



***s/v Beatrix* Repair, Maintenance and Improvements Log**

**219500 Words
466 Pages**

**January 14, 2004
To
August 8, 2020**

To Bottom

New Entry

Contents

Battery Load Test.....	14
Pressure Leak Investigation	53
CURRENT FX CHARGER CONFIGURATIONS.....	94
CURRENT CHARGER CONFIGURATIONS	104
AUTOPILOT (see 10 May).....	125
71C Velvet Drive transmission Parts & Rebuild	137
CURRENT CHARGER CONFIGURATIONS	144
REFRIGERATION.....	299
PRINCE OF WALES MARINA IN TASMANIA TO BLACKWATTLE BAY, SYDNEY, NSW	309
BLEEDING THE MAIN ENGINE	381
Acceptable fuel dilution limits	434
Why is fuel dilution a problem?.....	434
Hobart to Murbanna to Hobart to Sydney Voyage Glitch List	452

Wednesday, 14 January 2004 17:30

Starter

Replaced starter with spare starter. Starter is bolted to engine with three 3/8NF automotive studs. These require 9/16" box wrench. 5/8" wrench is required to remove starter power cable. Make sure cable is de-energized. If possible to remove fuel filter it makes it much easier. Diagnostic routine was as stated in Nigel Calder's book. The starter now on the engine is the rebuilt spare bought when the engine was rebuilt. Note that extra stud and nuts, bolts & washers should be kept with the spare starter.

Octopus

Started work on Octopus replacement. Detached hoses from actuator and plugged and capped them. Size is SAE 1/4" flare fittings.

Thursday, 04 March 2004 07:19

Finished Octopus pump wiring.

Thursday, 22 April 2004 09:15

Sent TACK and MULTI to Golden Arrow Electronics in Dorset, UK for repair.

Friday, 23 April 2004 08:38

AFT Head Vacuflush pump does not shut off.

Monday, 31 May 2004 18:51

R&R AFT Head Vacuflush Flush Ball & Bowl Seal. (Kit #316140 Dometic Corp.)

TACK (repaired w/ new software) and MULTI returned from UK. Thieves wanted more than cost of a replacement to fix the MULTI.

Mast pulled from boat.

Tuesday, 13 July 2004 09:10

Replaced Main Battery Switch (Blue Seas p/n 9004E). Old switch had burned out. Jeff was in Australia and Patti did not know procedure for "rebooting" the Trace inverter/charger. Lessons learned: 1) Big switches can burn out 2) Procedures manual needs to be written.

Sunday, 01 August 2004 08:40

Replaced WEMA Sensor in holding tank (aft) with new stainless model. Old sensor had cracked at the water inlet and was leaking odors. Post-installation nasal analysis shows marked improvement.

Monday, 09 August 2004 06:13

Hot water hose slipped off at the hot water heater. Pumped all remaining water into the bilge covering the drip tank. Regular bilge pump not working, probably needs new filter. Replaced hose and retightened hose clamp. There is something about these reinforced plastic hoses I don't like but I don't know what the alternative is at this point.

Tuesday, 31 August 2004 13:23

Removed pump fuse box from 15A OPB and wired directly to 12V Pumps Bus. This was done because some pumps on the fuse box (notably the oil change pump) require over 15A.

Wednesday, 01 September 2004 18:24

Engine would not start this AM. Bleeding had no effect. Changed fuel filters (which were very dirty). Three filters: Racor 500, Racor 900, and Engine filter. Had forgotten filter wrench.

Bleeding several times still without success. Called Larry Stewart of Stewart's Marine in Ballard who suggested that since we have the CAV injection pump that we bleed from the bleed screw there, loosen nuts on all four injectors, put throttle to the max, then run the engine to pump fuel through. This worked. Also note that Ziplocs to hold filters saved lots of mess. Bleed pump needs both V3 and V5 switched over. Raw Water alarm is ON all the time. Needs to be fixed and reconnected.

Also problems with Panda, still not running. Needs to be bled more, I think. Notes for later:

1. Add 5/16" hose to Racor drains.
2. Replace yellow Racor bowls with clear bowls.
3. Post bleed procedure on ER doors.
4. Post pics of various fuel sys. valve combos for various situations.
5. Make sure all gear is aboard including spare filters, wrenches, oil pads, metric wrenches for Panda, gaskets, etc.

Tuesday, 07 September 2004 22:15 – BLEEDING THE PANDA AGT-4.0

Today talked with Mark at Panda. He talked me through a bleeding process that included the high pressure side of the fuel system. The technique is to pop off the heads of the relays, both the Ks starter relay and the Kf fuel relay. (The middle relay is for the glow plug). Remove the relay, pry off the cover, and replace the relay.

To bleed the low pressure side loosen the plug in the stainless hose and activate the fuel relay. This turns on the fuel pump. Bleed until no air comes out. Tighten the plug.

To bleed the high pressure side, pull up the decompression level on the port side of the generator, crack the high pressure fitting which is a stainless steel compression nut, and activate the fuel pump and starter relays until there is a spray of fuel coming out of the compression nut. Tighten nut, disengage relays, and try a normal start.

Wednesday, 15 September 2004 14:20

Replaced anchor shackle on Bruce (main) anchor with a larger (Wichard 1/2") bow shackle. The other shackle was quite bruised and battered and twisted enough to require a crescent wrench to remove the pin. It has been twisting inside the Bruce's shackling slot. I left the swivel on but might have to rethink the swiveling arrangement. One of the keeper screws on the pins was missing so that pin was fastened with HS Loctite but we should keep an eye on it. SOP should be to inspect the shackle and swivel at EACH ANCHORING.

Thursday, 30 September 2004 12:26

The PANDA AGT generator was not working during this trip. Assuming it was fuel, and with advice from Panda, we bled and bled and bled to no avail. On Monday, Chris from Yachtmasters came aboard and we were able to start working on the problem. I learned a few more tips regarding the unit:

- During a 100-hour oil change, drain the oil. Remove the aft hold-down bolts, tip up the engine, remove the banjo plug from the oil inlet and remove and clean the screen on the inside. A hole in the base of the capsule can be drilled out and a plastic hole plug used to cover it so that it isn't necessary to tip up the engine.
- Any time the oil is changed the oil pressure sensor is likely to malfunction because there is a vacuum behind the OP sensor unit. To fix this, remove the OP sensor, cover the hole with a rag, turn over the motor a couple of times using the relay. This gets oil up into the OP sensor cavity.
- When bleeding, you can also remove the air box for easy access.
- There are only 3 sensors which can shut down the system.: Oil Pressure, Exhaust Temp., and Water Temp.
- Valve clearance: .008 in on compression.

After hours of work we found the engine would run only if the safety shutdown wire from the

Diode Box was disconnected. The system was trying to shut down the engine. We then found a fuse inside the Diode Box was blown. This was a 16A fuse of the old European VW style. The fuse holder is now led outside the box and is accessible from the top of the box under the safety cover.

Thursday, 30 September 2004 13:32

Trace Voyager inverter sensing function was not working even in DEFEAT mode. The inverter was pulled and brought to Xantrex in Arlington, WA. They tested it and found all was working well. Craig the tech suggested that the remote control was not overriding the default setting inside the box. Suggestion: Turn down the default setting so that DEFEAT is the default mode inside the box. Then I don't have to rely on the RC5 remote to set the parameters. The RC5 was actually designed for the Mariner series and doesn't work well the Voyager. Trace never finished building their universal controller before Xantrex bought them out and put them out of the marine inverter business. Note that the SENSE adjustment is a small knob accessible from the outside of the box. It is located on the forward outboard corner.

Saturday, 02 October 2004 05:37

Yesterday I ran down the batteries to test the Panda. It only gave out 80A or so and then the main cabin started to fill with a haze and the Panda engine shut down. Chris said to pull the box and we will send it to Florida. Looks like the box is fried. Patti reported that as the original behavior but we confused the issue with the breakdown of the main battery switch. Seems like too much of a coincidence.

Wednesday, 06 October 2004 08:47

Yesterday Eric from Offshore Store came by to repair mini-UHF connector on DA4000 cellular amp. Their support had recommended doing this as possible fix for non-functional unit. I had tried 3 times to crimp and had no real success, but I can't say Eric's job was any better than my job. No way to truly test this unit of course without being away from cell signals. Other comment was that maybe indoor ant. wasn't far enough away from main outdoor antenna

Thursday, 07 October 2004 18:10

R & R STARTER BATTERY

Chris from Yachtmasters was aboard with the Panda box. As I had said it failed the smoke test, filling the cabin with smoke. Also hard to start with Panda now on start battery. Turns out the Optima 1000M was going bad and was replaced. It's installation date was July 2002 and a bit of warranty was still left. So today is install date for a new Optima 1000M from Fisheries Supply in Seattle. Battery box was modified to allow hold-down to be slipped in on one side.

The Panda issue was totally fried diodes. Chris took the diode box off to send to Florida. Mark of Panda has no record of our Panda according to Chris so I need to call and rectify this and clarify that we had indeed installed it correctly and that the installation was signed off. We had installed it about a year ago and Todd of Yachtmasters had inspected and passed the installation. Now Chris is saying the ventilation is not good enough and that he thinks the wiring needs inspection. I'll be completely amazed if that is the case as I've been very exacting about wiring.

During this period of battery drawdown the reefer compressor wouldn't run. Once charging commenced again it works fine. Possible that below 12VDC the Masterflux doesn't work? Need to check this out

Friday, 08 October 2004 20:03

Received delivery of new Outback FX2012 inverter. Installation begun. Aluminum base of FX2012 had 5/16" holes which I tapped to 3/16". Inverter will be fastened in from the bottom. This is a **much heavier** unit (65#) than the old Trace

Monday, 11 October 2004 20:41

Installation of Outback FX2012 is mostly complete. Discussion with Dave at Lifeline and with tech support at Outback elicited the following information:

- The Outback runs quite hot
- Set points are 13.3V float and 14.4V absorption.
- Beginning absorption time is 3 hours
- Beginning float time is 1 hour
- Refloat is set at 12.5V
- Equalization is NOT recommended unless battery capacity appears reduced. If so equalize at 15.5V for 3 hours. *Note: I have since learned that for AGMs this is a kind of last-ditch Hail Mary play when the battery capacity is diminished. A maintenance equalization every 6 months of 15.0V for 1 hour should be done on AGMs as a normal procedure.*
- Inverter cuts in after only a few milliseconds. There should be no problem isolating the inverter by cutting the AC input. The invert function can be on but no power will flow. Of course, the inverter can also be set "OFF".

To finish the following tasks should be done:

- Shorten main power leads and lead from aft.
- Install RTS to battery.
- Install longer Cat-5 cable to controller
- Install auxiliary positive ventilation for Panda and Outback.
- Install the TURBO unit on the Outback.
- Consider wiring the PANDA so it won't turn on if shore power is connected

Thursday, 28 October 2004 06:33

Wallas heater kept turning off. Turned out the starboard tank went dry. Pumped 50 gallons of diesel fuel into the tank and that fixed the problem.

Fuel gauges not working. Faulty bus bar from overheating due to not tightening the post nut. Will replace the post and should also replace the alternator cable

Saturday, 27 November 2004 06:12

Finished installation of repaired Panda rectifier box. The bracketing had to be fixed up a bit and a new bracket made on top. Positioning of the unit directly over the vent holes in the base was difficult and the insulation on the heater had to be cut back to allow it to fit. The vents are BOTH out vents and now have tubes on the backside to allow ducting to be installed if necessary. I think ducting plus additional fans would be useful.

The last of the damage in the engine room was replaced. I rewired the e.r. light and replaced the power bus. The Panda start is now to the starter battery, but it seems to be a harder start than the main engine! I can see a situation in which the starter battery, normally charged by its own I alternator, doesn't actually get charged when at anchor for a long time if the Panda is supplying all the power. I need to figure that one out!

Sunday, 28 November 2004 11:25

But, I did more damage in the engine room again. This time I forgot to tighten the repaired power cable from the main alternator to the power bus. This damaged the power post on the alternator and also fried the cable terminal at the alternator end. The alternator will need to be inspected and a new post put in at Balmar.

Panda is running to charge batteries from a full 50% discharge. The diode box is just at "too hot to touch" with 250A. The posts on the main battery switch are too hot to keep my thumb on them. This doesn't feel right. The terminals at the fuse do not have this problem as they are merely warm.

The engine won't start. Assume (hope) its because the generator is running. Gen. power is now down to 212amp/14.1v and box is very warm but not hot.

Action items:

- Ask Mark at Panda about the temp of the diode box. (OK)
- Take alternator to Balmar for repair. (DONE, awaiting return in Jan). NOTE: Alternator was fried. Bought Bob Hawks 165A for \$350.
- Query Blue Seas about the battery switch and temp. and how to increase connectivity at the terminal (paste?) (Interesting answer: the rating on switches and terminals is at a 100 degree C. temp rise. So this means if a switch is rated at 50A then it will be boiling hot at this amperage. They sent me a replacement switch for free).

Thursday, 13 January 2005 06:45

Balmar alternator is toasted. What a waste. Just because I didn't tighten up the nut on the post. Balmar has an as-new alternator available for \$500. Retail is about \$1100. Plus offshore kit. Chuck Barnes (ext 309) is "the man" for Balmar tech. support. Excellent guy. This unit should put out about 150 amps at 4000RPM.

Monday, 18 April 2005 07:16

- Replacement BALMAR 165A alternator installed bought from Bob Hawk for \$350.
- Aft pushpit removed and stanchions rebedded. Holes filled with epoxy and redrilled. Wire clams replaced and rebedded.
- DA4000 digital cell repeater was returned from factory. New m/b and new antennas returned. Basically the system was STUFFED.

Wednesday, 20 April 2005 20:23

Eric of Stewart's marine came by today to inspect and tune the diesel. Here is the info I gathered from him:

OFFSHORE SPARES:

- 1 set of injectors (see Seattle injector)
- 1 set of copper washers for injector and return line
- Gaskets: Valve cover, head, lift pump, injector pump, intake.
- Spare oil cooler
- Spare water pump
- Spare fresh water pump
- Spare manifold
- Spare circulating pump

MAINTENANCE PROCEDURES

- End caps are good for 1 year in salt water. They are in short supply so need LOTS of these.
- Once per year pull the end caps and run a ¼" brazing rod through the heat exchanger.
- Get a water overflow bottle from auto parts store.
- Change transmission oil every 1000 hours. 1 ½ to 2 quarts of DEXTRON ATF.
- Check valves every 1000 hours.
- Adjust valves every 2000 hours
- Use Delo 400 30W or 40W MONOGRADE oil
- Use 10 micron filters for ALL filters.
- Replace anti-freeze once per year. 50/50 Mix.

Wednesday, 20 April 2005 20:32

- Re-installed Wind Sensor at masthead.
- Sprayed and wrapped the VHF coax connector
- Sprayed the connectors to the RADAR with weatherproof electrical sealer

Monday, 25 April 2005 09:19

- Cleaned filter on Refrigeration Pump.
- Fixed shower sump. Pump died. Pump replaced. New wiring put in place. New momentary switch was installed.

Monday, 15 August 2005 12:45

Alaska Voyage 2005

On finishing fueling in Glacier Bay Park the engine would NOT start. GB provided a tow to the main dock and a mechanic, Joe Tiblis, who worked for 5 hours on the problem. We were not getting fuel at the injectors, at least not in much quantity, and a lift pump replacement finally did the trick. Fortunately a spare was on board. To replace the lift pump we had to move the oil cooler which also meant draining the coolant and removing the oil change pump. It's always that way, one problem leads to another.

Upon successfully restarting the engine all 3 of us forgot, after repeated warnings and post-it notes to re-open the raw water intake so the exhaust overheated. No damage to the engine, but the flow alarm did NOT go off and there was some damage to the Vetus waterlift muffler. I was able to tighten things down to the point that the leaks disappeared. A new VETUS LSG60 waterlift and replacement alternator regulator is being sent to Sitka.

Lessons: carry lots of spares, note where the fuel is NOT flowing, assume nothing, check everything.

Other problems: diesel heater NOT working. Instruments need rebooting frequently.

Monday, 22 August 2005 07:52

Ketchikan. Mark McBride and I replaced the Vetus waterlift muffler, the alternator regulator for the main engine. Fuel fill problem on day tank was solved by removing the %\$#@ dust plug which was left in the fill pipe. Fuel problems were noted when I could not pump from starboard to day tank and then when I switched fuel supply direct to stbd tank the engine died. We put out sail and soon had her sailing well. Then we hove to while I tried to fix the engine. I figured it had to have something to do with the fuel feed so I switched back to the day tank and bled the engine -- and got it running again. Then we sailed for the remainder of the day to conserve fuel and motored into the little harbor at Meyers Chuck, AK, just minutes before it got pitch black.

Mark also fixed the toaster.

Sunday, 11 September 2005 11:11

Replaced Balmar 612 Alternator, for the second time. This time it has held its programming correctly and tested fine with the old harness. I had to swap the connector on the new harness because the larger alternator needed the "large case" connector. After installing the new harness the alt. would not charge. Went through the test procedures outlined in the Balmar Alt Reg instructions and the "blue wire" test failed. ??? Tried the direct red-to-blue test to excite the alternator and this worked. I think somehow the alternator needed this to "reset" enough residual magnetism or something. Anyway it is working fine now!

Repaired dinghy where the davit clips had ripped out. It would be good to fix the dinghy with wooden rails.

Friday, 15 Sept 2005 07:00

Flooding incident. Bleed screw worked itself out in the refrigerator pump and flooded the bilge to the bulkheads. Was at the dock in Poulsbo so could rinse with freshwater. The shower pump was ruined (already bad) but Fisheries replaced it because of the previous corrosion. The March reefer pump was cleanable, as was the autopilot pump. I forgot about the washdown pump and didn't disassemble it until Oct 21.

Monday, 02 October 2006 11:27

Time to begin keeping a better maintenance log. Note that OIL changes and FILTER changes will be kept separately.

Today:

1. Modified radio bus to include ONLY VHF and SSB circuits. Sailing Instruments are moved to Main Bus.

Saturday, 07 October 2006 09:33

Did work yesterday on restructuring the NMEA data and installing a KVH heading sensor for the trip south. Unfortunately the KVH is DOA and the NMEA is flaky, maybe a bad NDC-3-A unit. This morning I jumpered the KVH into the computer and there was no data at all.

The data system has been pared down until the NDC output is used only by TWO systems – the CETREK instruments and the A/P general data input on PL12. No output from the A/P is used or required so that was eliminated. All CETREK instruments are now driven by the CANBUS with the NMEA input going just to the Nav Station multi. The PC gets data direct from the RS232 data port at 38400 which should slow clogging. The output from the heading sensor goes direct to the MFD Port 2 (except its not working) and the other

There seems to be a lot of depth dropouts on the CETREK bus but that might actually be that the MFD is either slow in providing the data or the muddy soft bottom causes depth dropouts from time to time. I can't tell until I move the boat, but this data system SHOULD be fine from an architectural standpoint. If there is interference—well that's another problem – and would require rewiring with shielded cables.

Monday, 09 October 2006 06:15

The problem remains that is focused on the NDC. I will try to contact Actisense and find out how to reflash it. I might also be able to cut down on the outgoing sentences from the Gramin. MARPA works fine!!!!

Wednesday, 11 October 2006 12:20

Engine hours unknown. FWP belt broke. Alarms went off. Replaced ALL belts:

1. RWP TopCog Dayco 17440 13A1120 (13mm x 1120mm)
2. FWP Dayco 15510 TopCog 15510 11A1295 (11mm x 1295 mm)
3. Alternator Belts (2 pair - matched) ½" x 40-3/8" 12.5/13mm x 1025mm Carquest 9400

Saturday, 14 October 2006 13:42

PANDA problem may be solved. Chris Wheeler hooked the supply to the return and vice versa.

I noticed ATF dripping from the gasket seal between the Velvet Drive and the engine.

Sunday, 22 October 2006 12:27

Joe at Viking Marine had a look at Panda and talked later about BW tranny. He confirms wrong fuel fitting was installed and will order new parts. He thinks it is possible to fix BW in place if it is a gasket leak. (Later we found the problem to be a failed O ring on the transmission forward/reverse valve).

Sailing to Ensenada. Main alternator not online for six hours and then suddenly kicks in. Faulty switch? What could cause this?

GPSMAP 3010C not seeing the GPS17. I have confirmed that GPS17 is putting out NMEA Pos data. Obviously the rebuild of the NMEA network the day before leaving was not a good idea.

Coastal Explorer is also acting dicky. The combo of these effects is that I am using the backup GPS to drive CE which isn't working well. I can't zoom without it locking up. I think the fault is in a Mexican Chart which I loaded from the "free" disk I got from Bob Hawk. Nor can I use the GPSMAP without a position input. I have tried to supply position via the PORT 2 input but it isn't taking it.

Monday, 15 January 2007 17:47

Maintenance performed on

- Schaeffer roller furling. Flush with fresh water per instructions
- Serviced all winches except boom winch and primaries
- Removed forward through hull fitting and relocated in engine compartment
- Re-installed refrigerator pump in passageway pump alley.

Re-ran reefer cooling hose from galley to engine space.

Saturday, 12 May 2007 11:21

Continuing Preparation. What is NOT in this log is:

1. Panda is repaired and installed. Quite a saga. It has been rebuilt at 80.4 hours. New Diode Box and engine rebuild. Diode box has been reinstalled in a better place behind the starboard bookshelf and with booster fans.
2. Watermaker has been installed and is working perfectly. Daily Marine of San Diego was a big help. Left to install is the plankton filter.
3. Printer closet was finished.
4. Large computer was removed.
5. New lining made for forward dinette locker.
6. Storage behind locker panels.
7. Bottom paint done in Ensenada at Baja Naval. Work included
 - a. Two coats bottom paint, 3 coats at waterline. Sea Hawk Monterey 4422 Blue (CuO₂)
 - b. Moved waterline and bootstripe upwards
 - c. Relocated through hull for reefer coolant intake and watermaker. Re-installed GROCO sea strainer.
 - d. Filled Aluminum rudder with epoxy.
8. New chainplates mfg and installed. They were waterjet cut at Gardico. Lessons learned:
 - a. Drill undersize hole for doubler plates. Weld and then do final drill.
 - b. Never assume the old holes are the same. Each chainplate is different! Best to drill holes after.
 - c. It would have been easier and a bit cheaper (or not much more expensive) to have a fabricator make up the chainplates.

Saturday, 12 May 2007 11:48

Re-tuned the rig. The backstay was overly tight. This was after sailing a week ago with the first tune becoming loose. I suspect it was because the backstay was loose while tightening the rig. Tension on the backstay bends the mast back, shortening the distance from masthead to deck. All is now well but bears watching.

Friday, 25 May 2007 08:23

1. **Rig.** More tuning under sail. Mast had a bit of a "kink" to port at the first spreader so this was corrected by alternately loosening the stbd lowers and tightening the port lowers. This has seemed to straighten it out and all wires are tuned to spec.
2. **Watermaker.** First real use of watermaker. Below 130ppm. Product flow is at 11GPH with both pumps and 7 GPH with one pump.
3. **Bilge.** Had some issues with water coming in from some strange location. It seemed to be the port deck drain, but that stopped appearing to be a problem. Bilge seems to fill more under

way. Possibly also an issue is the pressure seawater system which does loose pressure and needs to be inspected.
Everything else is running fine.

Thursday, 31 May 2007 10:31

Call to Andrew at Lifeline Batteries. Answers:

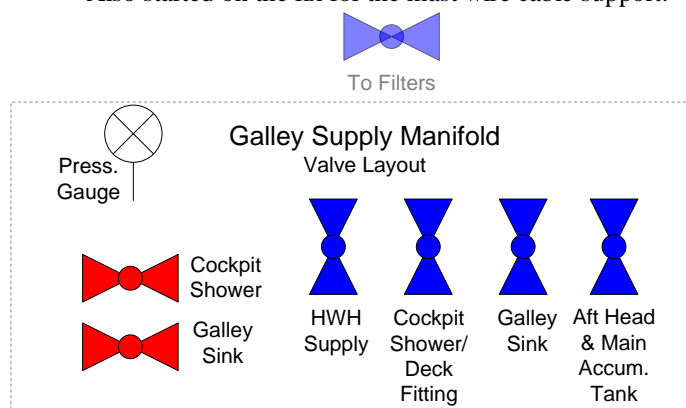
- The batteries must be FULLY CHARGED every day.¹
- If partially discharged, don't let them sit at that lower level.
- They need to be run up at the 14.2 volt charge until they are accepting about 2 amps or less
- Start the genset each morning, make lattes, make water, cool the reefer,
- The solar panels will only work to "top up" the charge IF the bulk/float setting is high enough. Trace C40 manual recommends 14.4v/13.4v. Lifeline recommends 14.2 volts.

Friday, 06 July 2007 10:22

Talked to Dave at Lifeline and he says that the batteries (esp on sailboats, any battery) need equalization charges at 6 month intervals. This would be 15.5 volts for 3 hours with the lifelines. **NO!** *NO! Routine equalization is 15.0VDC for 1 hour.*

Monday, 13 August 2007 11:02

- Yesterday restructured the freshwater system, adding a small accumulator under the floorboards, a separate valve for the filtered water system, and separated the cold water supply to the water heater from the aft head supply. Both are now on separate valves (see below). This means that I can now more easily isolate components of the system to track down small pressure leaks.
- Also started on the fix for the mast wire cable support.



- Started battery check as above. 95A initial charge. Pulled all fuses. Should make internal fuse block (FB1) on switch so can turn off ALL the DC if necessary. See notes on DC Wiring Diagram.
- 12.70 V at start @ 1415. At 2020 the voltage was 12.6. At 0715 (17 hrs) the rest voltage was 12.5.
- Redesigned Main Panel DC to add a positive bus and a means to switch off Fuse Block 1 through a 30A breaker.
- Talked to Shay Weston re problems with Panda. The fuel pump has been deprecated. Need to buy a new one. Ordered new model Walbro FRB from Depco @ \$80.00.

¹ This is clearly impossible on a cruising sailboat

Tuesday, 14 August 2007 13:04

- Still having reefer problems
- Bought used GROCO seacock and a Y-valve, \$80 total
- Put 400A ANL fuse back in place. This finishes the fuse block replacement.
- Starting drawdown test NOW.

Wednesday, 15 August 2007 13:15

- Talked to Mark McBride re. refrigeration.
 - Check to see if sight glass is green. Yellow indicates water
 - Check to see if compressor is hot. The compressor is the purple unit.
 - If empty will running, or nearly so it needs more refrigerant
 - The system hold 2 pounds total
 - Get 14 oz can of refrigerant R134-A from auto parts store
 - Refrigerant
 - Can top fitting
 - Adaptor to go on the refrigerator
 - Adding refrigerant
 - Put in one can
 - Charge while running
 - Must add as a vapor so hold can upright. NO LIQUID MUST BE IN THE COMPRESSOR.
 - The can gets cold as it empties. Head with hot water to speed up the process
 - The can may be inverted for ½ second but no more.
 - Buy a Gauge Set?
 - Can be done at R-parts or online

Disconnected the ER Bilge Pump outlet from the deck drain and re-plumbed to the old original bilge pump hose which exits through a GROCO 1" through-hull on the port side outboard of the water heater. The Tee was plugged. Now refrigerator cooling raw water drains through the port cockpit drain by itself.

Thursday, 16 August 2007 18:21

Today's objectives were met and unmet. After 5 hours away in the dinghy and by car I finally collected all the equipment to recharge the refrigeration compressor. Alas, the adaptor I bought was either faulty, or I installed it wrong, and it did not allow the gas to go into the line. While at NAPA auto parts I also spent \$50 on a load tester, which has determined that all the batteries, tested individually, have passed a load test. I was hoping for at least one bad battery. Still, they are not accepting a full charge and they ARE discharging too fast (maybe the same thing). I am not sure what to do next except to talk to Dave at Lifeline and continue negotiating. Also, I can't connect to any internet here in this spot in the San Diego A9 anchorage. Nevertheless I worked hard all day and feel I have made progress towards fixing the reefer and the battery situation. I just need another adaptor and I have new knowledge on the batteries.

Saturday, 18 August 2007 07:16

I tried again to refill the reefer. I remembered to actually open the valve on the can. That helps. But I still bent the Schrader valve in the adaptor. Perhaps it is the wrong adaptor. Could look for something else or just call the reefer tech. Fleming. I raised the set point S1 and reduced the P1 to help ease the load until this is fixed.

I talked to Mark and we have moved to using the input valve on the compressor itself. There is a 3/8" line and a 1/4" line. The "suction" line, the big one, is the one to add the R134a refrigerant to. The valve works backwards from a normal valve, as it seats upwards. Clockwise to open, counterclockwise to close. It only take a ¼ turn to open. There is a black cover over the valve stem. I loaded up about 18 oz

of refrigerant. Mark says it takes two pound total. The sight glass shows more fluid moving through, but it isn't full yet. I think I should take at least 4 cans of refrigerant with me. I don't know how long this has been down. It is worth doing regular checks on the sight glass. Note that the button in the glass is blue – yellow indicates the presence of moisture in the system, which is not good.

Battery Load Test

- 25A load. Check Voltage every hour. Fully charged battery. 390 minutes. 10.5V ends the test.

Sunday, 19 August 2007 15:31

Today I have been looking at the refrigeration statistics. Looking good. I have not heard any of the wheezing or spin-up on the compressor, there have been no shutdown events, and the cycle times are down as well. I will keep monitoring and maybe add more refrigerant later.

Tuesday, 21 August 2007 07:26

I am attempting to put together a load tester. I cleverly found 3x100A 12VDC light bulbs, only to realize I needed 2/0 wire to power them. The only way to go is to use the inverter with two or three AC light bulbs, which means essentially disabling the system for 6 hours at a time. It's OK, I can live with it. At the dock I can get AC power into the AUX input. Every 6 hours, cool the reefer.

Wednesday, 22 August 2007 18:49

Today I attempted to find out what was wrong with the main alternator. It had been putting out 15VDC which was bad. Now it won't put out anything. I did notice an overheated terminal but that might have been from long ago. I suspect the problem is with the regulator and when I find the spare one I will swap it out and see what gives.

Added almost another 12 oz of refrigerant today. The system is working better and better. I may be able to add a bit more. I've been doing it slowly as the system runs. Holdover times are about the same but drawdown has been greater, indicating the problem is not with insulation. I am hoping to move my energy budget to <100 AH for refrigeration.

Also ready for battery load testing at the Cop Dock. Could start Thursday, finish Monday, but it would be nice to be able to resolve the issue this week.

Saturday, 25 August 2007 14:26

Battery testing complete. Results are in the files. Battery 4 (the one mounted sideways) is noticeably bad, but all of them are bad. The three "better" batteries will still only charge up to 12.7V. Andrew at Lifeline recommends another set of equalization charges (more than one!). He has said they will replace the one bad one. I agree that it is statistically unlikely for 4 batteries to be bad, but NOT impossible of course. I want to know if one "bad apple" can spoil the barrel. *Note: YES batteries can decline rapidly if not impedance matched (and they are no). This is due to the use of multiple parallel strings.*

Today I started investigating the failure of the Main Alternator to charge anything. I substituted a spare MC612 regulator and tested it. No charge. Then I went through all the alternator tests including an unregulated load test. This produced amps. I then tested the replacement alternator and it was fine. I reconnected the original and it works fine! Is it possible that I needed to excite the alternator with a non-regulated voltage?

PANDA fuel pump is being replaced by a Walbro FRB-13. This is a terrific new pump. It has a filter and is a continuous duty lift/fuel pump. Possibly should consider a spare!. The mounts are wider than the old pump so I am ordering a new AL mounting plate from onlinemetals.com.

Tues, 28 August 2007 06:22

Had the bottom scrubbed (\$1.20/ft) by a diver here at the Cop Dock. Installed new prop zinc. The old one has fallen off as usual.

Cleaned off the propeller and the transducers. Perhaps the speed log will work better now.

Wed , 29 August 2007 06:22

Drove to Asuza, CA to exchange the batteries. They were pretty nice about it. With the new 6-volts the wiring configuration has changed. The way to do it is with paired 6-volt batteries and bus bars. The bus bars allow for better load matching.

What have I learned?

1. To watch the charging voltages carefully. The resting volts should be over 12.85 after charging. If this declines, test the batteries for a week one.
2. Of course, never overcharge the batteries (I knew that)
3. AGMs and Balmar 612: turn the engine (or regulator) off after a couple of hours. The regulators are set to bulk charge for a given time only. AGMs can take all the amps you can throw at them, as long as the voltage stays below 14.2 in the absorption stage. **Set programmable regulators by hand to bulk charge for 90 minutes.**
4. Always fully charge batteries if you possibly can. Watch the battery monitor (Link 10) and put back the amp-hours you take out. Top off with solar and low consumption after a morning charge.
5. Set the LBCO on the inverter at about 11.5V.
6. Even AGMs need equalization, 15.0 volts for 1 hours, about once a year or more if indicated.

Thursday, 30 August 2007 06:22

At the Cop Dock in San Diego. Lifeline has replaced the bank. The new bank is eight 6-volt GPL-4CT Lifeline AGM batteries. The old tray had to be enlarged by 3.5". All the batteries now fit in the old tray. New wiring (\$110) and bus bars this time (\$80). I oversized the wire. Just couldn't accept that #6 wire would do the job, even though my calculations said it was more than adequate. So now I am using #2 wire. I figured I could afford the wire but I forgot how expensive the lugs are as well, especially from West Marine. Today's tasks completed:

- o Cleaned Bilge ✓
- o Ran Anchor locker drain to bilge ✓
- o Supported seawater Washdown hose ✓
- o Supported PVC Tube to Engine Room ✓
- o Bilge hose being worn by raw water pump. Fixed this. ✓
- o Relieved Galley Drain Hose to make more room for batteries. ✓
- o Repaired Cross Member in Floor with 1/4" flathead machine screws
- o Got rid of copper foil ✓
- o Began fitting of battery tray.

Sunday, 02 September 2007 09:00

Finished a lot of the battery install issues, including the above. Having done all this I now realize that the batteries are jammed too close together to promote proper cooling and the battery "pan" should be rebuilt. Unfortunately it has to be in aluminum because of the clearance issue. It would be nice and cheap to use wood but it won't work. However, I actually see no real need to form the edges – all I need is the "floor" and the footmen's loops with the webbing to hold everything in place. I suppose I should just hook up all the batteries and then give them a charge tomorrow and watch the temperature!

The solution I have come up with is to remove the center batteries and install them on their side. Not as elegant as a new battery tray, but cheaper and it does work. The last pair can be installed on its side.

Monday, 03 September 2007 18:58

Fixed the dinghy stem today which was split. Put a new crosspiece underneath for strength. Did not glow the stempost in because it might work to have that removable..

Tuesday, 04 September 2007 10:18

Finished work on ½ the dinghy, whipping rub rail to the gunwhale

Thursday, 06 September 2007 07:43

Finished Dinghy rub rail. Ate Apple Pie. Happy Birthday.

Sunday, 09 September 2007 19:30

Friday finished the Dinghy Repairs and made some calls and contacts regarding the batteries. Moved the boat to the La Playa anchorage. The last pieces of the puzzle were:

- No air space necessary between the batteries (Dave at Lifeline)
- Equal round trip on the #2 AWG cables connecting each battery pair to the bus.
- Balance the bus. A single post might have been better, but 5 rings on a post is too much. The final installation has the small cables on each side of the large cable.

12V batteries are better than two 6V batteries. Why make a 12V battery yourself when the mfg. one. It is nearly always best to have batteries at the voltage you need.

Sunday, 16 September 2007 15:14

- Finished installation of batteries. Tie-downs finished. Installed batt temp sensors, extra battery pan.
- There is still a problem with the freezer short cycle functioning opposite to it's intent. The cycle kicks in when the generator goes off instead of when it starts. Refrig. seems to work ok but it should be checked out.
- Checked out the screen in the GROCO refrig. pump sea water filter. The replacement is wrong and the screen that is in place cannot be removed without dismantling the unit.
- Installed missing ball bearings in Harken double turning blocks. Greased upper sheave only.
- Installed (physically, not electrically) Protech 1240i universal battery charger under nav station. Note that this unit has a West Marine Extended warranty. Sold: 09/09/07, Store 16, Reg #2.
- Reorganized the Nav Stn and some Wiring.

Wednesday, 19 September 2007 00:09

Today I cleaned up the boat a lot – more space is appearing as I stow things better. Found a spot against the hull next to the fuel tank for spare filters and R-134a refrigerant.

Today I sent off the ICOM M802 for the “clipping mod” to fix potential transmission clipping.

Monday, 27 September 2007 08:54

Send GARMIN 40 radar unit off to be repaired. It died with “Error Code 5” on Sunday.

Thursday, 27 September 2007 08:54

Fresh water leak. Pressure drops from 40 to 20psi (about 1.5L) in about 4 hours, equal to 9L/day.

Problems with CETREK? Possible accidental resetting of rudder parameters. Need to check them first.

Saturday, 06 October 2007 17:40

Re-installed Garmin Radar 40 dome after repair by Garmin. No charge even after 2 years. Wow. Works great.

Allen head bolt (1½" x 5/16 NC) fell out of the boom vang. Replaced it and greased, Tef-gel, and Loctite all 3 sheave bolts on the vang.

Sunday, 14 October 2007 06:05

AUTOPILOT. Last week the AP started veering off course. Fortunately it turned out to be a configuration problem. On the main menu there is a RUDDER setting, which is the Rudder Ratio. This value should be 5 and I had accidentally turned it down to 1. At the same time I was investigating this I found out that the Cetrek has a Motor Ramp function which gives a "soft start" to an electrical motor. This ramping did not provide enough power to turn over the pump. Setting MTR RAMP to zero is required. The AP now does micro-adjustments. It may be that there are other fine tuning settings to work on, such as the dead band setting.

WATER TANKS A vent hose blew off the aft tanks while filling. This was an opportunity to replace and rationalize the water tank vents. I am using 5/8" reinforced hose and running all vents to a common manifold besides the aft settee drawer. I am also installing the WEMA tank level sensors using the special "site glasses" made of PVC tubing.

Sunday, 14 October 2007 08:07

Generator stopped working. Bleeding it fixed the problem. Drilled small holes in the relay casings so a toothpick or skewer stick can energize them without prying off the cases. Makes bleeding easy.

Thursday, 25 October 2007 11:19 Ensenada, BJ, MX.

Here at Baja Naval.

Finished installation of 4 water tank level sensors. If there is a water leak in one tank, this should show it. There might be, as I'm seeing a lot of bilge pump cycling, approx 1 gph. I see wet bilge along the side of the stbd fwd tank. I have set the pumps to draw from the port tank. If the stbd fwd tank, or the aft tanks, are leaking, I should see significant water level drop in 24-48 hours. I should also do an overnight pressure drop test with all pumps off.

Bilge pump is not drawing too well. Not sure why. Filter is clear but possible there is a blockage elsewhere. There is lots of dirt in the bilges – I would like to bring a hose down and just sluice things out.

Still have the following major issues at the moment:

- Where did the 100 gallons of water maker product disappear to? It didn't end up in the tanks. The leak rate (1 gph) should still have seen 80-90 gallons in the tanks.
- There is an engine coolant leak. Maybe a hose or the RWP.
- The generator fuel issues is still with me.

The NAV network is not working right. Software patch from Actisense needs to be installed and tested.

Friday, 26 October 2007 14:38

Just reset bilge cycles. Over last 30 hours the cycle time was 1.5 cycles per hour. Tastes like freshwater. Just filled Tank #2 (SF). Noting some tank drawdown on #3 (PA)

Saturday, 27 October 2007 13:07

Ah Hah! Noticed overflow from hot water heater when pumping over 60#. WP#1 pumps to 60 pounds, which is more than the HWH relief valve must be is set for.

Monday, 29 October 2007 16:26

Fresh Water Pump Leak. Possibly drip coming from the press relieve valve on the HWH.

Thursday, 08 November 2007 09:32

Returned to boat after 1 week away to find compressor running but not pulling down the plates. This morning the compressor would not tum on when energized. Found LOTS of corrosion on the terminal block – it looks like the access plate above was dripping water on the block. I need to figure out how to seal that plate better. Perhaps I can use some plastic over the top or underneath. Anyway I need to clean and repair this. I fear the controller board is damaged.

Friday, 09 November 2007 19:02

Yesterday found water damage on the controller board for the refrigerator. Looks like more \$\$ to be spent and of course no refrigeration for a while. Drat

Installed new fresh water pump (core) on the engine. Replaced raw water pump impeller. Inspected all belts (look good) and tightened them.

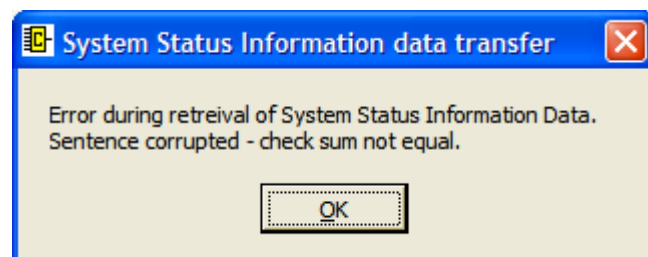
Noticed that only one of the hose clamps on the raw water pump does any good. The barb is just too short.

Bilge pump sucks but not picking up much – need to inspect the bronze foot which might be plugged.

Just add coolant – and away we go. Coolant in Mexico was 4X what it costs in San Diego. Ouch.

Saturday, 10 November 2007 08:44

Patched the NDC-3 with new software. The following error message was given by the NDC Controller.



Put f/w in cooling system. There is a leak somewhere as water is spraying about.

Saturday, 10 November 2007 14:47

Removed s/w pump and found that I had mis-placed the gasket. Reset with #2 Permatex. Found the 1" hose had a wear spot where it passed over the aluminum stringer. This was always a problem and the spiral wrap wasn't a good enough chafe gear. I cut a piece of 1" PVC tube to snap over the hose and clamped it on with some Permatex #2 inside. It is something that I doubt is a serious problem and there is 5' of spare hose onboard.

Saturday, 10 November 2007 19:46

Tested the system. Still leaking seawater someplace. Drat. Can't find the spare pump. Might be a pump seal but what's the chance I have two pump failures the same day!.

Monday, 12 November 2007 17:32

Tuned the rig! Tightening up the forestay took a LOT of the mast bend out. Flushed the roller furling. The rig looks and feels right now. I think it will bend between 2" and 4" depending on backstay tension being between 10% and 20%.

Ordered new pump parts from Depco. The ICOM has been modded and is being returned.

Thursday, 15 November 2007 08:42

Using parts from Marv Dunn and the parts I ordered I rebuilt the Jabsco 11850 raw water pump. The main bearing was shot. I used Marv's new main housing, shaft and bearing and then my seals. The pump seems fine. It was a lot of work rebuilding it, but not impossible. I washed the engine with freshwater, dried the drip tray.

Friday, 16 November 2007 11:02

Underway. Engine running fine. Boat is slow in flat seas no wind, maybe 5.5 knots. Probably dirty bottom. Engine was over-revved for a while and black smoke ensued. Seems to like about 2000 RPM. Watermaker and water level gauges working fine. Filled Stbd main tank in 4 hours. Now just switched to Port main tank.

Friday, 16 November 2007 15:16

Port main full. Switched to Port Aft tank. Looks like about 4 hours to fill a main tank with both pumps running.

Friday, 16 November 2007 16:28

Port aft is full. Starting on Sbd Aft.

Friday, 16 November 2007 17:55

WM Shutdown. Stbd Aft ½ full, Stbd Port now ½ full, Main tanks 7/8 full. Wonder if there is some kind of siphoning effect. Also possible the wires are too thin for the long run. Could use common ground and double up on the cable, or use a different cable (ugh).

