

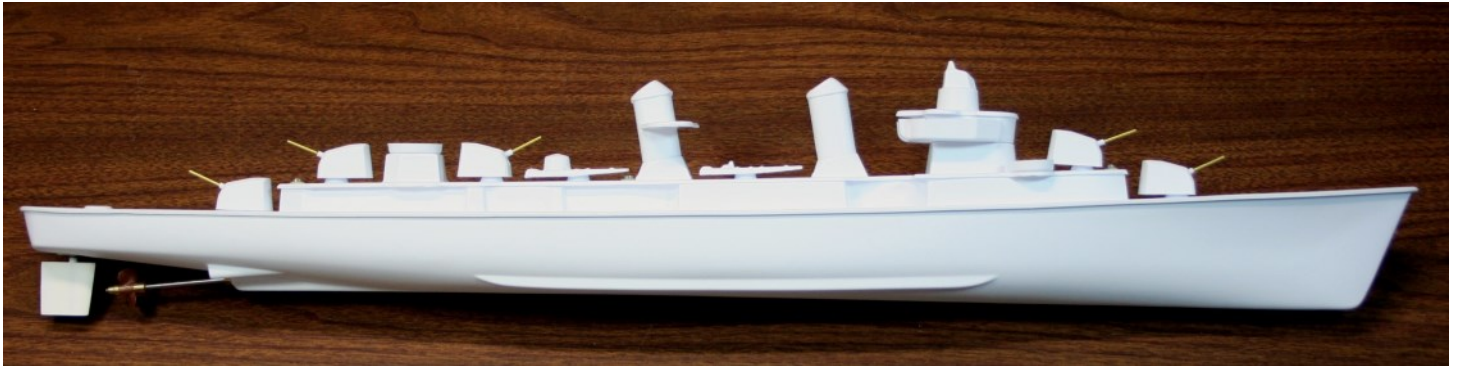


# Vac-U-Fletcher™



## 1:144 Scale Model RC Fletcher Class Destroyer Hull Kit

Manufactured by Vac-U-Boat 1259 Humphries Rd. Conyers, GA 30012 philpace@vac-u-boat.com



**This Vac-U-Fletcher Hull Kit Features:** Tough high-impact polystyrene hull, a scale deck with realistic details including five 5-inch cannons with brass barrels, stacks with searchlight platform, two torpedo launchers and the bridge with gun director overhead. The rudder kit includes a rudder cast on a brass shaft with a self-aligning rudder bracket, rudder arm, stainless steel pushrod, and e-z connector with stainless screw. The single drive kit includes a “365” motor direct-driving the precision 1/8-inch stainless steel shaft supported by Oilite® bushings in the brass stern tube with a brass coupling, injection-molded copper colored 1-inch polyethylene prop, 6-32 threaded drive dog, prop nut, six magnets to attach the 2nd deck and a motor mount that also holds the included mini servo for the rudder. Once assembled, the hull is sealed up to the top of the deck house. Although not necessary for most water conditions, the upper deckhouse openings can be taped over with a strip of clear packing tape to completely waterproof the hull. Screws for the motor, rudder pushrod & servo are accessible from openings in the top of the deck house for any repair or maintenance. A more expensive twin counter-rotating drive kit is available to make the model’s drive the same as the real ship but isn’t necessary as both single and twin drive setups will drive and maneuver the ship at faster-than-scale speeds.

If you are looking for a museum-quality scale Fletcher-Class destroyer with hundreds of parts and fine detail, **DO NOT BUY THIS MODEL!** This is a vacuum-formed plastic kit which includes only the larger details of the real ship with adjustments made so the shape is compatible with vacuum-forming equipment. Once assembled & painted and you have added your radio gear, battery, electronic speed control, ballast weights & wiring connectors, it will run and look great in the water. If you need additional details, they can be scratch built or 3D printed.

The boat can be painted with plastic-compatible hobby spray paints. Use **ONLY** plastic-safe paints like Hobby Enamels, Krylon *Fusion* or Rustoleum American Accents 2X Ultra Cover paints are the best. Sprayed or brushed acrylics work well too.

Please read the following information, warnings, tips and tricks before building this model. Use caution with glue, the plastic bags, and small parts if children are around. Read the labels of all adhesives, paints, and electronics purchased for this hull. Use extreme care with hobby knives when cutting plastic.

Remember to turn on the transmitter first, then the boat’s receiver. Teach your child to turn off the boat before lifting it out of the water. Even a plastic prop can be hazardous to their little fingers.

Enjoy your Vac-U-Fletcher. If you have any questions, you can contact me at philpace@vac-u-boat.com.

## Now, for the warnings!

**Read all of the instructions!** Review and understand each step, and the one after, as you build your boat. Don't rush. Good work takes time.

**This is not a toy!** I know. It LOOKS like a toy, but it isn't. Toys are generally safe for small children. This boat is not safe for small children. Assembling it requires the use of sharp tools that can cut skin, strong adhesives than can bond flesh and injure eyes, spray paints that can be flammable and toxic, as well as batteries that can short causing severe burns or fires. Read all of the instructions and warnings on all of the tools and chemicals you plan to use. Use protective eyewear when recommended. **USE SAFETY GLASSES! If you think you don't have the skills, or are uncomfortable with tools and chemicals, or just changed your mind, then pack up this kit and return it immediately for a full refund.** If you bought this direct from Vac-U-Boat, I'll reimburse you for standard return shipping. **If you need some help, find a local boat club to join, check with the hobby shop where you purchased your motor and radio gear, or contact internet clubs and organizations for assistance.** Keep your work area away from children. Even if you have no children, when not working on the kit, keep all sharp objects and all chemicals locked away in a safe area. You never know who will come to visit and how well they will supervise the young ones with them.

**This is STILL not a toy!** Once you complete the boat and are running it in a lake, know that the boat can injure life, limb, and property. Never touch the propeller, spinning or not, while there is a battery inside or connected to the boat. Even if it is turned OFF, assume it can glitch and run on its own. Never run the boat if swimmers are in the water. Don't chase wildlife. Be careful with rechargeable batteries. They have the ability to dump large amounts of current in a very brief period of time if shorted, causing burns or fires. Never store the boat with the battery inside it, connected or not. Keep your batteries in a safe place, out of the reach of children. Read the warnings on the other parts you purchase, the motor, battery, electronic speed control, radio transmitter and receiver, and the battery charger. Use "frequency boards" at your lake to control radio channel usage. If you don't control channels, then you increase the risk of losing control of the boat. An out of control boat can harm someone. You are responsible for the safe use of this product. You are responsible for choosing wisely, those who you entrust the use of the boat and radio, even for a few minutes at a lake. **Never swim after a disabled model boat!**

At full power, this boat will go fast enough to cause damage to itself or others if it collides with rocks or other boats. Before handing it over to a less experienced "Captain", dial down the throttle on your transmitter to limit its speed to the experience level of the operator. Stay close and supervise them as needed to prevent regret later! If damage happens, it happens. Repair it and keep playing. Keep the experience a positive one!



### WARNING



**CHOKING HAZARD** - Small parts. Not for children under 3 years.

**WARNING** - To avoid danger of suffocation, keep plastic bags away from babies and children. Do not use in cribs, beds, carriages or play pens.

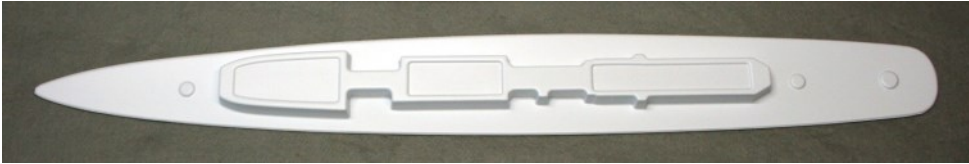
**WARNING:** Brass parts in this kit contain lead, a chemical known to the State of California to cause cancer and birth defects and other reproductive harm.

# KIT CONTENTS

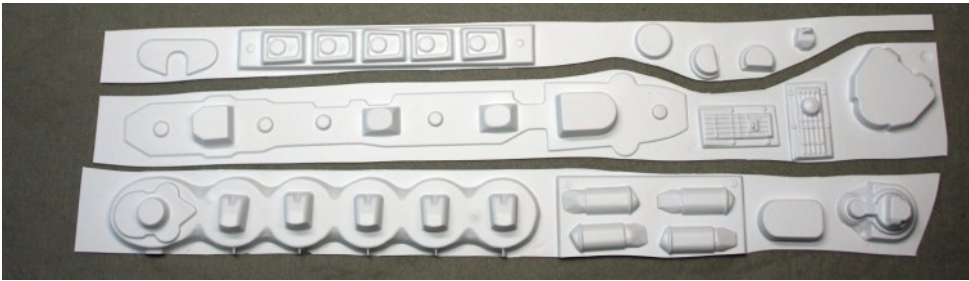
*Available as a Hull Kit with Single Drive or optional counter-rotating Dual Drive.*



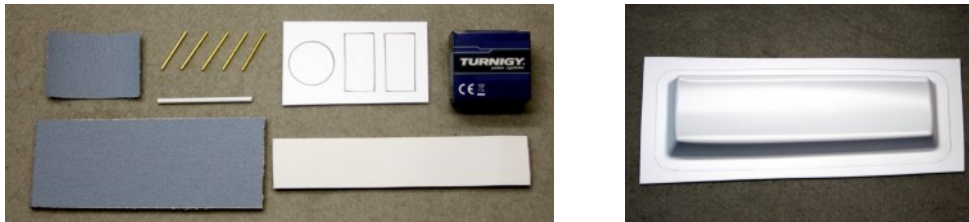
**Hull** pre-trimmed with the shaft journal pre-drilled for the stern tube.



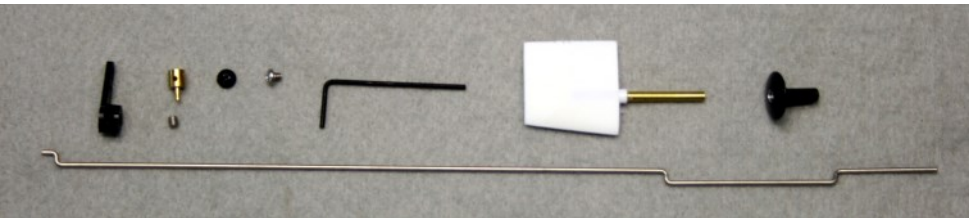
**Pre-Trimmed Deck** with recessed hatch openings ready to cut open in the deckhouse.



**2nd Deck & Deck Components** all of the deck bits needed for a great look.



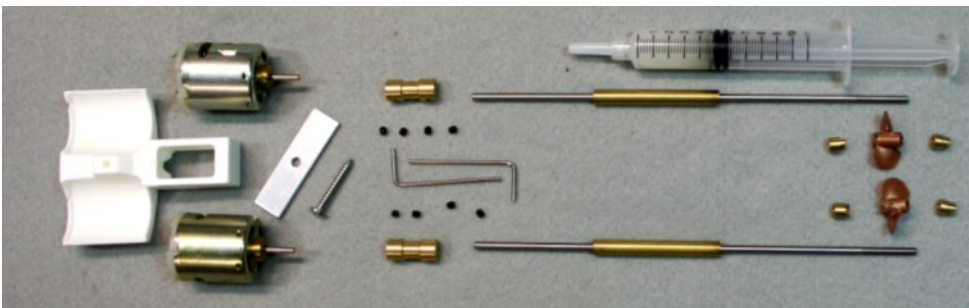
Sanding block, sandpaper, hook & loop, gun barrels, torpedo launcher bases, mini-servo & boat stand.



