

ZIPP MANUFACTURING

RIVETT
Classic Hydra

ROCKETT
Retro Hydra

Zippkits R/C Boats

BUILDING INSTRUCTIONS

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Introduction

Thank you for purchasing this kit. We are sure that it will provide you with many hours of enjoyment.

Please take the time to read this entire manual before building this boat. You will become familiar with the building order, and less likely to make mistakes.

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.

Here are a few safety tips:

- **Never operate your boat alone. If you get hurt, you may not be able to drive for help.**
- **Never, ever operate your boat in an area where there are full size boats or swimmers. If something happens, a 15 pound object traveling at 50+ mph can do serious damage.**
- **Always use a failsafe. This shuts the engine off in the event of radio signal loss. Test the failsafe each day of running, by shutting off your transmitter.**
- **Always carry a fire extinguisher, as gasoline is extremely flammable.**

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.

RIVETT/ ROCKETT

Purpose

The Rivett and Rockett were designed to fill a void in the gas boat market.

There simply was not a scale type hydro specifically designed for gasoline power.

The Rivett and Rockett were designed from the ground up as gas boats. They were literally designed around a Zenoah marine engine!

They were designed as easy to build kits that are also easy to setup, and very predictable to drive. They have excellent stability and turning ability, and handle rough water as well as any hydro.

The secret to their outstanding performance is the modern design features, such as the sponson angle of attack, non trip and deck crown. All these elements add up to an aerodynamically sound design.

You can build this boat without having the engine or radio, but it does make it easier to have them available when you build.

You can use any gasoline engine, as long as it has mounts for 5 inch rails. If you use a Zenoah or similar, you will generally use a collet type of cable system.

If you use a Homelite, or similar sport engine, you will generally use a square drive type.

Please note that this boat was designed for the Zenoah style marine engines. Other engines may not fit without cutting, and may not fit under the cowling.

These kits are identical, except for the top decks. Construction is identical, except for the top decks. Both the Rivett and Rockett are built exactly the same way, and we show both decks.

This reduces our costs, as we only have to produce one manual for both kits. You benefit because this keeps the kit price reasonable.

Preparation

Tools and supplies needed to build:

- Small wood plane (mini plane)
- Sanding blocks with 80 and 220 grit paper
- Drill with bits
- Right angle drill or attachment
- Square
- FLAT Workbench
- 3 wood blocks $\frac{3}{4}$ x 2 x 10 (1x stock or $\frac{3}{4}$ ply)
- $\frac{3}{4}$ x 10x 48 MDF or ply
- 1 ounce Thin CA glue and accelerator
- Good quality 30 minute epoxy
- Epoxy finishing resin
- Lots of clamps! Spring clamps, paper clamps, c clamps, etc.
- Razor saw
- Wide tape
- Wood filler
- Primer
- Paint

RIVETT/ ROCKETT

Additional items needed to complete:

- Gasoline engine with 5 inch mounts
- .250 Collet for engine (Zenoah type engines)
- .250 30 inch cable w/welded stub shaft (Zenoah type engines)
- .250-.250 brass ferrule (sport “trimmer” type engine)
- 30 inch section of square drive cable (“trimmer” type engine- get from trimmer)
 - ¼ inch stub shaft (“trimmer” type engine)
 - ¼ inch thrust bearing (“trimmer” type engine)
 - Tuned pipe
- 2 channel surface radio with 1 standard and 1 heavy duty servo (100 in/oz minimum)
 - Throttle pushrod (2-56 or 4-40 Size) with Clevises
 - 2- 4-40x12 Pushrods and a ¼” OD carbon pushrod
 - 2 pushrod seals (Zipp 3404)
 - 14 ounce Fuel Tank or IV Bag(gasoline compatible)
 - .250 strut (Zipp 3403)
 - .250 drive dog (Zipp 3405)
 - 6518/3 or 6717/3 prop
 - Prop nuts (Zipp 3450)
 - Engine Mounts (Zipp 3409 for Zenoah)
 - Cable grease
 - Large rudder (water pickup type) (Zipp 3402 or 3413)
 - 5 feet large silicone tubing (water line)
 - 12 inch length of 11/32 brass tubing
 - 36 inch length of 5/16 brass tubing
 - Floatation (pool noodles, foam, etc.)

RIVETT/ ROCKETT

Before we can start building, we need to do some prep work. Good prep work will pay off later with a straight, true running boat.

First, we need a flat work surface. Nothing else will do.

Put your 3/4x10x48 MDF or plywood on the bench. If necessary, screw it down so that it stays flat.

The entire boat will be built on this, so make it right.

The Frame

We are ready to start the build!

Let's identify the parts in the sheets. Don't remove the parts until you actually need them, as some look similar, but are not the same. This boat is not symmetrical, that is, the right and left are not the same, so it is critical that you mark the parts correctly, or they will not fit. Note that all reference to right or left is as if you were sitting in the boat. See back of book for larger pictures,

See Printed Version

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We like the Great Planes 11 inch bar sanders



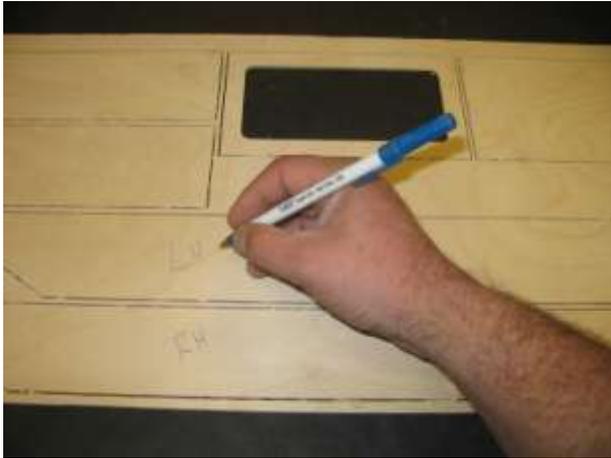
Your life will be much easier with one of these



Use good quality epoxy and finishing resin



Acid brush trimmed for fast epoxy application



Marking parts before removal.



Bulkhead 3 with turn fin doubler removed. Middle piece gets tossed.



Incorrect doubler installation. Note bottom chine slot is covered.

Let's get started.

The first thing you should do is to carefully sand the parts while they are still in the sheets. Do this with your 80 grit sanding block.

Sand both sides, as this will make it much easier to sand the parts once they are out of the sheet.

While the parts are still in their sheets, use a pencil to mark each part with the name, and which side is right or left, as the parts only fit correctly one way.

Turn fin doubler

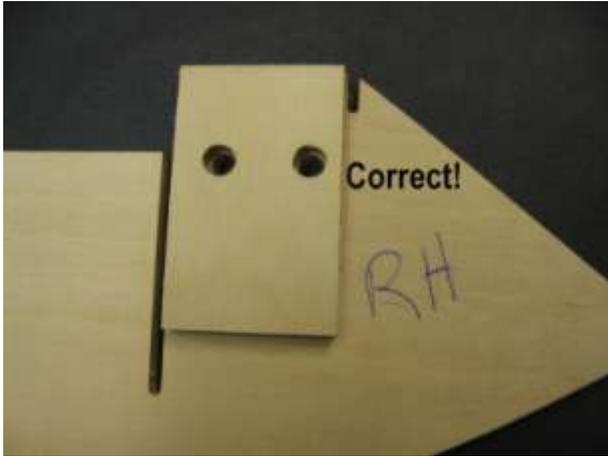
Sand the edges of bulkhead 3. Sand inside the holes.

Remove the cutout containing the turn fin doubler.

Remove and sand the doubler. Toss the piece it was in.

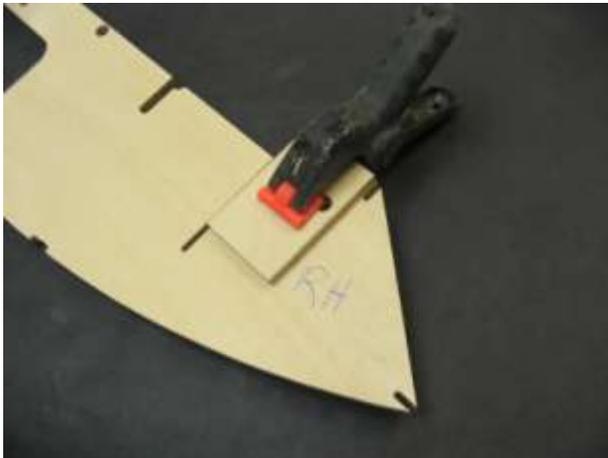
The doubler only goes on correctly one way.

Hold the doubler over the matching holes on bulkhead 3. Make sure you are on the FRONT RIGHT of the bulkhead. This will be the forward facing side.



Correctly installed doubler. Holes centered and slot uncovered

Make sure the doubler will be on the front (inside) of the bulkhead.



Doubler clamped in place.

When you are sure you have it correct, glue the doubler to the bulkhead with 30 minute epoxy. Clamp while it cures.



Be sure the turn fin doubler is glued to the proper side of bulkhead 3.

The doubler will be on the right front (inside) of the bulkhead when correctly assembled.



Blind nuts epoxied to turn fin doubler.

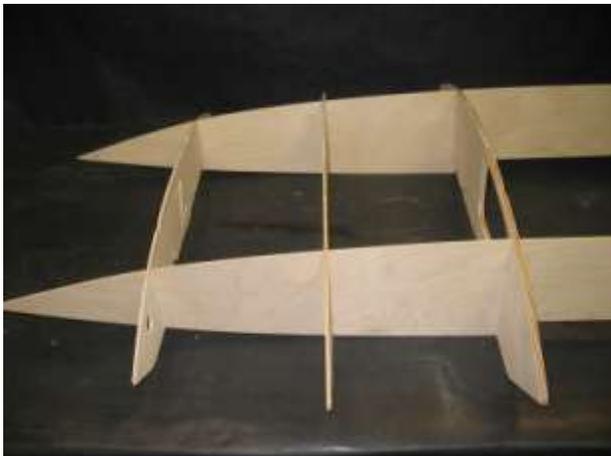
Install the two blind nuts to the turn fin doubler with 30 minute epoxy.



Our building board is two pieces of 3/4x10x48 MDF Cover with wax paper.

Frame assembly

Cover your building board with waxed paper or clear plastic wrap. We don't want to glue the boat to the building board...



Fitting bulkheads to stringers before wicking thin CA into joints.

Start by assembling bulkheads 1, 2 and 3 to the side stringers. Make sure the bulkheads are in the correct slots, and facing the correct way. The tabs on the bulkheads are all offset to the right.

