

Installing The Bilge Pump

By Lenny Rudow

Installing an automatic bilge pump may be a simple task, but it's also extremely important — this pump will keep your boat afloat, so make sure it goes in right!

Surprising but true: Most of us depend on rather cheap little pumps to keep our rather expensive boats from slipping beneath the waves. Fortunately, today's automatic bilge pumps are far more powerful and dependable than those of yesteryear. But they still go bad from time to time, and whether yours are in need of replacement or you simply want to add an extra pump or two for a security boost, you need to make absolutely sure this job goes right. Ready to get started? Good — roll up your sleeves, and let's get to work.

Before You Begin

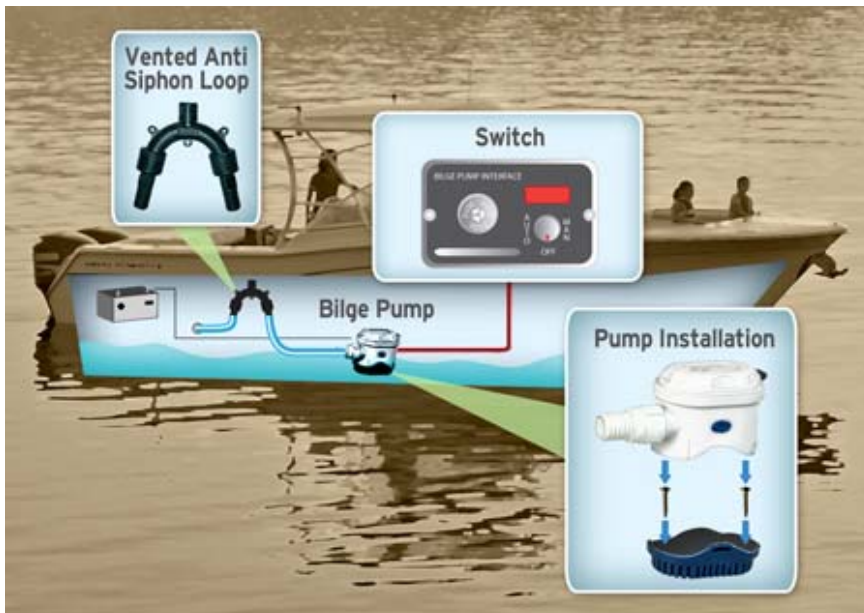
One of the main reasons bilge pumps fail is because foreign objects either jam the pump, or lock the float switch into the "on" or "off" position. Bilge gunk, leaves, oily crud, and sand are guaranteed pump-killers, so before you even begin mounting a new bilge pump, provide it with a clean place to live. It's easiest to do this when the boat is blocked up on dry land, when you can thoroughly wash and rinse the bilge and allow the mounting area to dry. Choose a spot as close as possible to the bottom of the V in your hull and as far aft as practical, which has a secure mounting location like a shelf or a block laminated into the hull, for just this purpose.

Step I Mount the strainer basket

We're going to assume you're starting from scratch, with a new strainer and pump. (When replacing a pump, you may be able to re-use a previously-mounted strainer basket if it's in good shape and you match the brand). Many modern pumps have integrated automatic switches; in these cases you won't have to mount a separate float switch, but some boaters prefer the easy access a separate switch provides.

Start by removing the strainer basket, which does double-duty as the pump's mount, from the bottom of the pump. Place it onto the spot you'll be mounting the pump, and use a pen to mark the location of the screw holes. Then remove the basket, and drill shallow pilot holes where you made the marks. Wipe away any gel coat or wood chips, and give each hole a copious serving of 3M 5200 Adhesive/sealant to be sure water doesn't intrude into the screw holes and cause damage over time. Place the strainer basket in position over the holes. Screw it down using the stainless-steel screws that came with the pump. If you're also mounting a separate flapper-style float switch be sure to orient it athwart ship, so surging water doesn't slam it into the up position when you accelerate — a common way they become stuck.

Now go home, and take the rest of the day off. The 5200 will take 24 hours to stiffen up (and several days more to completely cure) and you don't want to knock the strainer askew or stress it before the sticky goop dries, or you might end up with imperfect seals.



