A NEW HEAD

Once the preserve of high-end yachts, electric marine toilets have, er, trickled down to the masses. Is there one in your future?

After: the Marine Elegance head lends a certain *je ne sais quoi* to the boat

The 30-year-old Raritan PH II head on our Pearson 39-2 project boat still worked, but reluctantly. The boat had sat on the hard for two years and if there's anything marine toilets need, it's regular exercise to stop rubber or leather parts from hardening and cracking. I could have stripped the venerable Raritan down and rebuilt it, since a parts kit is not expensive, but aside from the fact that it looked its age, it was obvious that more than just the toilet needed attention; the waste discharge hoses were also way past their best, as evidenced by the slight cloacal reek that manifested itself whenever I opened the cockpit locker.

The blackwater setup was fairly typical—the toilet discharge hose led via a siphon break to a locking Y-valve that directed waste either overboard or into a holding tank, and the contents of said tank could be pumped overboard at sea by an electric macerator pump. Both the intake and discharge hoses were likely clogged with calcium deposits or worse, looked as old as the boat, and obviously needed to be replaced. The macerator pump made a hell of a racket, but did not seem to actually pump anything.

This in turn led to some head-scratching over the various options for upgrading or replacing the blackwater system. I planned to spend extended periods of time on the boat, so I'd have to live with the consequences of the decision.

MORE OF THE SAME?

An upgrade would involve purchasing new hoses, Y-valves, macerator and anti-syphon fittings, and either repairing the PH II or replacing it with a new unit.

Advantages: familiarity—I've replaced such systems before; reliability—a new soup-to-nuts system would be odor-free and should last me for the rest of time I own the boat; inexpensive compared to other alternatives.

Disadvantages: annoying to use, especially for

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guests; I've always had a love-hate relationship with manual toilets—no one ever seems to pump them enough to clear the hoses, and there is often a smelly backflow through the traitorous joker valve.

THE JOYS OF COMPOST?

Another option would be to install a composting head, which would allow me to do away with all the blackwater plumbing and perhaps replace the holding tank with an extra diesel tank. Many cruisers sing the praises of these units, and for a while I was seriously tempted.

Advantages: simplicity—such toilets require no plumbing, therefore no holes in the hull, no macerator and no holding tank (hallelujah).

Disadvantages: grossed-out non-sailing guests; issues with bugs if the proper composting medium isn't used; pee tanks need constant emptying; the "compost" must eventually be disposed of, either legally or illegally (though I'm sure no one reading this would ever do such a thing); cost.

These latter points were enough to turn me in the other direction; as awful as holding tanks are, plenty of harbors have pump-out vessels that will come to your boat and empty them whenever you like, and in most marinas you can pump out at the fuel dock. Failing that, if you're a coastal sailor, a brisk hour's sail seaward puts you outside the three-mile limit so you can pump out to your heart's content. Carrying a bucket of poop ashore, composted or not, isn't my idea of a fun time.

POWER TO THE PEOPLE

So it was that I decided to replace, rather than eliminate, my existing blackwater system. In the process of measuring the hoses for their replacements, I began to recall all the boats I'd sailed recently that were equipped with electric heads. After 35 years of hand-pumping, perhaps it was time to push a button.

Not so long ago, electric marine toilets were a bit of a joke; power-greedy, noisy and unreliable. I recall using one that sounded like a blender had mated with a concrete mixer. It put me off the idea for years. But then again, those I'd experienced recently had been relatively noiseless and oh-so-efficient. Their owners reported few, if any, reliability issues—no more than with manual heads. The more I thought about it, the more I liked the idea, so I started researching.

The pros and cons were both fairly obvious.

Advantages: compact—macerator built into toilet; typically use less flushing water; push-button convenience; landlubber-friendly; often bigger bowls/seats than manual toilets.

Disadvantages: power draw; noise; complexity (some have two motors); higher cost.

Part of the nasty existing plumbing, most of which was replaced as part of the project

Before: the venerable manual head was put out to pasture

The first thing my research revealed was that there is a surprising number of choices available for sailors looking to let their thumbs do the pumping.

Most manufacturers have several models in their lineups, aimed at either the RV or marine market. These are of varying sophistication, ranging from manual models with electric motors bolted on, to purpose-designed units with single or twin electric pumps—on some models one pump both draws water in and expels waste, while others have a dedicated intake pump as well as a discharge pump. Between the various manufacturers a large number of options are offered, including voltages, styles, colors, bowl and seat sizes and more or less clever electronic controls. Many models offer the option of freshwater or saltwater flushing.

LOOK BEFORE YOU BUY

Boat shows are the ideal venue to check out this bewildering assortment of thrones, which vary in size from household to midget. You'll want to make sure that it is feasible to install such a head and its associated plumbing and wiring in your boat; intake and discharge hoses may need to be re-routed, it may be difficult to find a suitable place for one or two remote pumps, and so on. The size and shape of the platform on which the head will be mounted may influence your choice. Bear in mind that you'll need sufficient battery capacity to cope with the demands of a large crew—the momentary current draw of one or two powerful electric motors can be substantial, 20-30 amps or more.

All else being equal, here are some factors to bear in mind.