Rudder, self-aligning mount, rudder arm, stainless set screws, stainless pushrod & EZ-Connector.



**Single Drive Package** with brass stern tube, Oilite<sup>®</sup> bushings, precision stainless 1/8 inch shaft, shaft coupling, drive dog prop nut, polyethylene prop, synthetic grease, motor and motor/servo mount assembly.



**Optional Dual Drive Package** Optional counter-rotating drive package. Twin drives like the real ship. Both the single and dual drives will run the ship at faster-than-scale speeds. Dual drives are not necessary for realistic action in the water.

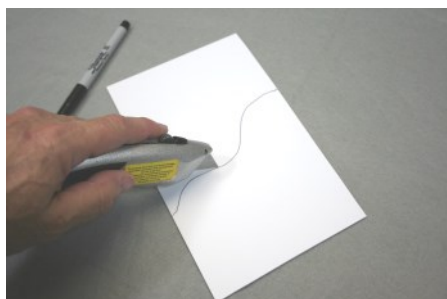
# INSTRUCTIONS

We are ready to get started building this Scale Fletcher hull kit. Follow the photos and captions to assemble your boat. Read through the instructions before building. Assemble the necessary tools and adhesives on a clean workbench or table. Keep paper towels handy to catch spills. Don't forget the safety glasses!

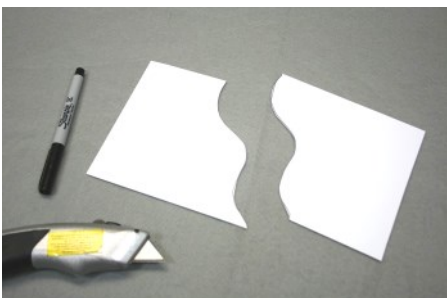
To build this kit you will need: A variable-speed drill. A hobby knife or box cutter, sharp scissors, medium CA glue or regular Gorilla brand super glue, Devcon 2-Ton Epoxy or hobby epoxy with a 30 minute or greater cure-time. 5 minute, 7 minute, or 15 minute epoxy is not waterproof and has too short of a working time to fold in filler and use with this model. Talcum powder, micro-spheres or your preference as filler for epoxy. Drill bits 3/32", 1/8", 5/32" and 3/16". A #2 Phillips screwdriver and a roll of painter's masking tape. A step-drill bit is handy for making large holes safely. Following smaller drills with larger ones will work. A Dremel Rotary hobby grinder will be helpful to cut flats on the shaft ends.

Read ahead for each step. With hobby knives or box cutters, always cut in a direction away from nearby body parts. Knives will slip so be aware of what direction you are cutting and what is ahead of the blade if it was to slip. Practice harder installations, motor/drives for example, without glue first to be comfortable with what steps are needed to ensure a good fit.

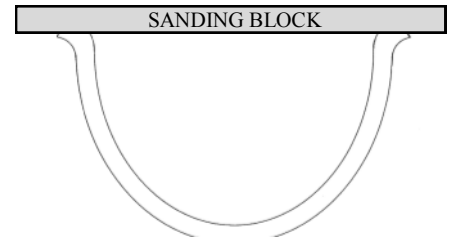
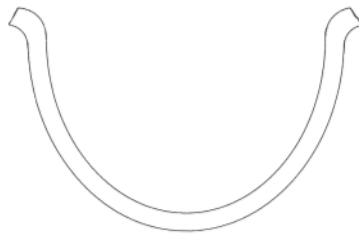
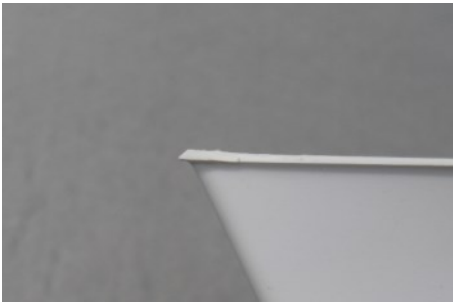
When drilling styrene, drill at the **slowest setting**. The material is soft so little pressure is needed to drill into it. All surfaces that will be glued with epoxy or CA-super glue need to be sanded/scuffed with 100 grit sandpaper to help the surfaces have a strong bond.



Styrene can be cut by scoring and breaking, or with scissors. The first score should be very light while concentrating on accuracy. The second and third score is made with more pressure and will follow the first.



Bending at the score will break the plastic along the scored line. You can cut with scissors if you prefer. Either way, any rough edges can be smoothed out with the included 100 grit sand paper or sanding block.



Held upright, the pre-trimmed edge of the hull does not have a flat top. It is raised and flared outward. The cross-section of the hull looks like this. Using the sanding block to span the width of the hull, sand off only the raised area leaving the flare curve to make a flat surface to glue to the deck. **DO NOT SAND AWAY THE CURVED FLARED EDGE.**



The 100 grit sanding block will sand both sides at the same time. Hold the sanding block at its center with two fingers to apply equal pressure to each side of the hull. Grasp under the hull with one hand to keep the hull sides from spreading apart under the pressure of the sanding block. Keep the block flat on the surface. Don't let the block overhang either end of the hull more than 1/2 inch to avoid rounding-over the tip of the bow or stern. Go back & forth 10 - 12 times over an 10 - 12 inch long area. Then move to the next area along the hull overlapping the last a little. When you get to the end, turn the hull around and repeat. Each end may need additional sanding.

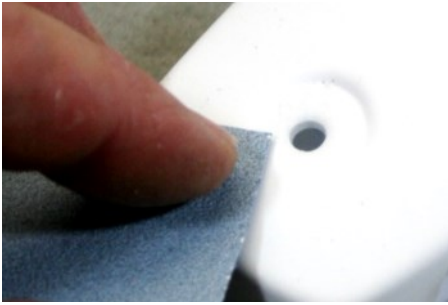
A short video of this process is available online at: <https://youtu.be/IqU9QfGCBBM>



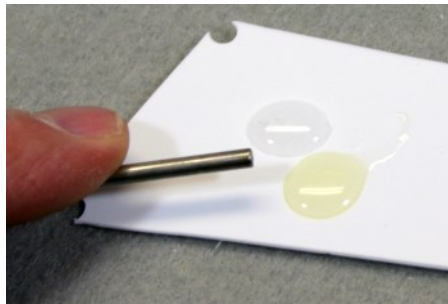
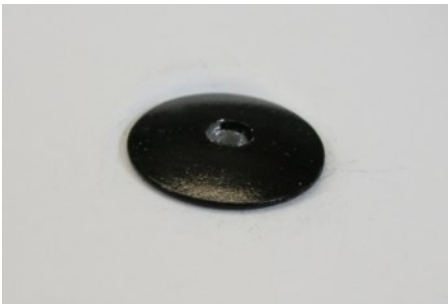
When done, there should be a rough flat surface all around the hull.



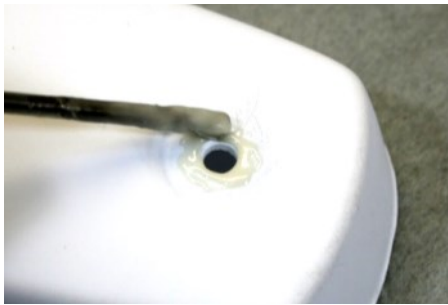
Turn the hull over and look at the flared edge of the hull. There will be uneven areas at the bow and stern. Use the sanding board to even up these uneven areas to match the surrounding flare lines.



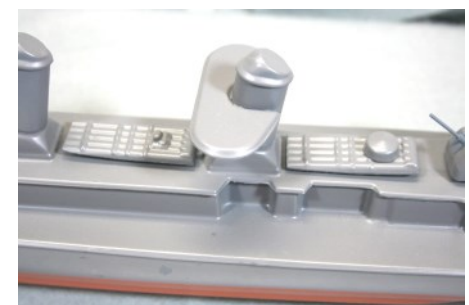
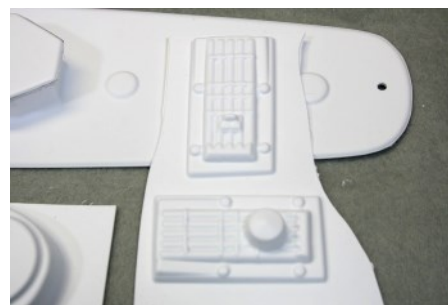
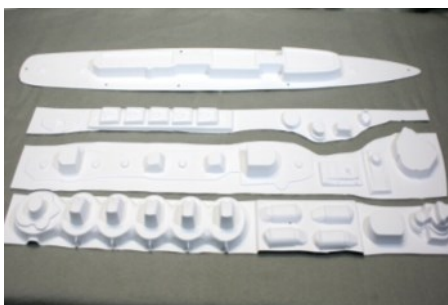
Use a 3/16 inch drill to drill into the center of the rudder inset at the stern of the hull. Wallow out the hole a little so the rudder base (black aluminum rivet) will fit. Sand the rudder mount recess in the hull and sand inside the hull at the rudder mount as well. Roughen the underside of the rudder mount and its stem with sandpaper.



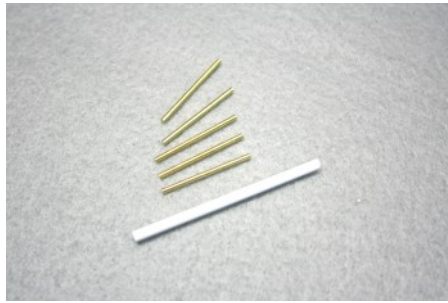
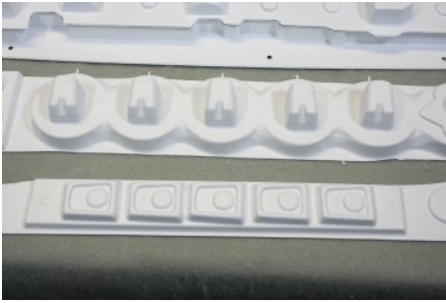
Test fit the rudder mount. It should drop in and sit flush. If it binds, enlarge the hole a little with the 3/16 inch drill. Mix a small batch of epoxy. Fold in an equal amount of filler to thicken and strengthen the epoxy.



Mix until smooth. Add just a little around the rudder mount hole and rub into the sanded area to help it bond to the plastic. Put a small amount around the stem of the rudder mount as shown. Press into the hull. It should look like this. Less epoxy is OK.



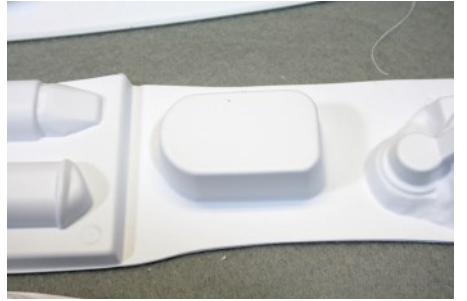
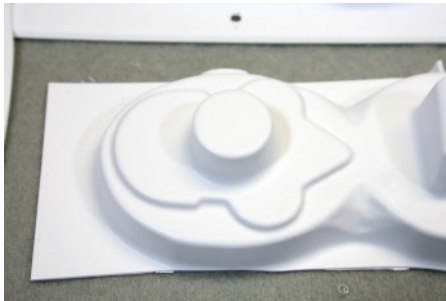
Set the hull aside for the epoxy to cure. Lay out the deck and deck accessories as shown. Identify the deck accessories. These are torpedo launchers. The one with the round dome on top goes behind the one without a dome. They are located on either side of the rear Stack.



