

Catalina 310

C310 Association
 Technical Editor
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I hope that the New Year has brought you joy and that Santa brought you lots of new boat toys. As always I encourage people to share their ideas and projects with the group so that all can benefit from the great pool of knowledge and experience. Send your articles and pictures to me at the address above and I will share them with the Catalina Associations. -Bill

The Eternal Coolant Leak

Ok, so I was wrong, I did not solve the mystery of the eternal coolant leak as claimed in the last writing on this subject. The problem turned out to be far more complicated than I first thought, but two months of a dry engine sump has boosted my confidence in having solved the mystery.

Like most of you I have the Universal Westerbeke engine and, like many of you, I have a pervasive leak in the coolant system. For those of you in cold climates that would be anti-freeze. The problem peaked at the end of the summer as we overheated twice for lack of coolant in the system, so it was time for drastic measures and some amount of dismantling. The coolant appeared to be dripping from somewhere around the back of the engine, but no amount of hose clamp tightening would solve the problem. I became worried that the precious green liquid, might be leaking from the engine so I decided to remove the heat exchanger for a better look.

The heat exchange is a tube and jacket affair that runs transverse across the back of the engine and is held in place by two brackets bolted onto the engine block. The bolts are accessible from the aft bunk with a socket extension and some minor contortions. The starboard side bolt will require removal of the throttle control bracket in order to gain access. Once the bolts were removed the brackets dropped off into my hand and the heat exchange was held in place by only the hoses. This is significant because I latter discovered that the brackets are supposed to be solidly attached to the heat exchanger.

I drained the coolant system and removed the hoses attached to the heat exchanger. In order to extricate the heat

exchanger you will need to remove the exhaust hose from the exhaust riser. Wanting to leave no stone unturned I removed all of the hoses, the thermostat and it's gasket. I did not remove the water pump on the hope that it was in good condition and could be easily isolated and replaced latter if necessary.

Back in the shop I rigged up a pressure test for the heat exchanger and put water pressure on it. The jacket appeared sound, but the water pressure showed me where a significant leak was located. It appears that the brackets that hold the heat exchanger in place were brazed on to the heat exchanger at the factory. This is a process of tinning the brackets, which are made of steel, and brazing them on to the heat exchanger, which is made of brass. In the process it appears that the jacket was overheated and weakened at the bracket location. Over time vibration and movement worked the bracket free from the jacket and the weakened jacket developed a hairline fracture that leaked coolant.

I took the brackets and the heat exchanger to a radiator repair shop where they cleaned up all of the components and brazed the system back together again. The rework appeared to be superior to the original, but only time will tell.

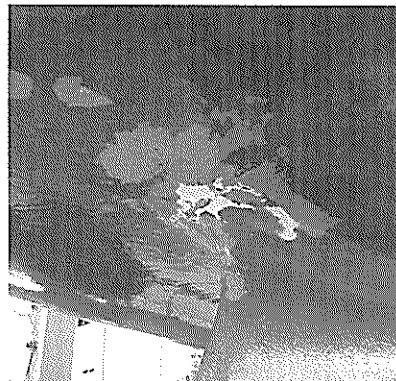
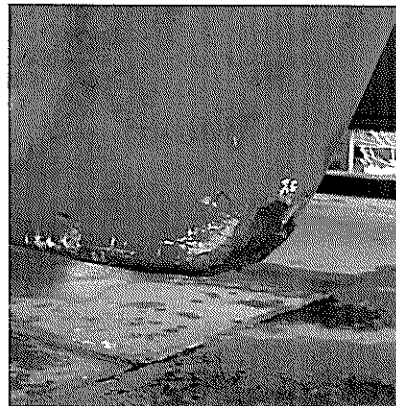
Upon reinstalling the heat exchanger I replaced all of the hoses, hose clamps, thermostat and thermostat gasket. In refilling the coolant system it is important to follow the manufactures recommendations for refilling the system with the engine running in order to properly purge the air. Note that there are two bleed valves, one on the heat exchanger and one on the thermostat housing. With two trips to the island under our belts and two months of time gone by I have no coolant collecting in the engine sump and the level of coolant in the reservoir is spot on.

