

RC-Hydros.com



UL1ABU Assembly Instructions

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DISCLAIMER

Due to the fact that these boats are intended for use **ONLY** by experienced modelers, and that organized competition will frequently cause racers to push their equipment well beyond the design limits, RC-Hydros.com is **NOT** liable for **ANY** misuse of this product. Assembly or operation of this product implies acceptance of this policy.

SPECIFICATIONS

Length: 24.5" at deck (622mm)
Width: 11" (330mm)
Weight: 40 oz (Ready to run except cells) (2.2 kg) ABS hull with Cordite motor. The ABS and fiberglass hulls weigh virtually the same and are equally strong. The ABS is much easier to build and finish, but fiberglass has "snob appeal."

Sport Recommendations:

Motor: Graupner 700BB (included in GR1157 Hardware Package)
Propeller: Stock Graupner plastic propeller
Batteries: (2) six-cell "stick" packs available from your local hobby shop, with a variety of brand names. We recommend a minimum of 1500mAH packs for adequate runtime. For longer runtime, we recommend you visit Hill's RC (<http://sjshill.hypermart.net>) and tell them we sent you.
Speed Control: Any 12-cell capable speed control capable of 60 Amps continuous (our SC-2 AsTec ESC, or Hughey mechanical, as well as others.
Hardware: GR1157 Hardware Package

Club Racing Recommendations:

Motor: Graupner 700BB, Graupner 770 (Cobalt), or Astro 25 (Cobalt)
Propeller: Octura X438-X450 (depends on motor) (requires adapter with GR1157)
Batteries: (2) six-cell "matched" packs available from your local hobby shop or various online sources including Hill's RC (<http://sjshill.hypermart.net>).
Speed Control: Any 12-cell capable speed control capable of 60 Amps continuous (our SC-3, AsTec ESC, or Hughey mechanical, as well as others.
Hardware: GR1157 Hardware Package or a Fullers, Octura, or BBY Racing 3/16" setup

Pro Racing Recommendations:

Motor: FDM Cordite, 4-Turn
Propeller: X637-X645 (depends on setup)
Batteries: (2) six-cell "Pro" matched packs available from your local hobby shop or various online sources including Hill's RC (<http://sjshill.hypermart.net>).
Speed Control: Any 12-cell capable speed control capable of 60 Amps continuous (our SC-2 AsTec ESC, or Hughey mechanical, as well as others.
Hardware: Fullers, Octura, BBY Racing, or your own custom setup.

KIT CONTENTS

Your *RC-Hydros.com* Unlimited Light Hydroplane kit includes the following items:

Plastic & Wood Parts

- | | |
|-----------------------------------|---|
| 1 Vacuum-formed hull & deck | 2 Plywood Sponson Doublers (left and right) |
| 2 Balsa Vertical Rear Wings | 1 1/8" birch dowel |
| 2 0.5" x 12" Plastic Ledge Strips | 2 8" fiberglass tubes |
| 1 Fiberglass Cowling Ledge Strip | 2 10" fiberglass tubes |
| 1 Plastic Radio Box | 2 Foam flotation "bricks" |
| 1 Radio Box lid (clear) | 1 Small foam flotation block |
| 1 Plywood Transom Doubler | |
| 1 Plastic Transom Doubler | |



Photo 1 - Parts of the ULIABU kit. Not shown is the Fiberglass Ledge Strip.

THINGS YOU NEED TO PROVIDE

Construction Materials

Thin CA (cyanoacrylate instant glue)
Thick/Gap filling CA
CA Accelerator spray
Light (3oz or less) fiberglass cloth

Tools

Electrical tape (3M white works best)
Sharp hobby knife with spare blades
Small sanding block
Drill and bits (1/16", 3/32", 3/16", 1/4", and 3/8" sizes)
220 or 240-grit wet-or-dry sandpaper
Small C-clamps (3 should suffice)

Finishing Materials

Squadron White Putty
Lacquer or Enamel finish (white primer, color, and clear)
Pactra Formula-U™ Clear or other compatible finish
GE Silicone-II Glue (Clear is best)

BEFORE YOU BEGIN

Before you begin, please read the manual thoroughly, referring to the pictures as necessary to gain a better understanding. It is recommended that you pull out all the parts and “assemble” them without glue before beginning, so you know exactly how things fit together.

