

# Making Connections That Will Last

**P**roctical Sailor reader Mark Johnson, a marine service professional, recently wrote us about marine wiring and gave us the scoop on how he gets a lifetime of service from his connections.

“About half of my 40 years of experience at building boats and sailing away on them has been avocation, and the other half vocation. This has given me ample opportunity to assess the quality of the electrical connections and appearance of the terminals that I put in 15 years ago.

“For vocation, I frequently use only crimp fittings as their existing wire is old and won’t take solder—and also because I work by the hour, and my best technique takes much longer; most customers don’t want to pay for a 30-year life span on their wiring harness.

“However on important stuff like setups in a customer’s bilge or every inch of the wiring harness on my 34-foot Sea-runner trimaran, here is what I do:

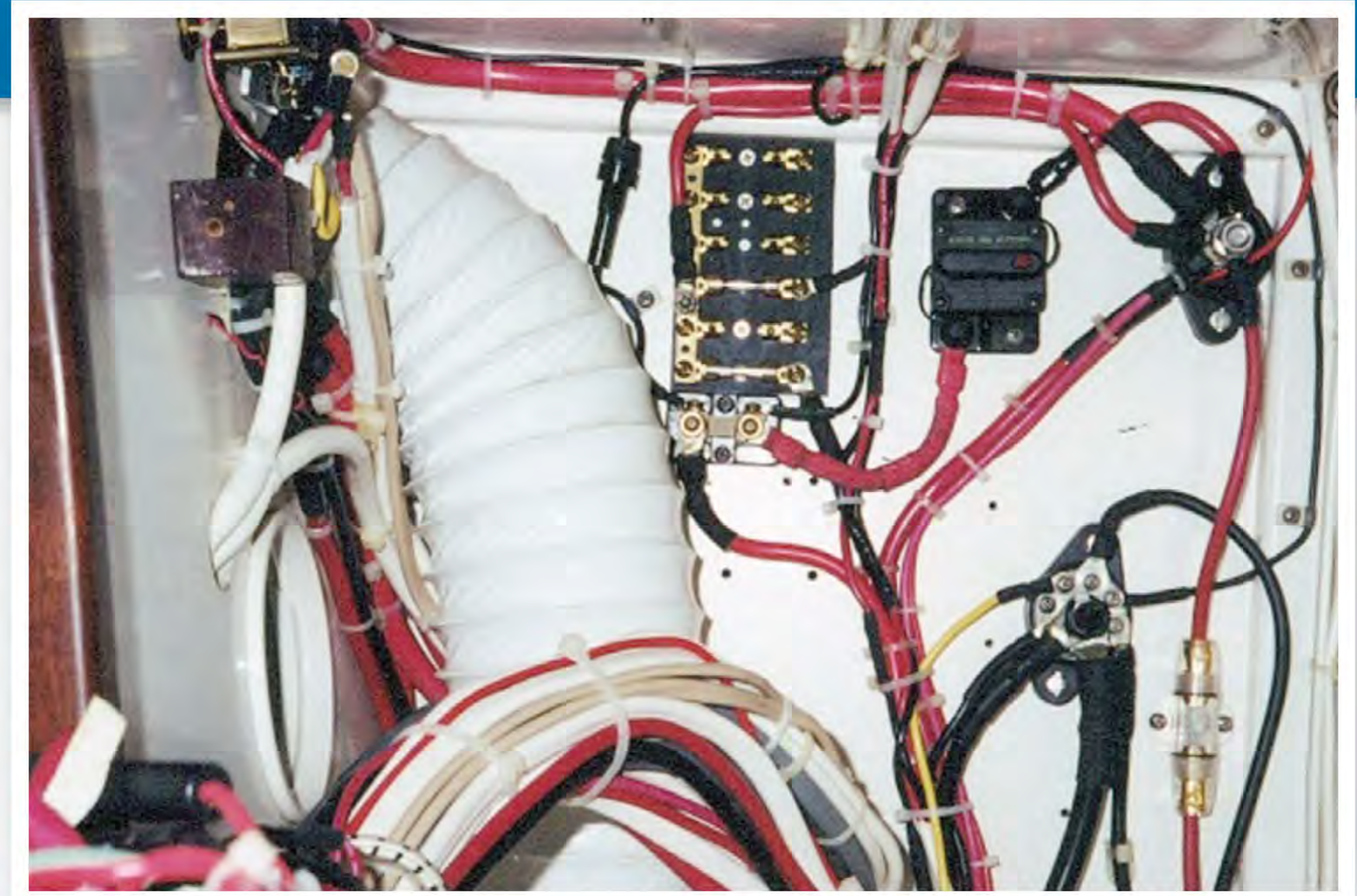
“I use ‘1 size up’ (usually No. 12 or No. 14) of high-quality, double-jacketed, finely stranded, tinned copper wire (like Anchor). I use mostly top-quality eye connections—never forks—and just remove the jacket and throw it away.

“I slip 2 inches of adhesive-lined heat shrink tubing on the wire, then crimp on the eye and give it a test tug. Then, I solder the eye and follow that with the heat shrink. I then heat-gun it until the adhesive bubbles out. If done correctly, this kind of wiring harness has an indefinite lifespan, perfect electrical transmission, and if you cut back the insulation 15 years later, the wire and eye barrel will still be ‘shiny’ clean and perfect.

“A poorly done solder is no better or worse than a poorly done crimp. Neither is acceptable. If you use the thinnest wire solder, and just quickly touch it to the eye end of the pre-heated eye barrel, you just fill the barrel. It should go no more than 1/8 inch up the wire!

“The old argument that this ‘hard spot’ is a risk is moot because if you allow the wire to move around in a seaway, it will eventually fail in any case. (I attach my wires every 5 or 6 inches over the length of the boat.)

“On the eyes themselves, if you apply just a small dab of Jet Lube to the interface between the junction block strip



*Crimping and soldering important connections is a good idea, as is attaching the wires every 6 inches or so to keep them from moving around in a seaway, which can shorten their lifespan.*

and the eye, that too will be perfect 15 years later. Jet Lube is a copper powder-loaded grease, that increases conductivity while displacing air or moisture in the interface. (Sometimes I skip this out of laziness, but it does work great!)

“On my Trojan L-14 house batteries, I crimp AND solder each cable as described above, followed by heavy adhesive-lined heat shrink. Then I polish up the eye and lug with a Scotchbrite pad, followed by an application of Jet Lube. After tightening the fittings, I use mineral spirits to wash off the excess Jet Lube, leaving it only in the interface.

“Then, I apply five coats of liquid Lectric tape (30 minutes between coats) to the eye, lug, up the wire a half-inch, and onto the battery top. With my hydro caps on the batteries, all I have to do is check the water every few months, and I’m good for seven to 10 years!

“If there is a short in the wire, the solder doesn’t increase the likelihood of a failure, because if the solder melted out, it leaves the wire still crimped. Besides, I use a Blue Sea battery fuse within 10 inches of the battery, on both house and engine batteries.

“I have easily scraped and peeled this sort of connection back after seven years and 20,000 miles to find the post and eyes “still shiny.” Not many professionals would do this sort of thing because it takes 10 times as long, and is NOT cost effective. Their customers don’t expect it either.”

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