



How-To: Installing Solar Charger

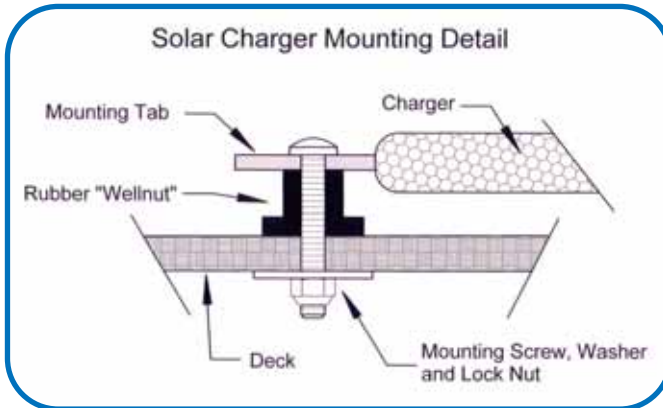
Paul Esterle has been building or repairing watercraft, of all descriptions, for longer than he cares to admit, from hovercraft to power and sail boats. Paul specializes in boat improvement and repair projects utilizing wood, epoxy, and fiberglass. If you have any questions about your boat project, contact Paul at pesterle@preferred.com.

by Paul W. Esterle

I've been known to kill a battery or two through benign neglect. My outboard-powered twenty-footer doesn't have a charging circuit on the engine so the onboard battery relies on my regularly charging it. I didn't do well with that when I was at the boat dock in Tennessee with power at the slip.

Here in the east, my slip doesn't have electrical power at all, so I knew I would be on my way to killing yet another battery. I decided to bite the bullet and install a solar battery charger or solar panel. Looking through the boat store, I found a number of choices.

They ranged in size from a small one (2 watt, \$34.95), big enough to keep a single battery topped up, to a medium one (6 watt, \$89.95) designed for a medium-sized deep cycle battery and a large one (18 watt, \$159.95) used for larger battery banks. The two smaller sizes were designed to charge the battery directly, without needing any sort of charge controller. The large panel, however, required the use of the charge controller to keep from overcharging the battery and boiling off the electrolyte.



came close. If I placed it on the curved cabin top, it would eventually slide off. I would come back to the boat and find it hanging over the side, luckily out of the water.

In either case the charging cord was too short to plug into the electrical panel without the use of a 12-volt extension cord. No big problem, but the total effect wasn't neat and tidy.

I finally decided that the charger was working well enough to deserve a permanent installation. The small panel had four mounting tabs that could be extended out from each corner of the charger. These would prove to be ideal for permanently mounting the charger. The only problem was that the place I wanted to mount the panel was curved in two different directions.

Another stroll through the boat store provided the answer to this problem too. I found a piece of hardware called a "wellnut". These were rubber spacers with a flange at one end and an internal threaded metal insert in the other end. By placing the flange side down, I could attach it to the mounting tab with a machine screw. The machine screw held the wellnut tight to the bottom side of the mounting tab and stuck out of the wellnut long enough to go through the deck. The rubber part of the wellnut compressed enough to account for the curvature of the deck and provided a secure mount for the charger.

After drilling the four mounting holes oversized, I filled them with epoxy filler. After the epoxy had hardened, I re-drilled the holes through the filler. This eliminated any chance of water leaking into the deck core and delam-

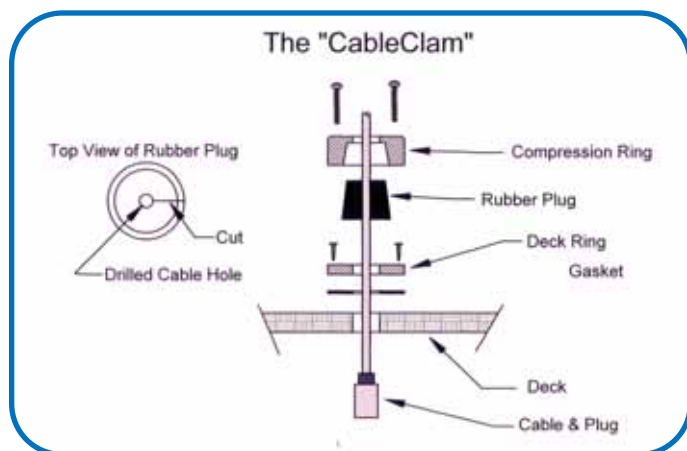
inating it. When bolting the assembly in place, I used plenty of polysulfide sealant (3M101 or BoatLIFE LifeCaulk) on the bottom of the wellnuts and on the machine screws.

The final problem was bringing the cable below, through the deck. I used a device called a "CableClam" to provide a leak proof method of bringing the charging cable through the deck. The first step was to drill a hole through the deck large enough for the end of the charger cable to pass through (this hole was also sealed with epoxy filler).

The CableClam has four parts. The first part, the deck ring, is screwed to the deck directly over the through-deck hole, using plenty of sealant as well as the gasket provided beneath. The third part of the seal is a tapered rubber plug. I drilled a hole through this plug exactly the same size as the wire used in the charging cable. I then used a sharp knife to cut through the

plug on one side. This allowed me to force the cable into the drilled center hole of the plug. I then placed the plug in the lower part of the seal previously screwed to the deck. After placing the final piece of the seal, the compression ring, over the rubber plug, I screwed it to the bottom piece. This compressed the tapered rubber plug and provided the waterproof seal for the charging cable. It takes longer to explain than install and hasn't leaked a drop.

My battery now stays fully charged be-



I decided the small charger would be just the ticket for the small battery I had aboard. The battery is used only for navigation and cabin lights and wasn't used very much. The small charger came with two charging cords. The first was equipped with alligator clips to directly hook to the battery terminals. The other cord had a standard cigarette lighter style plug on the end.

It just so happens that the new electrical panel I installed has an accessory socket for that style plug. So the initial installation was dirt simple: plug it into the socket and lay the charger out on deck. Electrically, this worked fine. It kept the battery topped off and didn't overcharge it.



tween uses and thanks me every time I step aboard. The panel stays in place and out of the way at all times. The location I chose was close enough to the electrical panel that I no longer need an extension cord. Life is good and my battery is happy.