Hi-

Follow-up to the split at the top rudder bearing structure of our 2002 Catalina 36. Via email I was able to communicate with Catalina Yachts. Both Warren and Gerry responded that the best method to correct the split was to glue it back together. They recommended a product call Plexus for the bonding. The following is the reply from Warren and Gerry:

> "After injecting the Plexus™ you can push, clamp, use 2 x 4 (s) with a small scissor jack to push up off (the hull) full as you mentioned, whatever angle or method seems best to facilitate getting it back into the prior- basic orientation it was before the split. Putting a strip or two of 1808 or 2408 cloth over the top is probably not necessary, but of course would be a very good time to do it if you were so inclined as it can only add extra insurance."

After much trial and error I found the if I used clamps from the edge of the lazerette opening on both sides of the rudder area I could avoid a complicated set up to apply upward pressure from the hull. The clamps were pulling against a caul (slightly curved board) I made to straddle the span of the separated bearing housing. I also used clamps along the edge of each side of the housing, again, hooking on the edge of the lazerette opening. The port side required the removal of the transom shower to get the clearance needed for proper clamping.

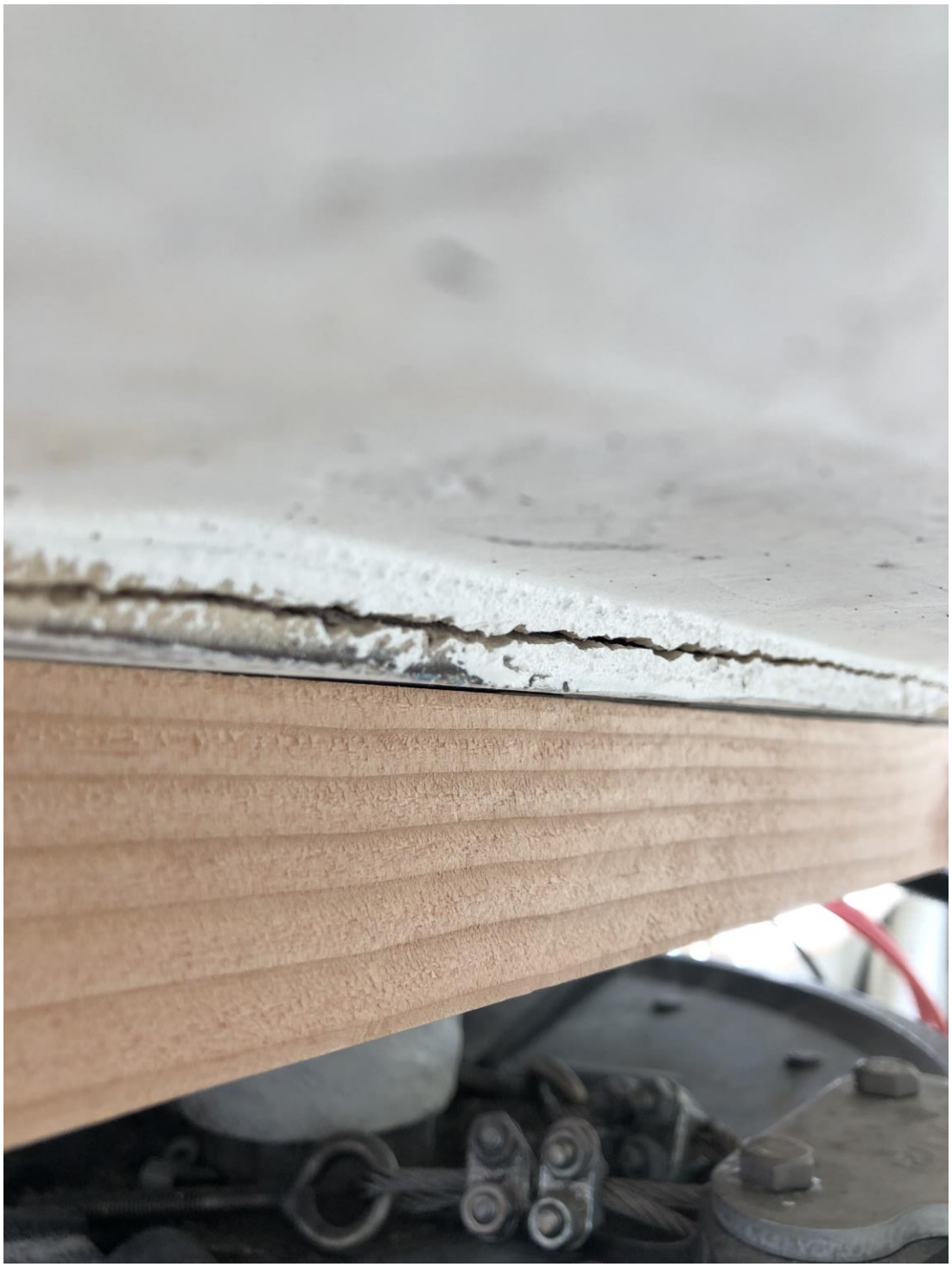
I chose to use West Systems 6-10 thickened epoxy over the Plexus product. I was able to get the West product from my local Catalina dealer which allowed me to fix the issue sooner than waiting on the Plexus to arrive via Fed Ex/UPS. The West product also has a longer open time allowing me a bit more of a window to get everything done.

