CATALINA 350 INTERNATIONAL ASSOCIATION



C350 Association Technical Editor Scott Monroe

Here is to a peaceful night sleep! While an electric flush was a big plus over the squeak of a manual Raritan head, the noise from the electric pump could wake the dead and did! Thanks to John for showing us all a path to quieter night.

Everyone else, please keep those submissions coming. Your projects and experiences are benefit to all in the C350 family. **–Scott Monroe,** Southern Yankee #409, scott_monroe@verizon.net

Head for a Quieter Night Sleep

Sleeping onboard a boat tends to be relaxing and soothing as the gentle waves rock you to sleep. You just hope no one needs to get up during the night to use the toilet. The flushing sound could wake the dead! My wife and I had gotten used to the loud sound of the flush, but when overnight guests hesitated to use the bathroom during the night, I decided it was time to see what could be done to improve the situation.

I replaced the aging Raritan Sea Era electric head with a Raritan Marine Elegance Pressurized Freshwater head. The Marine Elegance is quieter & all hoses are now hidden. It looks great and has operated flawlessly for two boating seasons. Using fresh water eliminates the "rotten egg" odor. While it does increase freshwater usage, as the bowl is refilled from the fresh water supply, we found it not to be an issue. One unexpected consequence is the freshwater pump runs with each flush which does create some cabin noise, but far less than the original toilet. See image with finished project and inset image of controller.



Finished project with optional controller shown in inset which was mounted under vanity sink.

The Raritan instructions and their customer support are excellent, so don't be afraid to take on this project! I followed the instruction manual and have provided some details specific to the Catalina 350.

I purchased a standard angle back Marine Elegance Toilet (Model: 221HF02401). The angled back allows space for the two hoses and toilet footprint on the raised deck. I also purchased the STC Smart Toilet Control approximately $130 add-on. The Smart Control Flush provides a water saving flush pattern based on whether solid or liquid waste and makes the wiring installation easier. I used the pressurized freshwater system as it was the easiest option to install. Another option is to install a separate freshwater tank beneath the port settee with a separate pump to supply the toilet.

I chose to connect the Maine Elegance Fresh Water toilet to the boat's pressurized freshwater system. To provide separation between the pressurized freshwater system and the wastewater the toilet comes with an integral vacuum breaker. Between the electrical solenoid valve which is only open to supply water and the vacuum breaker there are two barriers to prevent cross contamination. It's important to note that ABYC standards suggest that "The potable water system shall be designed and installed so that the potable water is totally separate from any contact with the water used for other purposes – H23). I confirmed with Raritan technical support services that the vacuum breaker is the primary means of separation.

Materials required: 8' of RaritanSani/Flex hose (see note), a method to tap into the fresh water system. I used a plastic ¾" "T" fitting that was compatible with the sink cold water line and faucet fittings. Another option is connecting to the fresh water manifold in the bilge which would require more reinforced hose,10' of ¾ " reinforced hose to connect the fresh water supply toilet, 1" & ¾" plastic "T's", various hose clamps, 6' of #10 wire, electrical tie wraps, waterproof stakons to fit #10 wire & mounting screws. NOTE: The Raritan Sani/Flex hose is great, although it is quite expensive.

Some tools I found useful were a large hole saw, battery powered drill, various drill bits, sabre saw, voltmeter, wire cutter, stakon tool, string, heat gun, various wrenches & work light.

The project is 9 steps:

(1) Assemble tools, materials & instructions
(2) Shut off AC & DC power
(3) Remove access panel, hoses and old toilet
(4) Cut access hole in head bulkhead
(5) Tie into fresh water system
(6) Size, pull and connect (one end) fresh water feed & waste hoses
(7) Install Smart Toilet Control Panel and Smart Toilet Control Box complete with electrical connections
(8) Install mounting bracket and 90 degree fittings on toilet inlet & discharge ports
(9) Install toilet, connect waste and fresh water supply hoses and fresh water solenoid valve electrical connections

The first step is to remove the remove the small panel above the toilet which provides access the top of the holding tank. This is where the discharge hose from the toilet connects to the waste holding tank. This little panel can be very tough to remove. I had to knock it out with hammer.