Step II Run the wires

With the pump clipped into the basket (to ensure you make the correct length wires) run a wire from the end of the pump's ground wire to the battery. Use a crimped butt-connector with adhesive-lined heat-shrink tubing to connect these wires; remember, this connection will have to live in the moist and dank environment of your bilge, so make sure it's a good one. Run the wire along a bulkhead or a pre-existing wiring harness, and secure it every couple of feet with cushioned clamps. Note: always use the manufacturer's recommended minimum (or larger) gauge tinned-copper wire.

Next, run a pair of wires (one for the "on," one for the "auto" setting) to a three-way switch, located at the helm. It's best to use a switch made specifically for this purpose, which has a power-on indicator light so you know when the pump is activated. Connect these to the pump's power wires (or the separate float switch, if applicable; refer to the manufacturer's wiring diagram included with the pump to identify which power wire is which) with more crimped butt-connectors protected by adhesive-lined heat-shrink tubing, and secure them every couple of feet. Then connect the wires to the switch's "on" and "automatic" positions, using either ring terminals or by soldering, as is appropriate for the type of switch. Note that this switch should be wired to a fused or breaker power connection at the helm, with the appropriate amperage as recommended by the manufacturer, unless it incorporates a fuse of its own. And remember that if you want the bilge pump to work when the battery switch is turned off you need to make a live connection, not one that goes dead when the switch is turned off. When wiring directly to the battery, such as in the case of very small tiller-steered boats that may not have fuse or breaker panels, install the fuse directly in-line as close to the battery as possible.

Step III Installing the thru-hull discharge

You'll need to drill a hole in the hullsides (ouch!) in order to give your pump an outlet. This is unnerving, but trust us, it's 100-percent necessary. Choose a thru-hull that matches the diameter of the pump's port size. Obviously, this will also determine the diameter of the discharge hose you use. Locate a spot on the hull that's far enough above the waterline that it won't become submerged when the boat is fully loaded or heeling over. It should also be as close as possible to the pump, because long runs and bends in the discharge line will reduce the pump's capacity. The natural loss of pumping ability due to "head" (height above pump level and friction in the discharge hose) can cut a pump's capacity by as much as a third of what's advertised. On top of that, long runs can result in lots of backflow when the pump shuts off, and in extreme cases, enough backflow to re-start the pump — so keep the plumbing as short as possible.

The boat's gelcoat is less likely to splinter if you drill from the outside-in as opposed to the inside-out, but if nearby bulkheads, wires, or plumbing makes it imperative for you to get the exact location perfect, you may need to first drill a tiny pilot hole from the inside, so you can identify the specific spot while standing outside the boat. Remember, you'll minimize gelcoat splintering if you run the drill at full speed at all times (slower speeds only encourage the bit to grab and break off chunks of gel coat). Okay, it's time to grit your teeth and drill, baby, drill!

With your hole complete, glob some 3M 5200 around the insides of the fitting and the face of the nut (not the threads), insert the fitting into place, and spin the nut on. Whew! Time to take another break; the most stressful part of this job is now behind us.

Step IV Installing the discharge hose

When you cut the hose to length, allow enough extra to shape a loop in it, just above the discharge. Make it a fairly large loop, which rises well above the thru-hull fitting, and secure it to the hullside with cushioned clamps. This is called an "anti-siphon loop," and although this bend will increase the head your pump must overcome, it also prevents water from back-flowing through the discharge hose — an imperative feature, if your discharge ever dips below the waterline. With the hose in place, secure it to the pump's discharge and the thru-hull's barb, using stainless-steel hose clamps. Then use cushioned clamps to secure the hose along its run.

Congratulations. You've just installed a new automatic bilge pump. Before launching your boat, give it a test by putting in the boat's plug(s) and filling the bilge with a hose until the automatic switch kicks in. Then, test it with the three-way switch. Finally, it's time to celebrate a job well done. 🎉

Tech Tip:

The diameter of your hose may be predetermined, but you'll still have to choose between corrugated and smooth. Go with the smooth hose. The corrugated stuff might be the least expensive in the store, but those ridges also cause turbulence and friction, which add to the head the pump has to overcome, thereby reducing its capacity.