Sunday, 18 November 2007 16:48

I Tackled the malfunctioning bleed pump. It turns out the on/off switch was water damaged in its "temporary" switch location. I installed a momentary and on/off bleed switch on the panel which is part of the fuel system cover. The transfer pump is now turned on/off at the breaker panel. Eventually the transfer pump should be controlled by a time switch.

Noticed the short piece of hose connecting the oil cooler to the heat exchanger has a drip. Weirdly, this hose has to attach to different diameter barb.

Thursday, 22 November 2007 10:28

I changed all 3 fuel filters, 2 oil filters, and engine and generator oil. Changed generator oil twice it looked so dirty (and low, down about ½). Bled genset and it is working fine. Important to turn off the oil drain line valve. Installed new style 10u filter in Racor 500. While bleeding the engine I broke the

vent screw assembly in the Injection Pump. Luckily I am in San Diego and found a new one. I replaced both vent screws. The replacement part numbers are Delphi 7240-20A and 7240-2B.

I found a 2" to 1¾" hose reducer for the oil-cooler-to-heat-exchanger connection.

Panda output is cycling up and down. Panda won't restart, consistently.

Friday, 23 November 2007 14:03

Just started the Panda again. I bled the low pressure. No Start. Bled the high pressure (17mm wrench) and using two toothpicks in the relay cases was able to hand start it. The reason it was NOT starting from the panel was because the throttle was not cycling open. Holding down the fuel relay by hand caused the throttle to open up and it would start fine. The starting problem may not be a bleed problem but may be a throttle problem. Note that yesterday the weird cycling was due to the throttle opening and closing. After wiggling the fuel pump relay the throttle opened and the engine kept running. It may be that there is either a loose connection or a bad relay. It appears to be running Now I'm getting a temperature warning light but the exhaust water is cool and functioning. I'll try a shutdown/restart. Turning off the control panel has not stopped the generator from running! The coolant water suddenly started boiling. I turned off the fuel. I pulled the coolant relays. Still running. I turned down the throttle by hand until the engine died.

I filled the coolant tank after things had cooled down. I replaced the fuel start valve because I could not find the one I had pulled off, although I doubt it had anything to do with the problem. It is now starting/stopping under panel control. Perhaps by hand starting the engine the controller was "confused" and would not therefore shut it down? I have any idea why it would overheat. The coolant pump is electric. The manual start was done with me sticking toothpicks in the relays. That may be a bad idea. If a piece of wood broke off it would keep the fuel relay running. Anyway since I hand-started it and it kept running, the controller did not know the Panda was "on", therefore it did not energized the coolant pump. The coolant is topped up now. It's been running consistently now for about 10 minutes with no issues. I am seeing 152amps and 13.91 volts.

At 45 minutes into it the run it started oscillating up and down. I talked to Shea Weston about it and he suggested disconnecting the throttle motor wire. I did this and it ran rock steady. Then I connected it up again and it oscillated again, the worm drive advancing and then retarding the throttle. I grabbed the fuel pump relay and pulled up on it. The engine settled down. As soon as I released it the problem started up again. I inspected the relay socket and found the plastic melted around one of the sockets. Using a flat-blade screwdriver I prided the flanges closer together and re-inserted the relay. It is running like clockwork right now. The problem of both starting and running regularly was in the relay base! Probably it should be replaced. I'm not sure how hard this is, or if my "fix" is good enough.

Monday, 26 November 2007 10:47

Yesterday I checked the NAV system. No ground loops were observed on the NDC when the RS-232 TX/RX lines were disconnected. I observed checksum errors with the NDC control centre. Today plotted route to A9 from La Playa. NO NAV data, indeed no data at all, was present in the Autopilot system. Data was present everywhere else. I did have a Sonar Service dropout. Currently the COM6 port is configured to communicate with the RS-232 port on the NSW (it normally should go to the backup Garmin 128). I suspect there may be a loose wire in the switch or elsewhere, because the data IS in the system, just not getting to the Cetrek autopilot.

Noticed that motor revs over 2000RPM shows black smoke. Also I observed dieseling on shutdown, which I have never seen before.

Tuesday, 27 November 2007 18:33

Black smoke. Talked to Tom and American Diesel (they do injectors). He says injector-caused smoking is at all points of RPM. Possibly the timing of the injector pump is off. I think I should call Viking marine and have them inspect it. Next week, if I like, Tom will pop-test the injectors if I take them off. I'd better do it while at the dock in case the generator doesn't work. Had another Panda shutdown tonight and it's still that relay. I will order some spare sockets from Panda tomorrow.

Wednesday, 28 November 2007 07:44

The relay socket is much better, but still not reliable. Last night it over-volted to 16 volts and would not shut down with the panel. I had to pull the wires to the actuator and wind down the worm drive. I just talked to Allan at Panda. New harness is \$295. He is looking to see if there are some old harnesses about with relay sockets that I can use.

Friday, 30 November 2007 08:17

HP dvd 940d

Make sure that in My Computer that drives are write enabled

In Control Panel make sure drives have DMA enabled and region selected.

Monday, 03 December 2007 07:24

Compressor Control Box is installed and reefer running fine. Freezer not yet turned on. Had a problem with the terminal block. One of the machines screws #10-32 was stripped. I used a #10-24 to hold the 6AWG negative wire in the terminal block. If removed again the terminal block needs to be changed. It should be a large 6-pos block.

Note: Passed the Amateur Radio General Class on Saturday.

Johnson f/w circulating pump on the Panda had the power lead break this morning. Taking apart the pump I also discovered the impeller is cracking. I am jury-rigging the power lead and ordering a replacement pump Johnson #10-24503-03.

Noticed stress crack in gelcoat near port upper shroud chainplate.

New SIIG drivers were installed.

Tuesday, 04 December 2007 18:00

- Installed power to aft cabin bus
- Installed ICOM 802 and NMEA cable in aft cabin
- Installed new firmware in STC-IIpro
- Tested radio
- Installed reading light and 12V Power Socket

Wednesday, 05 December 2007 15:43

Case # 181488112. Replaced keyboard and DVD drive in Dell.

Did business mostly.

Replaced bad Taylor fender ball.

Replaced NAV seat

Sunday, 09 December 2007 13:48

In the last few days....

- Replaced hose connecting heat exchanger to transmission cooler. 2" hose with 1.75" reducing insert (Gates part). There is a spare onboard now.
- Replaced the 7# pressure cap on the heat exchanger.
- Cleaned out the exhaust riser. Chipped it off and then used Brake Part Cleaner for the rest.

Sprayed it in and let it soak overnight. Carbon buildup at the injector end was causing the Diesel to blow black smoke above 2000 RPM. Just tested at dock, but seems to be working much better. Should rev higher now without the smoke.

- Saturday in Oceanside with Elaine Johnson. Took all day but the new upholstery is done, batted and stuffed. I should get some Scotch Guard for it.
- Turned on freezer. Still having problems pulling it down. Talked to Mark:
 - The buzzer doesn't go off because the error signal is TTL level which is NOT 12V but probably 5 V. So I need a solid state relay of some kind to actuate the buzzer, perhaps using a power transistor, e.g. SCR.

Monday, 10 December 2007 16:18

Refrigeration Tech (Sandy from A to Z Marine) came by to check out the system and found NO leaks. This leaves unresolved why the compressor often error faults out. He did show me how to use gauges to tell the state of the system and I may buy some reefer gauges.

I am closing in on the spare parts issue. Most everything is ordered or received.

Tues to Friday, 14 December 2007 22:07

- Scrubbed the dinghy bottom which has coral growing on it.
- Yellow cedar installed in aft cabin.
- Dinghy brackets under construction.
- Generator relay socket fixed. Overheated casing on socket released the connector so the tab would just push it back. I have one spare socket case left. But genset now will not run. Volts light stays red and it dies after a minute.
- Some kind of water leak after fill up. System was over pressurized by sticking the hose way down the pipe. Don't know where the leak might be. Pressure side holds pressure. I am working off one tank and watching the others.
- Engine coolant leak. Fixed but still not good. The rubber "reducer" from 2" to 1.75" is squeezing out and needs to be glued in place. This means draining the coolant, removing the transmission cooler bolts, removing the hose and gluing in the piece. Nuts. Fix it twice, the usual thing.

Saturday, 15 December 2007 07:11

Generator problem was a 10A fuse which had fallen out. The two fuses need a "keeper", which has been lost. I can fix that sometime. It's good to have the generator running.

NOTE: Freezer short cycle is defeating the freezer not enabling it, when generator is running.

Saturday, 22 December 2007 08:52

Oops. I have not been keeping this up. I have about 10 days to finish up ready to go South. In the last week:

1. Messed up the watermaker product 4-way distribution. Hopefully it just needs new O-rings.
2. Coolant hose reducer has slipped and it leaks a bit.
3. Constructed a box for epoxy
4. Aft Head
 - a. Put yellow cedar paneling in the aft head.
 - b. Better positioning for SCUBA tanks
 - c. Teak Toilet paper holder
5. Built dinghy tie-down units
6. Started Coelan test on steering wheel.
7. Installed reading lamps in aft cabin (wired) and in main cabin (not yet wired)

Communicated with Phil at Actisense re NMEA but nothing is revealed.

Saturday, 22 December 2007 19:48

- Finished installation of transom panel cover.

Put second coat of Coelan on the wheel. This is HARD stuff to work with and I'm afraid it is going to go bad on me before I use it up. Strange goo.

Sunday, 23 December 2007 14:17

- Putting on coats of Coelan
 - Had to sand, not sure this was good
 - Horrible stuff to work with. It might be better horizontal. I needed to thin it MUCH more.

Cleaning up. Still can't find spare water pump. It MUST be behind the main cabin panels somewhere.

Tuesday, 25 December 2007 18:33

Put on 7th coat of Coelan.

Today, with help of Kathy Perkins, put the dinghy on the deck and tested the positioning of the chocks. It appears to work well. I did note that the staysail will need to be higher so the pennant will be extended. There is lots of room underneath dinghy for oars, which can be strapped in to the seats (a safety factor) and I think it might be possible to have the bicycles stored in the sail locker while underway, and the sails underneath the dinghy. Points to note:

- Aft, Strap dinghy direct to chock hand rail.
- Fwd, Strap to deck folding eye straps.
- Add cushioning to protect topsides from dinghy davit tabs.
- Strap oars inside.
- Possibly strap ditch kit
- Add dedicated knife reachable from forward hatch if need to escape (i.e. cabin fire prevents escape aft or through companionway).

Finished installation of Blue Sky Eneryg Solar Boost 2512i charge controller. For just swapping the units and 4 wires, it took about 6 hours. The problem was the PV feed wires were too big (#8) to fit in the box and screw down onto the small connectors on the 2512i. Problem solved with a 4-gang terminal block and #14 wires leading from the block to the 2512i.

Thursday, 27 December 2007 05:49

Huge battery drawdown last night. 600AH. 11.27 VDC. Caused by failure of the power box on the SDYC dock. I cut down the draw to 22 Amps and switched posts. All breakers seemed OK. I seem to remember this problem happening on I-dock before.

Sunday, 30 December 2007 22:13

Friday worked all day on aft cabin closet shelves. The project went just fine except I forgot to allow for thickness of the sea rail on each shelf. I can fix this, but I have to bring some new teak pieces and slice a bit off each shelf. The sliced off pieces could be used as dividers.

Saturday *Beatrix* moved to the cop dock. Spent much of the day on stowing lumber, sorting photos, and clearing out the forward cabin closet.

Today I visited Mom in LA.

Friday, 04 January 2008 07:48

Mon-Thurs. Built containers for spray cans. Finished deck gear. Did lots of business. Visited Mom. I should have kept this going because I can't remember what I did. Mon and much of Tuesday I worked

on software and movies.

Fixed watermaker distribution.

Monday, 07 January 2008 06:26

New Upholstery Installed.

Tested SSB Radio with new Airmail3 software and all is working ok.

Tuesday, 08 January 2008 16:05

Fixed engine to transmission cooler hose. Used 3M Industrial Adhesive on the reducing collar. All looks OK now.

Thursday, 10 January 2008 08:25

Underway San Diego to Ensenada. Nav glitches still in place. Wind at nav stn, cockpit instruments not working and no wind visible in CE. Wiggling the Steering Data Sw and shifting go PC (it is actually the GPS) source got the nav data to the A/P. A mystery to solve. It's nice when the NAV works on the A/P.

Monday, 14 January 2008 07:49

Contacted GARMIN support re. the heading display problem.

techsupp@garmin.com

SUB: Michael Barger (Marine Team)

The WIND and MULTI instruments are dead. Replaced with two spare MULTIs.

Wednesday, 16 January 2008 14:47

Underway down Baja Coast.

Issues and potential problems are:

- Confirmed strong stream in deck fill for water maker product not present in starboard fwd deck fill. Bilge pump cycling at very high rate. Assume watermaker product is ending up in bilge.
- Data and nav and radio
 - Continued "data leak". Heading sensor drifts off course and NAV data to the A/P goes in and out. NAV data is still present on the Multi.
 - A/P will not work when transmitting on SSB.
 - RFI from Inverter to SSB
 - A/P receives intermittent NAV data.
 - Need constant position data from GPS when radios are on.
- RADAR – not working to specs. Return to Garmin
- COMPUTER – running on wing and a prayer. Dell fix.
- Mast step needs to be better held in place.
- Mast Partners
- Deck leak could compromise the SSB. It needs some protection.
- GPS data to SSB
- Main alt is sometimes charging at higher voltages than recommended.
- Starter Battery
 - Voltage to Nav Panel
 - Replace starter battery
 - Redo the starting circuit. Problems with Start Batt not visible.

- Consider a separate radio battery
- Nav Station Curtain
- Portlight curtains
- Disassemble binnacle
 - Fix throttle lever
 - Inspect chain and cable attachment
 - Install binnacle lights
- Purchases
 - Silicone Sealant
 - VHF100 West Marine, replace.
- External VHF Mike permanent connection. Mike may not be working. Contact ICOM if necc.
- Spare water pump and pulley must be rebuilt/replaced. Pulley is 6 ½" dia, 2 ¼" deep, ½" belt. May be Perkins part. Non-standard.
- Riser weld/repair.
- Inspect all engine hoses, replace if necessary, at least carry spare hose in all sizes.
- ER is always hot. Need to reinstall ventilation channel from outside air.

Sunday, 20 January 2008 07:11

Alternator and regulator working fine again. It is frustrating to know that it could start charging at 16 volts. I need to check all connections and sense wires.

Watermaker working fine. All tanks are full.

Found the issue with the heading sensor. It is interference from the refrigerator compressor controller. I wonder if this could also be affecting the other NMEA devices.

At the moment I am receiving NO information over the serial ports, but oddly enough, the GPS data is usually getting through to CE.

Radar is ;not working well. I have to turn up the gain almost all the way to show large nearby vessels.

LEAK IS DEVELOPING IN THE RISER NEAR THE INJECTOR!

Saturday, 26 January 2008 11:44

Genset: Overtemp shutdown. Topped off with coolant (about 2 cups). Running fine now.

Engine: Water Pump Pulley fell off. This happened twice today.

The water pump pulley fell off because in the first instance the bolt worked loose, in the second instance I did not use a heavy washer to hold the pulley on. The thin copper washer I used just disintegrated. Kathy on watch delayed shutting down the engine until waking me. It doesn't look like any harm was done. I took the heavy washer off the spare pump. The spare pump pulley is different from the current pump. I need to acquire a spare pulley that is correct and a spare heavy washer. Perhaps DEPCO will have them.

Also noted: 97 bilge pump cycles! Not sure where this is coming from. These large BP cycles seem to come in waves. I.e. there will be a large amount, then nothing. Unless there is some association with watermaking, I can't quite figure it out. When the engine coolant was leaking badly of course there where lots of BP cycles.

Other problems include me continually forgetting to turn off the freshwater flush valve on the watermaker, thus pumping all the hard-earned pure water back into the ocean.

Also noted: more black smoke at higher RPMS, and a leak in the exhaust riser that needs to be re-welded. The insulating blanket needs some high-temp duct tape or other fix.

Note: order a new personal strobe.

Note: Engine STOP from cockpit not working.

Note: STARTER BATTERY not charging.

Sunday, 27 January 2008 14:31

Changed 5u filter on watermaker. It was black and clogged and the dual pump flow was down to 8 GPH. I will watch and see if the new filter makes it easier on the pumps and perhaps the second pump will not over temp now. S THIS SEEMS TO BE THE CASE. Note: Water tanks filled and then isolated. Both pumps working fine after filter change. 51 BP cycles since this AM and some water near the tank manifold under the floorboard. Reset BP to zero. All gauges register full except stbd fwd which is just below full. System is set to draw water from port fwd. Watch stbd fwd and see if it level drops.

Wednesday, 30 January 2008 17:51

PANDA had over temp again. I have changed out the coolant pump and replaced one of the spade connectors. Running now with no apparent problems. Good Panda, we love you, Panda.

The main engine has suffered another coolant leak. Not sure where it is coming from. It didn't leak from Mag Bay to Cabo.

Performed a textbook stern anchor using a modified flying moor. Since our fore anchor was already deployed and the boat was streaming away from the drop point, we let out extra chain../i

Wednesday, 30 January 2008 19:26

PANDA heat shutdown. Boiled over. Called Shea Weston and he suggests checking out the raw water system. Check impeller and through-hull.

Thursday, 07 February 2008 07:11

More PANDA woes. Continual overheating after running from ½ to 1 hr. Jim (support@fischerpanda.com) suggests looking at each of the 6 temp sensors to determine which one is heating. Soot is from low load running. Perhaps final charging should be done WITH a load, e.g. save the watermaking/refrigeration until after 1.5 to 2 hrs of run time.

Engine coolant leaks stopped by seriously tightening the hose clamps. Seems to have worked mostly, although engine is using a bit of coolant. Had to top off with about 2 cups of water for five hrs of motoring. That's too much.

Thursday, 07 February 2008 18:34

Good sailing in 30 knots of wind, but breakage today was: jib sacrificial cover, staysail stay tie down, two eggs and tomato juice all over the galley. Yesterday the VHF100 handheld was broken. Try to get replacement from West Marine or eBay because battery packs are in the life raft.

Sunday, 10 February 2008 23:57

Bahio Los Muertes, BC

Raw water pump pulley has destroyed the woodruff key and shaft on the raw water pump. I'm not sure when or how this has happened. I tried using the spare pump but it was configured for opposite rotation. I rebuilt the pump to correct this, but found the shaft seals were leaking. I replaced the shaft seals but the pump still leaks. So we have to stay another day, now ay out of it. We were due to make the final leg to La Paz tomorrow but that is not possible now. I have to somehow take the working pump with the bad shaft and the non-working pump with the good shaft and combine them without destroying my remaining seals. With the Panda not working we are going to soon have a power problem.

Monday, 12 February 2008 14:03
Bahio Las Muertes, BC

Repaired old water pump and replacement pump with parts from stores and from Marv Dun on *Odyssey*. It was time-consuming and difficult, but now I have two functional pumps. The pulley has a very worn keyway but I am confident it will last to La Paz. I will need to have a new keyway made in the pulley and, hopefully, find a new one so I have a drop-in water pump assembly. Clearly, having a replacement pump is not enough.

Wednesday, 13 February 2008 07:09
Marina Palmira, La Paz

In Palmira Marina at La Paz. Motored all the way from Las Muertos. Flat calm, no wind. The last glitch of the passage was having the roll pin come out of the throttle lever as we entered the harbor. I managed to make do as we docked the boat, but probably should have stopped to get a vise-grip first. Here we are!

Monday, 18 February 2008 12:30

Took jib to sailmaker to re-stitch the sacrificial Sunbrella cover.
Wichinox/Polished portlights ext, port handrails, bow handrail, port granny bar/backstay adjuster.
Added swivel to the boom end of the mainsheet. Day before, we sailed from Los Muertos to LaPaz 2/11

Talked with Marcus at Trans Atlantic Diesel re black smoke. It IS the air cleaner.
Cleaned air cleaner and blew the soot out of exhaust system. Wow!! Engine runs greater. Jeff revved engine up to 2300 then 3000 under no load and NO BLACK SMOKE.

Kathy found Jeff's phone laying in passage way on starboard side along floor ceiling!!!! WOW!!!
Contact: Skip on KP44 "Last Hurrah" up

Tuesday, 19 February 2008 10:36

Calling Marcus at TAD:

- New air cleaner?
- Coolant Hose?
- Price of new water pump?

Called ICOM. Sounds like I need to send in the VHF.

Need to pack the Radar.

Monday, 25 February 2008 20:22

Radar Dome, Icom VHF M602, the Interphase Control Head are all in USA for repairs.

New Computer works, new monitor works, old monitor works. Old computer is at Dell.
Today installed reading light over dinette table, 12V outlet, and Blue Sea dimmer unit. Cool.

Tuesday, 26 February 2008 19:38

Colin came by to look over the engine. He will help with rebuilding the spare fresh water pump and the welding. He'll be by on Thursday and we will modify BOTH heat exchangers by welding on suitable aluminum pipe to 1.25". Tasks are:

1. Get out the spare heat exchanger
2. Drain coolant and remove engine heat exchanger
3. Remove riser.
4. Remove and pop-test injectors.

We will get to the Panda at a later date. He should be able to help with that. Rates are \$35/hr.

Wednesday, 27 February 2008 12:59

WATERMAKER FILTERS:

Wipe off black one. 5u, blue one is a 20 u filter. Swap out when black.

Carbon Filter every 6 mo to a year.

When I see flocculent stuff growing in the f/w carbon filter, change the filter.

Thursday, 28 February 2008 10:52

Tested 50A alternator. Checks out OK.

Removed cores on spare and current heat exchanger. Both look good.

Removed riser for welding.

Removed small stainless injection water fitting. Check for pinhole leak.

Sunday, 02 March 2008 17:46

Propane is empty.

Water fill to top still leaks f/w into bilge

Reefer is over-tempering on freezer at -2.5. Fans a must.

Fixed burned out relay for Hot Water Enable. Re-designed the circuit with separate AC relay from the Time Delay Relay. The TDR did not have rating for AC load. I am surprised it worked all these years.

Rebuilt nav seat as part of the project. Made it easy to take off.

NOTES ON PUDDLEJUMP NET

Wind Dancer:

Zarpe and Health Inspection

Health Inspection is within 2 business days

Horizon WDB 7200 leaving in 2 weeks

Monday, 03 March 2008 10:15

Tried to fix "crazy mouse" problem again. MS Article

[http://support.microsoft.com/default.aspx?scid=kb;\[LN\];Q131976](http://support.microsoft.com/default.aspx?scid=kb;[LN];Q131976)

Showed that I had not written the boot.ini file correctly. The switch should have been: /NoSerialMice

Tuesday, 04 March 2008 16:59

- Colin Agar was about. Says “fuckin’” too much
- Removed 50A alternator and modified bracket to take either a 1” or 2” foot.
- Got injectors back from shop: were 120/120/120/130 all now set to 135.
- Got modified heat exchangers back from shop. Adapted to 1¾” hose from original 2” by welding tube on.
- Cores boiled for both spare and operating heat exchanger
- Installed House Bank cutoff switch in high current box between main bus and 100A house fuse.

Friday, 07 March 2008 09:37

- Installed 100A alternator (replaced 50A) with new bracket.
- 50A alternator checked at shop in La Paz
- Engine
 - Inspected all belts
 - Moved Genset Battery Cable (starting power) to Main Bank Positive Bus.
 - Valve lock nuts were VERY LOOSE.
 - Setting Valve clearance. .012”
 - 1-4 and 2-3 are paired.
 - When #1 is “rocking” (which means when the exhaust is just finished closing and the inlet valve is just starting to open) then #1 is at TDC, then #4 is at TDC on the compression stroke, which is where you adjust the valves. Same for all other pairs.

Sunday, 09 March 2008 16:02

Yesterday saw the engine all back together, adjusted, bled, and running very sweetly and actually cooler than before. Today I have been installing the second alternator and “Digital Duo Charge” system.

Monday, 10 March 2008 21:14

Moved to Abaroa boat yard, awaiting haulout in the morning.

Finished restructuring the charging circuit. See Engine Control Schematic G, Page 3. A “Digital Duo Charge” will charge the starting battery anytime the voltage exceeds 13V. The DDC is operational when there is power on the Main Bus. Both alternators (100A + 165A) are now driven off a single regulator. The wiring is sloppier than I would like and when I rebuild the engine start system I will redo this.

Friday, 14 March 2008 19:03

Haulout completed. This included:

- Regreasing the MaxProp and putting on new prop zinc.
- Putting new zinc on the lightning ground (the other had fallen off)
- Putting new zincs on rudder. The new zincs had fixed holes and I had to drill and tap new holes
- Putting new zinc on shaft brush.
- Putting on 4 gallons of Amercoat ABC#3, blue, in 2 coats.
- Prop was coated too, but not primed.
- Some areas of paint had flaked off down to the fiberglass where there are lots of very small

blisters. These areas were faired and primed, but I expect the boat needs a thorough sanding and barrier painting at some point.

What I learned about MaxProps:

- It should be a 1/8" hole, but I mistakenly drilled it out to 9/64. I used a new 1/8" s/s rod.
- In order to keep the zinc from falling off it MUST BE solid against the back of the prop. Two of the hex nuts were proud and prevented this.

WEST MARINE ZINCS ✓

- 110296 CMT20 LIGHTNING GROUND ZINC
- 110312 CMT21 RUDDER ZINC
- 291807 CMZHC2 HULL ZINC

Monday, 17 March 2008 12:21

Generator. Terry came by. Concerned with fuel contamination (water/dirt) because the Panda has no secondary fuel filter. Suggested that either the heat exchanger is partially plugged or the fuel is dirty. The test is to let it run and see which part of the unit is overheating. Terry has loaned me a Non-contact laser thermometer (Cen-Tech) which you can point at something with a laser and read off it's temperature. If the entire unit overheats, then we have a fuel problem – the engine is trying to power a bigger load than it has fuel for. Also, smell exhaust.

Start Amp Hours: -253

Start Amps: 230

Run Time:

Started with black smoke and lots of carbon particles in the water. LOTS of carbon particles. After 35 minutes.

Terry (and Panda) thinks I have been running it without a load. Terry says "just let it run" while it is loaded up.

After 1 hr 51 minutes it is producing 144 amps, running at ½ throttle. No smoker or soot in the water. Maybe it is like the other engine, it is not getting enough air?

Tuesday, 18 March 2008 08:23

Talked to Panda re. problems.

1. **Would not shut down.** This is apparently a problem with the K3 relay. I unplugged it and put it back in and shutdown now worked. Solution: Keep an eye on K3. If it does not stop, unplug K3 and see if it shuts down. If it does, replace K3.
2. **Smoke and soot under load.** Either the air cleaner is dirty or it is overloaded. Clean air cleaner, and then if that doesn't fix it, turn down the max amperage pot in the diode box.

Cleaned the air cleaner and waiting for enough Amp-hours to be drawn out of the battery to see if it still smokes under full load.

Thursday, 20 March 2008 23:06

Generator is now working OK. Still to come aboard are the spare water pump which is stuck in Seattle.

Sunday, 30 March 2008 19:12

- Radar re-installed and tested. Works Fine.
- Moved flag to backstay
- Inspected rig to masthead, coated cotter pins with new silicone.

Thursday, 03 April 2008 15:47

- Panda high output reset from to amps
- Stored spare batten in boom

Kathy washed and “Downy”ed the main sheet and the traveler sheets

Thursday, 10 April 2008 22:06

- Changed oil in genset and main
- Installed the lee cloths
- Bought canvas work: jerry jug covers
- Repaired inner stay restraining fitting
- Repaired mainsail cover
- New sling/cover for Honda outboard
- Added reefing point ties to main sail.

REFRIGERATION NOTES FROM MARK McBRIDE

What would happen if I raised the bottom set point to -1.0 or 0.0? [It won't hurt anything, the freezer box temp will be a little higher.](#)

I still have the option of putting in some fans to cool the condenser (that's the tall cylinder, right?). [You would want to cool the compressor itself, the purple thing-just moving the air around is the important thing.](#)

The other option would be a time delay [That's the best solution. You can do that with the Carel controller. Just adjust the time between restarts. That would be parameter C7, which can be increased to 5 minutes, maximum, from the default of 0.](#)

[relay \(the Carel relay\) to limit the compressor run time. But the easiest "fix" at the moment is raising the set point since it seems that pulling it down past -1.5 is the problem. What do you think? You can certainly adjust the temp, but the real cause is multiple restarts under pressure. Changing C7 is almost as easy as changing the setpoint. I think giving the system 5 minutes between restarts will help. \(The bigger question is why does it stop and have to restart? I suspect that may be over temp on the compressor, or perhaps low voltage, does it only occur without a charging source?\)](#)

The problem *always* seems to occur when I let the system warm up, e.g. for defrosting or cleaning. [If it was "always" that would point us to an overheated compressor after a very long run time.](#)

[Here's another fix! \(besides changing parameter C7\) .You could put a Carel probe on the compressor top and set the Carel to respond to over temp in a more graceful way than what the compressor is doing now. \(so it would turn off when too hot, come back on when ready\). You can also set alarms, one for "warm freezer", and one for "hot compressor". I believe that you can do all that with the controllers you have now. One probe in "direct" and the other in "reverse". Look into the "compensation" function. It looks like you can compensate the low temp of the system with the high temp of another part of the system. So when the compressor got too hot, it would increase the setpoint of the freezer plate. Wouldn't take the plate to -4° if the compressor got too warm. These controllers are pretty nifty.](#)

Check for 3.5 gallons a minute minimum.

Refrigeration Issue Solutions:

1. Put in a short cycle manual button. **DONE**
2. Add cooling fans in the compressor compartment. **DONE**
3. Check water flow. **DONE**
4. Add Time Delay Relay to limit compressor run time (e.g. 15 min ON, 15 min OFF until setpoint reached). **Never done; not required**

Sunday, 13 April 2008 20:01

Panda conversation with "Bob"

Installed vane adjustment lines for the Cape Horn

Added another line reel

Added Nav Station Curtain

R512 to adjust voltage on main board

R606 to adjust amps on main board

Hi/Low/Common are autostart features. Only for Autostart

Wednesday, 15 April 2008 22:28

- Water Leak on tank fill problem discovered and solved. Stbd Aft Tank vent hose did not have a hose clamp. Difficult to fix.
- Strobe light now working – disconnected wire.
- Start Battery Voltage Sense now going to Digital Voltmeter – disconnected wire was re-connected.
- Glued floorboard in passageway and fwd cabin
- Dinghy
 - Attached lines to hold oars
 - Glued in loose spacer in teak trim
- Repaired canvas cover for wooden paddles
- Finished canvas work
 - Reel cover
 - Fishing and windvane
 - Nav Curtain install
 - Reefer continues to error out.

Saturday, 08 August 2020 07:54

- Changed Groco raw water filters. Expensive little items. The smaller (3/4" filter) had to be cut down and adapted. The engine raw water filter fit.
 - SS-69-C for 3/4" filter (modified)
 - SS-76-B fit OK.
- Called Mark re. reefer and are undertaking test to see what it's problem is:
 - Flow with 809-HS pump is only 1.8 GPM. System should have minimum 5 gpm.
 - March 809-HS pump specs show 6 gpm at 3' of head.
 - Hooked up dock hose to system.
 - 6 GPM at the hose
 - 3.33 GPM when piped through the reefer system (quite a drop in flow)
- Tied down
- gear on deck
 - Tied down under rubber mat
 - Oars
 - Dinghy Mast

- Floorboards
- Washed dinghy and stowed life jackets and sails under thwart ready to load.

Sunday, 20 April 2008 08:29

Still in La Paz. Reefer not working right.

Reefer:

- Called Hector the reefer man here.
- Checked refrigerant – OK
- Condenser cooling – OK
- Opened expansion valve just a bit to let more fluid back to compressor to cool it.
- Reset Set points to higher levels (see reefer log)
- Ran overnight with thermocouple loose. Runs fine.
- Re-fastened thermocouple – still has problems but not enough to error out.
- Raised freezer setpoint to 2 deg and reefer left at 20. Both now have differential 8 deg.
- Hector says he has seen these units before and all had the same problem – they don't work in these climates. One man replaced the entire unit including cold plates.
- I can't do that so the answer has to be:
 - Limit run time with a programmable relay
 - Add some fans to the compartment and reverse the existing fan to blow outward.

Saturday, 26 April 2008 08:31

- Under weigh from La Paz to Cabo, then Marquesas, with Kathy and Delilah
- The reefer problem went away with
 - Installation of strong fans to directly cool the compressor and vent the compartment
 - Opened expansion valves ½ turn
- Installed GPS data line to SSB radio and STC-IIpro modem.
- Relocated HDG sensor wire to avoid other wires, but it still goes off by about 40 deg when the refrigeration compressor is running.
-

Don Anderson suggests my radio, which is broadcasting just fine, has an RFI problem since reception is bad. Need to start with dead boat and go from there.

Noticed that bolts holding vang to mast had worked free and had to be tightened. They just vibrated loose – I did not see any sign of thread damage to the backing plate. Glad I used a backing plate, though.

Sunday, 27 April 2008 07:10

Today's glitches:

1. Right speakers (front and rear) are not working (just a faint hum)
2. RFI issues in SSB
3. Leaking seal in forward head.
4. Heading sensor error and nav errors (old glitch)

Engine Stop did not work. Stopped Engine Using switch on nav panel.

Monday, 28 April 2008 09:45

Refrigeration fans are blowing lots of hot air under the sink. I think with the engine running that the compressor is drawing air from the engine room. It needs an external air source. Once sailing it should be better. Amp usage is way up on the reefer system (not sure the amp draw on the fans, but might be as high as 4 or 5 for both fans).

The reefer amp draw is overheating the Blue Seas 40A thermal breaker. It has started to trip out on it's own.

Sunday, 04 May 2008 13:08 – Underway Cabo to Marquesas

ER Bilge pump was plugged at the foot, and the screen loose. I cleaned and repaired the foot. The Flojet pump has trouble priming itself now.

Current urgent issues are:

- mast partner wedges are slipping about. New wedges must be made. (DONE)
- Handheld autopilot controller wires are broken. Splicing is in order.

Monday, 05 May 2008 07:00

Radar showed "Error Code 2". Restarted OK.

Wednesday, 07 May 2008 14:54

Panda low on oil. Needed 3 x to restart with OP sensor. Probably pump not primed.

Sunday, 11 May 2008 22:15

Added 1 cup oil to Panda for 7 hrs runtime.

Tuesday, 13 May 2008 15:19

The Pactor STC-IIusb has been damaged. I was investigating RFI and I plugged and un-plugged the unit while running. There is a notice in the instructions not to do this, but no sticker on the unit itself.

Digital Duo Charge is not charging starter battery. It shows a "battery temp" error condition – not surprising. All this heat is a problem for the refrigerator, the engine, the crew. Running the motor (3 days more to get through the ITCZ) is a problem.

Wednesday, 14 May 2008 23:47

Motoring along in the ITCZ. 30°C air, 27°C water. Hot, hot. Engine is about 200°. A bit warm. We have the E.R. doors open, and the passageway door, and the exhaust fan going. It's cooler on deck, but we need to stay out of the sun. The voltage sense wire to the main alternator was broken, probably from fatigue, and therefore no charging was taking place. It was an easy fix.

Saturday, 17 May 2008 19:21

Today's glitch was the cockpit shower head blowing off the hose and the pressure water system emptying the ready tank (Port Fwd). The heat, extra usage, etc. had caused the crimped hose barb to slip off the hose. I was able to fix this (for how long we will see) by using a centerpunch to dimple the crimp.

Tuesday, 20 May 2008 03:55

Yesterday the reefer compressor was dead. I could see power being consumed as the controller fed amps to the motor, but the compressor remained silent. I defrosted the expansion valves and waited until the morning. The compressor started (after emptying the locker to get to it). It has run fine all day. I installed the small 2" circulation fan in the reefer box. I can't tell if it is helping yet.

Spliced a snap shackled into a line for the afterguy. The spinnaker tack pendant was very chafed and I will splice another one tomorrow. I think I will use a cinch knot and loop for the jib sheets.

Tuesday, 20 May 2008 15:13

Reefer ran OK until I installed the box fan. Now it is drawing almost 50 amps and tripping the breaker.

Wednesday, 04 June 2008 05:39

1. LEAKS:
 - Mast Boot
 - Port Staysail Track (aft bolt)
 - Staysail Bolt
 - Stanchion Bases
2. Today the OVEN stopped working. Turned out we were almost out of gas. Yay, another non-problem.
3. Kathy sewed by hand some stitching on the sacrificial cover on the jib
4. Need to patch some holes in the rain cover over the cockpit
5. Lubricated the upper bearing on the roller furling
6. The main anchor (stbd) bow roller is bad. Cannot remove it without using another 7/32" hex wrench

Friday, 06 June 2008 21:24

Replaced watermaker pleated sediment filter.

Thursday, 12 June 2008 03:55

- Reset valves on Panda. They were very loose once again (.016 instead of .008). Panda still not functional – problems with throttle control.
- Installed 1200W motor and 150A breaker for anchor windlass. Added 500ml 80-90W gear oil to replace that spilled during swapout.
- Re-flaked chain.
- Inspected bow roller – needs to be cut off to re-use.

Saturday, 14 June 2008 19:54

Cleaned the watermaker filters. It was dark but not too dirty, actually. The pumps seemed to be straining. Cleaning the sediment filter helped a lot. The Groco raw water filter is OK. Spinnaker halyard was lost of the mast.

Sunday, 15 June 2008 03:42

Much fresh water in bilge after marathon watermaking session. I suspect it is the watermaker. One of the settings must pump water into the bilge, or it is the vent system.

Tuesday, 24 June 2008

- Problems with SCUBA compressor – won't start. Filled tanks at resort.
- Fixed water system. Leaking drain valve from hot water heater. Set firmly to "off". Added elbow to remove crimp in drain hose to bilge from HWH drain valve.
- Noted only one f/w pressure pump working properly. Pump 2 will not pump up pressure.
- Anchor chain pinched between fallen coral head. Anchor retrieved. Chain still stuck.

Wednesday, 25 June 2008 07:26

- Added crimp-only terminals on refrigerator compressor 3-phase power lines. Checked wiring at controller.

- RIX compressor not working. Carburetor is bad and needs to be replaced.
- Watermaker problems. Emailed Spectra about the problem. If air in line possibly Clark pump will not work correctly.
 - 1) Low pressure, normal amps, reduced flow, salinity too high (550 ppm)
 - 2) All filters checked.
 - 3) Bubbles noted in feed water line.
 - 4) **Need to check if blockage of the through hull fitting/**
 - 5) **Need to check all hose clamps on the raw water feed line.**

Saturday, 28 June 2008 04:45

Panda was tested yesterday. Lot's of dialog with Jim at Panda HQ. They are not happy with my one-liner about it being not suitable for cruising vessels.

Results of testing:

- Will not start without manual throttle advance
- With manual advance, engine will start, all lights are green, amps start to be produced and.... It winds down and stops.

SPECTRA

- Inspected raw water line and tightened all hose clamps.
- Replaced filter
- Found pinhole leak in brine discharge line out of the Clark pump. This was inflicted by a projecting brad in the wooden cover. It probably occurred as I took off the cover because otherwise a lot of salt and water damage would have been noticed. We knocked the projecting brads down with a hammer and cut off the hose. Changing the brine discharge outlet to the left side of the pump allowed the same cut-off hose to be used.
- Feed water pressure is down
 - 60 PSI with one pump (should be 60-70)
 - 70 PSI with two (should be around 90).
- Bubbles still appear in the raw water plankton filter.
- Implication is that the feedwater intake is restricted.
- The "Primo" salinity meter is not working, in fact has died, and I am going to assume that was the problem with the high PPM readings. Before it died totally I compared the water in the tanks to the product water and they both read high, which is why I think the problem is with the meter.
- Conclusion – two problems:
 - Restricted raw water intake
 - Malfunctioning salinity meter.

Monday, 30 June 2008 21:35

SPECTRA

- Re-plumbed the connection of raw water line to Groco strainer to provide greater flow.
- Broke plastic filter bowl. Using shower sump bowl (same type)
- Added 90° elbow where the raw water hose was crimping around the support post.
- Pressure tested raw water line to 8 PSI and found no leaks. Therefore air in line cannot be coming from air leaks.
- Tested unit again with pressure relief valve open. The raw water line is about 26' long. Two-thirds of the line is 5/8" solid grey which I got from Daily Marine. I did not have enough of this so the remainder (above waterline) is 5/8" reinforced plastic water line. It normally does not collapse. I had suspected a pinhole leak but it holds pressure so no leaks.
- Still finding air in raw water line before the filter. The air HAS to be from residual air in the line. Air enters after the raw water filter is cleaned. Are pumps not sucking hard enough to clear it all out? It should clear eventually.
- Pump Test: Brine discharge + Product water

- Pump 1 outputs 0.9 gallons/minute @ 60PSI (should be 1.7 @ 60-70PSI)
- Pump 2 outputs 0.8 gallons/minute @ 60 PSI (should be 1.7 @ 60-70PSI)
- Both pumps output 1.4 gallons/minute @ 70-75 PSI (should be 2.8 @ ~90PSI)

Monday, 28 July 2008 19:43 Z

Letter from Blue Sea regarding 0.00 watt reading.

Hi Jeff,

There is a simple fix for this one.

The current transformers connected to pins 4 and 5 of the meter have no polarity indication. When the two leads are reversed, the current shows positive on the half cycle when the voltage is negative. We should calculate negative power.. flowing the wrong way, but the specialized chip we use is not programmed for negative numbers so it reads zero.

Just remove the two wires on terminals 4 and 5 of the meter and reverse them. That will make the polarity match and you should get a Watt reading. It is in the instructions, but not everybody gets that step when everything else seems to work just fine.

Be careful to turn off AC power before making the change, keep safety first when working in the AC.

Best regards,

Wayne E. Kelsoe, PE

S/V Mahalo

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Monday, 28 July 2008 19:45 Z

- Turned on 220VAC panel for the first time in Tahiti, with 230VAC/60HZ power. I have a polarity issues to resolve, otherwise it works fine.
- Installed new GMR 24 radar to replace ailing GMR40. It works great. The installation is somewhat different in that it has studs, not bolts. If it ever has to come down off the mast again I would need to make a lifting sling with 4 light lines terminating in loops (or carabineers) and tied to a single stainless ring. Each loop would be fitted through one of the studs and the spinnaker halyard shackled to the ring would lift it straight up.
- Garmin also sent a free transducer to us. Wow.
- Refrigeration: The compressor will NOT start. Last time it was using 57 amps. Now it won't run at all.
- The bent bow roller was sent for repair and improvement. It should be back today. We have spent 10 days at the Tahiti Quai des Yachts now, using up lots of money.

Thursday, 31 July 2008 22:09 Z

- Bow roller re-installed and fixed for only (gasp) 38,000 CFP. Reconfigured spinnaker tack and pole guy blocks. Tack uses bale and block supported by shock cord. Foreguy/downhaul uses standup block in a Schaeffer removable base plate.
- **Secondary anchor rode:** Removed rusty thimble and made a "shovel splice" rope-to-chain splice.
- **Bruce Anchor.** Used stainless Wichard bow and D shackles rated ~4700 SWL. Note Bruce Anchor really needs large galvanized anchor shackle. 3¼T SWL. Bruce shank takes up to ¾"

shackle pin dia. and 13/16" shackle gap.