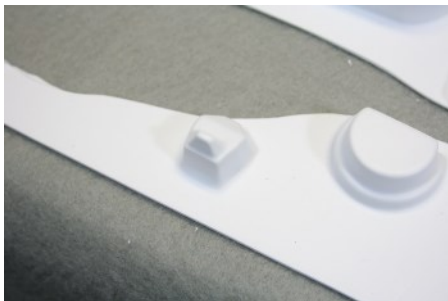
5-Inch guns and their bases go together with the 2-piece barrels to make five guns for the deck.



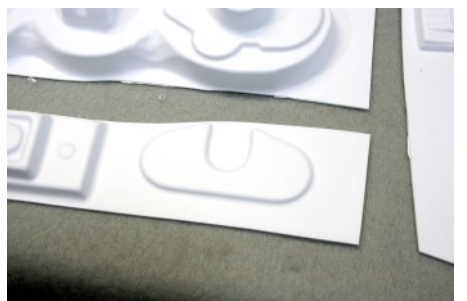
The bridge assembly starts with the bridge, formed upside-down where the pilot house crew can walk outside.



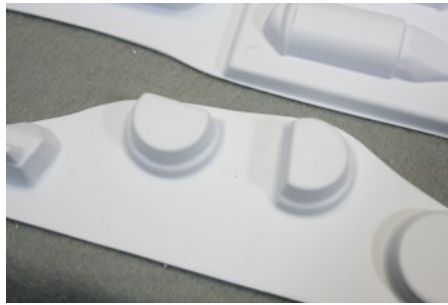
The pilot house roof supports the mast and gun director. The pilot house is also formed upside-down.



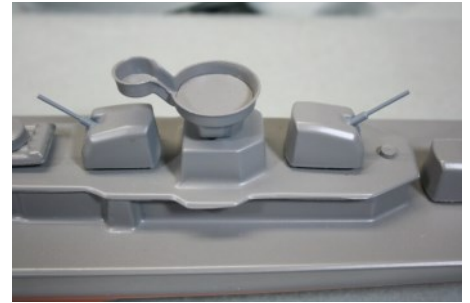
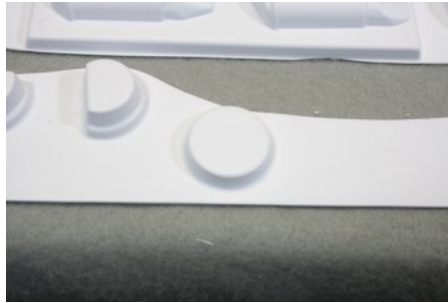
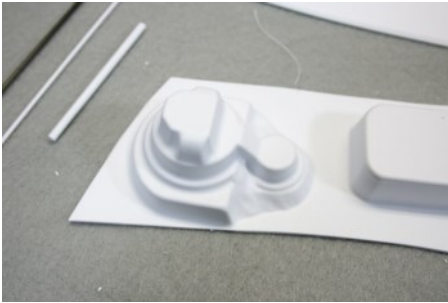
These parts stack together on top of the upper deck. This small bump is the gun director that sits on top of the pilot house roof. There are more tiny details that aren't included in this kit. Add more bits after you are done.



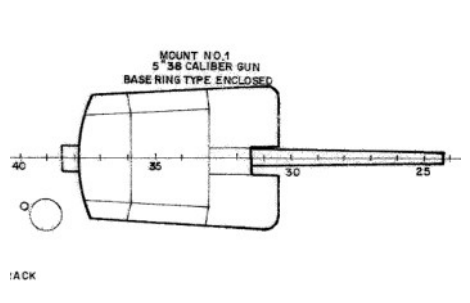
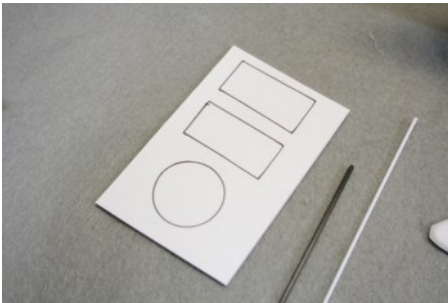
The stacks are formed in halves. They glue together and sit on the angled bases on the 2nd deck. The rear-most stack has a wing that mounts searchlights.



These half-round items are anti-aircraft gun placements near the Bow.



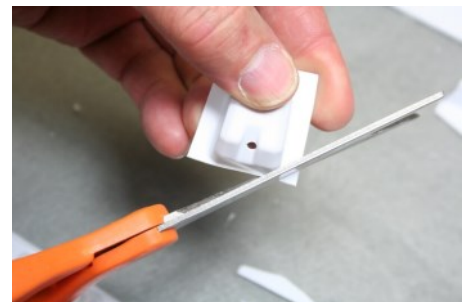
Early Fletchers had an AA gun mount with a rangefinder mount next to it. Later versions had just the gun mount.



The circle forms the floor of the early AA gun mount. The rectangles are bases for mounting the torpedo launchers. The slot in the 5-Inch guns is off-center with the barrel mounted centered on the right of the slot.



Before separating the 5-inch gun tops, choose the angle of your gun barrels. Put a dot on each cannon where you plan to drill. Hold the drill at the same angle for each cannon. Slowly drill a 1/8-inch hole in each cannon.

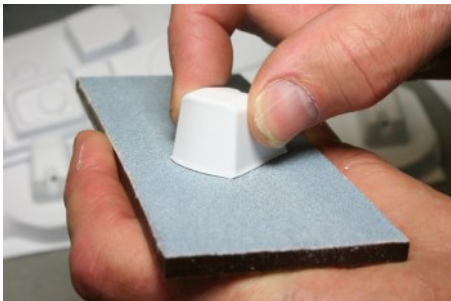


Gradually trim the plastic closer to the sides of a cannon. For your final cuts, **lay the top blade of the scissors flat against the side you are trimming**. Don't forget the 45 degree corner cuts on the front.

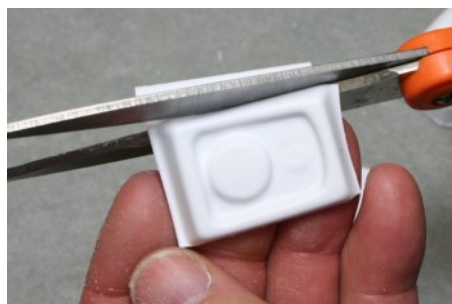
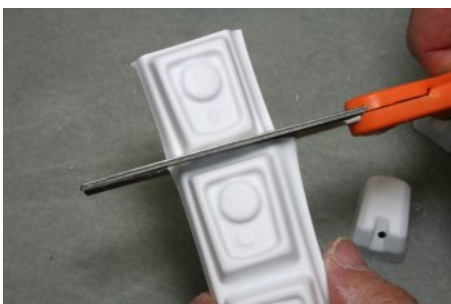




Laying the upper blade flat against the side of the cannon, trim each side until it looks like this.



Sand on the sanding block. **Rotate it frequently to keep the base of the gun square and even on all sides.** Sand just until the rounded bottom is gone as shown on the right photo, “after” on left and “before” on right.



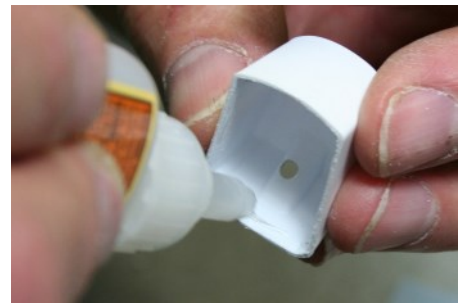
Cut a gun base from the strip. Trim it a little at a time to remove edge scrap. **Turn it over** and trim as shown.



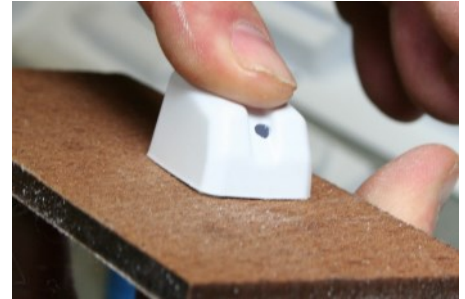
Now trimmed just outside of the raised rounded area, mark the outer edge of that raised area with a pencil to help locate the cut-line. Trim to the mark with scissors.



Cut the tiny 45 degree front angles and carefully trim the rounded back area. Sand the sides to make them even with the bottom of the round edge. Here are two halves of a gun ready to be glued together. If you are worried about a gun getting knocked off in a collision, put a small piece of Styrofoam inside the housing. 9



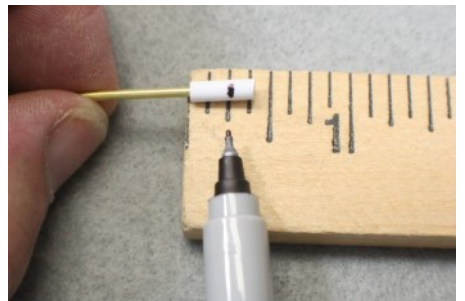
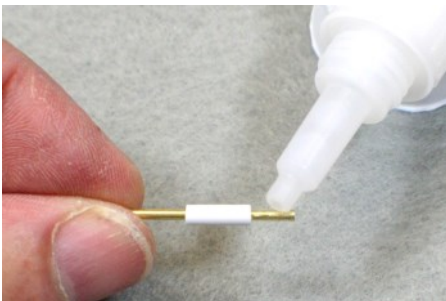
Lightly sand inside the bottom of the gun shell. Apply super glue around inside the shell and spread evenly.



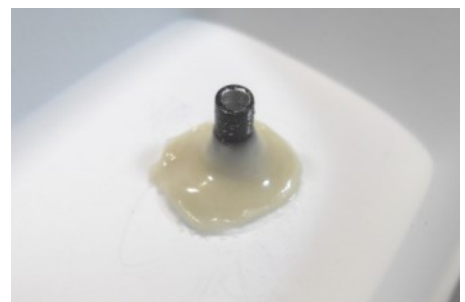
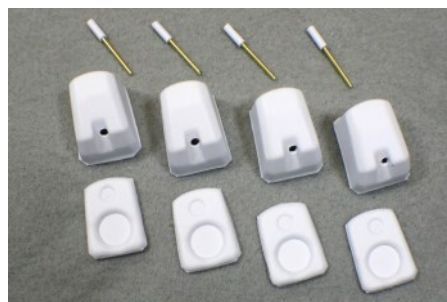
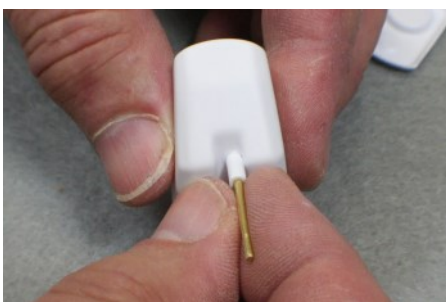
Set the base on a flat scrap surface. Align the gun and press down to engage the base and hold for 10 seconds.



