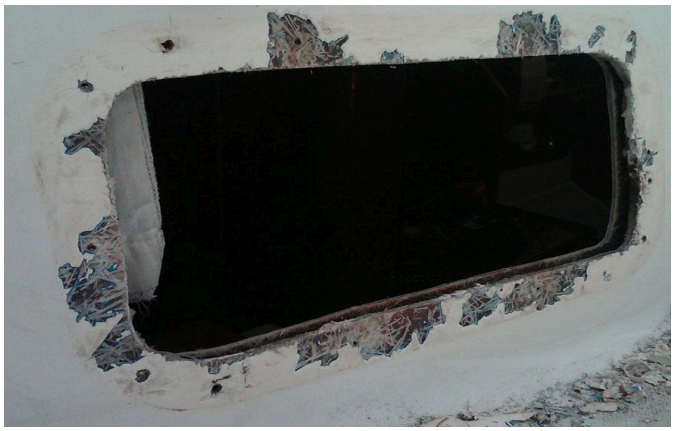
Replacing the Ports

Replacing 30 year old Beckson Ports with New Found Metals stainless steel Ports and Rebuilding the fixed Ports

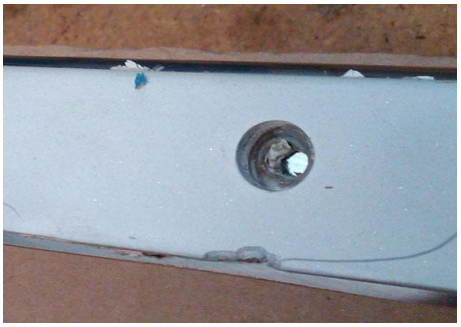
After 7 years of leaky ports, I am finally replacing the ports on Sea Dragon. I have had problems with the ports leaking from the day we bought our 1981 Pearson 367. Three years ago I purchased four (4) NFM stainless steel 5x12 opening ports which collected dust while in storage in the garage while I tried to find time and the courage to install them.

The original ports were Beckson Plastic ports which leaked at the time of the survey and purchase. The ports leaked so badly at the time of purchase that I paid the local yard to remove and bed them before we took possession of Sea Dragon. Unknown to me they decided to bed the them with 5200

I tried everything to remove the trim rings without damaging the gelcoat to no avail. I tried a cold sharp putty knife and a dull blade. I tried heating the blade with a heat gun. I tried going slow and fast. No matter what I tried the 5200 was NOT going to be removed without damaging the coach roof.



I



Once the old ports were out I was able compare the old plasti the NFM SS trim rings and I was relieved to see that the NFM t larger than the Beckson trim rings. As it turns out the new SS t cover all of the damaged gelcoat.

After removing the ports, I removed the remaining 5200 and older sealant using a razor blade and a lot of elbow grease.

I will soak the damaged & exposed fiberglass with epoxy resin to seal the damaged fiberglass.

One of the reason the ports leaked was the large space between coach roof (outer skin) and the liner. The space allowed the liner and coach roof to move breaking the thin seal between the trim ring, the port itself, and the coach roof.

After removing the ports it was clear where water was enterir port. As you can see on this port the water came in behind the then ran down until it found its way past the seal between the coach roof, to the face of the port, and finally out between th liner.

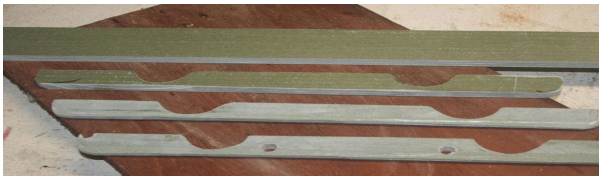
Once the ports were removed I was surprised to see how large the gap is between the coach roof and the liner. It was important to come up with a way to fill the gap. The picture on the right shows the gap on the port side of the boat. On Sea Dragon the gap is larger on the starboard side than on the port side.

As you can see the gap is a full 3/8 of an inch wide on the port side. The liner is 1/8 of an inch thick and the coach roof is 1/4 of an inch thick.

A point of interest - at about 2 inch below the opening the liner curves out board causing the gap to shrink. The gap is widest at the opening and narrows.

The gap on the starboard side is a full 1/16 of an inch wider than the gap on port side or a full 7/16 inch gap.

I spent some time considering my options for filling the gap and finally decided to order a piece of 3/8 inch fiberglass from McMasters to fill the the bottom gap. The sides and top would be filled with 3/8 strips cut from a piece of mahogany I had. My logic was that any water that made its way in would run down and be trapped on the lower filler and sit there for some time. The fiberglass will not rot like wood if it is exposed to standing water.



I decided to cut, shape, and drill each piece at home and not at the boat. To accommodate narrowing gap I ground the lower edges to a slight angle.

