

HARDWARE INSTALLATION

Use these instructions to install the hardware components of the Vac-U-Cracker, or as a guide for the basic setup of your own hardware. Alignment of the drive components is critical to a high-performance boat. Installing the hardware in the order shown will allow you to visually check the alignment and to make adjustments before applying adhesives.

There are numerous ways to modify this kit for maximum performance as a stock 1:10 scale Crackerbox. Or, you can attach a surface drive and create an “Unlimited Class Crackerbox”.

Check with the Vac-U-Cracker web page for the latest recommendations and suggestions.

Check with your club members for their opinions on configuration & balance of the model.



Cut the slot for the Turn Fin. Carefully score the liner on each side of the raised Turn Fin line.



Repeat scoring both sides of the raised line until you are through the hull. Remove the strip of plastic at the center.



Test-fit the Turn Fin into the slot you just made.



The Turn Fin must fit without binding. Use the strip of emery cloth to widen the slot as needed. Sand slowly and frequently check the fit.



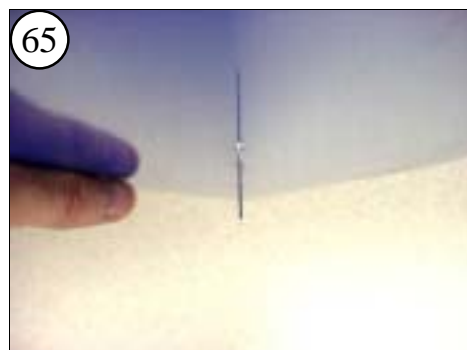
Sand the inside of the Turn Fin recess so the filled epoxy will bind it to the hull.



Don't forget to sand the walls of the recess as well. Same with the walls and ribs of the Motor recess and the pass-through for the Stern Tube.



You will use the Boat Stand to support the Hull while the Turn Fin epoxy is curing. Put a paper towel into the stand to catch any drips.



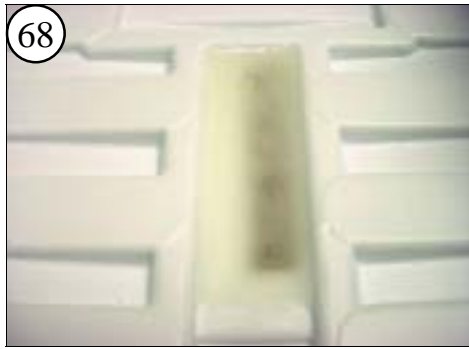
Looking from the stern, use the reflection of the Turn Fin to confirm that it is perpendicular to the hull.



Scuff the flange of the Turn Fin on both sides with the emery cloth. Don't sand the blades of the Turn Fin.



67 Hold the Turn Fin at an angle and push filled-epoxy under its flange until it appears behind the holes.



68 Straighten the Turn Fin. Fill the recess with filled-epoxy.



69 Reinforce the Turn Fin installation by laying a scrap of fiberglass cloth, or other material, into the epoxy.



70 Press the fiberglass cloth into the epoxy until it is saturated. Check the alignment of the Turn Fin **frequently** until it cures.



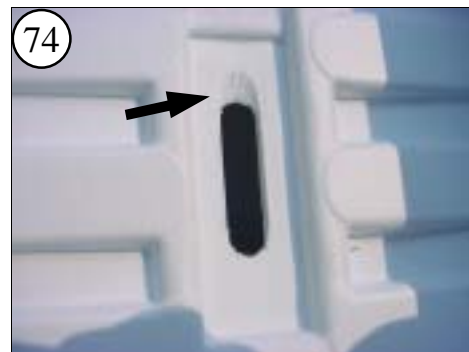
71 **DRIVE LINE** After the Turn Fin epoxy cures, install the drive train. Drill two 7/32 inch holes on either end of the raised area.



72 The holes should line up with the round ends of the raised area. View is from the tray underside.



73 Score along the edge of the raised area with a hobby knife. Continue scoring straight down until you have connected the two holes.



74 Use the hobby knife to bevel the front end (bow end) of the top of the stern tube pass-through slot.



75 On the underside of the slot, bevel the rear end (stern end). These bevels allow the Stern Tube to lay in the slot without binding.