HULL CONSTRUCTION

NOTE: When gluing with cyanoacrylate adhesives, always rough up the plastic parts slightly with 220-grit sandpaper to insure a good bond. Also, take care to keep the adhesive from marring the finish of the plastic parts. You can sand minor blemishes out, but why not take the extra care to avoid unnecessary work in the first place!

Unless otherwise stated, use thin CA for all joints. If at all possible, try not to use the accelerator.

Test fit all parts to insure proper bonding. It is wise to slightly round the corners on the plywood where the fit inside a square corner of the plastic hull.

- 1 Sand all the interior surfaces of the hull and deck in order to provide a good bonding surface. With your sanding block, clean up the edges of the hull and deck as well.
- 2 Glue the 1/8" dowel into the canard about 1/3 of the way from the front (Photo 2). The actual position is not critical.
- 3 Glue the plywood transom doubler onto the inside of the transom (Photo 2). Use clamps to hold the plywood and plastic tightly together.

PERFORMANCE CORNER:

You may reduce weight a little by removing the central areas of the plywood sponson doublers on the top area. Leave a perimeter of at least 3/16" to insure adequate strength.

- 4 Glue the plywood sponson doublers onto the inside of the sponsons (Photo 2), using glue only on the actual sponson transom flat area. The right side doubler has a small additional piece of plywood at the bottom that will give the screws for the skid fin mount a better grip.

The bottom edge of the doubler should lie flat against the bottom of the hull center section.

- 5 After the thin CA cures, use thick CA to glue the plywood to the bottom of the hull and to fill any gaps around the edges of the joint. You will probably need accelerator to cure these bonds.

Use some fiberglass to strengthen the bond to the hull. It may be glued with thin CA.

- 6 Glue one of the 8" long fiberglass tubes crosswise in the boat about 1" behind the front of the center section (Photo 2). Reinforce this joint with fiberglass cloth

strips about 2" square. Fill any gaps in between the cloth and the hull or tube with thick CA.