- **ANCHOR RODE MARKERS**

- Marked the 130 (425') meter anchor chain at 10 meter intervals:
 1. Blue
 2. Red
 3. Yellow
 4. Blue Blue
 5. Red Red
 6. Yellow Yellow
 7. Green Blue
 8. Breen Red
 9. Green Yellow
 10. Green Blue Blue
 11. Green Red Red
 12. Green Yellow Yellow
 13. Green Blue Yellow Red
- Marked the 120 meter (390 feet) secondary anchor rode at 10 meter intervals:
 1. Black
 2. Black Black
 3. Black Black Black
 4. Black
 5. Black Black
 6. Black Black Black
 7. Black
 8. Black Black
 9. Black Black Black
 10. Black
 11. Black Black
 12. Black Black Black

- **Refrigeration Test**

- all auxiliary devices (fans and pumps) not running
- No refrigerant in system.
- Tested Continuity on press/temp alarm circuit.
 - Error found. Wire broken from pressure sensor.
 - Jumpered alarm wire to controller for the test.
- Current draw: 51 Amps without pumps/fans
- Resistance between pins on compressor:
 - OY 74.7 kOhms
 - YB 74.7 kOhms
 - BO 74.7 kOhms
- Volts at compressor (pins connected)
 - O 5.8 volts
 - Y 5.8 volts
 - B 5.8 volts
- Volts from controller (pins disconnected)
 - OY 0 to 0.2 volts fluctuating
 - YB 0.3 0.55volts fluctuating
 - BO 0.3 volts fluctuating

Wednesday, 06 August 2008 03:12 Z

Repaired main halyard. The cover had frayed through. After a futile attempt to splice on a new cover I cut off the old splice and re-spliced. This was a core-dependent splice with a ring hitch onto the halyard shackle. Because the cover was not important I terminated it and whipped it where it reached the shackle.

Wednesday, 06 August 2008 18:24 Z

Started Panda this AM. Still blowing oil and soot but at least its running. Suggest I reduce max power to 150 amps.

Called Carole Hasse re. sails

- Don't keep sails on deck unless in Sunbrella™
- Reefing lines DO mash down the sails – nature of the beast.
- Perhaps some sacrificial cover or enlargement of the reefing line opening into the boom?

Called Brion Toss:

- Use **buntline hitch** to fasten lines to sails
- It is possible with a single line to use a Brummel eye.

Sunday, 10 August 2008 15:25 Z

Vang Bang

- Sharp noise originating at boom vang connection to mast
- Discovered missing nut on bolt, worn hole in lower hinge, excess play in the vang gooseneck fitting, and one of the attachment screws was broken in the hole. Threaded portion of bolt has worn a bit out of the lower hinge gudgeon.
- Repairs
 - R&R flat head machine screw
 - Added additional washers as shims to prevent gooseneck from sliding.

Bolt too short (new one is ordered) so used full strength Loctite with ordinary bolt.

Thursday, 21 August 2008 17:06 Z

DECK

Raiatea Island. About a week ago we changed out the shackles on the main anchor, using two 3¼T galvanized bow shackles. These are a bit big for the roller channel but we'll watch that. I have decided to NOT use an anchor swivel. It's a weak link, and not necessary.

Harepiti Bay, Tahaa. A few days ago we added a folding padeye just aft of the anchor windlass as an attachment point for jack lines. This allows a crew member to work all the way to the bow without unclipping from the jack line.

DRAINS

Huahine Island. We unclogged drains. They had become full of something resembling greasy, gray shit. I disassembled the sink drain and cleaned them, put a bend in the starboard PVC drain for a better run and to allow it to be properly screwed to the sink drain (it was leaking). We found some French "Drano" (in about sixteen varieties – granules, liquid, hot, cold, big, small) and ran about 3 applications until the drains were running freely at last. The power flush device I bought was essential. It has a big soft rubber flange and hooks up to pressure water. The problem with the drains is twofold: 1) they have relatively flat run to the down tube and 2) the waterline is so high, just a couple of inches below the drains, that the drains have trouble flushing unless a lot of water is run through them. There is also a safety issue with the higher waterline.

Possible solutions:

1. Redirect the drain lines so they go straight down (restricts space)
2. Add a seawater faucet for flushing drains
3. Use a sump box. Solves the safety issues but probably won't work well as they get all glunky.
4. Definitely add a gate valve to the down pipe for emergency shutoff in case there is a break in the thin PVC drain tubes connected to the sink.

HALYARDS

Harepiti Bay, Tahaa. We did some work up the mast to move the aft spare halyard from port to starboard. After some messing about we did get it moved. We ended up with the spare forward halyard on deck because I forget that opposing halyards MUST BE TIGHT. The sheave clearance fore-to-aft in the headbox is too small and unless the opposite halyard is snugged tight the loose halyard is drawn backwards through the opposite sheave.

The technique was to use a light line weighted with about 30 ¼” nuts. This worked once, but in trying to reinstall the forward spare halyard (fwd port sheave) it got jammed somehow. I could lower the line about 3m. It felt normal until then. I could raise the line and then it would jam and not pull out. I simply can’t visualize what is going on in there. The only thing I can think of is that it is the wrong way round (wrapped) on the jib halyard. All other halyards work fine, but we didn’t loosen the jib halyard. I cut off the line and tied it tight so my spare Nylock ¼-20s are in the mast if I need them.

We also installed a block on the starboard spinnaker bail and ran a light line to it. If needed, we can accommodate a spare spinnaker halyard that way. We sprayed SailKote on the track, which made a huge difference in the ability to raise, lower, and tension the main. It’s obvious that this needs to be done every 3 months under sail.

Sunday, 24 August 2008 16:55 Z

- Topped up the ATF reservoir on the Octopus steering actuator
- Put a Nylock nut over the end of the backstay chainplate bolt to keep the Cape Horn windvane from hanging up on the projecting bolt end.
- Noted too much friction in the grey line on the Cape Horn control lines. The shock cord is not strong enough to suck it back. Not sure what the problem is.
- Noted crimp in holding tank fresh water flush line. Needs a bronze elbow installed. Tightened a loose hose clamp at the same place.
- Scrubbed green weeds of bottom.
- Replaced prop zinc needs replacing.

Monday, 25 August 2008 15:43 Z

- Check the rig tension: one full turn on intermediates to 20% of b.s. All others OK.
- Checked gooseneck: snugged up bolts. One stripped. Re-tapped NF to NC and used longer bolt
- Checked all boom fittings. Tightened preventer padeyes. Loose forward endcap fitting.
- Replaced prop zinc.
- Running Backs secured with sail stop bungees
- Storm drogue attached to line with swivel
- Check/tighten bolts and nuts in floorboard. Might help.
- Forward padeye for jackline attachments
- Made a “stopper” for the wind vane quadrant by adding a Nylock to the aft chainplate. Noted that carriage bolts could be “turned”. Not surprising, really. I think they are fine, just don’t turn them. ✓
- Polished winches

Thursday, 28 August 2008 21:03 Z

Noted shaft rumble. It’s more like a rattling, intermittent, not constant. It seems to have something to do with the swell. My guess? Bad Cutless™ bearing, but it could also be the new prop zinc has a problem; it started immediately after the installation.

Lot’s of floor creaking. I need a good solution for that; perhaps epoxy impregnation.

Wind vane control lines have accumulated friction.

Wednesday, 03 September 2008 02:53

Suwarro Island.

- Panda. Running today. Saw no soot. Ks (rt hand) relay for start was burning out because of bad socket. I tweaked it with screwdriver but it should be fixed properly
- Attempted to regulate pot to limit max amperage but it seemed to have no effect.
- Oil use was not too bad, but remember last run was a short one.
- Fixed detached sail slide on main. Found several loops with upside-down sliders. Fix these later.
- Fixed sea berth by replacing wood screws with bolts.
- Checked prop. No problem there. If rumble persists it HAS to be the Cutless™ bearings.

Thursday, 04 September 2008 04:28

Replaced faulty Ks Relay socket on Panda. The socket was heating up badly because one of the stupid ¼" tab sockets was not good. These are so pitiful as connectors. Panda seems to run OK. Ran for a couple of hours yesterday without soot and without oil consumption. We are hopeful.

Sunday, 07 September 2008 19:23

Lost the dinghy. Both the primary and safety let go in the night. My fault for not replacing the primary loop in the tow line hole and for not properly securing the eyebolt which held the secondary.

Panda is still sucking oil.

Today the wind data from the sensor is showing errors of up to 10 knots over actual wind speed.

Monday, 29 September 2008 17:20 Pago Pago, Amer. Samoa

Finally I repaired the refrigerator. A new Masterflux Sierra was swapped in. George on Thalia helped. Leak testing was with R-22. After that, reefer was pulled down with vac pump for almost 6 hours. No leaks detected. Motor leads are now led to a terminal block and I should NOT have to open the stupid connections on the compressor if I have to remove it, or remove the controller. Added speed control potentiometer. Currently at full speed. (BLOODY GEORGE MADE A BAD JOINT AND SYSTEM DIED SHORTLY AFTER)

Thursday, 16 October 2008 22:11

Reefer woes persist. I am recharging. System would not pull down completely. There MAY be a leak so I am re-tightening the compression fittings. Added 24oz of R134a. System working better, of course. The compressor hour meter for monitoring run time is working again. That's strange; it just started working. The pressure gauges show 120psi and 10psi.

New HONDA EU2000 2kw genset is operational and running fine with the exception that we lose an amp or two. Wish I had bought a ProTech with larger capacity, say 100A. Then I could use shore or gen AC to charge batteries totally independently of the inverter, and use inverter for AC. When running the Honda and when applying intermittent high loads the Outback (inverter/charger) will often disconnect the "shore power".

Batteries appear to be weakening seriously.

Friday, 17 October 2008 18:31

I cannot not use the freezer. Starting at 22°F it took 1.8 hours to pull down to 10°F and another 1.5 hours to get to 6°F. Historically the average pull-down time from 10 to -4 degrees was only 1.1 hours.

The reefer seems OK. It takes less than 30 minutes to pull down from 28°F to 20°F.

I do not know the explanation for this.

Saturday, 25 October 2008 19:59

INTERNET PROBLEMS:

1. Loose coax connection in the WiFi amplifier.
2. Good signal with Hawking HWUG-1 but not signal with cable and new antenna.
3. Possibly the cable has corrosion in the connectors or is otherwise not working. Could test resistance in cable? Clean the connectors with something?
4. Best solution: Antenna on aft deck to replace cellular booster antenna with active USB cable to the transom AND short coax.

REFRIGERATION PROBLEMS:

1. It will NOT pull down on either reefer or freezer. Last night the freezer ran 9 hours continuously and would not get colder than 4.5. I'm giving it a rest now.
2. Refrigerant loss? Need to put gauges on the unit and check the sight glass.
3. This refrigerator/freezer system has been screwed up for so many years I doubt it will ever work right.
4. Mark suggests CLOSING the expansion valve by ¼ turn.

NEW BATTERY CHARGER:

1. Installed ProTech-I 40 amp universal battery charger yesterday. Installation went well and the unit worked fine.
2. 230 VAC input worked fine.
3. While out for dinner, the Protech developed a screeching sound that might be a bad fan bearing. After only a few hours of operation.

Monday, 27 October 2008 00:47

Battery Charger started working again. A bit noisy but the noise is normal fan blades

Mark says I have too much refrigerant, which is the “whhooop” noise because the compressor can't compress liquid. I have bled out a log of refrigerant, but it makes no difference.

Finished the remote sailmail website updater. Cool.

Wednesday, 29 October 2008 04:17

Discussion with Mark McBride re. reefer

I tried whacking and whooping but without success.

[4:07:27 AM] Mark McBride says: with or without refrigerant in the sys?

[4:07:30 AM] Jeff Stander says: I could not give a good whack because of limited space, but I was able to tap the compressor during startup with two hammers, using one of the handles.

[4:07:34 AM] Jeff Stander says: With refrigerant.

[4:07:41 AM] Jeff Stander says: Should I now try without?

[4:08:02 AM] Mark McBride says: ok, any change in pressure, or immediate whoop and shutdown?

[4:08:11 AM] Jeff Stander says: I did notice some oil around the sweated joints going into the condenser. But, if this were a leak, the refrigerant would be all gone, I'm sure. Maybe it's from the installation. Don't know.

[4:08:23 AM] Jeff Stander says: Did not have gauges hooked up. Sorry.

[4:08:28 AM] Mark McBride says: a little oil isn't anything to worry about.

[4:08:36 AM] Mark McBride says: Ok,

[4:08:38 AM] Jeff Stander says: That's good.
[4:08:42 AM] Jeff Stander says: What next?
[4:08:49 AM] Mark McBride says: for awhile, its ok to leave the gauges hooked up.
[4:08:57 AM] Mark McBride says: Next,
[4:09:33 AM] Mark McBride says: probably we should try with less refrigerant, but frankly, odds are getting worse.
[4:10:49 AM] Mark McBride says: All the usual double checks, wire connections, loose terminals, etc.
[4:11:15 AM] Mark McBride says: And, break it down to the most simple configuration, no extras, to just get the damn thing to start.
[4:11:49 AM] Mark McBride says: No fans, no pump, just the basics, to see if we can get it to run at all.
[4:12:08 AM] Mark McBride says: Most likely, something is blocking the compressor and keeping it from starting.
[4:12:45 AM] Jeff Stander says: Yes, sounds like it. We are OK to sail without refrigerator. Small freezer is working OK for cubes and some meat and we can buy ice in port for the big reefer box. We can probably fix this in Australia? Do you think the compressor is bad?

Have checked wires. Good solid install I'm sure. The only "new" thing is the potentiometer for controlling speed. BTW if you haven't done so I still need a new molex connector with pigtails sent to Fremont UPS Store.

[4:13:01 AM] Mark McBride says: If possible, attempt to start it at a lower rpm.
[4:14:10 AM] Jeff Stander says: Ok, if something is blocking we can try to blow it out with SCUBA air? Let's take it one step at a time for refrigerator challenged me. What should I do tomorrow?

Lower RPM
Lower Pressure
Gauges connected

OK?

[4:14:15 AM] Mark McBride says: BTW check, just got more connectors will get right on it.
[4:14:20 AM] Mark McBride says: Yes,
[4:14:57 AM] Jeff Stander says: OK, will do it and report back.

Saturday, 01 November 2008 01:46 UTC Apia

Refrigeration

I got the compressor running today. First I turned the speed dial all the way down. Then it started. I turned it all the way up slowly and it kept running. Added 2 cans (2 x 12 oz) of R134A. It is pulling down, but VERY SLOWLY. It might be because I am still adding the second can. Pressure was 10/90 psi and is now 15/100 psi. Ambient air is 86°. Not sure of SST. It is now at 0/100 PSI and plate temp of 21°. Sight glass shows flow of liquid, but not full by long shot. Something is not right about this long pull down. That's what I was seeing before the last time it stopped running. It has been on since 0930 this AM. I am not calling it "fixed" yet until I see how the cycles run. I am going to stop this cycle at 21° (20° to 28° are the reefer setpoints).

Sunday, 02 November 2008 22:49

Equalization charge applied to batteries: 15.5V for 3 hrs. Used Honda gen and Outback charger after fully charging to float with ProTech.

Repaired aft closet shelves so doors will now close.

Monday, 10 November 2008 22:50

Reefer working, but strangely. Not using freezer. Cycles/day are way up, run time is way down. I wonder if there is a holding plate problem??

Lost upper pump in watermaker today. Both need new fans and a rebuild.

New genoa sheet installed. I'm afraid it is too short, drat.

Watermaker:

Rebuilt Spectra water pump #2 (bottom pump) with new diaphragm assembly. I still need to add a new cooling fan,, rebuild #1 pump, and add the hour meter. Otherwise, working fine. Rebuilt pump functions at 7-8 GPM and 80psi top pressure. Replaced 20u pleated filter.

Tuesday, 11 November 2008 21:37. Under way from Apia, Samoa to New Caledonia.

Noted today that batteries have drawn down to 313AH and are still at 12.1 VDC even at a 12 amp draw. This is good news. It appears the battery capacity is back.

Sunday, 16 November 2008 17:56 UTC

Last night we encountered our first big squall in the South Pacific. The vang pulled out of the mast right away. I thought I had put backing plates in the mast when it was out, but obviously that was not the case. Backing plates are only in the boom. What I had also forgotten was that the rigid vang had replaced the topping lift so when we put in the reef, the boom was practically lying on the lifelines until I tightened up the reef line.

The boom-end stainless strap that is normally used for halyard stowage is acting as termination for a topping lift using the spare aft halyard. It really isn't strong enough. When I fix the outhaul slide on the boom I need to put a lifting eye at the end.

Another glitch was a blown fuse in the engine alarm circuit. I think it just needs a slightly bigger fuse. Hope this isn't "wishful thinking".

Thursday, 20 November 2008 03:52

The vang mast attachment pulled out. No backing plates! Surprised, I was. I thought I had put backing plates in there.

Yesterday I rigged a new vang out of Amsteel 5/16" Dyneema (9800# b/s) using a block and a line between the stays'l tracks on the cabin-top. I took two sliding padeyes off the genoa tracks, made an eye-splice on each of a length of Amsteel and ring-hitched it to the padeyes. The block runs on that line and has an Amsteel pennant running to the block-and-tackle from the broken rigid vang. It should get us to Nouméa but it is a stress on the wood supporting the stays'l tracks.

I always feel pleased when I can MacGyver something up. In Nouméa I'll re-attach the rigid vang hinge at the mast WITH BACKING PLATES. Yesterday's other glitch was a partial failure of the cooking gas solenoid. I had to remove it to get the stove to work. It was kind of an onerous task in rolly conditions. I did have a spare somewhere, but it wasn't in the obvious places, nor was it on the inventory list. So we run the hopefully insignificant risk of a gas leak until I can either locate my spare or buy a new one in Nouméa. I have come to realize that this is part of the adventure.

I have been redesigning the engine control wiring and thought I had it down to only three relays but then I discovered that the design keeps the engine stop solenoid on all the time.

Thursday, 20 November 2008 16:22

I changed the jury-rigged vang once again. It was actually stretching a bow shackle and I could detect some movement in the offside stays'l track wooden support. Now it attached with a snap shackle direct to the track slide and is inline with the track.

Stays'l sheet is TOO SHORT. Stays'l track is not located properly – it needs to be outboard more.

1. Relocate Mast Pulpits farther out by 3 to 4"

2. Find a better place for the Jerry Jugs
Relocate stays'l tracks outboard.

Thursday, 04 December 2008 03:22

The Twinscope keeps turning itself off. I checked that it's not a power cable problem and then spread the prongs a bit in the connector. It has been running without turning off for over an hour now.

Saturday, 06 December 2008 19:01 UTC Kuto Bay, Iles des Pins, New Caledonia

- Chain counter has stopped working. The magnet appears to have disintegrated with corrosion.
- Turned on freezer for testing. Taking 2.5 hours for draw-down. Will it change?
- Inner stay clevis pin came loose.
- Frozen thumbscrews on solar panel braces. They should have had anti-seizing more often.

Monday, 08 December 2008 02:07

- A. Repaired dorade box cowling with blind rivets
- B. Replaced two nav light bulbs: stern and port. (Loose filaments working intermittently).
Cleaned and applied anti-ox to contacts.
- C. Fixed chain counter by replacing magnet. Sealed with JB Weld.
- D. Nikon D70 would not read cards. Used CRC Contact cleaner and Dust-Off™ in the socket and it works fine.

Tuesday, 09 December 2008 18:37

- Noticed coolant in bilge. Found one hose clamp needs tightening. Should be replaced with T-clamp.
- Garmin GPSMAP 3010C lost all connection with peripherals and needed to be re-booted. This is starting to happen once or twice a day.
- There is a leak in the Generator Raw Water Supply Valve. Replace valve and/or connecting pipe nipples.
- Today's Glitch: Autopilot dial does not function. All other functions nominal.
- Today's Magic Fix: autopilot dial starts working after a few hours.

Sunday, 14 December 2008 23:24

Refrigerator has stopped being pulled down. No change in freezer. Possibilities:

- Probe failure or mis-location
- Failure of solenoid.

Gooseneck.

- Removed Goosneck for inspection. All is OK.
- Loosened up all bolts for renewing Tefgel™. Thread diagram: 5/16" thread.

TOP HOUND:

NF	NF	NC*	NF	NF
NF	NF	NC*	NF	NF

BOTTOM HOUND:

NF	NF	NF*	NF	NF
NF	NF	NF*	NF	NC*

*=stripped threads

Monday, 12 December 2008

I have turned on the freezer now while I'm at the dock. It's been running for about 5 days now and the recent results are below:

You can see that the Reefer is running about 7 times/day with an average run time of 24 minutes. That's not too bad, but it proves the insulation needs work.

Now as far as the freezer is concerned, it is kind of weird. I have some frozen water jugs. Also (this is an interesting idea) a bunch of paper towels in plastic bags. The holdover time is astonishing! About 18 hours. AND the set points are 0° to 10° and not -4° to 14° as in the historical (first installed) record. BUT, the time to pull the plates down from 10° to 0° is 3-1/4 hours! This has been consistent over the last several days and I don't know why. Perhaps the expansion valves need to be adjusted. I know we talked about this but I cannot remember if, under the circumstances, I should start OPENING or CLOSING the freezer valve.

CURRENT STATISTICS:

Avg.	C/D	R.T	h:m/d	Hldovr	AH/d
R	6.8	24	2:46	3:06	69
F	1.2	170	3:16	17:56	82
Tot	8.0		6:02		151

ST1	P1	ST2	P2
0	10	0	10
20	8	20	8

HISTORICAL STATS FROM INITIAL INSTALLATION (lower SWT and ambient temp)

Avg.	C/D	R.T	h:m/d	Hldovr	AH/d
R	5.2	14	1:10	4:25	27
F	3.9	42	2:44	5:27	63
Tot	9.1		3:54		90
-4	14	-4	14		
20	8	20	8		

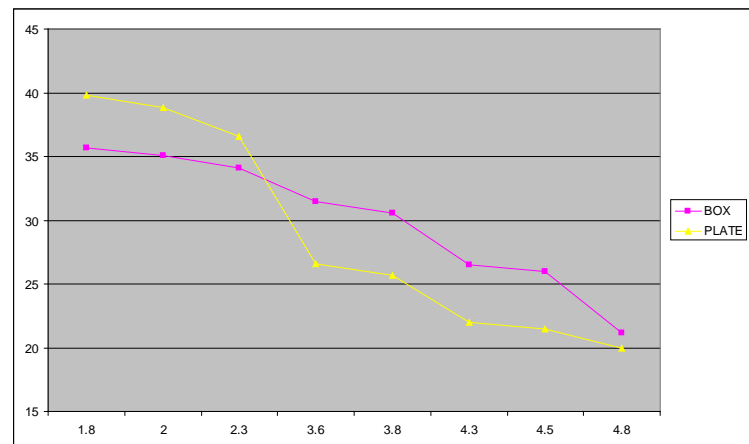
Monday, 15 December 2008 21:11

Refrigeration Woes

- Reefer still not right. It was working fine, now it is not pulling down.
- Checked sight glass and solenoids. Refrigerant is flowing in both F and R mode. Freezer working as before (e.g. long drawdown), but reefer not pulling down. Solenoids appear to be working.
- Noted yesterday that vertical center of plate was cold and vertical edges much warmer. The center had ice on it.
- Try again starting with 48.7 plate 55.7 box.
- Nothing happened so I have jammed the box probe against the plate. Cooling became uniform across the plate. Here are results:

REFRIGERATOR			
HOURS	BOX	PLATE	DIFF
0.0	?	55.7	
1.8	35.7	39.8	4.1
2.0	35.1	38.8	3.7
2.3	34.1	36.6	2.5
3.6	31.5	26.6	-4.9
3.8	30.6	25.7	-4.9
4.3	26.5	22.0	-4.5
4.5	26.0	21.5	-4.5
4.8	21.2	20.0	-1.2

FREEZER		
HRS	BOX	PLATE
0	15.3	11.2
0.2	13.8	10.5
0.4	12.3	9.7
4.3	0.0	

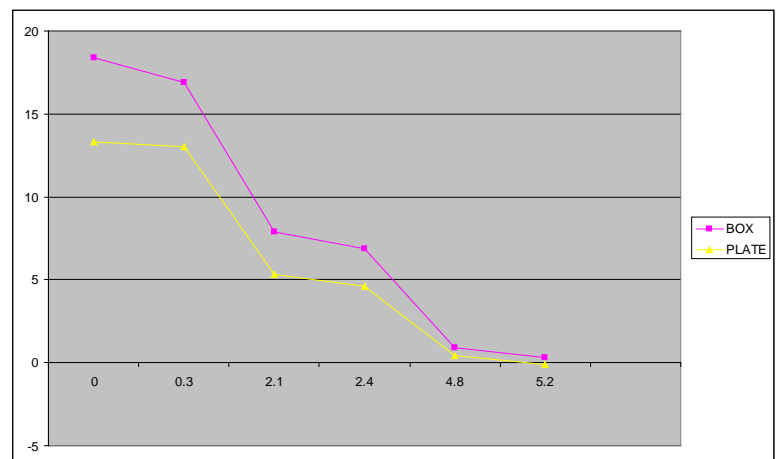


- Results suggest: probes are OK, thermostat is OK, solenoid is OK.

Tuesday, 16 December 2008 21:38

Reefer would not only not pull down, it got hotter. It's been off all night. Now have turned on the freezer:

FREEZER		
HRS	BOX	PLATE
0	18.4	13.3
0.3	16.9	13.0
2.1	7.9	5.3
2.4	6.9	4.6
4.8	0.9	0.4
5.2	0.3	-0.1



Freezer pulled down over FIVE HOURS. Reefer won't pull down at all! Time for gauges. Need to consult with Mark.

Wednesday, 17 December 2008 04:57

- Greased double opening foot blocks
- TefGel™-ed the port side cleats on the mast
- Finished re-installing solar panels after re-tapping a hole and adding TefGel™

- Greased spinpole lower bolts
- Still testing reefer! Not working well.

Thursday, 18 December 2008 02:14

1. Installed Jabsco Amazon Non Return Valve 29295-1011 in the propane box drain line to prevent sea water from intruding in the bottom of the vent box when heeled. These NRVs are designed for bilge pump applications and seem to be adequate for this purpose. 3980CFP.

Monday, 22 December 2008 04:19 – Timbio Bay, NC

Scraped bottom of boat. Removed all barnacles, slime, and crud from hull, prop, and sonar sensors. Not as bad as I had thought, but did lose two scrapers and a lot of skin.

Sunday, 28 December 2008 05:04 – Underway to Bundaberg from Nouméa

1. The Garmin GPS17 blew it's fuse.
2. The a/p keeps losing it's NAV data and I suspect it's the Garmin because normally a reboot of the GPSMAP 3010C will set it right; however in the last few minutes I have not been able to fix this and we are back on Compass mode instead of Nav Mode for the a/p.
3. Tuned the rig,
4. Replaced the main halyard with the spare (not the new one).
5. Shortened the StrongTrack because it looked like a source of the halyard chafing. Took about 3" off the top end. It doesn't do anything so it seemed reasonable. We'll watch the current halyard for chafing.
6. Seeing some more chafing on the old genoa sheet where I whipped it. It might be the rubbing as it leads to the turning block.
7. Installed new Mercury Control Valve in the stove but it doesn't fix the problem. A propane torch will enable the MCV so I think it has something to do with the butane we are using. It might be the oven just doesn't work with butane.
8. Horn not working. Another blown fuse.
9. Added new sheave to vang to replace too small sheave erroneously installed during manufacture. There is a worn groove in the tube, which I will watch.
10. Inspected the gooseneck. Tightened screws as I could.
11. TefGel™ re-applied to most screws around the bottom of the mast.
12. TefGel™ applied to solar panel mount points. These are very subject to corrosion.

Reefers are working fine but appear to be heat-sensitive. I've had two error-condition shutdowns and the may be related to heat from the engine. I can feel the heat from the fans under the sink and I think the engine exhaust fan is heating up the compressor area as it attempts to ventilate the E.R. Right now I am running the engine with the doors and passage cover open to the outside. Engine room ventilation has to be put on the list.

Sunday, 28 December 2008 23:02

Another "data leak" caused the A/P to lose the Nav. It appears that disconnecting the backup GPS helped (it won't turn off) but I still have to "reboot" the GPSMAP3010C to get nav data flowing to the a/p again.

Thursday, 01 January 2009 22:29

- Now that we are in Australia we can get LP gas instead of butane. This has "fixed" the problem with the oven not working. Apparently the butane does not get the Mercury Control Valve hot enough to open and allow the gas to the burners. It is likely that the MCV was fine all along and did not have to be repaired.
- Fixed the coffee grinder. It was a) getting plugged and b) a screw had come loose from the epoxy putty repair from last time. Removing an apparently unnecessary flapper valve (is this the grinder's "appendix"?) fixed a) and some JB-Weld fixed b)

- JB-Weld also fixed the knife sharpener. I had to glue one of the honing plates back to the oscillating doo-hickey.
- Talked to Julian Smallwood on KP44 *Brilliant II* re. the hull situation and we decided it was high time to haul out and fix the damaged gelcoat. Hopefully there will be no structural damage and it will be a “patch” repair. Someday the entire hull could use peeling and gel-coating, but not yet I hope.

Tuesday, 06 January 2009 21:13

- Changed Oil (no filter)
- Installed an Australian power point near the nav station.
- Removed davits prior to haulout
- Refrigeration
 - Removed reefer compressor and controller.
 - Talked to Mark this AM. He is talking to Tecumseh to see if the motor can be reversed. Noted that both failures are related to high temp. Noted that George using OxyMapp gas for soldering without a nitrogen/argon purge would have caused scaling in the copper tubing. (*Turns out George did not use high temp; he just soldered a cold joint*).
 - If suction pressure is high it could be either bad solenoids OR a blockage.
 - Tried to check screens in the TX valves but cannot get to them.

Sunday, 11 January 2009 18:59

- Removed the shaft. The Cutless bearing is totally worn out. The shaft is dirty and a bit scored but might clean up OK. We will clean it and check it with a micrometer.
- Microwave has stopped working. Will get replacement shipped in from Bruce Mate.
- Hot water heater is probably shorted out. I'll investigate the problem this morning.
- The propellor is wobbly and scored and pitted. It will be going to PYI for repair.

Tuesday, 13 January 2009 07:51

- Kathy cleaned up the shaft and it is just fine.
- Spare prop tested and it fits the shaft, but the prop nuts are LH thread instead of RH. Will get new nut
- Prop sent to PYI
- Pulled both Cutless bearings. The outer bearing plate was not coming out. I drilled and tapped the plate and used a ¼-20 machine screw to force the plate and bearing out.
- New bearing dropped at machine shop for threading.
- Reefer compressor found to have no oil, and what oil was present was burned. Sending it back to Mark. This would make 3 Masterflux compressors and one dead Italian Job (the original).

Tuesday, 13 January 2009 23:04

Called Blue Sea Systems re. the Battery Switch. It is nominally OK if can touch it without being burned.

Monday, 19 January 2009 05:03

- Fresh water leak discovered: from max of 60 psi to 50 psi in 10 min. Pump should be adjusted down to 40 psi when convenient.
- Design glitch in Panda exhaust water discovered.
 - The Gen-Sep water exhaust shares a through-hull with the deck drain.
 - If the through-hull valve is shut, then water from the deck fills the waterlift muffler and then backs up in the Panda engine.
 - Although this doesn't happen often, it only takes once.

- The solution is to run the Gen-Sep water to the unused 1" through-hull in the small locker under the flight of drawers in the aft cabin.
- Modified the two original washboards by adding fly screens to help keep out the Ozzie Mozzies. Kathy helped. Nice job.

Tuesday, 20 January 2009 05:59

- Hopefully solved the halyard chafe problem by sawing off the top 6" of the stainless T-track. Excess holes were filled with aluminum blind rivets.
- Kathy polished the copper ground plane.
- Isotemp water heater element not available in Australia. Will have to order from USA.

Thursday, 22 January 2009 06:39

- Jib repair: re-stitched the sacrificial cover.
- Panda start test: it does turn over. It started but would not stop at first. Therefore a hydrolock is not the issue; however local engine tech says the camshaft is wearing which is why the valve clearance keeps growing. Estimate up to \$2K to rebuild motor.
- Removed dodger
 - New zipper for rain cover attachment.
 - Cleaned dodger in shipyard shower.
- Prep for sanding. Removed backstay & cleaned deck & plugged holes.

Thursday, 29 January 2009 09:00

- Thousands of blisters were exposed by the sandblasting. They are small and not too deep but have to be dealt with. So, no painting for a while. Tony moved us back to the yard from the sanding booth. It was great to take a boat trip even if it was on a travel-lift.
- Yesterday and today was spent grinding at the hull with a 36 grit disc sander to get down to solid material. Not necessary to grind all the gelcoat off, though. The boat is now about 190 on the moisture meter and we need to wait for it to dry out more.
- Water heater element shipped today from Seattle.
- PYI called with cost of rebuilding the prop: \$922.50. Ouch. It was needed, though.
- I hope this is the bottom of the hole and we now will be climbing out. (It wasn't – 18/05)

Tuesday, 03 February 2009 00:29

- Grind, grind, grind. Maybe 25% done.
- Replace duckbill valve in bilge pump siphon break. It blew out when the yard forgot to remove the rag stuffing in the through-hull fitting.
- Computer batteries all dying
- Sold first article to Cruising World

Thursday, 05 February 2009 21:13

Finished replacement of water heater element. All I could find was a 110V element but it would be better to move towards a 240V boat. Nice to have hot water again.

Sunday, 15 February 2009 01:10

We have been grinding on the hull every day except when it has rained torrentially. Here we are in the monsoon season in central Queensland, drying out the hull. What is wrong with this picture? I get two days off now because the new grinder/polisher has stopped working and I need to get it swapped out at the store where I bought it.

The shower sump drain in the forward head has been re-routed to go through a siphon break under the deck and back down to the through-hull. I cut off the hose (black rubber wire-reinforced wet exhaust hose) which looked weak. Better check the rest of them.

Drilled some holes at the back of the companionway sliding hatch to try to get some lubricant into the wood-to-wood sliding surfaces. It was moderately successful. I need a more viscous lubricant.

Kathy cleaned the cleaned the bilges from the engine room (including the drip tank) and aft to the shaft log.

I made a template (doorskin and hot glue) for a replacement shelf under the sink in the forward head. I'll fabricate this today or tomorrow.

Flushed the watermaker (bi-weekly flush).

Monday, 16 February 2009 03:24

- Installed new ProMariner Protech 1240i Plus battery charge received three days ago as warranty replacement. ProMariner paid for \$30 of the shipping plus the new unit. Good customer service.
- Finished fabrication of the new outhaul slider. All it needs is polishing. Had trouble tapping the base. Part of the problems is it's 316 stainless. I also think the local "imperial" taps are not exactly right as the bolts did not fit well. I had to oversize the holes above the recommended tap drill. Oh well, I'll use studs with HD threadlocker. It will be fine. I can always upsize to 5/16" or metric bolts.
- Kathy cleaned all the bilges. They are spotless now. Noticed a need for more wedges starboard side on the mast step and a need to regularly clear the mast step collar drain.
- We have two major deck leaks in the boat – both are associated with the portlights. The person helping us install them back in Seattle liberally applied the bedding compound to the flange on the INSIDE of the boat. How dumb is that! The voids in the side needed filling and it care needed to be taken that the bedding compound was working on the OUTSIDE of the boat. Just venting here. Sorry. We need to properly finish installing all the flanges and probably will remove the worst portlight which is over the galley (the aft-most one).

Thursday, 19 February 2009 11:50

- Sent passport renewal return envelope to CGUSA in Sydney
- Downloaded 54 pages of information and articles on blisters and blister repair.
 - Wash down the boat each day to remove salt, amines and other water-soluble chemicals which block the water from evaporating
 - Have decided that Colin and Tony at the yard may not know enough about boats and blisters so it's up to me to keep an eye on things.
- Replacement microwave arrives from the USA. Repaired MaxProp (at \$1000) is being held in Customs in Brisbane.

Sunday, 01 March 2009 05:54

- We have been grinding on the boat and at last all the gelcoat has been removed. Now we wait for the hull to dry...
- Fixed the SCUBA Compressor
 - Replaced broken fan
 - Fastened down the belt guard
 - Added oak footboards to the bottom – attached to the rubber vibration mounts
 - Replaced stowage beams in the lazarette to accommodate the new configuration.
- Noted freshwater leak on the pressure side.
- Noted water leaks in galley portlights, galley corner and aft cabin starboard portlight.

Tuesday, 03 March 2009 11:25

- Installed new microwave.

Thursday, 05 March 2009 07:44

- Propeller arrived from USA. So shiny you can see your face in the blades.
- While Microwave was replaced we needed to pull out the panels over the stove. I am taking this opportunity to re-bed the port forward stanchion gates. The base plate was all bent and obviously not sealed because of all the dirt visible under the plate. Bedding material was not working at all, really.
- Finished fabricating the forward galley shelf.
- The injector leading to the VETUS LSG60 muffler was rebuilt by Jim here at the yard. The cold water hitting the hot gasses was causing carbon buildup and corrosion. Jim has built a jacketed injector. Only AUD500. ☹
- Rebedded the Forward Gate stanchion bases. See Article ([Stanchion Base Bedding](#))

Saturday, 07 March 2009 20:41

Pressure Leak Investigation

We have seen 4 bilge pump cycles with PRESSURE WATER OFF over 18 hours = 5.3 cycles/day. Starting new test at 1400. After 17 hours cycles are 8.5 cycles/day.

Saturday, 14 March 2009 07:59

One of the Scuba tanks appears to be leaking.
Greased forward head through hulls
Not much was done last week because of Cyclone Hamish.

Tuesday, 17 March 2009 21:03

Finished through-hull greasing except for Eng Raw water. This one I removed to rotate it so a grease fitting could be installed. All others have grease fittings except for inaccessible bilge pump stopcock. Pressure leak persists. Masterflux has refused to send a replacement unit.

Wednesday, 18 March 2009 07:36

Removed Panda Diode Box and Controller
Installed Eng. Raw Water stopcock after repair.
Determined need for replacement gaskets in the Groco raw water filters.

Tuesday, 24 March 2009 20:19

AVG found virus system32/ntbios.dll infected with Wn32/Heur which is

Thursday, 02 April 2009 22:23

Mark McBride is sending the new (4th) compressor out. We will contact Rolf to schedule a flush of the system. To make the refrigeration system work best the plan is to

1. Provide more air and a cooler environment in the compressor space or find a new location.
2. Run the compressor at less than max RPM.

Discovered serious rot in the deck core from inside the coaming towards the port side of the boat. This is a major fix – someday the entire deck needs to be redone by airing out the core, filling with penetrating epoxy, and resurfacing. For the moment, this problem can be tackled by rebuilding the coaming floor.

Saturday, 04 April 2009 19:39

- Cut opening in forward part of port coaming for a combination air intake/access panel.
- Removed stanchion and base from opposite the cockpit (starboard). Completely warped, bent, etc. Very clearly a place where water can enter. All the base plates on the stanchion bases are too thin – they warp under stress. This particular stanchion was damaged in a docking incident with a neighboring anchor back in San Diego, and then the stress from the furling line which is connected to it has also bent it over a bit. I have a replacement stanchion, but the through-hole for the middle lifeline is in the wrong place. Tomorrow I'll ask Jim the Welder to fix it if possible.
- A space heater in the locker has apparently dried most of the wood.
- A [repair plan](#) was written for the job.

Wednesday, 15 April 2009 23:27

- Much of this week was spent off the boat in Yeppoon. It's been raining like crazy and hard to work.
- We started re-installing the shaft but the PSS stainless collar is scored and needs to be faced on a lathe.
- Progress was made on the rotten locker – more fiberglass and wood was removed.
- The new compressor arrived, but it is damaged. One of the copper tubes has bent.
- Kathy worked on rudder sanding last week.
- Engine room
 - Installed fixed riser (made new gaskets).
 - Re-installed fuel pump.
- Shaft collar face machined at L&G Machine Shop.

Sunday, 19 April 2009 09:22

- Reinstalled shaft and R&D Coupling
 - Noted that there is a Front and Back to the R&D. Naturally I installed it backwards before discovering this.
 - Also sought to replace with the spare, new unit, but discovered it was the wrong type. *Beatrix's* engine/transmission uses a 910-09B coupler.
- Worked on the coaming repair.
- Kathy spray painted the rusty speaker grilles.
- Discovered prop nut did not come back from PYI Inc.

Kathy cleaned and oiled the chain hoist.

Tuesday, 21 April 2009 13:32

Today we installed the new wood under the deck and above the cockpit lazarette. We also installed the new baffle in the coaming to separate the engine intake and exhaust air. The baffle has a layer of fiberglass cloth epoxied on both sides and was filleted in place with West System epoxy and 406 filler.

The rotten wood in the deck core was replaced with a fitted piece of marine ply and glued into place with Watty! EFC (Epoxy Fairing Compound). This is nice stuff! It is thick enough to stick, but still quite workable. It comes in an 8L pack of 2 x 4L pails, and is mixed 1:1. It's a bit messy in close quarters. I also used it to plug the old coaming drain.

The experiment to heat the hull with small heaters has worked. The area tested, about 1 m², reduced its apparent water content to 50%. The moisture meter was reading at 185 and was down to 65 in 24 hours. We have moved the heater to allow the hull to "settle" because there may be more moisture in the interior. We'll measure it tomorrow.

Wednesday, 22 April 2009 23:02

I heard from Neill Bull at Power Protection re. Panda. Problems they fixed were clogged air filter and broken throttle actuator motor lead (which we knew about). He states it has been running fine now all day long. They found a shunt problem in the VCS which kept the engine running flat out at first. He says that although Panda advertises 265-275A output that actual amperage should not exceed 220 amps otherwise the engine is running too hard. This could explain a lot. There are three problems as I see it.

1. Smoke and soot in water.
2. Oil consumption of 3 to 6 oz per cycle (about 2 hrs). This is about 120ml to 250ml.
3. Valves need readjustment every 80 hours or so. They were 0.200 in and readjusted to 0.008 in.

Possibly 1 and 2 are explainable by overloading of the engine, but not 3. They are going to inspect the engine today.

Friday, 24 April 2009 11:55

- Message received from Neil at Power Solutions. They have discovered loose head bolts and have taken the head off the Panda engine. He will call tomorrow. Sounds to me like a bad repair job in Florida.
- Wet locker aired and de-molded
- Under the stove drawer also cleaned and de-molded.
- Aluminium channel added to reinforce the cockpit lazarette access to the machinery space underneath.
- Hull heating is ongoing. Doubt it will help.
- Computer not functioning well and Telstra internet will not connect on the primary computer. The backup of the C Drive was not complete. Somehow I copied the wrong backup, not the full one. The backup computer still has the correct C drive so it might be possible to restore that way. System Restore has been turned off due to viruses. Avira anti-virus was uninstalled, but it won't uninstall properly.
- Water system
 - Replaced over-pressure and drain valve on water heater
 - Noted that one water pump goes to 60 PSI without shutoff
 - Second pump shuts off at 45PSI, but won't pump that high.

Need to remove pumps and repair.

Saturday, 25 April 2009 19:03

We continue to heat the hull.

Completely fixed the freshwater system

1. Removed both pumps.
2. Checked switch on pump 1. These are very simple micro-switches operated by a pressure diaphragm.
3. Built "test rig" with the accumulator from the Washdown (it was out for repair) and calibrated each pump to turn off at 42 PSI.
4. Reinstalled. Cleaned up the area.

Note that in future it is possible to pull the pump mount forward to allow some access to the adjustment screws. The positioning of the pumps to not allow easy access to these screws was a mistake.