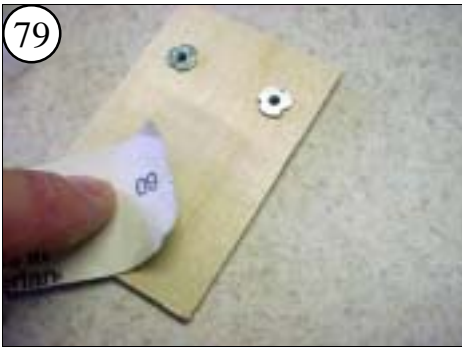
76 Fill the Stern Tube with your favorite lubricant. Greases seal well but can cause some drag on the motor. Thinner lubricants cause less drag but may need refilling more often.



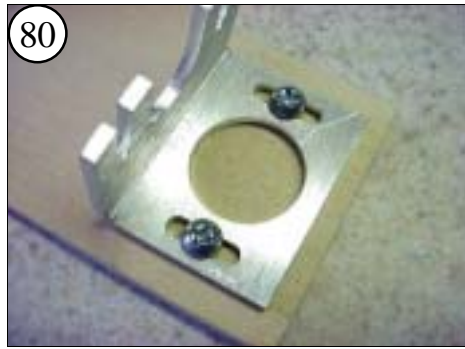
77 White lithium grease, or a synthetic grease works well. They can be thinned. Push out the excess grease by inserting the Drive Shaft. Clean any excess grease from the Stern Tube with solvent.



78 Lay out the drive line. For competition, Crackerboxes require a "R.O.A.R. Legal" motor.



79 Scuff the underside of the wood base so the epoxy will bind to the wood.



80 Install the Motor Mount as shown with the 6-32 x 1/4 inch screws centered in the base slots of the mount. Tighten the screws.



81 Install the motor with the M3 screws in the lowest position on the Mount. Lightly grease the Thrust Bearing.



82 Install the 3-piece Thrust Bearing and the Coupling, adjusting so the coupling pushes against the bearing without binding.



83 Put a tiny piece of electrical tape over the center of the T-Nuts to prevent epoxy from filling the threads.



84 Install the Drive Dog, Prop, & Prop Nut, then slip the Stern Tube into the hull and attach fully into the Coupling.



85 The prop should be spaced approximately 1/8 of an inch from the underside of the hull with a 1/8 inch gap between the drive dog and stern tube.



86 The motor base or prop shaft assembly should not bind to the hull. Adjust the motor mount screws or the length of the prop shaft to the Turn Fin. Slide the Motor Base left or right to center the slot in the hull to align the prop location.

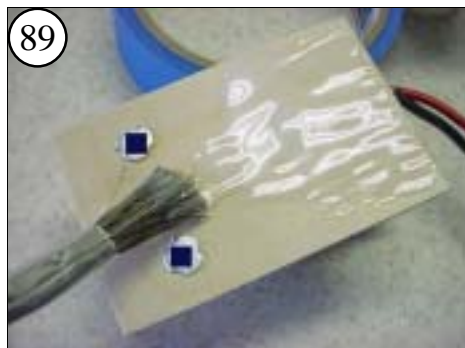


87 Mark the Stern Tube where it passes through the hull. This marks the area you will sand. From the Bow, check the alignment of the Prop Shaft to the Turn Fin. Slide the Motor Base left or right to center the Propeller.



88 Clean off any grease residue and then scuff the Stern Tube so it will bond with the filled epoxy when installed. Sand the recesses for the Motor Base and the Stern Tube slot.

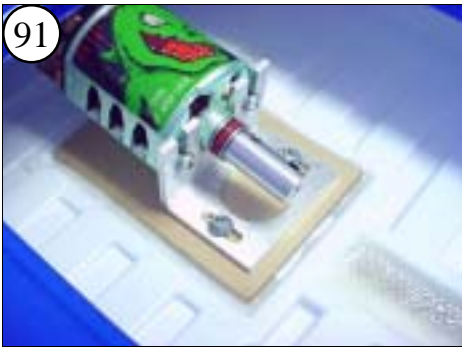
You can glue the Motor Base and Stern Tube at the same time, or separately. "Same time" follows:



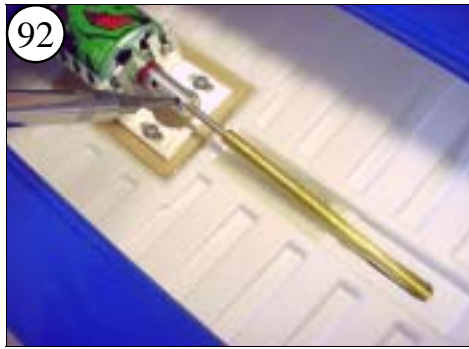
89 Mix two 1-1/2 inch puddles of parts A and B epoxy together. Add filler. Brush on the underside of the Motor Mount Base.