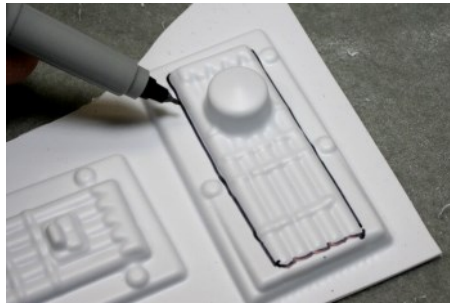
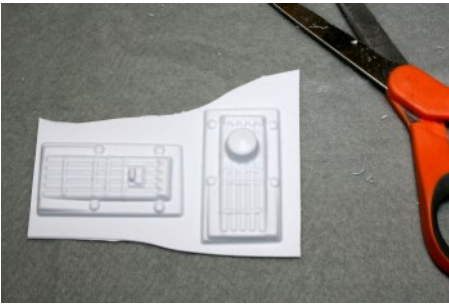
It should look like this. Cut a 3/8-inch piece of 1/8-inch plastic tubing. Scuff 1/4" of the end of a brass barrel.



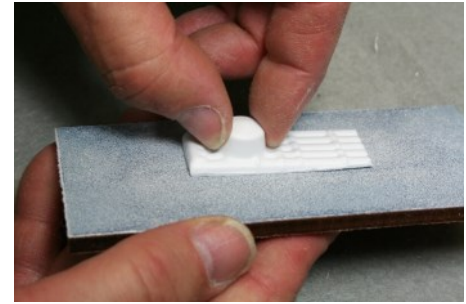
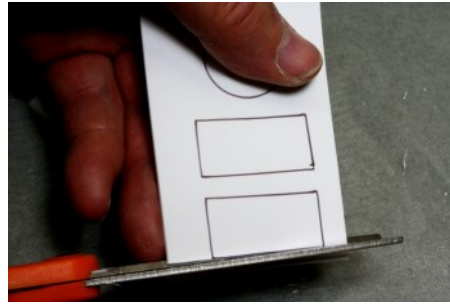
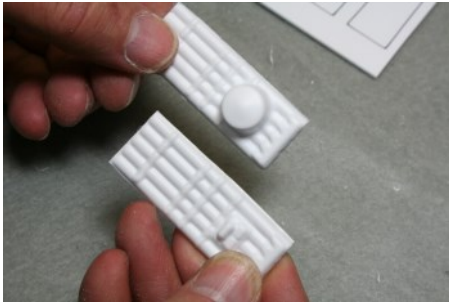
Insert the sanded end of the rod through the tube. Apply a little CA (super glue) around the end, then push the tube down over the CA covered rod against a flat surface. Mark the tube end of the barrel 1/8-inch from the end.



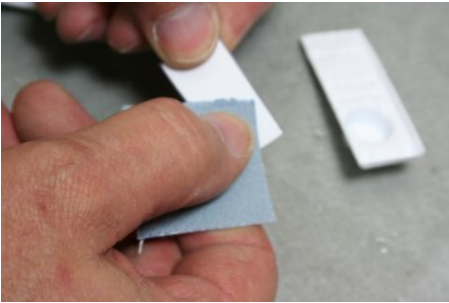
Put a little CA around the 1/8-inch area and insert into the hole of the gun aligning the barrel before the CA cures. Repeat for the other 4 guns. Don't attach them to your ship yet. Back to the hull: If the rudder mount epoxy has cured, you can add more filled epoxy inside the hull around the stem to reinforce it.



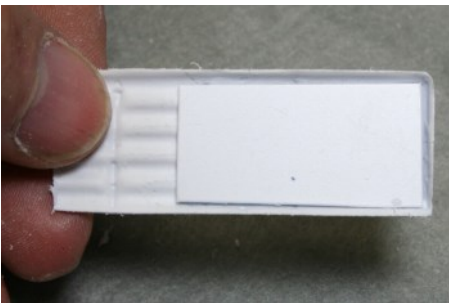
Locate the torpedo launchers. Outline the launcher with a pencil. Cut out the launcher along the line.



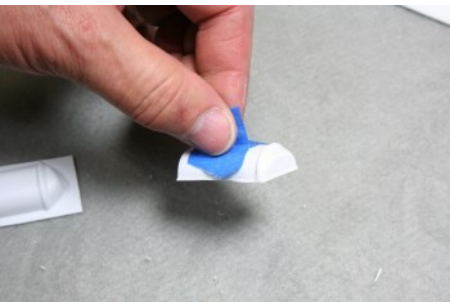
Sand the edges straight. Cut out the two plastic rectangles. Sand smooth the bottom of the trimmed edges.



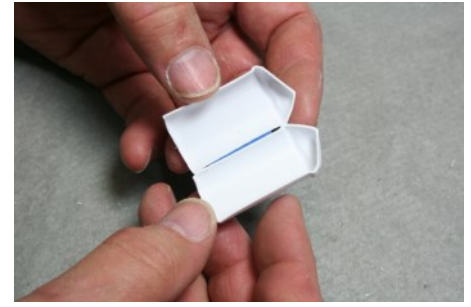
Sand one side of a rectangle. Sand the underside of the launcher. Apply CA to the raised areas under the launcher.



Press the sanded side of the rectangle to the underside of the launcher. This forms a flat base for mounting it.  
Locate the 4 Stack halves and the searchlight wing. Trim the edges of two stack halves as shown.



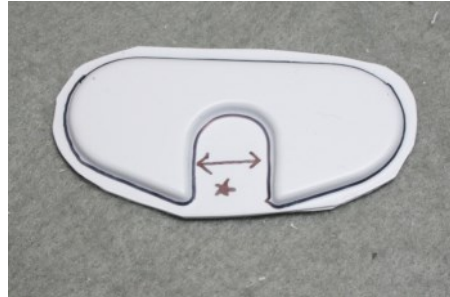
Make a handle from a piece of masking tape. Lightly sand the stack half against the sanding board to remove the slight curve along the cut line, just like you did with the cannon tops. Rotate it while sanding to be even.



Sanded pair of stack halves “before” & “after”. Once done, hold together and tape one edge to make a hinge.



Apply a thin layer of CA around the edge of one of the halves. Fold together and align. The CA will let you reposition the halves until you have them aligned. Hold for 10 seconds. Secure with a 2nd piece of tape.



Put a piece of foam for flotation inside the stack. Add filled epoxy to hold the foam and strengthen the inside of the seams. Mark the outline of the searchlight mounting wing and trim the outside with scissors. Don't fully trim the inside area (double arrow). Leave room to sand and fit to the width of your finished stack.

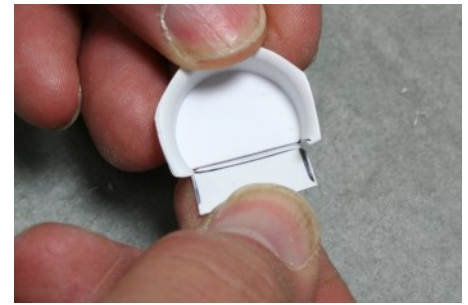


Score the inside **narrower than the marked lines**. Break out the inside piece and sand the edges of the wing smooth. **Don't sand the inside slot yet**. Sand the bottom of the wing smooth and level with the sanding block.

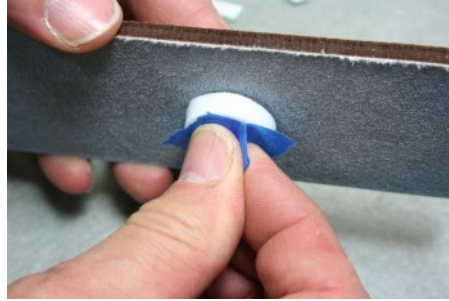


The width of a stack will vary according to how much you sanded away. The slot in the wing should not be too large at this point. Install it on the stack **LATER**. Locate the anti-aircraft gun placements for the bow.

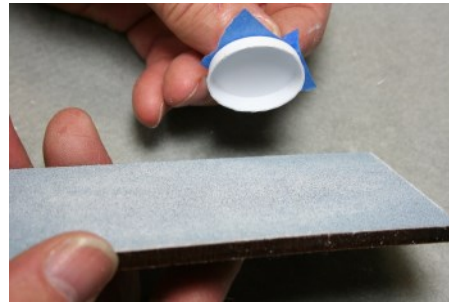
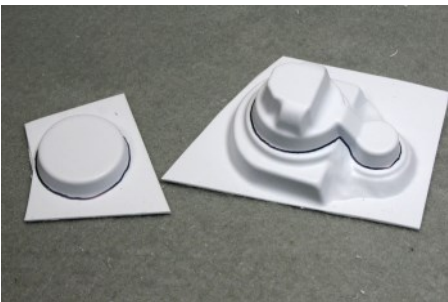
Mark them as shown for trimming.



Trim the outside with scissors. Use a knife to score the inside opening. Break open along the score lines.



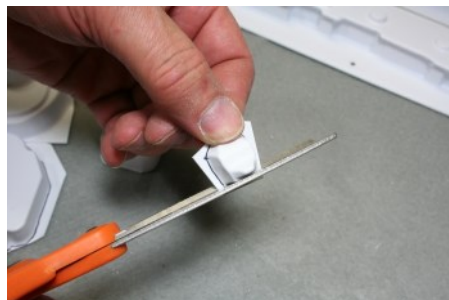
Cut around the outside along the line. Make a "tape handle" and sand the top and side opening smooth and straight. Scuff the bottom of the gun placements and the corresponding round areas of the upper deck and glue with CA.



Choose the later version on left or the earlier version on the right and trim the rear anti-aircraft gun placement. Attach a "tape handle" and sand the top smooth and even.



Use your hobby knife or box cutter to remove any plastic bits around the inside of the placement. After scuffing the surfaces, glue to the top of the rear-most structure of the upper deck. Gather the bridge pieces as shown.



Mark them for trimming. This bridge piece is marked on the inside, to remove the round area. Cut away the edges with scissors. A knife is best to score the roof of the bridge.



Even the edges. Sand the bottom of the bridge roof. Sand the gun director. Rotate it frequently to sand evenly.



Sand just until the rounded edge is gone. Same for the pilot house and the Bridge.



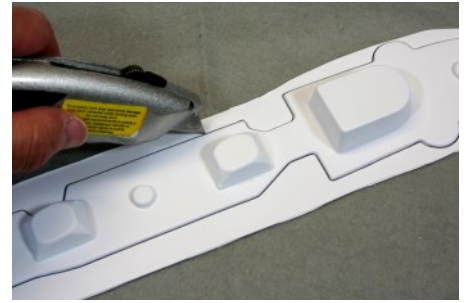
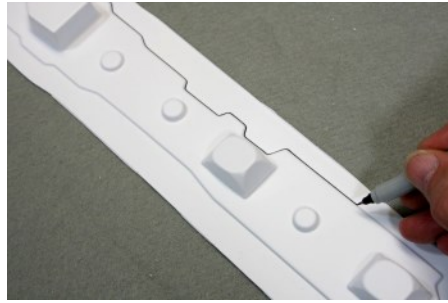
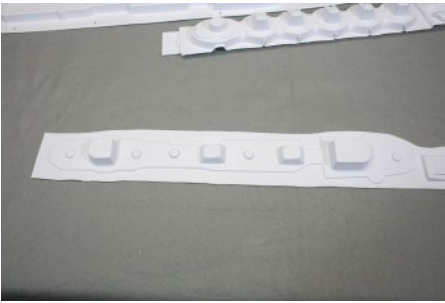
Lightly dragging the blade sideways will remove rough edges left from sanding. Score the inside marks at the bridge. The finished parts should look like this. LOOK CLOSE at the cutout detail of the Bridge to match it.