Monday, 27 April 2009 02:29

- Pump 1 freshwater pump has trouble pumping over 42 PSI. Rebuild kit ordered from FISCO.

Tuesday, 28 April 2009 09:07

- Finished repair of coaming floor. Overhead was hard. We put down 1 layer of cloth, one of matting, and one more of cloth. Second two were together. We had to wait for the epoxy to "kick" a bit so it would stick overhead. Plastic and cardboard supported the wetted glass until

it could be made to stick to the overhead. Once the entire sheet was sticking it was OK, but before that the weight would start to pull it down. In order to roll out air bubbles it was necessary to remove the plastic.

- Kathy put rust converter on condenser coil
- Kathy continued work on painting the new hatch cover for the SCUBA compartment.
- Installed wire raceways in cockpit lazarette.
- Bought FOUR Schaefer half-moon lead blocks for \$300. A bargain. Will see if they will work for turning blocks for the preventer lines.
- BILGE IS PERFECTLY DRY!

Wednesday, 29 April 2009 03:19

- Plugged extra hole in hull for old style zinc.
- Kathy painted the locker (and herself).

Took a look at the re-plumbing for the Panda wet exhaust and decided it requires a replacement of the 1" through-hull in the locker under the aft cabin drawers with a 1.5" through-hull. This will become the deck-drain through hull and the Panda will drain under the sink.

Friday, 01 May 2009 08:52

Rolf came by and installed refrigeration, filled with coolant, installed a low pressure sensor. He tested system. He did not find any goo. It all looks clean.

Jeff prepared refrigeration controller, added a coolant loss alarm, and tachometer

Rebuilt the J1 moxex connector on the controller and brought all the fault leads outside.

Colin had shaped the wooden backers for the outside speakers. Kathy sanded and prepared them for mounting.

Jeff drilled a collar for the elbow in the lazarette then expoxied this in place.

In the morning, we moved two heaters to port aft. They are surrounded by a blue tarp.

Saturday, 02 May 2009 21:52

Yesterday:

- Finished re-installing the emergency bilge pump hoses and drain lines.
- Installed trim ring on engine air intake plate
- Got FISCO parts – arrived safely and as ordered.

Hull job slated for Wednesday start.

Monday, 04 May 2009 07:55 AUS Labor Day Holiday

- Installed controller (twice)
 - needed a stronger lead wire on terminal, lug replaced
 - Replaced terminal (65A Blue Sea Systems 2606). Found one screw was stripped. Should order at least one spare.
- Spinlock repair and re-mount
 - Using belt sander, ground area for clutches
 - Decided would not need the beautiful fiberglass pad that Jeff made yesterday.
 - Kathy painted the area with undercoat, semi-gloss goes on tomorrow
 - Jeff polished the stainless pad
- Kathy sorted and put away fasteners
- Colin measure moisture. Maybe a 10 point drop in some areas.

Tuesday, 05 May 2009 02:45

Refrigeration COMPLETELY INSTALLED. Waiting on Rolf to come by and top off the coolant. Jeff built holders to mount the fuse box and terminal block. Kathy painted the area where the line clutches will go.

Thursday, 07 May 2009 07:50

The last two days have seen trips to town for supplies, which takes time. Other accomplishments are:

- Bought new Scuba regulator for Jeff's octopus.
- Regulator hose repaired.
- Picked up Hydro-certified tank.
- Bought 10 Dive weights for drogue line terminal weight.
- Had dive weights sewn to heavy duty webbing with loops at the end.
- Installed P-splash unit on Day Tank Vent
- Installed 316 hex bolts on shaft flange in aft cabin.
- Kathy re-loaded the stainless toolbox after Jeff repaired the drawer slide.

Re-installed the door lip for port access panel in engine room.

Friday, 08 May 2009 08:17

- Today IS THE DAY that Colin started on the hull repair.
 - Glassed the damage from Marquesas
 - Glassed the rudder
 - Filled all gouges
- Refrigerator finished and connected to water barrel, awaiting Rolf and recharge on Monday.
- Cleaned and replaced some fittings on the compressor cooling system where it drains into the cockpit drain hose. They were corroding and needed simplification, cleaning, and re-installation. Used Loctite 567 for thread sealant.
- Removed through-hull and skin fitting in aft port small closet.
- Retrieved the 1.5" Groco through hull which will replace it.
- Installed deck plate for Spinlocks. Cut the protruding bolts off so cap nuts can be used. Ready to screw down the Spinlocks themselves.
- Decided to locate the plankton filter in the engine room, hanging off the fuel management console.
- Got the toolbox tray welded by Jim the Stainless Guy.
- Kathy installed rubber grip material in the galley plate and dish lockers.

Saturday, 09 May 2009 08:29

- Plugged old screw holes in splash guard.
- Shopping in Bundy –visited with Andrew, inspected a 2 cycle diesel genset w/frig compressor, watermaker, for possible purchase: asking \$800
- Colin
 - Finished repairing rudder mostly
 - Finished most of glassing of keel and damage
 - Made support strip in epoxy for the copper lightning ground strap
 - Next door boat is painting, so this limits our grinding ability.

Sunday, 10, May 2009

- Drilled holes for mounting half-moon block and Spinlock for the furling line. Wood core in the bulwarks is definitely damp. Drying out before putting in epoxy plugs.
- Finished fastening down the Spinlocks for control lines.
- Took apart the stiffener for the davits. Will install new wood, davit clips.
- Finished mounting the cockpit speakers.

Monday, 11 May 2009 10:47

- Today Rolf loaded the compressor with refrigerant and we ran the compressor and the refrigeration appears fine. We changed over to Celsius on the displays which took some working out, as the set points and differentials all had to be changed too. The battery charger seems to have issues with the compressor load, which is about 30A. Rolf opened the TX valve ½ a turn on the freezer. The plate sensing probe was not well attached against the plate. The potentiometer I installed to control the compressor speed does not appear to be working. The battery charger does not keep up well with the 30A load from the compressor.
- It was a bit rainy, but we still got some work done on the hull.
 - We put rain-tape around the hull
 - I noticed some small dings and scratches above the waterline
 - Most notable was the transom, which appeared to be a plate added to the stern. We decided to wrap some cloth around the stern and found huge voids. It looks like the stern was not laid up well and the added plate of fiberglass simply glued over it.
 - Colin ground the waterline to the bootstripe. Some work was done on the transom repair. We might try to inject some thickened epoxy into the voids.
- Rudder repairs and other repairs are nearly done.

Friday, 15 May 2009 11:02

Over the last week a lot has happened on the boat. Colin's hull repairs are completed and fairing is over half done. It took 6 8L packs of fairing compound. We have all been working hard:

- Welding
 - Stove grate finally fixed so that pans and pots don't fall through the holes. Up until now we had been rotating the grating so that full bars were across the gas "eyes". Now some welded steel rod has closed the gaps.
 - Added 1/3 of a s/s ring to reinforce the pulpit and add an attachment point for a slingback for the pulpit seat.
 - Added ½ of a chain link to the pulpit rail to allow using a pelican hook to lower the top lifeline when flying the spinnaker.
- Refrigeration appears to be working nominally. We have bought new closed-cell foam to fit into the reefer locker. I also need to be able to get the wee fan working inside the box.
- Wiring was added for the propane solenoids.
- The cockpit lazarette is complete and we are in the process of re-stowing. It is now possible to fit 7 milk crates and more in the locker.
- We have fitted/installed the transom hawse pipes for the drogue lines.
- Drilled and filled holes for the half-moon block/spinlock for the jib furler line.
- Had special plates made for the half-moon blocks on the forward rail for preventer turning blocks.

Saturday, 18 & Sunday, May 17, 2009

- Kathy started polishing the stainless steel plates for the half moon blocks, solar panel supports, and boom slider replacement.
- Jeff installed the plankton filter which was bought with the watermaker and reconfigured the water manifold for the watermaker and refrigeration cooling. A dodgy old valve was replaced. The generator raw water hose was used for this purpose and the generator raw water was plugged on the main raw water strainer.

Tuesday, 19 May 2009 20:11

It's been raining like crazy yesterday and maybe today, too. This has put a complete stop to hull repairs. Kathy is going home for 3 weeks to USA and Sarah and I have postponed her trip to visit me until August. This is taking off all the pressure. The boat should be in the water in a couple of weeks.

Thursday, 28 May 2009 02:30

The vessel is at last ready to begin painting. Today we installed the new transducer and the prop shaft is back in. The prop appears out of alignment but I can adjust this in the water by removing the flange. Also today saw the arrival of more parts from the US. We also are awaiting another shipment of silicon bronze fasteners – something not available in Australia.

Refrigeration stays good! I am now using both freezer and refrigerator and both are running fine. There are some problems with the Redington cycle and hour meters. They were not working but appear to be coming back to life!

You can have multiple controllers configured in that manner, but if you have SB2512iXs, as the controllers, and an IPNPRO-Remote they can be networked together. When they are networked, the units would have a master and would control the units as one.

Eric Clampit
Engineering Technician
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Wednesday, 03 June 2009 11:39

- Replaced carbon filter and pleated filter in Watermaker
- Ordered 10 carbon and 10 pleated from supplier in Australia. (eBay)
- First coat of epoxy primer has been applied and Colin has sanded it back. This could be a racing hull. Looks great.

This was an interesting day.

I called a company called thesolar.biz to buy some equipment. Boe sold me an “export” inverter for 220V/50Hz and as we were chatting she said “You must speak to my husband about batteries”. I then spent ½ hour with Tom and learned an enormous amount from him. He’s been working with batteries and chargers and solar systems for years. He claims that batteries fail within a 2 to 3 years because of putting parallel strings together.

Because of varying impedance in the battery assemblies a single element of the bank, whether it’s made of paired six volt batteries or 12V batteries, will over time become weaker than the others. The impedance mismatch grows. This is because the charger will sense the battery with highest voltage in the bank and charge to that. This can reduce the life of the bank to less than 2 years when it should be over ten years.

Furthermore a large parallel string is subject to heating and outgassing of potentially explosive hydrogen and oxygen. Tom reckons that ¼ of all 4-unit paralleled batteries will fail catastrophically. He does not particularly recommend 3-unit parallels, but states unequivocally that 3 strings are the maximum.

In my case, with my eight 6-volt batteries wired in parallel/serial, I have four parallel strings to make 880AH of battery capacity. This he feels is both dangerous and will also seriously degrade the battery life. Even three parallel strings will shorten the battery life considerably. Tom said “Every time you parallel a battery you cut it’s life in half”. I thought all these cruiser battery failures were due to bad charging, but there are obviously other factors.

What Tom recommends as the ideal long-lasting and safe battery configuration is six 2-volt batteries wired in series. He says neither he, nor any other battery manufacturer or technician has ever seen an individual 2-volt cell failure. Nevertheless the prudent thing is to take a spare cell along. The problem is that the spare cell needs to be used as much as the active cells, so it needs to be swapped for another cell once a month. The hard way is to shift all the batteries. The easy way is to swap around the jumper cables. Ideally the jumper cables are all the same length.

Given that I already have four parallel strings, and the batteries seem good so far, the best thing to do is reduce my main bank down to three parallel strings, giving me 660 Amp-Hours of capacity and 330 AH of useable power per charging cycle, assuming that I still have that much capacity. Fortunately I wired my six-volt pairs in a star pattern with equal length cables. This is IMHO a better arrangement than the typical method of paralleling battery banks because it isolates individual pairs and makes it simpler to equalize, test, and if necessary, remove a pair from the string.

What I will do is put 4 battery switches (Blue Sea Systems mini-M 6006) in the hot line from each pair of six-volt cells. This way I can add or subtract banks at will. Once a month, I can swap in the “spare” bank and swap out another one. Another advantage to this system will be that there is always a “spare” battery standing by. I need to ask Tom if there is a need to keep the reserve cell charged up using a combiner or an automatic charging switch like Balmar’s Digital Duo Charge.

Tom goes on to confirm that equalization of AGM batteries is not only a good thing, but essential. I know the manufacturer recommends it. It is commonly thought that AGMs cannot be equalized but this is not true. The effect of cleaning the plates and losing a bit of electrolyte is better than not equalizing. His recommendation is to equalize every six months using the following method:

1. Allow the batteries to discharge to a low level.
2. Fully charge the batteries.
3. Equalize at 15.0V for one hour. Equalization of individual batteries or serial pairs is better than equalizing the entire bank at once.

Diagrams of the *Beatrix* battery system, currently located under the floorboards below the companionway steps, can be found at:

http://www.svbeatrix.com/ftp/Current_Main_Battery_Bank_Rev_B.pdf

And Tom's ideal system might look like this:

http://www.svbeatrix.com/ftp/Ideal_Main_Battery_Bank_Rev_B.pdf

Friday, 05 June 2009 10:56

- Finished buffing half the boat
- Installed new 1.5” thru-hull (skin) fitting in aft cabin port locker with Groco bronze valve.
- Installed ProSafe FS30 Galvanic Isolater.
 - Mounted GI on side of isolation transformer
 - Fixed slide lock on transformer selector switches
 - Re-wired the earth so it is NOT connected to neutral but instead runs through the GI.
 - Tested ship and ground fault has disappeared

Tuesday, 09 June 2009 21:17

- At last the boat is in the paint booth with one coat of Epoxy Primer and it looks good.

Product	Brand	Name and Code	Quantity	Cost
Epoxy Fairing Compound	Wattyl	EFC	7 x 8L	
Epoxy Primer	Hempel	Hemapdur 45141-12170	20L+2x5L + 2x5L	
Epoxy Light Primer	Hempel	45551-11630 (optional sand between coats)	10 packs @ 2.25L	
Epoxy Tie Coat	Hempel	26030 Underwater Primer while 45551 still green* (6 hr	4 x 2.5L	

		min) Has to be Same Day! Light Coat. (silver gray)		
Self-Polishing Anti-Fouling	Hempel	Olympic 86951 Blue	2 x 10L	
Water-based Anti-Fouling	?	for transducers	100ml	\$20.00
Aluminium Anti-Foul	Hempel	Mille Dynamic Alu 7160A	1 L	
Thinner	Hempel	845	20L	

- the only critical day

Wednesday, 10 June 2009 16:18

Colin Moyle applied light screeds of Wattyl EFC to the pinholes that still showed following the spray coat of Epoxy Primer 45141. Today (Thurs) he will be sanding this and painting recommences on Friday or possibly this afternoon.

I lost the key for the propeller and had to make a new one out of 8mm stock which is just an RCH too big. I used the belt sander to grind it down and it works fine.

Wednesday, 17 June 2009 02:09

In the last week the boat has been completely coated and bottom painted and is ready to be lifted on the sling for final touchup on the keel. In the morning we “splash”. It’s been a LONG road and a very expensive one. Tony the yard manager gave me a free hat. I thought of putting a price tag on it – hat \$20,000, haulout and yard work, free.

The Max-Prop has been sent back to PYI because it was wobbly and not suitable for use. They claimed I had “rejected” fixing the gears on the paddles and bushing the pivots. “Why would I do that?” I asked. I was as nice as I could be and they offered to pay shipping both ways and finish the job for free – or give me a new one for about US\$ 2,000, which is a significant discount, but still a lot more than “free”.

Finding a prop nut and drilling out a cotter hole was a bit of work but it’s done.

Wednesday, 17 June 2009 09:18

The zincs are on. Fenders over the side. I am hanging in the cradle and tomorrow morning about 0730 we put the boat in the water. It’s been so long, almost six months.

Monday, 29 June 2009 00:32

I’ve been too busy to even think about writing. I’ve two articles in the works at SAIL magazine and the boat needs much attention. Thankfully, at last, we are back in the water. The bottom job was beautiful. Right now I’m working on a big list to be done before we can leave for Vanuatu. It’s too big. I don’t know what I was thinking of all those months on the hard. It’s like a nightmare. Right now I’m just trying to get the boat cleaned up. Tomorrow I drive to Brisbane because Kathy returns from USA.

Items done:

- Refrigeration working fine on seawater cooling.
- Boat sides all buffed. The gelcoat is wearing thin. Next time it needs to be painted.
- Bilge pump strainer was left out. Working fine after disassembly and flushing.
- Vessel inventory software almost complete.
- Computer sold to Colin Moyle for \$1000.
- Spare prop was installed with drilling another hole for the nut pin.

Thursday, 09 July 2009 07:07

Kathy is back from the USA and we are in full forward gear to get the boat ready to sail. Today I finished installation of a second inverter, an Outback FX2012ET, which is the counterpart to the already existing FX2012MT. The ET model is for 230VAC/50hz. It is a great battery charger and will provide clean international power. I used the 4/0 battery cables that were formerly used by the Panda generator diode box. I also had bought a RJ45 A/B switch which works perfectly to allow the existing Mate™ inverter controller to be used for both units. I had not realized this, but each inverter retains its settings when not connected to the Mate™. This makes control and programming a piece of cake.

Friday, 10 July 2009 21:16

Refrigerator has stopped. I awoke this morning to find the error signal flashing on the compressor controller. Cycling power did not help. The error light started flashing immediately upon turning on the system

The only things that cause an error are low pressure, high pressure, and over-temp. Since the system is cold, it has to be low pressure. I disconnected the sensor circuit and tested continuity through the three sensors. Continuity was present, which indicated no fault in the pressure, but it still started with an error condition. Then I connected the terminals to the controller, bypassing the safety sensors. The system started with a couple of “hiccups” (it sounded like the motor revved up, slowed down, revved up), but it kept running. I only ran it for a few seconds. I then reconnected the sensors and the system has kept running since – no errors. It appears to be pulling down the freezer just fine now. The sight glass showed green (no water) and fluid with bubbles going through. Case temp on the compressor is 85°F to 124°F, hotter at the base near the intake.

In summary, it seems that the “kick-start” got it running. When measuring the temp I noticed the motor speed suddenly pick up a bit.

It’s a mystery.

The system has now pulled down the freezer in record time (40 min runtime) and is working on the refrigerator. It took only about 10 minutes to pull that down.

Saturday, 11 July 2009 07:46

The refrigerator/freezer has been working like a charm all day long. Go figure.

Today was a great day for accomplishment.

- Engine alignment was checked. It was spot on in spite of the large offset in mating the templates while on the hard.
- Replaced exhaust riser insulation
- Hooked up the new transducer and tested it. Noted that “Bottom Lock” on the Sonar Page of the Garmin GPSMAP 3010C crashes the device. I never used “Bottom Lock”.
- Tuned the rig and got the kink out of the mast. As best as I can tell it is now in column and true. Checked all tensions. The uppers are tensioned a bit high (about 18%), which is what we did on the crossing. Forward intermediates have less tension, but I think it’s because of the tension of the inner forestay.
- Made a new spacer for the wheel nut out of starboard.
- Re-mounted the solar panels.

Hooked up the running backstays.

Monday, 13 July 2009 04:03

Noted: GPSMAP 3010C, running for approx 5 hours, again exhibited the “LOST GPS SERVICE” and “LOST SONAR SERVICE”. I.e. all services on the net just drop out. Rebooting solves this problem.

Monday, 13 July 2009 12:21

Working on cooling fan installation behind bookshelf over the inverters. New back is constructed.

The same refrigerator problem is back.

Tuesday, 14 July 2009 04:00

Rolf came to look at the reefer problem. "The system is good", he declared. Plenty of refrigerant. He checked the differential on the low pressure sensor – all good. Continuity existed through the sensor series. All good. Turn it on. Error! If I by-pass the sensors the compressor starts up and runs fine. So the only thing to do was to put in a bypass switch so I can effectively take the sensors off-line when this happens again. Could it be a controller issue? It's been running fine for the last 3 hours. Look at these averages!!

Avg.	C/D	h:m/d	AH/d	R.T	EHO	On °C	Off °C	Ideal
R	3.8	1:10	29	19	6:02	-2.6	-7.0	2.0
F	4.2	2:27	61	35	5:07	-14.2	-20.0	-15.0
Tot	8.0	3:37	91					

When I hear it turn on, though, it appeared to have a couple of tries before settling down to run. I have no idea what is doing on, but I promise I WILL NOT replace this compressor again. 4 Masterflux's would be four too many. There is no reason why this should fail now! We are in a marina, we have good power.

Wednesday, 15 July 2009 19:46

On the hard (but just in the sling) for prop install and ground plate install.

The following happened:

- Discovered water leak where hose from exhaust attaches to waterlift.
- Forgot to shut down reefer and ran without coolant for a while. Have not determined if any harm was done.
- Added new ground plate, 4 x 12 x ¼ inch copper plate through-bolted into aft cabin with 3/8" silicon bronze and 3M 5200 adhesive. Kathy sanded copper plate to 600 grit. Attached radio ground on inside. The bolts were silver-soldered to the plate by Rolf the reefer tech.
- Replaced fixed prop with refurbished MaxProp – works MUCH BETTER – no wobble at all. Craig at the Bundy Shiplift Yard applied PropSpeed™ to the prop. A beautiful job except for a few flecks of bottom paint the Jeff let blow into the wet prop while sanding the anti-foul for the ground plate adhesive. Had the usual problem where the supplied hex-socket bolts had to be ground down because they were too long and prevented the zinc from being closely bonded to the prop.
- Kathy sanded the transducers and applied two coats of water-based transducer anti-fouling paint.

Thursday, 16 July 2009 00:39

Launch day #2. Back in the water without drama. I greased the prop, added a zinc to the radio ground plate, and touched up the anti-foul. Kathy did perfectly handling the spring line on a strong downwind entrance to the slip.

Friday, 17 July 2009 23:29

Reefer out again. I had wired in a bypass switch so I don't have to open up "the hole" to bypass the

safety circuit. Today it failed again -- I tried the bypass switch -- it had no effect. Tested continuity -- all good. I opened up the locker to where I can access the wires directly. I disconnected the sensor circuit, joined the two black wires from the controller. It started up with no problems. I stopped it, re-connected the sensors, and turned it back on. It started right up. It's pulling down the freezer as I write this; and at record speed. The unit runs better than ever with no issues except this mystery startup failure every few days.

Sunday, 19 July 2009 23:06

- Kathy noted a few blue flashes from the compressor on startup last night. Otherwise it is running just fine.
- Starboard bookshelf project almost done:
 - Fabricated new backboards and floor to replace Panda-ridden holes
 - Installed 24VDC fans (quieter when run on 12VDC) for ventilation of Inverter spaces.
 - One fan per inverter. AUX rated output is 0.7A and total amps for both TURBO and external fans are 0.9A. As the AUX output is fully protected for over-current and since the fans just keep running I have chosen to run the AUX output at slightly over the rated power.
 - Fabricated new floorboard for starboard bookshelf
 - Fabricated custom base for the recording barometer.
 - All new material painted white by Kathy.

Monday, 20 July 2009 02:40

Reefer stopped with error condition again. For the first time, the bypass switch seemed to get it started again.

Tuesday, 21 July 2009 03:10

Reefer failure once again. Bypassing with my bypass switch doesn't work. Measuring the startup current shows the unit attempting to start repeatedly with amperages of 40 to 45 which is consistent with normal startup. Every few seconds it retries and then stops. The bypass switch doesn't do anything to change the situation. But, when I go into the compressor area and physically disconnect the sensors and plug the two wires from the controller together it starts right up. When I turn it off, reconnect the sensors, and start up again, it works fine. This has been going on for a week now with it working normally for about 48 hours. **THE ONLY THING THAT FIXES THE PROBLEM IS CONNECTING THE TWO BLACK WIRES FROM THE CONTROLLER.** This makes no sense, as there is continuity throughout the sensor circuit.

OK, I found a potential problem with the "bypass switch" circuit – a bad connection in one of the tab connectors. I really don't like those too much. So maybe the bypass will work now. Of course, I still don't know why that should be the problem. As I said, there is continuity in the the 3 sensors.

What could it be? Too much voltage drop? I doubt it. And if that were the case why would it run for 48 hours and then error out?

1. Locked Rotor Detection? No, because we can get it to start.
2. FET Thermal Shutdown No, because it is cold and the unit will start fine once the safeties are disconnected.
3. Motor Case Thermal Shutdown. No, it's cold.

4. Under/Over Voltage Shutdown. No, voltage is 12.53.

5. Over Current Shutdown. No, because it isn't drawing more than 45 amps on startup. Unless it's drawing it for too long.

I just shut it down and started it up to check startup amps. Would not start. Went over and held down the bypass switch for it's second try, and it started. This has something to do with the sensor circuit. There are three sensors: Rolf put in a low-pressure switch. I checked my emails and you approved that modification, as well as removing the suction accumulator.

I just shut down and re-started again! Same blue error lights (I installed a flashing blue LED). When it attempted startup again I held down the bypass switch and it started.

Tuesday, 21 July 2009 05:48

There seems to be a change in motor speed as I listen to the compressor. It will be running faster, then it sounds like it goes into "low gear". Amp draw is 25A or less. I can feel the case temp without it being too hot to burn me. The IR thermometer reads 50°C.

Tuesday, 21 July 2009 21:52

Just had another error mode on the refrigeration compressor. Bypass switch did not work. Manual bypass did work to start it up. Tested resistance in the circuit: 1.2 ohms. Tested bypass switch in case there was a wiring fault. It tested fine. So we are back to the ONLY fix is to disconnect the two wires from the controller, connect them together, start the system, then reconnect the sensor circuit. This is crazy; it makes no sense.

While listening to the compressor running, I heard it "lug down" for a few seconds again, like it was pushing something heavy through it, then it ran smoothly again.

Wednesday, 22 July 2009 21:57 UTC

Reefer errored out last night. This morning it was the same thing. Bypass switch had no effect. Physically bypassing did. I disconnected and reconnected the sensors and it started after two error cycles. The motor sounded like it was very lugged down at first, like something was clogged and it had to get work to get it running. Then it got a bit better. It still shifts speeds but doesn't sound so bad. There is NO effect on amp draw (about 25A) and there is a voltage drop from 12.55 to 12.10 at the breaker (I can't reach the terminals on the controller to measure voltage there as they are on the bottom).

Captain's Log Friday, 24 July 2009 04:56 UTC

Reefer – Another shutdown this morning. Mark McBride sent an email telling me to take the low pressure switch out of the circuit. After I did this, I tested system the system with the bypass switch and it started right up. Then I used jumpers to wire the low-pressure and temp-sensor in series to the controller sense wires. Again, it started right up. So it appears that the low-pressure switch is the culprit, but why? I was thinking possibly there was interference from the nearby AC line to the hot water heater – perhaps some induced current that influenced the controller when the heater was on. That would explain the intermittent nature of the fault. Unfortunately I thought of this after I cut the wires. I have to do some serious work to re-connect the low pressure switch before I can test this.

Right now I'm just going to let the system run and if it's still running after a few days I will declare the low-pressure switch be the definitive culprit in this latest adventure in refrigeration.

My current thinking is to handle this by wiring the low pressure switch to an external alarm, and possibly to a relay-controlled shutdown or direct connection with the enabling power to the controller. I just need to re-connect some wires to the switch and I can test this.

Friday, 24 July 2009 23:31

The compressor shut down again last night in the middle of the night. Total run time is about 8 hrs since I started it. So, it was not Rolf's low pressure switch. The behavior is the same as before. The bypass switch (tested again this morning) is working, but it does not cause the compressor to start. It will not start the system EVEN IF THE SENSORS ARE DISCONNECTED. Only manually disconnecting the sense wires from the sensors and connecting them together will cause the compressor to start. Once started, the sensors can be re-connected and the system will run until its next failure, which is taking less and less time.

There are some initial speed adjustments on startup.

Sunday, 26 July 2009 00:32 UTC

Failure again last night. Attempted usual startup with jumper. This time it failed. I took a hammer handle and tapped the compressor while it attempted startup. After a couple of attempts to start it kept running.

Sunday, 26 July 2009 16:54 UTC

Two more failures. The hammer handle worked, and I'm waiting for AM to do it again. It looks like the situation is getting worse and I would not be surprised if the compressor fails totally.

Monday, 27 July 2009 07:58

Two more failures today both requiring tapping. Things are getting worse with about 12 hours between failures. Rolf can't think of anything to do but add more oil. I have turned the speed control back to full.

Tuesday, 28 July 2009 22:05

Good news. Compressor has been running over 24 hours. I do notice when it starts at night it draws a lot of power. I need to a) remove the speed adjustment and b) check and possibly replace the main terminal block on the controller. New counters have arrived from the USA.

Friday, 31 July 2009 20:22

The reefer went blue-light on us again last night, after four days of good running. It won't start.

Saturday, 01 August 2009 08:32

I started the compressor this morning with a light tap from a hammer handle. After it pulled down the reefer and freezer I removed the compressor controller, removed the old dodgy terminal block, and added new terminal blocks. I only had two 4-circuit blocks instead of a 6-circuit block, but we have to make do out here in the colonies. I checked and tightened all terminal screws from controller to compressor. Sensors are bypassed. It started right up. I left the 10k pot in place as it was showing 0 ohms so it must be working at full speed. The tachometer output was measured with my Fluke meter at 1510khz which translates into 3775 RPM for the compressor. I think that is the correct speed – at 12V it runs at ½ the rated speed. I don't see any need to mess with controller speed, but I didn't want to hack around in the controller box any more than necessary.

Kathy varnished some teak pieces today. They look great. We have a nice whiteboard now made out of a plastic that is 10,000 times better than the cheap cardboard whiteboards you get at the office supply store.

Monday, 03 August 2009 01:30

Put the temp sensor back on the compressor controller. Compressor has been working fine since Saturday. I don't want to speculate if it's been fixed or not unless it runs a week or two. Low and high pressure sensors are off-line and will take some work to re-connect as the wires are short and require clearing out the dive compressor as well as the lazarette. We are going to close up the locker and see how we fare this week.

Tuesday, 04 August 2009 01:15

The reefer has been running fine for three days now, ever since replacing the terminal block. Today I put the Fluke meter on the +12VDC line to the controller at the breaker (I could not physically connect the meter at the controller end). I registered min/max voltages of 11.42VDC / 13.17VDC (13% voltage drop) on startup. The measured voltage drop from the battery to the breaker is about 2% when the compressor is running, but there is another run of perhaps 10' to the controller plus about 5' back to ship's negative; about another 2% calculated at the 25A the compressor normally draws, and 3% at the 55A, so the total voltage drop on startup appears to be possibly 15% or more. As we are on shore power perhaps it's not so critical, but at anchor or while sailing the battery voltage will be lower. E.g. if it drops to 12VDC then the voltage at the controller during startup could be as low as 10.2VDC given a 15% drop.

The wiring is #6AWG. To reduce the startup voltage drop I could:

- A. upsize the wire, which would be expensive and cumbersome
- B. connect the reefer directly to the battery (on the house side of the main switch). This would shorten the wire run by about 3 or 4 feet.
- C. run the wire to the main bank positive bus in the engine room. This would shorten the wire run by about 8 or 9 feet. The compressor negative already terminates at the main bank negative bus in the engine room. It's easy to run the positive to the engine room; the difficulty is in relocating the circuit breaker, but it's do-able.

Tuesday, 04 August 2009 20:26

3½ days successful running now on the compressor.

Wednesday, 05 August 2009 02:13

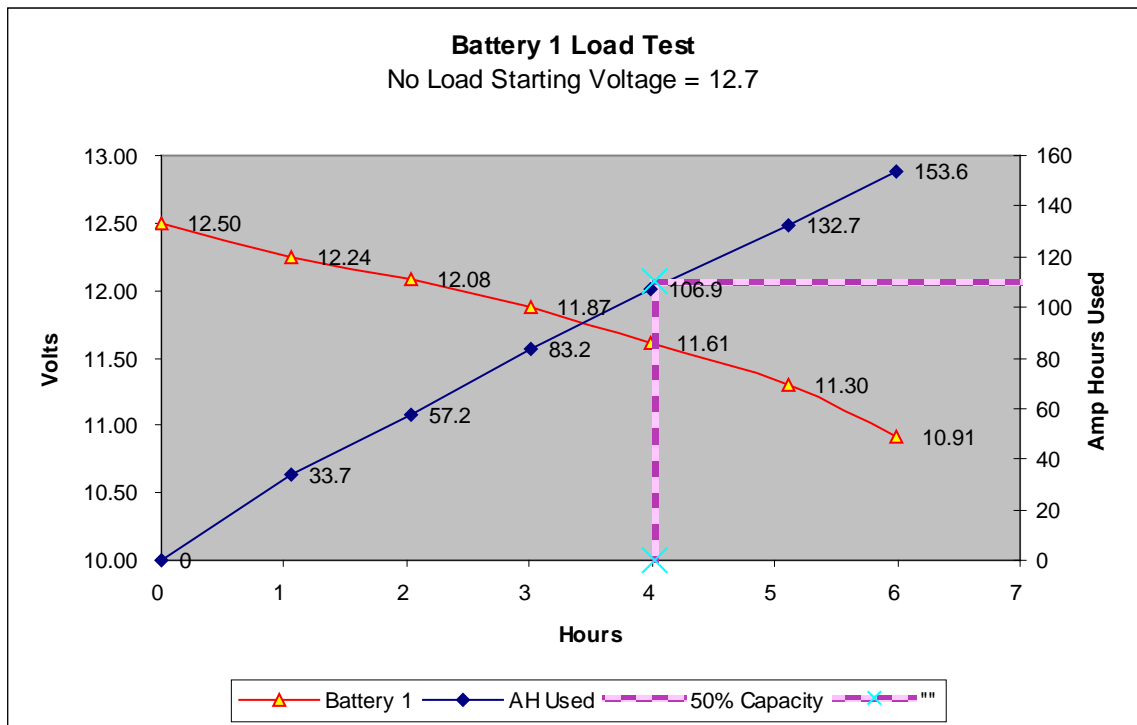
Installed the 4 battery isolation switches under the companionway stairs. Batteries 2-4 are OFF so I can do equalization and load testing.

Thursday, 06 August 2009 05:49

Completed installation of 240VAC power point in galley. Wire runs down behind the flight of 5 drawers, into the settee drawer (Port #2) across the water tank and into a junction box near the starboard power point at the nav station.

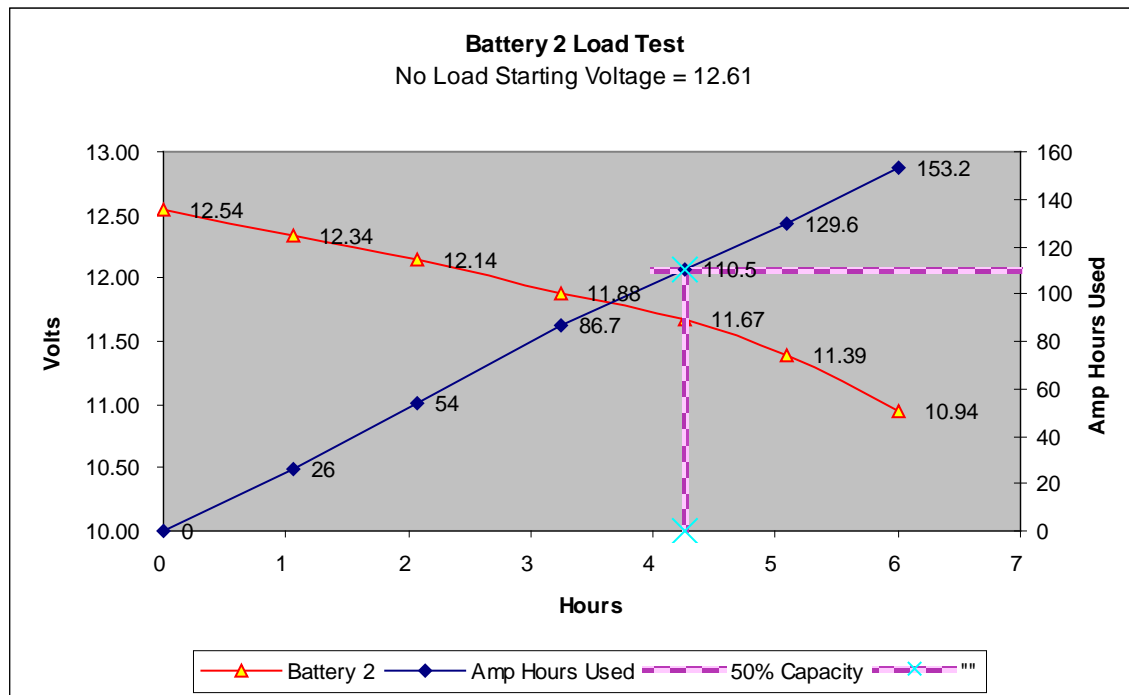
Finished equalization and 25V load test on Battery Bank 1. The test looks good, I think. It seems like the voltage should be higher, but then again it does put out the right amount of amps over the test. "OK" is defined as reaching 10.5 VDC in 6.5 hours. I stopped the test at 6 hours not wanting to draw it down any further. Theoretical capacity for the bank is 220AH / 2 = 110AH. This was reached at 11.4V before 4 hrs.

Temp measurements on one 6V during recharge: 35°-38°C with 80A charge current. Wires at 30°C.



Friday, 07 August 2009 07:00

Load Test on Battery 2 performed. Battery appears healthy. Tried a reefer compressor start at 10.9 VDC and it would not start. It started fine at 12.3 VDC once the charger was started.



Saturday, 08 August 2009 07:12

Equalized Battery 3 today. Did not perform load test.

Celebrating 1 week of faultless refrigeration.

Monday, 10 August 2009 09:14

Drawing down Batt 4 for equalization. Will do load tests afterwards. The load tests need constant amp draw so it is hard to schedule them when we need the inverter power for work.

Last night the oven would not light. I swapped in a new regulator and that seemed to fix it. Then I swapped in the old regulator again, and it lit! Possibly it was still warm, because I think it was a regulator fault, even though they don't fail often. The old one had flickering flames on the burners. So I did replace the regulator and installed a new solenoid for the oven, plus solenoid control for the BBQ, which had never been done. I was hoping to control both through the Xintex propane control but it only can handle up to 1 amp. A relay gets to complex so we'll just run the BBQ solenoid through to the switch on the main panel.

Finished building the roller furling line clutch and turning block.

Tuesday, 11 August 2009 01:44

Finished equalization on all batteries. Batts # 3 and #4 still need load testing.

Saturday, 15 August 2009 21:41

- Load Testing was finished on Batteries 3 and 4 with much the same results. All healthy!
- Finished fabricating and installing the new davit clips to hold the davit stiffener. They are made of Delrin and have a hook in them to keep them from turning. They also are held in

- place with a split ring so they cannot come out.
- Battery ONE is now offline. The online battery capacity is now a good 660AH with a useable 330AH.
- Installation of the new block for the new furler control hardware is complete. We are trying [Deks Olje](#).

Tuesday, 18 August 2009 11:05

Yesterday Kathy and I did a lot of sanding and polishing on the solar panel braces and the new aluminum dinghy brace. I think it was annoying to our neighboring boats so today we moved to the work dock – in a rather high wind. To get to the work dock we had to thread our way between a number of poles which were a boat length off the dock. The opening between poles was barely wider than the boat. Picking our approach, with a port side docking, we were able to use the prop walk to make almost a 90° turn as we passed between the left-most poles. As soon as the poles were amidships I turned right and hit reverse to swing the stern to the left. Then powered forward, still with right rudder, and then reversed again. The boat slipped neatly alongside the dock. Our neighbor caught the spring line and, after a bit of instruction, tied it off properly near the stern so I could use the engine to snug the boat to the dock.

Kathy finished off the polishing and we sanded and bleached part of the cockpit teak and both cockpit gratings. We are going to apply Deks Olje to these. Deks Olje #1 is an oil-like substance that can be re-applied after light sanding. It looks great and doesn't build like varnish. Worth a try.

Yesterday also so completion of the new preventer turning blocks and the screw knobs for the dinghy hold-down and brace. We tried the dinghy on deck and it fits VERY nicely.

Wednesday, 19 August 2009 05:00

- Polishing of solar panel braces completed
- Old bilge pump replaced with Jabsco 50800 diaphragm pump. I screwed up in my rebuild of the old FloJet pump and it was quite corroded in the swash plate. It needs another rebuild. I just replaced it and the Jabsco is a much better pump. It has one big diaphragm, no swash plate, 3m self-priming, and needs no filter.
- Kathy finished applying Deks Olje to the gratings and starboard cockpit lid.
- A loose wire from the engine temp sensor was repaired.
- The bilge suction foot was fixed to use a length of bronze pipe to connect to the rather spongy hose instead of a hose barb. The hose may be weird but it's non-critical and not pressurized so it will work fine.

Tuesday, 25 August 2009 09:29

Somebody threw away a blown out mainsail and we had it made into a riding sail: 180" x 150" x 75"

Saturday, 24 August 2009

Replaced the MATE 2M controller panel for the two Outback inverters. This was a swap for a software upgrade from Outback.

Saturday, 29 August 2009 05:34

The last three days (Wed-Fri) we spent delivering "Rocky" the Daihatsu, which has been loaned to us for the last several months by Ann and Eric North, 1050km north to Townsville along the A1 highway. It was out of "reggo" so we were lucky to get it there without drama. It will sit under their boat, *Temerarius*, until they return in January. We spent the night at a motel in Mackay and ate dinner at the Hog's Breath Café, a placae notorius for it's 18-hr slow-cooked prime rib. It was as good as I remembered it. In Townsville we found our friend's Bev and Colin aboard their cruising cat, *Midnight*

Blue, about to head off for the Louisiades. These are an island group owned by PNG. Our trip back was on the “Sunlander” – Queensland Rail’s southbound train. We spent the night trying to sleep in the seats and it was not good. Too old for that stuff. Next time I’ll spent the money on a plane ticket or a sleeper.

On the repair front we installed switch for BBQ Gas Solenoid, Radio Power Source to alternate battery, and fixed the Engine Stop Switch on the main Nav Panel. I modified the wiring diagrams to match.

Tuesday, 01 September 2009 06:30

Fixed Trim Rings on 4 of the 14 portlights. Two of the portlights, the aft galley and the last stbd in the aft cabin were leaking. It was decided to drill and plug ALL the trim ring holes. The wood core was very wet. Ideally a long term drying regime should have been done but that would not have helped the problem in that the entire core is probably wet at this time – likely due to the bad installation job done by stupid Vince who installed the portlights. Not enough care was taken to fill voids. Much care was taken to add sealant on the INSIDE of the portlights. When I saw this it was too late. If the cabin fills with water it won’t leak out – it just leaks in.

Anyway Kathy and I drilled out all the holes with a centering drill and bit. We and found both void and wet core. We dried and MEK’ed the holes, painted them with West System™ epoxy, and then filled with thickened epoxy (406) to a non-sag “peanut butter” consistency. The hope was the non-sag epoxy would not sag, but when we went to drill the holes about 40% of the epoxy plugs were not deep enough. This was too bad as we wanted to screw in the self-tapping trim ring screws while the plug was not fully cured. We quickly mixed some more thickened epoxy to go in the drill holes and squirted it in with a syringe. Hope it works. Next time we need to figure out how to get the plug farther back into the voids without sagging – perhaps find some tubing that we can use to make epoxy dowels that can be glued in places.

Sealant was added only at the seam between the spigot and the trim ring. Perhaps we also might have countersunk around the screw holes and used sealant there. The problem is that if we ever paint the boat we will want to remove the rings so they we can’t make them too difficult to remove.

The other job done today was to re-adjust the shaft in the shaft flange in order to install a forgotten spring pin (or “roll pin”) which both keeps the shaft from moving fore and aft (along with two clamp screws and a set screw). All a bit of overkill. Anyway the roll pin was cracked so I just realigned the hole in the shaft with the hole in the flange and we’ll find a new pin in town. I used the trick of placing a socket between the two flanges and squeezing the flanges together with the bolts. The socket forces the shaft out. This time I wrapped a length of masking tape with a 6” tail around the socket which made it very easy to set it in place.