In the midst of the retro fit I was at the boat show in Annapolis and stopped by the Universal Westerbeke booth. Upon inspection of the 2004 version of the 25XPB engine I discovered that the heat exchanger mounting brackets have been redesigned to fully wrap around the heat exchanger jacket and require no brazing, an excellent solution. If you decide that you need to make this repair I would recommend going to the new style of brackets rather than re-brazing the old brackets. -Bill Lewis, Allez-y! Hull No. 73, Huntington Beach, CA

The following came from Leo Lambert, who sails "White Tara", hull #44 out of Fort Saskatchewan, Alberta, Canada: Thanks Leo.

How strong is your Catalina 310?

Well-let say after hitting some under water object that was not charted I'll show you. The speed we hit at was about 6 knots and all we needed was 6 inches more clearance. But all is good; we had to motor 5 hour to dock, even taking on water, the Catalina systems worked as designed (Another good job by the designers at Catalina). Repairs took most of the summer but she's back in the water good as new. Would we buy another Catalina or recommend one, you better believe it.



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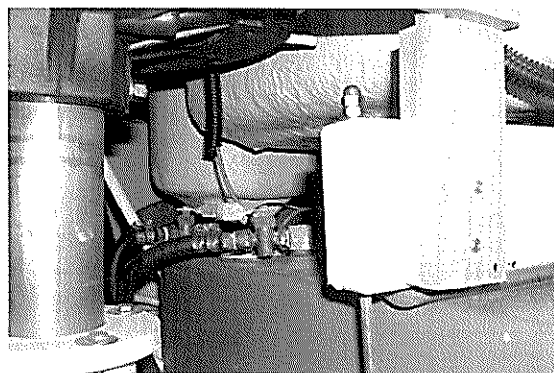


Local Notice to Mariners

Local Notice to Mariners is issued by the Coast Guard and is now available by an automated e-mail delivery system. The service is free, you simply need to go on line and sign up. Go to www.navcen.uscg.gov and scroll down to the section labeled "LNM & Light List Notifications." Select "Sign up to receive automatic notices." This will bring you to a list of the Districts covered by the notices. Select the region that is relevant to your cruising grounds. The final screen will be a fill in the blank form for your contact information and pass word. You will start getting notices immediately and on a weekly basis. Be safe, stay informed. -Bill

Fuel System Modification

Several Owners have experienced a condition where when motor sailing at a significant angle of heel the engine will stop running for no apparent



reason. The conditions surrounding this situation are angles of heel greater than 20 degrees, sailing on a starboard tack and a fuel tank that is less than half full. When the angle of heel is reduced the engine will generally restart.

A few relevant facts about the C310 and the M-25XPB engine: 1) the fuel tank is mounted athwart ship at the stern and is slightly higher than the engine, 2) the fuel supply and return lines are attached to down tubes that protrude in to the tank to within 1/2" of the bottom (Hull 54 and newer), 3) the supply down tube is mounted

toward the starboard end of the tank and the return down tube is mounted closer to the centerline of the tank, 4) the MP25XPB is designed to run at a maximum angle of rotation of 25 degrees.

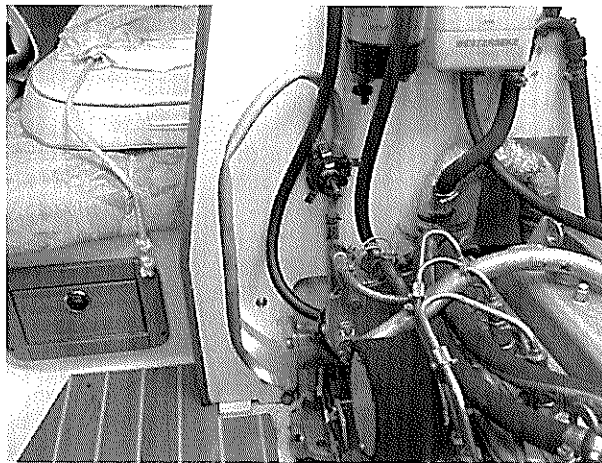
With the above information we can better understand what is happening when the engine stalls. As the boat heels to port with less than a half tank of fuel the supply line, being on the high starboard side of the tank, is out of the fuel supply and sucking air. The engine is starved of fuel and stops running. When the angle of heel is reduced the supply down tube is now back in the fuel supply and the fuel pump can once again draw fuel and supply fuel to the engine allowing the engine to restart.

