

Keeping Your Cool

The Need to Descale

BY BOB ARRINGTON



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Tyler and Amy were ready for their summer vacation aboard the boat. Slip reservations were confirmed, the refrigerator was stocked, and the weather forecast double checked. Tyler couldn't believe what he was hearing when Amy came up on deck and said she didn't think the air conditioner was working. Tyler checked the thru-hull and overflow, and sure enough, it was pumping water. He checked the filter on the return air vent; it was clean. The system was cooling, just not as much as usual, so they decided to pull out any way.

Once underway, Tyler noticed one of his engines was running hotter than usual. "Great," he thought out loud. "First the air conditioning and now engine trouble." Tyler knew these systems were not connected, so he couldn't figure out why he would have trouble with each at the same time.

Tyler was correct, the air conditioning and engine cooling systems are not connected. But they do have something in common — they both draw in and circulate sea water through a heat exchange process. During the summer, the active use of these systems drawing warm sea water into thru-hulls, sea-strainers and hoses, creates the perfect environment for barnacle growth and calcification inside cooling components. As a result, the restriction of water flow reduces the cooling capacity of any system. So, Tyler's air conditioning and engine over-heating problems were not related; however, they both had the same cause and effect.

Descaling hoses and heat exchangers should be a regular maintenance item for boats used in saltwater. Boaters in colder northern climates might get by with only doing this once per season. Boaters in

southern climates may have to perform this every few months.

The process involves circulating a chemical or solution capable of breaking down the hard substances within the system. The products available are typically a form of acid, which are available as both generics and as pre-formulated solutions. The generic products can be white vinegar, oxalic acid or muriatic acid. The most commonly used pre-formulated solutions marketed specifically for this application are: Barnacle Buster, Sew Clean, Rydlyme, Lime-A-Way, and Bright Bay's Hammerhead Descaler, to name a few.

As the descaler needs to circulate for more time in the cooling system than a single pass would allow, recirculating systems are built with pails, pumps and hoses to recirculate the solution through the hoses and heat exchangers for one

hour or more. The acidic nature of the solution breaks down marine growth, restoring the full flow of coolant water through heat exchangers.

Unfortunately, the solution's acidic properties can have negative effects on metals it encounters in the process. If the item you're descaling uses sacrificial anodes, remove the anodes and replace them with a blank plug before using the descaling solution. Follow the manufacturer's guidelines on recommended concentrations of the product you use and be sure to flush fully with fresh water after the process. Also, take care to contain all of the solution within the recirculating system to prevent acid spills inside the boat. Lastly, after completing the descaling process, dispose of the solution properly; do not dispose of it overboard.

Extremely calcified components may require a mechanical step to clear the obstructions. Rods can be used to clean heat exchanger coils if you're careful not to break any of the coils or solder joints within the exchanger. Hoses can be removed, and rods can be pressed through the hose performing the same function. Often, it's more effective to just replace the hose.



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Boaters in salt water are largely left in a reactionary or response mode when it comes to addressing growth and calcification in cooling hoses, as there is little you can do to prevent it. Some boaters put chlorine or bromine tablets in their sea strainer baskets, which may help some, but the tablets dissolve and flush out quickly, and too high of a concentration of chlorine and long-term exposure is caustic to metals.

One manufacturer, ElectroSea, makes a system that utilizes an electro-chlorinator, which is plumbed into the raw-water system. The unit generates a small amount of chlorine, which prevents growth but not enough to damage the system. The system is effective, but can require an extensive and complicated installation if you have multiple pumps, inlets and strainers.

The same conditions that create the problem in a boat's internal cooling systems, exist in outboard engines as well. However, most outboard engines are built of aluminum components, with the seawater circulating throughout the engine, including the block. The acids in most descaling products are highly

corrosive to aluminum. When descaling outboard engines, look for products that are safe to use with aluminum.

Restriction of water flow reduces the cooling capacity of any system

We like boating when it's hot, so don't let your summer vacation be ruined with an air conditioning system that's fouled, or an engine that's overheating. Keep your cool by keeping cooling lines clear. *ml*



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