

Restoring the Bouyancy Tanks on 6878

On March 31, 2001 I became the proud owner of Albacore 6878, a Skeene built in 1980. The boat was in pretty good shape, but like many Skeene and Ontario Yachts (non-foam core) Albacores built in the hull number 6800 to 7500 range, the seat tanks had separated from the floor leaving lots of space for water to enter the bouancy tanks. The previous owner had placed air bags in the tanks to provide floatation. My plan was to re-seal the tanks to restore the buoyancy and to add rigidity to the hull. Having no experience in doing fiberglass repairs I relied on my neighbor, Peter Duncan's, assurances that he and Barney Harris would coach me through the process. In fact, Peter was just starting a similar restoration of hull #7264, and suggested we might lend one another a hand at some of the more time-critical points. He suggested I start out by getting some guidance from Barney who has completed several restorations of this kind.

Following Peter's advice, I contacted Barney, who said he was working on an article which would describe the process in some detail. He offered to send me the set of instructions he had completed and asked that I embellish them as I went through the restoration, turning them into a finished article in the end. So here is the article, the main substance of which was provided by Barney Harris, with comments and additions by both Peter Duncan and me based on our work on #6878 and #7264.

Clearly, preparation is the key to a project of this kind.

Equipment

- 4 or 4.25 inch power grinder (Dewalt or equivalent), for grinding off gel coat
- Dremel tool with abrasive sanding drums and cutting disks, for detailed grinding
- Air Filtration Mask or dust mask, depending on whether work is done inside or out
- Eye protection
- Thin laytex gloves
- Orbital sander, detail sander and or sanding block
- Rasp, Screwdrivers or small prying tools, hacksaw blade
- Shop Vac

[- Whisk broom](#)

[- Cotton rags & paper towels](#)

[- scissors for cutting fiber glass](#)

Materials

- 37 ft. of 4" wide 9 oz. Fiberglass cloth (Gueogon WEST), or alternatively, 23 ft. of 4" wide 9 oz. Fiberglass cloth and 15 square feet of fiberglass mat
- 1 quart Epoxy resin (WEST 105)
- Slow epoxy hardener (WEST 206)
- 6 oz Colloidal silica (WEST 406)
- Acetone
- Small can of polyurethane primer (Interlux or equivalent)
- Small can of polyurethane enamel top coat (one part poly- Interlux or equivalent)
- 3 or 4 inch masking tape that is thick, in a contrasting color such as blue
- newspaper for masking
- disposable 1 inch china bristle brushes
- mixing cups and stir stix (yogurt cups and popsicle sticks work well)
- 80 grit wet or dry sandpaper
- 100 grit sandpaper
- marking pen or pencil
- yard stick for measuring and for use as a straight edge

~~[-scissors for cutting fiber glass](#)~~

If you have not worked with fiber glass before I suggest you read Fiberglass Boat Repair and Maintenance by West Systems before embarking on this project. Properly done, fiberglass is pretty easy to work with, but an error can be difficult to fix once the epoxy has cured.

Instructions

- 1) Clean boat with soap/water to remove debris and dirt from floor-tank joint area. Dry thoroughly. Allow boat to stand indoors for a week or so with a few lamps nearby to drive all water away. Water or [f](#) moisture can ruin epoxy resin, and I found that water would drain from the darndest places when turning the apparently dry boat into different positions. Remove all internal rigging and hiking straps. Mask off any fittings and blocks in the way. Time – about 2 hours [See Photo 1]
- 2) Mark a line along the bottom of the seat, just after it turns from vertical to horizontal, along the floor. From this line, measure and mark a line 4" toward the center of the boat along the floor. The hull joint should be between the two lines, not quite equidistant. This 4" area is where we will grind away the gel coat so the fiberglass will adhere well.
- 3) Place two layers of masking tape coinciding with these lines. The masking tape serves to reduce grinding scratches beyond the area intended for repair. Time to mark and mask – about 1 hour
- 4) Using the grinder and Dremel tools, remove around 80% of the gel coat and / or paint, meaning you should see about 80% of the fiber glass with spots and blotches of old gel coat remaining covering about 20% of the prepared surface. Do your best to remove as little of the original fiberglass as possible. Leaving 20% of the gel coat / old paint is about right - you will remove too much of the original boat structure if you attempt to remove 100% of the gel coat or paint. Use the Dremel tool for corners and hard to reach areas. I found the flexible extension for the Dremel tool to be useful.
- 5) The grinding is the nasty part of the job. Gel coat dust gets everywhere, so cover up. I suggest that you do this outdoors if possible. If not, try to have someone available to run the vacuum cleaner as you grind, to help control the dust. It is easy to make a mistake while grinding, just a slip and you could grind a hole in the boat, so take extra care while doing this part of the job. Time – Grinding, about 5 hours [See Photo 2]
- 6) Using the grinder, make a slight chamfer on the edge of the tank flange lip to help soften transition from tank flange to floor.
- 7) With a hammer and chisel, remove loose adhesive between the tank flange and the hull.