Efficiency: the integral macerator pumps in these toilets deal with waste quickly and efficiently. Units with dedicated intake pumps that deliver pressurized water as the macerator pump handles the waste tend to flush more efficiently. Some makers claim as little as a pint of water per flush, though this seems optimistic. Controls vary from a simple on-off push button to electronic switches providing timed fills and flushes; given the choice, a simple fill-flush-empty switch would seem the most useful. Many toilets come with a choice between pressurized freshwater or saltwater; the former is less likely to give rise to odors in the hoses deriving from dead sea critters, but absent a dockside supply, is best suited to boats with watermakers.

Reliability: in an attempt to find a reason not to go electric, I polled fellow sailors online. It soon became apparent that many commenters who argued against electric toilets had little or no actual experience of them, and were merely parroting the prejudices of others. Those who actually owned such heads were generally enthusiastic about them, and the consensus was that there was little difference in reliability between manual and electric heads. Nevertheless, if your boat has only one head, you will probably want to carry spare pumps if you're going off the grid, or be prepared to use a bucket. Our project boat has a second (manual) head forward, so I'm not too concerned about the possibility of the electric head failing.

Logistics: installation of these toilets can be simple or nightmarish, just like any boat project, but is well within the powers of any reasonably competent DIY-er. To avoid elec-

Dry-fit the toilet first to get an idea of hose and electrical cable runs

The guts of the toilet were simple enough, with the macerator pump under the bowl

trical issues, follow religiously theinstructions pertaining to wire and circuit breaker sizing and make sure that wire terminations and connections are well crimped and properly secured. As for plumbing, a filter upstream of the intake pump will prevent debris from clogging or possibly damaging an expensive pump.

If you seize the opportunity to get rid of all those stinky old discharge hoses, as I did, make sure that the hose fittings on your chosen toilet match your intake and discharge seacocks—for instance, some toilets come with 1/2in intake and 1in discharge hoses, while most discharge seacock hose tails are sized for 1 1/2in hose, 3/4in for intake. Note that the heavy-walled, semi-flexible waste hoses from Shields, Trident and others, while high-quality, can be real bears to install and remove, usually requiring the assistance of a heat gun; I've found the easiest hose by far to deal with is Raritan's Saniflex, which can be bent relatively easily and slips onto hose tails with little persuasion.

THE BOTTOM LINE

Winter is the ideal time to embark on such a project. After looking at all the models on offer I went for the Raritan Marine Elegance, which combined a number of desirable features: a near-household-sized bowl with soft-close lid, saltwater intake (freshwater is an option), a powerful macerator concealed in the toilet base, a water trap to prevent holding tank odor from sneaking back through the discharge hose, and quality construction.

Installation was surprisingly straightforward. Since I had removed and discarded the macerator pump that had emptied the holding tank (to be replaced with a manual pump), a heavy-duty wire and circuit breaker already existed right where it needed to be. I cut a hole for the switch panel and mounted its control box on the aft side of the heads bulkhead. The cables from the two pumps were led to that box, which was then hooked up to the 20 amp circuit breaker.

The toilet came with the mounting lugs premounted on a sticky template; all I had to do was position it, once I'd confirmed the toilet location, and drill the holes to bolt the lugs down. Then, using the guide supplied in the instructions, I drilled the new holes for the inlet and discharge hoses. This took some concentration, as plumbing and wiring on the other side of the bulkhead had to be moved out of the way.

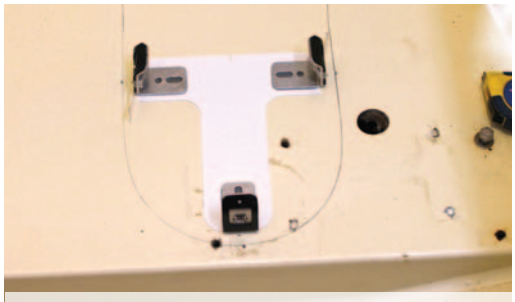
I mounted the intake pump on the other side of the bulkhead, with an inline filter and siphon break in the hose, and ran the pump's wires to the control panel for the momentary switch as per Raritan's excellent instructions, which I recommend following to the letter.

After installing the seat and connecting the intake and discharge hoses to the toilet's macerator pump, I slid the bowl into position and bolted it to the mounting lugs. And that was about all there was to it.

PUSH-BUTTON DELIGHT

With the first press of the button, the toilet filled and flushed. The noise was nowhere near as bad as I feared it would be, certainly less intrusive than the sound of midnight pumping; about a 5-7-second press of the button flushes and clears the bowl, which then refills with clean water, whereas the manual toilet needed about 20 pumps to ensure the deposit had cleared the uphill rise of the discharge hose. There has been no noticeable impact on the batteries, nor any head odor at all in the six months the Raritan has been in commission. Flushed with success? Most certainly.

Partway through replacing the hoses and valves; the new intake pump is on the right



After tracing the outline of the bowl, I stuck down the template with its mounting brackets

Brackets are installed and new holes have been cut for the hoses

Resources

Groco groco.net
Jabsco xylemflowcontrol.com
Raritan raritaneng.com
Saniflo saniflostore.com
Sealand/Dometic dometic.com
Thetford thetford.com
Vetus vetus.com