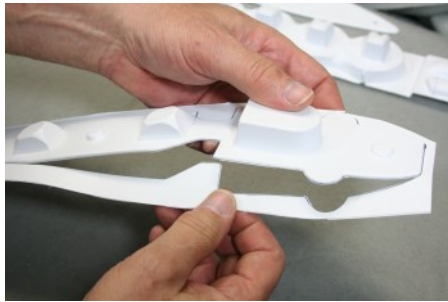
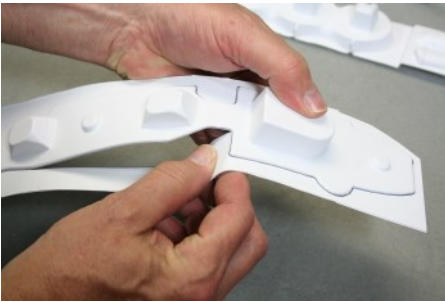
Set the pilot house into the bridge as shown. Center, scuff mating surfaces and glue in place. Sand around the underside of the pilot roof. Apply CA to the top edge of the pilot house. Center, press & hold the roof for 12 seconds. Center the triangular part between the rectangular vent extensions.



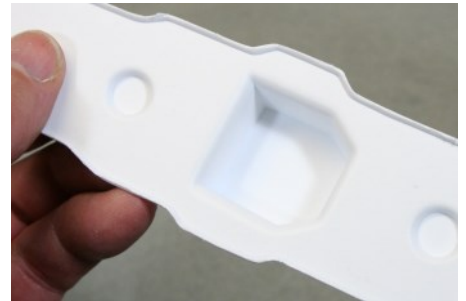
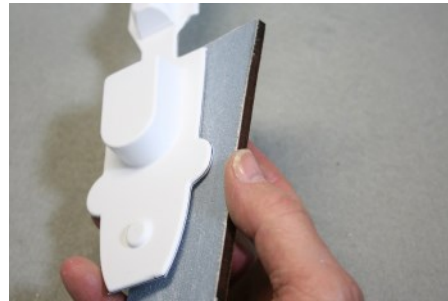
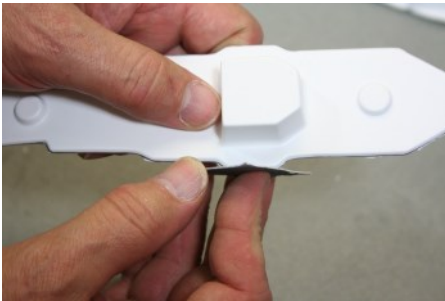
From the side, the bridge railing looks a little high. I should have sanded it a little more. Scuff, center and CA glue the gun director as shown. The bridge is now ready to glue to the upper deck.



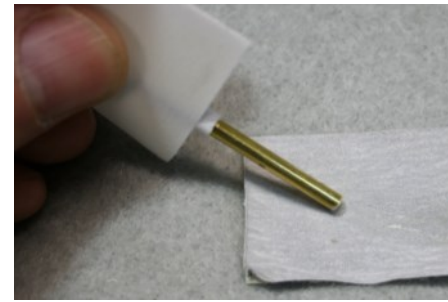
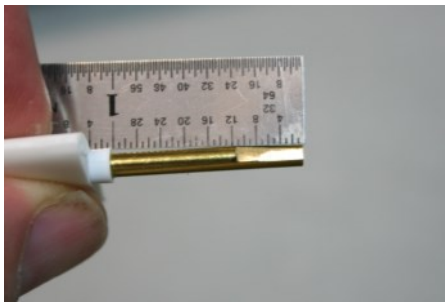
The upper deck sits on top of the deck. It has a raised outline. Mark the bottom of the outline with a pencil and use your knife to lightly score the outline first, then repeat scoring until the edges will break away.



Careful not to tear the upper deck at corners. The rough edges can be trimmed with a hobby knife or scissors.



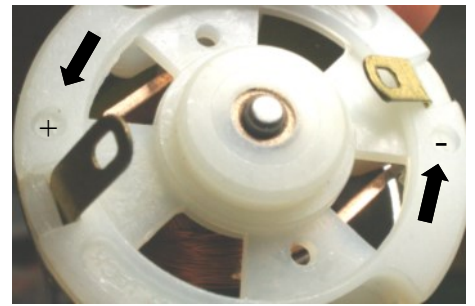
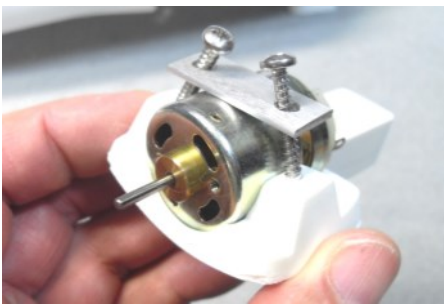
Use sandpaper to smooth the edges. Use the sanding block to sand the underside so the curved overhang of the upper deck is even when viewed from the side.



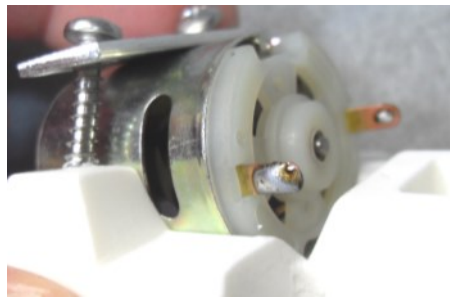
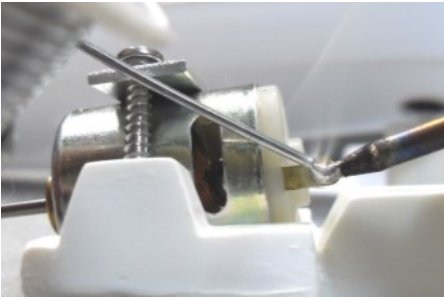
Grind a 3/8-inch flat on the leading edge of the rudder shaft facing forward. Sanding off the sharp corners of the end of the shaft will make it easier to insert into the rudder arm. Put a little grease on the shaft near the rudder blade.



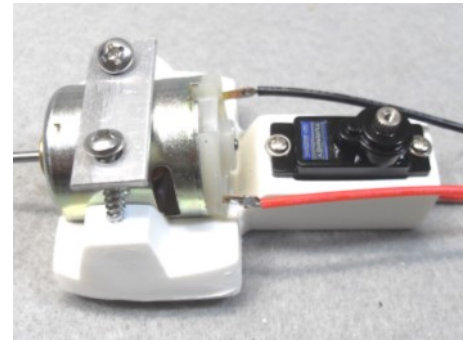
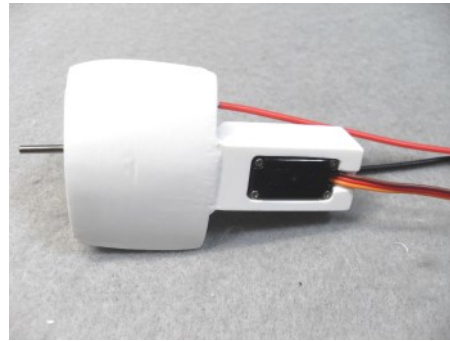
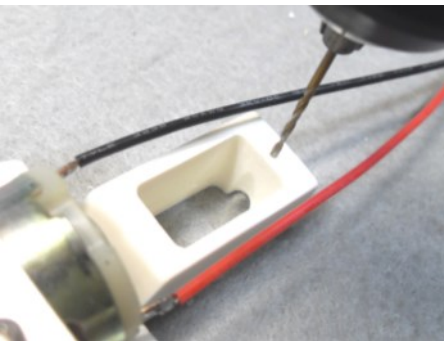
Insert the pushrod into the rudder arm as shown. Insert the rudder into the rudder mount. Install the rudder arm over the rudder shaft and tighten the set screw against the flat of the rudder. Leave a little up & down clearance to prevent binding of the rudder shaft. Wash your hands to keep grease off of the plastic parts. **15**



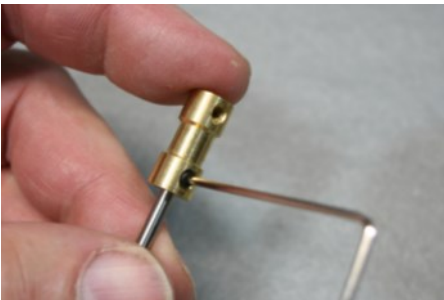
Set the motor fully into the motor mount recess as shown. Attach the motor bracket with the two screws provided. Do not overtighten. Leave the bracket as level as possible. Identify the + positive and - negative terminals.



Attach your red (+) and black (-) wires to the motor by first “tinning” the motor tabs with solder, then tin the wire ends. Hold the wire against the tab and heat with the solder iron to melt them together.



Drill into the servo mount dimples with a 1/16 inch drill. Insert the servo wire first and seat into the opening as shown. Secure the servo with the 2 screws from the servo box.

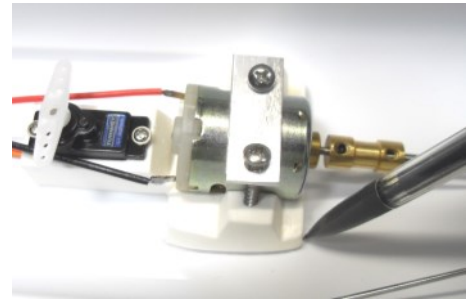
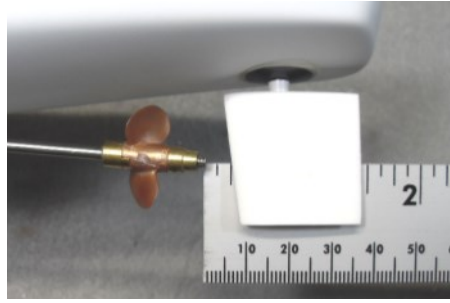


Insert the prop shaft FULLY into the coupling and just snug one set screw. Insert fully onto the motor shaft and install 2 set screws in the motor shaft holes and tighten. Remove the prop shaft set screw. Mark the prop shaft with a sharp felt pen at both holes. Remove the shaft and grind small flats at the marks for the set screws.



Make sure the shaft stern tube sets into the hull recess (journal) without binding. Insert it into the opening from inside the hull. If it isn't resting loosely in the recess, remove it and use a hobby knife to trim the upper half of the hole, then test again until it sits down into the recess.

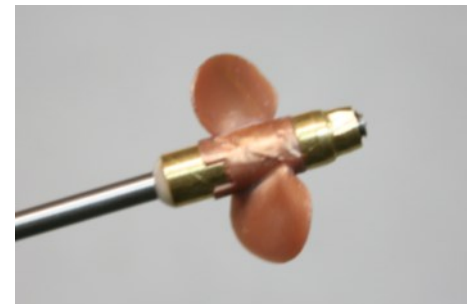




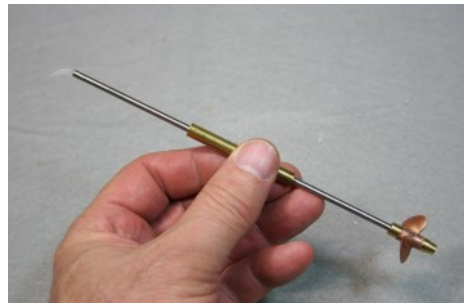
Insert the prop shaft into the stern tube and through the hull temporarily attaching the prop shaft to the motor assembly. Measure about 1/8" between the shaft and the rudder. Mark the position of the motor mount in the hull.



Disconnect the shaft from the motor coupling. Scuff the motor mount, the marked motor area in the hull and the recess in the hull where the stern tube will be installed.