Push the bulkheads all the way into the stringers, until they are flush at the bottom of the stringer. You may need to tap the bulkheads with a block of wood or a small hammer to get them fully seated.



Be positive that bulkheads are in correctly before gluing!



Note that air vents are on the left side.



Bulkhead 6 and transom gusset glued to bottom.

Once you are satisfied with the fit of the bulkheads in the stringers, wick some thin CA into the joints. Don't glue bulkhead 3 until the others are done.

Don't use so much CA that it drips off the part. Thin CA is about as thick as alcohol, so it runs and seeps everywhere.

Hit each joint with accelerator to harden it. Only glue once, we will go over the joints a second time after we fit this assembly to the bottom. If needed, we can break the glue joints pretty easily at this point, but not after double gluing.

Now glue bulkhead 3, being careful to align the bottom part flush with the step in the side stringer.

Fit bulkheads 4 and 5, making sure that they fit tightly to the side stringers. Wrap a rubber band around bulkhead 5 to keep it in the stringers.

Set this assembly aside for now.

Bottom

Place the bottom sheet on the building board, so that the right side is facing away, and is marked.

All slots in the bottom are offset to the right.

Check the fit of the transom gusset into the bottom. Make sure it fits tightly to the bottom. Also check the fit of the gusset into bulkhead 6, and the fit of the bulkhead into the bottom. If all is well, clamp a piece of wood to the rear of bulkhead 6 to keep it straight, then glue it to the bottom and to the gusset with thin CA. Be sure the back of the bulkhead is flush with the back edge of the bottom. Hit this with accelerator. Glue again, and hit with accelerator again.



Nose doubler glued to bottom, 3/8 inch from front. Make sure it is on correctly.



Bulkheads 3 and 4 being glued to bottom. Note broken cinder block weights.



Gluing bulkhead 6 to the stringers. Be sure it is not twisted or warped.

Glue the nose doubler to the bottom, 3/8 inch back from the front edge. Be sure that the nose doubler is installed correctly. If you are not sure, check it against bulkhead 1.

Putting it together

Slip the framework over the bottom, and slip the tabs of bulkheads 4 and 5 into the slots in the bottom.

Place weights on the bottom to keep it flat against the building board.

If bulkheads 4 and 5 fit tightly to the bottom, wick thin CA into the joints and hit with accelerator.

DO NOT glue bulkhead 3 to the bottom!

Glue and double glue bulkhead 6 to the side stringers. Be sure bulkhead is 90 degrees to the bottom. Side stringers will overhang bulkhead slightly. We will trim these later.



Bulkheads 4, 5 and 6 glued to bottom and sides.

Double glue bulkheads 4 and 5 to the sides and bottom. Use accelerator.



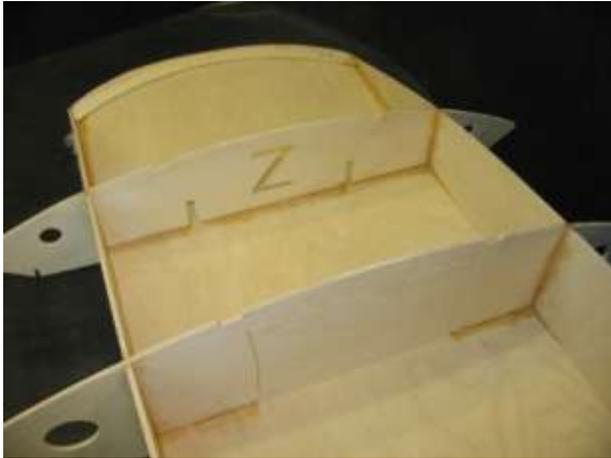
3/4x2x10 gluing block. Wrap in wax paper.

Wrap your 3/4x2x10 gluing block with waxed paper. Slip it under bulkhead 1 to support the bottom while we glue.



Push block under bulkhead 1 for support.

Press down on bulkhead 1 and if it is tight to the bottom, wick thin CA into the joint, and spray with accelerator.



Bulkheads 1 and 2 glued tightly to bottom. Do not glue center of 2, as it will be cut out.

Slide the gluing block back to bulkhead 2, and glue it to the bottom the same way. Do not glue the center area of bulkhead 2, as it will be removed later.

DO NOT glue bulkhead 3 to the bottom yet!



Bottom glued to sides.

Glue the nose portion of the bottom to the sides, aligning the front tip of the sides to the bottom.

Use thin CA and accelerator. Double glue.

Double glue bulkheads 1 and 2 to the bottom and sides.



Cutting out center of bulkhead 2.

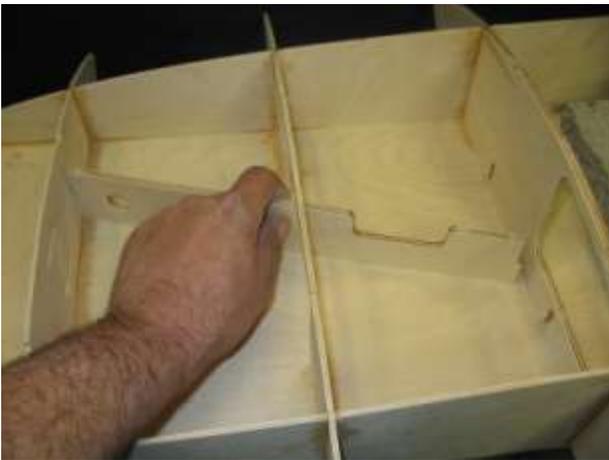
Use your slitting saw or razor saw to cut the center out of bulkhead 2.

Leave the top bridge in place for now, as it keeps the sponsons from twisting until we can put the deck on.

Engine Rails



Sanding bulkhead 2 in preparation for the engine rails.



Test fitting rails by “snapping” them into bulkhead 3.



Rails in place. Note cutout in right rail for carb.

Lightly sand the vertical parts of bulkhead 2 for the engine rails.

The engine rails have round holes to indicate the front. The right rail also has a cutout for the carb.

Test fit the rails as follows:

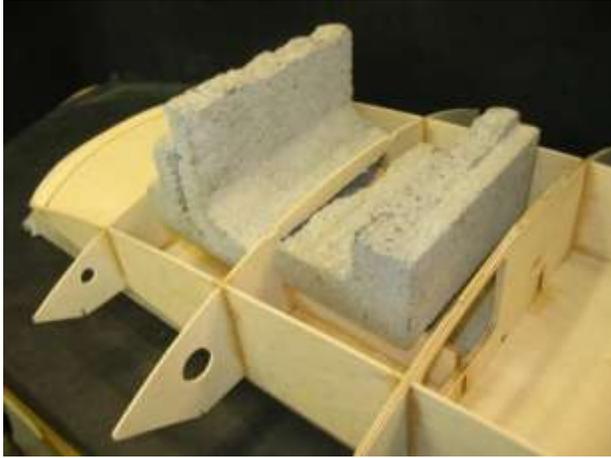
Put the right rail in the slot in bulkhead 1.

Push the rail against bulkhead 3 so that it “bows” back slightly. The rail will snap into place. Do the same for the left rail. If all looks good, carefully remove the rails by bowing bulkhead 3 back so that you can get them out, one at a time.

Mix up about ½ ounce of 30 minute epoxy.

Coat the bottoms of the rails, as well as the slots in the bulkheads with epoxy. Coat the drain holes at the rail slots.

Also coat the two vertical surfaces on bulkhead 2.



Engine rails weighted while the glue dries. Gluing block under bulkhead 2.



Sponson chines in place.



Make sure the sponson transom is square.

Snap the rails in as before. Use any excess resin to create a fillet where the rails meet the bottom.

When the rails are fully epoxied in, place some weights on them, with the gluing block under bulkhead 2.

Let cure for at least 2 hours.

When cured, press down on bulkhead 3 and double glue in place.

Sponsons

Remove the sponson chines for the bottoms and sides.

Start with the side chine. Slip it into the notches in the outside edge of the bulkheads.

Put the front tab into the side stringer, seating it fully. If the chine doesn't seem to fit correctly, make sure that you marked them correctly, or simply try the other chine.

Do not glue yet.

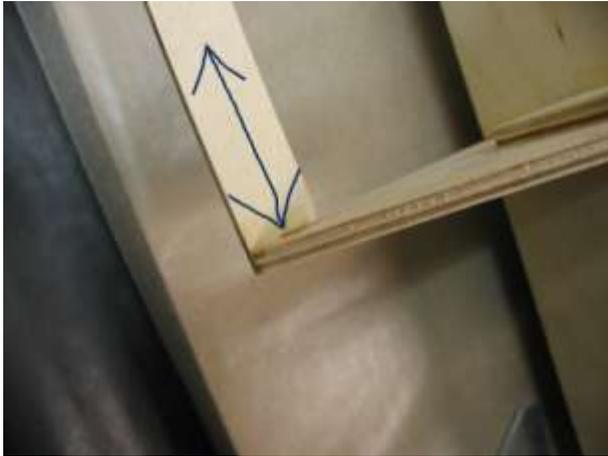
Put the bottom chine in place, making sure that the front tab is fully seated in the slot in the side chine.

When satisfied that everything is in place, wick thin CA at every joint EXCEPT AT BULKHEAD 3.

Do not glue the chines to bulkhead 3 yet.

Use a square to check the rear of bulkhead 3 (sponson transom). Adjust the bulkhead at the chine joints. When all is square, glue the chines to bulkhead 3.

Double glue all chine joints.



Adjust sponson transom at chines until square.

Repeat on other side. Make sure that you take the time to get the sponson transoms square, as the turn fin will be bolted to one of them. If not square, the boat will not track straight.

Sponson Non Trip



Looks like a boat...

With the hull upside down, use your wood plane to bevel the side and bottom chines to match the angle of the bulkheads.



Sanding chines for sponson non trip sides.

Sand the chines and bulkheads so that the non trip sides will fit squarely.

Note that the side chine offers very little



Ready for sponson side.

surface for the non trip side. This is normal.



Sealing hard to reach areas while gluing.

Mix up about ½ ounce of 30 minute epoxy. Using your special epoxy brush, put a coat of epoxy on the chines and bulkheads where the sides will touch. Also seal the chines at this time, as they will be difficult to seal after the sides are in place.



Sponson side with epoxy.

