CATALINA 350 INTERNATIONAL ASSOCIATION



Past C350 Association Technical Editor Bill Templeton

This will be my final submission as Technical Editor for the C350 group. Hopefully you will find my name as contributor to the C385 group a couple of pages back.... (I have already sent in a "quick and easy" increase in storage" article). I am most pleased to announce Scott Monroe will be taking over this column. You may recall the name from his most detailed and precise article "The Repedestalization of Southern Yankee" last Fall. Scott's "bio" can be found in the Association News section.....I think you will be (as I was) most impressed. I have already "threatened" Scott with a write-up of my experiences replacing the waste valve last Winter for his first submission (September/Fall) as Technical Editor.

This quarter I present to you Michael Price's article on replacing and relocating the heat exchanger in Journey, his 2005 C350 # 275. I think you will find the information and his procedure most relevant as the 350s are getting older and HX issues are probably in most of our (your) futures. I had to "service" my HX and replace an end cap a few years ago. If my HX had been located where Michael put his the job would have been much quicker and easier.

Farewell and thanks for letting me share "all-things 350" with you for the last 6-7 years.. **–Bill Templeton**, pbtemp6816@verizon.net

Heat Exchanger (HX) Relocation

By Michael & Maureen Price • SV Journey Catalina 350 - Hull #275

November 2017, we bought a 2005 Catalina 350 #275 which was a major upgrade to our 1982 Ericson 28 Plus. Over the past year we have worked to improve Journey which was already a very sound sailboat. Our past owner had problems with the Heat Exchanger (HX) mounted on the back of the M35B Universal and recommended a relocation effort. Enjoying our boat on the Chesapeake, we often noted a small coolant leak after running the engine. This typically was less than 2 ounces of coolant up under the engine. The coolant leak was more and more a nagging issue as we tried to locate the source. We suspected a small crack STBD fastening strap which we later verified using a long strip of thin rubber tightened under the strap. The engine setup from the factory was understandable as the engine, HX and all were installed as a single package.

This Winter, we decided to send in the old HX for a repair and pressure test. But even with the small crack outside the tube repaired, the pressure test indicated the antifreeze (AF) was likely leaking into the raw water (RW) side. We contacted Mr. Cool and spoke to Russ who was very knowledgeable on these matters. Happy with his patience in answering my questions over several phone calls, we made the purchase which came in under $450 shipping included. Russ offered to swap out the engine mounting brackets for the aluminum saddle mounts since HX relocation was key to the effort.



Platform left FWD & Right AFT also showing NTP Elbow which will come from old HX

Surveying a prospective area where we could mount the HX, we decided that the area under the Aft stateroom bedding, behind the shaft next to the muffler was best. Here a piece of plywood had been glassed in. We felt we could mount the HX there but noted a downward slope facing forward. This meant the HX would need to be mounted on something that provided a level platform. Using 1" thick Starboard, using two, one-foot pieces of Starboard, we shimmed the forward section up from 2" total height thickness to 3 ¾ inches. Seen in the photo, the completed platform was constructed with two pieces of 1" thick Starboard measuring 5 ½" wide by 12". In retrospect, it would have been easier to make the bottom piece 4" longer (2" forward and 2" aft) for mounting. Incidentally, the overall height of the level platform with respect to the previous engine location was about the same. Both pieces of Starboard and shims were secured with epoxy before drilling mounting bolt holes. The two HX aluminum saddles were fastened through the entire platform with countersinking the four bolt heads and flat washers from underneath. Self-locking stainless nuts and flat



Mr. Cool HX - Email Release for this PIC enclosed



RW Hose Couplings 34 in. to .875 and 1 in.

washers were use on top. For the entire unit, we fashioned corner blocks fore and aft to hold the unit in place. Final securing of the blocks was completed with #12 1-½" stainless screws and large flat washers. Warning!!! We were very careful in pre-drilling and screwing the unit to the plywood as we did not want to drill into the hull or the shaft log. With the blocks and the HX unit held in place from sliding forward or aft, we will ultimately secure both the blocks and the HX platform down with epoxy or 3M 5200 once good engine cooling is verified.

HX mock-up notes: The old HX has an elbow seen in the parts diagram that must be refitted to the .75" NPT fitting. With a large wrench and some Teflon Tape the Elbow item #13 on pg. 25 of the parts list, fit to the new HX. The Elbow is labeled 3/8 NTP to 1, marked item #13 on the diagram. Getting the overall platform angle of incline correct was frankly pure luck. After some rough measurements, we were able to zero a level on the HX platform, staged on the boat to zero with a full fuel tank, NO water in any of my tanks, and the boat cleared of all personal effects, food or items needed. Another thing to consider after consulting with Russ at Mr. Cool is that the SeaKamp HX should be oriented so the zinc and drain are as close to down as possible. Hose routing plays into this however.