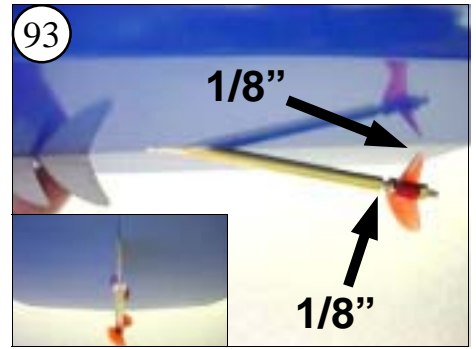
90 Put more of the filled epoxy into the motor base recess of the hull liner. Be generous.



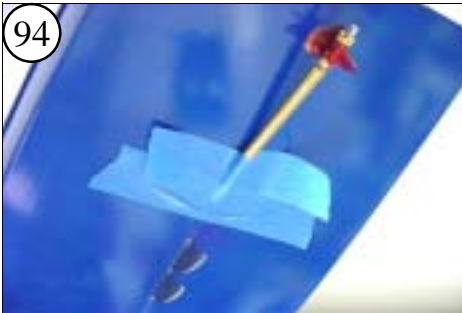
91 Set the Motor Assembly into the Hull Liner. Work quick. Even 30-minute epoxy will cure too fast!



92 Connect the Prop Shaft Assembly to the Motor. Your goal is to have epoxy around the stern tube before the motor sets.



93 Check the Prop to Hull distance one last time. Slide the Motor Base left or right to center the Prop.



94 Put masking tape around the Stern Tube to catch any epoxy that may drip around the Stern Tube slot.



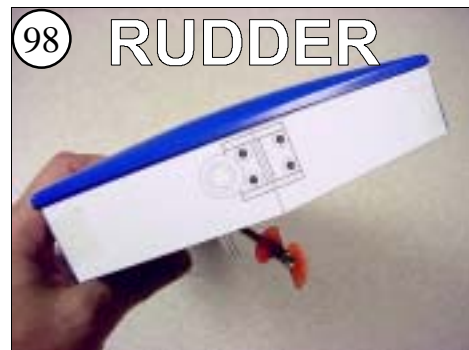
95 Add some of the filled epoxy to the recess around the stern tube.



96 Fill the recess. Push epoxy under and on top of the stern tube. Before the epoxy cures, check the alignment.



97 Take any extra filled epoxy and place it around the Motor Base to better bond it to the walls of the Hull Liner recess. Let the epoxy fully



98 Carefully trim the Rudder Template. Align and tape the template to the Transom. Set the Rudder on the Template to check Prop-Rudder alignment.



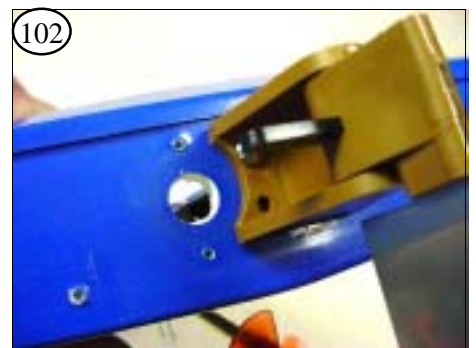
99 Use a push-pin to press marks through the template onto the transom. Drill four 1/16th inch holes at the pin marks on the transom.



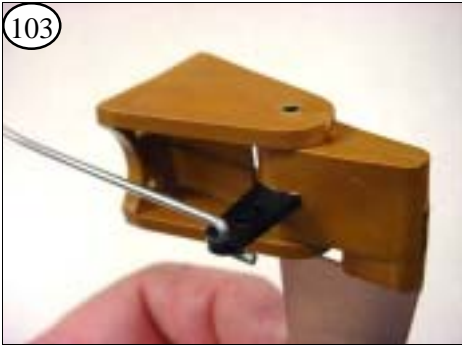
100 Use one of the rudder mounting screws to thread the holes for the rudder. Use some pressure to help the screw bite into the PVC reinforcement without causing the Hull to pull away.



101 Temporarily install the rudder with 2 screws. Use the Bru-Line™ Pushrod Boot Bracket as a template to mark the centers for three holes needed.



102 Drill the mounting holes with a 1/16th inch bit, and the center hole 1/4 to 3/8ths inch diameter. Remove the rudder from the transom.