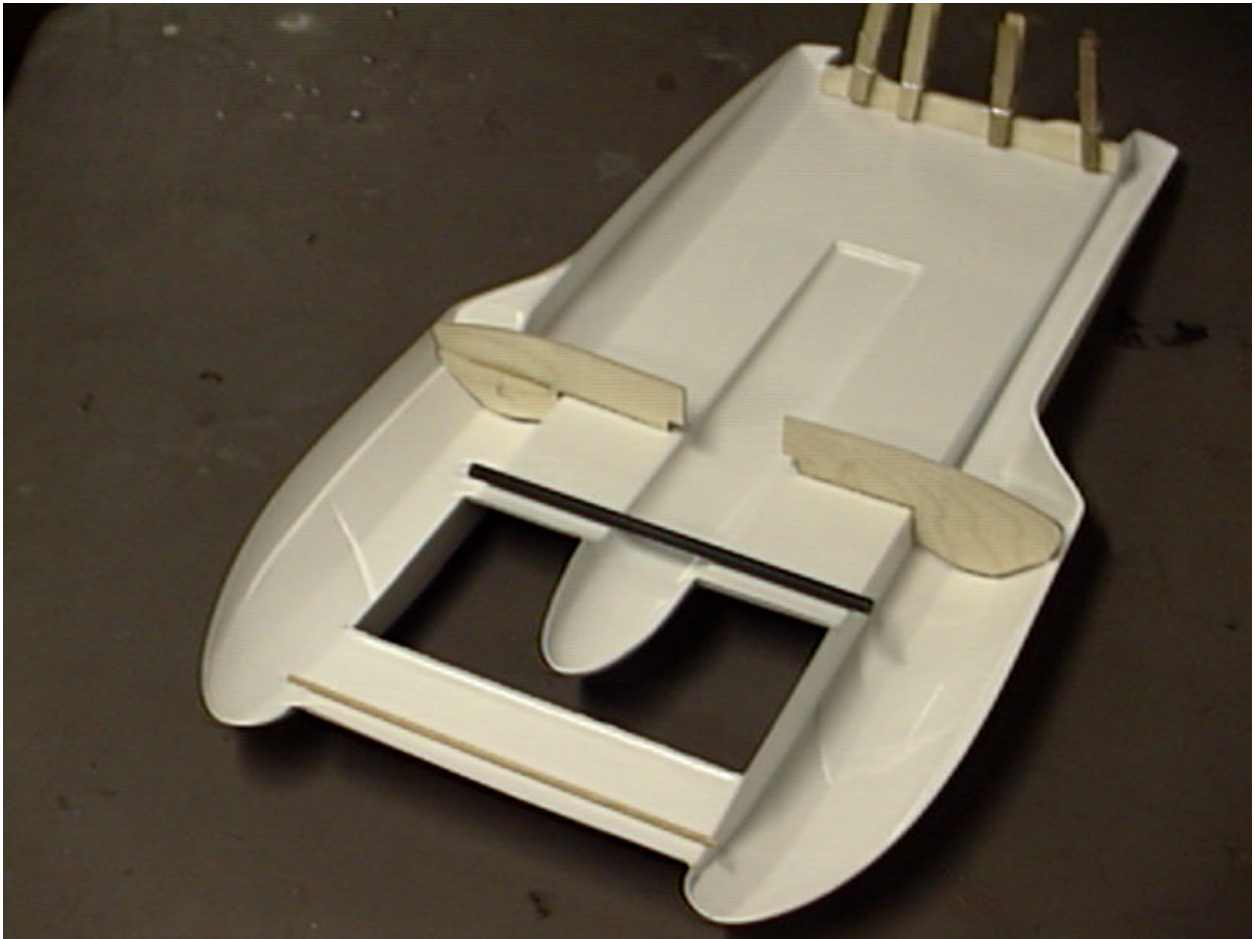


Photo 2 – Internal Chassis for All Hulls

- 7 **IF YOU ARE USING A RADIO BOX SKIP THIS STEP!** Glue the other 8" tube crosswise in the boat right where the engine well ends. There is a slight "bend" in the bottom at this point, and you want the tube to lay in this bend.
- 8 Trim the two 10" tubes so that they fit snugly between the forward and rear cross-braces at the top sides of the engine well (NOT at the bottom of the well!). Working on a flat surface, glue these pieces in. Reinforce the joint for both the side and rear cross-brace with fiberglass cloth. Take care not to place cloth on the bottom of the engine well; you should have cloth only on the sides of it. This will make mounting the motor much easier later on.
- 9 Reinforce the joints where the tubes join to one another with glass cloth strips about 1" x 3" long. Lay the cloth over the joints in an "X" pattern. You may let the strips go into the engine well at these points, as the motor mount will not be close to either end.

