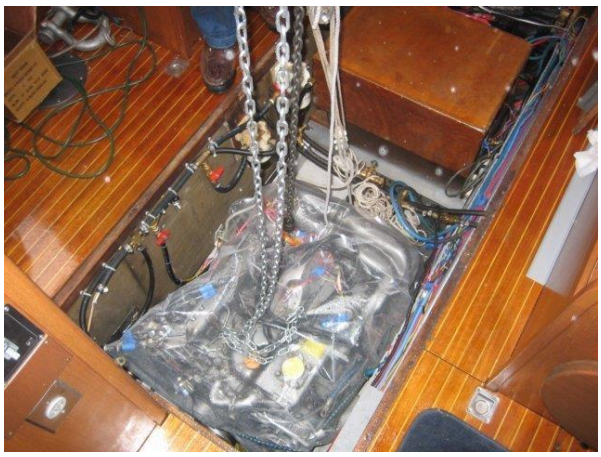
Projects 2006

New Engine, Instruments, Air Conditioner, Ports, Stove, Table

Let's play change engines. The boat originally had a Perkins 4-108 which was replaced with a Yanmar 4JH2-DTE (turbocharged, intercooled, 88hp). Since this was way too much engine for the boat, we decided to replace it with something a little smaller and simpler. Step 1 was finding somebody who was looking for a good deal on an engine with low hours. That was easy as an Albin 27 was looking for exactly this engine.



Step 2 was finding a crane operator that you could trust. That was easy too, as Dad was available. Even though he has been retired for 15 years, he still has the touch.

Step 3. Find a suitable crane, or at least a crane that wasn't busy that day.

Step 4. Open up the cover, modify the cover framework to allow access to the engine and hook on.

Step 4 (some more)

Step 5. Hoist it out.

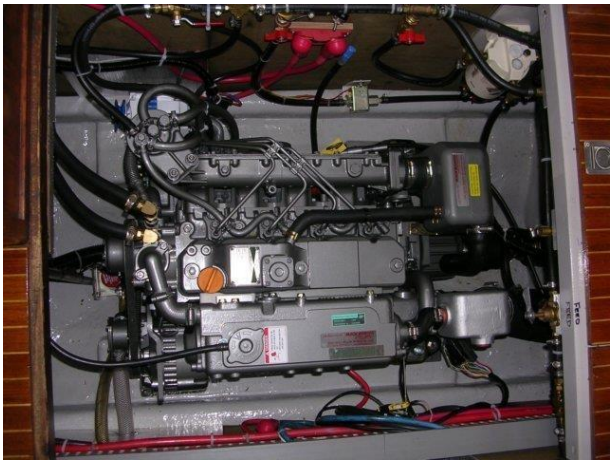
Step 6. Load it up for delivery. Goodbye 88hp 4JH2, hello 52 hp Yanmar 4JH4E.

Step 7. Make a jig to exactly align the (in)correct engine mounts that are mounted on square aluminum tube so as to use the original mount holes (drilled and tapped into steel plates glassed into the hull).

Steps 8 - 37. Install new engine after replacing incorrect senders, making a few (significant) electrical changes

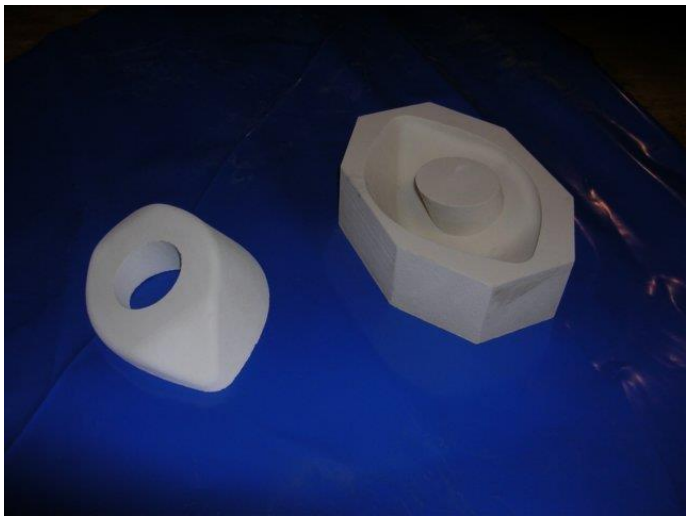
Not sure why, but Yanmar very nicely aligned the gear shift mechanism directly below the 3" exhaust. Fortunately, the exhaust hose needed to make a bend to port, and by rotating the shift mount to tip it aft, things were made to work.

View from above.