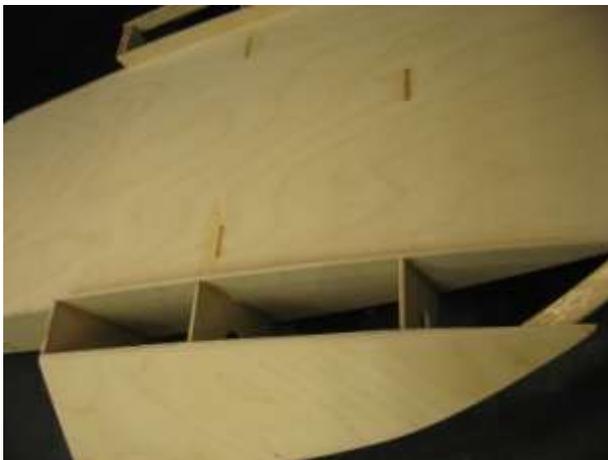
Brush epoxy on the outer perimeter of the non trip side.

Make sure you apply epoxy to the correct side of the correct part!

Use tape and clamps to hold side against



Tape, clamps and weights build a strong, straight hull.



Sponson bottom sanded and ready for sheeting.



Bottom sheeting test fitted.

the frame.

Check that the non trip side in contact all the way around.

When satisfied, put the hull on the building board, and weight it down

Allow to cure at least 2 hours.

Repeat on other side

When the non trip sides have fully cured, remove the tape and clamps.

Sponson Bottoms

Plane and sand the sides even with the sponson bottom. Take your time here, as this is a critical ride surface.

Make sure that you sand the sponson bottom evenly and squarely.

Test fit the sponson bottom in place. If all is well, lightly mark the inside of the bottom.

Repeat on other sponson.

Place your $\frac{3}{4}$ inch thick gluing block on the work surface. We don't need the building board for the next steps.



Epoxy in place, ready for bottom sheeting.

Mix about ½ ounce of epoxy.
Use your epoxy brush to coat all areas that the sponson bottoms will touch.
Do one sponson.



Lots of clear tape holding bottom sheet in place.

Brush epoxy on the outer perimeter of the bottom. Be sure you do the inside of the piece (you did mark them as left and right inside, didn't you?)



Other bottom sheet used as shim while on board.

Quickly tape the sponson bottoms tightly to the sponsons. Be sure that the inside edge of the sponson bottom is aligned as well as you can get it. It should be flush. Also make sure that the bottom is flush, or a little past the sponson transom.

Flip the boat over so that it is sitting upright on your bench.
Put the gluing block under the rear of the boat (bulkhead 6).

Put the other sponson bottom (the one we aren't gluing yet) in place to shim that side up.

Put some weight at the rear, and some just in front of bulkhead 3. Not too much, maybe a couple of pounds each.



Hull weighted down while sponson bottom sheet cures.

We just want to make sure that both sponsons are resting squarely on the table, with the transom shimmed $\frac{3}{4}$ inch.

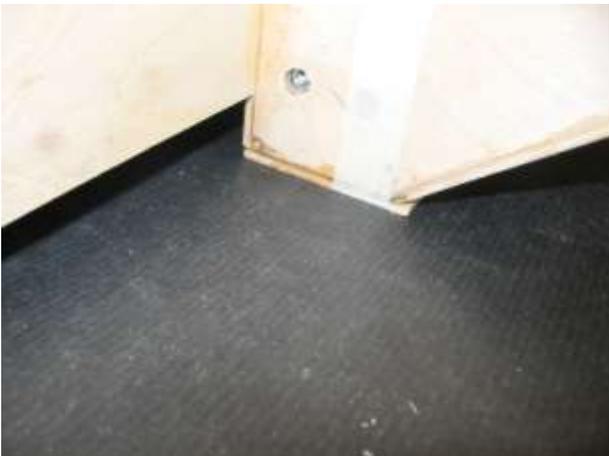
Allow to cure at least 2 hours.



Rear of hull weighted on gluing block so that it remains flat.

Repeat for the other sponson bottom.

Allow to cure for 2 hours.



Sponson bottom resting squarely on bench.



Bottom flush with inside and rear.

Lets build the radio box while the bottom sheet cures.



Radio box parts. Note waxed paper.

Radio Box

Remove all of the radio box parts: Two long sides, two short sides, the top and bottom, as well as the 1/8 ply top with lid.

Sand all the parts smooth with 80. Lay a piece of plastic wrap or waxed paper on your bench.



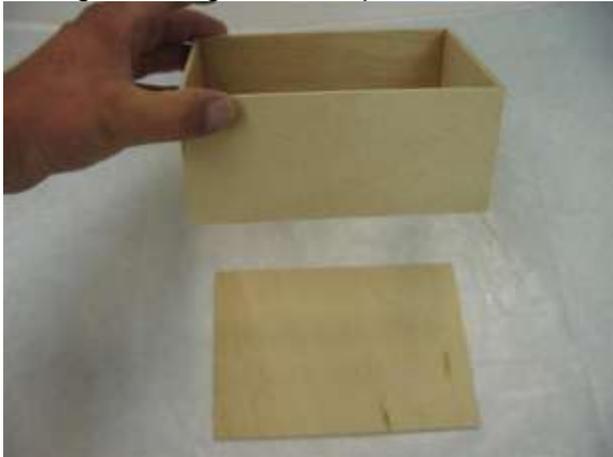
Gluing the short side to the long.

Using CA, glue the two small sides to the two long sides. The small sides go between the long ones. Use a square.



Gluing sides together. Keep on flat surface.

Put glue on the edges, and join the two box halves on the bench.



Gluing on bottom.

Lightly sand the bottom of the box.
Glue on the bottom.



Gluing on top.

Lightly sand the top.

Glue the radio box top on.

This is the 1/8 inch Birch top.

Using 80 grit, sand the overhang on the top and bottom so that it's flush with the sides.



Top on and box sanded.



Gluing 1/8 ply top in place.



Completed box, ready for sealing.

Sand the top with 180 or 220 grit paper on a block.

Carefully remove the lid from the 1/8 ply radio box top.

Sand the edges smooth.

Glue the 1/8 ply top to the radio box.

It has a slightly larger hole for the lid, so try to center it so that the "lip" is even all around.

Make sure that you don't get any glue in the "lip", as it will interfere with the way the lid seats.

Sand the entire box with 180.

Stand back and admire your awesome radio box!



Servo mounts assembled.

Radio:

Find the 4 pieces of $\frac{1}{4} \times 1\text{-}1/2$ ply, and the 4 pieces of tri stock.

These are the servo mounts.

Using CA, glue one piece of tri stock to each piece of ply.

Make sure the two pieces are flush with each other by holding them flat against the bench while the glue dries. Use a piece of waxed paper or cling wrap on the bench, so the part doesn't become a permanent part of your bench...

When dry, sand each mount smooth with 80. Get your servos.



Marking servo. Be sure servo is at the end of the mount.

Hold the servo at the end of the mount, mark the hole locations in the ply. Be sure to leave a $1/16$ gap between the servo case and the mount. Drill on the marks with a $1/16$ bit.

Repeat for the other side.

Repeat for the other servo.

Assemble the grommets and bushings on the servos. Note that the brass bushings go in from the bottom of the servo.



Sitting flat on bench.

Screw the servos to the mounts, making sure the case does not touch the mount.

Lay each mounted servo on the bench.

Check to see that it sits flat on the mounts. If not, find out why and correct it.



Radio box with servos installed.

Get a piece of scrap 1/8 wood from the kit, and place this on the floor of the radio box, where the rudder servo will be.

With the radio box still on its side, glue the rudder servo mounts in with CA. Make sure the 1/8 scrap is under the servo, to space it up from the radio box bottom. Do not glue any part of the servo to the radio box! Check the servo wire!
Hold firmly until dry.

Your engine will determine where you mount the throttle servo.
Mount it the same way as you did the rudder servo.

Drill 3/8 holes where the pushrods will exit.

Remove everything from the radio box, and coat the inside and outside with finishing resin.

Be careful not to get any buildup in the lip, where the lid seats. It will make it impossible for the lid to seal properly. To get inside the upper part, bend an acid brush about 120 degrees, and it works very well.

Seal the lid, as well. You can seal one side, drop it onto some waxed paper and do the other side.

You can seal the inside, top and all four sides of the outside in one session.
Allow to cure overnight.

Sand the top of the box with 400 grit of finer, so that the sealing tape has a smooth surface to adhere to.

We like Scotch Plastic tape (clear).



Sponson bottoms ready for trimming and sanding.



Rear non trip being test fitted in place.



Note bevels in rear non trip.

Back to the boat:

Make sure that it has been at least 2 hours since you glued the bottom sheeting to the sponson.

Rear Non Trip

The rear non trip sides are designed to go inside of the hull, between the sides and bottom.

They must be beveled in order to fit.

Hold one of the rear non trips near the back of the hull, and mark it for the bevels needed to get it inside.

Use your plane and 80 grit to make the 45 degree bevels.

Test fit the non trip in place. You may have to trim the front point slightly, so that it fits tightly in place.

When satisfied with the fit, glue in place with thin CA and accelerator. Glue again.

Repeat on other side.



Rear non trip in place.



Rear View of non trips installed.



Transom being glued in place.

Transom

When the rear non trips are done, sand the rear of bulkhead 6. Glue the transom to the rear of bulkhead 6 using 30 minute epoxy. Clamp in place until it cures.



Engine in place, ready for mounting.



Marking bolt holes in rails.



Engine in place. Note that the top of bulkhead 2 is still in place.

Mounting Engine

Your engine should be in its 5 inch mounts, and have some sort of throttle assembly installed. We like the simple bell crank.

Remove the carb and header, if installed.

Slip the engine between the rails until the carb is centered in the slot in the right rail.

Place a 1/8 ply scrap under the engine as a spacer. The engine can be no closer than 1/8 inch to the bottom.

Aim the engine towards the hole in bulkhead 3.

Use a 1/4 inch rod or long bolt to align the engine to the hull.

Push the rod from the bottom, through the slot and hole in bulkhead 3, and into the collet.

This will allow you to mark the two rear mounting holes in the rails.

We like to use a stub pencil, and needle nose pliers for marking the holes.

Remove the engine and drill the two holes with your right angle drill.

Make sure the holes are slightly larger than the bolts, as we will be sealing these holes later.

Put the engine back in, and loosely bolt the rear in place.

Push your 1/4 inch rod back up through into the collet.

Mark the front holes.

Remove the engine and drill the two front mounting holes.



Shaft tube being aligned.



11/32 by 3-1/2 stuffing tube.