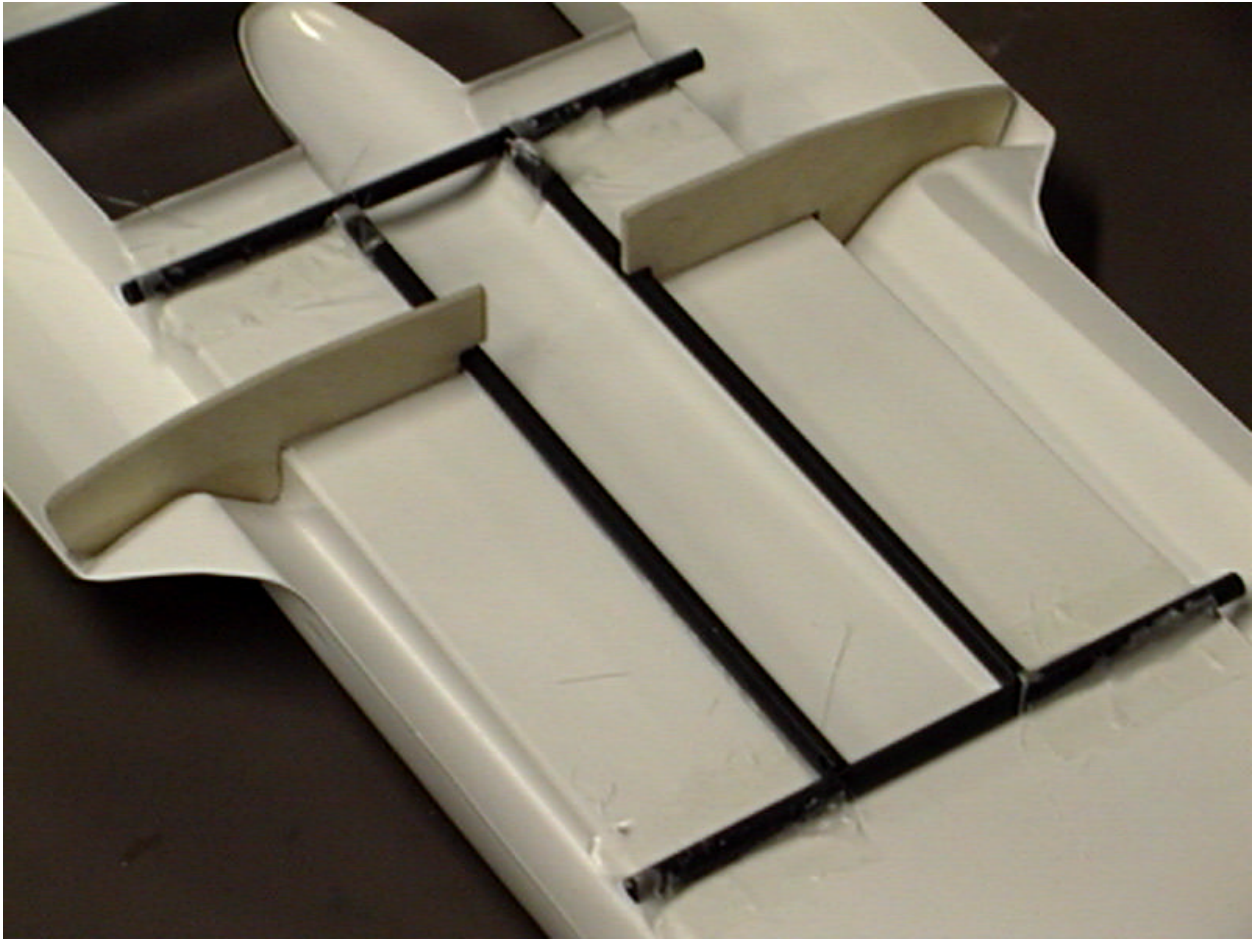


Photo 3 – Chassis in Hull with No Radio Box

- 10 Glue the two large foam flotation pieces into the sponsons using the silicone glue. To be especially prudent, we **strongly** advise you to get some more foam of this sort to be placed in the hull anywhere it will fit after construction is complete.



The foam blocks need to be trimmed to fit into your hull. It is not necessary that they have a tight fit to the hull, but simply that they do not keep the hull and deck separated. You want to have as much foam in the boat as you can!

The foam is trimmed on the bottom to match the shape of the sponson. On the top, you may need to remove a small square so that the dowel and tubing do not interfere.

Photo 3A – Foam Blocks Trimmed for Sponsons

PERFORMANCE CORNER:

If you want to make your boat stronger, find some more fiberglass tubing (Dave Brown Pushrods are what we use) to add two pieces from the rear cross-brace to the transom. Plan ahead to prevent them from being in the way of your radio equipment! See Photo 4.