With the panel removed you now have access to the waste hose connection from the waste holding tank. After dis-



Panel had to be removed to gain access to holding tank.

connecting the hose, I sealed off the top of the holding tank to minimize odors. At this point I would check the holding tank vent line to be sure it's clear by removing one end and checking the vent hose is not blocked. It is much easier to access the vent piping when the head discharge hose is out of the way.

Prior to removing the toilet, I pulled the water out with a turkey baster and then disconnect the waste hose from the toilet. Be ready with bags and a bucket, don't want any in your bilge or … While disconnecting the power leads leave as much exposed as possible. I tied the two wires together as I was concerned I might lose them. These wires are used to power the new head. The existing breaker in the DC Distribution panel is 25 amp which is the correct size.

I made a hole in the bulkhead behind the toilet using a hole saw to provides a path for the waste hose and the fresh water supply hose. Careful with the pilot bit as the hull is close to the bulkhead. Raritan suggests that you should drop the discharge hose straight down from the toilet discharge port which I found to be impossible in the C350. A better solution for me, was adding a 90-degree fitting on the toilet discharge port & drill a hole in the wall directly behind the toilet providing a path from the toilet discharge port to the holding tank. The discharge hose makes a large loop in the holding tank area and although flexible it is quite strong. The



Toilet removed with sufficient length wires to be reconnected.

hole was also large enough to include the water supply hose. The hole and the hoses are not visible as they are hidden behind the toilet. Fitting the waste hose so that it minimized bends reducing

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Hole behind toilet was drilled to accommodate both discharge hose and water line.

stress on the very flexible toilet discharge port was the most difficult part of the job.

I added a "T" to the head sink cold water supply line. This fitting was found at a local marine store which was compatible with the sink and hose connections. The reinforced hose was routed from the "T" connection under the sink, below the deck and through the newly cut hole in the bulkhead. The reinforced hose was cut to final length when the toilet was in place.



T connector to freshwater line.

After attaching the discharge hose to the waste tank, my main concern was to minimize strain on the very flexible waste toilet discharge port, so I attached a small piece of waste hose with a 1" 90-degree fitting to the waste discharge port. A similar transition piece and ¾" 90-degree fitting was also added for the fresh water hose (see image 4). An alternative is to buy a Thru Wall Discharge Kit from Raritan.

I mounted the control panel on the bathroom cabinet just below the sink close to the head after removing Raritan Sea Era control button. I connected the two wires that were previously tied to the control button. This wire is the positive power feed to the toilet via the Control Box which was mounted on the forward bulkhead inside the holding tank enclosure.

The electrical connections are outlined in the instructions. I connected the 10-gauge wire to the existing red and black wires from the original Sea Era toilet. I then snaked these wires to the smart control box and attached them to the negative and positive terminals per the instructions. I used the provided wires to connect from the Smart Control Box to the Smart control Panel. The remaining wires, also provided, from the Smart Control Box to the freshwater valve can be attached to the Smart control box now and run to the toilet location. They will be attached to the toilet when it is in place.

I mounted the toilet following the instructions provided by Raritan. The mounting bracket is custom made to fit each toilet which may not look quite symmetrical. Don't worry it will fit!

Next, I connected the 1" waste disposal and ¾" freshwater hoses to the toilet and connected the two wires to the fresh water solenoid valve and the two wires to the discharge pump. I secured the toilet in place per the Instructions.

I turned on the freshwater pump and tested the toilet and inspected for leaks. Success! All said and done, I spent approximately $700 on the project which is well worth peaceful sleep.

I have been incredibly happy with this toilet and the fact that there are no visible hoses is a real plus! **- John Ferguson**, *Interlude*, #316 New London, CT. jhferguson22@sbcglobal.net

