(1,2) This hose clamp has a poor grade adjusting screw. With the adjustment mechanism positioned on the underside of the hose, moisture tends to collect in the worst possible place.

story STEVE ZIMMERMAN

Top 10 DIY Tips

KEEP THESE PRACTICAL NUGGETS IN YOUR MENTAL TOOLBOX FOR WHEN THE DO-IT-YOURSELF SPIRIT TAKES HOLD.

If you work on boats long enough, you learn some painful lessons. It has been said that the first time a task goes wrong, we call it experience; the second time, we call it a mistake.

In no particular order, the following list shares some of our experiences and mistakes, in the hope that they will help you avoid your own.

TIP NO. 1

Never partially assemble a component with loose parts, with the intent to return later to finalize the installation.

Imagine that you are installing new hoses on a few seacocks. You carefully measure and cut several pieces of hose to length, and identify the proper hose clamps sizes. You want it all to look tidy and well planned, and toward that end, you decide to "dry fit" the hoses to make sure it all looks good. You slip the hose onto the seacock barb and leave the hose clamp loosely around the hose, with the intent to finalize the installation once you are satisfied with the hose runs and lengths.

Perhaps a phone call or a visitor interrupts your work, or maybe you reach the end of the day. A seacock with no hose attached stands a good chance of drawing attention, but one with the hose loosely in place will not.

Eventually, it will get your attention—when water pours into the boat.

TIP NO. 2

Speaking of hose clamps, make sure you use high-quality ones with grade 316 components. Lower-grade stainless will rust, a problem especially prevalent with the adjusting screw.

Go one step further and use hose clamps with indented adjusting ridges instead of the ones with the slots cut all the way through. The open slots have a way of damaging hoses, while the indented style will not. Position the clamp with the adjusting screw on top; that way, any leaks or condensation will not accumulate on the only moving parts.

(3) The stainless-steel washer placed between these two ring terminals will generate excess heat due to its poor conductivity, potentially creating a fire hazard.

TIP NO. 3

Never put a stainless washer between a ring terminal and a bus bar or battery terminal.

Stainless steel, for all its virtues, is a relatively poor conductor of electricity. By placing the washer between the terminal and the point of contact, you are inserting resistance. Increased resistance creates heat. The added resistance won't trip any breakers, but it might set your boat on fire.

You can use stainless washers, but only on the side of the terminal away from the contact surface (see photo).

TIP NO. 4

When executing repairs with a catalyzed resin, keep the container of unused resin overnight, but in safe place. You want to keep the excess resin so you can verify that it cured properly—but you also want to be careful about where you leave it, because the curing resin in the bucket can generate a surprising amount of heat.

(4) A common boatyard sight: excess resin in a cup left outside overnight. A container with catalyzed resin can generate enough heat to start a fire and for that reason we always leave them outside of the shops overnight. In the morning, before tossing it away, check to make sure the resin cured properly.

In one of the more bizarre events during my 40 years of running a boatyard, I left work one day and, as I drove past one of the sheds, felt the need to turn around and have a look inside. Walking into the shed, I noticed a plastic container of leftover resin on a scaffold. The chemical reaction generated enough heat to start smoking, and just above the bucket was a rag hanging down. In another 10 minutes or so, the resin would have set the rag on fire.

There were 12 boats in that shed. I grabbed the container and ran outside with it just in time. If you walk around our boatyards after hours, you will often see a container of leftover resin from the day sitting outside the building, in what has become our standard practice.

TIP NO. 5

"Never put a saddle on a dead horse." This saying helps us remember how to install cable clamps on wire rope.

While swages are neater, stronger and more common than clamps on wire rope, many older boats rely on the latter for the steering cable and other situations. These clamps consist of a U-bolt and a "saddle." The cable has a working end (the long run coming into the clamp) and a dead end (the short tail end). The U-bolt should rest against the dead end, while the saddle should contact the working end.

Proper installation maximizes the holding power of the clamp.