At the same time, because I had to get into the “shaft alley” to loosen the drip-less seal collar, I also finished installation of the shaft brush and the connections from the shaft and engine to the main zinc. The new arrangement of the shaft brush is much superior to the old connection in that it is held in place by a single plastic/stainless thumb nut which makes it easy to adjust and remove.

Wednesday, 02 September 2009 07:19

- Reinstalled the HF Radio Antenna.
- Re-connected the solar panels. Some corrosion evident in the waterproof connectors.
- Re-wired the stern nav light
- Changed fuel filters in the Racor 900 and 500. Cleaned the 900 bowl which was quite full of grit. Replaced with 10u filter. Used 2u old-style filter in the 500 (have a bunch of those). Overdue for this – it’s been about 700 engine hours.

Thursday, 03 September 2009 07:37

Today we installed the roll pin in the shaft: 8mm x 75mm; we started the dinghy project, and finished the solar panel re-connection. One lead was loose in the port side and took some time to trace and

repair. Also pumped some fuel through the new filters. Noted that the fuel level sensor is not working on the day tank. We'll take a look at that.

Sunday, 06 September 2009 22:46

Today is Monday, local time.

The refrigerator compressor stopped again last night after 5 weeks of flawless performance.

It exhibited the same type of symptom – it won't start. Today I did the usual of taking the temp sensor out of the loop (that didn't work), then tapping the compressor with a hammer handle during startup – and it started. Then I could hear the RPM's drop. The freezer is still cold so it is running on the refrigerator box. I have noticed, over the last few days, a difference in the compressor sound. Not enough to be able to describe the difference – it is a vibration, perhaps it's been running slower; I don't know. I don't know if it's a problem with the compressor, the rest of the refrigeration system, or an electrical problem (i.e. not enough amps on startup). I could reduce the potential voltage drop a bit by re-routing the large power feed wires. I also want to make the RPM output from the compressor more accessible so I can keep some records.

I am also hearing changes in motor speed associated with ship voltage. With the battery charger ON and the voltage at 14.2V the motor speed is up. With the battery charger OFF and ship voltage at 12.8V the motor speed decreases. I measure 19 amps with the charger OFF. I can't measure compressor amp draw with the charger ON.

I unplugged shore power and carefully watched. Apparently the error light comes on after an error, then it goes off while the controller re-tries the startup, then on again, for the ten times we expected. Each time there was a heavy draw (about 40A on the meter), but no action.

So, I went back to the hammer handle. This time it went zwooop? (first time I've heard that) and it didn't start at first, but it did start on the third try.

The way the system apparently works is that error light comes on at the first error, then off for a re-try, then on again for 10 retries.

Tuesday, 08 September 2009 19:24

I got up early today and could listen while working on the computer. The reefer had failed last night but this morning it started when I turned it on. But then it failed in mid-cycle.

The refrigeration compressor is now going through stops and restarts DURING a cycle. I can hear the motor do a couple of revs, and then stop. It sounds "rumbly" in its restart attempt. I switched off. Case temp on the compressor was not hot at all. Switched on again – no problem with the startup. It has gone to the reefer as the freezer got pulled down enough to not re-engage. I need to watch if failures are associated with a particular circuit (F or R). The compressor has a low-frequency rumble that it did not have last week. RPMs are down too.

Cycles up and down. Heavy vibration. Error. So not restricted to R or F. Swoopy sounds in restart attempts. Restart was successful. So... unit is having failures and restarts. Refrigeration is about to die, I am sure of it. (VDC=13.15 and charging).

Tuesday, 08 September 2009 20:12

Restarted with breaker. It started up again. (R, PT=-0.5°C)

Wednesday, 09 September 2009 03:02

Several failures this morning while running. Now will not start on it's own.

Went to the locker to “tap” with hammer handle which got it started. Then it slowed down and after a approx 15 seconds it failed. It restarted itself on re-try #1. (F, PT=-10°C)

Wednesday, 09 September 2009 03:21

Stopped with error. Restarted OK. PT was still at -10°C. Switched to R, PT=-0.5°C

Five minutes later: error failure. PT=-0.5°C

Friday, 11 September 2009 05:42

Jeff,

Symptoms seem to point to oil starvation, which is all about oil return. I'd like to see the freezer shut down completely and the plates brought up to ambient temp, then the freezer circuit pulled down from warm. My thought is that perhaps, because your compressor is above the plates, there may be oil trapping in the plates that might be starving the compressor from enough oil (again). The oil wants to stay in the coldest place, which is in the freezer plates. Warming them up and then re-freezing them will flush most of the oil out of the tubing "U" bends and hopefully return it to the compressor. It wouldn't hurt to do it to the refrigerator plate too. What is the highest temp the freezer plates get to in the normal cycle?

I realize doing this will be a pain in the butt if you have much in the freezer, but it's the only thing I can think of that might be a contributing factor. Be sure to get the plates fully warm. It's important, as the refrigerant and oil get too friendly in the coldest parts of the plates. Warming it will help move the oil along when the system restarts.

The zwoooopp I've heard occasionally. It doesn't seem to be much of a problem, usually it only does it a couple of times. I'd let it try again on it's own, rather than cycle the breaker. Usually the zwooop happens when the compressor is trying to start under a load, as when it restarts too soon after running. It should have a few minutes rest before trying to restart. It won't hurt it, it just might zwoop a few times. (Usually, as far as I have seen, but obviously I haven't seen this...).

Mark

Commenced test after allowing F box to reach ambient temp of 25°C. PT probe needed re-gluing to the box.

F PT= 16.5°C

Didn't work. It still blue-lights.

Friday, 11 September 2009 08:04

Turned on refrigerator. Self-started this time. Failed and restarted itself.

Saturday, 12 September 2009 08:01 UTC

NOTE: NEW FENDER COVERS MADE BY KATHY. She cleverly made them from an old dodger that someone threw away.

In testing the reefer voltages I felt a LOT of heating across the terminal block connecting the 3 phased

DC wires from the controller to the compressor. I took off the terminals, cleaned them, wire brushed the plates on the terminal block, coated everything with CONTAX and reassembled. Kathy turned on breaker and LO, it started right up and sounds normal. Since the freezer is empty only the Refrigerator box is being cooled. Watch it cool! ST1=-7.0°C. On temp=-2.6°. The terminal block is the one we installed way back in Seattle. I will get a new one on order in case this crops up again. These blocks are rated at 30A which should be enough.

08:01 PT=16.2°C

08:58 PT = -7.0°

Saturday, 12 September 2009 22:21

I spoke too soon. The system failed again last night and would not restart.

This morning it auto-started after three re-tries. Temperature on the terminal blocks is 25.5°, 27° and 28.5° on the three wires. The blue wire is warmer. I have not yet taken off the cap to test the temperature of the terminals on top of the compressor.

The motor is running at 2200RPM (880hz) which is about 2/3 speed. I could hear, early in the cycle, the drop in motor speed. It sounded very slow but I did not have the meter on the tach output to test it. It now SOUNDS slower than normal, but not as slow as it gets when it seems to be laboring. The temp is pulling down nicely though. I'll let it finish it's cycle, then rest a bit, then try it again and measure the flag lug temperature and continue to watch the speed.

Sunday, 13 September 2009 05:01

I took the cap off and got the unit running to test the temperature on the flag connectors.

Almost immediately the post where the orange wire is attached heats up A LOT. I cannot touch it is so hot.

I HAVE NOT MESSED WITH THOSE ATTACHMENTS SINCE THE COMPRESSOR WAS SHIPPED! The compressor was installed May 11 so I cannot understand why this is a problem. The old terminal blocks, yes, but why these?

I have written Mark and will hopefully have an answer soon.

Monday, 14 September 2009 01:32

Nope, no answer from Mark. I have removed the orange and yellow tabs, sprayed them with CRC Contact Cleaner, fine sanded the flag part of the spade lug, coated with Contax and re-connected. The connections are NOT HEATING UP any more. Motor speed is normal at 3455 RPM. I'll do the same on the blue wire, smear everything with silicone dielectric goop, and maybe, must maybe, that will solve the problems.

It's been running 10 minutes without problems and at full speed. I've always not liked the "standard" connectors that Masterflux uses on the top of the compressor – I had LOTS of troubles with them on an earlier compressor. I think I should acquire, at the least, a spare harness.

Switched to Freezer and speed has increased to 3670RPM. RPM has increased to 3845RPM. Now at 3975RPM. Case Temp is 55°C.

Monday, 14 September 2009 02:23

Fire extinguishers:

- ENGINE ROOM: FE-241 (Chlorotetrafluoroethane, HCFC124) is approved for unoccupied spaces such as engine rooms and is approved for use in the United States. Legal but requires pre-charged import license.
- GALLEY: Bromochlorodifluoromethane Halon-1211. Not legal in Australia.
- DRY POWDER EXTINGUISHERS: Nitrogen charge – no problem.
- REFRIGERATION: Re-gassed in Australia. Should be legal.

Monday, 14 September 2009 05:40

Now on to the refrigerator. 3662RPM is a bit slower than with the freezer, but not by much.0

Tuesday, 15 September 2009 23:53

Reefer/Freezer still good. All sensors are now connected: low-pressure, high-pressure, temp. I am not overjoyed about using those nasty little spade terminals. They don't crimp well and they are hard to get apart. Ideally I would like to lead ALL the wiring inside the cabin, including the solenoid, fuses, sensor wires and power wires. They would be more accessible, more testable, and better protected.

Switched Battery #1 on line, took Battery #2 off line.

Monday, 21 September 2009 08:28

Yesterday the refrigerator "blue-lighted" (Blue LED on error) on me again. Today I went back to the 3 terminals on top of the compressor and yes, indeed, the Yellow Wire was too hot too touch when attempting startup – a high-resistance connection. I pulled it, cleaned it, sanded it, crimped the connector and it's all working again. What I have determined is that these terminals are made of tin-plated steel, assuming they are the same as in the Del City catalog, This means that corrosion is not only possible, but likely. In the high heat situation they operate in I suspect any dielectric compound would soon evaporate or flow off. What we need here is a way to positively screw the wires to the terminals. I'm thinking of a spade connector and some kind of brass doo-dad which pushes the terminal against the tab.

Today we also decided on importing the boat. Really, we had no choice, as the Australian laws are actually that residents are not entitled to Cruising Control Permits. All up, with 10% GST and 5% duty at our low valuation it comes to A\$8585.59.

We finished the dinghy chock modifications. I'm not totally satisfied with them but they'll do.

I also had some thoughts regarding the life raft. First, hardly anybody every actually uses a life raft; but almost everybody carries one. They are expensive, need to be serviced every one to three years, take up room on deck, and are hopefully never used. We have one of course, but I've just started to wonder how I might use it in a real emergency onboard. Common knowledge is that you should "step up into the raft" and not leave the big boat unless it's on fire or sinking. And, we've all read the books about drifting for weeks drinking sea turtle blood and catching fish. But does anyone know anyone who took to their life raft after a sinking? I want to know exactly how they deployed the thing. On *Beatrix* it is a heavy object in a fiberglass capsule with instructions that say: hold on to the lanyard and throw it into the sea. Yeah, right.

The raft in its capsule weighs about 150 pounds and frankly, right now, it's unlikely we could deploy it. It sits under the line reels and behind the mainsheet traveler and is almost impossible to imagine lifting out of its cradle, let alone toss it overboard. If you could get it to the aft deck it might float off after the boat sank. Two ideas come to mind: 1) move the cradle forward over the companionway so it can be dumped into the cockpit, 2) fabricate a vertical cradle and mount it on the rail so it can be tipped over into the sea.

The first idea is easy, since we don't use the aft companionway anyway, but it still leaves the heavy capsule in the cockpit to be lifted over (or slid under) the lifelines.

I like the second idea for its ease of use in an emergency but there are two problems: the increased exposure to the salt water and that a life raft should be deployed to leeward; it might be on the windward side when needed. It's also the more expensive option.

Any thoughts?

Friday, 25 September 2009 06:05

We started on the lifeline project. Kathy has been polishing the stainless stanchions with Witchinox and cleaning the deck, which has gotten very dirty in the dust storms.

The freshwater system started leaking at the pump fittings in the back. I took the opportunity while replacing the white hoses to install a pump control (Pumptrol™ 9013FYG) pressure switch. This will simply override the internal pressure switch.

Saturday, 26 September 2009 03:08

Installed new 5u carbon filter and Seagull IV RS-1 SG filter cartridge rated 0.1 micron.

Sunday, 27 September 2009 01:12

- Cleared aft cabin closet. Reorganized and checked for leaks (it seemed “salty “ in side). Tightened all hose clamps. The watermaker seems fine. We threw out a lot of old clothes.
- Flushed watermaker
- Found the water leak and tested the new pressure switch, but turns out I cannot install it back in the cabinet without relocating.
- Finished new lifelines. Need a new simple Pelican Hook.

Wednesday, 07 October 2009 06:55

Cruising... Great Keppel Island, QLD

Watermaker would not run because of priming issue. Can possibly be because it shares input with the refrigerator cooling which has an open hose to the cockpit drain. A non-return valve (5/8" hose or 1/2" NPT might fix this.

Stove igniter has stopped working. Heading sensor is offline. Wind meter is on/off at the Multi put always present on the computer. Wind is displayed on the Multi, apparently, only when the Garmin is on. I am using a borrowed Garmin chip because other electronic charts are not available right now.

Friday, 09 October 2009 20:12

Yesterday we worked on the watermaker. The dead fans were replaced on both pumps and a new pump head installed on the upper pump. It was a difficult job to reattach everything. Strangely the rubber diaphragms were NOT included in the rebuild kit! This needs to be checked. Unfortunately, after working all day (with suitable rest breaks) the pumps will not prime. This could be because the new plankton filter has added to much resistance to the system. I will try to install a one-way valve and if that does not work, relocate the plankton filter and/or put in a priming pump.

The water leak increased and it became apparent that the engine raw water pump is dripping gobs of salt water. I turned off the seacock but this did not entirely stop the bilge pump cycling. There may be another leak as well.

Saturday, 10 October 2009 07:33

The seal has gone on the RWP. The entire pump has been replaced with the newly rebuilt pump from

Depco Pump and the aluminum sheave. TefGel™ was applied everywhere because of bronze/alum/stainless connections. The leak must have been going on for a while because the steel pulley on the old RWP was quite rusty.

The Watermaker had an airleak, apparently a missing O-ring in the upper pump attachment. I installed an “Amazon” non-return valve (3/4”) in the intake line near the plankton filter. We were able to fix the attachment with a similar but not exact O-ring (actually a small rubber washer). Both pumps now are pumping fine and may just “suck” all the way. I flushed the system with freshwater.

Sunday, 11 October 2009 07:39

A Sailing Day. We sailed 4 hrs down the Queensland Coast. Watermaker was working on both pumps BUT I could not see the Clark pump shift. We also need batteries for salinity probe so I can’t accurately check the product water. The pumps were doing well, though, 80PSI.

Propane Tank ran out.

Tuesday, 03 November 2009 18:10

Things done since 11 Oct are:

- Made new anchor snubber
- Changed battery in main cabin clock
- Added leech lines to sun shade.
- Replaced furling line with 8mm polyester double-braid (Donaghy Yachtmaster XS)
- Replaced bungee cords on sun shade.
- Marked reef line.
- Sorted new lines which will be replaced:
 - 1 new genoa sheet
 - Reef lines.

Tightened alternator belt. (Thurs)

Monday, 09 November 2009 05:20 UTC

The last three days were spent working on boat organization and maintenance chores on the aft sanitation system. I love my Vacuflush toilets. They work great, don’t smell, and only need servicing maybe once every five years. Those five years were up today.

This turned out to be, literally, a shitty job. Taking apart the Vacuum Generator to replace the 4 duckbill valves entailed disassembling much of the piping, unfastening the generator, and moving it out to where we could get to it. This meant that the remaining brown liquid in the pipes had a tendency, no matter how careful I was, to spill. Kathy was incredibly supportive in being my “scrub nurse” for tools and supplies, wiping up the spilled shit, and generally keeping me as calm and happy as possible. “Some people pay for this”, she said.

Once the duckbill valves were replaced in the VG, we moved to the T-series macerator pump to replace the two duckbills in them. It is worth noting that the threads on the fittings are reversed for that pump. It explains why they were so hard to remove at first.

There were other problems. Once the duckbills were all fixed the system still would not hold a vacuum. It turned out the vacuum switch had failed – the metal plate that holds the rubber gasket against the suction plate just wasn’t there anymore. No doubt it is swilling around in the bottom of the vacuum tank. The leaky switch kept any vacuum from building.

And one other problem surfaced as I continued to test the system. I had plumbed in a clever device for

flushing the tank and vent line; so I checked the tank vent by turning on the flush water and Kathy confirmed it was flowing out the transom vent. But as I kept the pump running it was pressurizing the tank with air (thanks to the efficiency of the new rubber duckbills) and this forced whatever was left in the holding tank out through the macerator pump and over the side. Whoops! I knew (or thought) the vent was clear, so this should not be happening. I closed the through-hull to stop the overboard discharge. What I didn't know was that the vent was plugged just where it entered the tank. The copper tube inside the pipe fitting which was supposed to direct the water into the tank had blocked up all around the tube. The holding tank started to inflate like a balloon. Double whoops! Noxious watery stuff-that-shall-not-be-named was bubbling out around the draw tube and the level gauge sensor unit. I quickly turned off the pump and opened the through-hull and waited for it to settle down again. My fear was a damaged tank and/or tank fittings.

So now the 3-hour maintenance job, as typically happens, had escalated into a 3-day fiasco. A "day", of course, refers to a cruiser's day, which starts after coffee, email, breakfast, more coffee, some Internet browsing and finally getting down to the job at hand. The day ends, of course, when the light fails around 1800, only three hours from "cruiser's midnight" at 2100.

I had to disassemble the pipes and fitting leading to the holding tank. As I carefully disconnected hose #1 I let go of hose #2, which tipped down and delivered me with another brown shower. Will I ever wear those clothes again? Fortunately my sense of smell had departed many hours ago. It was about this time that the phone rang. I couldn't even pick it up, so Kathy held it to my ear as I sat damply under the aft bunk. It was my friend Graham Court, unofficial historian of the KP44 boats, who called with the news he would be in the neighborhood of our anchorage shortly and he'd love to come have a look at *Beatrix*. What excellent timing, I thought, sure Graham, come on over, this will test your ability to look past the superficial mess to the brilliant vessel underneath. Actually Graham's visit was pretty much the end of the second day of work. No problem, any excuse to wash up and put off the rest of the job until tomorrow.

Removing the tank sensor (a float type designed especially to work under the odious conditions found inside a holding tank) I discovered it completely plugged at the bottom and the float jammed with fibrous stuff and seeds. "Hmm", I thought, "I really should chew my food longer." Kathy generously set about to clean the components with blue holding tank chemicals and I continued to work on the system. The internal flange holding the sensor in place was corroded beyond recognition. It was made of 316 stainless, a material obviously unsuited for this use, even though it was advertised as a huge improvement. I would think nylon or Delrin would be better. I was about to fabricate a replacement myself when I came across a spare nylon version of the flange in the parts box. Yahoo! After cleaning all the parts, changing O-rings, and replacing everything we tested the tank with some gentle air pressure and soapy water. No leaks.

Next I cannibalized the forward head VG for a replacement vacuum switch. I just HAD to know the whole aft head system was going to work. I had sourced a new switch online and it will be delivered tomorrow. The forward VG is much more accessible so it made sense to put the new switch back in that unit.

The last job to do was to replace the broken Tank Level Gauge in the aft head. Now that the float sensor is working, it made sense to fix the gauge. Why have a clean level sensor and a no way to read what it's telling us.

So today it all went back together and, lo, it worked just fine. It vented, it pumped, it sucked, it flushed. I shouldn't have to touch it until 2014 (except perhaps I'll clean the sensor tube more often). So that will go on the maintenance calendar Now all that's left is to put back all the gear that had to be removed to get to the pumps.

And, oh yes, the forward head is due for a valve replacement Real Soon Now.

Saturday, 19 December 2009 03:42

I have returned from the USA with many parts and spares. While gone some new organization was done by Kathy. Today the Honda EU2000 started running erratically and the problem turned out to be dirty gas. We siphoned it out from the bottom and the first bit of petrol was rusty and possibly watery. The spark plug has some small fouling which I cleaned. It is now running fine. I think if it isn't being used it needs to a) have a full tank and b) a bit of alcohol added to soak up any moisture. Otherwise it's a fine unit.

Rotation of the batteries was on schedule.

Thursday, 24 December 2009 19:42

Today we serviced the Honda 2HP outboard.

- Replaced broken fuel level
- Made a new inner carb. Gasket to replace the one I broke disassembling the unit.
- Adjusted the idle
- Checked spark plug
- Cleaned out gasoline tank and drained carburetor

Sunday, 03 January 2010 08:53

We have been working on boat cleanup mostly. In the last week Jeff spliced lots of lines:

- The old preventer control lines were replaced with double braid polyester.
- The 2nd new genoa sheet was fabricated. It still needs to be lashed to the sail
- The lower reefing line was replaced.
- Spinnaker halyard was replaced with double braid polyester.
- Main halyard (XLS Xtra-T) was constructed but we are awaiting results of a chafe test. The spare halyard we have been using has been exhibiting chafe about 10" above the shackle, but WELL BELOW the sheave. I have no idea what it could be chafing on. We have wrapped it with rigging tape and we'll watch it to see if it is still chafing.
- We tried out the dinghy anchor bungee cord – it works fabulously.
- Kathy repaired the mainsail cover, the rain awnings, the Honda generator cover, and made lots of ditty bags.
- We tried Allen's Spotless Stainless and it works fine!

Friday, 15 January 2010 06:07

- Extended legs on life raft cradle and moved it back over the aft hatch. It's a good system for deployment, but looks ugly and also needs additional bracing as it will definitely fail if not braced.
- Removed the port aft lifeline gate because it was bent. I had to use a bottle jack to do this and there was so much pressure on the cross member that it dented the tubing. Even more damage. We got the gate legs straightened but the stanchion bases are not looking too good either.
- Changed the battery configuration to put Battery #2 on standby.
- Kathy made chocolate chip cookies.

Wednesday, 20 January 2010 02:37

Checked rigging after noticing slack on lee forward lower during last passage. All are nominal EXCEPT I had tightened the backstay way too high. The backstay now has a rigging tape marker at max tension (20%) and I measured number of turns to reach 15% (-10) and 10% (-24).

Thursday, 21 January 2010 17:09

Sailing South – Southport to Sydney

Noted: Aft bilge pump did not come on when power was cycled to the "Water Witch" auto-switch.

The Xintex propane controller/sniffer has started to go wonky. Over the past few days we've noticed the gas burners have stopped mysteriously (with the knob on) and the oven has died a couple of times. Tonight the Xintex was cycling through the indicator lights, turning the gas relay on and off. Plugging and unplugging the sensors just started the alarm. Finally with cycling power and plugging in both sensors the unit has stabilized and appears to be controlling the gas properly again.

Of course, the unit has been little more than an on/off switch for the solenoid because I never installed the sensors where they should be. Now the question is: do I replace this or not? The S-2A is still made, but I think the exact model is different. I need to write Xintex and find out. If I can get away with the S-2A HEAD ONLY I think it's worth it, provided I finish the installation.

Order#	Mfg#	Type	List
31058	XIN#S1	Plug-In Propane Fume Detector	\$220.94
98947	XIN#S-1A	Single Channel Detector w/ Solenoid Valve	\$301.39
169928	XIN#S-1A-NV	Single Channel Detector with 2' Square Bronze , No Valve	\$233.51
38551	XIN#S-2A	Two-Channel Monitor w/ Auto Solenoid Valve	\$370.45
146805	XIN#S-2AHEADONLY	S-2A Head Only	\$195.00

Sunday, 24 January 2010 10:50

Today I bypassed the Xintex S-2A control unit with a toggle switch. It's just worn out and needs replaced. The fume detectors should work fine.

Engine oil was changed today prior to leaving Port Stephens. It was 33 hours overdue because of the long motoring two days ago. Tomorrow we head for Sydney and we will probably have to motor for five or six hours in the morning.

It went very well. I liked having the big 20L container that Kathy found in Nouméa for the used oil. We pumped directly out of the 20L jerry-can into the engine. This works better than having lots of little containers, also cheaper to by 20L at a time. We also changed the filters, using the last of the BT-237 large filters. From now on we'll be using smaller oil filter.

Thursday, 28 January 2010 01:01

The oven malfunctioned – it would not stay lit. The problem was 1) blocked pilot orifice, 2) dented pilot orifice (might have been a problem) and 3) dirty gas channel in front of orifice. Scuba tank air and knocking out the dent, plus using a pipe cleaner to get the dirt out of the channel, seemed to do the trick.

Saturday, 30 January 2010 02:27

Serviced the forward head ST-3 Vacuum Pump. 1 new Universal Seal and 4 new duckbill valves installed.

Saturday, 06 February 2010 01:54

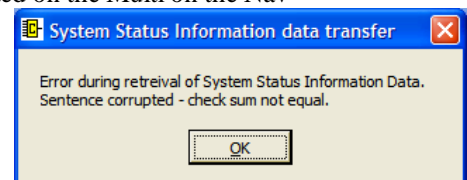
Beginning to work on the Navigation Systems

1. Issues:
 - a. Garmin 128 will not turn off.
 - b. Wind Data only available via the GPSMap 3010C
 - c. Heading sensor is intermittent.
 - d. Backup GPS is having collisions with some other data source. It should be 4800 baud on COM6, but something else is sending data on that port.

- e. With both the GPSMAP and the GPS120 off, data is still coming into this port.
2. Backup GPS
 - a. GPS128 would not turn off with the OFF switch.
 - b. Replaced with backup GPS120. This unit has never been switched on since getting it back refurbished from the factory. The LED backlight does not work, but the rest of it seems to be OK.
 3. Heading Sensor
 - a. Broken fuse holder was found to the AIS box. Note that AIS box multiplexes the HDG sensor.
 - b. I cut out the fuse and butt-connected the power leads, since the circuit is already fused.
 - c. I tightened and checked all leads.
 - d. I am now seeing consistent power at the heading sensor.
 - e. Both signal ground and power ground are connected and switched with the “NSW/NDC Reboot Switch”
 4. Next problem was wind sensor.
 - a. Noted: wind sensor only works when the Garmin GPSMap 3010C is on.

TESTS:

1. Tests were logged with 1-port serial combiner (USB) and Hyperterminal. Samples saved in the directory
[“D:\usr\SVBeatrix\Electrics & Electronics\NMEA and Onboard Networks\Logs\10Feb2010”](D:\usr\SVBeatrix\Electrics & Electronics\NMEA and Onboard Networks\Logs\10Feb2010)
2. Wind sensor isolated and read with HyperTerminal. Sentences look OK (i.e. complete) but the values show an error condition.
 - a. Observed values:
 - i. \$IIMWV,226.0,R,000.00,**N**,V
 - ii. \$WIXDR,C,**049.0**,C,,
 - b. Note that the “N” in the wind speed/direction sentence indicates an error.
 - c. Note that air temperature is 49°C, which is also erroneous.
3. Heading sensor is reporting fine data and this is being repeated on the Multi on the Nav Station.
4. Hyperterminal is reporting fine data on Port 4, which is the combiner output, using single and Wind+HDG/AID data.
5. NDC Control Centre runs for a minute, then starts throwing the error message seen at right.
6. Garbage from the Garmin. Testing the unit at TB-9 gives the following output



```
$SDDPT,3.29,-2.01*71
À€,bbRš5
$GPRMB,V,,,,,,,,,V*66
$GPGGA,053835,,,,,0,00,,,M,,M,,*6E
$GPGSA,A,1,,,,,,,,,,,,,*1E
$GPGSV,2,1,08,02,20,353,00,04,48,033,00,08,12,033,00,09,42,227,00*7C
```

- a. The garbage disappears at the other end of the cable.
- b. Testing the wire (C7-brn) at the TB9 end showed no garbage.
- c. Testing the wire installed in the terminal block TB9-34 showed garbage.
- d. The bridging clip on 35-36 was in the same plan as 34-35. Inverting this cleared the garbage output.

Friday, 12 February 2010 23:26

Wow! Filled water tanks in torrential rain in Sydney, Australia last night. It only took about 20

minutes. We placed towels to funnel the water into the deck fills.

Saturday, 13 February 2010 21:50

Confirmed Alt 2 not working.

Noted problem with upper right USB port on LIGHTHOUSE laptop. Would not “see” external DVD drive.

Kathy finished the construction of the series drogue! I have to splice bridles and leader now. I have purchased 3/8” stainless chain to pass through the hawse holes aft so there should not be any chafe. Amsteel was another option.

Monday, 15 February 2010 09:24

The refrigerator compressor “blue-light-of-death” was blinking in the morning with a very low voltage of 11.1VDC. Power was being drawn on each error cycle so it was not a low voltage cutout. It seems that running the little reefer plus the computers used a lot of power. I don’t think the batteries are bad, just that they have this low voltage. Capacity seems good. The refrigeration worked fine after bringing the charge back up. The BLOD happened because of excess amps needed to power the compressor startup. Possible scenarios are to once-and-for-all do something about the power connectors on the compressor; not run the compressor at night (wait for charging cycle in the morning); not use the portable reefer/freezer unless having a party; do less computing and watch less movies.

Battery maintenance today:

- Batteries brought to full charge with 12 hours of charging using Honda generator.
- Equalization Charge done for all batteries: 15.1V for 1 hour.
- Battery #3 put on standby.

Monday, 15 February 2010 22:32

Adjusted the FX inverter to restrict AC input to 12 amps AC. This translates, somehow, into 15A maximum on the AC main panel, which keeps the system from trying to draw too much out of the wee Honda. SETUP/FX/INPUT on the Mate is used to change ac2/gen values (see manual).

It would be good to have a second Honda with synchronizing cable (or second Honda 230V/50hz but that requires re-wiring). Having dual-voltage gensets has some advantage in that a) can run Aussie tools and b) the charging circuit of Honda->Charger is duplicated for both inverters; i.e. if one inverter/charger dies, the second one is still available. Also no need to use a charging circuit.

Current Problems are:

1. Nav Issues
2. Winch Servicing
3. Cooling Hose on Engine (tighten/replace clamp)
4. Fluids: o/b and gen oil change, transmission oil
5. Bilge pump check
6. Forestay Clevis (cotter pin replace)
7. Reefer meters
8. Alternator 2 not charging
9. Tighten aft port tank vent
10. Fix power connectors on compressor
11. Fuel additive for port tank.

Tuesday, 16 February 2010 03:53

Back to testing the NAV system.

- Checked all wiring in Data Panel (TB10). All looks good so far.
- Connected directly to HDG/AIS on TB9-34-35. 4800 Baud. Looks fine. AIS/HDG are apparent on the test port.
- Added output from TB9-34-35 to the CNET and it has appeared on the MULTI. AIS/HCHDM/IIMWV/WIXDR along with direct output from the GPS.
- Turning on the GPSMAP has added more sentences to COM4, including depth, water speed, temp, and wind. (Note: wind data is erroneous).
- Wind Speed is apparent only when the GPSMAP is on.
- Wind Data + Other info is being read at TB9-27-28 NMEA COMBINER OUT terminal without issues. Brn wire supposed to go to MULTI, Blue wire to repeater, and blue wire to A/P computer via C7-blue. The C7-blue was misplaced and is now working OK.
- The problem with the MULTI therefore seems to be at the MULTI end. All seems well on TB9.

Also let's check dataflow on the GPS17 data. Possibly we need to restrict output sentences from GPSMAP to the NDC and exclude position info, proprietary stuff, etc.

Wednesday, 17 February 2010 08:13

I finished "fixing" the refrigeration by crimping connection on the yellow wire to the compressor. Note that the black plastic cap was cracked and lost a piece.

Noted fuel overflow from the "Splashguard", possibly due to a loose hose clamp (which was tightened) after fully filling the tank to the filler with the external intake from jerry jugs. I suspect that the fuel leaked out the return hose because of the loose hose clamp. In future it should be best practice to simply not fill the tank so full, or to pump some back so the hoses are not actually acting as fuel containers.

Defrosted both fridge and freezer after the "fix".

Started work on solving problem as to why Alt 2 not working. Found the Alt 2 belt was loose. Tightening the belt seemed to help but I think it's time to change it – indeed to change all the belts. They were last changed in 2006 and the rubber just gets hard.

That might have fixed the problem, but it turns out something is amiss in the Regulator switch wire (brown wire) which should be 12 V. This circuit passes through the Main Batt Sw AFD, the cockpit switch, and then to the regulator. The problem so far is I can trace continuity back to the ER but still cannot find the 12V power. With eng on and relays all functioning there should be power at Pin 5 (brown). I will tackle it again in the morning. Time for a steak and a movie.

Thursday, 18 February 2010 00:41

Circuit issues where with the Cockpit Panel Alt Main switch. Flipping it back and forth a few time seemed to make it work, but it should be slated for replacement.

Testing the alternators & regulator produced the following information:

- With both alternators connected the field wire (blue) showed ~6.0VDC.
- Output from Alt 2 (100A) was about 70 amps at engine 1800RPM.
- Output from Alt 1 (165A) was 45 amps. A full field test put out 50 A.
- Next test was Alt 1 with measuring single outputs by removing the bridge. Each side unbridged will generate 45A. I just read in the manual "DO NOT OPERATE without each main output terminal connected to a battery or bridged". It did not seem to change things as the 45 bridged output is still there.
- Combined output is 115A at 1800 RPM, which is basically Alt 2 @ 70A and Alt 1 @ 45A.

So it appears that Alt 1 is not running at full output.
Alt1 is a Balmar 94175 (Series 94, 175A)

Friday, 19 February 2010 08:02

Repairs made to Alt 1:

- Replaced both bearings
- Replaced 1 Diode which had corroded pigtail
- Replaced bushings
- One plastic standoff base was destroyed – this will be replaced with epoxy to hold the standoff.

Saturday, 20 February 2010 09:09

Today we reassembled the 175A alternator but under load it was just the same as when we started. No joy.

All drive belts were replaced on the engine: raw water, fresh water/alternator 2, alternator 1 (2 belts).

Thursday, 25 February 2010 05:42

1. Finished fixing reefer compressor power problem:
 - a. It was clear the original terminal connectors would no longer work.
 - b. Fabricated new hold-down for temp sensor out of ½” Delrin™ sheet. See reefer wiring Visio file for the template.
 - c. Installed new access plate closer to the compressor.
 - d. Used Aussie “ground lugs” – brass double connectors – with plastic insulating covers – to connect what was left of the terminal connectors to the spades coming out of the compressor. I think that high-temp butt connectors would be better but I did not have any.
 - e. It seems to be running fine.
2. Changed Fluids:
 - a. Honda outboard oil.
 - b. Honda EU2000i generator. Also inspected air cleaner.
 - c. Changed engine coolant. Used “extra-long life” mono ethylene glycol. Supposed to last 4 years. Mixed at 50/50 “extra strong” because I did not want to keep the partial jug.
3. Changed way the back panels in the galley are fastened. They are now held in by a single knob and grooves at the ends.

Friday, 05 March 2010 06:56

1. Alternators
 - a. Both were sent to repair in Sydney.
 - b. Both were returned as failed. On re-installation the 100A performed up to specs, delivering 80 amps of power.
 - c. New 210AH alternator was ordered from Balmar for \$500 even plus shipping.
2. Weird goo on the PVC fabric of the dinghy tubes.
 - a. We are told this is from UV and that it is not warranted.
 - b. We are told by Active Watersports in Brisbane that we should use tube covers.
 - c. We are told that isopropylene and “Morning Fresh” detergent would help some.

Thursday, 11 March 2010 07:25

1. Installed Shurflo 8008-943-839 pump in watermaker as lower pump. This was sourced from Depco as being much cheaper than the pump from Spectra, but it lacks the cooling fins. I don't

know if this is a problem. The cooling fan collar was designed to fit over the fins, but without the fins I had to add 3 set screws to hold the fan in place. I think it will work fine! Maybe I can find some heat sinks someplace to glue onto the pump.

2. Andrew at Balmar wrote to say he had a 210A Stator for the 175A alternator, so I ordered it. If the Wanker at the Sydney electrical rewinder had not reported the old one DOA I would not have ordered a new one. I believe the old 175A had good diodes and new bearings so should work fine if I just install a new stator.
3. Yesterday I observed that the two stainless tangs that connect the roller furling drum with the forward chainplate fitting were BOTH cracked, on opposite sides. The crack has shown up exactly on the bend line where the S-bend was made. The lack of a 4-way articulation at the point where the two tangs are pinned to the chainplate was always a worry; Brion Toss had even mentioned it years ago. The solution as I see it is to add a new toggle which I have ordered from the USA (Schaefer 5/8" double jaw 93-88) at a good price and Railmakers NW is making two tangs from some 2" x 1/4" stock that they have. It will be a LOT cheaper than whatever I can get here in Oz. With the double jaw toggle there is no need for any bends in the tangs so with the additional articulation and no bends the new system should be fine!

Tuesday, 16 March 2010 00:32

- Changed battery configuration. #4 offline.
- Changed Propane Tank

Thursday, 18 March 2010 04:13

Back to testing the NAV system.

- Heading sensor was not working, but AIS was working. After "messaging about" the HDG sensor started working again with test port connected directly to HDG/AIS on TB9-34-35 @ 4800 Baud. AIS not visible but we are likely not picking any up in our current location. There seems to be a loose connection in the red wire TB9-32, which connects the AIS with the HDG sensor. Look at the green light on the AIS to determine if the HDG data is coming in. It flashes when data is being received.
- Added output from TB9-34-35 to the CNET and it has appeared on the MULTI. AIS/HCHDM/IIMWV/WIXDR along with direct output from the GPS.
- Turning on the GPSMAP has added more sentences to COM4, including depth, water speed, temp, and wind. (Note: wind data is looking better).
- Wind Speed is apparent on the MULTIO only when the GPSMAP is on.
- Wind Data + Other info is being read at TB9-27-28 NMEA COMBINER OUT terminal without issues. Brn wire supposed to go to MULTI, Blue wire to repeater, and blue wire to A/P computer via C7-blue. The C7-blue was misplaced and is now working OK.
- The problem with the MULTI therefore seems to be at the MULTI end. All seems well on TB9.

Also let's check dataflow on the GPS17 data. Possibly we need to restrict output sentences from GPSMAP to the NDC and exclude position info, proprietary stuff, etc.

Next:

1. Move MFD Output from TB9-35 (BRN) to NSW Ch1
2. DONE! Nav is working.
3. Red wire which is AIS unit serial port RD (from HDG sensor) was dodgy. I think it is fixed, but it's such a fine wire. I need a robust DB-9 connector with bigger wires. I should have enough parts to make one. So – NOTE: IF HDG STOPS WORKING AGAIN CHEC THE RED WIRE ON TB9-32.

Monday, 22 March 2010 06:44

Installed new Balmar 94-210-12 210A main alternator. Tightened all bolts and belts on both alternators. Exciter wire are kludged together but will get fixed once I get some new QC terminal strips (on the way).

Wednesday, 24 March 2010 21:49

Talked to Milltech Marine about SR-161 issues. The problem is that the buffer is being saturated before it has a chance to clear. Much of this is due to running the SR-161 at low speed plus using the buffer. So, disconnecting the HDG data line and reconnecting it (e.g. via a switch) definitely works. Also, toggling the NSW "reboot" switch a few times appears to work also. In an area of high AIS input the whole unit could get overloaded.

Solutions:

1. **Leave as is, and use "reboot" switch toggling to get the buffer cleared and HDG data flowing.** I went with this solution.
 - a. It works.
 - b. It involves minimal changes.
2. Move HDG data to another port, separating it from the AIS.
 - a. Reconfigure the NSW as an NDC and use it to multiplex the HDG and AIS data.
 - b. Buy a new multiplexer.
 - c. Use the old 8-port multiplexor (or sell on eBay)
3. Figure out how to use the GARMIN port as a high speed port. Can this be done in Garmin mode?
 - a. This can be done, but it involved switching configurations of the PC Nav Software and the Garmin each time an upload/download is desired.
4. Make HDG power switchable. (this did not work).
5. Put toggle switch in HDG sensor data+ line. This works if you rapidly cycle the data. I used a DIN rail disconnect in the terminal block next to the HDG sensor. This works. I could move the toggle function to the Reboot switches near the companionway on the Data Panel.

New Feature:

As part of this NAV rebuild I routed the HDG sensor data wire to the Network Panel and a new switch. This AIS BYPASS SWITCH when ON will power the SR-161 AIS and disconnect the HDG data bypass. In the OFF position the AIS is powered off and the HDG data bypass is connected to feed the HDG data directly to both the MFD and the NDC.

Friday, 26 March 2010 03:35

Updated all Garmin Units to latest software with:

Garmin Marine Network Update with Garmin Card software version 2010.0301.

Sunday, 28 March 2010 06:02

Finally!!! The weird issue of why the MULTI does not display wind data when the GPSMAP is off – SOLVED. It's (wait for it) a CONFIGURATION ISSUE. If you are trying to display TRUE wind speed, then it needs data from the GPS unit to calculate it (e.g. SOG). Setting the MULTI to display APPARENT wind angle works fine.

Also noted that the signal and power ground from the HDG sensor can act as a ground for the CNET system. So those have been moved to the common ground. The switched ground from the Network Panel CNET Reboot switch is now working OK.

Next steps for electrical work:

ELECTRICAL WORK PLAN

1. Refrigeration Controls
 - a. Replace dead timers and counters ✓
 - i. Hour meter for refrigeration.
 - ii. Cycle counter for refrigeration.
 - iii. Cycle counter for bilge pump.
 - b. Install RESET buttons for reefer hour meter/cycle counter and bilge counter
 - c. Install RESET button for bilge cycle counter
 - d. Install Short Cycle Immediate buttons for refrigerator and freezer thermostats.
2. Add auto-ON feature for engine room exhaust.
3. Clean up Inverter control select box. Mount under nav panel.
4. Re-fasten active VHF antenna switch inside NAV panel.
5. Connect the Sounder Switches (WHY?). Not needed as sounders work fine together.
I have decided to leave it off.
6. Short Cycle not working for Refrigerator (was bad terminal crimp)
7. NAV System – Wind not working (was loose wire)
8. Other Reefer Issues
 - a. Reefer Power Panel
 - i. Install reefer ammeter unit.
 - ii. Change reefer circuit breaker.
 - iii. Error LED moved to here!
 - b. Move Fuses to the control box
 - c. Use black Delrin plate as panel face.
 - d. Order new raw water pump.
9. AC
 - a. Panel lights on switch panel not working. ✓ (Bulbs burnt out – ordering new ones)
 - b. Water Heater seems to stay ON when running battery only. Does this have something to do with 230V?
 - c. 230V Inverter Bypass Switch needs to be installed
 - d. 2nd toroid on 230V switch panel needs installation
10. DC
 - a. Change Fuse Block 1 and 5
 - i. Move Diesel Heater to inline FB
 - ii. Move DC Main Panel Bus to 30A OPB
 - iii. Move Refrigerator to Direct Bus
 - iv. Add distribution post for DC MainPanel Bus
 - b. Clean up wiring in “alarm box”
 - i. Replace old Euro style connectors with DIN rail terminal blocks
 - ii. Screw down alarms
 - iii. Clean up wiring and fuse box
 - c. install fascia board in alarm area.
11. Propane Sensor
 - a. Install repaired propane sensor unit
 - b. Install 2 sensors
12. Nav Station Panel and Radios
 - a. Make panel face close better.
 - b. Microphone Clips.
 - c. Fix VHF Mic with new cable.
 - d. BBQ Light comes on when Pump Power switch is off (why?)
 - e. Investigate vampire loads
13. Cockpit
 - a. Instrument Pod on companionway hatch.
 - i. Install GARMIN GMI-10 display
 - ii. Find back cover
 - iii. install the back cover for the Instruments Pod
 - iv. Find connectors for CNET
 - v. See if there is any way to clean the old instruments.