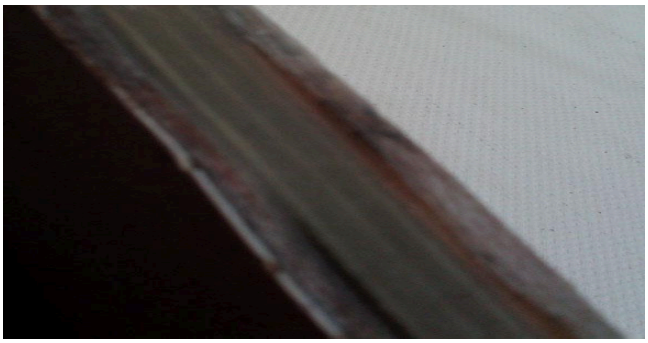
Now for the part I dislike most about any boat project, cutting the boat. At this point it is nice to have a helping hand. I was another Pearson 365 who was willing to help. Using a small rou trim bit and the NFM template it was easy to enlarge the exist to match the new ports.

Note to my self and anyone listening - wear a long sleeve shirt fiberglass.....

While the template is still in place, I used the guide to drill th After the template is removed the next step is to enlarge the inch and at least 1/2 deep. NFM sells a very nice 5/8 inch bore pilot - well worth the $30.

Next the upper gap was filled with 3/8 inch pieces of mahogany which is trimmed and drilled before being glassed in to place.

Once the filler is expoxied into place, the fiberglass can be sanded to a smooth finish



Using thickened West System epoxy each spacer was sealed ar into place.

I had purchased and finished four (4) teak spacer/trim rings thinking that they would be needed. However, after removing the existing ports, seeing the gap, and doing a little math, I decided that installing the 5/8 inch thick trim rings/spacers would shorten the over hang (exposed spigot) too much for me. I wanted at least an 1/2 of inch of the actual port spigot to extend past the outer SS ring for both functionality (proper drip rail) and appearance. ***Quick Math:*** *1/8 (liner) + 3/8 (gap) + 2/8 (coach roof) = 3/4 plus the 1/8" for the Stainless Steel trim ring, I was looking at 7/8 + 5/8 = 1 1/2"*

As you can see from each of the pictures of the port side portlights during their "dry fit" process I have exactly 5/8" of the spigot extending past the exterior ring. Perfect!

Bummer what to do with the 4 nice teak rings.

Now with opening cut and filled, I cleaned the liner, coach roof, SS steal trim ring, and the portsusing acetone. My plan was to clean anything the butyl would touch or the sealant.

Next I wrapped two (2) rings of butyl caulk purchased from NFM around each port. I was then able to position the ports in the openings and clamp them into place using scrap wood as spacer to allow me to slowly compress the butyl sealant until it filled the space around the port completely.

Next I put a little anti-seize/lubricant on the screws before aligning the port and trim ring.

I wanted to have as little friction as possible while tightening the screws, also I want to protect the threads during this process.

Completely compressing the butyl caulk took about 30 minutes per port. I began by tightening the screws until there was resistance. I let them port sit for 5-10 minutes while prepped the next port for installation. I would then return to the port and tighten each screw approximately one-half of a turn in a criss -cross pattern working my way from the outside edge working my way to the center.

Once I felt the ports were well seated, I removed the screws & trim ring and filled in any gap in the butyl rubber caulk... Finally, following the NFM instructions applied a Boatlife polysulfide sealant. I know - some would suggest 5200... Not me see FRAME 1. **NOTE** I failed to take pictures of this process so I borrowed this picture from the NFM very nice website...

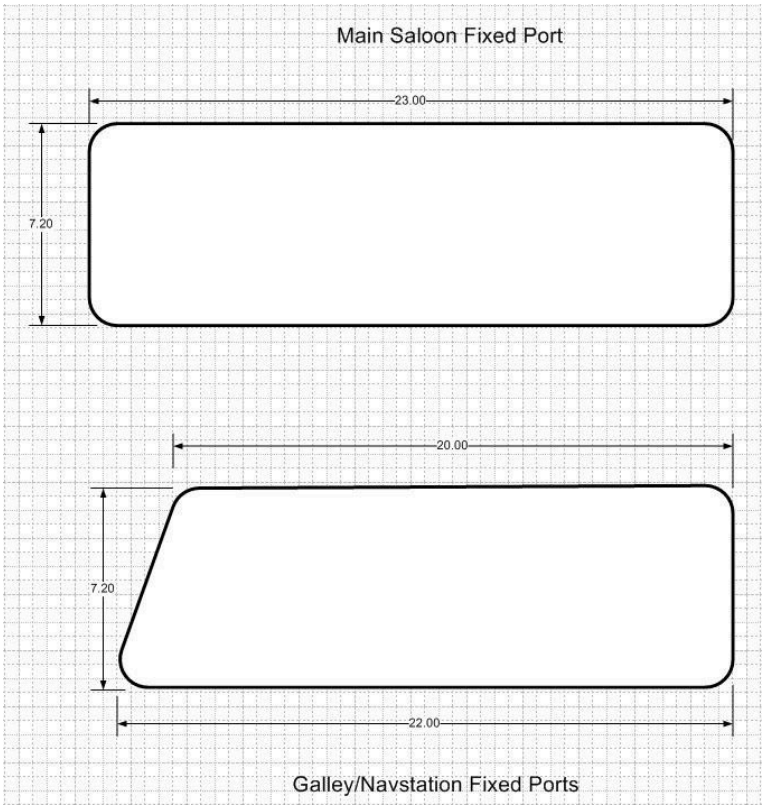
picture of installed port to be placed here

REPAIRING THE FIXED PORTS... *or too cheap to buy more ports*

Sea Dragon has four (4) fixed ports --- two (2) in the main salo
over the stove in the galley, and one (1) over the navstation.