Bottom of hull taped around stuffing tube.

Bolt the engine in place, with the rod in the collet.

Try to slip a piece of 9/32 brass tubing over the rod, up to the collet.

If that fits without interference, slip a piece of 5/16 brass tubing over that, if that slips on, slide the 11/32 brass stuffing tube over that. You should have to sand a little to get the tubes to fit.

When you can slide the 11/32 tube over the others without moving anything, its time to glue the stuffing tube.

The stuffing tube is a piece of 11/32 brass tubing about 3-1/2 inches long.

Rough up the outside of the tube with coarse sandpaper.

Slip the tube onto the 5/16 tube, until it is within 1/4 inch of the collet.

Tape around the bottom of the tube, so that no epoxy can seep out.

When happy with the tape job, flip the hull upright, and either cut a hole in your building board, or use pieces of 3/4 thick wood to space the hull off the bench, as the stuffing tube is now sticking down.

Mix up about a 1/4 ounce of 30 minute epoxy, and mix a little filler in, such as micro balloons or silica.

Just thicken to about mustard consistency. Apply this under, around, behind and on top of the stuffing tube to hull joint.

Try to be neat, and put some on the engine side of bulkhead 3.



Stuffing tube epoxied in place.

Don't move anything for at least two hours.



Deck supports glued in place.

Deck Supports

Sand the two deck supports.

Glue the deck supports into the notches in the bulkheads using medium CA.

Start at the rear, and glue to each bulkhead.



Front of deck support. Note bevel.

When you get to the front, trim and bevel the support so that it fits into the notch on the nose doubler, and blends to the bottom sheeting.

Sealing Interior



Sealing interior with epoxy.



Be sure to get inside any holes.



Sealing underside of deck supports.

Now we need to seal the inside. It is vital that all exposed wood be sealed.

Mix up about 2 ounces of epoxy finishing resin. You can thin the resin with about 10% acetone, so that it brushes easily. Go easy on the acetone, as it will soften the epoxy glue joints if you use too much. It's pretty funny to get the inside sealed, and see the side pop off the boat because you thinned the sealer too much...Don't ask!

Start from the front.

Using a brush, coat all areas of wood inside the hull. Get inside the holes and "Z's".

Get the bottom of the deck supports.

Try not to get too much resin in the threads of the blind nuts.

Seal inside the sponsons very well. These will not be accessible, so they must be sealed well.

Continue coating the inside with finishing resin.

If you need to mix more, use a new container and brush. If you don't, the old resin will mess with the new resin, and create a problem. Trust me...



Interior sealed with epoxy.

After you are 100% sure that all exposed wood inside the hull has been coated, let it sit overnight.

After the hull sealer has had a chance to cure, let's get the radio box mounted.



Radio box and mounts.

Radio Box Mounts

Grab the two radio box mounts. These are $\frac{1}{4}$ ply, about $3\text{-}\frac{3}{4}\times 3\frac{3}{4}$.

Mark a centerline along the length of both mounts.

On one of the mounts, mark lines $\frac{3}{4}$ from both ends.

On the other mount, mark the center.

Drill $\frac{3}{16}$ holes at the intersections of your lines.

Hold the rear mount on the bottom of the radio box. This should be at the rear end of the box (where the rudder servo is). Center the mount side to side, and flush with the rear.

While holding the mount, mark the two holes onto the bottom of the radio box.

Do the same for the front mount, except hold it lengthwise along the center of the radio box, flush with the front and centered side to side.



Drilling mounting holes in radio box.



Holes relieved for blind nuts.

Drill the 3 holes in the radio box with a 9/64 (.140) bit.

With your Dremel (or a 1/2 inch forstner bit), relieve the holes in the mounts to a depth of about 1/16 or so. This is for the blind nuts, so that we can epoxy the mounts to the hull bottom.

Install the blind nuts in the mounts, and use a little medium CA to keep them in place. Make sure they are flush with the surface of the mount.



Blind nut holes taped so no glue enters.

Using the (3) 6-32x3/8 screws and #6 flat and lock washers, bolt the mounts to the radio box.

Sand the bottoms of the mounts. Cut 3 little pieces of masking tape about 1/4 inch square. Put these on the blind nuts so that epoxy cannot get into the nut in the next step.

Sand the hull bottom where the radio box will go. This will be between bulkheads 3 and 4, on the right side.



Radio box in position.

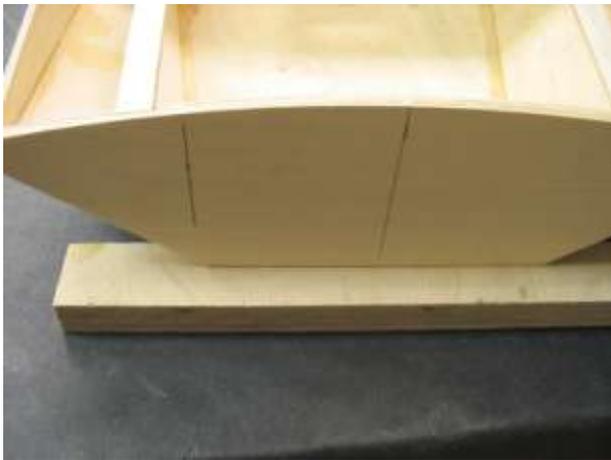
Using 30 minute epoxy, glue the mounts (with radio box attached) to the bottom. Center the radio box, front to rear between bulkheads 3 and 4.

The radio box should be flush with the exhaust opening in bulkhead 3. If you mount it further to the right, taping the lid on will be tougher, and further to the left will get the radio box too close to the exhaust.

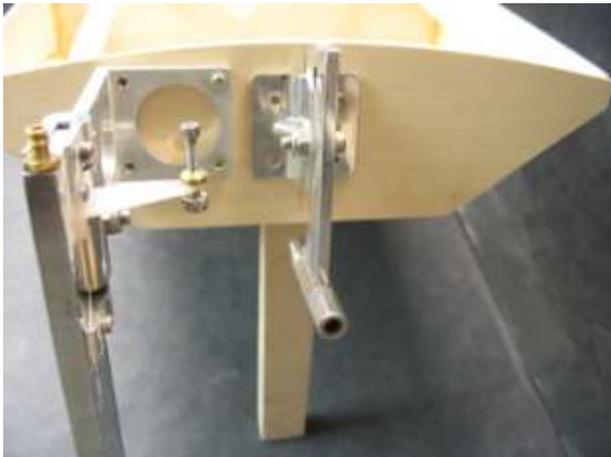
Weight the box with a pound or two, and let cure at least two hours.



Marking 2-3/4 inches to the left...



Strut and rudder centerlines.



Rudder and strut mounted.

Hardware

Draw a center line on the transom, top to bottom. Draw a parallel line 2-3/4 to the **left** of the center line.

Assemble your strut to the bracket, and adjust the strut so that it is all the way up in the bracket.

Hold the strut on the transom so that it is about 1/2 inch off the bottom, align it to the center line and mark one hole.

Drill this hole and bolt the strut to the transom with this one screw and nut.

Align the strut to the center line and tighten the screw.

Take a step back and eyeball the strut to make sure it, and your center line are straight. If all looks good, mark and drill the other 3 holes.

Mount the rudder on the left side of the transom, aligning it to the line you drew earlier. Mount it the same way, eyeballing it before you drill the last 3 holes.

The rudder should extend at least 2 inches below the strut.

Mark and drill the hole for the rudder pushrod in the transom.

Because it is so long, we used a 1/4 inch carbon tube and "4-40" pushrod material for our rudder pushrod.

We used a solder clevis at the servo end, and a 4-40 ball link at the rudder end.

Make sure the pushrod doesn't rub on any bulkheads. If it does, open the hole until it is clear.



Annealing shaft tube for easier bending. Just heat until color changes.



Measuring depth of shaft tube in strut.



Shaft tube with smooth bend.

Remove the rudder.
Set the hull on a FLAT table or bench.

Adjust the strut so that the bottom of the transom is $\frac{7}{8}$ inch off the bench.
The strut should be flat on the bench.
Tighten the strut.

Install the engine, and make the shaft tube from a piece of $\frac{5}{16}$ brass tubing.

Slip the 36 Inch long shaft tube into the stuffing tube until it hits the collet.

Mark the outside of the tube where the stuffing tube ends.

Remove the shaft tube and heat the area around the mark with a torch, until it changes color. This will anneal the brass tubing, making it soft, and easy to bend. Only heat an area about 1 inch on either side of your mark.

After it cools, carefully bend the tube about $\frac{1}{2}$ inch below your mark.

Slip the tube back in to the stuffing tube and continue to bend it to meet the strut. You want one smooth bend, then a parallel run to the strut.

Mark the front of the strut, the cut $\frac{1}{2}$ inch longer, to go into the strut.

Deburr the end of the shaft tube, unbolt the strut from the transom, and slip the strut onto the tube.

Don't loosen the strut adjustment, just unbolt it.

Mark the front of the shaft tube, about $\frac{1}{4}$ inch from the collet.



Shaft tube installed.



Note 1/4 inch gap between drive dog and strut.

Remove the strut and shaft tube (again!), and cut the front of the tube on your mark. Deburr this end.

Bolt the strut and shaft tube in place again. Slip the cable into the strut and tube, being absolutely certain that the cable is all the way into the collet.

Measure the distance from the back of the strut to the front of the drive dog. Subtract $\frac{1}{4}$ inch from this measurement.

This is the amount to cut off the front of the cable to leave a $\frac{1}{4}$ inch drive dog to strut gap.

Exhaust



Exhaust goes thru hole in bulkhead 3.

We used a quiet pipe in our hydro, and recommend that you use a quiet pipe or effective muffler, as loud boats lose ponds!

Install the engine in the hull with the 90 degree header in place. Leave the carb off, for now.

Slip the pipe onto the header and adjust it to the proper length.

If the pipe is long, you may have to cut out a hole in bulkhead 5. Using the quiet pipe, we didn't have to.

Make your pipe mount now, while the deck is not on.

We used a simple piece of $\frac{1}{2}$ inch marine (or aircraft) ply, on edge.



Pipe mount and extension tube.

The pipe clamp bolts to this with a ¼-20 screw and blind nut.

An extension runs out a custom elbow (sink drain pipe).



Custom chrome exhaust outlet.

Throttle

Depending on how your throttle is setup, your throttle servo will either be on the right or left of the radio box.

We used the straight pushrod, vertical bell crank throttle linkage on the prototype, and prefer it.