- vi. Plug the holes (with dead instruments??)
- vii. Setup CNET or pass-thru NMEA in the Instrument Pod
- b. Command Mic Install
- c. Autopilot Handheld Repair and Install

Monday, 29 March 2010 08:30

Today I managed to install the GARMIN GMI-10 instrument and it is displaying wind data fine. It does NOT display the air temperature even though it has a screen for it. I think the CVF3 wind unit has a weird NMEA sentence structure.

The day started with another reefer failure. This time it was a failed (actually melted down) 7.5A fuse that powers the fans and pump. Possibly it was under-rated for both fans and pumps so I bumped it up to 10A, but also changed out the ATO fuse block, which was a bit corroded looking. I think it is catching condenser water from a reefer line overhead which has lost its insulation. I have put that on the list. DONE!

Saturday, 03 April 2010 22:48

Kathy started on the winch servicing:

#	TYPE	LOC	WINCH	DATE COMPLETED
1	B32.2ST	Cockpit	Control Lines	3 April 2010
2	B40.2ST	Cockpit	Port Secondary	12 April 2010
3	B40.2ST	Cockpit	Starboard Secondary	12 April 2010
4	B40.2ST	Cockpit	Mainsheet	11 April 11, 2010
5	B56.3ST	Cockpit	Port Primary	17 April 2010
6	B56.3ST	Cockpit	Starboard Primary	18 April 2010
7	B32.2ST	Boom	Reefing	6 April 2010
8	B40.2ST	Mast S	Main Halyard	6 April 2010
9	B32.1ST	Mast P	Spinnaker / Genoa Halyard	6 April 2010
10	B16.1ST	Mast P	Staysail Halyard ²	12 April 2010

All winches have had the preservation tape on the winch base (used as a dielectric medium) replaced. It was getting dirty and goeey. Greasing was lighter than before (which I believe is correct). The mast winches appear to have more need of servicing than the cockpit winches which is not unexpected.

Lessons learned while servicing the winches:

1. They need to be done at LEAST once a year. These were last serviced in Mexico in January 2007, almost three years ago. They looked it. No harm done, but they may have received more wear than normal. I expect most sailors never service winches.
2. I noted that the control line winch was in much better shape than the others.
3. Winches should be rinsed regularly with fresh water
4. The bronze should be **polished monthly**, if not biweekly, or at least rinsed and rubbed down after sailing.
5. The fasteners are METRIC, so make sure to use a metric hex wrench on the Bottom Screw.
6. The 56.3ST primaries have a retaining ring that holds the center piece with the ball bearing detents inside. DO NOT TAKE THIS APART. Try to grease and lube without disassembling this. If it is required, then the chrome Logo Plate needs to be hammered off the Upper Drive Ring. Do this using the Handle Socket but offset so the splines don't catch.

Sunday, 04 April 2010 08:44

² The Bottom Bolts were very hard to remove (remember they need a metric hex wrench). With the B16.1ST it had to be drilled and extracted. This enlarged the hole to the point where it was necessary to oversize the hole and tap for 1/4-20 flat head machine screw. This should be put in with Loctite. I think it will be fine – this is the lightest of all the winches – and next time we will be more careful about the kind of hex wrench used.

Completed work on reefer counters, timers, and short cycle immediate buttons. Also bilge pump cycle meter. The new counters and timers did not have built-in reset switches so I had to add NO pushbutton switches. These did not quite poke through far enough to fasten down with the nut because the panel is so thick. I used a drop of super-glue to hold them in. BAD IDEA! Too strong. One failed and I had to take it out and in the end this meant drilling the switch out. Now I am using a drool of hot glue to hold the switch in place. I had to do this as well with the Carel digital thermostats, as the Short Cycle Immediate switches were too close to the thermostats to allow the panel clip to work. It's kind of messy but it works and it is removable.

Tuesday, 06 April 2010 20:07

Finished work on the wiring and mounting of the Inverter Select Switch.

Noted refrigeration short cycle not working and now the refrigeration pump is offline.

Sunday, 11 April 2010 00:50

Reefer working from Wed to Sunday. No problems. Might be brushes. Should I order a new pump??

Went to work on cleaning up the new forestay tangs. As shipped from the manufacturer (Railmakers NW) the holes were too small for the clevis pins. I used a strip of sandpaper taped to a mandrel (actually a hex-driver extension tool) and this was enough to remove the 1/1000" or so needed. I took it down to 320 grit.

In looking at my new design for another toggle at the chainplate and shortened, straight tangs (see design drawing) both the toggle and tangs are much lighter than what I am replacing. The tang material is 3/16" instead of 1/4" and the toggle is lighter too. However, the toggle is rated for the wire size (3/8" and 17,600 lb breaking strength) and the tangs calculate out at 26,500 lb breaking strength (2 x 2 x 7/16" x 3/16" x 80000 lbs/sq.in. = 26500 lbs). So, they should be adequate, and since they are not bent anymore and are properly articulated, they should not bend anymore.

Spacers for the tangs were made from 1/4" StarBoard™.

Electrical work is almost done. Except... I keep adding more.

Sunday, 11 April 2010 21:55

Battery #1 put on standby.

Sunday, 18 April 2010 08:18

1. Progress made on electrical work.
2. Propane sensors installed in engine room and near the oven (below the sink under the toe space).
3. Propane control re-installed.
4. Reefer working just fine with new power panel and error signal installed.

Wednesday, 21 April 2010 20:25

Finished re-wiring the engine and bilge pump alarms, propane sensors, controls and auto circuit for engine room exhaust fan.

Saturday, 24 April 2010 20:04

One of the primary winches was not working right. After taking apart both winches again we found an upside-down gear. Everything is OK now with the winches.

The Settee is free of stuff for the first time in six weeks.

I made a fascia to cover the back of the galley mid-ships locker and for the first time in years there is no rat's nest of wiring in the locker. Aside from the cleanup and replacement of several separate terminal connectors with a DIN-rail terminal block, new functionality was added:

- Engine room fan now runs automatically when engine is on.
- LED pilot light for engine room fan
- Propane sensors are sensibly located below the stove (new sensor) and in the engine room (old sensor)
- Alarm buzzers now fastened down to the backboard
- "Painfully loud" alarm siren is mounted (but not connected).

Sunday, 25 April 2010 00:55

1. It has been raining and a couple of interesting things are noted:
 - a. The small piece of foam in the corner of the Lewmar hatch has stopped its leaking, including no leaks noticeable on the deck tension bar.
 - b. The larger leak in the corner of the galley is obvious. Also noted a new leak from the stainless shield over the stove. I suspect the problem is one or more portlights on the port side or a deck fitting or splashguard fastener that has not been filled and re-drilled.
2. BBQ Gas Issues
 - a. The propane gas circuit is such that the BBQ gas is not in any way controlled by the S-2A propane controller and gas detector.
 - b. If the BBQ is on it opens the solenoid valve, which is under full tank pressure. When the BBQ is turned off there is still a lot of propane in the lines. It probably should be left to burn off, but if we forget to do this it would leave it open at the BBQ end. Also, if gas is detected by the SA-2 it shuts down the stove. The BBQ is NOT shut down, so if using the BBQ and we heard the fume alarm, then we would have to remember to turn off the BBQ right away!
 - c. To properly design a safe BBQ we would need:
 - i. N/O Pressure valve to turn off solenoid once the BBQ burns off.
 - ii. Momentary button switch next to the OFF-ON switch over-rides pressure valve "off" and fills the line. Once pressure valve is activated, solenoid will stay on.

Thursday, 29 April 2010 23:33

Active Water Sports in Brisbane has agreed to exchange the RID tube for a new one. I may be able to get a Hypalon™ version (no longer made) from the USA for \$1199, and sell the PVC version (current RP \$1355) on eBay in Australia.

Tuesday, 04 May 2010 08:59

Today the starter rope broke on the Honda EU2000i. This involved a near dis-embowling of the generator. I replaced the rope with an Amsteel one.

For future reference:

1. Remove the screws holding the handle together
2. Remove the black trim fascias at the base on either side.
3. Remove the long bolts holding the sides together at the bottom on either side of the red side covers.

Remove one or both end plates. The electrical socket and control plate does not need to be removed from the black plastic end cover. The end cover can be removed and the electrical plugs disconnected.

Monday, 10 May 2010 09:40

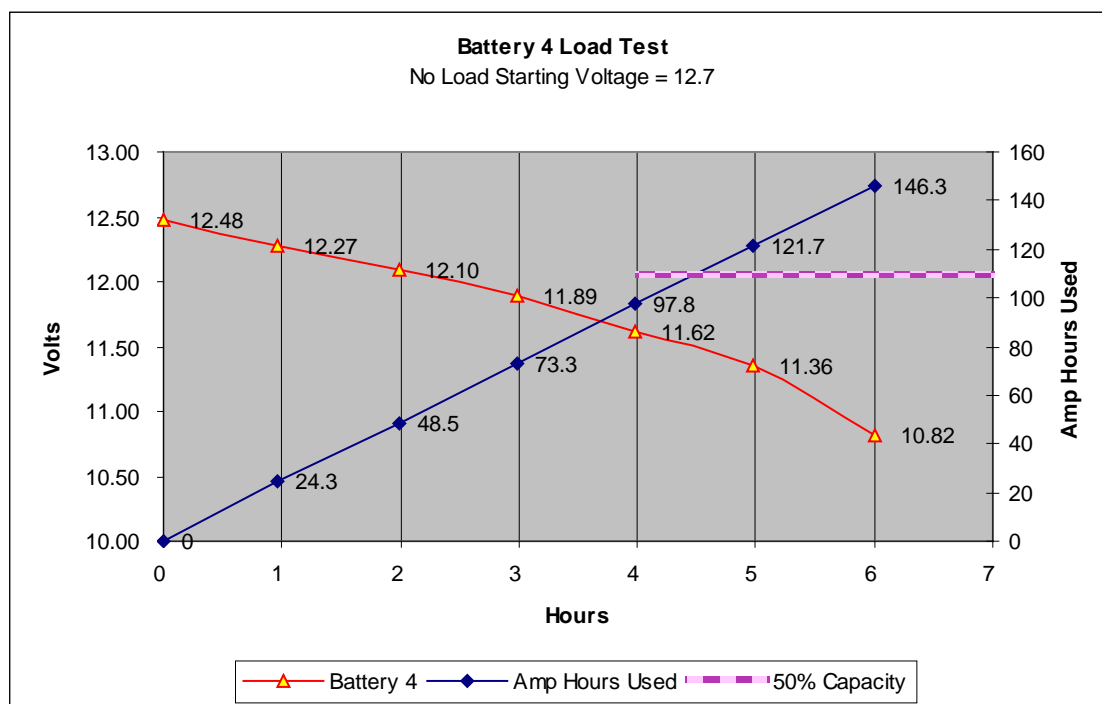
Filled 2 propane bottles in Berowra NSW, 9kg each.

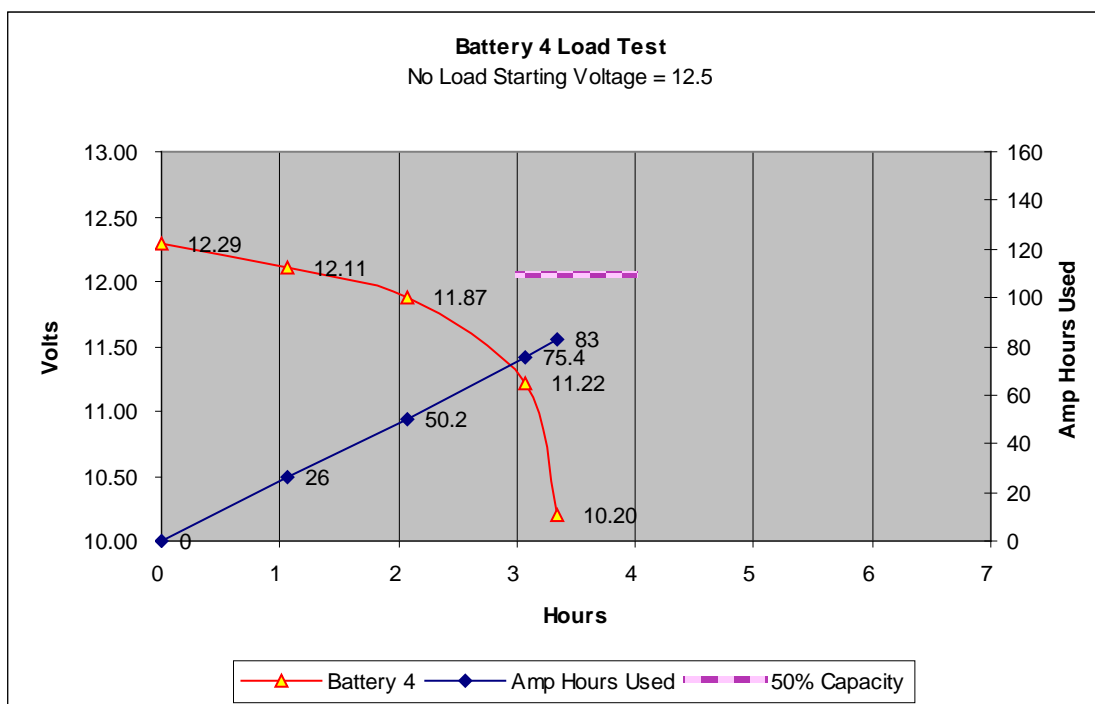
Moved computers back to the Nav Station

Monday, 10 May 2010 23:44

Batteries appear to be deteriorating. Batteries are now dropping to less than 11 volts at a discharge of 260 AH or so. This is down a bit according to the records. Battery 4 was swapped out and Battery 1 was placed online last month and that's when the troubles started to appear. Possibly Batt 1 is not good. We are commencing load testing to see if this is a problem with just one or with all the batteries.

Battery problem analysis: Deep cycling of these batteries, plus parallel string degradation, has led to a decline in capacity. However, the batteries are NOT dead because a 12-hr resting voltage test is 12.7 on all 4 strings. The load tests tell this story. About 60AH is the max we can draw out of a single string, which means that if we can not let the AH get below 150 we might make these last a bit longer. Compare the Aug 2009 load test with the May 2010 load test.





We need to be more watchful of battery consumption.

- Refrigeration management
 - Run during charging in morning and afternoon.
 - Leave lids closed after final charge and until morning.
 - Refrigeration OFF switch (i.e. Reefer defeat)
 - Fix refrigerator box circulation fan
- Computer
 - Turn off computer monitor when not in use.
 - Hibernate or Standby for computer when not in use.
 - Turn off all wall wart chargers.
- Remove DC chargers when not charging.

Use Wind Vane when sailing

Monday, 17 May 2010 07:43

Today I installed the new Jabsco large diaphragm pump in the forward shower sump. I also upgraded the fuse to 10A and relocated the fuse box upward to allow the cover to come off easier. Mostly I have been working with business and parts orders. Forward progress on the boat is slow but I am preparing for two new solar panels, an oil bypass system, and a bookshelf forward and port in the forward cabin.

Sunday, 23 May 2010 08:30

- Replacement of deck switch lid for anchor windlass foot switches.
- Installation of under-sink light
- Replacement of halogen light over the sink (one bulb socket was burned out)
- Starting bypass oil filter installation.
 - Need to find place to mount it.

Tuesday, 25 May 2010 05:57

Finished installation of oil bypass filter. The input is off the oil pressure sensor manifold (aluminum block). The outflow is teed into the oil drain hose. Note no hose clamps on hoses to sump (no pressure) side of sump drain hose.

Tuesday, 25 May 2010 20:59

I noticed that the 2/0 feed line from the alternator was warm at 40°C. The 4/0 cable to the batteries was also warm but just barely so, about 30°C. Need to check bolt torque on the terminals.

Thursday, 27 May 2010 11:25

Beginning 10 hour 15.5 vdc equalization charge on all battery banks. Batteries were fully charged after 2 hrs motoring and 11 hours at the dock.

Thursday, 27 May 2010 21:25

Ten-hour equalization charge completed. Batteries are offline to allow for resting-voltage test. Using Outback charger as power supply.

Friday, 28 May 2010 20:34

Testing batteries after 23-hr resting period.

After a 10-hr 15.5vdc equalization charge, these are the results:

RESTING VOLTAGE TEST - 23 HOURS				
Battery	1	2	3	4
Volts	12.80	12.81	12.83	12.82

Every time we do this equalization we lose Hydrogen and Oxygen.

Andrew Finkelstein is recommending another heavy equalization but Tom Duffy at TheSolar.Biz says we should wait 2 to 3 weeks before doing this. Andrew says 12.85 to 12.9 is resting voltage for a fully charged new Lifeline battery. We are not going to do a 25amp load test. 12.8 is almost new, especially after a 23-hour rest.

Batteries 2-3 are online. Battery 1 is offline.

Subsequent records indicated at least a 40AH increase in capacity for three batteries.

100amp Balmar alternator is re-installed with new bearings.

CURRENT FX CHARGER CONFIGURATIONS

- 3.0 hours absorb limit **changed to 4.0**
- 14.3 absorb voltage **changed to 14.7 on 110V and 14.5 on 230V**
- Equalize setpoint 15.2 V **changed to 15.5**
- Equalize time period 1.0 hrs **changed to 10.0 hfx**

CHARGER CONFIGURATION	FX2012M T(110V/60HZ)	FX2012ET (240V/50HZ)	SOLAR CC Blue Sky 1225i	Balmar MC612 Regulator with 210A+100A Alts.
Maximum Amp DC (Shore)	90 adc	100adc	n/a	n/a
Max Amp DC (Off Grid)	90 adc	n/a	20 adc	190 adc
Charger Limit	12 aac	6 aac	25 adc	n/a
Absorb Setpoint	14.7 vdc	14.5 vdc*	14.2 vdc	14.18 vdc
Absorb Time Limit	4.0 hrs	4.0 hrs	2.0 hrs	36 min (minimum)
Float Setpoint	13.2 vdc	13.2 vdc	13.2 vdc	13.38 vdc
Float Time Period	1.0 hrs	1.0 hrs	n/a	6.0hrs
Refloat Setpoint	12.5 vdc	12.5 vdc	n/a	n/a
Equalize Setpoint	15.5 vdc	15.5 vdc	Disabled	Not used
Equalize Time Period	10.0 hrs	10.0 hrs	Disabled	Not used

* This is lower because the 240V charger is generally only used at the dock.

Sunday, 06 June 2010 21:39

We have been using the newly equalized batteries. We only have one day of autonomy, if that, but I can keep the batteries above 12v. Since the float voltage has been increased we are able to fully restore the lost amp hours, but it takes some time to get the last 10AH and I am concerned about the high voltage. All recommendations I used to hear were to never use a voltage over 14.2 to 14.4 and now the absorption point is set at 14.7! I just realized that a ten-hour equalization could seriously impair the starting battery! I hope I took it offline when I was equalizing. Frankly, I cannot remember. 50/50 odds on that.

I fixed the broken oar today by using an alder wood spline. Kathy had threaded the blade behind the swim ladder and snapped it right off.

Also, finally, I replaced the sharp foot-slicing diesel heater exhaust deck fitting with a smooth one and, at the same time, finally installed the custom aluminum through-deck fitting for the exhaust flex. It is COLD here in NSW and we are using the heater.

As I write this, a fitting or hose has blown in the forward head and hot water has been blasted everywhere. A programmable relay on the water pumps to alarm when they run more than a given amount of time would help. I have designed this.

Thursday, 10 June 2010 21:30

Noted error condition in the Propane Sensor. It would cycle through all lights, activating the solenoid as it went. Cycling power did not help. Activating the "Sensor Test" buttons seemed to fix the problem.

Thursday, 10 June 2010 21:31

Noted from the KP44 user group – Hawse pipe leaks. Better see to it!

The Hawse Pipes (Where the ropes go through the hull for the dock lines) where the major contributors to our leaks on the boat. The 2 in the back of the boat where

getting our aft cabin bed wet from both sides. The middle ones where getting the instrument panel area and refrigerator area wet.

After taking them out we could see that the water was getting into the deck joint and there was a gap between the underside fiberglass that seals the deck and the hull. This gap was allowing water to literally pour into the boat.

We took the hawse pipes out, sealed the area with thickened fiberglass and reinstalled the Hawse pipes with chalk. No more leaks!!! Also look where the teak cap rail goes over the deck joint on both sides . We found 4 spots where the fiberglass dipped down like a v and was allowing water to get into the deck joint. We sealed these with chalk and the boat has been so much drier is it amazing. Good Luck!

Monday, 14 June 2010 02:55

Temperatures noted on warmed up diesel:

Alt 2 (100A) 62°C
Alt 1 (210S) 40°C
Bypass Filters 45-50°C
Oil Filters 92°C
Freshwater 82°C

Monday, 14 June 2010 02:5

Today I lost a fitting for the watermaker (in red). It is a “Fast-Tite” fitting from Parker-Hannefin. All in black polypropylene, ½” tube to ½” pipe.

P8NS ½” Nut and Spacer Replacement Set

P8ME8 ½” tube to ½” Male Pipe – Elbow, Tube to Pipe

P8MT8 ½” tube to ½” Male Pipe – Branch Tee

8GR – stainless grab ring

8OR – ¼” O-Ring

4GR – ¼” stainless grab ring

4GR – ¼” O-Ring

PARKER HANNIFIN (AUST) PTY LTD
AUSTRALIAN HEAD OFFICE
9 CARRINGTON ROAD
CASTLE HILL
NSW 1765
AUSTRALIA

Part was found – on deck. It was difficult to get the tube tight again. I think I should buy spares as above.

Monday, 14 June 2010 06:35

Repaired the awning and the dodger was re-stitched by (stitched over) by Paul Rudge at the RPAYC in Newport, NSW. \$200.

Oars and dinghy chocks were painted by Kathy and Kailia.

Watermaker flush showed watermaker running at 15PSI with jumps to 40PSI. Product flow gauge was less than 5 GPM and no water came out of the service flow for over ten minutes, then a little bit was flowing. It did NOT smell.

Tuesday, 15 June 2010 21:15

Talked with Spectra re. watermaker and it appears that the low pressure readings means air in the system. We will try to run the watermaker while offshore today. It should run 40+ lbs with 1 pump and 80 with two pumps. Run one pump at a time with the pressure relief valve open. Other things to do:

- Replace all filters. Make sure carbon filter is not clogged. Should be changed every 6 mo, they say.
- Check/clean plankton and raw water filters.

Changed Battery Config: #1 online, #2 offline.

Ran out of Propane. It has only been 5 weeks since the fill-up. This is not right.

Wednesday, 16 June 2010 02:37

Primed watermaker for some time with seawater while heading South to Sydney from Pittwater. Bubbles appear in the pleated filter at the top when both pumps running. Pressure while priming was 15PSI with 40PSI during CP shifts. De-salinated water was 470PPM, which seems high compared to previous readings of around 350PPM. I am now running product water into the tanks. Product Water Flow is 3GPM on one cycle and 6GPM on the opposite cycle. This might indicate a problem with the Clark Pump. Will contact Spectra about this tomorrow.

Wednesday, 16 June 2010 21:35

I DID NOT NOTE THE PRESSURE. DUH.

The Clark Pump should not shift irregularly. If it produces water and the pressure is normal then it's OK. The new pump is a rated pump and it's OK to use. The diagnosis of the asymmetric product water flow requires noting the pressure on each shift. Also, 470PPM is good clean water! No problem there.

Sunday, 20 June 2010 06:54

Started on the new wiring on the stern for solar and aft deck lights.

Made pattern for Walker Bay Tube Chaps.

Tuesday, 29 June 2010 09:02

Worked on trying to finish the solar panel mounts. Did not succeed in time – we are leaving for Nouméa 1 July.

Designed and built controller for aft transom and deck lights which allow transom switch to control both lights.

Watermaker statistics:

PUMP	PRESSURE	GPM
1	60-65	3
1	75	6
2	65	4
2	75	6
1 + 2	85	10

Ball does not fall so swiftly as it used to., With both pumps on it does not drop at all. Clarke Pump shifts with a 10 PSI upward jolt lasting about ½ second.

TECH SUPPORT

Annular ring crack or piston rod seal. If I pull the test port (allen bolt between two high press fittings).

If it pulses on shift (squirts) that means a piston rod seal is bad. Crack annular ring is in the center block of the valve body on top (a white ring). If it hisses it might be that.

Wednesday, 30 June 2010 08:02

Walker Bay tubes treated 29 June.
Cleaned Engine Air Filter. 4½"Hx4½"Wx1½"D

Thursday, 01 July 2010 23:04

Underway to New Caledonia. All systems nominal.

Noted bugs: HF Radio not showing position. Position not available to the sailmail system.

Tuesday, 06 July 2010 03:49

We left Newcastle NSW 02 July at 0600.

Today cleaned saltwater out of fuel tank on the EU2000 genset. It still would not start so we tried a new spark plug. It then started right up. The existing CR4HSB NKG spark plug was replaced with a CR5HSB NKG which we had aboard and looks the same.

Day 2 saw huge seas up to 7m. We were running downwind with just the storm staysail. Earlier the second reefing line broke and had to lower the main under sail and wrap it up with a spiral of line as we could not envision going INTO the wind with those mountainous seas. The main also had a detached batt-slide at the top. Praise the Strong Track. We only have 2 reefs so we did not want the main up

Day 3 we got the storm trysail up and the seas abated somewhat so it was much more comfortable. First time using the storm jib and trysail and it worked great with a small glitch (lazy jack in the way). I can fix that with a snap clip for next time.

Day 4 (today) we have 20k winds from the south. We fixed the batt-slide; strangely the cotter ring that holds the tiny clevis had vanished and the batt-slide was disconnected from the sail slide, but THE PIN WAS STILL IN PLACE. Last year K and I made sure all the cotters were on the bottom. This turned out to be a good idea. The loose pin must have jumped up, released the slide, and then dropped back in.

The main is back up (reef #1 only), the furling jib is out at the 2nd reef, and we are doing a very nice 8+ knots to the NW on a beam reach with our South Wind. Yesterday's GRIBS are predicting some light SE and then very light (maybe calm) conditions towards the end of the trip. I haven't gotten today's GRIB file yet but will do so with the next email session. The wind has been abating slightly and barometer going up so I am thinking the low over the Tasman is starting to move east. Not sure how long this means for the good wind we now have. I kind of expect the last few days to me motor-sailing or drifting days.

Under weigh we have been experiencing numerous other glitches.

1. Spice rack shock cord is worn.
2. Spinnaker Tack needs fixing! The pendant line has to lead through the block with a fair lead and no chafing.
3. NAV/GPS Glitches
 - a. SSB Radio was not getting GPS data; but now it seems to be working. Don't understand these GPS glitches
 - b. Wind data has three states: working / bad data / not working. Lately it has been working except for a "Lost GPS Data" every few minutes and then it comes right back.
4. Need pressure cooker part
5. Reefing
 - a. Install new 2nd reef line.
 - b. Need to change how reefing works:

- i. Lead to cockpit
 - ii. Move winch off the boom to the mast and use the two flip/flop blocks plus line clutches control and provide fair lead to the boom winch.
6. Storm trysail
 - a. Continue to work on bag.
 - b. Add snap clip to lazy jack line
7. Clips for sliding doors are required
8. Lubricate main companionway hatch
9. .Fix broken sea berth
10. Replace pilot light on main panel for AFT CABIN LIGHTS
11. Forward head door needs to have a way to keep it open so it can dry out.
12. Forward and aft toilets should have local ON/OFF switches installed.
13. The automatic NIGHT ON / DAY OFF function should be extended to the NAV lights
14. Repair starboard flag halyard – the second halyard pulley has pulled off
15. Add wool telltales on the furling jib so we can see them when jib is furled.
16. Inspect / Repair leech on jib. Fix access to the leech line.
17. **INVESTIGATE POSSIBLE GAS LEAK. The gas eyes are NOT pressurized when solenoid is energized.**

Friday, 09 July 2010 02:29 100 miles from Noumea

1. Today Kathy cleaned with Salt-X and polished all winches.
2. Determined that we would move two jerry jugs to the rail over the fresh water fills if raised up to cap-rail level.
3. Added clip to stbd lazy-jack line to allow raising of trysail. Noted that line cover is almost at end of life.
4. Added a buried light line in the running back deck line to allow the shackle block to be snapped to the stanchion base and hauled tight for stowage.
5. Kathy found water under the drawers and lockers. Water could be coming from:
 - a. Anchor pipes
 - b. Hawse pipe leakage (other KP44 have reported this)
 - c. Portlight over stove was left open.

ANSWER: None of the above. It was freshwater fill hose leak).
6. Determined that two flip/flop blocks and line snubbers would work for moving control of the reefing lines to the mast.
7. Also for improved reefing a leech block could help, e.g. Ronstan Series 55 looks good.

Series 55 Orbit Ball Bearing Blocks™

Less Friction, Ultimate Performance

Designed for racing boats, ball bearing Orbit Blocks have the highest strength-to-weight ratio available. This is achieved through all-composite, reinforced polymer construction coupled with a UV stabilized Dyneema® rope link head that eliminates heavy stainless steel headposts and shackles. The result is up to 35% weight savings over comparable composite blocks with metal components --- a huge difference. The Dyneema rope link opens for easy attachment to padeyes, toerail, boom bails, eyes, etc.

- Ultra lightweight and low profile
- Highest working load in its class
- Easily fitted and securely retained Dyneema® Link head
- Low friction 2-stage Orbital bearing system ensures easy running with high load capacity
- Doubles and triples have only a single inner cheeks for minimum weight and compactness
- Clean, fully-articulating rubber boot Stand-Up Base allows for conversion of any Orbit Block
- Sheave diameter: 55mm (2-3/16")
- Maximum line size: 3/8"



Order#	Mfg#	Type	SWL	Weight	List
187385	RON#RF55101	Series 55 Orbit Block - Single	1100 lbs.	2.4 oz.	\$29.99

Friday, 16 July 2010 01:39

Inspected roller Genoa and found much thread deterioration on the covers. Kathy is re-stitching.

Determined that the reefing positions are in the wrong place.

Found moisture in the radio compartment. NEED TO GET VENTILATION AND A RAIN HAT.

Found serious chafe in the genoa halyard that has parted the cover and one or two core fibers. The halyard is made of 7/16" Validator SKB and was installed in July 2004. We are also experiencing main halyard chafe. I am wondering if a Spectra cover and a Halyard Ball Stop would improve things. What I would like is one of Brion Toss's step-by-step diagrams for making the splice. This photo appears to be a locked Brummel with a ring-hitch, Spectra Chafe Guard and stopper ball.



Friday, 16 July 2010 22:55

Batteries were drained and re-charged. Could not figure out how to initiate the equalization.

Found missing and loose machine screws in the outboard slider track. Through-bolted each end, but middle machine screw was not able to be reinserted so now only 4 machine screws are holding it on.

Friday, 23 July 2010 01:35

Kathy once again found Serious Water intruding into main cabin port locker 2, working it's way into the dinette coaming and below. Some investigation and testing and suspicion revealed it was from the watermaker and not, thank Neptune, from a deck leak. The watermaker feed lines are tapped into the freshwater deck fill fittings with Fast-and-Tite™ fittings, which were fine, but the really old corrupt green 1.5" hose that led to the forward starboard tank was no longer able to be clamped to the hose barb. Fortunately there was enough hose to cut off the end and re-clamp. This fixed the problem.

Friday, 23 July 2010 04:15

Today we tried the old cruising trick of filling our cooking gas tanks by transfer from a local bottle to our cruising bottle. This was a long process and involved holding the 12kg butane tank from Nouméa up on top of the lifesaver box and trickling the butane through a small hose into the boat's propane

tank. We were able to fill the tank but I think a lot of gas get's lost while bleeding the target tank.

Battery 4 is offline.

Wednesday, 28 July 2010 19:11

Battery 4 is online.

Registrations for both EPIRBS were renewed.

Discovered salt crystals around the diesel heater but we did NOT find water entering through the exhaust even though we had not plugged it. Probably we had water in the coaming then coming down the UNSEALED fresh air vent (the rectangular aluminum tube) into the corner in front of the heater. SOLUTION: seal the vent tube (hard) or put a barrier in the coaming area to keep any water intrusion in the center, drained area.

New gas sensor replaced "defective" sensor in engine room. Finished installing standoffs for the Pump Fuse Block 4. Wood standoffs were used and glued in place with E1000 held temporarily by "hot glue". This is a good technique for epoxy or other glues. The hot glue holds the piece in place until the epoxy or other glues sets up.

Saturday, 31 July 2010 06:34

Finished wiring up the on/off switch for the BBQ gas. In doing so I somehow deranged the switch next to it. I will fix that tomorrow.

Through out a bunch of old clothes to make more room in the closet. It may be we are just a little bit away from having an organized boat.

Sunday, 01 August 2010 01:34

The problem was actually a blown fuse so the switches are working. Wind NAV data died also but it started working again when I reseated the NMEA data plug in the Cetrek Multi. Battery #1 is offline.

I lowered the "OFF" set point for the refrigerator. It goes off at -9°C but still goes on at the same place. It might run 5 minutes longer per cycle, but the box temp has dropped 1 to 2 degrees. The small circulating fan that was fixed appears to have improved uniformity of the box temperature as foods seem colder.

I have noted that the freezer seems to take a much longer time to pull down, but it lasts longer between cycles. AH consumption overall has not changed. I'm not sure what this means. The reefer is still working at it's normal cycles/day and cycle run time.

Thursday, 05 August 2010 09:59

I was going to start working on the lights for the transom, but when I was running the watermaker, I found a leak only when product water is directed to the tanks. We changed all the filters and cleaned the plankton and raw water filters for both the watermaker and main engine. I had to make a new gasket from 1.5mm neoprene for the GROCO SA-500 as we had no spares. I have emailed Chris Kennedy at Fisheries Supply re. sending spares. The strainer on the 1/2" GROCO was full of barnacles and other fouling. The basket was plugged. I think this will improve performance on the watermaker and possibly better cooling for the refrigerator compressor.

Kathy got started on fabricating the tube chaps for the Dinghy.

Saturday, 07 August 2010 01:58

The water maker is running again. I disassembled the 3-way valve that diverts product water to the

Service (galley sink) or Run (water tanks). It was leaking when in the Run position. I re-greased the valve seals and put it back together and that solved the problem. There was some difficulty in re-priming the system but that had to do with properly seating the intake hose for the upper pump. The hose must have been sucking air. Pressure was near zero. By inspecting the sight glass in the raw water intake I could see that zero or very little flow was taking place. It was a guess that the 1/2" tube assembly on the feed water was leaking, but re-assembling the Fast'n'Tite fitting fixed things, so it must have been the reason for the lack of pressure. This unit is very difficult to work with because of all the hoses and wires. Disassembly is hard. But it's back together and working well.

Note that the GPM is unbalanced still, so a Clark Pump rebuild is in the future. The membrane is still making good water so let's hope it lasts a long time.

Kathy was sous-chef which was greatly appreciated.

Sunday, 08 August 2010 03:03

Running watermaker all day; it looks like with 2 pumps there is still a small leak. Possibly the rubbers seals on the plastic ball valve are not rated for the higher pressure. Also GPM is pretty low. For now we will run only with one watermaker pump at a time.

Wednesday, 11 August 2010 09:01

Finished installation of IPN ProRemote in the main panel where the Panda Remote Control Panel used to be. Changed connection on power supply to Solar Amps digital ammeter so it is only running during the day. This was a simple move of the pos. wire to the regulated output of the Anchor Light relay box.

Installed two 50mv/500A shunts on the alternator outputs to supply a new Datel digital ammeter on the main panel to show individual alternator outputs.

Sunday, 15 August 2010 18:48

Today brought two new problems!

1. Failure of the lower bearing on the Schaefer 3100 jib furler.
2. Failure of the Optima 1000m starting battery.

The starter battery failure surprised me; although I had noticed the engine start was a bit harder over the last few weeks. The battery ONLY starts the engine so I figured it should last longer than it has. It was installed 07 Oct 2004 so it has lasted six years. The failure is fairly catastrophic. It shows normal voltage but when any load is applied it delivers zero amps. The Digital Duo Charge unit should limit upper voltage.

The lower bearing has three rows of 25 3/8" Torlon bearings. The bearing rumbles so perhaps if the races aren't destroyed

Monday, 16 August 2010 05:14

Went to Ducos with kind assistance of Eleanor (the car) and her brother Michael Kleiber. I bought a new Excide 34 Gel battery similar to the dead Optima for CFP317000 (about \$340) and also found a machine shop to extract the raceways from the lower bearing assembly of the jib furler. It was very hard going to do this and there was a lot of aluminum corrosion (white powder) and all the Torlon balls had dimples and dents. So it looks like this is a repairable item – all I need to do is clean the components, install 75 new 3/8" Torlon balls, and press the bearings back in place.

Cruising to Phare Amadeé: the positive alternator output terminal was loose on the large alternator. Did I loosen it and forget to re-tighten it? Sounds likely, as it was very loose. The new selectable alternator ammeter is working just fine.

Friday, 20 August 2010 03:04

- Installed a new starting battery
 - Had to downsize the pos cable from 2/0 to 1/0 as the new battery posts are in the center and the old cable did not reach. Should not be a big problem.
 - Exide Maxima Max900.
 - This is a bit taller than the box so the hold-down did not fit until I turned it upside down.
 - Specs
 - Voltage 12 Volts
 - Capacity 50 Ah
 - CCA 900 Amps
 - Length 260 mm
 - Width 173 mm
 - Height 206 mm
- Ordered replacement radiator caps from CDC in Australia and Stewart's Marine in Seattle. I can be sure of the one from Stewart's and it will be sent to Vanuatu. The other is coming to Nouméa. I cut a circular piece of 1.5mm neoprene which seemed to fix the immediate leak. We'll have to watch for this when we start the engine.
- Disassembled the windlass for cleaning.
 - Lots of corrosion in the screw holding the pawl. Probably not TefGel™-ed.
 - The brake cones definitely are over due for a clean. We had to sand them smooth.
 - Kathy did most of the sanding and cleaning.
 - I had to file a small ridge in the keyway – probably left over from the Hoa Huka grounding – and this allowed the cones to move freely. I noted a bit of widening in the keyways on the cones. I don't think it will be a problem.
- Kathy cleaned out the engine and sump for washing and it was rinsed with fresh water.

Saturday, 21 August 2010 01:40

- Re-installed worn out lower bearing unit in the Schaefer 3100 Jib Furler.
 - Taped the halyard with black Rescue Tape to see if where the chafe is
 - Noted our current halyard shackle does NOT fit the upper swivel and a secondary shackle is required.
 - Re-hoisted sail. Checked lashings.
 - Tightened all furler line fairleads.
- Installed Delrin roller inside of the boom on the innermost of the end-boom bails.

Noted that there is some wear (oval) where the stainless bolt goes through the boom. I have ordered some ½" ID stainless 316 tubing (1/8" wall) x 4" to act as bearings for the bolts. I already have longer bolts. The Delrin would need to be re-drilled to ¾" to accommodate the tubing if installed.

Monday, 23 August 2010 04:15

Today I installed the 6' of LED rope lighting purchase in Aug 2008 in Pago Pago. It is nicely clipped with shock cord from the dodger arch to the boom gallows and has its own 12V automobile socket to plug into. The concept is to have it easily removable. We tried it out last night with Eleanor and Michael Kleiber over to make Spaghetti Carbonara.

Tuesday, 24 August 2010 07:44

- Kailia worked on sanding the cockpit coamings
- Kathy worked on sewing projects
 - Throw bag repair
 - Fender cover repair
 - Installed cap access flap on one petrol jug cover
 - Started working on sail cover fasteners
 - Ditty bag for jacklines
- Jeff finished modifying engine room electric panel, helped Kailia and ordered stuff on the

Internet

Friday, 27 August 2010 05:20

Yesterday Kailia and Kathy finished sanding, prepping and putting Dex Olje on the cockpit coamings. They look GREAT.

Jeff installed wiring from the cockpit engine panel back to the transom. Nasty job.

Today moved to the anchorage from the marina at Port Moselle. There is a need to change the battery settings. Digital Duo Charge needs to be reset to GEL for the new starting battery which limits voltage from 13V to 13.9V.

CURRENT CHARGER CONFIGURATIONS

- 3.0 hours absorb limit **remains at 4.0**
- Absorb voltage **changed back to 14.6 on 110V and 14.2 on 230V and (new) 14.5 on solar**
- Equalize setpoint 15.2 V **remains at 15.5**
- Equalize time period 1.0 hrs **remains at 10.0 hours for chargers and set at 1.0 hrs for solar**
- Start battery – Digital Duo Charge set to Gel program: ON at 13.0V OFF at 13.9V.

CHARGER CONFIGURATION	FX2012MT (110V/60HZ)	FX2012ET (240V/50HZ)	SOLAR CC Blue Sky IPN ProRemote	Balmar MC612 Regulator with 210A+100A Alts.
Maximum Amp DC (Shore)	90 adc	100adc	n/a	n/a
Max Amp DC (Off Grid)	90 adc	n/a	20 adc	190 adc
Charger Limit	12 aac	6 aac	25 adc	n/a
Acceptance/Absorb Setpoint	14. vdc	14.2 vdc ³	14.5 vdc	14.18 vdc
Acceptance/Absorb Time Limit	4.0 hrs	4.0 hrs	6.0 hrs	36 min (minimum)
Float Setpoint	13.2 vdc	13.2 vdc	13.3 vdc	13.38 vdc
Float Time Period	2.0 hrs	2.0 hrs	n/a	6.0hrs
Float Current (A/100AH)	n/a	n/a	.3 a/100ah	n/a
Refloat Setpoint	12.5 vdc	12.5 vdc	n/a	n/a
Equalize Setpoint	15.5 vdc	15.5 vdc	15.5 vdc	Not used
Equalize Time Period	10.0 hrs	10.0 hrs	1.0 hrs	Not used
Low Battery cut-out setpoint	11.4	11.4		

* The above has been stored in a separate file: [Current Charger Configuration.doc](#)

Saturday, 28 August 2010 21:44

Made eye splice for reefing line. New line is 12mm double-braid Dacron. (Donaghy)

Noted dim light on “reverse polarity” LED on main switchboard. Ground leak? How test?

Monday, 30 August 2010 04:10

Noted small alternator not registering on new alt amps panel. It appears to fail after the engine has run for a while. On startup everything looks fine. Need to check for bad crimp or terminal not tight.

Tuesday, 31 August 2010 05:39

- Ran new reefing line. Not certain of length. Measured line of 33m – 14m remaining gives 19m of line for the second reef, but that seems too high. I need to remember to check the length after installing the new exit block.

Hooked up HF radio after re-routing a few wires and shifting the radio to allow room for a plastic “rain hat” (not yet installed).

³ This is lower because the 240V charger is generally only used at the dock.

Thursday, 02 September 2010 06:07

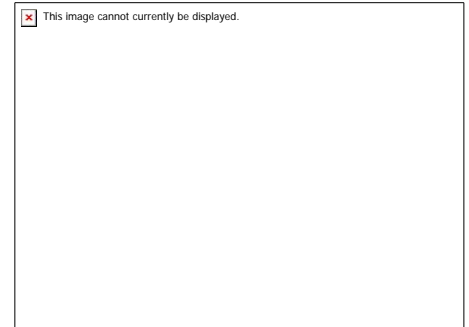
Found the Wind Sensor glitch! The lead to the NMEA input on the VHF (Icom IC-M602) was getting pinched when the panel was closed. This lead to the strange intermittent fault where the wind data was sometimes there, sometimes not. For now it appears to be working.

