

## Catalina 25 Through Hull Upgrade

By: Todd Bosch

I've got a 1980 Catalina 25 standard rig, fin keel, dinette model. Boats of this vintage have the infamous "to-hulls" for the sink drains and the head intake. These consist of a brass nipple that's been epoxied into the hull. These have the telltale "volcano" of resin where the pipe meets the hull. The photo below is of the original drain for the galley sink and ice box.



Replacing these original through hulls is a highly recommended upgrade. Postings on the Catalina-capri-25s forums and the Catalina Direct parts manual are very clear about the possibility of the original through hulls failing. You'll see comments about how easily they come off and how surprised you'll be when you put a wrench to them and they practically fall off by themselves. Mine, however, were not easy to remove and showed no signs of imminent failure. Even so, I'm glad I made the upgrade. It is definitely an improvement and now I have one less thing to worry about!

I'm hoping that you will find this document useful and that it will save you some time and frustration. The project was successful but there were a few surprises...

## **The Kit**

I ordered parts from Catalina Direct. I ordered 3 through hulls, 3 nylon valves and one through hull mounting kit. The mounting kit has materials for installing 2 through hulls and consists of a West Systems Repair Kit and 2 marine plywood backing blocks. In the interest of saving money I bought one kit with the intention of figuring out if I could scrounge what I needed to mount the third through hull. I'm glad I did. In my opinion, the West System Repair Kit does not have enough epoxy to complete the job, at least not the way that I wanted to do it. I tend to over do things and this project was no exception.

Once I got the kit and read the instructions I was worried that I might have an absolute minimum amount of material to complete the job. I have a keel fairing project in the works that will require copious amounts of epoxy so I decided to keep the repair kit on the boat for future use and buy large quantities of West Systems epoxy, resin and filler.

After cutting myself a third backing board out of a scrap piece of marine I had everything I needed to complete the project.

## **Holes**

The new through hulls need a 1 1/8 inch hole. The existing hole in the hull is smaller than that, as is the hole in the plywood backing blocks supplied with Catalina Direct's kit. The installation instructions do not specify the size of the hole you will be drilling so get yourself the 1 1/8 inch hole saw before you get started and you'll save a trip to the hardware store.

## **Sealing the Backing Blocks**

Not a lot of mystery here. Unthickened epoxy is used to seal the marine plywood backing blocks. Go light on the epoxy here and put on several coats. This is the first time I was glad that I had bulk epoxy products to work with.

I did this on day 1 so that the epoxy would be cured when I was ready to use the blocks.

## Removing the Original Through Hulls

This was not as easy as forum discussions or the Catalina Direct instructions would imply. I tried several tools before settling on an angle grinder with a 1/4 inch thick grinding plate. The process involved grinding through the “volcano” at hull level all the way around the through hull pipe and then driving the pipe into the boat from the outside using a hammer and screw driver. You’ll end up with something like this:



## Mid-Project Observations

You will notice in the photo that the end of the through hull pipe is cut at an angle. This was done to conform to the contour of the hull. The blue inside the pipe is bottom paint. You will also notice in the picture on page one that the through hull comes into the boat vertically. The new through hulls are mounted perpendicular to the hull. Hmm... So the angle of the hole through the hull will have to change, as will the hole's diameter.

## Site Preparation

This ended up to be the most difficult part of the project. I started by grinding down the rest of the “volcano” so that the mounting site matched the inner hull’s profile. You will see this in the next image. You will also see one of the epoxy sealed backing boards.



## Drilling Holes

The through hull hole needs to be enlarged to 1 1/8 inch. As mentioned before, the angle of the hole also needs to change. It needs to change from a vertical (plumb) hole to a hole that is perpendicular to the hull. I decided to drill from the outside of the hull in. There were two reasons for this. One was that changing the angle of the hole could result in some patching to do. You can center your drill on the side you are starting from but on the other side of the hull you will overlap the original hole. The second reason was working space. It was difficult, if not impossible, to get my drill and bit perpendicular to the hull without hitting cabinets, settee walls, etc.

I hand held a backing board to use as a guide. This kept the cutting bit from jumping around too much while I got the hole started.

## More Mid-Project Observations

At this point I dry fit all of the parts. I laid the backer boards over the holes and looked at how this was all going to go together. I observed that the flat board against the curved hull resulted in a gap between the two. This shouldn't be a problem because the next step is to bed the board to the hull using thickened epoxy, right? This would fill any gaps. But the combined thickness of the hull, the backing board and the gap seemed pretty large. I dry fit the through hull (backwards) and took a look. As you can see in the picture below, there aren't very many threads left in the through hull to attach the valve.



I tried to thread a valve onto here but there weren't enough threads to even hand tighten it. I figure that the combined thickness of the hull and mounted backing plate would have to be about one inch to be able to mount the valve. The picture below is showing a few more threads than the photo above. To expose more threads I would have to remove more material from the inside of the hull.





## Site Preparation Part 2

I traced an outline of the backing plate onto the inside of the hull and got the grinder out again. My goal was to grind down the area where the top and bottom edges of the backing plate met the hull. This would decrease the gap between the backing plate and the hull. I was basically taking the curve out of the hull at this area. I didn't like grinding into the hull but it wouldn't do me any good to have a through hull that I can't get a valve on! The picture below is of the through hull site for the head intake after I ground out more material as described above.



## An Unholy Mess

If I was starting this project over again I would remove everything from the boat. It took me days to clean up after this project. The grinder produced a very fine, floury dust that covered every inch of the boat.



## Bedding the Backing Boards

I took this process one step further than the Catalina Direct instructions. I followed some of the advice found in the West Systems Epoxy user manual. Before bedding the backing boards I used unthickened epoxy on the hull and the backer board and let it partially cure to a tacky state. At the same time I also wetted the hole that I drilled in the hull to seal that freshly cut surface. Then I mixed West Systems epoxy, resin and 406 filler to a peanut butter consistency and used that to bed the boards to the hull. I used enough so that it oozed out around the board enough to fillet the edges. After this filled epoxy was partially cured I covered the filleted edges, the top of the board and, especially, the inside of the hole with unthickened epoxy. This might have been overkill but it gives me peace of mind to know that I've done everything I can to seal the work from water intrusion.



## The Rest of the Project

The hard part of the project is over. The through-hull components are easy to install from here using the 3M 5200 sealant that is included with the kit.

Hopefully you will find this information useful. This is a challenging project. But if you are at all concerned with replacing the original “to-hulls” with modern components then it is worth the effort.