Whatever method you use, take the time to get it right, as there is very little room between the engine and bulkhead 3, especially when the deck is installed and fuel and water lines are in the way. Once you are happy with the way the rudder and throttle work, remove everything.



Carb linkage bellcrank.

Turn fin



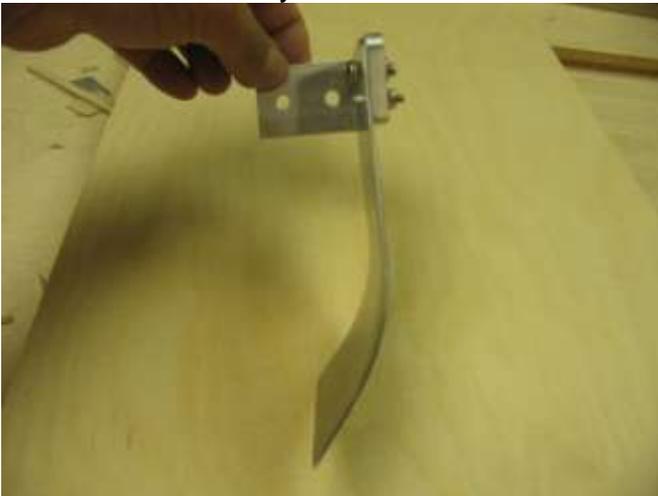
Turn fin and mounting hardware.

Assemble the turn fin to the bracket so that it is on the inside of the bracket.



Fin mounted correctly to inside of bracket.

If you mount the fin on the outside of the bracket, it would cause the water to lift the right sponson in the turns, as water hits the bracket.



Another view.

Use the $\frac{1}{4}$ -20x $\frac{3}{4}$ button head and 6-32x $\frac{1}{2}$ socket head screws and locknuts.



Turn fin mounted to sponson transom.

Use the 1/4-20x3/4 socket head screws to mount the turn fin bracket to the blind nuts in the right sponson.

You may have to run a 1/4-20 tap in the blind nuts if there is epoxy in the threads from sealing the interior.

If all is well with the turn fin, remove it.

Cowling

The cowling is made from a lite ply deck with the epoxy glass cowling glued to it.

You should have already sealed one side of the cowl deck.

Glue the two halves together. Do not adjust the way the decks come together as they are designed to bow slightly when you glue them together.



Lite ply cowl deck glued together.

Use waxed paper and put the forward cowl deck former in place with its 3/16 dowel. The waxed paper will prevent the deck and former from being glued to the boat. Use small clamps inside to hold the former flush with bulkhead 1.



Forward cowl former. Note waxed paper.

Do the same with the rear former, only use small clamps to hold it slightly above flush.

Set the cowl deck in place and center it on the deck support strips.



Aft cowl former. Note waxed paper and clamps.

If all is well, put epoxy on the front and rear deck formers and set the cowl deck in place.

Be sure that the deck is flush with bulkhead 1 and centered on the deck strips. There will be some overhang at the rear.

Clamp the cowl deck completely along both sides and against the deck formers.

Spray the lite ply cowl deck with water to help in conform to the compound curve of the deck.



Cowl deck clamped in place.

Double check that everything is in contact and allow to dry for several hours or overnight.

You can spray the lite ply deck again after a few hours if you want. It will help the cowl deck to conform to the compound curve of the hull.

While the deck is drying, grab the epoxy glass cowling. Wash the cowling in soap and water to remove the mold release agent.

Test fit the epoxy glass cowling to the boat.

The cowl should sit on the bulkheads and fit inside of the lite ply deck. You will have to sand the deck opening slightly. Try to fit the cowl so that it just touches the lite ply deck, without putting pressure on it. If there is any pressure on it, the deck will distort.

Once you are happy with the fit, use medium CA or epoxy to attach the epoxy glass cowling to the lite ply deck.

Make sure that the cowl is sitting on top of the bulkheads.



Note front clamps.



Epoxy glass cowling being test fit.

When cured, sand the rear of the cowl deck flush with the transom.

Remove the clamps and trace the cowl outline on the deck strips. We will use these later as guides for the deck.

Remove the cowl assembly.

You must provide cowl flotation, as epoxy glass does not float. It's not a question of *if* you will lose your cowling, it's *when*...



Cowling assembled.

Use white polystyrene foam and 5 minute epoxy to glue it into the cowling.

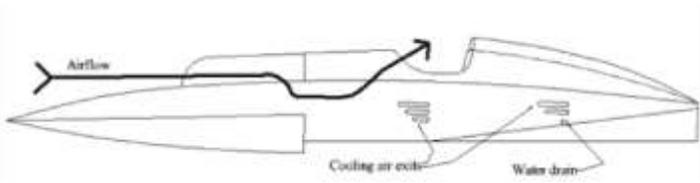
You must block the air from blowing straight through the cowling, by diverting it down, and over the exhaust before it can exit. See page 59 for a diagram of the air flow needed.

Do this with a piece of foam, sanded to conform to the inside of the cowling, just at bulkhead 3.

We will be cutting air holes in the front of the cowling, and an air exit where the "dashboard" would be.



Flotation in place. Early cowling shown.



Airflow diagram.

If we didn't have an air dam, the air would come in the front of the cowling, and sail straight through to the air exit, carrying very little heat with it. We need it to go into the front, and go around the bottom of the hull, before going up to the "dashboard". See page 59 for details.



Rivett nose before trimming.



Deck halves test fitted.

Top Deck

This is where the Rivett and Rockett differ.

If you are building the Rockett, go ahead and skip to the **Rockett** section below.

Rivett

The deck is comprised of 3 pieces:

The two deck halves and the center deck.

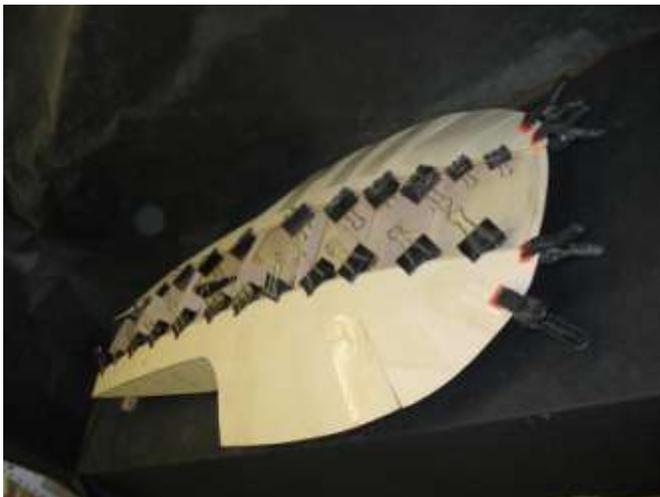


Cowling fits between deck halves.

The deck halves are not the same. It is important that you test fit and fully understand how the deck fits on before you epoxy.

The deck halves are attached one at a time, allowed to cure, and the center deck is attached at the front.

The cowling covers most of the open center section.

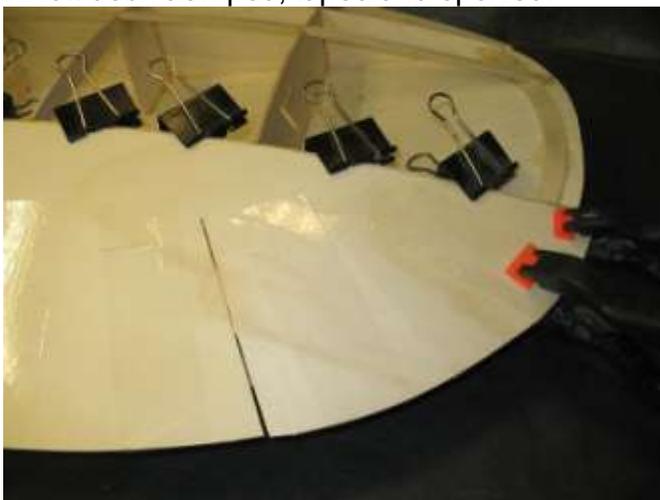


Rivett deck clamped, taped and epoxied.

Before you glue anything, lets test fit the deck.

Using a couple of small clamps, clamp one deck to the deck support near the front and rear. Line up the rear of the sponson with the deck, and line up the deck inside edge with the centerline you drew on the deck support.

When the deck is lined up correctly, add clamps along the deck support. Clamp the nose as well.



Notch detail.

Using masking tape, tape the rear portion of the deck down. Tape at the transom too.

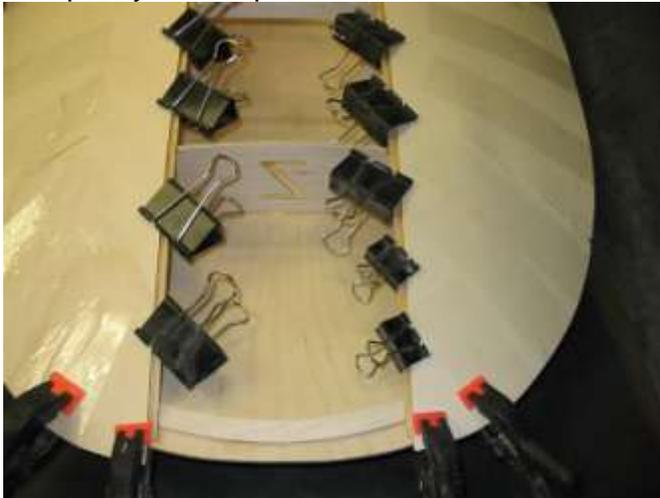
Continue taping the sponson portion, and tape the sponson transom, as it will want to bow upward.

Tape the sponson deck, and note how well the notch closes. Does the notch need to be opened up slightly? Is there a gap?

Take the time to get the notch as perfect as possible, as this is the part of the boat that everybody sees.



Use plenty of clamps!



Note the clear packing tape on deck.



Deck center being fitted.

If all looks well, make a mark on the deck and deck support. This will make it easier to line up the deck when you are gluing it in place.

Remove the tape and clamps.

For the deck installation, make sure that the hull is sitting on your flat work surface, and the rear is sitting on a $\frac{3}{4}$ inch gluing block. If the hull is twisted, the deck installation will lock it in that position. Weight the hull down so that it remains straight.

You will need a small glue brush and a credit card or piece of thin plastic or wood for the next steps.

Mix about $\frac{3}{4}$ ounce of epoxy finishing resin.

Using a squeegee or credit card, coat the bottom of the deck with resin. This seals the deck bottom.

Use your brush to coat all areas that this deck will touch. Work quickly.