Catalina does have a recommendation for improving the current situation. The recommendation is to simply exchange the supply and return hose at the tank. In the picture you can see the supply and the return lines. There is ample hose to make the change without replacing or extending the existing hoses. By doing this the supply hose will now be drawing through the down tube located at closer to the centerline of the tank and the return will deposit fuel through the outboard down tube. If you think about the geometry of this you will see that the supply line will be immersed in fuel even when the fuel level is much lower than a half tank. Though it is not a perfect solution is should eliminate all of the problem. It also important to note that the engine manufacture recommends not running the engine when the angle of heel is greater than 25 degrees in either direction.

I don't know about you, but when I have enough wind to heel 20 degrees I am not motoring I am sailing! -Bill

Easy Oil Change

In order to make my oil change clean and easy I have installed a pump that is permanently connected to the oil reservoir. The installation is easy and inexpensive. I used a drill pump from WM. I mounted the small pump on the bulkhead inside the engine compartment as shown in the picture. Using some pieces of stainless steel strap I fastened the pump into place. I connected the inlet side of the pump to the existing hose that is connected to



the oil pan drain. On the outlet side of the pump I connected the hose that came with the pump. Using a 3/8" brass nipple and a brass cap connected to the outlet end of the hose I created an easily removable cap for the system.

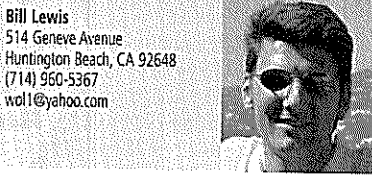
When it is time for an oil change I warm the engine up to about 80 degrees. I connect my battery powered drill motor to the pump and remove the end cap from the outlet hose. I deposit the hose into a jug while turning the pump with the drill motor and in no time the sump is dry and you are ready for fresh oil. With a paper towel the end of the hose is whipped off and the cap is replaced to seal the system. -Bill



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Thanks to Jerry De Armond for the following.

SAY LIN

The Iron Jenny and The Money Pit

We have been plagued with coolant leaks for a very long time, probably even from the time that our C310 was delivered. We thought that there would be simple fixes, for example, the replacement of the coolant overflow reservoir. We never really got a good answer to our question—where is the leak? Bill Lewis gave us the answer. After careful inspection we discovered that indeed there was a leak in the heat exchanger. It was confirmed by a diesel mechanic whom we respect for his expertise and talent.

So, now what? I contacted Westerbeke and was advised to contact the local distributor for Westerbeke and Universal engines in the area where SAY

We all know that it never just ONE thing, but rather a multitude of things, usually coming in threes before final resolution.

LIN is located. Engines One was very helpful and took the necessary information regarding the boat and the engine. I made it perfectly clear that SAY LIN had only 80 hours on it and therefore is nearly new. I just wasn't sure what was going to happen because I did not want to spend about \$400 for a new heat exchanger—that was the approximate cost. I was very pleased when I contacted Engines One a week later and was told that Westerbeke was going to send us a heat exchanger. The heat exchanger arrived a few days later—it wasn't new, but it didn't cost me anything either. With the used heat exchanger in hand we were ready to go to Georgia.

