

Documentation and Instructions, Please

by Steve D'Antonio

Has a customer ever asked you: "Isn't it just common sense that I should expect instructions/diagrams/documentation with this [extremely complex] installation? How would I know how to use it, or what to do when it doesn't work?"

The design, installation, and maintenance of complex marine propulsion, plumbing, and electrical systems are challenging yet rewarding tasks—exactly the sort of work that keeps many of the best builders and technicians engaged in the boating industry. I've done this work my entire career, so I know that these essential shipboard tasks have one thing in common: none could be successfully and gratifyingly completed without accurate documentation, information, and instructions. But I frequently inspect new and used vessels whose myriad systems lack these basic necessities.

Considering that customers have likely spent what they consider a great deal of money on a boat purchase or repair, I think it's reasonable for them to expect more.

At the very least, new vessels should be provided with schematics or diagrams for all electrical and plumbing systems. Then, anytime you do systems work, you should prepare a diagram that updates the original documentation, clearly indicating what change you have made. But boatyard owners and other installers too often scoff at the idea.

"Do you know how much time that would take?," they argue. "No one wants to pay for that."

First, let the customer decide what he or she wants to pay for. If you offer the documentation *as the default* so it's just part of the job, I suspect few will want to back it out for the perceived savings. Second, think about how much it will cost the owner in troubleshooting time to have someone else track down a problem two or five years later and a thousand miles from

the yard when none of the wires, switches, or fuses is labeled.

Other yards and builders tell me, "We can't justify the CAD program and operator training for creating these schematics." This is either a misunderstanding of the expectation, or willful irresponsibility. Most customers don't expect computer-generated schematics with complex electrical engineering argot and symbols—just a neatly drawn diagram that indicates placement of onboard components and shows electric and plumbing lines connecting them to other systems. A pdf scan of the diagram allows the owner to keep an electronic as well as a printed copy, and the builder or service yard can retain an electronic record for future reference.

Along similar lines, consider how utterly baffling even a single unlabeled valve can be: is it the raw-water intake for the engine, or an overboard discharge for the sanitation system? Remember, boat owners aren't professional mariners—they don't intuitively know where a hose is likely to lead, or how to trace a mystery wire back to a panel. Yet I routinely find dozens of unlabeled valves and switches aboard high-quality new boats. In response to a question about the fuel system manifold valves on his new boat, an owner recently told me, "It all works, so don't touch them. I'm not sure what they do anyway." And how could he? The valves were unlabeled. This is unacceptable.

It's the installer's responsibility to explain how each component (even one with a manufacturer's manual) works in conjunction with the larger onboard system and to write it all down for future reference and subsequent owners. It should be a billable part of the job, along with making sure all connections are properly crimped and plumbing installations

are leak-free. Any owner who has had to troubleshoot a failed, unlabeled system without a wiring or plumbing diagram will know it's worth paying for.

Below is a list of reasonable services you should provide to your customers as part of any systems work you perform.

- Clearly and permanently label every fuse, circuit breaker, and switch.
- Label or number wires at both ends. If numbered, they should be keyed to an accompanying diagram.
- Include a wiring or layout diagram of all but the simplest electrical/electronic installations or refits.
- Provide a list or diagram of fuses aboard and a list of replacement fuses for the owner to purchase.
- Walk the customer through the location of key fuses/circuit breakers and explain their operation.
- Carefully store, and give to owners upon completion of a project, the installation and owner's manuals including the warranty or product registration cards for new components.
- Make sure that equipment model and serial numbers are recorded in the manuals.
- Clearly and permanently label every valve, including seacocks and overboard discharges.
- Unless specifically instructed otherwise by an owner, initialize the installation of gear that requires setup, such as battery chargers and electrical system monitors, autopilots, and alternator regulators. **PBB**

About the Author: For many years a full-service yard manager, Steve now works with boat builders and owners and others in the industry as "Steve D'Antonio Marine Consulting." He is a contributing editor of *Professional BoatBuilder*, and awaits the publication (by McGraw-Hill/International Marine) of his book on marine systems.