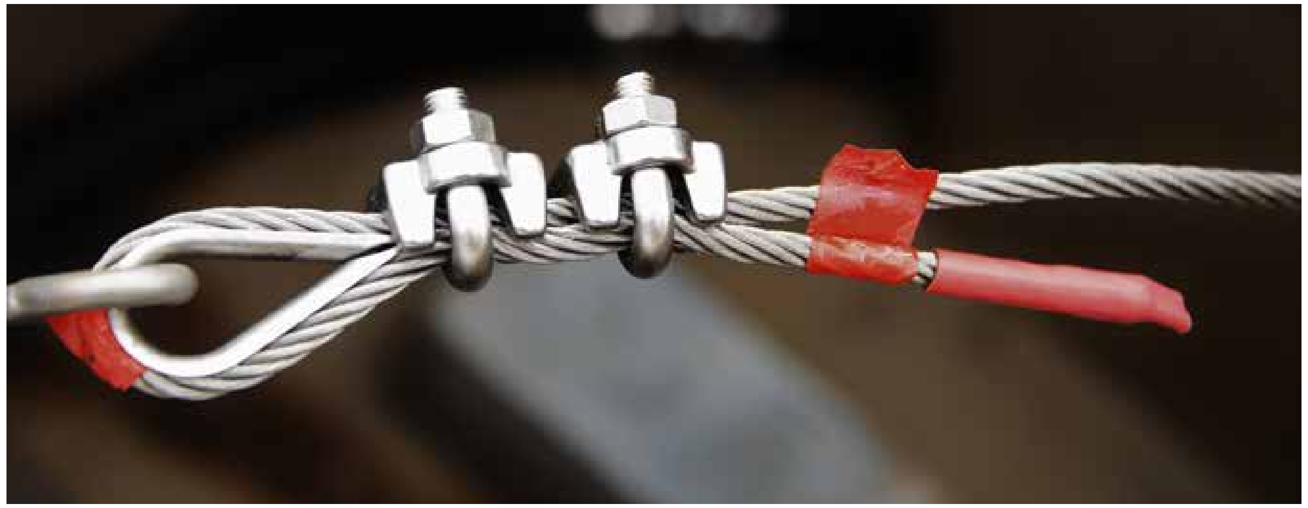
TIP NO. 6

Never add fuel to the engine's secondary fuel filter.

When changing the element in the primary fuel filter (the first filter in line from the fuel tank), it is acceptable—and necessary—to add fuel after installing the new filter. If you are adding fuel from a container, some dirt might find its way into the system, but the primary or secondary filter will capture any contamination.

The secondary filter (mounted on the engine) should never have fuel added to it from a container because particulates might be downstream of the filter, giving them a path into the injection pump and injectors. Particulates in those components can wreak havoc and cause damage.

Every secondary pump has a means of priming after the filter has been installed, often a small lever or rubber button combined with a bleed screw.



(5) The "dead end" of the cable has been marked with red tape. The wire clamps consist of a U-bolt and a saddle. These clamps have been installed properly, with the U-bolts on the dead end of the cable and the saddles on the working or standing side of the cable.

TIP NO. 7

Never put a pipe wrench or vise grips on your prop shaft.

When struggling to remove a prop or deal with a difficult-to-rotate shaft, you might be tempted to hold the shaft with one of these tools. Scars and imperfections in the underwater portion of a shaft can lead to microfracturing (the formation of minute cracks), eventually leading to a shaft failure. Additionally, the scars can set up tiny variations in voltage potential, leading to pitting corrosion and weakening of the shaft.

TIP NO. 8

Always repair damaged structural fiberglass laminates with vinylester or epoxy resin.

Polyester resin works best when applied to recently applied polyester resin. For cured structures, polyester does not adhere as reliably. Vinylester and epoxy, however, will adhere reliably to cured polyester regardless of the age of the laminate. In addition, they have stronger mechanical properties—an important advantage for structural repairs.

(7) A pipe wrench has badly scarred this shaft. In the area of the shaft seal, such scars can cause leaks and excessive wear on the seal. Shaft scars on the underwater portion of the shaft can lead to corrosion and micro-fractures, resulting in a broken shaft.

(8) Polyester resin does not bond reliably to cured polyester. This part popped loose from the hull due to a failed bond, as a result of a poor resin choice and poor preparation.

(10) The black wire tie on the left has been nipped off, leaving just enough to gash the arm of someone reaching past it.

TIP NO. 9

Never use a screwdriver to pry an impeller out of the pump housing.

An impeller-driven raw-water pump relies on close tolerances to create the vacuum pressure needed to draw in seawater. The screwdriver will distort the relatively soft bronze pump housing, reducing the pump's efficiency.

TIP NO. 10

Always cut wire ties with a pair of flush-cutting diagonal wire cutters.

After snugging up the wire tie, you will want to cut off the excess. The sharp ends of these cut wire ties have a way of slicing into arms and hands that reach close by. Cutting the tie off flush will protect you and any other workers from painful cuts. ❆

Steve Zimmerman *is the president of Zimmerman Marine, which operates five boatyards in Maryland, Virginia, North Carolina and South Carolina. Zimmerman has been building and repairing boats for more than four decades.*