Removal and installation of the exchanger took three hours. It was an amazing job, and I was not able to do it without the expertise of a skilled diesel mechanic. Wayne was terrific. Westerbeke sent the exchanger with the straps as Bill Lewis suggested be used for any replacement. After installation the engine was started and all looked well

until...we discovered a leak in the rubber hose where it connected with the starboard fitting on the exchanger.

It was not only a difficult job in getting this hose off, but even more difficult in putting on a new one. No local shop/store had the proper hose, so we drove down to Jacksonville and obtained the proper hose cut to the proper length...then the fun began. I must admit that I am not the sharpest mechanic—I will reserve that title for Susan, my mate who should also be the Captain. I was able to secure the hose to the fitting on the starboard side of the heat exchanger and clamped it down with a new stainless steel screw clamp. During that process I was able to get the hose in the proper position—sort of—on the port side where it connected to the engine. This is where the fun was. We found it most difficult to get the hose onto the fitting. Finally, after exhausting several other means, Susan got out her stainless steel spatula used in the galley, sprayed it with W-D 40, and we were able to slide the hose (again with some effort) down onto the fitting. I clamped it down with another new stainless steel clamp. We started the engine...the bell sounded and we shut it down. Now what?

We all know that it never just ONE thing, but rather a multitude of things, usually coming in threes before final resolution. So now we are on number three. We really couldn't wait to see what the problem was, although I had a hunch. Both of us had to get back home in order to go to work in a day and a half. (We leave in the p.m. to late afternoon, drive all night, get home in the morning—usually by 9 am—have a day, then go back to work the following day.) I called Wayne. He wasn't sure what the problem was this time, but he had a hunch and it was just like mine! I got a call from him two days later and he confirmed that now it was the thermostat. It apparently got stuck in the closed position, so when the engine began to heat up no water was able to get through the closed system to the heat exchanger and the heat built up. We were glad that the warning system bell sounded. I ordered the part from Engines One—they are terrific people and wanted the serial number of the engine in order to be certain that the correct part was shipped. The new thermostat arrived, was installed and the engine tested. It is now running at 180°F—a bit on the cool side, but that is a good thing.

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A note from Westerbeke:

The M25XPBC engine in the C310. Westerbeke recommends nothing smaller than a 10 Micron filter element in the systems primary filter because of the electric fuel pump's inability to draw fuel through a two micron filter in all cases. This could, however, depend on the layout of the particular vessel's fuel supply system. You may want to contact your dealer. Perhaps we can get clarification from Catalina Yachts directly.

Service Bulletin

It has been brought to my attention that a service bulletin has been issued for the Universal M25XPB engine with a manufacturers date code of E001 (January 2000) and older. The Bulletin is #235 and the subject is "Cam Shaft Drive Tang Reinforcing Sleeve." This Bulletin addresses a missing reinforcing sleeve for the drive tang on the seawater pump. A replacement part can be requested from Westerbeke by calling 508-823-7677 or emailing a request to help@westerbeke.com. It does not appear that the bulletin is readily available on their website so owners of the Westerbeke products are advised to be sure that their warranty information is registered with Westerbeke so that future notifications will be received.

Where to put the Roll

There has been an amazing amount of discussion about where to put a paper towel holder on the boat. Some have mounted conventional paper towel holders in the cabinet behind the dry locker, above the nav station and even on the hand hold above the sink.

I had been simply storing the roll in the cabinet behind the stove, but with all this talk I was incensed and started to ponder the problem. A couple Coronas later and I was no further ahead. The Admiral joined in and immediately found the location and I engineered the solution.

