

Battery-cable lug connections that last

by John Danicic

Unless you have access to a professional battery cable-crimping tool (\$200-300), attaching the terminal lugs to the cable will be one of the unexpectedly big jobs of your windlass installation.

If you can get such a tool, use it. But if you use other means to mechanically fasten lugs to cables, you must make sure that the cable and the lug remain securely attached. What better way to do that than to combine mechanical fastening with the power of solder?



All this stuff? Yep. Clockwise from bottom left: heavy wire cutters or a hacksaw to cut the cable, hammer-style crimper, flux for the solder or use rosin-core solder, utility knife, brush, hammer, solder, propane torch, three progressively longer lengths of heat-shrink tubing, cable, lugs, and needle-nose pliers or forceps. Not shown is the heat gun.



Hack or snip? The first step is measuring and then cutting the cable to length.

Big wire cutters work best, but if you want a vigorous workout use a hacksaw. Battery cable lugs have a

flat surface that mates with the terminal. Once you run the wire, determine how you want the lug to fit on the cable for the best orientation to the terminal. Once it is firmly attached, it's very hard to bend the cable to fit.

Mark the top of the cable with an arrow during placement and length measurement. Cut the insulation with a utility knife and leave enough gap between the lug and insulation to clamp a pair of pliers or forceps to act as a cable holder and heat sink.

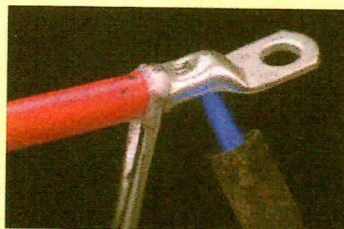


Clean, then brush the flux. Slip the three progressively longer heat-shrink tubes on and well down the cable. Clean out the inside of the lug with fine steel wool and coat the inside of the lug and the cable with rosin flux. Never use acid flux. You may use rosin-core solder with no other flux.



Strike a blow. Using an inexpensive hammer crimper will put a dimple into the lug and form a mechanical fastening. It's set up to accommodate various cable gauges.

If done correctly, this should be all you need. If you lack a hammer crimper, use a blunt chisel to form the dimple. Work on a surface that will absorb the considerable forces and prevent the cable from moving.



Hot, hot heat. Heat from the lug end to the cable with a flicker-through-the-flame motion until solder will melt if touched to the lug. We are talking about mere seconds of heating. You could also use a large electric soldering iron, but that would deduct too much time from sailing.



Bubble and boil. Apply solder to the seam. It should melt quickly and be drawn into the cable and socket. If it doesn't, heat up the lug some more... It doesn't take much solder to form a good connection.



Cool it! Let it cool a bit, but not too much. The insula-

tion will be rather soft when warm and can be pushed down to cover your heat-sink gap. Let it cool completely and use a fresh rag to clean off residual flux.



Easy as 1-2-3. I like to use three layers of heat-shrink tubing, with each layer longer than the last to cover the seams. I found heavy-duty black 3M tubing at a surplus electronics store. Draw the first layer up and over the lug and use the heat gun to shrink each layer separately.



Layer two. Keep the heat gun moving so as not to burn up all your hard work.



Good documentation. It's a good idea to write what the cable is for and where it goes on a piece of tape. Cover this with clear heat-shrink tubing. You now have an impressive safe, and informative cable connection.