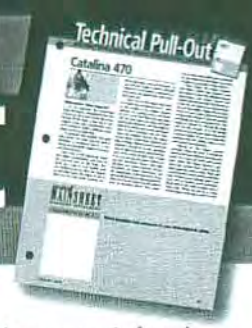
Technical Pull-Out

Q&A FOR YOUR CATALINA THAT'S BEEN FACTORY APPROVED FOR ACCURACY



Catalina 470

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Beckoning, #76

Jim is off learning how to fly (again) and he asked me to step in and provide a Tech article.

Having just returned from the Bahamas where life on board S/V *Southern Cross* depended on a lot of power some updates and add-ons were defined as necessary. *–Carl Smeigh*

Fisher-Panda Generator:

Unless you are one of the fortunate group that has a new FP generator with the fancy new digital readout, you have little more than an "idiot" light to tell you if the genset is providing you with adequate quality power. This became an issue twice on board *Southern Cross*. As more load was added to the genset a point was reached where the green AC light went out. What did that mean? We have a load list and I was sure the genset was not overloaded. I was pulling an estimated 42 amps off of the unit. At the time all I had was a basic multi-meter that did not have a frequency or current measuring ability. I was able to measure the AC voltage which was extremely low at 105 volts AC. As I unloaded the genset, the voltage rose. Knowing from past experience and the many posts on the C470 forum that the problem was most likely a fuel problem so that is where I looked first. I changed the RACOR fuel filter and the fuel filter on the FP. This did not correct the problem. After much research and working with the technical support guys at FP we realized that the external blue fuel pump in the bilge was not working due to corroded connectors on the bottom of the pump. Once fixed (I replaced the pump with a new one from FP) everything was back to working order. Ever since that event I found myself always checking the voltage and now current and frequency with a new hand held clamp-on ammeter and multimeter. Although this works well it is an accident waiting to happen. Every time I got out the equipment to check the operation Judie would express concern about me getting shocked or worse. I considered it safe but in rough weather underway or at anchor it was a concern. That issue is now history on *Southern Cross* and can be on any of the 470s for about $280 and a half hour of work.

Blue Seas Systems makes a mounted 6247 AC MULTIMETER that was easy to install. I had spent countless hours trying to figure out where to put the unit. It needs a bit of room in the back

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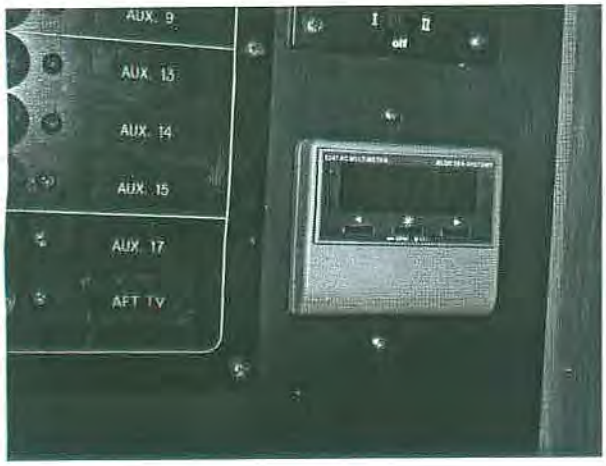