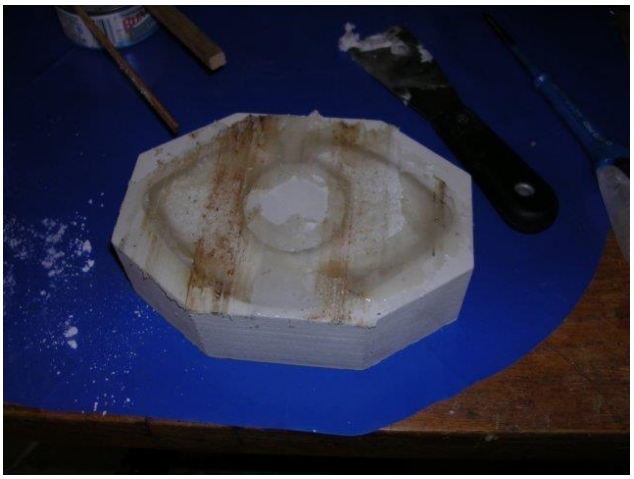


All is well that ends well. The engine mounts had to be swapped out for more flexible ones (e-mail me for details if you are installing a 4JH4) while the engine was in the boat. In reality, that wasn't that much work if you don't mind standing on your head for four hours. It was the usual job with the first three taking very little time and the last one taking the majority of time. The cost and time were worthwhile however. The new engine is 17 dbA quieter, although some additional sound insulation might have contributed to that.

The boat needed a second depth sounder (fish finder). Not being happy with a shoot through the hull one, we wanted one that had direct access to the water. This required an external fairing on the outside of the hull. I have a good idea. Cast one out of epoxy. First print a prototype using a Z-Corporation 3D printer (on left). Then print a mold that can be filled with epoxy (on right).



Fill the mold with epoxy. Some minor excitement was created as the epoxy starts to smoke due to the heat generated by such a large thermal mass. Fortunately, there is a door to the outside from the basement, and it was the middle of winter.

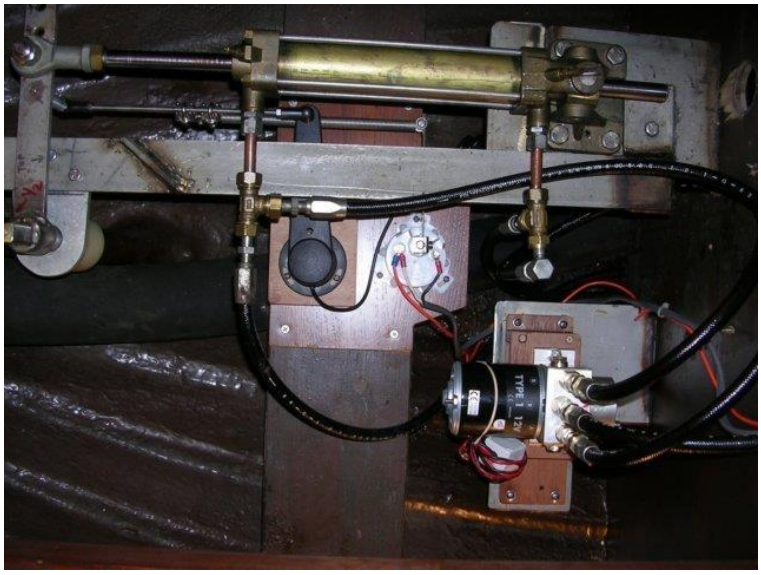


Somebody could have printed the mold a different color than the epoxy that was poured into the mold, but they didn't. Somebody also thought that the epoxy wouldn't adhere to the plaster mold but it did.

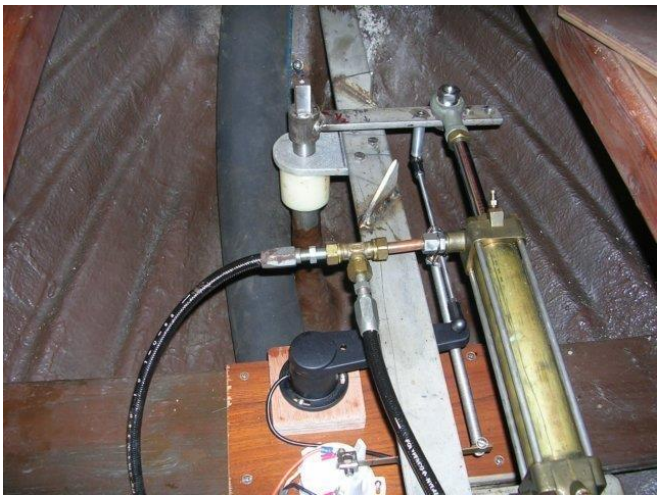
After much work with a chisle and sandpaper, you have an epoxy part. The plaster prototype is on the left, the finished epoxy part on the right.

Installed in the boat bottom.

The original Sharp Autopilot had never worked properly when we got the boat, so had been removed during the initial rebuilding process. It did make installing a new RayMarine Autopilot a lot easier, as the hoses and connectors were already in place.