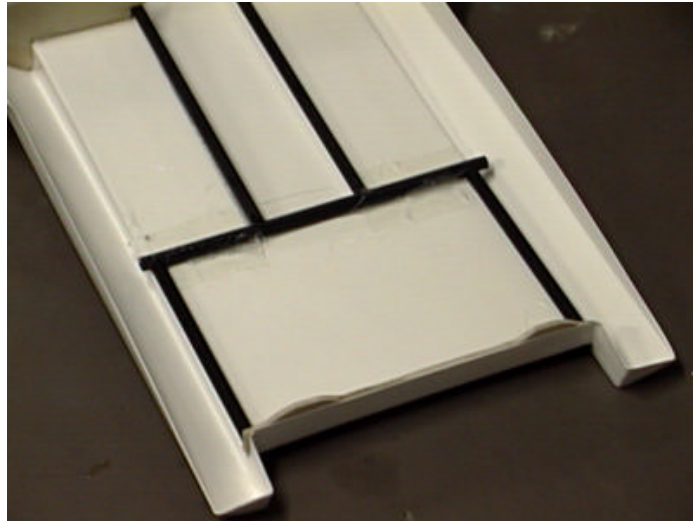


Photo 4 – Optional Extra Chassis

- 11 The hull is shipped slightly oversize to allow you to make the fit between the hull and deck perfect. Take your time trimming the hull so that its edges are smooth arcs, with no sudden changes, gaps, or bumps. The better the fit, the stronger your boat will be. Sand using 220 grit paper mounted to a long sanding block.
- 12 Trim the top edge of the plywood sponson doublers so that they allow the deck to make a smooth flow into the hull. This often requires removing a curved wedge that smoothly takes the top flat area down to the outside edge of the boat. If you trim a little too much, that is OK. Not trimming enough will make it hard to join the boat together and have it remain straight.
- 13 Tape hull and deck together (Photo 5). We recommend using 3M white electrical tape because, for some reason, it doesn't leave a residue like the black kind sometimes does. *Black tape was used in the photographs to make it more visible.*
- 14 Line up the hull and the deck at the transom. Apply a single piece of tape to the center of each of the small "humps."
- 15 Fit the bottom portion of the cockpit area into the top portion, and work outward in both directions to fit things
- 16 Tape hull and deck together moving from front to rear around both sides at the same time. Verify that the hull has not warped as you go!

NOTE: At this point, the hull should fit relatively easily inside the perimeter of the deck. Excess plastic will be trimmed from the deck later.



Photo 5 – Hull and Deck Taped Together (Top View)

17 Tack the hull in place using thin CA with small drops near the taped places. Check alignment to verify that no twists have been introduced. If the hull has twisted for some reason, it is simple enough to crack the glue joints and re-align it.

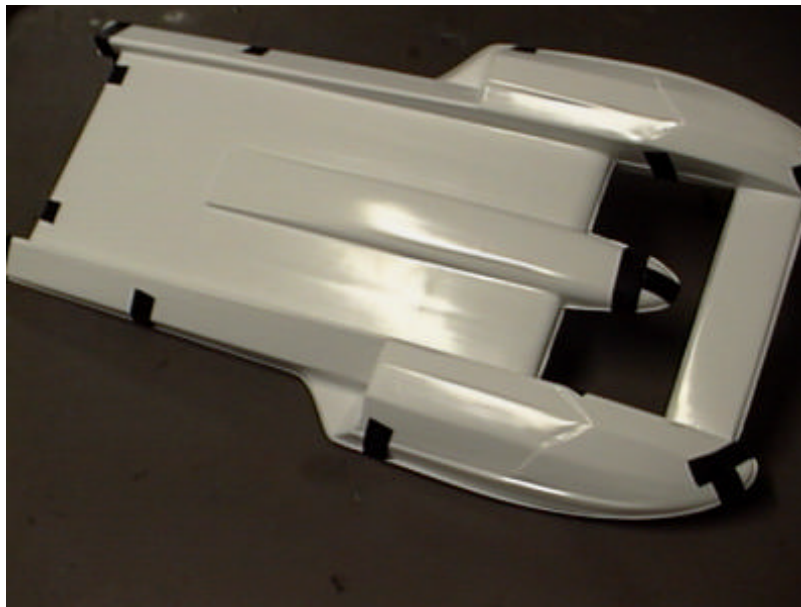


Photo 6 – Hull and Deck Taped Together (Bottom View)

- 18 If you are satisfied with the straightness, begin gluing (it doesn't take much!) starting at the cockpit, then working around the hull in both directions at the same time, much as was done when taping. Periodically check to insure that you haven't introduced any twists. Seal any holes around the edge so that when you glue from the interior, it doesn't leak out and mar the finish. Remove the tape.
- 19 Locate the lines on the deck which denote the removable section of the cowl. Lightly pencil in the lines so they are more visible (Photo 7).
- 20 Using these lines as a guide, take a straight edge ruler (taped in place) and define them better with a sharp hobby knife (a pointed #11 blade works best). Patiently cut through the deck by making repeated passes with the sharp knife.