I set up the clamps and caul and did a dry run. The dry run allowed me to evaluate clamping pressure and I could see if the cracks were adequately closed and alignment was good once clamped. The dry run also gave me an opportunity to mark locations and see how long it would take to get the clamps set once the epoxy was in place. All was good, so I started to inject the epoxy. I had a helper fill resin syringes directly from the self-mixing tube of 6-10 epoxy while I (5'7" 165lbs) worked from within the lazerette. The narrow tip of the syringe allowed me to get the epoxy deep into the cracked area. The injection process took about 20 minutes. I used a full tube, 6.4 oz., of the 6-10 epoxy.

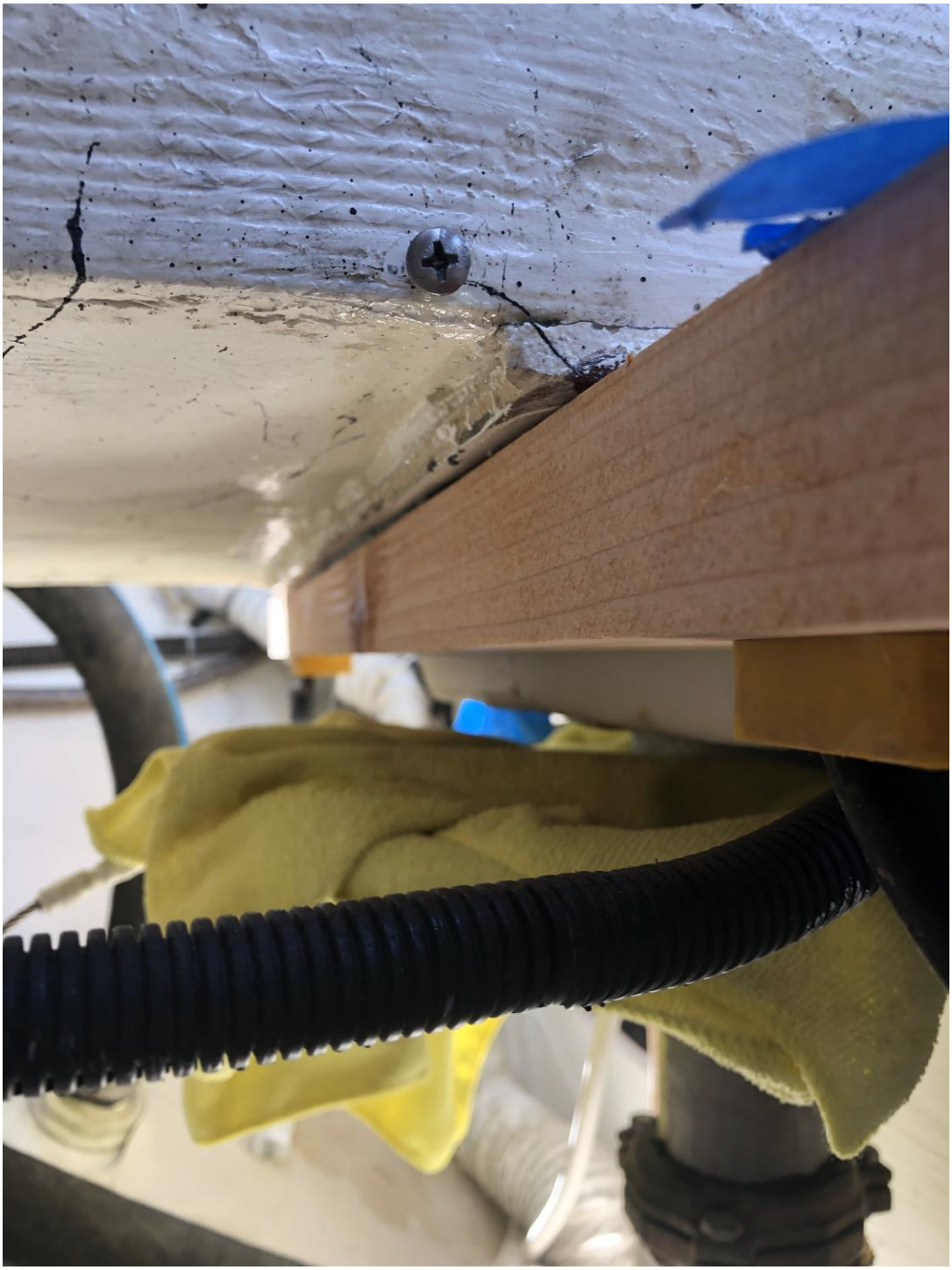
Once the epoxy was injected I put the caul in place and use the clamps to pull it up against the loose panel. I used a two by across the top of the lazerette openings to help spread the load across the gel coat edges, wanting to avoid damaging the opening. Wax paper or tape should be applied to the caul to avoid having it get glued to the fiberglass. I used rags to protect the radial drive from epoxy ooze during the clamping process. Time from initial injection of epoxy to wiping the last run out was 35 minutes. The open time on the 6-10 epoxy is 40 minutes.

Cure time for the epoxy is 5-7 hours depending on temps. I let it sit overnight, a total of 18 hours from start. I removed clamps and inspected, all looked good. Sailed for 5 hours that day in 5-10 knots of wind. Checked the area after returning to the dock and all was still looking good.

Photos:

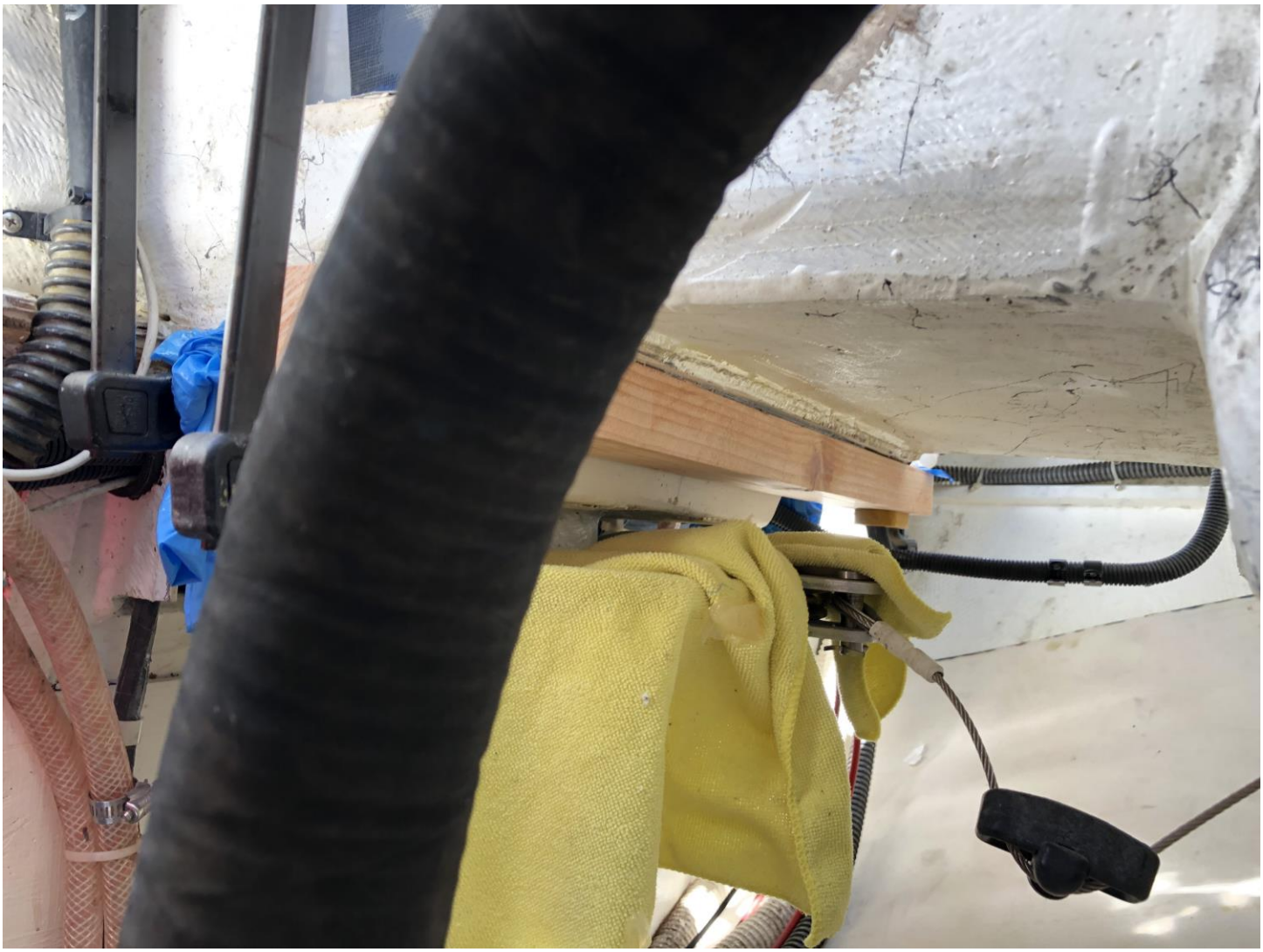


Caul in place for dry run.



