

March 2023 “Solderless Installation”

Newsletter Terminal

Photo Essay: Solderless Terminal Installation

Solderless terminals, first introduced by aircraft manufacturers prior to WWII, have revolutionized the marine and many other industries. Without them, we'd be soldering and taping every connection.

As good as they are, they do have some pitfalls. The butt-splice terminals shown here are a “cap” rather than common in-line or “barrel” design. Provided it meets ABYC guidelines for tensile strength (these terminals tend to split or pull apart in an in-line pull test, I don't believe they are as resilient as a traditionally barrel terminal), there's no issue with the design per se other than, in this orientation, it can trap water should it run down the wire. Additionally, in this case the wiring is carrying 240 volts AC, and as such all terminations or connections must be housed within an enclosure. Therefore, these splices, as they are shown here, lack ABYC compliance. My recommendation, in a scenario such as this, is to use solderless ring terminals, and a screw terminal strip, within a purpose-made electrical enclosure.

Ask Steve

Steve,

I recently had a new engine installed in my Cabo Rico NE400. It's a Yanmar 4JH80, replacing a Yanmar 4JH3-HTE. Work was done by a Yanmar dealer.

The stringers in the engine compartment are steel, and the original engine mounts were connected directly to that. The new engine was installed with wooden (I think teak) blocks about 1 inch thick between the engine mounts and the metal stringer. I questioned the dealer, and they said it was just a "spacer" – so no problem.

Is wood an acceptable material in this installation?

Best regards,

Neil Ross

Neil:

Regardless of species, because of its tendency to split when in compression, *solid* timber should not be used for backing block or shim applications. In short, no, timber, teak or otherwise, solid wood blocks are not suitable as spacers or shims. Suitable materials include aluminum, and stainless steel, as well as prefabricated fiber-reinforced plastics such as GPO3 (my preference) and G10, which is epoxy based. In years past marine plywood may also have been used, as it will not split, however, over time it can deteriorate.

The "spacer" or shim itself is usually advantageous in that it shortens the extended distance of the motor mount studs, reducing the likelihood of their failure. Ideally, the engine bracket should reside roughly in the middle of the stud, allowing for a range of adjustment.

For more on motor mounts see this article.

Hi Steve,

I've read all the articles about fiberglass blisters and their solutions. None of them answer the question, if I have an older boat with a few (< 20) blisters, is it a good idea to put a barrier coat on the hull under the boat paint? Or is this just sealing in the moisture that is already in the fiberglass?

Thanks,

Kevin Towers

Kevin:

Because it's not possible to get water to "evaporate" from a fiberglass matrix, at least not under normal atmospheric pressure and temperature, applying a barrier coat won't seal in the moisture per se, it's already there, likely for good. Applying a barrier will prevent more water from entering, so there's no harm.

Having said that, based on the blisters you have, water has almost certainly entered the fiberglass laminate, so it's likely blisters will continue to appear. Application of a barrier may, once again, slow that process down by preventing water from continuing to enter the laminate. Epoxy barrier coats also make an excellent primer for bottom paint applications.

More on osmosis and blisters here.

Hi Steve,

Your email was dropped on a forum and I wondered if you could help me with what is hopefully a basic (and stupid) question.

I have a galvanic isolator that plugs directly into my shoreline cable. I have an isolator in the boat that cuts off shoreline power which I often use when there is plenty of

sunshine (solar panels). When I isolate inside the boat will the galvanic isolator plugged into my shoreline cable continue to offer protection from galvanic corrosion?

Many thanks,

Joshua Ziegler

Joshua:

Because the shore safety ground remains connected as long as the shore power is plugged in, and it cannot, or should not, be switched in any way, the galvanic isolator will isolate the vessel, up to a point, from DC, galvanic current regardless of the position of the shore power switch or whether you are using a solar panel or shore power charger. If you disconnect the shore power cord, you would achieve the same end, by disconnecting the vessel from the shore ground.