Friday, 03 September 2010 19:01

Halyard Chafe Solution.

Schaefer Hinged Fairlead/ Ball Bearing 506-32

Sheave Dia. 2" (51 mm), Max Line 7/16" (11 mm),
Length 3-1/4" (83 mm), Width 7/8" (22 mm), Height 3-
1/16" (78 mm), Bearing Height 1-3/16" (30 mm),
Fasteners (2), 1/4" FH (6 mm), C/C 2-1/8" (54 mm),
SWL 1000 lbs. (454 kg), Weight 7.3 oz. (207 g)
\$137.25 (\$91.44 Port Supply)



No need to design a base for this! Inspection at the masthead indicates this should be mounted as far as possible toward the sheave.

Sunday, 05 September 2010 06:42

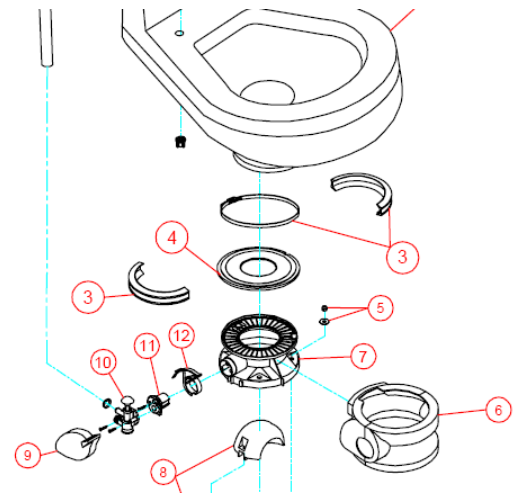
A day of work, some successes, some work less than successful.

1. Mast Climb
 - a. Inspected all tangs, spreaders no problems were observed except as noted below:
 - i. Starboard lower spreader still has some mushrooming at the base but not more than before.
 - ii. Upper starboard spreader plate has an enlarged forward hole. This probably means it should be replaced sometime soon.
 - b. Fixed starboard flag halyard which had an eyestrapp missing on the second block. Had to hang out over the deck on the bosun's harness and work the Big Daddy pop riveter.
 - c. Inspected chafe on jib halyard. Noted that there can only be ONE shackle from the halyard to the upper bearing unit because the genoa barely fits. The halyard restrainer block looks good. The chafing on the halyard appears to be after it enters the sheave. Either there is something on top of the sheave or it is binding against the main halyard. However, main halyard chafe is due to rubbing on the exit slot when going downwind. This is possibly due to the headbox originally being constructed for wire halyards. Either we need to start using smaller halyards (especially for the jib halyard) or tapered halyards. Another option is to turn down the sheaves to a slightly smaller diameter (about 1/8" reduction should do it).
 - d. The lost string of nuts which were an attempt to feed a new halyard messenger is still stuck in the port forward sheave. I don't think it is affecting anything.

2. Forward Head Seal Replacement

Kathy and Kailia replaced the seal on the forward head because it was not holding vacuum. It's been way overdue. The proper seal kit for our 1006 Vacuflush model is 385310677 (#4 at right), but where it fits into the base (#7) the diameter of the plastic disk was slightly too great and the toilet kept leaking. This is a manufacturing design flaw, but an easy fix. Trimming the disk with a belt sander allowed it to fit and the seal to become flush to the disk. I expect the same problem in the aft head. **Actually NOT, the plastic disk was placed UPSIDE DOWN. Right side up it fits fine.**

There was a ring of scale around the bottom of the toilet where it seals to the ring. I scaled it with a paint scraper and sandpaper. The ball was cleaned and sanded and polished progressively with 600/1000/1500 grit.



3. Kathy stitched the luff selvage in several places on the jib. Some abrasion was noted on the sacrificial cover.
4. I (Jeff) attempted to splice a new shackle on the old halyard with failure on two tries. The line is 7/16" Validator SKB. The cover is very tight. I need to try the simpler Sampson method instead of Brion Toss's method. I just can't tuck the core into the cover. If the Sampson method fails I'll just use a ring hitch or eye-splice on the 12-strand core and stitch a leather cover for it.

Monday, 06 September 2010 00:30

Happy Birthday Jeff! 68 and counting.

Kathy cleaned the scale off the old #4 seal from the forward head (removed yesterday) and we installed it in the aft head. Its seal was fairly clean. They recommend checking seals every 3-5 years. I believe that the forward head seal was the original one and it appears to be still good after a cleaning so it went into the aft head Vacuflush. Spares now include a used but serviceable old style seal (6 years old) and a brand new 385310677 Teflon seal of the new design. The aft head toilet was not so scaly as the forward head toilet. The ball was cleaned and polished.

Wednesday, 08 September 2010 04:08

Installed Algae-X magnetic fuel cleaning device. This was installed before the input to the fuel transfer pump.

Sunday, 12 September 2010 05:22

Wonderful say of sailing on spinnaker only. We are heading from Nouméa, New Caledonia to Anatom Island, Vanuatu. The winds are southerly and our course is NW so it is perfect. We are now doing 7.9 knot on a broad reach in 15-16 knots of wind.

Yesterday I added moved the spinnaker tack block to a toggle fastened to the cross member that ties the two anchor rollers together. It worked very well. I need to add a fairlead on the side of the stainless tang under the furler drum to prevent chafing of the pennant; I need to make a new very strong pennant as well. The length should be 3m.

Noted heating of the Main Battery Switch. There is some wobble in the switch studs but the lugs are correctly fastened. This switch is rated at 350 amps continuous and I don't put that much through. I should check temps on the engine feed, too, with the thermometer. I believe these switches can heat up

to 50°C without exceeding the standard. It is possible to change the switches to 600 amp switches as they are the same size. Normally I only feed up to 225 amps max and only for a few minutes. Possibly this particular switch is getting bad; it has happened before. I do have a spare.

Temps on switches: 47°C on main and 57°C in engine room; but then everything is hot in the engine room. I think the batt switch and cables are within specs.

Sunday, 12 September 2010 19:35

- Still seeing problems with GPS dropouts on the GMI-10. Will try direct feed (not through Multi)
- Problems with watermaker
 - Needs both pumps to produce enough water. The flow ball barely moves with one pump, but two pumps gets about 11 gpm.
 - However, the Y-valve for product service leaks on two pumps.
- Noted reefer control throws error when transmitting HF at 7 meg.

Monday, 13 September 2010 05:14

Datel Meter Note: Connecting an external, unpolarized capacitor across TB1's "+" and "-" inputs, and/or across the shunt's 50mV output terminals, can help reduce noise-related display errors. In certain situations, the use of twisted pair or shield wiring may be required. As a general rule, avoid using excessively long leads between the ammeter and the shunt.

Tuesday, 14 September 2010 01:15

Completed installation of 230VAC and 110VAC power points behind removable access plate in the cockpit. I've wanted power to the cockpit for some time as I don't like running extension cords from the nav station to the outside.

Two difficulties remain:

1. The outside power points (mains sockets) should be on a separate circuit from the other AC loads.
2. The 230V GFI has not yet been installed.

I believe the solution is to remove the "Transfer" function on the main 230V distribution panel and use that slot for a circuit breaker and then use the spare circuit breaker on the Aux Panel for the 110VAC cockpit power sockets.

Saturday, 18 September 2010 22:12

Watermaker salinity is 550 ppm, drinkable, but not as pure. It used to make 350ppm, 470ppm in July. I wonder if the ambient temp of 25.5°C being higher is a possible culprit.

We also have a bad leak at the Clark Pump. I can't tell what it is.

Monday, 20 September 2010 19:31

Repaired watermaker. The following was done:

1. Fixed asymmetric flow problems by replacing the following:
 - a. Annular Rings (2) – these looked pretty good but were replaced anyway
 - b. Annular Ring Seals (O-ring) (4)
 - c. Valve Spool Quad Ring (2)
 - d. Valve Spool Piston O-ring (2)
2. Leaks:
 - a. Fixed Leaking High Pressure Out fitting by reseating with new Teflon tape (4 wraps)
 - b. Tightened SS compression fitting to center block (forward).

3. Noted:
- a. Tiny chip (dent) under the O-ring seal on the Valve Spool Piston.
 - b. Salinity was @ 630 ppm with one pump. This morning @ 517.
 - c. Information from Spectra: 1000ppm is considered potable by WHO standards. 750ppm is the diversion threshold on Spectra's automatic systems.
 - d. Flow:
 - i. Pump 1 = 7 gpm
 - ii. Pump 2 = 9 gpm
 - iii. The flow meter readings correspond closely with timed volume flow rates. There is some fluctuation.
 - iv. The new bottom pump (#2) has a higher feed rate than the original so, for now, we should only run one or the other and not both. Both would exert excess pressure on the feed water system.
 - e. The leak in the Product Water Diversion Valve seems to have stopped, especially when running with only one or the other pump. I should still order a new valve as a spare.
 - f. No handheld salinometer calibration fluid available. We have the wrong solution.

While the above work was in progress I also shortened the aft closet clothes hangar rod. Ever since the aft 2/3 of the closet was converted to shelving the old rod had interfered with the top shelf. I also ran some wiring from the coaming on top of the closet to the HF radio compartment behind the aft cabin starboard bookshelf. When connected it is to be used for a red LED to illuminate the clock and to power a fan.

Thursday, 30 September 2010 01:01 UT

- Installed new lower bearing unit on Schaeffer Furler.
- Installed Davis Cable Covers
- Broke Davis "Quick Fist" holders for boat hook and gaff
- Started reefing refit project.
- Fixed GFI for 110VAC on deck

Sunday, 03 October 2010 08:00 UTC

- Fixed Davis "Quick Fix"
- Filled Honda outboard with oil – it was very empty
- Finished boom end reefing project. Will delay mast end until we do some more reefing.

Monday, 04 October 2010 03:21 UT

- Monthly Maintenance
- Checked Engine Air Cleaner – no problems
- Cleaned cockpit
- Engine need 1L of oil. This in 200 hours of operation.

Friday, 08 October 2010 04:15 UT

After cleaning the plankton filters for the watermaker I could not get a decent prime. These filters are on the input side of the watermaker boost pumps. The boost pumps and/or the configuration of plumbing doesn't seem to allow the pumps to clear the air out of the filters. Installation of a valve and garden hose quick fitting allowed me to easily run the output from the refrigeration cooling pump to the watermaker plankton filters. This purged the air in short order.

The final filter of the raw water is a cartridge on the output side of the boost pumps. If it has air in it then loosening the filter case allows the air to escape. **MAKE SURE TO HAND-TIGHTEN ONLY!**

Friday, 08 October 2010 22:17 UT

Honde EU2000i is not running. Symptoms are: motor surges at low RPMs. No good power detected at main AC board. It shows reverse polarity. I suspect something serious in the inverter or inverter control. The service manual is ONLY in paper form and needs to be purchased.

The ECO throttle control (electronic governor) works through the throttle control motor on top of the carb. Remove the electrical connector on the throttle control motor. On the motor terminal you can measure the resistance to determine if it is functional. The pin closest to you is 1 and the one farthest away is 5. PM me if you need an image of the terminal pins showing the numbers.

Between 1 and 3 should be 50-70 ohms

Between 2 and 4 should be 50-70 ohms

If the resistance is outside the above range, you need to replace the motor.

Operational check:

At Stop: the throttle arm returns to the full open position

At Start: the throttle arm moves from the full open position to the full closed position

FIRST

Disconnect the load. Check for voltage. Electronics Solenoid Control on top of Carburetor might be bad. Could be inverter or electronic governor. Look behind inverter unit and make sure plug in pins are securely connected. Remove front panel. Inverter unit is working. But only 50hz so governor not working. Opens butterfly on carb. Could do it manually. On top of carb below electronic governor – see if linkage can cause pick up speed. If RPM picks up could be one of two issues.

Cheapest route would be electronic governor. \$1099 new.

Friday, 15 October 2010 01:18 UTC

Checked generator. Still producing bad power even when throttle manually advanced. Plunged galley sink because it was blocked with grease. Applied Drano™ twice after flushing. Noted faulty alternator control switch in cockpit. Needed to be flicked several times for engine to start. Defrosted refrigerator.

Thursday, 28 October 2010 22:11 UT

Defrosted Freezer!

Previously:

Using generator and ProMariner on 120V/50hz

Tightened Lifelines and installed snap shackles

Polished some stainless

Thursday, 04 November 2010 15:15 UT

Underway Port Vila to Bundaberg

Recent items fixed or maintained:

- Added short lines from gate to next stanchion forward to support line bags. This keeps the weight of the newly stretched lifelines.
- Failed to put eye splices in old halyards. Not possible for me to do this. I might think about simply going with some 10mm poly and the heck with this hi-tech stuff.
- Cleaned out the drip pan under engine. Noted some oil on top but mostly water and anti-freeze; possibly from leaking radiator cap in Nouméa

Tuesday, 09 November 2010 00:01 UT

Voyage Glitches for Port Vila to Bundaberg

1. Broken hold-down on waterlift muffler
2. No time/position going to VHF or SSB radios
3. Definitely need to prioritize rationalizing the day tank air vent. Plumb back into Port Tank without connection to outside. Consider how to have a "full" alarm.
4. Noted belt to RWP may need tightening.
5. Heading Sensor is about 20° off in it's heading. The interference is from the refrigeration controls running by. Need to shield it somehow.
6. Wind sensor continues to give both intermittent and erroneous readings. It appears to work most of the time but now and then it reads 50 knots in calm winds. It loses the GPS signal on a regular basis. I suspect the problem is in the wiring.
7. Generator started at 60 cycles, then dropped to 50, but somehow the big inverter is still handling it. RP light is still on while running.
8. Refrigerator Short-Cycle Enable Button not functioning
9. Need to fix doors and make door locks for aft cabin lockers.
Perhaps a flat piece of teak with a hangar bolt and knob to lock the doors. Reid Tool TSDK-1A 10-24 RSDK-1A 3/16 3/4 5/8 1/2 1/4 3/8 5/64 7.79

Domed Knurled Knobs



10. Need to fix bookshelves so they don't spill books underway. Lee cloths or fiddles?
11. VANG DISABLED. 5/16" (?) bolt broke and bent the tabs on the mast attachment. This brings forward the replacement of the attachment with a custom fabricated "hound" or check with LeFiell if the still sell the gooseneck straps for it's 9½" x 5½" mast.
 - o Set is \$120.00
 - o
12. Galley light is glitched: it is dim on all settings most of the time, but sometimes works.
13. Water intrusion
 - o New Mast boot is required (we knew this). This has filled the Alpenglow light with water. The light was removed and rinsed and is probably OK.
 - o Staysail fitting. Remove and re-bed or use a gasket.
14. The ProMariner 1240i battery charger has overheated and is melting the insulation. This is due to fan failure. We knew about this. It's a piece of junk and is the third time this has happened. It's an extended warranty and this is the third time. I guess we will get a brand new one and hope they've solved this problem by now.
15. Mainsail has leech line cover frayed off at 2nd reef. All leech lines should be replaced as they are probably all near end of their life.
16. Move the grab rail on the oven back 1" so the swinging stove doesn't pinch fingers in severe weather.
17. There is a torn Webbing Snap Tab on the cockpit awning. Two more have broken. All need replacing with extra overhang for snapping the webbing onto the stud and should be in black.
18. Alpenglow fixture in galley has a light bulb gone bad and needs replacing.
19. The "Creakometer" which tells us the sea state has become really annoying and needs to be fixed. I believe it is the galley island that is the problem. All the fitout is held together with ring-shank nails and glue and after 31 years the glue is gone and the nails are pulling out.
20. And last but definitely not least, the shore power connection has a short in it, probably at the 110V/220V switch panel on the isolation transformer. **DONE!!! FIVE MINUTE FIX!!!** The indicator lights with very tiny wire had shorted out. Easily fixed by cutting fused wires and re-installing LEDs.

Wednesday, 17 November 2010 08:03 UT

Fixed mainsail. Added new leech line on bottom 40%. We opened a seam, spliced a new line to the old by whipping/stitching them together, then ran the new line, which is a poly cover/dyneema core, down to the clew. NOTED: two upper battens are cracked and need replacing.

Fixed shore power problem (see above).

Saturday, 20 November 2010 20:13 UTC – Bundaberg

Two topmost battens in the mainsail were cracked. They have been replaced with battens bought here at Midtown Marina in Bundaberg. They are almost the same size, but not quite as stiff perhaps.

The anchor chain has gone to be galvanized.

Batteries were seriously discharged when the shore power was disconnected. This happens often enough that a shore power disconnect alarm would be useful.

Sunday, 21 November 2010 09:56 UT

Installed new Fusion Ipod Stereo. Removed old stereo and CD changer. Noted some salt intrusion in the area. The Fusion is waterproof and not open to the atmosphere like the old Alpine.

Kathy polished stainless from lifeline connections all the way around the aft deck from port to starboard and on upper deck aft. Used Amway polish on a rainy day. She also rinsed all the line clutches.

Tuesday, 23 November 2010 21:51 UT

The plastic fitting I made to support the line reel axle has broken and needs to be fixed before the next journey.

Boston Voyager speakers are no longer made in our model so the grilles are not available as spare parts.

The Breville “Roma” was replaced with a Krups XP52 series espresso machine and new Krups GV-X2 burr grinder included free as a “special”. Took opportunity to replace both units. Makes great coffee. Purchased at Harvey Norman, Bundaberg, with 3 year extended warranty.

Thursday, 25 November 2010 05:12 UT

Replaced the toggle strap on the aft stbd lower stay as the one in place looked cracked. I think it’s just a scratch. But this reminded me as I looked at the kinky wire near the upper terminal that the tangs are not a true fairlead and there is a bit of twist applied to the wire. This needs to be addressed at some time, probably when the boat is re-rigged.

Did temporary repair on the line reel axle support.

Kathy bottled beer: Bottling Number Six. Cooper’s Larger started in Port Vila Vanuatu. Stayed in the primary fermentor for the 10 voyage to Bundaberg.

Tuesday, 30 November 2010 00:19 UT

Can recalibrate thermostat if the stove burner does cycle.

Contact Todd@suremarine.com

Monday, 06 December 2010 21:36 UT

Outhaul track was fixed. Jim’s crappy welding (Stainless at Port Bundaberg) had failed and the flange had bent. Aquatech at Kawana Waters did a good job fixing it up. They had to re-drill and plug-weld the bad welds, straighten it out. Took some time. Also fabbed new flanges for the rusted-out BBQ grille

supports. TC = A\$100.

Thermostat appears to be working in that the ignition flame that heats the MCV probe dims when the operating temperature is reached.

Called Todd at suremarine.com

1. There are two pilot flames: one from the MCV (orifice is fixed inside) and one from the thermostat.
2. MCV controls the ignition of the main burner.
3. Thermostat controls a pilot light which is HIGH when below operating temperature and LOW when operating temperature is reached.
4. This pilot flame which heats the MCV probe is controlled by the thermostat. This flame is controlled by the removable orifice.
5. Check that MCV probe is not in flame when operating temperature is reached and pilot is LOW.
6. When the Thermostat lowers the ignition flame it turns OFF the burner by cooling the MCV probe.

R&R PROCEDURE:

1. Check if proper orifice is in place. If not, replace and re-test.
2. Visually inspect that MCV probe is not being heated when pilot is in LOW. Perhaps the bracket is bent. Straighten/Replace as necessary.
3. If problem persists, replace MCV valve with spare. If this fixes problem, send old MCV for rebuild, else keep as spare.

Wednesday, 08 December 2010 01:13 UT

Called Lake City Power about the surge with the ECO switch on the Honda EU2000i. This is normal, he says, and is a function of the requested power draw. I need to experiment with the charger settings to not demand more than 13vac.

Don Averill, Director of Marine Programs at LeFiell.

Friday, 10 December 2010 07:06 UT

The forestay broke while running downwind!

1. This happened about 0745 today (Friday, December 10, 2010). The tab on the large stainless bracket broke off due to stress fracture. It is apparent from the stub that only about 20% of the tab was holding onto the forestay. Thankfully we were running and not beating. The piece is not in a place that lends itself to inspection.
2. Kathy was sleeping and our friend Eugene was on deck; I was making tea. There was a bang and then the furler was banging around against the bulwarks and cap rail. I went forward to assess and then secured the loose end with a line. Kathy came on deck and while I helped to run the roller and they worked with the furling line we were able to get the jib rolled up.
3. The spinnaker halyard was brought into play to secure the top of the mast to a bail (already in place) which spanned the two anchor rollers. Although there was no problem because we were running downwind (in 20 knots of wind and 4 knots of EAC current) it felt good to have some support back in place for the top of the mast.
4. We checked on the tension of the inner stay and found out that, somehow, it had become unhooked from the deck fitting. Probably when changing sails the keeper ring on the stay lever had not been placed properly and the inner stay had detached itself. We fixed this and now we had forward support with both the inner stay and the spinnaker halyard.
5. A problem with a furling jib as opposed to a hanked on sail became apparent; you cannot take off the sail when it is furled.
6. We tied a sail tie around the furled jib to keep it from unrolling and tied another line to the

- roller drum so would not turn.
7. We have a Schafer multi-plate as part of the anchor roller unit and we installed a stand-up block there. A line was led from the base of the roller furler, through the block, and back to a cockpit winch. We actually used the preventer line for this purpose. Tightening this line pulled the pulled the loose forestay down to the deck. It was not useable (at least I was not willing to use it) but it was keeping the loose stay under control.
 8. At this point, with the main still drawing and no foresails I felt the prudent thing to do was relax, have some coffee and breakfast, consider our options, and decide what to do.
 9. Options:
 - a. Remove the sail, disassemble the furler, loosen the turnbuckle, reattach the stay to the spare pin on the forestay chainplate fitting, re-assemble the furler, and be back in business with full equipment.
 - b. Leave the furler like it is; run with main, staysail, and spinnaker if warranted. If upwind work needed we can reef the main, deploy a staysail and use a running backstay. The thinking was that the “stick” above the top spreader would be under no stress.
 - c. There is also a logistical problem.
 - i. Winds are predicted at 25-30 knot northerlies and we are heading south. But sometime tomorrow a southerly change is predicted. Our target is Broken Bay north of Sydney.
 - ii. At this point alternate landfalls can be made at Port Stephens, then Newcastle. Coffs Harbor is already on our right. We have 200 miles to go and are making about 10knots with an assist from the East Australia Current. We were doing this under sail; now we are motor-sailing with just the full main up.
 - iii. The wind has dropped off which might be the harbinger of the change; its arrival being early and most untimely. We can’t know for sure until later.
 10. Our decision is to keep on and not try to repair anything. The rig is stable and supported and time is of the essence.
 11. This turned out to be a good decision. The Australian BOM forecast was off by 24 hours and a good 100 miles north. Our prediction for today of NW to NE winds at 20-25 rising to 25-30 never happened.
 12. We had about two hours of zero apparent wind and used that opportunity to reeve a second forestay replacement line from a spare halyard and then to unfurl and take off the jib.
 13. No sooner was that done than we got hit with 30 knot southerlies. We had one reef in the main; we put in the second reef. The broken forestay and furler were flogging about a bit so we had to secure those a bit better by putting more tension on the jury-rig line holding it to the deck.
 14. The front has now passed and we are in fairly calm seas; motorsailing into a very, very light southeasterly breeze. Seas are calm. We are 165 n.m .and about 25 hours from Broken Bay and barring further mishaps and bad weather should arrive Sat Dec 16 in the early evening. In spite of the breakdown we broke our record for miles logged in a single day: 228 n.m.

Monday, 03 January 2011 18:55

Today we removed the forestay fitting. We had to first empty the anchor locker, of course, but then the 5 bolts and the nut on the rod all came out without difficulty. It looks like we should consider filling and drilling the existing holes if they are through wood core.

The bilge pump in the engine room stopped working. The machine screw connecting the motor to the diaphragm had unscrewed itself.

We also have a small persistent saltwater leak.

And the computers... let’s not talk about the software and hardware problems; but there are many.

Wednesday, 05 January 2011 18:31

Bilge leak explained. The photos show a below-the-waterline bronze pump head. The pump is a 12V March Pump and it has been installed at least 7 years. I'm not sure why this developed. The pump circulates sea water to cool the reefer compressor. The hole you see was made when I started poking at the pump head. Before that it was only spraying a misty stream from a pinhole in the tissue-paper-thin bronze. A hole of the size in the photo would have filled the bilge to the floorboards in two or three hours.

I found it because the small bilge pump that drains the engine room had its cycles too high. Strangely the bilge pump itself threw a machine screw that connects an oscillating arm to the diaphragm and stopped working two days ago. I could hear it turn on, but not suck. This could have lead to a cascade effect: leak plus non-functioning bilge pump. If I had been off the boat, two more lines of defense lay behind these failures: the two large, separately wired and alarmed, main bilge pumps. Nevertheless, if no one had been aboard for a while the pumps would have eventually drained the batteries and then the boat would have sunk.

It's hard to anticipate and prevent all possible disaster scenarios. In this case, I could return to fresh-water refrigeration cooling (a small water tank would have to be dedicated to this). I could have an above the waterline impeller pump (wears out faster, is noisier, uses more power). I could have all-electrically controlled through-hull valves that automatically close when the bilge cycles get too high (too complex and expensive). I could turn off all refrigeration when not aboard for a long time (but what to do with the frozen and refrigerated food?).

Or, I can remain hopeful that all problems will be caught and solved. Statistically, most boats stay afloat, and Beatrix is a solid boat. I need to keep inspecting all potential breakages in valves, through-hull fittings, and hoses; continue to pay attention to the boat and not ignore small anomalies; and trust in the law of averages. Note that a visual inspection would not have discovered the thin wall of the bronze pump head.

It does reinforce my opinion that a cruiser should carry spares of ALL critical pumps, both mechanical (engine) and electrical. I had a spare pump, installed it in an hour, and through the miracle of Skype have already ordered a new "wet end" from Depco Pump to rebuild the damaged pump.

Wednesday, 12 January 2011 22:28 UT

The broken forestay attachment fitting has been fixed by Bruce of Allweld Mobile Welding (Mona Vale). He did a great job. The original material was cut away and a thicker tang welded on both inside and outside. He did a good job cleaning it up. It is now much stronger. He also re-fabbed the tang attachment for the boom vang, making it thicker to attach to the vang to the gooseneck straps.

We have glued the fitting down with 5200. According to 3M specs of 700 psi it should have a total tensile strength of approximately 16000 pounds. Since the wire has a breaking strength of 14500, and is statically tensioned to a maximum 20% of breaking strength (~3000 lbs), the adhesive should be adequate all on its own without considering the five bolts and the "chain rod". The 3/8" carriage bolts have been replaced with new 10mm x 400mm 316 hex head machine screws.



Wednesday, 26 January 2011 09:10 UTC

All is fixed with the forestay. We had to re-tune the rig, taking up a few turns on the forward stay turnbuckle.

Kathy put a new leech line jam cleat in the jib. Carol Hasse is sending us half a dozen aluminum ones, which are better than the plastic ones.

Noted: the rigging turnbuckles all need cleaning and greasing.

Kathy cleaned the engine air filter. It was oily but not badly plugged.

Wednesday, 26 January 2011 23:24 UTC

Garmin p/n 010-10183-02 B744VC Airmar Jemeco (Airmar distributors) Bob Hall +1 803 693 0777 MReedenauer@airmar.com Mark Reedenauer Product Marketing Manager AIRMAR Technology Corporation 35 Meadowbrook DriveMilford, N.H. 03055 Tel: 603-673-9570 Fax: 603-673-4624www.airmar.com
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Transducer (Sonar) not working.

Garmin made a mistake. It uses the continuity on the thermistor for STW as the indicator whether or not the unit is connected. If the thermistor is faulty it shuts the whole unit down.

Airmar makes a fix for this: a speed/temp sensor that is wired independently. It is a whole new insert, replacing the passive paddlewheel.

To check that the thermistor is bad we need to short out the thermistor wires. The double cable carries signals for speed/temp and depth on the side with print on it. Depth is on the non-print side. THIS WAS DONE AND DEPTH AND STW ARE NOW WORKING PERFECTLY.

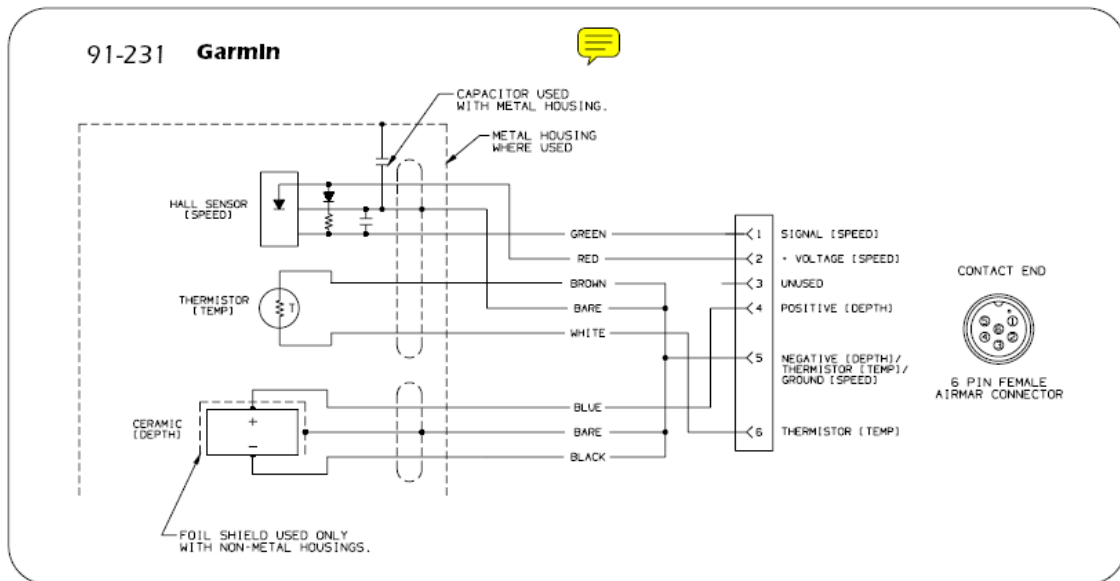
Strip this cable, take brown and white wires and connect together. See if the unit now works.

New Parts:

Xducer B744VC-INS-JB \$94.50 DOUBLE CAP VERSION new speed/temp only

OR

Xducer B744VC-6G \$310.00 full transducer.



Monday, 31 January 2011 05:49 UT

Arrived in Wineglass Bay after traversing Bass Strait from Eden, NSW. It was a good passage. Max sustained winds were 30-32 knots. We only had opposing winds for the last 18 hours of the trip.

The Autopilot pump has failed 75 n.m. out of Wineglass. The pump head seems to no longer be firmly attached to the motor!. Of note is that we forgot to check the hydraulic fluid lately and the reservoir was empty.

Removed the pump and found the two long machine screws holding the motor together had worked loose. This could have caused the motor to stop if the brushes had come loose. Things look pretty good inside; there's some rust on the armature. The brushes look good. I used my trick with two loops of thread to hold back the brushes while I slip the end cap over the commutator.

Note: Check on Octopus spares.

1. Pump Assembly
2. Pump Motor Brush Kit.
3. Solenoid Valve Cartridge.
4. Solenoid Valve Coil.
5. Pump Seal Kit.
6. Cylinder Seal Kit.

Friday, 04 February 2011 20:31 UTC

Haulout at the RYCT.

I now think that Baja Naval got it wrong and that I'm somewhere between 18T and 20T.

Yesterday we tried to haul out using the RYCT marine railway. This uses a steel cradle on rail tracks that goes down a slope into the water. No problem hauling the boat up the incline but it was definitely at the top end of their allowable tonnage.

I was pressure washing the barnacle garden on the hull and the bosun went to move the boat forward several meters to bring the stern into a more favorable position for cleaning. Kathy and I were standing under the boat when there was a very loud BANG! and the boat lurched to port over our heads. I grabbed Kathy and ran. Fortunately the cradle held tight and the boat did not fall over. The huge axle on the railroad wheel had snapped clean in two (the bang) and the corner of the cradle dropped about a foot (the lurch). The boat was at maybe 10 degrees off vertical.

It took all day for the circus to fix things. Karl, the bosun, given his way, would

have simply jacked up the corner, welded in a cross beam, and used some "skates" (little roller devices) to allow the cradle to be moved back into the water. This was the solution, but it took all day for him to get it done because within minutes we had Club Directors, Commodores, Vice Commodores, Rear Commodores, Senior Club Members, the Club General Manager, and all kinds of other onlookers roping off the scene and making sure Karl had each and every one of their opinions on what he should be doing.

Since my wallet was on the boat, and I was not allowed back on, we went to the clubhouse and had a beer on the house.

By the afternoon everything was sorted out and today we will try once more. The only damage was to both the port and starboard cap-rails, which were split apart when the cradle dropped. The club says they will organize a shipwright to replace them.

That's the breaks, and no real damage done in the long run.

I think living aboard and/or owning a boat is one of the stranger things to do in life. It's certainly harder work than having a "real job". It's also more fun, mostly.

Saturday, 05 February 2011 08:24 UT

Today we hauled out again, successfully this time. The rudder was completely buried under a carpet of barnacles. All the copper plates were covered with barnacles. I guess copper was OK for stopping Teredo worms, but not barnacles. There were two blank white places where the scumbags at Port Bundaberg has neglected to do any anti-fouling or priming except for the last coat slapped on wet before the ship was splashed.

Kathy and I worked our little fingers off with a pressure washer that would have done justice to Engine Company 9 – I could hardly hang on to it. It could peel the chrome of a trailer hitch. Kathy did much of the barnacle scraping and all of the rudder.

We also took off both sails and sent them to Ian Ross (Hood Sails) to have the sacrificial repaired on the genoa, and to inspect and install a leech line that runs on a block on the headboard that then runs to the boom.

Sunday, 06 February 2011 21:23 UT

Created project a plan for [Haulout and Bottom Paint](#). See this document for painting details.

Monday, 07 February 2011 21:34 UT

Found Ultra Low Pressure Switch for Tank Overflow:

<http://www.mamcoswitches.com/pressure-switches/lf20.html>

Part is: LF20-15111-.5psi NO \$29.95

Technique is to restrict flow in the vent line so when pressure rises in the vent line the pressure switch triggers a latching relay to disable the pump and sound an alarm.

It is 52" from top of tank to air vent in coaming. 52" of water is 1.9 PSI. Assuming diesel is a bit less dense than water, it should trip the pressure sensor at about 18-20" of head. It might not even need a restricted orifice.

Tuesday, 15 February 2011 03:01 UT

All through-hull seacocks serviced except 1" seacock for engine room bilge pump. Most were greased. Some were disassembled and cleaned, notably the forward head discharge which had a lot of calcification in the valve body.

There are two major problems with accessibility of seacocks in case of a hose failure; or simply to turn

them off or on:

1. Noted was that the port cockpit drain is almost un-reachable and un-serviceable. A fix for this would be a new GROCO ball valve seacock BV-1500. The handle is more accessible; there is no T-handle for locking; the handle has a ½” square hole for a ½” socket wrench drive. It costs about \$200.
2. The engine room bilge pump empties into a seacock that requires the cockpit locker to be emptied, and even then it is not serviceable for greasing except from the outside of the hull. A fix for this is to move the bilge drain to share the port cockpit drain and remove the through-hull and plug it.. The siphon break does not need to be retained as the open drain in the cockpit serves this purpose.

Also, removing the unused 1½” through-hull in the “laundry locker” in the aft cabin would get us more room there. Re-installing the 1” through-hull and seacock in the “shaft alley” could allow the watermaker raw water feed to be more rational. A scoop strainer would be required but an internal sea water strainer should not be necessary. The intake should run to a coarse strainer and plankton filter mounted above the waterline.

Bottom Paint

Product	Brand	Name and Code	Quantity	Cost
Epoxy Tie Coat	Hempel	26030 Underwater Primer		
Self-Polishing Anti-Fouling	Hempel	Olympic 86951 Blue		
Water-based Anti-Fouling	?	for transducers		
Aluminium Anti-Foul	Hempel	Mille Dynamic Alu 7160A		
Thinner	Hempel	845		

- the only critical day

Friday, 18 February 2011 07:06 UT

Back in the water again without drama this time. Kathy and I taped plastic around the broken caprails until the shipwright manages to fix them. He’s had two weeks to consider this job and only just now got around to ordering up the wood from Brisbane. But Hey, that’s OK because the sailmaker who promised a 2-day job (two weeks ago) did not start on the sails until today. There is such a lot of slackness in the tradesmen here in Aus, you really have to keep after them. (Note 9 April 2011: The wood was never ordered and “Biggsy” said he could not find any. It took me five minutes on Google! It still has to come from Sydney and will take 3 days to get here.)

NOTE: Email from Marvin Dunn suggests using 5/16” clay and Teflon packing for the stuffing boxes.

Saturday, 19 February 2011 23:40 UTC

Equalization run on all banks. 15.5 vdc for 10 hrs. using Outback FX2012ET.

I fixed a broken wire leading to port main cabin lights. The main cabin lights are the only old wiring left in the boat and they connect to the 12v system with two butt connectors behind the paneling on the shelf above the microwave. Easy fix.

Wednesday, 23 February 2011 07:02 UTC

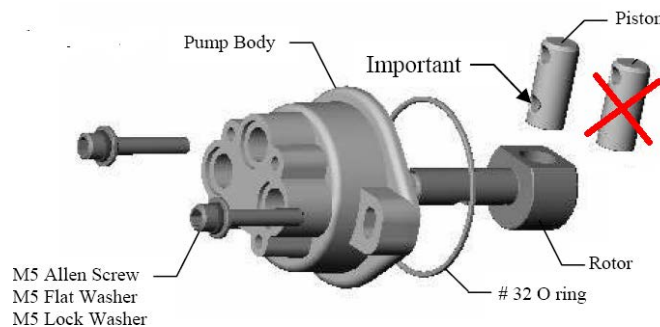
With the aft bunk floor exposed we finished the following tasks.

1. Purged the hydraulic lines in the autopilot reversing pump and re-installed unit.
2. Moved wire raceway over access to aft cabin under-bunk space. The cover was all splintered from the storage boxes being moved in and out. It is now above the sliding door opening.

3. Replaced Cape Horn Wind Vane shock cords which act as accumulators for the control lines.
4. Removed and cleaned the Wema SHS holding tank sensor. It was clogged at the bottom with (you don't want to know) and the float collar would not float. I tied a wire tie around the bottom of the shaft to keep the float off the very bottom which might help it remain clear for longer. Noted that the needle is in the red, but not quite at full, when the float is at it's maximum. Just don't use the holding tank if it is at or near the red zone on the meter.
5. Added a fiddle on the starboard side of the under-bunk storage area to help hold stuff against the hull.

Notes on the autopilot repair:

Noted earlier was that the main problem was the pump motor detaching itself from the pump. In fixing that, and inspecting the motor, we lost the prime on the hydraulics. We attempted to figure out the best way to fix this. I think the main problem was that we put the piston in backwards. Although it shows



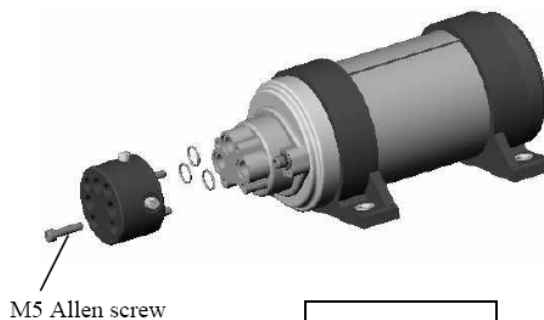
the correct orientation in the instruction diagram it isn't obvious that the lower hole does not go all the way through. I added the crossed-out piston in the diagram.

We tried five times to bleed the system; three with it in place and finally removed the entire pump and hoses from the boat. I still had the original caps and plugs so the hoses could be sealed and so could

their connections at the cylinder bypass valve.

IMPORTANT! MAKE SURE HOSES ARE MARKED SO THEY CAN BE RE-CONNECTED TO ORIGINAL LOCATIONS.

When we finally took it ALL apart I discovered the proper way to insert the piston. Although Dave Shannon at Octopus had supplied us with his "new" method for filling the lines, cylinders and pump it was oriented around draining and re-filling the entire system. Since our hydraulic actuator and hoses were already full the only problem was with the pump. The 3 shutoff valves must be closed. This keeps



fluid in the lines. The 4 Allen screws are removed to expose the front of the pump body.. We found that to fill the entire pump cavity you start with the pump tipped about 20° from horizontal. The third opening is the vent and it opens directly into the pump cavity. As it fills tip the entire pump towards the vertical. This lets air out. We used a plastic syringe to fill. The next "trick" we used was to dunk all three ends of the hoses (they are about 5m long) in a jar of ATF (we used a clear plastic soft drink

bottle). Then we ran the pump until bubbles stopped coming out. It was very gratifying to see those bubbles as our previous efforts (before getting the piston orientation correct) had been unsuccessful. Kathy was great and helpful in this entire endeavor.

Saturday, 26 February 2011 07:18 UT

Received main and genoa back from Hood Sails (Tas). Genoa had sacrificial cover repaired once again. The fabric is still good, just the stitching was a problem. Secondly the mainsail was checked for wear and tear and the leech line modified to be controllable from the boom end. We also intend to try it loose-footed and see how it goes.

Sunday, 27 February 2011 04:26 UT

Sailing from RYCT to the "Duck Pond" in Barnes Bay, we have Rig Glitches.

1. Too much headstay sag.
2. Problems with tensioning the jib halyard. Halyard won't hold in a line clutch.
3. Leeward shrouds (uppers in particular) are way too loose. Mast actually sags downwind a couple of degrees above the top spreader.

Fixes:

1. Swap the spinnaker halyard for the jib halyard.
2. While the jib is down, disassemble the furler and take up 2 to 3 turns in the turnbuckle.
3. Re-tune the rig.
 - a. Tension backstay to max and note the mast pre-bend. Should be 3 to 4 inches.
 - b. Tension lower, uppers, and intermediates per normal, but add an extra bit to the uppers.
 - c. Take opportunity to re-grease the turnbuckles. Some of them are too stiff.
4. Inspect spreaders and masthead.
5. Fix Starboard flag halyard.
6. SAILS
 - a. Ian Ross of Hood Sails Tasmania repaired the Genoa sacrificial cover. The cloth was just fine, no need to replace it. He also
 - b. The main was inspected and some small patches installed. The Leech Line was extended to be operable from either the tack or clew. A small block at the head of the sail leads the leech to the tack where it can be adjusted with ease. This is a big improvement.

Thursday, 03 March 2011 06:26 UT

1. Rig Tuning.
 - a. Greased all turnbuckles. Aft port lower was much seized and it took great effort to work it out. Inox™ penetrating lube and working the barrel back-and-forth finally freed it up. Not sure why this particular one had corrosion and not the others. Perhaps it was not greased last time around.
 - b. Lowers all tuned to 20-21 (13-14%) points. Some were quite slack, others too tight.
 - c. Backstay at max (48 points, 22%) now shows proper mast rake.
 - d. It may not be necessary to change the furler deck tangs.
 - e. Port upper spreader appears to be slightly aft of the port lower spreader,
 - f. I think the rig is now tuned OK but we will see next time we sail in 30 knots or more.
2. Moved flag halyard cleat to aft port lower from forward port lower; installed new clevis pin port aft lower. This pin has a welded ring on the head to which we can attach the running back. Finally the running backs can be stowed properly.
3. Worked on the Pfaff 130 sewing machine to get tension right. Some bobbins did not work well and were discarded. Previously worked on sewing machine to disassemble motor, grease bearings, fix brush keeper screw, and patch frayed power leads.
4. FIXED OVEN! Replacing the Mercury Control Valve. The last time I replaced this was 28 Dec 2008. Didn't last too long, did it? I will send the old one to Rose at REPCO for rebuilding. At the same time I finally installed the new Igniter Button; had to splice into the old wires.