We hung the roll inside of the sink cabinet, below the front part of the sink and above the trashcan. A piece of 3/4" PVC tubing was cut to a length of approximately 12 inches. A closed eyehook was installed under the counter

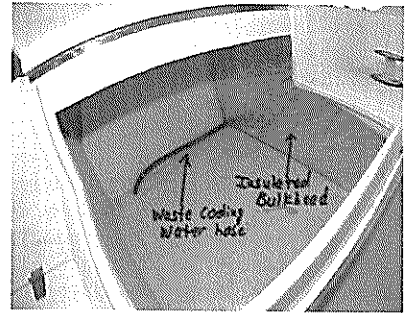
just to starboard of the sink. Using a piece of 1/8" nylon line a loop was tied onto the eyehook. An open hook was installed under the cabinet just to port of the sink. The free end of the line was threaded through the PVC tube and the paper towel roll. The line was then put through the open hook so that a proper height could be determined for the paper towel roll. A loop was then tied in the line, which can easily be placed on and off the open hook to allow replacement of the paper towel roll. Thanks to the Admiral for that one. —Bill

Air Conditioning Installation

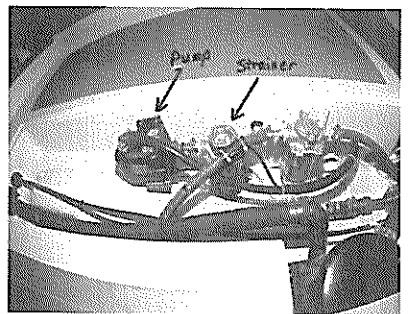
With summer's sweltering heat still fresh in your brain and knowing you are looking for a winter project I am rerunning this article on Air Conditioning Installation.

I bought the AC unit from Flagship Marine in Florida. Tom was great to work with; he cheerfully answered all my questions and is a neat guy. I would recommend buying from him. The Catalina dealer in St. Louis has installed lots of different brands including Marine Air, Mermaid etc. He said this was the best unit by far that he has seen. It is very well built. In fact Flagship supplies the US Coast Guard with all their AC units. Flagship charges slightly more for their units, I think, but they are very well put together, and worth it. Flagship's number is 800-316-6426, ask for Tom, and tell him that Dr. Quade from St. Louis sent you. I think you'll like them.

The unit I used, the 16,000 Btu, even though the 12,000 Btu would have worked fine, fits nicely in the port lazarette locker, in the forward aspect (Photo 1). I ordered mine with resistance heat since the lake water in the Midwest is very cold in the winter. You can also get reverse cycle heat from Flagship for use in warmer waters. I mounted it on a piece of plywood that I covered with epoxy for water resistance. I used 5200 to glue and seal it onto the floor of the locker. The return air grate/filter was cut into the floor of the locker as far outboard as possible. It sucks return air through the aft berth to keep it cool (Photo 7). I insulated the inside of the lazarette locker so that the outside of it, the part in the cockpit, would not condense water on the surface. I sealed the locker from the hull liner with spray foam. I also made a bulkhead from polyisocyanurate board to section off the part of the locker that contains the AC unit from the rest of the locker.



I ran, and I did a lot of the work on the installation, the water supply hose through the outboard aspect of the locker floor, down into the storage cabinet in the aft berth, and into the bilge area aft of the engine. I bought the deluxe installation kit because it had better components, including a very nice strainer. I installed the water supply pump and the strainer in the area that Catalina installed the strainer for the engine (Photo 2). I put it right next to it, that way everything is together for winterizing. I put the water intake through-hull next to the other through-hulls that are accessed from the head access panel. That way they are all together. Another good place for the intake through hull would have been next to the engine through-hull. The water waste hose was run to the port aft area to a through-hull in the far stern. I placed a Tee in the head sink drain for the condensate line to drain into. That way I would not have to drill another hole into the side of the boat. I used a 2"