The two in the main saloon are exactly the same. The other tv
images of the other and installed with the angled side positior

Furthermore, they are not a standard size that can be orderec
I could find....



After replacing the four opening ports, it was time to turn my attention to the leaky fixed ports. I considered replacing the fixed ports with a better design but I have not been unable to find anything I like. So I decided to remove, rebuild and re-install the original port . After looking closely at the leak it was clear that the water was entering NOT around the frame but instead the water was entering around the glass.

Somewhere along the way someone decided to "fix" the leak by filling the space between the port, coach roof, and liner with a very hard adhesive in hopes of stopping the leak.... This had to be dug out before removing the port... I was not able to remove all of the goop so I was forced (frustrated and resorted) to push the port out from the inside... This caused it own set of problems, cracking of the gelcoat at the corners.

Removing the fixed port begins with the removal of the screw inner ring to the port.

The first step was to remove the ports.... Once again a previo attempted to stop the leak by re-bedding the ports with - yes hour of carefully working with a razor blade and sturdy putty I able to remove the port. Once again the process removed muc gecoat.

Worst than that, as I pushed from the inside I was able to crac at the corner. See the "hair line" cracks in the picture below. now get to learn how to repair gelcoat cracks.

I will provide an update on the gelcoat repair once completec

Disassembly begins with the removal of the trim gasket. This gasket is cosmetic ONLY. Fills the channel inside...

The fixed port is held together by four screws (2 on each side). The screws pass through the aluminum frame into an aluminum "backing plate". Once the screws have be removed the frame can be split into two (2) pieces and the glass and gasket removed.

In this picture you can see the two channels. Once disassembled it is easy to see that water has been coming in around the window for some time. The corrosion can be seen clearly in the window channel (top).

I purchased replacement gasket material from Catalina Direct. Once the frame and the each track has been cleaned the new gasket will be installed

The instruction provide with the gasket reads as follows, "*Once you have cleaned and dried glass & frame, have a helper put a bead of the silicone sealant along the inside of the flexible PVC glazing channel. Have your helper hold the glazing channel. Set the glass into the glazing channel (gasket).After setting the glass into the glazing channel, have a helper put a bead of the silicone sealant along the inside of the window gap (frame). Have your helper hold the frame and set the glass with glazing channel already around it into the frame.*"

.

When installing t
made sure the li
the channel with

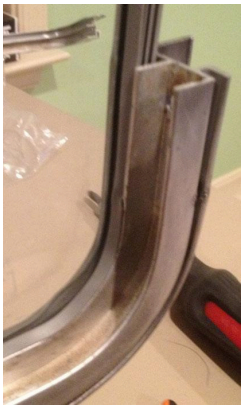
Before assembling the ports, I cleaned the channel really well
water then, using a scrap piece of wood and 220 grit sand pap
the channel to remove any corrosion and rough the area to all
silicone to seal better.

Using my simple to build jig to hold the frame in place, I applied liberal amounts of silicone to the channel.

Next I applied a ~~small~~ large bead of silicone to the gasket whe
will sit.

See Update below for lessons learned..

The next step required a little more joggling, I placed the glas
gasket then installed the gasket into the frame. Once in the g
gasket was in the track, I carefully went around the edge of th
a tooth pick and made sure the "lip" of the gasket was outside
(see picture above and left).



While I had the ports out and apart, I decided to polish the aluminum frames (OK I was looking for something to do).

The Before and.....

.....after can be seen below

Once cleaned and reassembled I turned my attention to preparing the boat for re-installation of the ports.

It is worth noting here, I am NOT gluing the ports back into the boat. Instead I will bed them with butyl tape purchased from MaineSail (see link below).

Link to butyl tape as well as a link on how to bed deck fittings with the tape.

Before re-installing, I decided to fill the gap between the coach roof and the liner with wood and thickened epoxy. My goal was to have a solid base as I tightened the inner ring in place. Also I wanted to have the same thickness all the way around the port..... So out came the West System epoxy and 3/8" thick pieces of hardwood... In this case oak.

UPDATE: *Once reinstalled, two (2) of the four (4) fixed ports continued to leak - both of the aft ports to be exact.....* ***Bummer!!!!*** *The ports are now easily remove and disassembled. As it turns out the failure was in the same location on both ports -- the lower aft corner between the glass & rubber gasket in the sharp radius formed by the forward slant. I removed the glass, cleaned it, and applied a much larger bead of silicone in the gasket, taking care to make sure the sharp corners were given extra attention (translate extra silicone).*