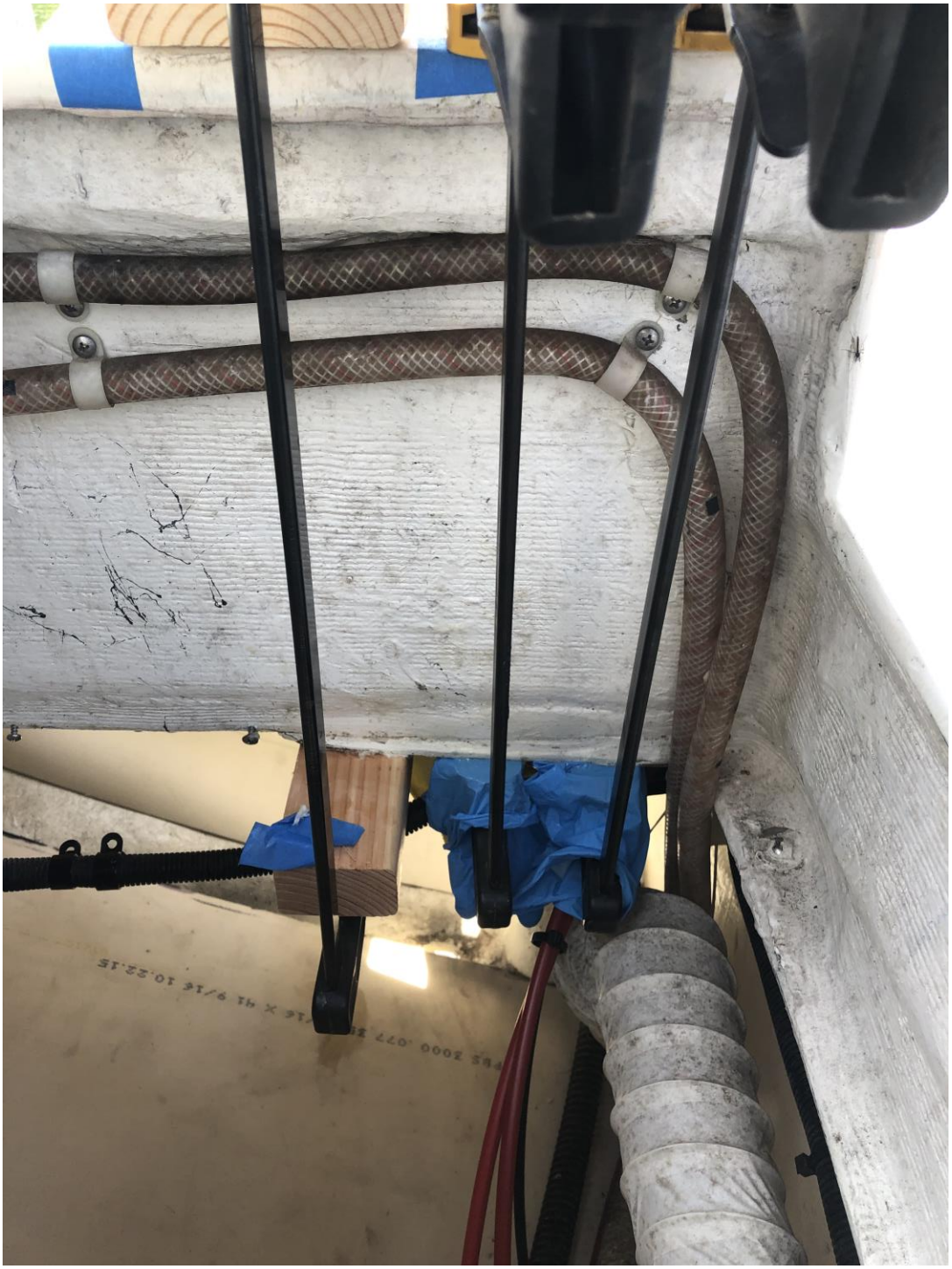
Caul in place after epoxy injected (view from starboard lazerette). Note rags on radial to catch run out of epoxy.

Runout has been clean up at this point, Gorilla tape on caul for release in case it ended up glued to the fiberglass.