103 Install the Z-Bend end of the Pushrod into the Rudder Arm exactly as shown.



104 Insert the Pushrod Boot into its mount as shown.



105 Install the pushrod boot to the transom. Make sure the boot is centered in the aluminum bracket.



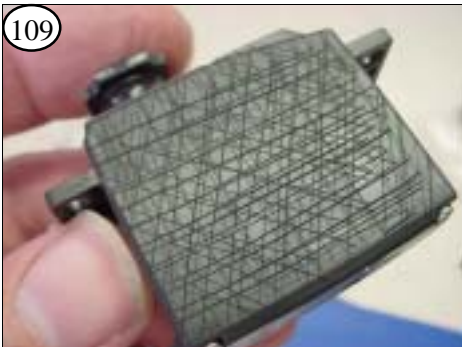
106 Put a little grease on the pushrod to help it slide into the boot, and install the rudder with 4 screws.



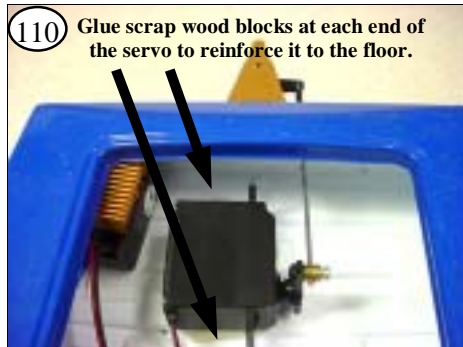
107 Connect the radio to "Center" the servo. Locate the Steering Servo so the Pushrod will be strait. The Servo Arm vertical and the Rudder Arm square.



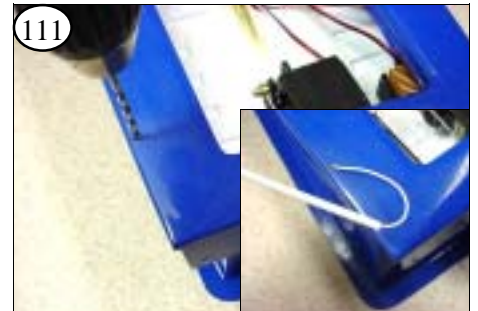
108 You will have to remove 3 of the 4 arms on the servo. The Pushrod should be centered in the hole in the transom. Mark the servo for mounting to the floor. Mount with Epoxy or Servo Tape.



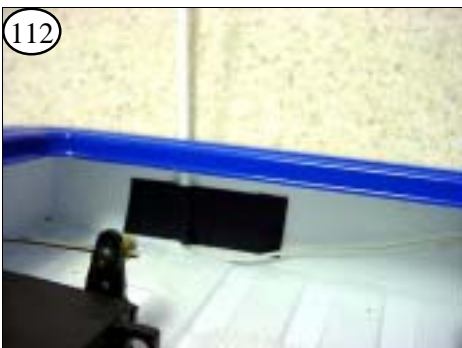
109 For epoxy, sand the Hull Liner where marked. Use a hobby knife to score the servo as shown. Use Velcro to attach the ESC, Receiver, & Battery.



110 Glue scrap wood blocks at each end of the servo to reinforce it to the floor. Run the rudder left and right to make sure the pushrod is not binding in the transom. An external antenna is recommended for the best reception for the model.



111 At the edge of the deck, locate a position near the receiver. Drill a 1/8th inch hole through the deck. Feed the antenna wire up through the hole and through the antenna mast.



112 Insert the mast through the deck and secure to the inside of the hull with tape. This installation will be relatively water-proof and will allow you to easily remove and replace the antenna.



113 Trim Tabs are installed level with the bottom of the hull at the outer edges. Drill 1/16th inch holes to mount them. The oval holes in the Tabs will allow some adjustment after installing.