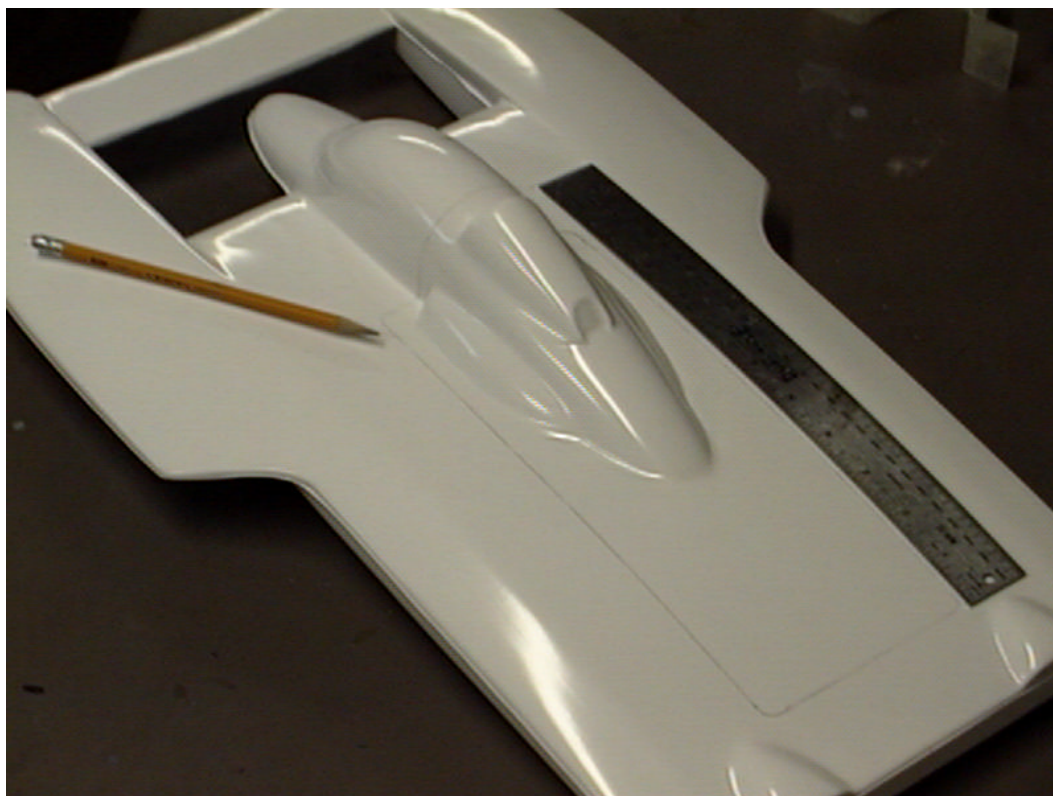


Photo 7 – Marking the Hatch Lines

- 21 Run a bead of thick CA around the inside of the deck/hull seam. Try not to use accelerator, as this will cause the glue to harden too quickly. Allowing it to cure more slowly will make a stronger bond. This step takes several minutes as you allow the glue to flow around the sponson edges.
- 22 Trim the fiberglass cowling ledge piece so that it leaves a ¼" gap on either side, and extends into the cut-out area about 3/8" (more is OK). Glue it in place, using spring-type clothes pins to hold the position correctly (Photo 8).