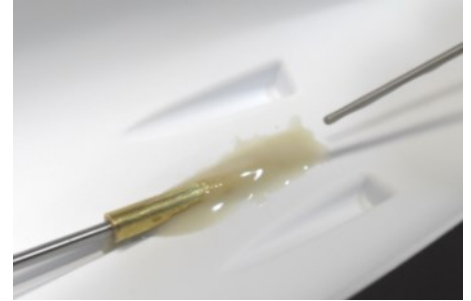
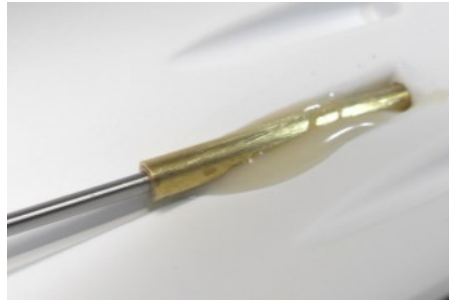
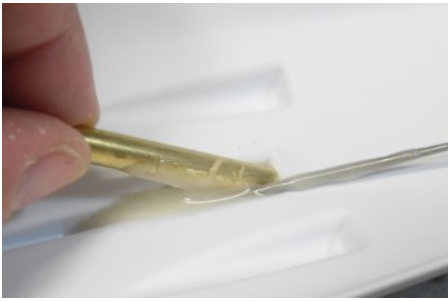
A little epoxy will keep the drive dog and prop from getting loose. Just a bit on the last few threads and tighten the drive dog as shown. Screw on the prop aligning the drive dog to the notch in the prop. Tighten the prop nut.



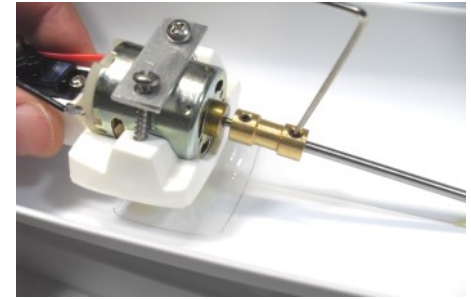
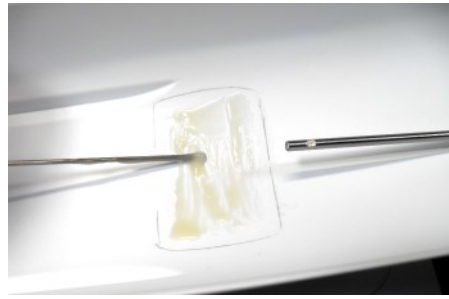
Sand the brass stern tube. Inject the synthetic grease filling the tube. Insert the shaft into the stern tube pushing out the excess grease. Leave the stern tube at the center of the shaft. Wipe off any grease.



Re-insert the prop shaft and stern tube assembly leaving about 1/16 to 1/8 inch of the stern tube sticking out of the hull. Mix a medium amount of epoxy, then fold in the same volume of filler.



While holding up the stern tube, force filled-epoxy under it into the recess. Lay the shaft down into it and add more epoxy on top. Make sure the stern tube is still sticking through the hull.



Add filled epoxy to the motor mount. Don't put any epoxy under the servo. Put epoxy into the hull at the marked motor location. While holding the motor above the hull, attach the prop shaft to the motor coupling. Be sure to line up the flats on the shaft with the set screws then tighten both set screws. Align the motor to the markings and set it down into the epoxy.

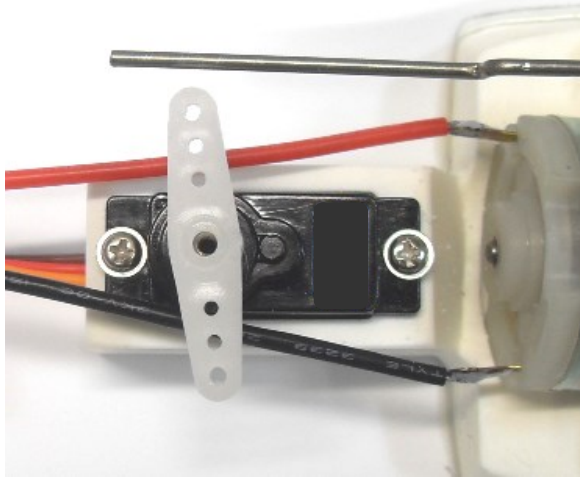


Press once LIGHTLY. Excess epoxy will come out. Gluing both the stern tube and motor mount at the same time will ensure that they line up with each other once the epoxy sets. Before the epoxy sets, check the space between the rudder and shaft end. Check prop alignment.

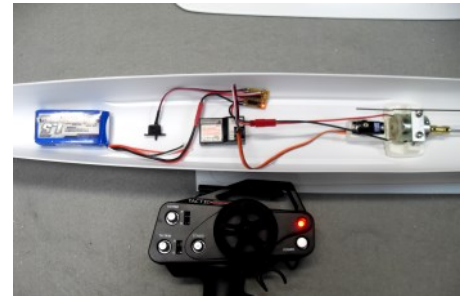
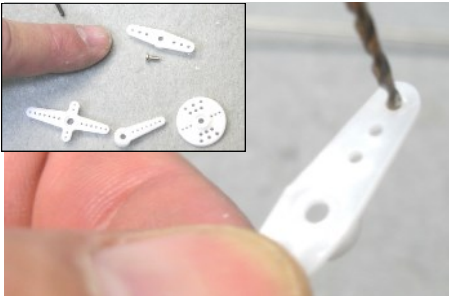


Set the hull on the boat stand. If the prop is off center to the rudder, pushing the motor assembly left or right can help to align the prop to the rudder. Before the epoxy sets, make a final check to ensure that the prop shaft is still about 1/8 inch from the front of the rudder and that there is clearance between the prop blades and the hull, that the stern tube is still sticking out of the hull and that no epoxy is touching the prop shaft or any moving parts. Once the epoxy is fully cured, it is time to attach the rudder linkage, center the servo, and test the drive system with your transmitter before gluing on the deck.

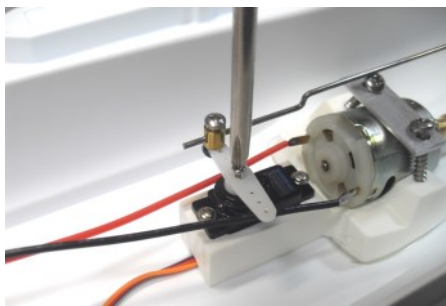
## Centering the Servo



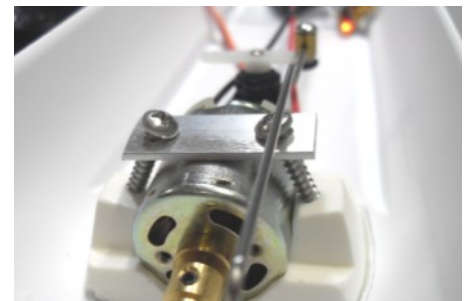
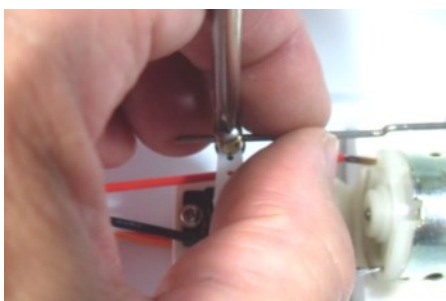
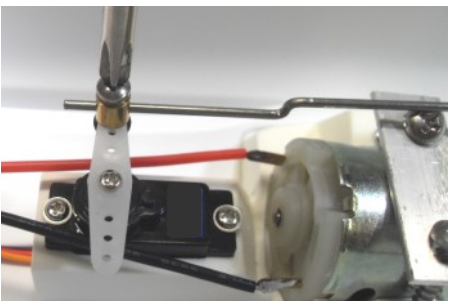
Before attaching the servo arm to the servo, we need to “Center” the servo. This can be done with a Servo Tester or by connecting it to your radio system and powering it up. Connect the servo lead to the #1 channel of your receiver. Turn on your transmitter. If you are using an ESC with “Battery Eliminator Circuitry” (BEC), the ESC supplies power to the receiver when you attach the battery to the ESC. (No need for a separate battery for the receiver.) Connect the ESC to the receiver and battery. Turn on the Transmitter, then turn on the receiver. (You may need to consult your radio system’s manual or ask for help from your fellow captains.) With the system on and working, center the radio’s steering stick and center any adjustment wheels or switches to center. This centers the servo. Attach the arm. If it is a little angled like the photo, then turn it around 180 degrees and it may fit straighter. Press in place and install the small screw from the servo accessory packet to the center hole of the servo arm.



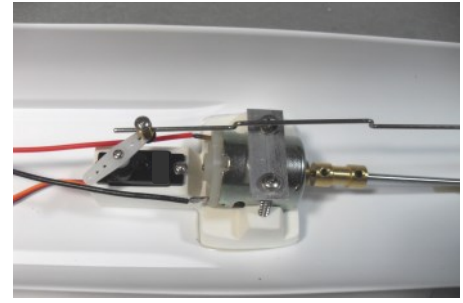
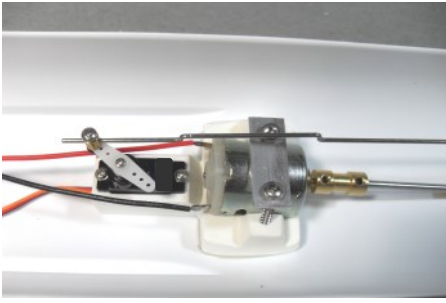
From the servo box, choose this rudder arm. Enlarge this rudder arm’s outer hole with a 1/16 inch drill. Install the EZ Connector into the hole. It should rotate without binding. Install your radio gear and “center” the servo.



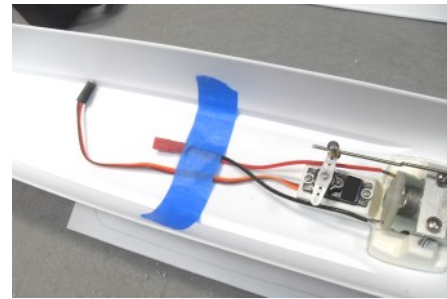
Install the rudder arm onto the centered servo. Secure it with the small screw from the servo package. Insert the pushrod into the EZ connector. Straighten the rudder as shown.



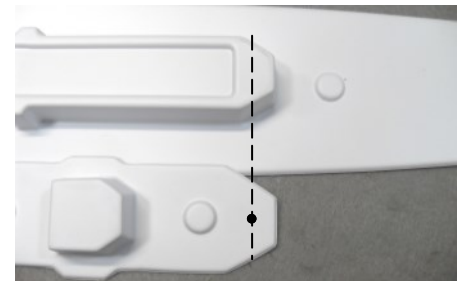
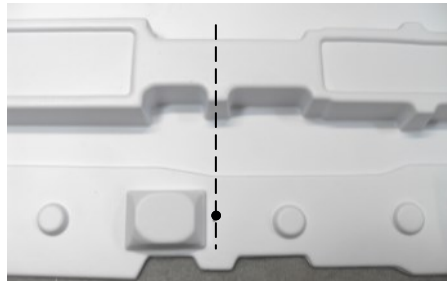
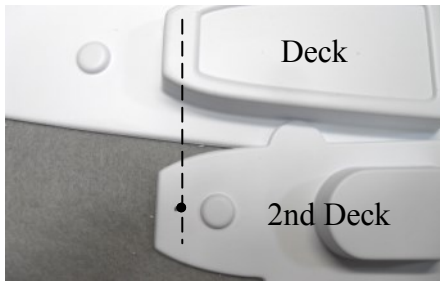
Tighten the EZ connector. Hold the pushrod to tighten the screw. Check the clearance from the pushrod to the motor mount. If the rod is touching the clamp or screws, adjust the clamp by loosening the “touching” screw a turn and tightening the opposite screw one or two turns.