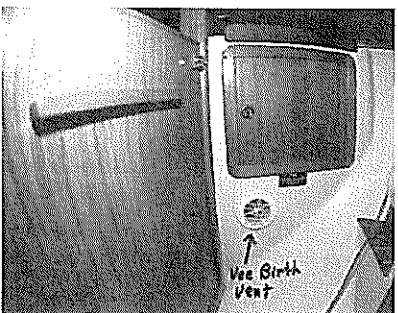
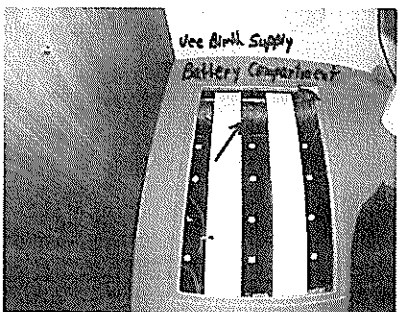
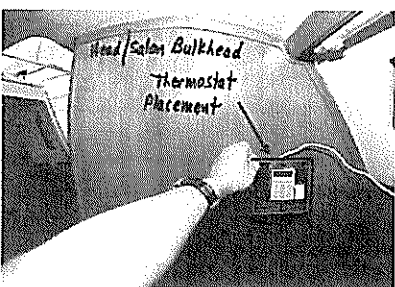
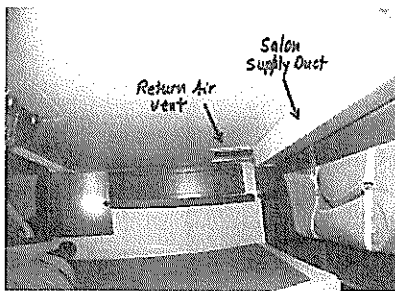
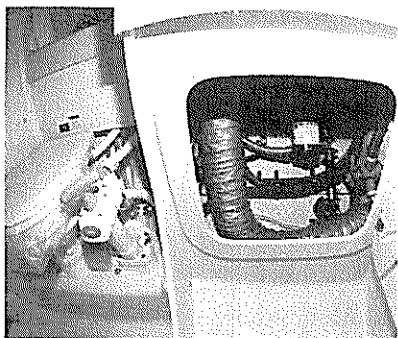


duct into the head (special order), I just ran it through the forward locker wall and ended it under the medicine cabinet so that shower water would not enter it, and it really is not visible (Photo 3). The other reason I put it there is so that AC



air would not blow the shower curtain open while showering. The air just goes under the cabinet and into the head area rather nicely.

I ran the duct forward to the vee birth down through the outboard aspect of the floor of the locker, into the storage cabinet underneath and behind the head (that board comes out for access). It continued through the vanity cabinet, through the bulkhead and into the battery area. Heading forward I ran the duct through the port settee, and then into the locker in the eve birth. There I cut a hole in the front of the locker and used a directional vent to aim the air into the birth.



For the salon supply I bought a 4" PVC fence post (do not laugh until you see it, it was neat) from Home Depot to be used as a nice looking air duct since it will be visible. I ran two 4" duct hoses just through the floor of the lazarette and left a couple inches sticking through the ceiling of the aft birth. I glued them in place. I cut two 4" holes

in the top of the fence post and mounted it on the ceiling of the aft birth to connect with the two protruding 4" hoses. The fence post ran toward the starboard side, and stopped at the bulkhead cutout, where the curtain is cut to close the cutout, behind the engine. I cut two 4" holes in the front of the duct and mounted two directional vents. The air blows from the vents, under the top step of the engine cover, and into the salon. It has enough velocity that you can slightly feel it at the vee birth bulkhead. I used some Starboard to close the ends of the fence post/duct. You could use just about anything to close the ends though. Home Depot even had fence post caps. I decided the duct would look too much like it belonged on a farm if I used the caps.

I put the thermostat on the head wall by the port settee, next to the louvered cabinet door, slightly inboard (Photo 10). The whole system is silent. The only way a person would know if it were running, is that cold air is moving around the cabin. —Dr. Kevin Quade, *Hydrophilic*, #191.

Kevin,

This looks like a great solution, I have seen several and was beginning to pull together the good parts of each, but yours is by far the best. The only item I might suggest for an improvement is running the condensate line to a tee in the drain line coming from the port propane locker instead of the sink drain in the head. Some people run the AC all the time and this would leave fewer through-hulls open. —Bill

Destinations

Write your Association Editor (1200 words plus one or two photos) with a critique of your favorite cruise destination. Tell us why and give us tips, plus cautions. **Pass it on!**

—James Holder,
Publisher and Editor