With respect to hoses and true to all things boat, we had to address added complexity with the four hose fittings requiring three different size hoses. The aforementioned Raw Water (RW) 3/8 NTP to 1" elbow takes around 5 ft of hose. The other RW side of this takes .875-inch hose or 7/8 inch. We noted two things here – Both RW connections are in proximity at the end of the HX facing most forward albeit with different sizes, and both Antifreeze coolant (AF) connections are 1 1/8-inch hose both located inward toward center of the HX with one connection most aft of the unit.

We considered why hoses at the engine were coupled with clamps to larger hoses. This is a likely consequence of the anti-siphon installation located under the steps behind the panel. This install addressed previous hard engine start issues. We also considered that the differences in the RW inlet/outlet hoses of the HX may act to lesson water pressure at the HX for better heat transfer to the coolant. Whatever the case, the inlet and outlet sides of the RW pump are both 3/4" with couplings to different size hoses.

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For the AF hose, the HX relocation needs two pieces of 1-1/8th inch hose. The first piece is replacing the 11" short piece coming from the aft manifold connection next to the mixing elbow (Ref M25xpb-M35b-m40b Parts Manual rev. 2 Pg. 25 Parts #s 29 and 4). 5-6 ft of hose did the trick from the exhaust manifold on the forward AF connection of the HX. The other aft AF connection, which was routed from a pre-molded hose from the front of the engine to the HX. We opted to remove the pre-molded hose and connect the 1 1/8th inch hose directly to AF Circulating pump (Pg. 47 part # 41). Running a longer section of 1-1/8th inch hose from the circulating pump connection at the front of the engine bending around aft toward the HX we required about 8 ft. of 1-1/8th inch hose but we recommend starting with a longer piece and cutting to length at the HX once everything is strapped in. This strategy necessitated bending the hose with enough radius to achieve the connection at the circulating pump at the front of the engine. Take care to ensure the hose does not contact the rotating belt. Though not easy, we felt this direct connection is better than using a coupler between the molded hose and the new hose.



Finished showing Mounting Screws

Lastly, we have determined that blue stripe and green stripe hose probably aren't much of a concern Green being for sanitation and blue being for exhaust. In both cases, we opted for wire inserted hose all around as it will not collapse under suction. Also, our two RW hoses, which we installed first were routed below the exhaust. Two AF hoses were routed above exhaust.

With everything run, mounted, and strapped for sea trials, once the engine is re-commissioned, we will report on our cooling. Engine operating temperatures of between 160 and 170 degrees in all conditions and NO coolant drips will ultimately determine the success of the HX relocation. We will also monitor all new hoses for any chafing or heating contact to other engine components. Best of Luck! **–Michael Price**, SV Journey

New Technical Editor C350

Since being a wee lad, my eyes have been out to sea and hand on a sheet. Growing up in upstate New York, my big water was the Finger lakes, but with a youthful imagination, high winds, lake chop and a small Sidewinder sail boat I was sailing the high seas. It wouldn't be until much later that my attention turned to boats that could handle the seas and I graduated into a Catalina 28, which grew to a 320 and then setting comfortably into a Catalina 350. Alas, my big seas were still lakes, and just reservoirs at that, as I was land locked in the Dallas TX area (the lakes are bigger in TX!).



C350 Association Technical Editor Scott Monroe

As life is full of changes, I landed an opportunity to move to Rhode Island, the Ocean State!! So, the Southern Yankee, our 2006 Catalina 350 was put on a truck and plopped in the ocean for the first time (for her and me). I have arrived! Despite the short sailing season, as New Englander's know, Narragansett Bay offers sheltered waters, great anchorages and many classic islands to set your compass to with names such as Nantucket, Martha's Vineyard and my favorite Block Island. I have arrived!

My story, though, isn't limited to my wife and I sailing into the sunset as we dreamed it might be. Having a forced career change several years back I decided to follow my passion over my profession and landed as a student at the International Yacht Restoration School (IYRS) in Newport, RI. My mechanical predisposition wanted to know how the Southern Yankeeticked from inside out, and so I became a big sponge for knowledge, ultimately earning ABYC Master Technician with focus on electrical, electronics, systems and diesel engines.

Having taught college, as one of many occupations, the school brought me back as an instructor and I have been sharing my passion for marine mechanics with students at IYRS ever since.

So, I am very excited that I am getting the chance to join the team as Technical Editor for the Catalina 350 association and share my knowledge and passion for all that is hidden beneath the floor boards, bulk heads and cabinetry in our floating joy, know as the Catalina 350. **–Scott Monroe**, scott_monroe@verizon.net

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