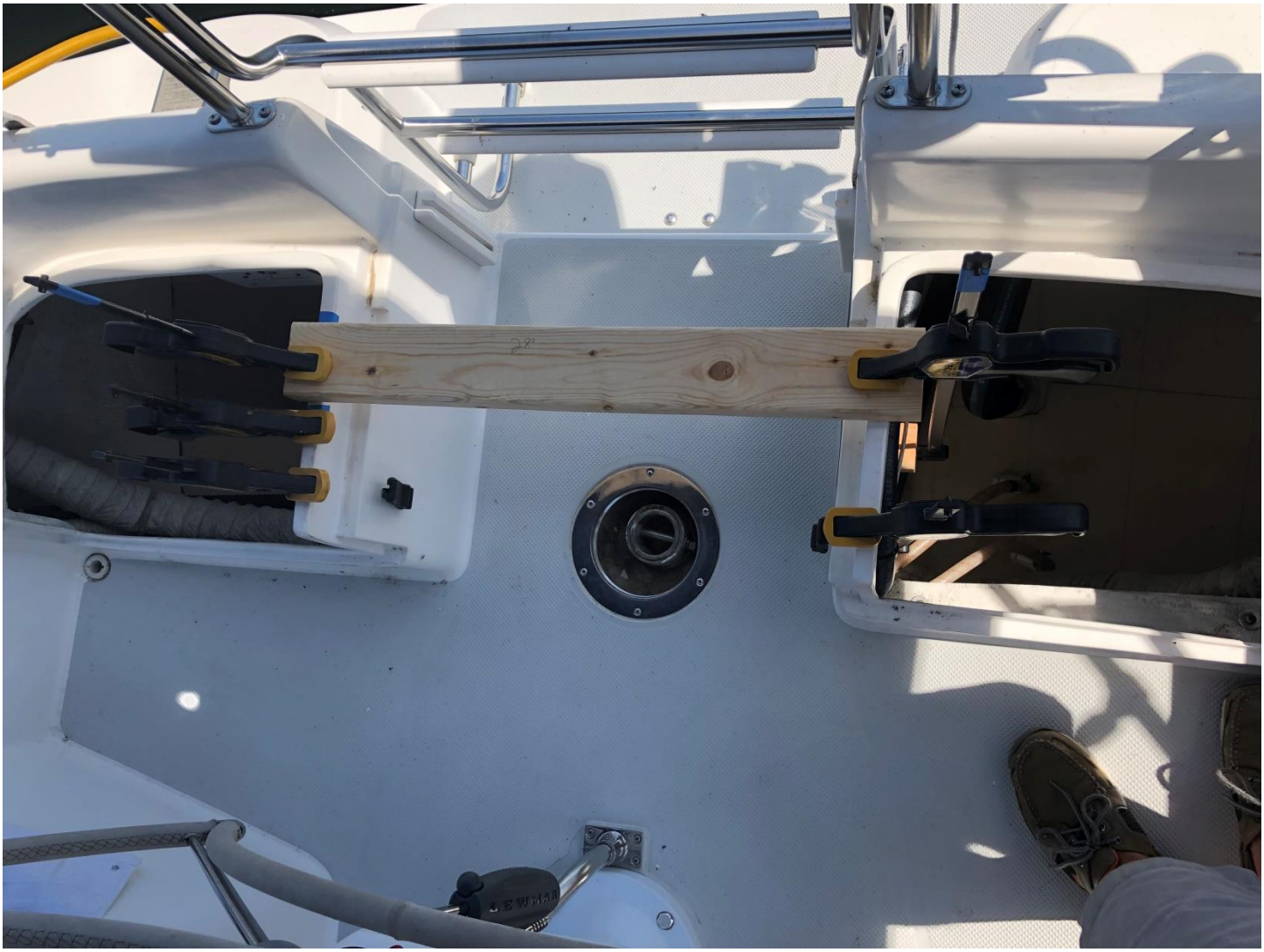


View from Port side lazerette.

Rubber gloves on clamps to prevent adhesion to fiberglass from runout.



Clamps viewed from starboard lazerette.