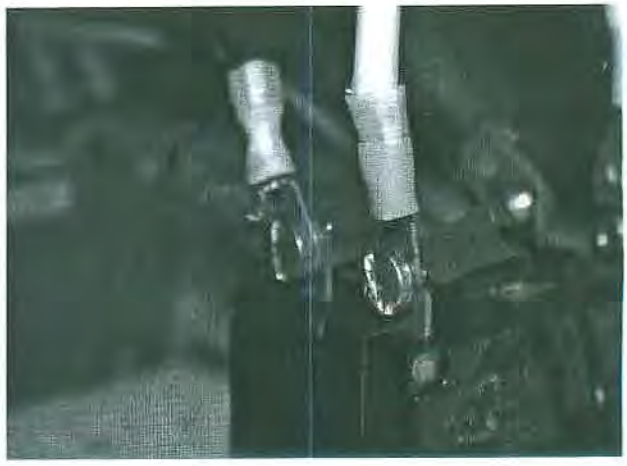

and a small piece of real estate on the panel. Unfortunately I did not have any empty space on either the AC or DC panels and was considering shoehorning it in someplace. A friend stopped by and I expressed my dilemma to him. He looked at the panels and asked how often I hooked up a shore phone, which of course is never. The dilemma was solved. Not only did the existing hole in the panel work for the Blue Seas unit, the wiring is a snap. The installation is straight forward and well explained in the instructions. A piece of number 16 two strand wire about 8 feet long and a fuse holder with a 0.5 amp fuse were the only parts I had to supply. I installed the unit on the genset side of the output breaker so I could monitor the unit before powering up anything. As you can see from the pictures the installation looks clean and the wiring is not complicated. I used the screws from the cover plate of the phone jack to fill the holes in the front of the panel. I now can monitor the frequency, voltage as well as the current being drawn and the kilowatts being supplied. Judie understands the limits so there is little chance of overloading the generator. You can set alarms on the unit to warn when limits are being reached.

Electrical Panel wire corrections:

Many things rob electrical power on board the boat. Dirty connections are always an issue and need to be continually cleaned as needed. I use a thermal IR handheld device to check connections for heating which is the major sign of a problem. Battery terminals are notorious for needing attention. If a terminal is significantly warmer that the others, it needs to be cleaned since you are getting a power loss at that joint.

One of the less obvious issues is how wiring is connected together at terminals. A stack of cable lugs on a terminal has rules to make sure that the connection is the best possible. I use the IR device to check all of the terminals on a regular basis. This became an issue when we smelled a burning wire odor and upon inspection I found a charred cable going to one of the 30 amp supply breakers. Closer inspection noted that the stack on the terminal was not idea. The best way to describe the only correct order of the cables is to think of a pyramid with the largest lugs closest to the base or terminal and the smaller ones stacked so the smallest is on the top. Anyone that has had kids remembers the stacked ring toy with the big ones at the base knows what I am talking about here. The reason this is important is that larger cable likely carries more current and if you have that connector above a smaller one, you are asking all of that current to pass through the smaller lug to get to the terminal. Catalina gets the panels from Seaward with the indicator lights wired to the breaker lugs. The workers at the factory and aftermarket technicians add the load wiring to the panel. It is not uncommon for them to add the new wire lug to a terminal without regard for the stack up. On *Southern Cross* almost every AC and DC terminal had what is known as the hour glass stack which is not desired. You can clearly see it when you look at a terminal and see a larger lug on top of the smaller lug and then the terminal from the breaker. It is the hour glass shape where you are asking all the current to go through the smaller lug to get to the terminal. The fix is easy: it just takes some time with power off the panel and care so that you do not lose the screws. Take the connection apart and get the lugs in the correct order as previously described. Since I fixed the problem, I have not had a hot terminal connection or a burned wire. You can see from the picture the wire on the back of a breaker terminal.

Wire Lug connections:

This one is fairly easy to check once you get past the idea that you might pull a connector apart. If you do pull one apart, your job is done finding the problem, get a new connector and crimp it on fixing the problem. Without using excessive force periodically give the wires coming from the lugs, butt connectors, etc., a tug. You might be surprised at the number of cables that come apart. How does this issue happen? Who knows, the workers at Catalina or the aftermarket technicians were doing their best to make the crimp tight and hopefully had given the wire a pull to make sure that it was secured. Time also has an effect on the crimp connectors. How many times have you had a piece of equipment that intermittently would not work? Those are the hardest problems to find. I have found that many of these intermittent problems can be traced to lose crimp connections.