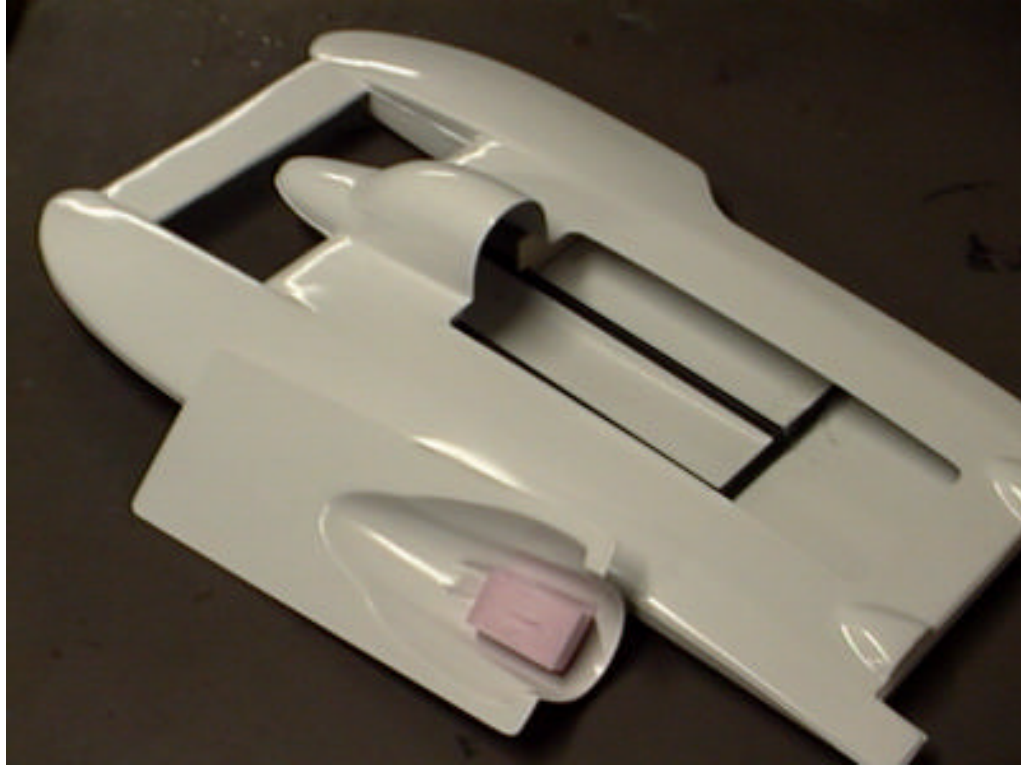


Photo 8 – Open Boat Showing Foam in Cowling

- 23 Trim the small foam block so that it fits snugly into the cowling as shown in Photo 8. This foam is intended only to keep the cowling afloat in case it is knocked off for some reason during operation.

**IF YOU WANT TO INSTALL A RADIO BOX IN YOUR BOAT,
PLEASE JUMP TO STEP 28. REFER TO STEP 40 FOR
TRADEOFFS.**

- 24 Cut the two 12” long plastic hatch ledge strips so that they fit within the hatch, extending slightly to provide a better glue surface (refer to Photo 9, ignore the radio box). Glue them in place, butting them snugly against the fiberglass ledge piece.
- 25 Cut a 4” of plastic piece from the bottom edge of the radio box so that it fits snugly between the two lengthwise hatch ledge strips. Glue it in place across the back of the hatch area.
- 26 Sand the edges of the removed hatch so that it fits nicely within the cut-out made in the deck. Round the edges so that they do not stick out above the deck surface when the hatch is in place.
- 27 Please jump to Step 35 to continue.