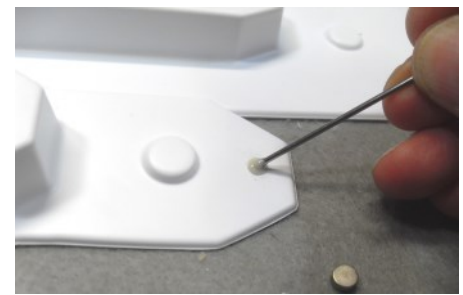
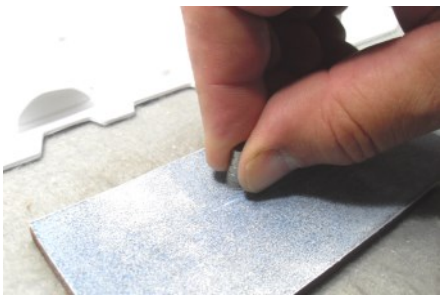
Turn the rudder servo left and right checking for uniform travel of the rudder and to ensure there is no binding of the rudder linkage. Run the motor. Check that all screws are tight. Don't overtighten the rudder arm set screw.



Remove the electronics. Tape the motor and servo leads to the hull to keep them out of the way of gluing the deck to the hull. Locate the 2nd deck you trimmed earlier if you are installing the supplied hatch magnets.



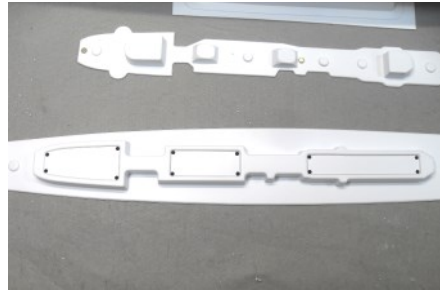
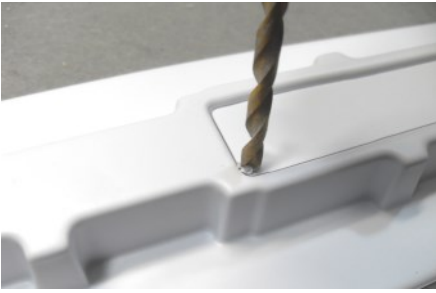
Locate the package of six rare earth magnets. Set the 2nd deck next to the deck as shown. Mark dots on the 2nd deck to correspond to these three positions roughly centered to the deck house top.



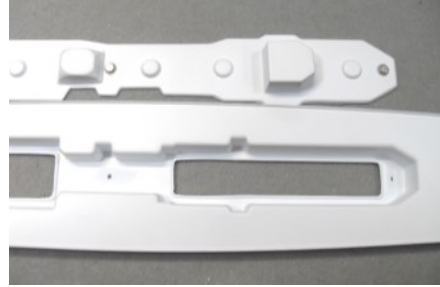
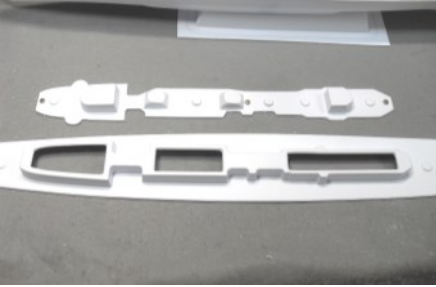
Sand one side of three magnets. Sand the three marked spots on the top of the 2nd deck, the diameter of the magnets. Rub in some filled epoxy onto the spots on the 2nd deck and on the sanded side of the three magnets.



Center the magnets over the three spots and lightly press into place. Excess epoxy that comes out from under the magnet will help hold it in place. Let the epoxy cure. If you are building a fleet, and want all of the 2nd decks to interchange, orient the polarity of the magnets the same way on each ship.



Trace the inside of the three deck house hatches with a pencil to mark the trim lines. Slowly drill the corners with a 3/16 inch drill. Use a hobby knife or box cutter to score the lines until the hatches are open.



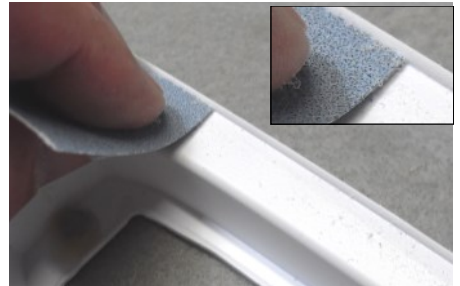
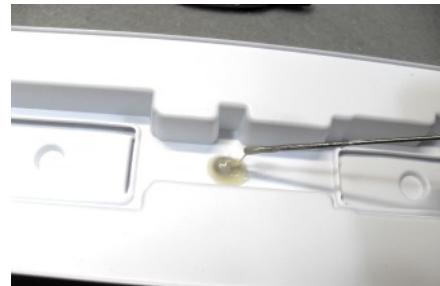
Looks like this when done. Flip over the deck. Set the 2nd deck next to it. Mark the spots on the underside of the deck house that match the location of your three 2nd deck magnets and roughen the locations with sandpaper.



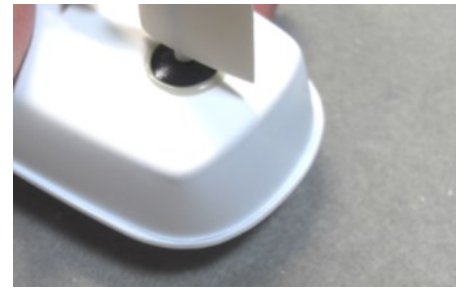
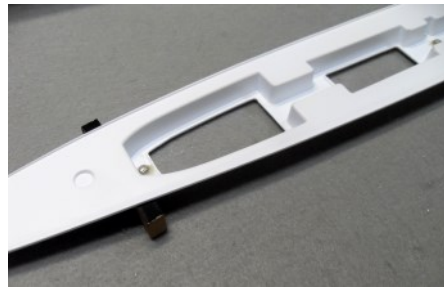
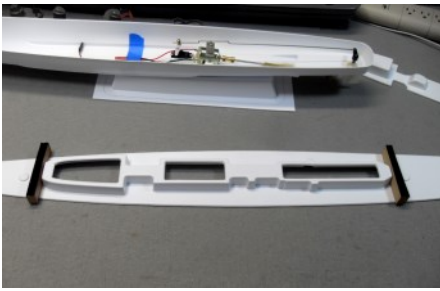
Turn over the deck and set the 2nd deck on top of it. Turn both over together and drop each of the three remaining magnets onto each roughened area. They will stick to the 2nd deck magnets. One at a time, mark the magnet, remove it and scuff the unmarked side to help it stick, add some filled epoxy onto the spot and return the magnet.



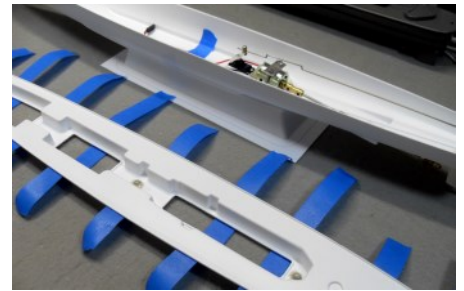
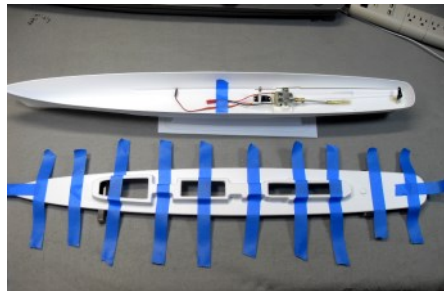
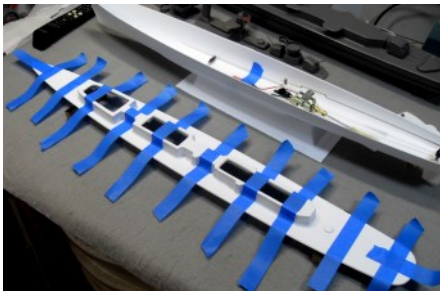
Repeat for the other two magnets. Before the epoxy sets, while these underside magnets will still slide around, turn the deck over and align the 2nd deck to the deck house so it is centered all around. Let the epoxy cure.



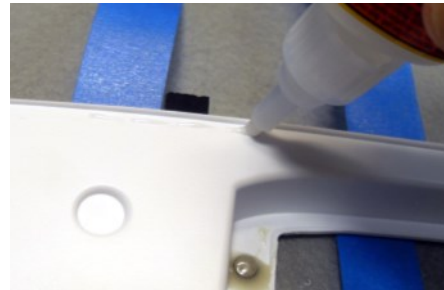
The arrow shows how the 2nd deck (deck roof) small overhang is centered on the deck house doorway. Then visually center the front and rear. Once the underside magnet epoxy cures, you can add a little more to cover the underside magnets to better secure them. Sand all around the edge of the underside of the deck next to the lip. **21**



Find two scraps of wood or anything wider than the hull and taller than the deck cabin to hold the deck level while gluing it. Turn over the deck. Test fit the hull. The edge of the hull fits just inside the deck recessed edge.



Set the deck upright on the sticks. Tear 8-inch pieces of painter's tape and tape over the deck every 2-1/2 to 3 inches. Put extra pieces at each end. Turn over the deck and set it on the sticks.



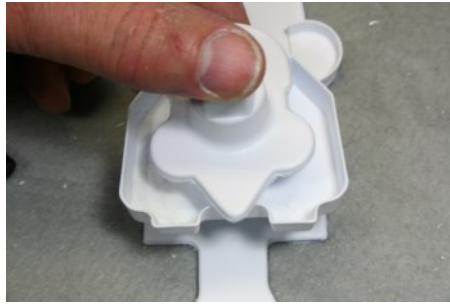
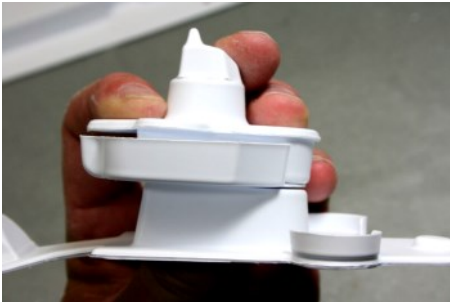
Using medium CA or Gorilla Super Glue, run a bead of glue around the edge of the underside of the deck. Go around again to make sure the glue is pushed into the corner of the recess. Be generous with the CA glue. It has to stay wet.



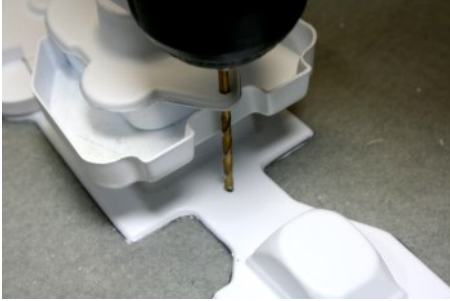
Set the stern tight to the end of the deck's recessed lip. Take each tape, and lift one end up with gentle pressure and stick against the hull. No need to pull hard. Alternate! On the next piece of tape, start with the opposite end first. Pulling on the same side of the hull for each piece of tape may cause a twist to the hull.