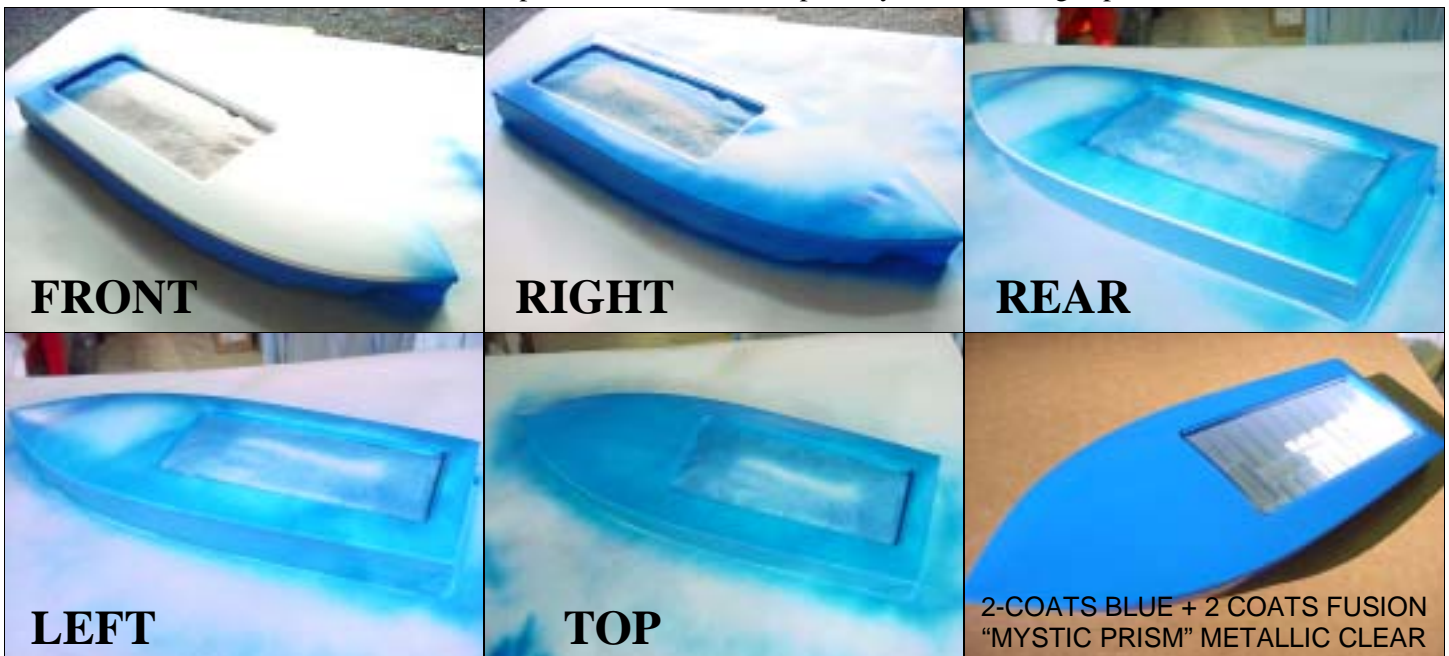


114 This completes the construction of the Vac-U-Cracker. Some tips are attached. Go to www.vac-u-boat.com for additional construction or painting tips.

Crackerbox Tips & Tricks

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 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.

PAINTING THE HULL: Styrene is best painted with Hobby Enamels, Krylon “Short Cuts”, or Krylon “Fusion” paint designed for plastic. Sanding is not necessary as these paints chemically bond with the hull plastic. They 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. Use them at your own risk! Remember that all surfaces have 5 sides to paint. Paint each side separately. See “Painting Tips” on the website.



OPTIONAL CUSTOM DECALS: Apply only after the paint has fully cured. Cut out the desired decal from the set. Separate the paper backing from the front tissue. The decal will adhere to the front tissue. Place the decal on the hull and smooth it with your fingernail. Peel off the front tissue paper. The decal set includes two side name-number sets and one top set along with a small “boat” emblem to put on the boat stand to remind you which direction to set the boat on the stand.

WATERPROOFING - FLOTATION: A 60-yard roll of hatch tape is included with every kit. Use new tape for each run. You can reuse a first-installed side piece to act like a hinge to the hatch, but be sure to dry it completely before installing the other 3 new strips. Seal the tape to the hatch by lightly drawing your fingernail along the hatch seam. Reused tape will leak. If your boat flips over, it may be several minutes before it can be safely retrieved. Don’t risk your electronics on a few cents worth of tape! There is plenty of room in the Bow for flotation. An inflated Ziplock® bag with the opening pressed and taped closed, makes a nice form-fitting float. If you have a mysterious leak, seal the hatch, hold the hull under water and gently squeeze the deck. The light pressure you put on the sealed hull should release bubbles at the leak. A dab of grease on the tip of the pushrod boot, and on the tip of the antenna tube will seal those areas well enough.

MAINTENANCE: After running, tilt the boat toward the Bow and blot out any water that was hiding under the floor. Leave the Hatch off for a couple of days to allow any moisture to dry. Discharge the boat battery to 6 volts. Storing the battery discharged helps to prevent it from developing a “memory”. Check the Stern Tube lubricant regularly. The Stern Tube can be modified with a filler tube or easier, just drill a tiny hole large enough for your lube syringe and slip a section of silicone rubber hose over the tube to close the opening while running.

Now go find some water and have fun!