As soon as everything is ready, start clamping and taping the deck as before. Use your alignment mark to save time.

Tape the crap out of the deck, make sure it is completely attached, and let cure overnight.

Repeat the procedure on the other side.

Make sure the hull stays weighted on the bench until the deck center is done.

Once all decks are cured, fit and glue in the deck center with 30 minute epoxy. Seal the underside with epoxy as well. The deck center should be flush with the back of bulkhead 1.

Tape tightly in place.



Deck notch after sanding.



Smooth, rounded nose.



Rockett decks being test fitted.

Once everything has cured, check the area of the side decks near bulkhead 2. Are the decks glued to this bulkhead? If not, you can use medium CA, squirted in the notch, to glue it down. Use accelerator.

You can cut the top of bulkhead 2 off at this point. Sand and seal the cut areas.

Plane and sand the deck flush, and keep the radius at the rear of the sponsons smooth.

The nose should be rounded off, and blunt. Do not make the nose sharp, as this will make the hull unpredictable at speed. Keep the radius to at least $\frac{1}{4}$ inch.

Fill the notches with wood filler.

Rockett

The Rockett deck is done in 5 pieces; Two deck sides, two sponson decks and one deck center.

The deck halves are not the same.

It is important that you test fit and fully understand how the deck fits on before you epoxy.

The deck halves are attached one at a time, allowed to cure, and the center deck is attached at the front.



Cowling fits between deck halves.

The cowling covers most of the open center section.

Before you glue anything, let's test fit the deck.

Using a couple of small clamps, clamp one deck to the deck support near the front and rear.

Line up the rear of the sponson with the deck, and line up the deck inside edge with the centerline you drew on the deck support.



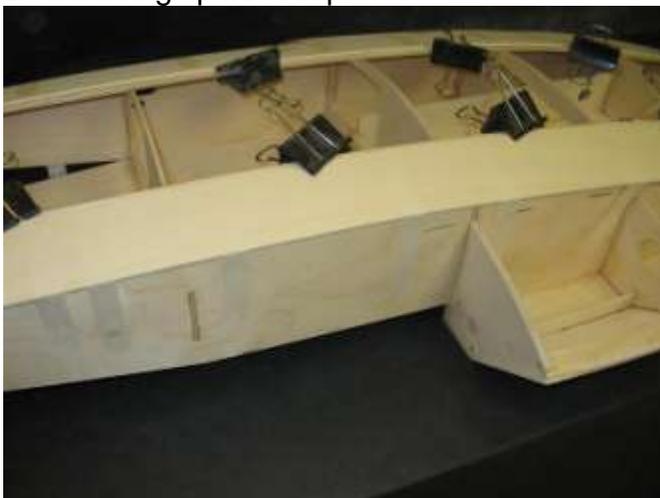
Decks being epoxied in place.

When the deck is lined up correctly, add clamps along the deck support. Clamp the nose as well.

Use masking tape, tape the rear portion of the deck down. Tape at the transom too.

Continue taping the front portion.

Make sure that the inside edge of the deck matches your centerline on the deck support. It is important that the space between the deck halves is 6-1/2 inches, as this is where the fiberglass cowling sits, and by a freak coincidence, is also 6-1/2 inches wide...



Tape and clamps are your friend!

If all looks well, make a mark on the deck and deck support. This will make it easier to line up the deck when you are gluing it in place.

Remove the tape and clamps.

For the deck installation, make sure that the hull is sitting on your flat work surface, and the rear is sitting on a 3/4 inch gluing block. If the hull is twisted, the deck installation will lock it in that position. Weight the hull down so that it remains straight.

You will need a small glue brush and a credit card or piece of thin plastic or wood for the next steps.



Ready for trimming.



Rockett sponson deck test fitted.



Deck in place after epoxy cures.

Mix about 1/2 ounce of epoxy finishing resin.

Using a squeegee or credit card, coat the bottom of the deck with resin. This seals the deck bottom.

Use your brush to coat all areas that this deck will touch. Work quickly.

As soon as everything is ready, start clamping and taping the deck as before. Use your alignment mark to save time.

Tape the crap out of the deck, make sure it is completely attached, and repeat the procedure on the other side.

Make sure the hull stays weighted on the bench until the deck center is done.

Glue the sponson decks on the same way. You may find it easier to bend these decks if you soak them in water first. If you do, let them dry while clamped and taped to the sponson. When dry, they will conform to the sponson shape and be easy to glue.

Don't forget to seal the bottom of the deck before gluing it on.

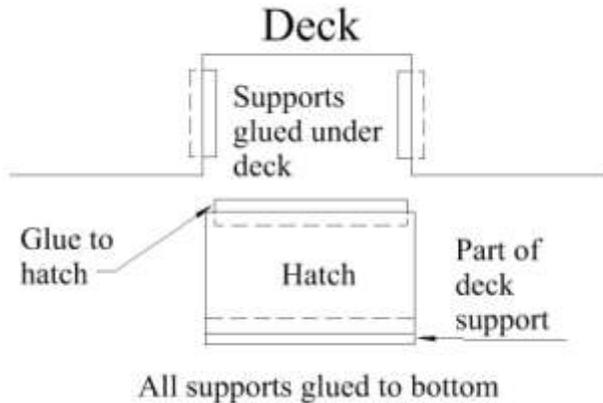
Once all decks are cured, fit and glue in the deck center with 30 minute epoxy. Seal the underside with epoxy as well. The deck center should be flush with the back of bulkhead 1.

Tape tightly in place. Let sit for at least 2 hours.

You can cut the top of bulkhead 2 off at this point. Sand and seal the cut areas.



Be sure that rear edge of deck is glued.



Deck Access Hatch

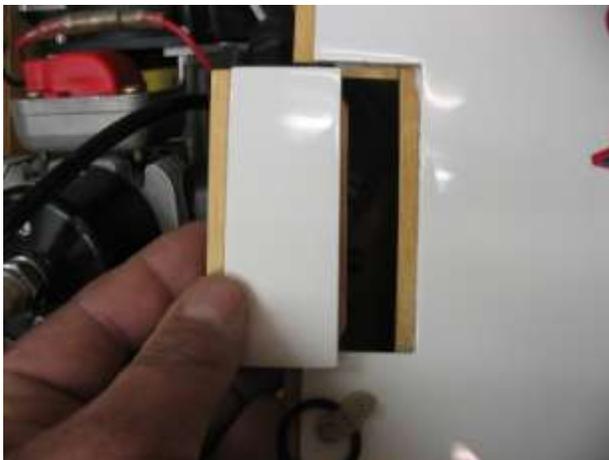
The deck must have an access hatch for the carb.

You will have to cut this hatch based on the location of your engine. The hatch should measure about 3-1/4 by 1-1/4 inches.

Carefully measure and mark the position of the hatch directly on the deck.

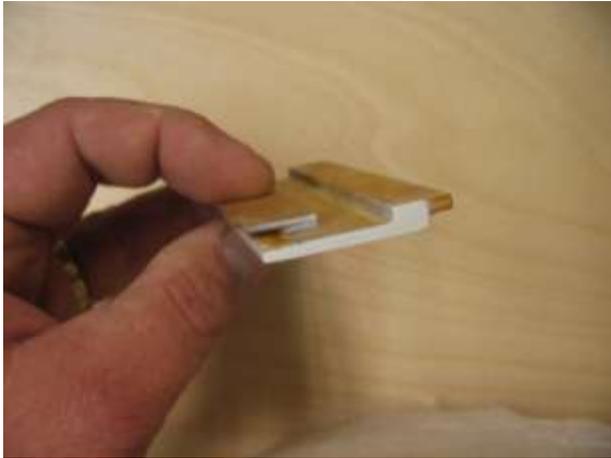
Use a fine tooth razor saw to cut out the hatch. Cut through the deck supports.

Do a neat job here.



Carb hatch in deck.

When the hatch is cut out, sand the edges of the hatch and opening, to allow for the paint thickness.



Note tongues to hold hatch.

Prepare the hatch supports by sanding the areas of the hatch and deck where the supports will be glued. See page 56 for details. Glue the supports to the hatch and deck with medium CA. Be sure that they are correctly installed, and clamp in place until cured.



Hard to see, but hatch is in place.

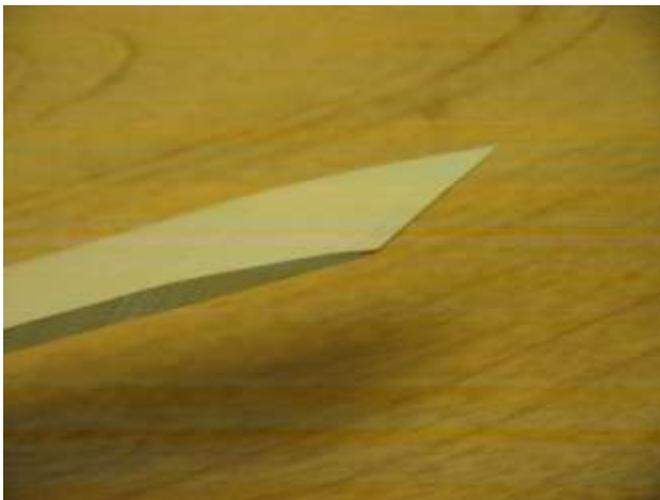
When cured, test fit the hatch in place. It should be fully retained by the cowling.

Ride Pads

The ride pads go on the bottom of both sponsons, and are the actual ride surface for the hull. These lift the hull slightly out of the water, and increase the top speed from a reduction in drag.

Use epoxy to glue each ride pad to its sponson bottom.

Note that the left ride pad is wider than the right, the same as the sponson bottoms are different widths. Mark the pads right and left, and taper the front from nothing, to full thickness for about the first $\frac{3}{4}$ inch or so.





Glue the pads on so that their inner and rear edges are flush with the sponson.

Tape firmly in position and allow to cure. Check for alignment once or twice before the epoxy fully cures, as it is critical that they remain flush with the inside and rear.

The hull is now ready for finishing.

Note that the photos show ride pads being installed on a finished boat, but the same thing applies to the bare hull.



Finishing

Sand the entire hull with 80.

Fill any dings, dents, craters, valleys or chips with wood filler.

When dry, sand again with 180. Check to make sure that all imperfections are filled. If not, fill and sand again.

Spend a little time getting this right, as it will make your boat look so much better when done.



Blow off the hull with compressed air, or use a vacuum to get the dust off.

Mix about 1 ounce of finishing resin. Use a credit card to spread out the resin on the top and sides.

