Head Refit for Skip-Jack

In 2009, Skip-Jack was refitted with a new Raritan Marine Elegance electric head. We were interested in making a simple clean look with a minimum of head odors and the capacity to go a week or more while living aboard without being forced to go offshore to pump-out or having to stop in at a pump-out station. In our home port there is a pump-out boat which is free, but we are hoping to make some voyages to the Chesapeake and south where these services are not readily available. The old 6 gallon tank did not allow enough time between pump- outs.

We did consider the Air Head composting toilet as installed by Bob Banzett and a couple of other members but were a little afraid of the requirements for cleaning and use in order to maintain a clean head. Regardless of which system is chosen, I think the overall project might be of interest to anyone willing to take on such a project.

The Marine Elegance is simple and clean looking with the option for using freshwater or seawater for the flush. Seawater, with its natural sea life, is more prone to anaerobic bacterial growth than fresh water, so we elected to install the freshwater model. It also has plumbing which can go straight down through the base, allowing a cleaner look.

The first step was to remove the entire interior of the head; including the shelves, vanity, cabinet bulkhead, head base and seacock (the seacock was located too close to the new holding tank). The entire area was cleaned and painted with Interlux barrier coat (2000/2001)

We then selected the 23 gallon OLT-344 holding tank from Ocean Link. It just fit the area under the sink, which was for the most part wasted space anyway.

The original bulkhead under the sink was very in poor condition so we elected to fabricate a new one from 5/8 plywood with a new gel coat face. We transferred the shape of the old panel to plywood then cut it to fit. I wanted to make the area serviceable, so the panel was cut along the base 3 inches above where the head base was to be set. The bottom section was then tabbed in place with polyester resin and fiberglass tape and screwed at the ends.

Two strips of wood were fabricated to fit the curve of the hull and the basic shape of the tank. They were then tabbed to the hull, providing a support on which to mount the plywood panels used to support the back side of the tank.

Another piece of plywood was cut to match the hull shape and to fit to the inside of the sink bulkhead.

Next, we fabricated a fiberglass panel with gel coat on one surface. This was accomplished by using a piece of glass (an old sliding door) as a mold. It was placed on a pair of saw horses making sure it was perfectly flat in all directions, then cleaned and coated with 4 layers of mold release wax. We then rolled on 2 layers of white gel coat. Once the gel coat was set up enough, a layer of fiberglass mat was laid down over the gel coat and soaked with polyester resin. A second layer of mat was applied then rolled with a fiberglass roller to remove the bubbles and consolidate the mat. The precut plywood panel was coated with resin while the gel coat was setting up. It was then coated again just before laying it down on top of the wet mat and pressed in carefully to mate the two. Weights were added to the top of the plywood and then left overnight to fully cure.

The panel was removed from the glass the next day. Then, with an angle grinder fitted with a cutting wheel, the fiberglass panel was cut leaving a ¼" or so extra over the edge of the plywood panel. Using a router with a following bit, the panel was trimmed to its exact size to match the pan. The drops from the rest of gel coat panel were saved for the fabrication of a new door and the panel applied to the bottom section of the sink bulkhead.

Next all the plumbing lines and wires were roughed in. A tee was placed in the cold water line for the head then run to the area of the vanity sink. The panels were cut to allow for plumbing connections then primed with barrier coat. We elected to set the pump-out fitting in the top of the tank, under the deck fitting. A tee was added to attach the manual pump then out the thru hull under the vanity. The vent also was located on the top of the tank. The fill fitting was located in the back of the tank at the top and then run to the head.

Since the tank is totally enclosed and the cleanout cover will only be accessible by removing the vanity, we installed a tank monitor in order to know what the tank level is. This Solo tank monitor was endorsed by Practical Sailor and was available from Defender. This tank monitor seemed to be simple reasonably priced and attaches to the outside of the tank so there should be no maintenance issues.

Tank Monitor with External Sensor

New Tank Monitor with External Sensor for your plastic Holding or Water Tank.

The Solo tank monitor attaches its sensor to the outside of your plastic or composite holding tank. It's a foil tape that connects to the neat looking 2"x 3.5" Solo display panel. Locate this nice looking little display panel anywhere. (Over the toilet in the head is our suggestion) You will now know at a glance your holding tank's level of fill.

Since the tank sensor tapes to the outside of your plastic holding tank it can't be fouled and is really easy to install. Just cut it to the vertical length of your tank and set the empty and full calibration points on the Solo's panel memory. You set it once and it's locked in to its memory.

Wood tabs were screwed to the center and bottom mating surfaces of the front vanity bulkhead to facilitate securing the tank side panel and the bottom section to the bulkhead. The hull end of the tank side panel was screwed to the tabs previously installed for the tank mounting panels.

Once the tank, tank side panel, plumbing, wiring and front bulkhead was in place and secured, a small plastic garbage bag was set between the front of the tank and the bulkhead. Foam was introduced into the bag in order to fill the empty space, securing the tank from any possible movement. I used the garbage bag so that if there was an occasion to remove the vanity bulkhead, the foam would separate from the parts.

The toilet base was cleaned, painted with white polyurethane, and holes were drilled for the hoses and electrical wires. The mounting flange for the toilet was installed according to directions. The base was then installed.

One of the drops from the gel coat panel was cut to fit the bottom of the vanity bulkhead panel. It was then coated with caulk (I used 3M 4200) and installed.

The vanity was rather dull and ugly looking. So, while it was out we took the opportunity to sand, fair and spray paint it with white two part polyurethane.

The rest of the head interior was sanded and painted with white polyurethane.

The shelves were then tabbed back in place with polyester resin and fiberglass tape.

The remaining woodwork was sanded, fixed as needed and refinished before installation. The tracks for the sliding doors were destroyed while disassembling the cabinetry, but the hardware store had the exact same aluminum extrusions. The screw holes were bunged, sanded and then the last coat of finish was applied in place.

The Raritan Marine Elegance is one of a new breed of toilets available now. It uses about a cup of water on a normal flush. There are also controls which allow you to flush with more water, no water, or only add water without flushing.

We have found it to be very user friendly and clean. The holding tank holds enough so that we rarely fill it more than half before a pump-out. The drawbacks are that you cannot use bleach or harsh head chemicals. We have been using white vinegar to help control the bacterial growth.

There seems to be some odor when the boat is left for weeks without a pump-out, mostly from the vent when flushed. There are vent filters available to control odor but they are expensive. During regular use the system is clean, easy to use and maintenance free.

Overall we are very pleased and highly recommend it.