

Grand Banks Holding Tank Discharge Tube Replacement.

Recently, I realized I had a problem when, after just a few flushes since my last pump out, the holding tank monitor light indicated a full tank. Thinking I might just have a clogged tank sender, I removed the sensor plate to discover that indeed, I did have a full tank.

In trying to figure out what was wrong, I had the “joy” of discovering that the discharge tube for the holding tank on my 1994 GB 42 Classic had corroded off, making it impossible to pump out more than the top few inches of the tank. Thanks to the input of several other GB owners who have had to deal with the same problem, I was able to fabricate a replacement from non-corrosive (and relatively inexpensive) components.

Since the corrosion of the discharge tube appears to be the result of an inappropriate choice of materials by Grand Banks when the boat was constructed and since other owners of older boats may face this problem in the future, I thought I should share how I made the repairs.

I located the metal plate where the inlet and outlet hoses attach on the top of the holding tank behind the generator (and not much fun to get to). The plate is 5 inches square and appears to be made of bronze. It is attached to the tank with 8 stainless steel bolts. There is a metal rim molded into the inside of the tank that has threaded holes for the bolts. The inlet and discharge tubes for the tank are made of copper and are brazed on to the plate; the inlet tube extending above the tank for attachment of the hose leading to the head and the discharge tube extending both into the tank and above the tank for connection of the discharge hose. Here are photos of the removed plate and tubes. Note how the discharge tube has simply dissolved inside the tank.



I fabricated a new plate and tubes using PVC for the plumbing and a piece of fiberglass board for the plate. The PVC pipe fittings are available from Lowes or Home Depot (with the exception of the hose adaptors). I got the fiberglass board from Jamestown Distributors (www.jamestowndistributors.com) and I obtained two PVC custom hose adaptors from Marine Sanitation & Supply (www.marinesan.com) in Seattle. I sourced a piece of rubber gasket material from

Home Depot from which I cut a sealing gasket for the plate. I also found tub drain gaskets which sealed the pipe/plate connections at Home Depot. Here are the raw materials.



Parts List:

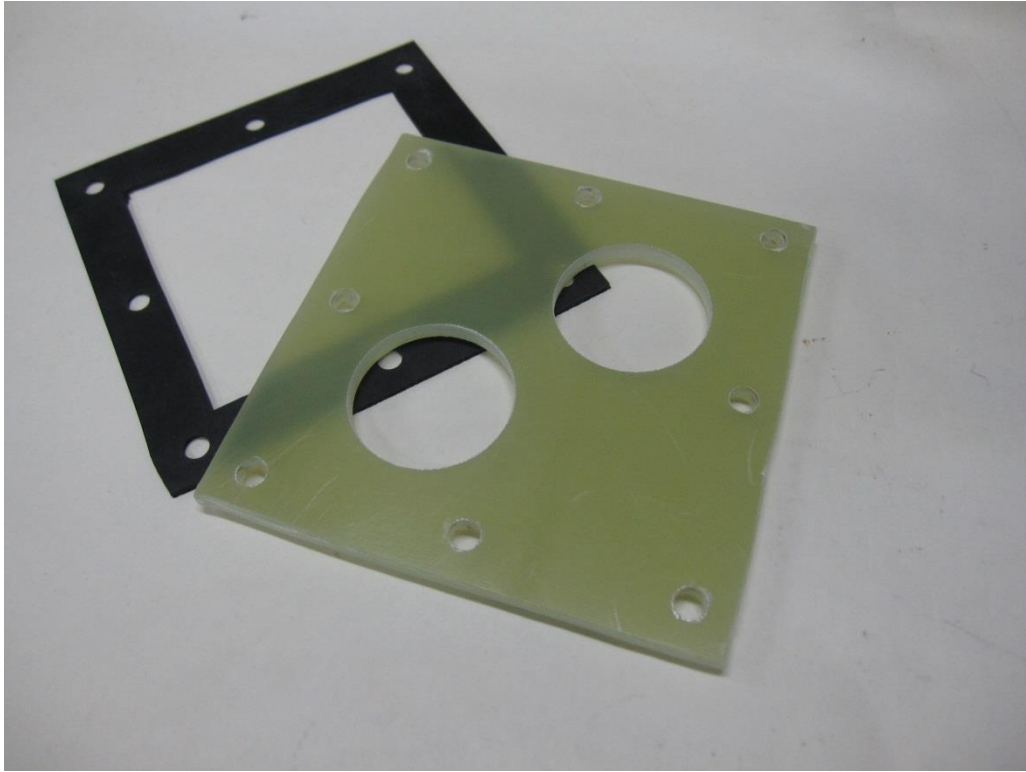
- 2 - 1 1/2" to 1 1/4" male threaded adapters
- 2 - 1 1/4" female male threaded adapters
- 2 - custom hose adapters *
- 1 - length of 1 1/4" Schedule 40 PVC pipe
- 1 - fiberglass board backing plate **
- 1 - 6" x 6" rubber gasket blank (comes in pack of 2, black and red)
- 2 - rubber tub drain gaskets

* Marine Sanitation & Supply, product code 307341513

** Jamestown Distributors, item number COM-G10 Backing Plate Fiberglass 1/4" x 12" x 12"

After cleaning up the original plate and tubes (and cutting off the stub of the discharge tube), I used it as a template for cutting out the replacement plate and locating the bolt holes. The fiberglass board was easily cut to size with a fine-toothed sabre saw (if you have it, a band saw would work great too). After covering the entire surface of the new plate with blue masking tape, I marked out the holes for the tubes and the bolts. I first used a small diameter drill bit to make pilot holes and then drilled the bolt holes with a 9/32" high speed bit and the tube holes with a 1 5/8" hole saw. I

then cut out the rubber plate gasket with a razor knife and drilled the holes for the bolts with the 9/32" bit. Here are the finished pieces.



IMPORTANT NOTE: The actual opening in the tank that the plate covers is only 3 1/2" square. Thus, the pipe fittings must be located very carefully to fit. One of the most difficult parts of the project was carefully measuring where to drill the holes for the pipes so that the pipe fittings could be as close together as possible in order to fit through the square opening in the tank top. This is also why I used 1 1/4" PVC pipe instead of 1 1/2", as I would have preferred. Even using the smaller pipe, I still had to grind a bit at the corners of the tank opening (and the metal inside rim) to make sure the pipe fittings would fit through).

Before assembling the parts, I cut down the male PVC pipe fittings so they would match the custom hose adapters. I also cut off most of one of the female PVC fittings since it would only be used as a nut to secure the inlet pipe fitting.

I cemented the custom hose adapters into the male PVC fittings and then assembled them to the plate using trimmed down tub gaskets to make sure there is a good seal. I then screwed on (and cemented) the female PVC fittings to the male fittings. I postponed cementing the PVC pipe to the discharge fitting until making a careful measurement of the depth of the tank. I then cut off the PVC pipe at about a 45° angle at a length that would put it approximately 1/4" from the bottom of the tank when everything was assembled. I then cemented the cut pipe to the full length female fitting.

Here is the assembled plate and fittings shown with the original it replaces. The last picture shows the attachment of the discharge tube.



All that remained to return the holding tank to functionality was to bolt the plate assembly to the top of the tank (using the new rubber gasket I made) and re-attach to inlet and discharge hoses. A little trimming of the hoses was required since the hose adapters are slightly longer than the original copper pipes.

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