Photo 9 – Radio Box and Ledge Strip Installation

- 28 Sand the bottom of the radio box so that it is relatively smooth in order to permit the glue to bond better.
- 29 Test-fit the radio box in position. The radio box has a small ledge in which the clear lid will rest. Mark the front of the radio box to show where you will need to remove some plastic in order for the box to go down smoothly over the two lengthwise black fiberglass tubes from Step 8.
- 30 Remove the area at the front and bottom of the radio box which is in the way of the fiberglass tubes. Test fit and trim until it goes down over the black tubes, and is in the proper position to allow the clear lid to go on top without interference.
- 31 Position the radio box and tack-glue it in place using small drops around the hatch. After carefully checking alignment, glue the box firmly around the hatch opening. Be careful not to use too much glue, as this will make it difficult to seal the boat for operation.
- 32 Glue the floor of the boat to the bottom of the radio box. This is easily accomplished by lifting the boat by the radio box and dripping glue into the gap between the boat and box. Squeeze the pieces tightly together to insure a good bond.
- 33 Cut the two 12” long plastic hatch ledge strips so that they fit within the hatch, extending slightly to provide a better glue surface (Photo 9). Glue them in place, butting them snugly against the fiberglass ledge piece and the front edge of the radio box. It helps if you slightly bevel the edge where it touches the radio box.

- 34 Sand the edges of the removed hatch so that it fits nicely within the cut-out made in the deck. Round the edges so that they do not stick out above the deck surface when the hatch is in place.
- 35 Trim one long edge of the plastic sponson doubler so that it allows the plastic to fit into the gap in the transom where the hull and deck meet. (Photo 10)



Photo 10 – Unfinished Transom showing Gap



Photo 11 – Transom after Doubler Installed

- 36 Fit the doubler onto the transom, allowing a small amount of plastic (1/16" to 1/8") to stick below the bottom of the boat.
- 37 Lightly sand the surface that will be against the boat and the transom of the boat where this piece will attach. This will improve the bond of the glue. Glue the piece in place.
- 38 Fill the gap on the bottom of the boat with thick CA. Use accelerator to help speed the cure. Take care not to allow CA to run onto the deck or underside of the boat where it will mar the finish. (Photo 11)
- 39 Using a block sander, water, and 220-grit wet-or-dry paper, remove the excess of transom doubler which extends below the bottom of the boat.

Please continue assembly using the manual entitled
“ULIAB and ULIFG (ABS and Fiberglass) Assembly Instructions”

- 40 This isn't a real assembly step.

The radio box is an optional item because some people prefer not to use them. A radio box is good for keeping your equipment dry. It can, however, be a pain because the tight quarters make it difficult to install the radio gear.

Many racers do not use radio boxes because they are able to set up the boat so it doesn't have any leaks (it just takes a little patience). This gives them a lot more room to move equipment around, and saves some weight.

The choice is yours. If you have more questions about radio boxes, please feel free to e-mail us at support@rc-hydros.com

GLOSSARY

Afterplane	On a 3-point hydroplane, this is the part of the boat behind the sponsons extending to the back of the boat.
Bow	The front of the boat.
Cavitation	An air bubble or pocket of air that is trapped around the propeller, preventing the boat from obtaining speed. Many electric hydroplanes will cavitate for a short time as they are coming up to speed from a dead stop, but they quickly move through it into a rapid acceleration.
Cowling	The engine cover on your hydroplane.
Deck	The upper surface of the hull. It usually is painted with a sponsor's logo.
Drive Dog	A small piece of metal that is mounted to the driveshaft which has a key to fit into a notch on the propeller, preventing it from turning at a different rate than the shaft.
3-point hydro	A boat with two sponsons starting at the bow and extending to about mid-boat. Driven by a propeller, a 3-point hydro rides on the aft end of the two sponsons and on the prop, floating on a cushion of air.
Pickle Fork	A boat that has a portion of the center section removed between the sponsons.
R/C	Radio control equipment, i.e., transmitter, receiver, servos, and batteries.
Skid Fin	A small metal plate attached behind the right sponson which prevents the boat from sliding through the turns.
Sponson	Two floats, one on each side of the main hull. On a 3-point hydroplane the sponsons begin at the bow and extend to about midway down the boat.
Strut	A device that is attached to the hull that guides the driveshaft into the hull.
Stuffing Box	A tube which houses the driveshaft. Its purposes are a) to keep water from entering the boat, and b) to guide the shaft in to proper direction. It should be kept filled with a light oil for lubrication.
Transom	The vertical portion of the boat at the extreme back end, attaching the sides, deck, and bottom.
Turn Fin	Another name for a Skid Fin.