- 8) Use a rasp, dremel tool cutting disk, detail sander, and/or old hacksaw blade to remove as much of the old adhesive as possible where the joint has already cracked. Be careful to not push chunks of old adhesive into the tank. Some previous repairs had been attempted on #6878, so there was a fair bit of old epoxy to be cut out using the Dremel tool.
- 9) Remove and dispose of masking tape; vacuum away all dust and material; use a whisk broom to loosen dust stuck in pores in the fiberglass.
- 10) Wash the area clean with acetone; allow surface to dry.
- 11) Use newspaper and masking tape to mask off the area above and below the ground areas. Be as precise as you can to leave only the area that will be covered in fiberglass exposed. [See Photo 3]
- 12) There are some things to consider before starting the fiberglass work. First, make sure the boat is well supported so it does not rock around when you are working on it. Also, be careful that the hull is not distorted by the way it is supported and constrained, or else the distortions will become permanent when the resin cures. I used a dolly that was low enough that I could easily reach inside the boat without leaning on anything. Time is of the essence when working with fiberglass, and is directly related to temperature. . If the temperature is above 75 degrees only work on half of boat at a time as epoxy cure may be too rapid. An alternative is to have help. By working together, Peter and I were able to glass the entire area, with three layers, in about 2 hours. You should lay out all the materials you will need ahead of time. [See Photo 4]
- 13) There are a couple of approaches we have seen used in fiberglassing the tanks to the floor. One is to use two layers of glass tape, one to cover the entire area, and the other long enough to cover the high traffic area (1 foot ahead of the front end of the centerboard case to 1 foot aft of back of the centerboard case). This second strip will be about 7 feet long. The second approach is to use two layers of fiberglass mat, covered by a final layer of 4" fiberglass tape.
- 14) Cut and test fit fiberglass mat and tape. Cut mat in 3.5" strips to fit underneath the 4" tape strips. Be certain that the masked area is just wide enough to accommodate the fiberglass. Be certain that no fiberglass will end up on top of masking tape.
- 15) Mix epoxy and coat the ground areas with a thin layer of resin. Coat facing surfaces where old adhesive was removed using a screw driver to pry them apart.
- 16) Mix epoxy and colloidal silica to a peanut butter consistency. Force the mixture into the tank to hull joint where old adhesive was removed. Use a screw driver to pry the surfaces apart; use enough to fill the gap but don't fill the entire tank with the stuff!

- 17) Form a smooth fillet from the top of the tank flange to the hull, which should extend as inboard the same distance as the flange is above the hull inner surface. Note, that when you apply this fillet, the mixture will be thinned by the epoxy already painted on, so use a thick mixture to keep the resulting fillet from running.
- 18) Working from the bow to transom. Lay mat or tape on wet epoxy on the tank flange and work it over the fillet and onto the hull. After the mat or glass tape is positioned, wet it out with additional resin. Use adequate resin to fully wet out the glass, but not so much that it begins to pool in lower areas or run out of the cloth. Press down to fill voids and air pockets.
- 19) If using mat, lay a second layer of mat over the first and fully wet out glass with epoxy. Then lay the layer of fiberglass tape over mat and fully wet out with epoxy. If not using the mat, the second layer should be the 7 foot strips of tape to cover the high traffic areas.
- 20) Allow epoxy to cure until it is not sticky to the touch or just barely so. Inspect work and clean off any runs or epoxy spikes with a sharp knife. Of course your technique was perfect and there are no major voids - but if there are, these can be filled with epoxy and colloidal silica using a hypodermic at this time.
- 21) Allow epoxy to continue to initial cure - no trace of stickiness but soft enough to dent with your fingernail (4-6 hours depending on temperature); remove all masking materials. Clean up any errant resin drops or smudges by scraping or with acetone.
- 22) Allow epoxy to fully cure (3-10 days depending on temperature). [See Photo 5]
- 23) File off all sharp edges with a rasp or power sander.
- 24) Wet sand epoxied area with 80 grit wet or dry sandpaper. Inspect with a lamp to ensure that no shiny areas remain. Keep sanding until all of the fiberglass has been dulled. Sand the fiberglass where it bends over the fillet very gingerly to not cut any of the glass fibers which would weaken the repair. Thoroughly clean all sanding residue and dry up all water.
- 25) Using an orbital sander and / or Dremel tool, smooth the transitions around the edges of the fiberglass tape to the hull and tank flange. These transitions should be no more than ¼ inch or so. Sand around ¼ inch beyond the extent of the fiberglass. Clean up all dust. Clean with acetone.
- 26) Re-mask area of repair, this time 1/4 inch wider than previous masking. Because #6878 had previously had rough fiberglass work done on the floor, I decided to paint the entire floor to get a uniform look, rather than painting just the strip around the hull joint.
- 27) Prime repair area with any good quality single part polyurethane primer; allow to dry.

28) Lightly sand primed surface with 150 or so grit paper, removing around 25 to 50% of the primer in the process. Replace any messed up masking.

29) Apply top coat- one part polyurethane paint, flowing on enough to be completely opaque but without runs or sags. I added a flattening agent to the paint to dull the glossy paint in order to blend better with the original floor surface.

30) Remove masking materials after paint cures to the touch. Allow paint to fully dry before walking on or sailing the boat. [See Photo 6]

31) Perform buoyancy test to verify integrity of repair

On many boats of this age you will also find separation where the chain plate columns meet the deck of the boat. I had this problem and had to seal this area as well. Place the boat upside down on a set of workhorses to access this area. [See Photo 7]