Squeegee as much as you can. Get a thin even coat of resin on all areas.

Use a small acid brush to get the edges.

Scrape as much resin as possible. You just want to wet the wood with resin, any excess will just have to be sanded off later. This first coat is easy, as the wood will darken as it gets wetted with resin.

The second coat will be a little more challenging, but will use far less resin and be faster to cover.

When you are sure that all areas on the top and sides are covered, let it cure overnight.



When cured, sand lightly with 80. Just make it smooth. It's ok if you sand through the resin on this coat.

When done, blow the dust off and do the bottom.

When the bottom is cured, sand with 80.

Repeat the whole thing for the second coat, only this time, after the second coat has cured, sand with 220 wet.

Sand with a bucket of water, a dribbling hose or in your bathtub.

Use one of those rubber sanding blocks. Don't worry about the hull, it's waterproof now...

Sand the inside of the hull too.



Sand until all areas are smooth, but don't sand through to the wood. If you do, you have to re-coat the area with resin, and re-sand.



Once the hull is dry, wipe it down with alcohol. Use a tack cloth lightly to remove any dust.

Spray a light coat of primer, inside and out. Let this flash for a few minutes, and spray a heavy coat on.

Let sit overnight.



When the primer is dry, use spot putty to fill any nicks or surface imperfections.

When dry, wet sand with 400 on the rubber block.

If you are happy with the surface, spray on another medium coat of primer.

When dry, wet sand with 600 or 800.

Use compressed air or a vacuum to remove the dust on the inside and outside of the hull.

Wipe down the entire boat with alcohol.

Use a tack cloth to lightly wipe all surfaces.



Spray your color coats.

When cured, wet sand with 800+ and clear coat the entire hull.

Make sure the clear is completely cured before final assembly.

Apply your decals.

Wipe the area with alcohol, allow to dry.

Remove the backing from the decal. If you have trouble removing the backing, press or squeegee it firmly, and try again.

Align the decal and press firmly to surface. Roll or squeegee in place. Remove transfer sheet from top of decal.

Final assembly

Before you bolt anything to the hull, give it a good coat of paste wax.



Put the boat on your stand. This is where it will live, when it's not in the water.

Sharpen the turn fin. Using a file (or grinder) and 220 grit paper, sharpen the right side of the turn fin only.

The front should be sharp, and the back flat.

Put the turn fin in its mount, and bolt it onto the sponson with the $\frac{1}{4}$ -20 screws, into the blind nuts.

Install the engine.

Install the servos.

Install the shaft tube.

Install the strut, pushing the end of the shaft tube all the way in. Leave the strut loose in the brackets.

Put the boat on a flat surface. You can hang the turn fin over the side of the table. Block up the transom $\frac{7}{8}$ inch from the table.

Push the strut to the table so that it is flat on the table while the transom is $\frac{7}{8}$ off the surface.

Tighten the strut in the brackets.

Install the rudder assembly

Install the flex shaft.

Install the fuel tank and fuel lines. Place foam rubber under the tank, and use a few rubber bands to hold the tank in place.

Install the bulkhead fittings and water outlet.

Install exhaust or tuned pipe.

Install water lines.

Push the threaded end of the rudder and throttle pushrods through the big end of the pushrod seals.



Attach both ends of the pushrods, making sure the seals are on the outside of the radio box.

Use Goop or CA to glue the pushrod seals to the outside of the radio box. Make sure the seals are centered on the pushrod holes. Allow to dry.

Install your antenna.



Setup

Grease the flex cable.

Slide the cable through the strut, into the engine collet.

Leave a ¼ inch gap between the drive dog and strut.

Tighten the collet.

Wrap your receiver, failsafe and battery pack in foam rubber.

Mount the switch.

Turn the transmitter on first, then the receiver.

Make sure the trims are centered.

Put the rudder servo arm on. It should be parallel with the servo, and 90 degrees to the pushrod. Use the sub trim function, if your radio has it. If not, get it as close as you can.



Attach the rudder to the pushrod. Is the rudder straight? If not, adjust the clevis or ball link until it is.

Be sure to put the screw in the servo arm...



Adjust the throttle so that the carb is wide open when you pull the trigger all the way back, and closed when you push the trigger forward.

When the engine is running, you can use the throttle trim to set the idle speed. Take the time to get this right. It's no fun running your boat onto the shore because the engine won't shut off...

Make sure all your water lines are firmly attached. Use those teeny little tie wraps at each fitting.



Center of Gravity

The CG is very important.

$\frac{1}{2}$ to 1 inch behind the sponson transom. Check the CG with everything installed and no fuel in the tank.

To check the CG, pick the boat up with one finger on each side, just behind the sponson transom (bulkhead 3).

You want the boat to balance level between $\frac{1}{2}$ and 1 inch behind the sponson transom.

This is critical. If the CG is any farther back, the boat will blow off the water at high speeds, as well as "hop" in the turns.

Running



If you are using a new engine, you should run it on the stand before going to the pond.

This will do several things; It will allow the engine to loosen up a little, making starting a simple matter, as well as get YOU familiar with its starting and running characteristics.

When new, the engines are very tight, and starting is difficult at best. Under no circumstances should you ever run a marine engine for an extended time without cooling water.

If you are going to run the boat on the stand, take the prop off, but leave the shaft connected to the engine. This will help to “break in” the strut bushings.

At the pond
Make sure your transmitter and receiver batteries are fresh, or fully charged.

Do a range check with your transmitter antenna down, and note the distance. You should do a range check every day that you run. Should a problem arise, you can fix it before you damage anything. Tape the lid on the radio box with radio box tape, or use Scotch Plastic Tape. Regular tape leaves a residue.

Make sure that your prop is sharp and balanced.
Make sure all screws and nuts are tight.

Fill the tank; turn on your transmitter, then receiver.
Wiggle the rudder so you know it works, and then start the engine.

Don't rev the engine much, as there is no load on the prop until it's in the water.



Roger Newton with the Rivett Prototype.





To launch, have a helper toss the boat in level.

You can give it a little gas as it gets to the water, but not too much. Most people don't like getting sprayed with water...

Let the engine warm up for 30 seconds or so before giving it full throttle.

Drive past yourself, and make sure you have a stream of cooling water.

If you don't see any, bring it in pronto!

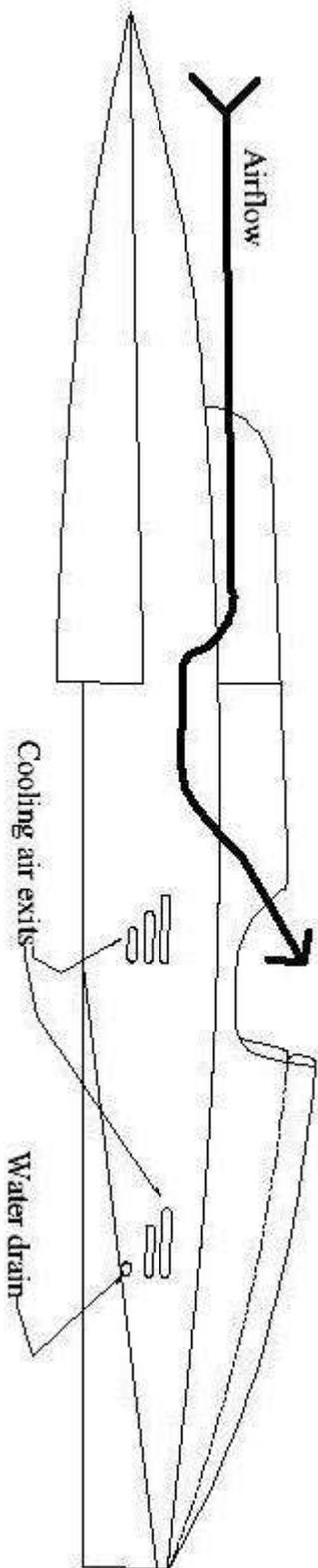
If all looks good, hit it!

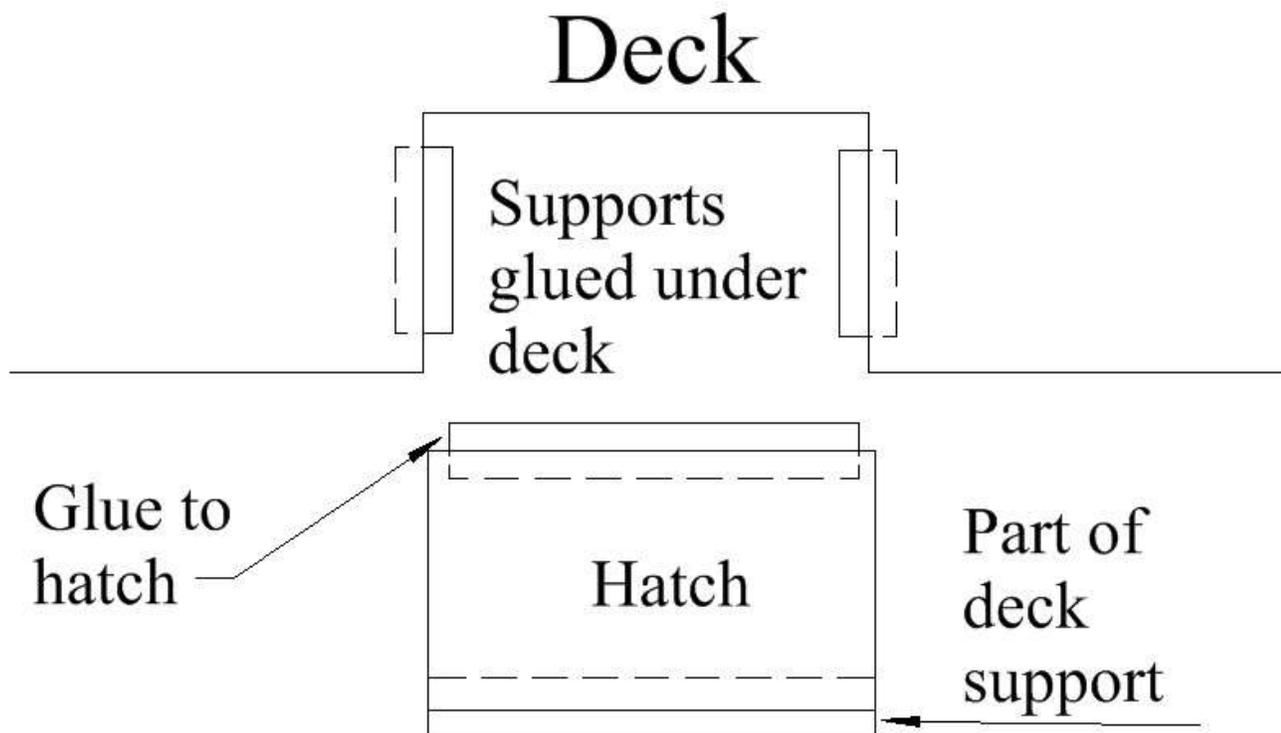
Notice how the boat rides in the straights. Does it lean or pull to one side?

