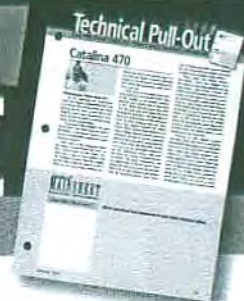


Technical Pull-Out

Q&A FOR YOUR CATALINA THAT'S BEEN FACTORY APPROVED FOR ACCURACY



Catalina 470



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Smoke it the Yanmar Exhaust and what is the temperature of the Engine

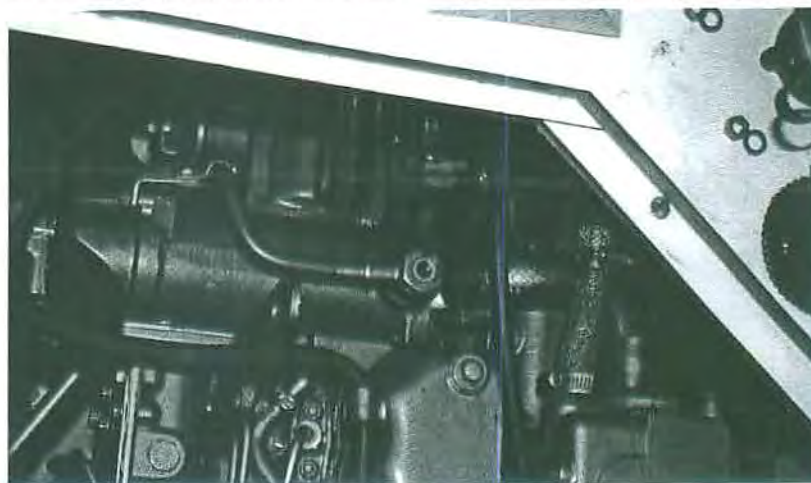
Traveling up and down the east coast of the United States was an interesting and learning experience the (for) Judie and me. You can read more about it in the 470 section.

The story of the Yanmar Engine on S/V *Southern Cross* has been interesting to say the least. It started with more white smoke than usual in the exhaust on startup of the Yanmar Engine. I know that the boat surveyor was very interested in the color and amount of smoke when the engine was first started. I have always monitored the start up for this issue. The smoke cleared up once the engine warmed up to normal operating temperature. We started to note that the

Yanmar needed oil more and more on the trip. It never needed oil in the past. This was cause for concern since I was not carrying multiple gallons of oil. Several calls to Mastry Engine (the supplier of the engines to Catalina) and the first thought was that I was not running the engine at high enough RPM and carbon was building up in the cylinders. The fix, run the engine at 2800 to 3000 RPM for an hour and burn the carbon off. I also

noted that the oil pressure was running in the 40psig range at most RPM's. I could not remember what the pressure was when the boat was newer. Mastry indicated that 40 psig was acceptable. At this point they also noted that the specification on the engine allowed for up to one liter of oil usage for every 50 hours of operation. Although I was close to that limit and could have ignored the usage and continued on adding oil, I decided to investigate further.

I have always let the engine cool down and followed the technical manual requirement to run the engine up to high



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RPM out of gear before the shutdown. I am not sure why but I do see that the evolution does blow all of the water out of the lift muffler which helps on the next start up. As the oil usage was going up, more white smoke was discharged.

Once we got back to the Key West area, I called in the local Yanmar Mechanic to evaluate the issue and make a recommendation. At the same time I provided all of the above observations to Mastry. Both paths on conversation pointed at the same problem. The Turbo-Charge seals had to be leaking. Once the air inlet screen was removed, you could see the puddle of oil in the bottom as well as oil down the side of the engine under the intake. A new Turbo-Charger had to be sent over from

Japan since there were none in the US and the 4JH3TE engine in the C470 has a unique one that is not used on any other engines. It took about 4 hours to change out the Turbo-Charger. Although I could have done the work, several new gaskets were needed which are not provided with the new Turbo-Charger. (Oh and)The new unit is sent unpainted to add to the work. The antifreeze coolant has to be drained from the engine to remove the old Turbo-Charger.

With the Turbo-Charger replaced I observed the following changes.

No more white smoke from the exhaust, the oil pressure is now constant at about 60psig, oil usage has stopped and the engine sounds much quieter. Judie noted the low engine noise level also, so although not scientific we both think it is running quieter and better.

The photos show the old Turbo-Charger installed, the new Turbo-Charger, two views on the deck and the engine with the Turbo-Charger removed.

The mechanic indicated that there is a way to rebuild the unit but did not recommend it since the body is cast iron and usually corroded and the seals will not work right.



where



Catalina 42

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Yorkshire Rose, #870

In the last issue I outlined some electrical upgrades I have done to *Yorkshire Rose*. One of the few remaining concerns, routine battery maintenance, is neatly addressed in a contribution I received from Rod Kidd. Rod has a large number of wet-cell batteries installed on *Sashay*, and he outlines a great way to tend the water levels quickly and easily. Rod is based in the San Francisco Bay area, and he is a long-time contributor to the discussions on the C42 internet forum.

I also received a note from Bob Levi about a useful solution to a problem most of us have faced at one time or another; how to get into a locked door without creating damage. Bob and Nalu Kai are based in the Los Angeles area.

Bob is another frequent contributor to the C42 internet forum.

New Batteries Aboard *Sashay*

When I purchased *Sashay*, a 1997 C42 MkII #567 in July of 2002, the original owner had upgraded the house battery bank from the stock pair of 4D batteries to a house bank consisting of eight 6V golf cart batteries for a total amp-hour capacity of 980 AH. I purchased the boat from the 2nd owner.

During the pre-purchase survey, the surveyor discovered all 8 batteries were dry and the plates were exposed. Not wanting to replace the batteries immediately, I filled each cell with distilled water and hoped for the best. I got another full year of use from the house bank before I had to replace the entire bank due to a shorted cell in one of the eight batteries. I replaced the batteries with eight more golf cart batteries from US Battery. Four of the batteries were located in the area under the "garage", a pair were located in a custom battery box in the port lazarette, and the last pair were located in another custom battery box in the starboard lazarette. The new US batteries lasted 8 years before another cell shorted.

Since the US Battery golf cart batteries lasted 8 years, the logical choice was to replace the bank with US Batteries again. I chose the US-145-XC at 251 AH each giving me a total capacity of 1008 AH. I briefly considered AGMs and other battery chemistries but chose to go with plain old lead acid wet batteries due to cost and their availability in remote cruising grounds.

One of the pain points with eight golf cart batteries is checking the water levels and topping up the cells. There are 24 cells (eight batteries X three cells each). I dreaded emptying the garage and the lazarette to top up each of the 24 cells.

When I purchased the batteries from the local US Battery dealer, I was complaining about watering all those batteries. The dealer suggested I install a Flow-Rite Pro-Fill battery watering system. The Pro-Fill system consists of special battery cell caps, and manifold to connect the caps together, tubing to connect the manifolds together, a quick connect, and a squeeze bulb water pump. The system allows one to fill all 8 batteries/24 cells from one quick connect fill point.

Photo 1 shows the battery caps and manifold, and Photo 2 shows the caps