



## Chesapeake Tartan 30 Association

### MANUAL BILGE PUMP REPLACEMENT

Brad Armendt, T-30 #282, *Emprise*, August 1994\*

After installing the alternate (bilge) intake for the engine cooling water pump (see separate article "Super Bilge Pump," on this website), I thought I had a lifetime supply of adequate bilge pumps. But then we had the terrible winter of '93-94. *Emprise* is kept in the water year round; a de-icer (propeller type) under the pier keeps the seawater from freezing solid around the boat. But last winter it got so cold that the water in the bilge (mostly fresh) froze solid, even though some antifreeze had been added. Likewise, the water mixture trapped inside the manual bilge pump must have frozen. In the spring, attempts to use the manual bilge pump just sprayed water into the starboard lazarette locker. The diaphragm on the pump was ruptured.

This manual bilge pump, originally installed by Tartan, was a Guzzler 400. It was located on the starboard side of the cockpit, with a thru-deck mounting kit, so the pump handle stuck out just above the engine throttle/gearshift. While trying to remove the pump to replace the diaphragm, one of the mounting legs broke off. (Well, it was twenty years old, and nothing lasts forever.) After a mighty struggle with frozen screws, I finally got the thing out.

The Guzzler 400 pump has an inlet and outlet for 1.0 inch I.D. hose. Tartan had put a short piece of 1.0 inch I.D. clear PVC water hose on both to shim them up to take 1.25 inch I.D. hose, which was clamped by a single stainless steel hose clamp. The "stainless steel" hose clamp screws were badly rusted. The hose used for both intake and outlet was a thin gray plastic with a helical wire reinforcement. The reinforcing wire had been inadequately protected, because a lot of it had *simply rusted away!* The plastic was still intact, so the hose didn't leak, but it was kinked and partially collapsed in places.

The outlet hose ran to the 1.5 inch thru-hull under the stern of the boat. This bronze thru-hull had no seacock, but was topped by a bronze cross fitting, thus providing three outlets to drain overboard. Two of these were connected to the cockpit drains, using heavy rubber, wire-reinforced hose (i.e., wet exhaust hose). The third was reduced to a 1.0 inch I.D. hose barb (using *plastic* pipe fittings!), and was then shimmed back up to 1.25 inch I.D. to take the plastic hose from the bilge pump. This whole bilge pump arrangement is not what we have come to regard as top-quality Tartan construction practice. Yes, I know the stern drain thru-hull is normally above the waterline, but when the boat gets moving the stern sinks into the quarterwave, putting that flimsy plastic hose with its rusted-out helical wire reinforcement down where it has to hold out the ocean. And I'm an original owner, so there is no previous owner to blame this on; Tartan built it this way.

For a replacement pump, I wanted something a little better than the original (now that I realized what it was). I think the Whale Gusher 10 is the best of this type, but I just couldn't bring myself to spend well over \$200 for it. Instead, I found a Guzzler 500 (model M-5-V) with integral thru-deck mounting at West Marine. This has a nominal capacity of 15 gpm, as compared to the Guzzler 400's 10 gpm. The 500 has fittings for 1.5 inch I.D. hose, the same size as the thru-hull drain.

The Guzzler 500 M-5-V was too large to fit where the Guzzler 400 was originally mounted. Instead, I put it through the aft end of the cockpit, just to starboard of the tiller post. The pump outlet at the top was too close to the deck to allow the heavy outlet hose (see below) to turn 180 degrees, but I found a Whale EB-3488, 90° elbow fitting (intended for their Gusher 10) which fit the Guzzler outlet perfectly. For outlet hose, 1.5 inch I.D. wet exhaust hose (Shields 250-1120) was used. The original plastic pipe fittings on the stern thru-hull assembly were replaced with a proper 1.5 inch bronze hose spigot. Double SCN stainless steel hose clamps were used at each coupling. The hose runs up to the deck level of the boat, which is high enough to prevent reverse siphoning. (Remember, *never* install a bilge pump system without an anti-siphon loop, if the thru-hull will ever go below the waterline.)



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The intake side of the Guzzler 500 should never have to withstand the pressure of the sea, so somewhat less expensive hose may be used. Twelve feet of Shields 143-1120 VAC Heavy Duty hose runs in a gentle curve from the intake of the bilge pump down the center of the hull and into the bilge. Screw-on end fittings and stainless steel hose clamps are used to attach this kind of hose to the pump at one end and a bronze strainer at the intake end. Note that the screw-on end fittings (hose cuffs) come in both right-hand thread and left-hand thread versions. Be sure to get end fittings with the type of thread that fits the hose you buy. Smear some kind of waterproof adhesive, such as silicone sealer, on the end of the hose before screwing on the end fitting. Make sure the stuff doesn't ooze out inside and partially block the hose. A heavy bronze strainer (Perko 721000B) holds the end of the hose down on the bottom of the bilge and keeps large trash out of the line. Molded plastic strainers are somewhat cheaper, but may not be heavy enough to keep the intake where it belongs. You could fasten the strainer down, but remember that you may need to pull it out quickly to clear it of debris.

The resulting system provides a pump with 50% greater capacity than the original, pumping water through hose and fittings of 1.5 inch I.D. from end to end, with only one elbow to constrict the flow. I have no way to measure the actual throughput, but it certainly seems to move a lot more water with about the same amount of effort as before.