Is the deck and transom level?

How about the turns? Does the transom rise or fall in the turns? Does it slide or hook?

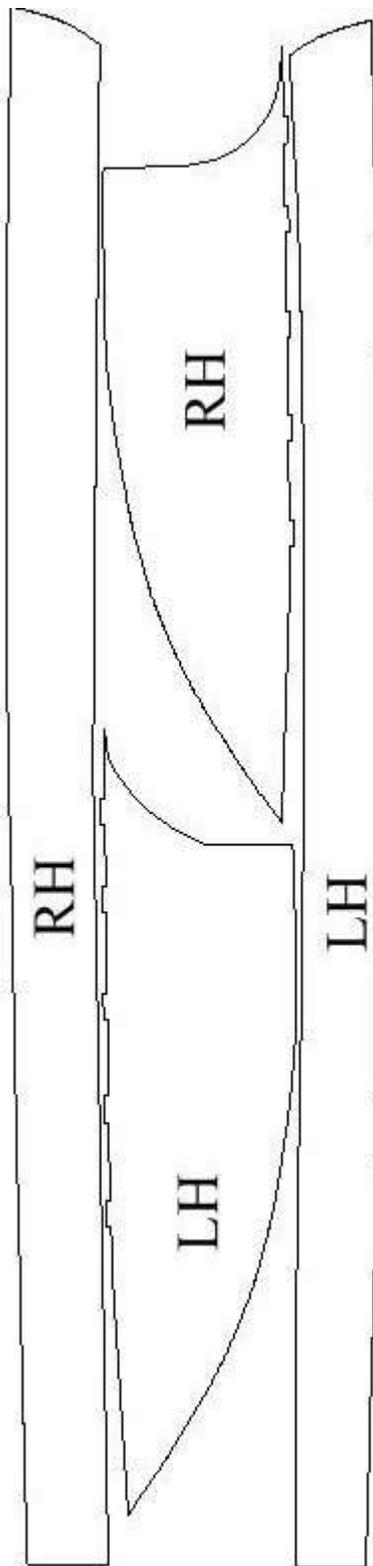
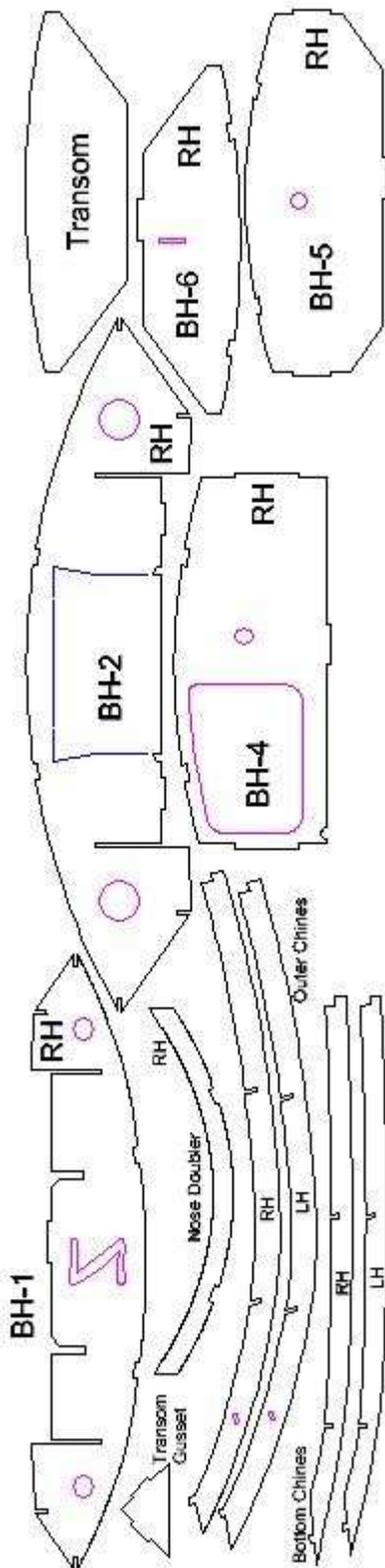
It's a good idea to have a helper write down your comments as you run the boat. After the run, you can use the included "Hydro Tuning Tools" sheet to help you sort out any problems.

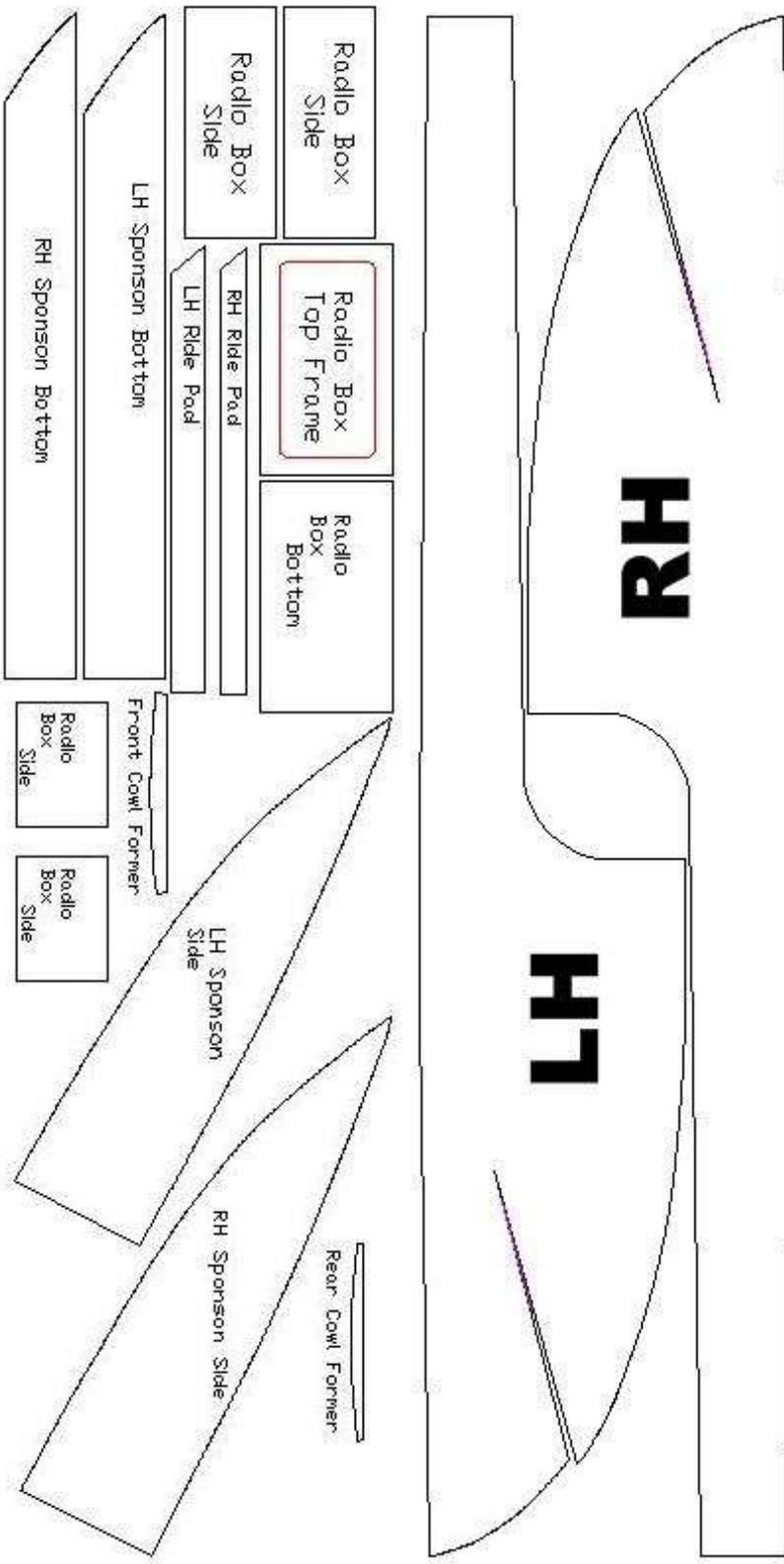




All supports glued to bottom

Hatch support detail





Troubleshooting

| | |
|--------------------------------------|--|
| Boat bounces in the straights- | Strut too high CG too far back Speed too slow |
| Boat blows over at high speed- | CG too far back Strut too high |
| Boat “plows”- | CG too far forward Strut too low Strut too negative |
| Boat is very “light” and unstable- | Strut too high CG too far back |
| Boat needs left trim to go straight- | Prop walk Prop walk Prop walk Turn fin not aligned correctly Prop walk |
| Boat slides too much in turns- | Turn fin bent Turn fin too small Turn fin fell off! |
| Boat hooks in turns- | CG too far back Turn fin too big (unlikely) Lateral (side to side) balance off |
| Boat “dances” in the straights | Pretty cool, huh? |
| Boat “hops” | CG too far back or too much lift in prop |
| Boat is slow and won’t turn- | Get a Zippkits boat! |

Tuning notes

The Rivett and Rockett hydros are just like any 3 point hydro, as far as tuning and adjustment.

There are a few things that you should know when you are tuning your boat for maximum performance.

The most important thing is to understand blow overs.

Blow overs can only occur if the angle of attack gets positive.

Angle of attack is the angle that the boat hull strikes the air. Since the bottoms of our hydros are flat, we use that for a reference point.

When setting up the boat on the bench, the 7/8 inch measurement is a starting point.

The goal is to get the hull to ride level, or just a teeny bit tail high at full speed.

If you have to push the strut down to 1 inch, or 3 inches to get the boat level, do it!

This will change with different props, so strut adjustments are usually necessary with prop changes.

Remember that the goal is always to keep the angle of attack no higher than zero, period.

The turn fin can have a strong influence on angle of attack if it is not aligned properly.

Also note that this hull is designed to race turning RIGHT only. Left turns can be easily made, but always try to slow down if possible

Remember that if you don't allow the nose to come up, the chance of blowing over is greatly reduced.