

# Tech Notes

Q&A for Your Catalina That's Been  
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CATALINA 470 NATIONAL ASSOCIATION

## Raw Water Cooling System Issues



C470 Association  
Technical Editor  
Joe Rocchio

Sometimes the systems we rely on just don't behave the way they should – or perhaps, more accurately, the way we expect that they should. In the last 50,000+ nm of cruising, I have come across some perplexing problems with *Onward's* raw water cooling systems

for both the main Yanmar engine and the Fischer-Panda generator. Both have had simple solutions that came to mind once I stopped thinking that they should behave the way I thought they should. The following

suggestions may be useful to keep in mind should you encounter “strange” behavior.

The problem arises when there has been enough wear on the raw water pump surfaces that come in contact with the sides of the impeller. This normal wear can be enough to reduce the pump's ability to pull enough of a vacuum to move a bubble of air through the intake system and the pump. When the pump chamber is full of water, with its higher viscosity and lower compressibility, it is moved through the system just fine.

The first time I encountered this problem was with the Yanmar. *Onward* was traveling south on the ICW near Ft. Pierce when it was overtaken by a very large sports-fisherman. It passed us close by with a huge wake (sound

familiar?), but I was able to quickly come hard to starboard and cut through the wake into the quiet zone thus avoiding the salon being “blenderized.” Shortly thereafter, the engine overheat warning signal came on and I had to shut it down.

Fortunately, I was able to quickly set sails and sail into a nearby marina. There my investigation led me to believe that the huge amount of foam in the wake of the sports-fisherman had been sucked into the raw water intake and formed such a large air bubble in the strainer loop that the raw water pump could not rid itself of it. I fixed the problem by closing the intake through-hull valve, filling the strainer with sea water, then closing the strainer before reopening the

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intake valve and starting the engine. Normal raw water flow began immediately. It is possible that a loosely-tightened strainer cover added to the problem.

During *Onward's* annual summer visit to Nantucket for 2015, the Fischer-Panda generator fell victim to the infamous eel grass that flows back and forth in the harbor. The raw water intake elbow got plugged and the engine was shut down by the temperature safety interlock. Unfortunately, when I checked the raw water impeller it was damaged. I quickly replaced it and cleaned the intake line. However, there was no joy; raw water did not flow when the generator was restarted.

A good friend Bill Kimbell suggested using the high pressure air hand pump for the RIB to back-flush the system. So, first to assure there was no blockage in the inlet line, the raw water inlet hose was removed from the raw water pump and the hand pump connected to the inlet elbow with the inlet through-hull valve closed. The hand pump was able to push air and water through the line indicating there was no blockage. I was then concerned that the missing vane of the pump had moved along to the heat exchanger and was blocking flow. So, with the intake through-hull valve closed and the cover of the raw water pump removed, I disconnected the raw water hose from the exhaust elbow and connected the high pressure hand pump filled with fresh water to it. I forced water through, back-flushing the heat exchanger tubes and pump until there was full flow out through the raw water pump. Now, having verified the ability for raw water to flow through the entire system, I reassembled it, opened the intake through-hull valve, and started the generator. Again, no joy, there was still no raw water flow.

I was perplexed to say the least. Then I remembered the problem with the Yanmar's cooling system related above. So, I again removed the raw water feed hose at the pump, opened the raw water intake valve, and put the hose end well below the waterline until full water flow was achieved. I closed the intake valve and reconnected the hose, now full of water and no air bubble, back to the pump intake port. The generator started and ran with full normal raw water flow. Success!

**The lesson:** while a new raw water pump can move air bubbles through the system, it apparently doesn't take much wear on the side surfaces to become ineffective under the right conditions. A simple manual priming of the intake line is an easy fix – once you stop assuming that the pump performs like it did when new. Periodic replacement of worn cover plates should help reduce at least half of this problem. **–Joe Rocchio, jjr@onward.ws**

## CATALINA MORGAN 440 NATIONAL ASSOCIATION

### Life After Solar



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Mike Simpson

*Special thanks to Judy Durnford for submitting this article.*

**–Mike Simpson,**  
mike@threesheetsailing.com

You may remember I am a B. C. ER nurse, single grandmother and living on my CM440 for almost 5 years. It is really my second boat having previously owned a C27. I learned to sail on Lake Huron on a Sunfish and then an Albacore. I sail the gulf islands from Sydney to the Broughtons and currently I have a few months to work at the Alert Bay hospital on the north end of Vancouver Island and then have a wish to travel to La Paz for next winter. By the way, I need crew.

Some of you already have a solar addition on your boat and I am not an “electro techi”, but this was my 2014 addition to Paloma.

For 5 years I have cruised the inside passage of the pacific west. With unlimited anchorages, I lean towards the solitude of the gunkholer. Anyway, you get what I mean.

This created the endless monitoring of the battery charge. I do not admit to being a technical expert on electricity and so will leave that to the experts however, I do know what it means when the battery voltmeter reads 11.2 volts.

I was obsessed with maintaining the battery charge. Turnoff the freezer at night, change all the lights to LED, “no you can't charge your IPADs!”, new gel batteries, bigger alternator. Still, I had to turn on the Honda generator. This was so annoying and loud.



Luckily, I attended the Catalina Rendezvous that year at Thetis Island and after networking the participants I introduced myself to an owner who was importing semi-flexible panels at a fraction of the previously quoted prices. I calculated my boat's requirement with an online chart. The panels can be clasped on or with Velcro, sewn to the existing canvass. This saved an

arch installation. I think the panels do not detract from the boat's appearance and become virtually invisible.

My “lucky to know” shipwright and racer took over for me...4 hours later I was ready to try the new system.

After being on the water this year since May, I have not used shore power until 5 September because I am back to work and need an electrical heater as I work 12 hour shifts and do not want to leave the diesel Hurricane on and, of course, I need my hair blow dryer.

The system is paying for itself and the bonus is “movie night is on!” no matter where I am. **–Judy Durnford, S/V Paloma**

Solar panels (4 x 100 watts) .....	\$385 x 4 = \$1540
Controller .....	300
Canvas work.....	200
Wiring.....	25
Labor (approx 4 hours).....	160
<b>Total .....</b>	<b>\$2225</b>

Previous quote

Arch.....	7000
Solar complete installation .....	7000
<b>Total .....</b>	<b>\$14000</b>