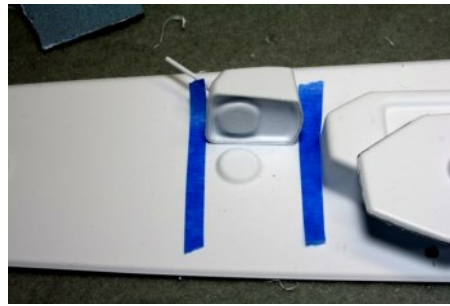
Don't pull so tight that the tape deforms the hull. Work along toward the bow. You can reposition if necessary if you don't wait too long. Once done, let the boat sit overnight, or at least an hour or two before handling. There is a bump at the stern end of the deck. This is an access point for the rudder set screw. If you ever need to access the rudder set screw, you can open the deck here. Afterwards, cut a small hatch from a scrap to close the hole. 22



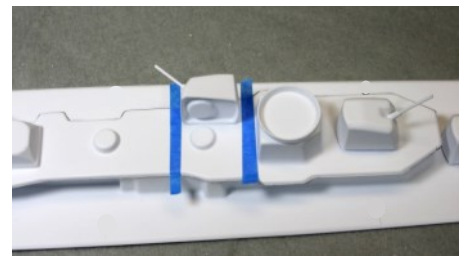
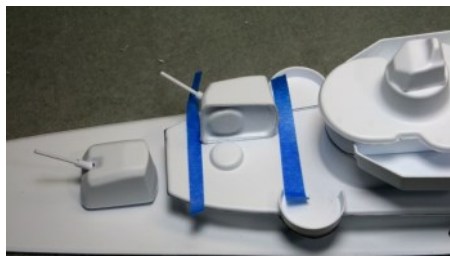
The bridge mounts to this upper deck structure with the rounded fronts even and the rear square to the corners of the upper deck below it. Scuff. Apply CA to one surface, press and hold. A mast can be installed for flags.



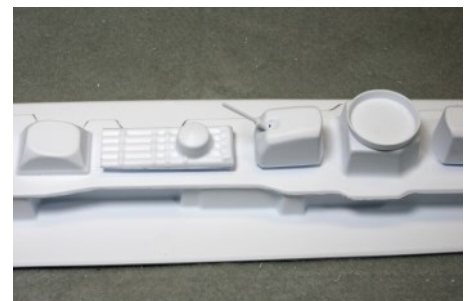
Drill through the roof hole to the upper deck. Tape over underside of hole. Insert the mast. Apply CA to the mast bottom and where it passes through the roof & seat the mast to cure. A mast can be made from a bamboo skewer.



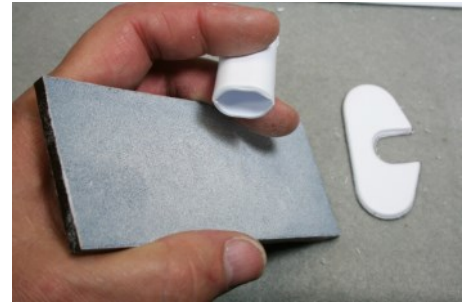
#1 Cannon. Use tape strips to mark alignment of the round mounting surfaces. Line up gun with cabin behind it. Visually center the gun left and right when gluing it.



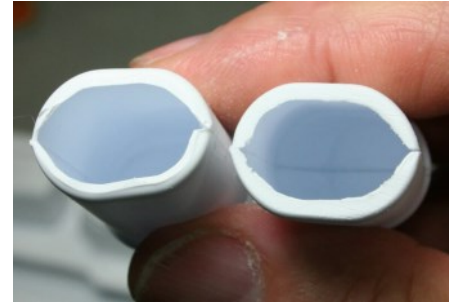
Scuff the deck mount circle and the gun's base. Apply CA to gun. Center the gun and press & hold 12 seconds. Repeat for the other four guns. Glue the two anti-aircraft mounts. Then attach the torpedo launchers as shown.



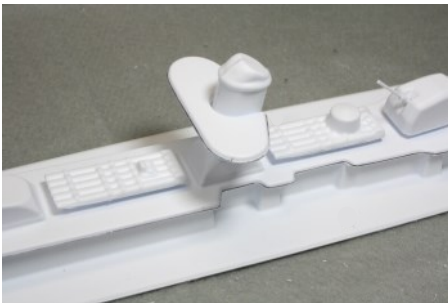
Turn over the launcher. Sand the round mount point plus the bottom of the launcher that will contact it. Apply CA to the round mount. Center & press the first torpedo launcher 20 seconds. Repeat for the 2nd Torpedo Launcher.



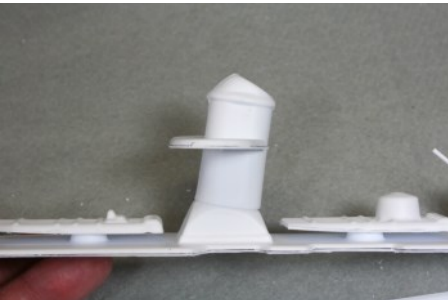
Get the cured stacks and the searchlight mount. Sand off the rounded edges of the bottom of the Stacks.



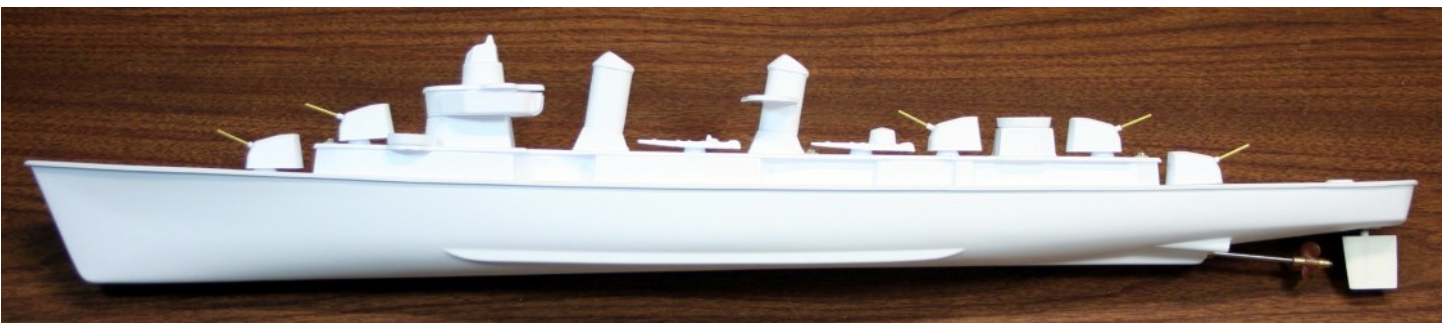
Lightly sand, rotating the stack often so it will remain square. Sanded “before” & “after”. It is a good idea to put a scrap of foam inside the stacks for flotation. Install the stacks, Scuff the base, apply CA to the stack, center, press & hold. **Note the top angle.** Orient them as shown.



The searchlight mount will attach on the rear-most stack parallel to the deck as shown. Use sandpaper to round and widen the inside of the mount until it fits barely snug and even without being spread/warped by the stack.



Install it about 1/2 way between the top and bottom of the straight portion of the stack. Don't forget the stern anti-aircraft mount or the alternate early version included.



The model is complete and ready for painting and the installation of your electronics and ballast weights. 24



## ADDITIONAL TIPS AND TRICKS

**Ballast & Waterline:** Adhesive car weights work well. A plastic bag full of bb's mixed with a spoonfull of epoxy will conform to the shape of the hull and once the bag is removed, can be fixed to the hull with glue or hook & loop. Install them as low in the hull as possible. Best to make it removable so that you can make adjustments later if you add a water pump for a "water gun", or other accessories like LED Lights, other batteries or switches. Measured downward from just under the lip overhang of the deck, the waterline should be approximately 1-1/2" down along the bow and 5/8 inch down at the stern.

**Flotation:** All Radio Controlled boats should have flotation in case they get dunked by a dog or run over by another boat. Insert pieces of swim noodle into the bow. Use scraps of foam or plastic bags. **Never swim after a disabled or sinking boat.** Keep a recovery tugboat or fishing rod handy to recover disabled boats.

**Decisions about your electrical components.** There is room in the hull for most batteries, electronic speed controllers (ESC's) and receivers. Use what you have or if you are buying new, think small and inexpensive. Will you use large waterproofed ESCs with their big wires and plugs, or smaller ones used in small toys like 1:18 scale cars? Will you use high-amperage connectors or smaller ones rated for what this model uses? Or, will you just solder everything together, eliminating the plugs with their weight, but making it harder to service the boat in the field. Think "small". There is no need to buy a high-amperage ESC for a boat with a motor that draw only one amp. No need to permanently install your electronics. Velcro will hold receiver, ESC and battery in place for easy removal. Your ESC doesn't have to be waterproof as the inside of the hull should stay dry. You can mount them above the floor or wrap them in a piece of paper towel, then insert them into a balloon with a twist-tie securing the wires to provide some water resistance. They should be Forward-Reverse ESCs. Avoid any that advertise "With Brake" as they require extra stick action to engage reverse that doesn't come to mind naturally when you are about to collide with something. As the first of these hulls are built, we will post examples of equipment setups and sources to help get you started.

**Painting Tips:** It will take 2 to 3 coats of most hobby paints to give a good even color. Never try to get full coverage with the first coat. It will run every time! You should be able to see through the first coat. **The best tip about any kind of spray paint is to let the paint "flash" between coats.** A coat of paint has "flashed" when it is dry to the touch. Don't touch the boat. Touch the masking paper or somewhere where a fingerprint won't show in case you touched it too soon. Hobby enamel or Krylon Fusion paint will take 5 to 15 minutes to flash depending on the temperature. Different colors can take different times to flash. A coat that has flashed properly will support the next coat and prevent it from dripping. The second coat will take longer to flash than the first. Be patient! Practice on a scrap stood on it's end. Your goal is to get coverage without runs. Avoid spraying enamel on very humid days. Humidity can cause the paint to "blush" leaving a cloudy appearance to dark colors. "Non-toxic" model paints are safest to brush on, for the painter and the boat. "Primer" colors like grey or red can make good hull paints. If spraying multiple colors, read the can for recoat time limitations.

**Painting The Hull:** Styrene is best painted with Acrylics, Hobby Enamels, Krylon "Short Cuts", Krylon "Fusion" paint or Rust-Oleum 2X paint that is safe for plastic. Sanding is not necessary as these paints chemically bond with the hull plastic. Acrylics may bond better with a primer coat or by lightly scuffing the plastic. Test them on plastic scraps. Plastic-friendly enamels will not peel from the surface, even when scraped by rocks or other sharp objects. Lacquers and regular enamels, like regular "Krylon" paints will melt or weaken the styrene in thin areas or when applied wet-on-wet. Don't use them. Test your paints on the leftover hull scraps. Remember that all surfaces have 5 sides to paint. Paint each side separately. See "Painting Tips" on the website.

**After a day of boating:** Remove the 2nd deck. Drain any water from the hull. There shouldn't be any. If there is, look for collision damage or a place where the deck has separated from the hull allowing water to enter the hull. If muddy, rinse with clean water or wipe down the outside with a wet paper towel. Remove the battery for safety. Unplug any wet connectors and dry them. The stern tube grease will only need to be changed if water leaks in along the shafts. It should last for years without changing.

**Before running:** Put a droplet of sewing machine oil on the prop shaft where it exits the stern tube for lubrication. Wipe away the excess oil.