

CHAPTER ELEVEN : Third battery :

I did a few projects in tandem: Third battery, inverter, anchor windlass, anchor/deck washdown system, circuit breaker panels, upgraded the battery charger from a Xantrex 20 to a Xantrex 40. Adding the third battery first was needed to support the rest of these projects. Considering all the new battery and supply cables I would need, I bought one of the hammer-it type lug crimpers. It paid for itself easily. I stayed with the 5/16 terminals for the negative cables, 3/8 for the positive cables. The lugs are a little cheaper in a ten-pack. (The rear engine cover has a lot of Velcro on it, so it takes a good pull to break it free.)

I ordered a new RED-HANDLED battery on/off switch (like the other two under the aft berth) from Beneteau's Syselios system. I un-mounted the black "Negative" switch and made sure it could not touch any positive cables. I mounted the new red one there. The new, third, battery box is located under the aft berth, in the starboard cubby that is outboard of the battery that is alongside the drive shaft. I had changed the original two batteries to be house batteries and made the 3rd one the size 24 "engine" battery. The batteries by the shaft and in front of the engine I changed to group 31 size, and they are the "house" batteries- each to its own on/off switch. You could make an epoxy or plywood base (would make the battery sit higher) to set the new battery box on, but to make it level I just put a strip of wood under it, alongside that divider that is next to the shaft battery. I bolted the battery box to that divider. Yes, the battery is high enough that the bunk board sets on top of it, but way into the corner, there is not much weight on it, and I've had it that way two years. I do, however, plan to put wood cleats on the bulkheads to support the bed board higher than the battery.

To run the battery (1/0-size) cables, I drilled TWO holes through the divider, into the center compartment, in front of the shaft battery. Two holes, so the pos&neg cables cannot chafe in the same hole. There are also through-the-bulkhead cable terminals that you could use, but they mean

more connections, which means another place for corrosion. Curve the cables from the holes up to behind (fore of, actually) the 3-inch panel that goes crossways. There are other cables there, and you can use wire ties to add the new ones. On the port side divider there is probably a big enough hole to get the cables to where the back of the switches are. Actually, it might be better to drill a hole higher through the divider for the pos cable to come straight to the new switch. Terminate the positive cable on the new red switch. That should be a 3/8 lug. I found it best to put the battery cables on the lower terminals of the switches, then use the upper lugs as the pos buss.

Run the neg cable down through where all the other cables are. Connect the neg cable to the neg switch.

A slight digression here: No one seems to be able to tell anyone why there is a negative on/off switch. I have not heard of any other manufacturer who does it. If you turn it off, it may be a good theft deterrent. I suppose you can just leave it on BUT be sure to do something so it does not move and touch a positive battery connection. I made a divider that goes athwart-ship, just the 8 or-so inches behind the panel the OEM switches are mounted on, and along the stringer that is molded into the floor liner. It seems strong enough just using an inch-square piece of wood to secure it to the divider that is alongside the muffler, but if/when warmer weather returns I'll epoxy it in place also. I will either mount the neg switch through this new divider or do away with the switch and place all the cables on a buss bar. If I keep the switch, I will mount it so the handle faces aft. A side benefit with the new divider is you can store stuff aft of it and not worry about things running into the switch connections. For a little more protection, I will also place a lid over the new cubby that the switch terminals are in.

THE CHARGING CIRCUIT: The Xantrex 20 or 40 have connection lugs on the bottom for THREE positive battery cables- one negative. You only

need a new positive wire. (((On the factory setup they ran the charger cables to the rear of the boat, across, then forward to the battery switches where there is a large Maxi-fuse before it connects to the battery side of the on/off switches. Due to the long 24-foot run, they use a #6 wire, which is too large to fit into the charger connector without cutting some of the strands off. Adding to the wire length is the distance from the battery switch back to the battery itself.))) I used a number 8 wire from the third charger connector and went down the bulkhead, behind the water heater, and into the cubby where the new battery is. (You may find it a good idea to run a new wire to the shaft battery at this same time - or just reuse part of the existing one-. It would be about 80 % shorter! Move the fuse, also.) ((I got my X40 at a good price because some owner wanted the 40 taken out of his new B-boat and replaced with something bigger. If you have a Beneteau dealer near you, maybe they can get you one at a good price.))) You can get a remote monitoring panel for the charger. It can be put anywhere- like the nav station- by a simple phone cord. Bear in mind the panel only monitors the first two outputs, which in my case is the two house batteries.

FUSES: The factory X20 charger manual calls for a 25-amp fuse and it be placed as close to the battery as possible. They also specify a #10 wire for up to 5 feet, # 8 for up to 7.5 feet. I'd suggest go ahead and go with #8, BUT the chart in West (page 427) and other places says you can go smaller and still fuse at 25 amps. Let your conscience and wallet be your guide. West/Blue Sea makes a 25 amp surface-mount circuit breaker for \$55. The Maxi-fuse, which I used with my X20&40, the smallest fuse for that is 30 amps, which both the #8 and #10 wires can handle. There are also easier to install in-line fuses that can handle up to 30 amps, but should you ever put in a larger charger, you'll need a 50-amp breaker or fuse. I bolted the Maxi-fuse to the battery case and terminated its 3/8-inch lugged lead onto the pos battery terminal along with the battery cable. Before you put the Maxi block in, make sure the fuse can go in and

out of it easily enough. I put the block in first, then had to file and force a screwdriver into the sockets to be able to put the fuse in.

ON/OFF SWITCH LABELS: If you put the new cables on the new switch, you can put new labels on the switches as needed. However, I chose the harder way- to move the engine" cable" off the center switch to the new switch. I put the new cable to the center switch so as to retain the "engine" designation. If all your batteries are the same size, it does not really matter which one is cabled to the "engine" on/off switch.

POSITIVE BUSS: Bear in mind that you now have THREE batteries that can supply more than twice the original amperage to the "positive" buss. From the factory there is a 1/0 short battery cable jumper between the two pos battery switches. This is the "POSITIVE BUSS" that feeds the volts to the boat. MAYBE this 1/0 size is sufficient, but since I had all the batteries disconnected and had the lugs and wire and crimper, I removed that jumper and replaced it with two (a new one to connect to the new switch), short (4 inches or so, 2/0) jumpers. This links the three switches into a positive buss. A tinned, copper, bar across the three switches in place of the 2/0 would be nice, but hard to find?

VOLT METER: In this three-battery, three-switch arrangement you can turn on any combination of batteries for engine or house use- or to isolate any defective one. Other switches on other boats would have the two house batteries wired together, but you lose flexibility compared to this 323 modification. To help tell how the battery is, at the battery on/off switch connections, locate wire "T1", which should be on the battery side of the engine switch. This wire goes to the nav panel volt meter. In the factory-wired position you can only read the voltage of the engine battery. (Duh! Either it starts the engine or doesn't.) Move T1 onto any of the positive buss terminals. This way, any ONE battery that is "ON" can be read by the meter. Actually turn them ALL "ON", and you read the combined voltage. Jan 21, 2009