View of the ram and rudder indicator.



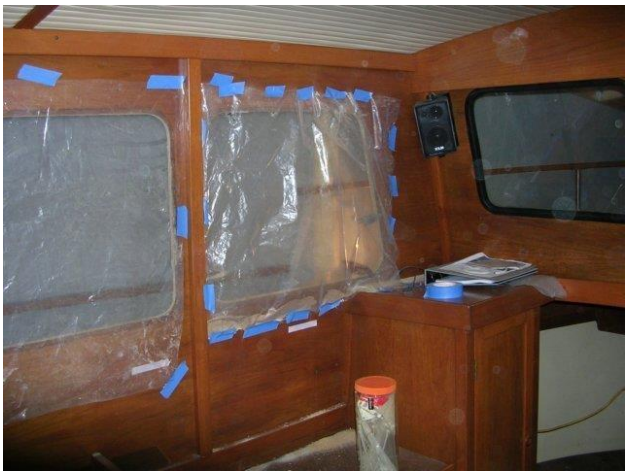
Revision X (lost count) for instruments. Autopilot, wind speed, Yanmar panel as well as Garmin fish finder are new in 2006. The Garmin screen was very nicely placed overhead until it was realized that the LCD screen could not be read even with the backlighting turned to maximum. It only takes a few hours to re-route/re-do all the wiring.

The storage under the port seat was a perfect place to install the air conditioning unit. Since all the through hulls were being replaced during the winter, how much work is it to add one more?

Another view of the air conditioner unit. Since it is a reverse cycle unit, it does provide another heat source at the dock. The Volvo diesel heater that came with the boat is prone to overheating and shutting down. There are three vents: one four inch to the aft cabin, a six inch to the salon and one four inch to the forward cabin.

Air movement though the cabin is important. The original ports were non-opening, so while the boat was under cover for the winter, it was thought that this would be an ideal time to address that issue. Of course, the corner radius was incorrect for the new ports, so a jig was made to both straighten the cut outs as well as generate the proper radius by using a router to re-cut the openings.

Routers make somewhat of a mess, so the attempt was made to limit the amount of dust and chips entering the cabin. The plastic only got stuck in the router bit once. It removed the entire piece in about 1/100 second.



We sanded the outside of the house down to bare wood where the old rubber trim was, removing all traces of the massive amounts of silicone used as sealant. This area was then re-primed, and the house sides repainted with two coats of paint.

The end grain of the cut outs was saturated with epoxy and then paint. Another coat of Sekins was applied to the inside of the house while we had the chance.

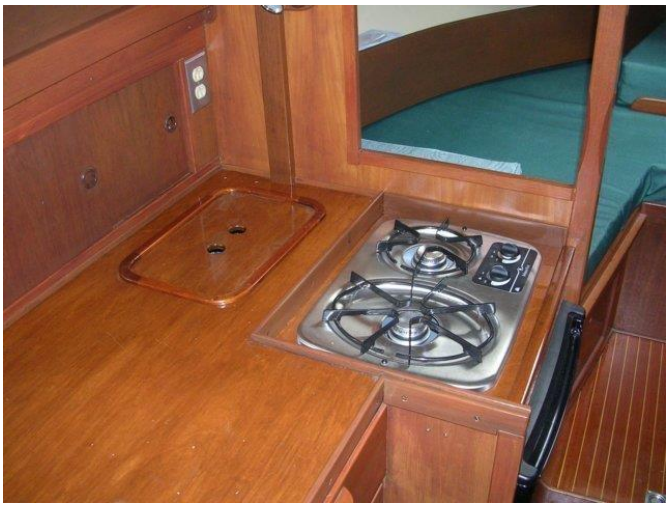
New ports after installation. The cabin doors also got new ports as the old, laminated glass was starting to cloud.

Aft window in the open position. There are sliding screens that are located on the inside track.

View from inside looking out. The increase in ventilation is significant.

After removing the original propane system and stove, and replacing it with an alcohol system, it was decided to put in a propane cooktop. There is a propane barbecue mounted on the stern rail, and it was reasoned (rationalized) that by having a large propane tank and a propane cooktop below, we could simply run an extension hose back to the barbecue. You only have to make a big mess of the main cabin to get access to locations where you need to drill access holes.

Propane cooktop in place, the refrigerator is underneath.



The original table only seated 3 effectively. It was decided that something needed to be done to remedy that situation so that I didn't have to spend the rest of my life holding my plate when we had guests for dinner. This picture is the result. If the table looks a little close to the aft seat, that's because it was, by about 1-1/2 inches. That has been fixed. You can now slide your legs by the dropped down portion.

Shock cord keeps the table from swinging away from the vertical support when the boat is rolling.

Four for dinner is no longer an issue.