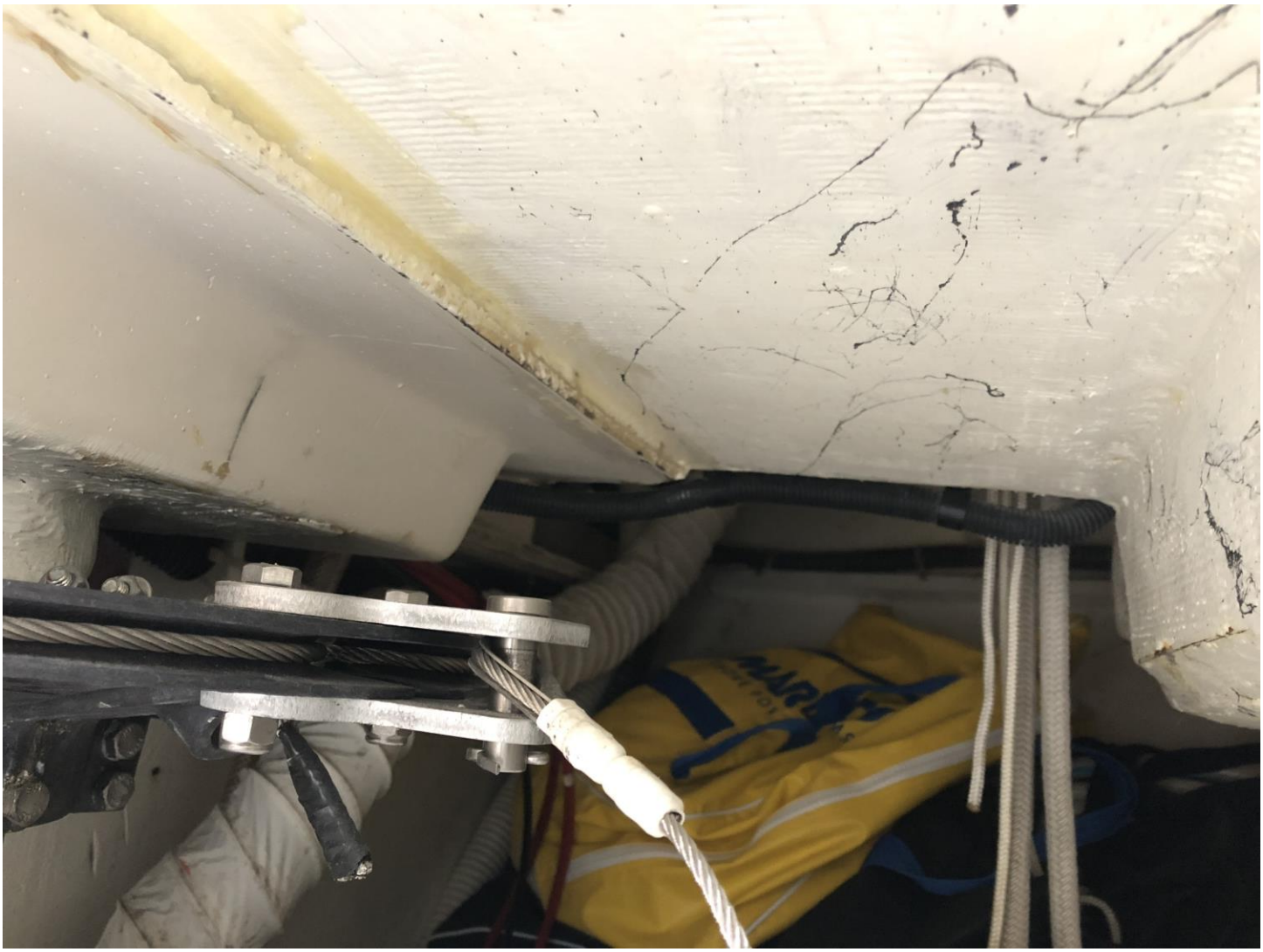


Clamps view from above.

You can see emergency rudder opening, some epoxy run out, mostly from the stern side, occurred into this area, but did not pose any issues or come near the bearing area.

Lazerette covers were removed to help create some working space and make it easier to get in and out of the starboard lazerette.

3rd clamp on port side would not stay seated due to odd angle, slipped off. In the end it was not necessary.



Cured joint.