Friday, 04 March 2011 02:14 UTC

Kathy and I re-tested the rig. All seems fine. Pre-bend looks to be about 3" at 20% tension. At the moment I don't think we need to make new tangs for the furler. We re-assembled the furler. Kathy will do some stitching on the sail.

The backstay adjuster was calibrated as follows:

BACKSTAY TENSION 10%-20%

Gauge Reading	% Break Strength	Turns from Previous	Turns from Mark
50	26%	0	0
48	22%	-7	-7
47	20%	-6	-13
46	18%	-6	-19
44	15%	-6	-25
41	12%	-6	-31
38	10%	-6	-37

Monday, 21 March 2011 01:42 UT

- Repaired Mast Boot
 - Used 5200 to glue down the stainless mast deck collar
 - Change out wood screws for through-bolts (1/4-20 FHMS with cap nuts on deck). Holes filled with epoxy, then re-drilled.
- Fixed BBQ. Rusted out support rails removed and replaced with heavier stainless angle stock. Attached far end of burner with 10-24 machine screws.
- Checked headstay sag while close-hauled. Looks good, but forward lowers are still loose. Could be it needs more backstay tension? Maybe more tension on lowers?
- 1TB drive dead. Might have had some movies on it. That would be only loss. \$700 for recovery – could buy a lot of movies for that. Need to think about backups for everything.
- Added stainless ring that hangs on a bit of shock cord from the lower lifeline. It supports the furling line and keeps it from getting caught in the mid-ships cleat.
- Kathy tested and checked the Pfaff 130 machine.
- Pressure Water System. Pumps did not turn off; i.e. they would not pressurize the system to the shut-off limit. I reduced shut-off to 35PSI.
- The product water tube from the watermaker to the forward port tank had a serious crimp in it. It passes through the port coaming next to the dinette and the protective plastic cover tubing was not attached at the top end. Gear sliding aft scissored the tube. I did not have the 1/4" Fast'n'Tight™ connector so had to make one of plumbing parts and two tube-to-pipe fittings. Buying more parts and spare tubing is on the list.
- The galley sink dispenser pump for dishwashing liquid had the canister fail. A replacement was made from plumbing parts. Replacement unit is on the list.
- NAV Mode on autopilot continues to be off. It takes time for the NAV to kick in. At first it seems to head off on the wrong compass setting.
 - Try calibrating the compass
 - Also re-align the rudder position sensor
- Strange bilge leak. It appears to be fresh water. I suspect at this point it is associated with over-filling the water tanks when making water. Have been running watermaker regularly. No problems, except the filters need changing. Noted some water under the storage boxes. Nothing to do right now, just watch.

Wednesday, 06 April 2011 20:05 UT

Thankfully we have been doing more sailing than boat repairs. However there have been some notable glitches:

1. 26 March. Pumping up Day Tank. Smelled fuel. A gusher of fuel was leaking off the top of the tank into the engine room. Thought it was a bad hose so we continued from Port Arthur to Hobart running directly out of the Port Tank.
2. Also noted steady fresh water leak and presence of coolant in the bilge water.
3. Noted. Engine oil at halfway mark. No oil added.
4. Nav Mode on autopilot continues to be off. It takes time for the NAV to kick in. At first it seems to head off on the wrong compass setting.
 - a. Try calibrating the compass
 - b. Also re-align the rudder position sensor
5. Strange bilge leak. Appears to be freshwater. I suspect at this point it is associated with over-

filling the water tanks when making water.

6. Pressure Water System. Pumps did not turn off; i.e. they would not pressurize the system to the shut-off limit. I reduced shut-off to 35PSI, which is a work-around, not a solution.

Pumping up the DAY tank went awry when fuel started dripping into the engine room. It was flowing into the cockpit locker where it was almost a cascade into the bilge. I was much desolated to smell fuel and find it running over the edge of the locker floor into the engine room bilge. Arghhh! Fortunately it turned out not to be an equipment failure; I had set the fuel transfer from to pump from the partially empty DAY tank to the full STBD tank, which overflowed not at the vent but into the locker. I did find a loose fitting on the vent line, which I tightened up, but I'm not sure it explains everything. It might be that the leak came through the Vetus Splash Guard which was probably NOT designed to take the pressure of a full backflow from the pump.

Monday, 11 April 2011 01:59 UT

- Fresh water pumps are not shutting off. The tank meters show ½ full so that's not the problem. We had this earlier (see 21 March) when I reduced the max PSI to 35 pounds. Now it won't pump over 30 PSI. I filled the tanks and tested each pump separately. Pump 1 will NOT pump above 5PSI. Pump 2 will reach the shutoff pressure. So the problem is in Pump 2; the diaphragms might be dirty or worn. I had better check before Kathy gets back from USA in case I need there is a faulty diaphragm..
- Yesterday finished construction of the relay module for the Fuel Tank Overflow Alarm system. It has been mounted in the engine room for easy access to the power, fuel transfer pump, and the control box above the generator box.
- Fitted a new machine screw on the mast deck collar where it was leaking. It was bedded with E1000 and now does not leak. HOWEVER, there is still water at the collar seam inside the opening. Drat. I think the next step is to replace ALL the bolts, bed them, and tighten them down good and tight. I can't believe after all that work and bedding with 5200 that we still have a serious leak. I have thought water might be running down the mast and out one of the old holes.



Saturday, 08 August 2020 07:54 UT

Replaced old shower hose in forward head (part10616 6' hose straight handle)

Thursday, 21 April 2011 05:05 UT

Tony "Biggsy" Chamberlain finished repairing the cap rails damaged during the RYCT haulout.

- I have been cleaning and throwing out things. The boat is looking much better!
- Replaced Shower Handset and hose in forward head. Replacement part is FISCO SKU 10196 "Shower white straight handle 6' hose"
- Re-installed preventer flip/flop blocks slightly ahead of the old positions as I could not bear to drill into the \$1100 teak which the Club bought.

Friday, 22 April 2011 07:30 UT

- Fixed dinghy chocks. Not a great fix – just bigger wood screws. This needs a whole new design with machine screws to **bolt on** the rail mounts to the chock.
- Re-drilled flip/flop holes because I used 410 sanding filler instead of 406 bonding filler. This time I drilled out a ¼" hole to center the machine screw then drilled out the ½" of sanding filler. I took some longer ¼-20 screws through the mounting plate, coated with Mold Release, then stuck them into the new thickened epoxy. The theory is that I can back out the screws in the morning and they will have molded their threads into the epoxy and I can then replace them with the proper length

screws and tighten them down (after a couple days of curing). We will see....

- YES! Screws came out fine. No problems with the preventer blocks.

Saturday, 30 April 2011 06:13 UT

- With Blair Fraser I mounted the reefing line clutches and flip-flop (halfmoon) Schaefer blocks on the boom. Reefing is now handled with the halyard winch. The B32.STC reefing winch was removed.
- Blair very professionally spliced an eye in 3/8" grey with blue tracer Validator II #1 reefing line. We also whipped markers where the lines need to exit the line clutches when set.

Friday, 06 May 2011 09:03 UT

- Autopilot has continued errors. It "hunts" for the track and takes a long time to settle in on it. We completely reset the pilot to factory defaults, recalibrated and re-set all parameters. Now it is throwing a 244 error which means it has problems telling where the rudder is. I need to check the rudder reference sensor for wiring faults and possibly replace it. It used to keep its track very closely; now it overshoots and makes large corrections to get back on the leg.
- The new preventer block attachment has failed on the starboard side during an unexpected gybe (see autopilot problem above) and pulled out of the cap rail, taking a big chunk with it. The failure may have happened because:
 1. Machine screws were not long enough
 2. Too much load on the wood and not into the hull seam.
 3. Original epoxy had the wrong thickener and I did not get it out all the way to the bottom (because I needed it to set up quickly).

Both sides will have to be re-done now.

Tuesday, 10 May 2011 20:31 UTC

Autopilot Issues

There were some clear problems with the autopilot. The tiller arm was loose on the rudder post. It is fastened by a 1/2" bolt with Nylock, so all I can think of is that it was not fully tightened when we were purging the Octopus hydraulic actuator. It is possible that the slack in the tiller plus the loss of the actuator rod end bushing, allowed enough play in the linkage to convince the A/P that something was wrong with the [RPU](#) (Rudder Feedback Unit) and throwing a "244 Fault" because of this.

The following was done:

1. Tightened clamp screw on bronze tiller arm.
2. Tested RPU with multi-meter for full range of resistance. Looks OK.
3. Checked wiring at the RPU.
4. Adjusted (rotated) RPU to get rid of the "198 Fault".
 - a. This means the RPU at center is not itself centered; it's maybe 5 deg. Off
 - b. I believe the system corrects for this during Dockside Setup.
 - c. The only other way to do this is to re-locate everything. We'll see how this works.
5. Checked that wheel centered equals rudder centered.
6. Replaced Rod End on the actuator.
 - a. Used Vice Grip on shaft as close to rod end as possible.
 - b. Old one came off hard; new one went on easy.
 - c. Used Med. Loctite.
 - d. Noted quite a bit of slack in the old rod end with no bushing.
7. Topped up ATF reservoir which was about empty.
8. Performed bleed procedure on actuator. It had a few bubbles in it.
9. Did full Dockside test with proper rudder end stop setting of 37.5°.
10. Need to do Sea Trial.

Of note is the following information from Yachting Magazine. *"Autopilot performance and, in most*

installations, radar and chart plotter performance depend more on the heading sensor than on any other part of the system... [It improves] steering performance in rough water and most noticeably in following sea conditions." So, I had better figure out the glitches in the KVH Heading Sensor.

Thursday, 12 May 2011 05:03 UT

Heading sensor has been relocated. At least I've found a new place. It is close to where it was, but will be on a shelf to the port and above the floor. The effect of the reefer when it is running appears to disappear at this new spot. The shelf is a 6x6" pieces of oak. Noted: interior of the cabinets is all peeling and cracked Formica. This may get fixed in another life.

Friday, 20 May 2011 12:35 UTC

Today I set about to fix the broken preventer turning block on the starboard rail; I decided to re-drill and re-fill the port side as well. As usual, glitches started to happen:

1. I drilled too deep/too outboard and cracked through the hull on the stbd side. Merde.
2. The epoxy ran out and the pump was frozen to the can. It could not be removed. I put this aside until tomorrow. I have a spare pump, but no spare can. Maybe I can get an empty can or two from Fisheries or Gougeon.

The method this time was much the same only I am using longer machine screws and drilling out a bigger diameter ($\frac{1}{4}$ inch FHMS and $\frac{3}{4}$ " drill hole). Overlong screws were coated with mold release and held in place at the top with the hardware. Next time I will use my old method of an embedded nut as a bottom spacer. In the morning I will withdraw the screws, remove the hardware, replace the screws, and top up epoxy.

A few days ago I rebuilt the Fuel Tank Overflow Prevention Module to be the failsafe version. Blair talked me into doing it. New pressure switches are being sent onward to Dangar Island and I should have them in a week or less. I also began the construction of the Switch and Status Panel for the Overflow Prevention System. It looks pretty good. Maybe later on I can get a custom engraved panel made.

Other underway projects are: mounting the cellular broadband antenna and re-wiring aft deck and transom lights. I have ordered a radio control momentary switch which and control the deck lighting system as if it were one of the physical momentary switches.

Saturday, 21 May 2011 21:20 UT

- Finished all major construction on the Fuel Transfer Pump control panel for the aft cabin.
- Ready to clean up the preventer block epoxy and re-install.

Tuesday, 24 May 2011 20:27 UT

Well, that did not work. The preventer block screws, when screwed back in, simply turned the epoxy threads to powder. Back to square one. I need to drill the hole and just mount it in place and let it harden up. I don't like it much. I think the technique has to be to put a nut in the bottom and allow at least one turn of room to tighten it.

A new glitch: the Honda outboard is leaking fuel. It drips into the water. I will check today. It's windy and a gale is coming. When it gets light I'll haul the dinghy onto the davits and the get the outboard on deck.

Sunday, 29 May 2011 02:57 UT

I have re-bedded the preventer turning block stainless plates by fitting a $\frac{1}{4}$ -20 nut on the end of the machine screws and stuffing the assembly with screws in place into the holes, now filled using an epoxy syringe. The epoxy hardened in place. We'll just have to see....

Sunday, 29 May 2011 02:58 UT

The light over the galley has been replaced with a www.samallen.com.au Part# 70962 467mm LED strip lamp. I really like it. The LED's color temperature is very nice. I've not seen how good they have become. I would consider replacing the Alpenglow lamps with something like this.

AUTOPILOT (see 10 May)

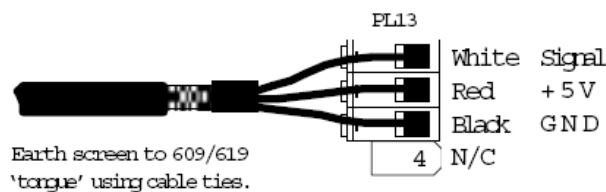
I am still having problems with the steering. I might make sure that the hydraulic motor is at full output, and put the new quiet mounts on at the same time. The dreaded 244 Fault is shown; excerpt from the manual is below.

RUDDER DRIVE FAULT 244

The Pilot computer has sent a drive command to the drive unit but the Rudder Feedback Unit has not detected a change in the rudder position. Check that the Rudder Feedback has not become disconnected from the Rudder Arm, also check that the steering system, especially the motor, is operating the rudder gear correctly. Ensure that the drive unit cables have not become disconnected or loose.

The Rudder Angle display on the A/P unit looks good, so why do we get this error?

THE CETREK RUDDER FEEDBACK UNIT IS SHOW BELOW:



Specification:

Voltage Applied 5V nominal.

Weight 0.5 kg.

Cable Supplied 14 m 3-way x 7/0.2 mm.

Compass Safe Distance

Grade 1 (1/4°) 300 mm (12").

Grade 2 (1°) 300 mm (12").

Overall resistance 2KΩ nominal (across the black and red wires)

AMPFD FBK should be set in the configuration.

RUDDER DEADBAND = 3 and other settings are all OK.

Current = 2.5mA (calculated $I=E/R$)

Power = 12.5mW ($P=E^2/R$)

Next moves:

1. Check the Octopus pump and increase the pump speed. Perhaps it's not working for small units.
2. re-test the RFU hard-over to hard-over resistance at the unit.
3. Also test voltage drop at both unit and at the A/P
4. Swap out the old A/P to see if that is the problem (doubtful)
5. See if the Raymarine or Vetus unit could be used.

Vetus RFU1718 Technical data

Power supply :5 Volt or 12 / 24 Volt DC

Power consumption :10 mA, max.

Output signal analogue :

Display instruments 2.075 V +/- 0.889 V, for +/- 45 degrees rudder

Autopilot 2.5 V +/- 0.342 V, for +/- 45 degrees rudder

Length connection cable
power supply : 2.5 m
Approx \$200 USA price
I think this means a voltage range of 2.158 to 2.842 +/- 45 degrees rudder when 5V is applied

RayMarine RFU Technical data

4-wire unit.

Resistance between 1.7 to 3.3 kOhms hard-over.

4 Wires: Shield, blue red green. The B-R and G-B presents opposite resistances between blue-red and green-blue, i.e B-R 1.7 to 3.3 and G-B 3.3 to 1.7.

RRP A\$330. (USD \$200 is avail in USA)

To see if one of the above would work, I need to measure the voltage on the Cetrek unit.

GeoNav FB 30 RFU

<http://www.geonavmarine.com/Product.aspx?id=154&linkidentifier=id&itemid=154>

Thursday, 02 June 2011 05:59 UT

NEW INFO:

I am anchored in the Hawkesbury River, so the A/P can pretend to be steering the boat while I investigate the A/P problems.

The A/P is signaling the pump to make small corrections as the river flows by. This works fine for a while, then a high-pitched whine starts up. This whine is coming from the OctoPump and is accompanied by quiet sounds of sizzling from inside the motor. Neither is very loud and I could not have heard them unless I was in this quiet river at anchor. The A/P is trying to energize the pump but the pump is just whining. Sometimes the pump comes back to life with a BIG correction to get back to where it was; then settles down to doing its jobs. If the pump does not recover, after a minute or two the A/P sounds its alarm and displays the 244 error message.

This could either be from a problem with the A/P computer or the pump. When the river starts running again on the next tide I will try to take voltage measurements during the failure mode.

It does make sense that if the pump is not working, it won't turn the rudder, and the RFU will therefore not indicate a new rudder position.

OTHER MAINTENANCE ISSUES

- There is a lot of oil leaking out of the Honda Outboard.
- The preventer blocks have been replaced and are ready to use.
- The zippers on the rain/sun awnings and side curtains have deteriorated and have missing teeth after only a year. They need to be replaced. But as the awnings completely leak; it is possible they should be replaced as well.

Disconnected both solenoid wires and power wires.

Splice together.

Then connect directly 12 V. Move back and forth. Run it manually.
12 – 15 sec hardover to hardover.

MOTOR \$358 x 20% no tax \$40 shipping.
MOTOR & PUMP \$680 x 20% no tax. \$544. HST

MOTOR + MOTOR/PUMP:

It is Mon 6 June 2011. I have managed to toast the APC. The “spare” which I bought on eBay about 8 years ago simply did not work. Reminder to self: test all spares for size and function when purchased.

The original APC kept blowing the 30A fuse on the Heavy Duty circuit. I found a blown FET and attempted to swap the component from the "dead" board. When I powered it up did not pass the smoke test. That is to say it burned up. So now I have 2 dead APCs. The only thing I can do now is wait for Dave Winwood to get back from cruising in Spain and send me another unit, or talk Bob out of his. Bob's unit probably died of boredom long ago. So, it's no autopilot for me for a few weeks. If Dave doesn't come through I'll need an entire new system.

Saturday, 04 June 2011 22:27 UTC

This morning I was running the engine to charge batteries. The engine suddenly died. A long time passed before the oil pressure dropped enough to turn on the alarm. This suggests that maybe the flow alarm needs verifying? I wish I had a decent fail-safe alarm panel that would tell me which alarm has gone off. (I have a design, but it's a lot of work and I haven't done it yet. Don't need it 'til you need it, right?) I have sensors for oil press/temp, water temp, water flow, & eng. exhaust but all they do is run a buzzer and a light.

I engaged the backup electric fuel pump and restarted the engine, in case it was the lift pump. It started perfectly. I turned OFF the backup (bleed) pump and it is running fine now. Oil/Water is OK but the drip tank is full of what appears to be fresh water (not green coolant) with a layer of oil on top. Where would fresh water come from? Torrential rains have happened in the last few days, but not in the drip pan. There is a fair amount of oil in the bilge. That's all I know at the moment. Engine seems fine now. WTF?

It is not the oil pressure. It is something in the relays. I started it up and all is fine now.

Wednesday, 08 June 2011 23:01 UT

Nope, engine died again. I found the fault, finally. The power input wire was broken. I spliced in a replacement but decided that this critical circuit deserves heavier wiring than 20awg. This is reflected in “Rev I” of the engine wiring schematic.

Last night I tried to fix the stove but the “new” thermostat from Repco was the wrong model. I called SureMarine in Seattle and they are sending a replacement unit. He will give me \$35 for the “wrong” thermostat. I also have a \$65 core charge to recoup. I also had to fry last night's pizza.

Now it is time to go somewhere more peaceful than the Dangar Island Ferry Mooring. I am off to Jerusalem Bay.

Saturday, 11 June 2011 07:51 UTC

After cleaning up the main cabin I swore I would finish the transom lights today but all I got down was running a new wire to the main electrical panel and reinstalling the backrest stop for the sliding backrest on the bunk. Running that wire, though, was a real job. I had to empty everything out of the aft closet, disassemble the shelving, take the drawers out of the tool chest, remove the tool chest, take the books out of the starboard bookshelf in the aft cabin, take stuff out of the wet locker, and then fish a new 12awg cable from the transom to the main panel. Done!

Sunday, 12 June 2011 00:36 UT

Gas ran out. Changed to full propane tank.

Monday, 13 June 2011 00:14 UT

The forward head has stopped working. The ball valve will not close. Stuck? Dirty? Broken? Who knows? This is all very depressing.

In terms of priorities I have these open jobs:

1. Forward Head
2. Toolbox Slides
3. Watermaker Leak
4. Aft Transom Job
 - a. Deck lights
 - i. Through-hull on/off switch
 - ii. Cabling
 - iii. Connect in Nav Panel
 - iv. Connect signal cable to cockpit
 - b. Antenna
 - i. Routing the antenna
 - ii. Supporting ELITE unit
 - iii. Extension cable???
5. Repair/rebuild cockpit engine panel
6. Check / Repair outboard oil leak.
7. Fuel Tank Overflow Prevention system
8. Fix Sailrite sewing machine case
9. List of minor but not urgent items including:
 - a. Test cockpit drains
 - b. Mast collar leak
 - c. Fix the oven.
 - d. Forward Hatch seal replacement
 - e. Halyard replacements and swaps
 - f. Make new reefing line
 - g. Have awinings fixed
 - h. Starboard lower spreader check
 - i. Starboard flag halyard replacement
 - j. Install shroud cleats (two)
 - k. Spin pole track servicing
 - l. Winch Servicing
 - m. Engine drip pan clean
 - n. Regular monthly maintenance
 - o. Change engine oil
 - p. Change watermaker filters
 - q. Figure out what to do about the Washdown pump raw water filter (needs replacing)

There are more items but these are the most important.

Tuesday, 14 June 2011 06:46

Fixed forward head. The recently replaced seal (5 Sep 2010) was swollen and needed replacing. There was lots of crusty scale to clean off. I replaced the seal with an old style (new) rubber seal. All is well now. I'm still impressed at how easy it is to service these things. The handle was cracked and not re-installed. I will need to buy a replacement, two ball kits, and two seal kits.

MAJOR VIRUS hit the computer requiring total recovery.

Wednesday, 15 June 2011 22:29

No charging this morning. There is a problem somewhere in the alternator/regulator system.

It was a fault in a connector on the exciter wire, intermittent of course. I saw the flash of electrical sparks through the insulation. I am actually getting more amps out of the alternator now. Truly, though, I need to rebuild the wiring. It has gotten kind of messy with the changeover to a single regulator. I enjoy doing wiring and I'm not proud of the way the engine room has gotten so messy. That and the cockpit controls all need to be redone.

In the movie "Joshua Then and Now", the actor Alan Arkin tells his cinematic grandchildren, "*The book of Job is much more than just another gambling story with a happy ending. It has a moral. And the moral is that if you continue to have faith in God or even your family, it will end up paying off double at the window.*"

So I have a new Book of Job, the maritime version. Satan says to God "There is one of your favorite servants, sailing his beautiful yacht on your beautiful ocean. I'll bet you I can bust his bum". So God and Satan make their bets. Poor old Captain Job; he never questions "why me, God" or even says "curse you, Raymarine, Garmin, Volvo, or ProFurl". Every day there is a new test. Monday, the water maker springs a leak. Tuesday, the seals on the marine toilet go bad. Tuesday was a double day, as the computer also contracts a terminal virus. That's OK, Wednesday is an off day and Job fixes the computer and the toilet. After spending the night at anchor in shallow water with 30 knot winds he finds out, in the morning, that although the engine has been running an hour, the batteries have not charged. He almost cries out "Why me, God!" as he realizes both alternators are not delivering any amps. Ok, he gets that fixed by the afternoon. It was only a broken wire, but it's getting harder and harder to focus efficiently with the continued onslaught of daily new problems. He counts the Job list. It has 35 entries on it. There is still the busted watermaker, the autopilot computer which failed its smoke test a week ago, the strange leak in the outboard motor which is dripping oil down the shaft, the need to retrieve the Vice-grip that slipped into a hidden and inaccessible place in the bilge, the leaky main hatch and leaky mast collar, the broken oven that needs a new thermostat (he hopes its



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only that). Not to mention the lack of time to do the routine maintenance such as oil changes and cleaning, the overdue winch servicing, a halyard replacement, and reefing line replacement, the sunshade repairs, past due filter changes and so forth. Job wistfully eyes the new projects he was working on; they are sitting on the settee in a box. He was building a switch panel for some aft deck lights, and a clever device to prevent fuel overflows when pumping up the day tank. He enjoys these creative jobs. But they remain half-finished and set aside; their priority downgraded to deal with the daily major and minor breakdowns. He hopes to make the boat better and more comfortable, as soon as the list gets smaller. He hopes to leave the frigid southland and sail north to Queensland or the Pacific Isles. Did Satan give God odds, or is it an even bet? Job is steadfast, "I am a sailor", says he, "I have faith. God has provided me with spare parts for a reason, and exotic parts in which to use them." Amen.

Friday, 17 June 2011 05:38

The watermaker Clark Pump turns out to have stress cracks around the HP Outlet port. The last time I worked on the CP I noted that this was leaking and I used extra Teflon tape and screwed it in tight. This was last September (2010) and now it has been leaking; I don't know for how long. A professional rebuild and testing will probably cost about \$300 + the CP Center Block.

Monday, 20 June 2011 08:37

I put the faulty watermaker pump back. I did not want to have to pickle the membrane and it doesn't leak so badly that I can't do a freshwater flush. I will keep flushing until I get to Southport.

Wednesday, 22 June 2011 00:51

After talking with Neil Bull (aptly named) in Queensland he offered to repair the unit for an unspecified amount, sell me a new central block for \$1690, or sell me a refurbished Clark pump for A\$1000. The Spectra factory in USA will upgrade/rebuild or replace my unit for \$450 plus shipping. As it turns out I will be in the USA July 5 to Aug 15 and will just bring it with me. So it will get pickled as of now.

PICKLED THE WATERMAKER MEMBRANE

Saturday, 25 June 2011 09:03

Finished installation of six (of seven) new AGM 900AH GPL-6CT-2V 900AH batteries. The installation was assisted by Niall from Sydney, who made the whole project go smoothly and quickly. I have decided to abandon use of switches and simply switch cables every month, although the switch concept is elegant. The heavy (42kg) batteries were a lot of work to shift around.

Sunday, 26 June 2011 07:49

Continued work on the 7th battery install. This involved cutting away some of the battery tray so that when I moved it there would not interfere with the through-hull bolt for the lightning ground plate.

I expoxied some thread inserts into the tabbed wood stringers so that we could two rows of three fasteners holding it down. There is just enough clearance – I did not have to raise the stringers. This however, kept the battery close enough to the old tray that the vertical post did NOT let it slide forward. They are sure packed in tight! I have at least two days of boat cleanup to do.

Friday, 01 July 2011 22:27

Batteries are all done, except I forgot to re-connect the air vent hoses for the aft water tanks. After filling the tanks, I started to fill the boat with the overflow!

Noted: main engine generation at -200 AH is no better than the little Honda. The new batteries, being only 25% depleted at -225 AH, do not accept as much charge current as the old ones.

I have purchased (with Niall Clifford) six new extended run Kubota Z482-E2B diesel engines to be shipped to Sydney. We will convert two into marine generators and sell the other four.

Monday, 05 September 2011 05:40

Replaced watermaker Clark Pump with refurbished unit. (\$445 factory rebuild). Changed mounts so rear brackets are cut to allow them to slide out of the rubber mounts after loosening the machine bolts. Pressure tested without leaks. All cartridge filter have been changed and/or cleaned (KBP did this).

Tested Cetrek RFU again and re-set so it appears to be perfect in its centering. Testing of the only semi-functioning autopilot computer shows that the drive motor will operate to starboard, but not to port. This indicates, in my opinion, a FET, relay, or other onboard failure of the autopilot computer. I believe that both the RFU and the Octopus drive motor (for now) are functioning. Arrival of the spare autopilot computers next week should fix things.

Also today, KBP replaced the sun-damaged outboard motor rail mount plate, the rail clamps on the Lifesling, and JS installed the Milwaukee tool battery chargers under the nav station.

JS redesigned the deck lights system to accommodate a dimmer switch, but this is over-engineering and really isn't necessary.

I re-installed the stanchion on starboard bow which was bent when the mounting plate for the preventer turning block came loose. Niall Clifford's shop made a whole new stanchion. Picking apart the Amsteel eye splices and re-splicing was quite easy. I need to remember to allow about 2" longer than required because of the bulking up of the splice.

The forward head Vacuflush is losing vacuum. Without a vacuum tester I need to check the base seal, the Universal seal, and all hose clamps back to the pump.

Friday, 16 September 2011 22:13

Kathy started on the winch servicing:

#	TYPE	LOC	WINCH	DATE COMPLETED
1	B32.2ST	Cockpit	Control Lines	19/9
2	B40.2ST	Cockpit	Port Secondary	20/9
3	B40.2ST	Cockpit	Starboard Secondary	20/9
4	B40.2ST	Cockpit	Mainsheet	20/9
5	B56.3ST	Cockpit	Port Primary	08/10
6	B56.3ST	Cockpit	Starboard Primary	08/10
7	B32.2ST	n/a	Former reefing winch	15/9
8	B40.2ST	Mast S	Main Halyard	20/9
9	B32.1ST	Mast P	Spinnaker / Genoa Halyard	16/9
10	B16.1ST	Mast P	Staysail Halyard	18/9

Autopilot was repaired:

Out of the three computers sent by Dave Winwood in the UK, only one was functional, and it did not have the CPU Eprom. The CPUs from the onboard dead both tested good. The new APC is a 619 unit which has the advanced daughter board. It will work the 780 control head which I have in stock. In fact, both control heads work together. There is a glitch in the 780 where the Setup Menu increases the contrast to max so the screen goes black. This is not too serious a problem. It has a bigger screen and lots of added info displays, but IMHO it is not an easier unit to use. The main problem with the 740 display is that the control knob no longer works.

A new motor was installed on the Octopus pump. This motor is both quieter, newer, and there would be no internal wiring problems. This model has a newly designed quiet mount. It really is quieter!

KPB and I bled the cylinders and took *Beatrix* out for sea trials. So far the AP is working perfectly, but I won't be totally convinced until we sail for a number of hours under autopilot control.

Tuesday, 20 September 2011 08:48

Today we had winds with a max gust of 39 knots in Blackwattle Bay. We dragged anchor twice and had to re-set and then tonight, with only slightly moderated winds, pulled up and re-located to be better positioned relative to another boat which had also re-anchored nearby. They had a lot of trouble. The bottom is fairly foul with junk here. A large Beneteau also dragged anchor with no one aboard. Fortunately it nicely dragged into an empty slip next to the local pier. Someone, probably not the skipper, tied the boat down.

Kathy did two and a half winches today.

Thursday, 22 September 2011 07:08

I fixed (I hope) the vacuum leak in the forward head; although I broke the trim ring in doing it. New seal and new rubber sponge seal were installed. Problem appears fixed.

Sunday, 25 September 2011 21:28

All winches are done except primaries. They need to be completely removed from the boat.

NOTES ON OIL FILTERS

BF988	BALDWIN FILTERS	BF988	
BT216	BALDWIN FILTERS	BT216	
G381-A	BALDWIN FILTERS	G381-A	Gasket
G449-B	BALDWIN FILTERS	G449-B	Gasket

Thursday, 06 October 2011 21:05

Noted fluctuations on Alt 1 amps. I suspect the exciter wire is both undersized and maybe loose. Still have problem where Alt 2 sense drops out after 5 minutes (heat?).

Friday, 07 October 2011 19:50

WASHDOWN PUMP REPAIRS

- Relocated fresh water supply hose and filter to make room for new Washdown pump motor.
- Drilled out (and replaced) base plate (made of ½" LDPE) for 12V pump motor and pump.
- Added vented loop and new pressure switch located on wall between drawers and dry locker in galley. Access by removing drawers. Replaced hinges on foldout "flour bin".
- Added wiring schematic and specs to DC Wiring Visio diagram.
- Re-routed tank vent lines.
- Re-plumbed the inlet/outlet on the PSR pump. It turns out the pump can be run in either direction so the plumbing can be routed the best way and just change the motor rotation to fit.

Monday, 17 October 2011 07:33

A big task done was re-organization of all fasteners which are now sorted into boxes! Yay!

Over the last weekend we installed, with Niall Clifford's generous help, a stainless frame that surrounds the battery area in below the cabin sole. This has strengthened the floor the point where it no longer gives at all – it feels like concrete! The stainless frame is bolted through the sole with RHMS and the holes plugged with teak plugs.

- 2mm neoprene was spray glued to the bottom of the main battery tray, and a length of 6mm rubber glued to the battery 7 tray.
- KY™ Jelly turned out to be a very good lubricant to slide the batteries in place.
- A battery installation/removal plan was documented.

Today we found a leak in the sink drain through-hull in the aft head. It turned out the plug was missing for the drain/zerk fitting. Why it was gone was a mystery, but in the closed position it leaked slightly; half-open it leaked A LOT; open it did not leak at all. A stainless zerk fitting was installed and appears

to have solved the problem .

Other things accomplished:

- Roller furling LBU was flushed
- Windlass Cones flushed
- Line clutches flushed
- Toilet seals scraped (fwd head only)

Flushed watermaker

Tuesday, 18 October 2011 20:01

Battery 7 (spare) was swapped into position formerly occupied by Battery 5. Battery 7 is now in middle row aft. Battery 5 is now in the spare position. Battery 7 (which has never been in the bank) had a resting voltage of 2.05 as compared to Battery 5 at 2.11. This represents a 50% discharge on the battery that was uncharged all these months. Full charge should be 12.96 volts according to the table, but I never see this.

State of Charge	2 Volt Battery	6 Volt Battery	12 Volt Battery
100%	2.16V or more	6.50V or more	12.8V or more
75%	2.08V	6.25V	12.5V
50%	2.03V	6.10V	12.2V
25%	1.98V	5.95V	11.9V
0%	1.93V or less	5.8V or less	11.6V or less

Reset the battery charger configuration (see [Battery Log and Charge Configuration.doc](#))

- FX2012MT: Absorb voltage changed back to 14.3 on 110V (FX2012MT)
- Solar: Reset Float Setpoint from 13.3 to 14.4 vdc
- Solar: Accept time limit set at 10 hrs (formerly 6 hrs)
- Noted: Link 10 voltage is 0.15vdc below that of the Blue Sky and Blue Sea display

Wednesday, 19 October 2011 08:08

This was a frustrating day. Most of it was spent trying to get our antique Pfaff 130 sewing machine going. In the end we gave it up for bad job; we need a repairman. Kathy used the hand stitching awl to make a lifting harness for Battery 5 in the battery bank. I finished making the removable dividing bar between the floorboards. It's just OK.

Tuesday, 25 October 2011 20:02

Over the last week we put in a new bus bar support for the main battery bank and finished working on the supports for the PSR Washdown pump and coupling it to the new motor.

Problems persist with the sewing machine. We do not seem to be able to set the hook timing.

A small pressure water leak seems to have developed and needs to be tracked down. We also still cannot find the box of spare regulators. They are listed on inventory, but are not where they should be.

Tuesday, 25 October 2011 23:22

Noted low amps in charging with Honda + FX2012MT. Spend some good time with Outback Power tech support and it MAY be that 3 boards need to be replaced: FET/Control/AC. Since the system is old, all 3 need upgrading. Cost is \$180 each plus shipping and core charge.

Thursday, 27 October 2011 02:19

Talked to George, David, and Kurt at the Outback Power company. We reset the system to factory defaults and will test tomorrow to see if charging is successful ant normal levels.

I continue to work with the fuel overflow prevention systems. The design is not perfect but will work without trouble.

Vacuflush

The forward head vacuum pump is, again, cycling too much. The seal was replaced a month ago, as was the foam flange seal. I will check the Universal seal (maybe replace it) at the vacuum pump under the dinette seat.

Tuesday, 01 November 2011 19:40

- Noted continuing cycling on forward head vacuum pump.
- Working on the fuel tank overflow system. It has bugs.
- FX2012MT is not putting out expected amperage. E.g. at -100 ah I expect more than 50adc.

Go into advanced programming and let it run through three times until it goes to SAV

Thursday, 03 November 2011 00:05

- Installed new battery voltage sensor line from alternator to battery. This red 12AWG wire runs through the raceway between the ER and galley station where it attaches to the main bank bus.
- Installed 14AWG blue field wire from MC-612 to small (110A) alternator.
- I still need to double up on the black (Ground) wire.

For a while I thought the glitch on the alternator output ammeter was fixed, but it still goes to -1 after a few minutes. It seems to have something to do with heat.

Tuesday, 15 November 2011 01:23

- New alt temp sensor ordered (it was bad).
- Solar power amps now at max due to fixing high-resistance connection on burned-out connector of terminal board.
- Finished wash down pump repair.

Tuesday, 29 November 2011 00:07

- Working on controller design for Diesel Generator
- Found out problem with Blue Sky Pro Remote is I incorrectly zeroed the shunt. This is like the “tare” on a scale and must be done with the shunt wires connected together to zero the resistance.
- Blue Sky says “The best and most simple way to ensure that the controller does what you want and still be able to count amp-hours etc. is to set the float charge volt to no float by lowering the setpoint until no float shows on the ProRemote screen. All the other set points should be back to factory defaults.”
- Main engine oil was changed this week
- Honda generator engine oil was also changed this week.
- Honda outboard was treated with Inox rust-inhibitor.

Friday, 20 January 2012 06:08

This is the first time back on the boat since my kidney removal operation 20 Dec, one month ago. With no refrigeration the batteries were fully charged from the solar panels. Pulling down the reefer and freezer took a long time and used many amp-hours. By the morning we were down almost 350AH but the system is stable now. We started with the refrigerator and the amp draw was almost 28 amps while the normal reading is 23.5 to 24.5. The compressor amp draw is now normal. It appears to me the refrigerator is taking a long time to cycle down, but I won't check it with the counter/timer for a few

more days.

We started out to head for Sydney, about 30 miles, but found during the pre-trip check that the transmission was empty of fluid. I recalled that from an earlier problem with low fluid that it was a failure of an O ring. Our vessel inventory reported 2L of ATF which we found in the proper place, but the O rings for the “Forward and Reverse Gear Transmission Valve” which were supposed to be in Parts Box 12 were simply not there. Frustrating.

Our decision was to fill the transmission and see what happens. We confirmed that the tranny is powering the shaft in forward and reverse. We are letting the engine run to give us some hot water and battery charge and will check the fluid level “hot” after that and then “cold” in the morning.

The engine belts look like they could be tightened.

Saturday, 21 January 2012 22:00

The following operating temperatures in deg. C were noted:

Alt 1	44 (too cool)
Alt 2	70 (not a problem – 98 or 99 is a problem)
Eng	88 85 85 85 (stern to bow)
Bypass	55
Tranny Case	95 / 220
Oil Line Tran	102
Oil Cooler	82
Header Tank	85

Temperatures are now being recorded in the Operations Log Spreadsheet

Yesterday we added a full liter of ATF to the Velvet Drive transmission.

This morning after motoring for 7 hours there was no loss of ATF in the transmission. The ATF was its normal translucent pink color (no black, no water in it).

Reading in the Calder book on “Marine Diesel Engines” reveals that few scenarios explain the loss of one full liter of ATF so suddenly. He notes that ATF can leak from a burst hose, a pinhole in the oil cooler, a bad seal in the output or engine side, or a bad O ring in the transmission shift valve. The last is a slow leak. An oil cooler leak should put oil into the header tank, an output seal leak should put oil into the bilge, and a blown seal to the engine should put oil into the crankcase because the oil pressure is greater in the transmission?

We had noted that the engine oil was significantly above the “full” mark. Could this be the problem? The boat was left in the Hawkesbury River on a mooring for a month. The Hawkesbury tidal flow plus river flow can get up to 7 knots. If the Max Prop were not feathered, then the transmission would have been freewheeling like a fixed prop. This would cause pressure in the transmission. Could this be enough to push ATF past the seal into the engine crankcase? Without the engine operating there would have been zero oil pressure in the crankcase. The ATF would have ended up in the sump, explaining the over-full reading on the dipstick.

The Max Prop will fail to feather if it needs greasing or if the engine is stopped while in reverse. It was thoroughly greased last Feb and I can’t see us turning off the engine while in reverse. We usually stop the engine in neutral, although the Max Prop manual recommends stopping the engine while engaged in forward. Normally we would not care if the prop was feathered while at anchor, but I guess we need to start checking if it is feathered while sailing, or at anchor in a river. I can hear the shaft turning under normal circumstances if the prop doesn’t feather but the day we moored we left the boat quickly.

I have taken a sample of the oil from the engine and we have a clean sample of unused oil. The Oil Test Lab says that they can tell if there is contamination. If my hypothesis proves correct, I will need to

consult a diesel tech to see if I need to change the oil (it was changed only 15 hours ago). I think it is likely. I also want to ask if the forward seal leak is an indication of a failing seal!

Loss of performance can be due to:

- Dirty Air Cleaner
- Slipping Transmission Clutches => black oil in transmission which is not the case.

Action items:

- Clean Air Cleaner **DONE (full power available again).**
- Drain the engine oil until it hits the full mark on the dipstick. Check both religiously. **DONE**
- Clean oil cooler and engine heat exchanger.
- Remove scale and salt deposits chemically (see p.93)
- Change anti-freeze.

71C Velvet Drive transmission Parts & Rebuild

Rebuild:

<http://www.michiganmotorz.com/transmission-rebuild-velvet-drive-p-475.html>

https://www.halemarine.com/index.php?main_page=product_info&cPath=1_18&products_id=2364

Get new neutral safety switch

https://www.halemarine.com/index.php?main_page=product_info&cPath=1_18&products_id=520

Get spare O ring for fwd/rev valve

http://www.halemarine.com/index.php?main_page=product_info&cPath=1_18&products_id=178

Get temp warning:

http://www.halemarine.com/index.php?main_page=product_info&cPath=1_18&products_id=115

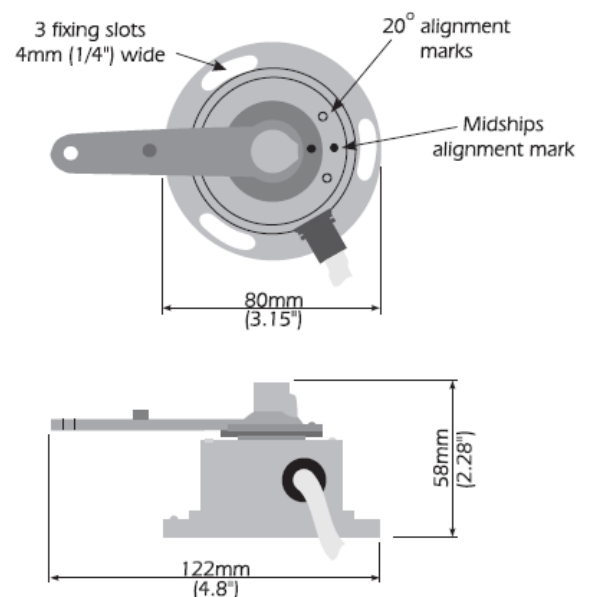
Thursday, 26 January 2012 22:44

- Dodger windows cleaned, polished, and protected
- Washed window covers
- Line clutches rinsed with Salt-X
- Sunscreen on ditch kit

Rinsed furling gear

Sunday, 29 January 2012 05:35

Recent major maintenance was on the autopilot after its total failure several weeks ago in the Hawkesbury River. It is odd that I did not note the failure in any of the logs. No matter, the main problem was a breakage of the Rudder Feedback Unit 930809. The plastic arm had broken off at the shaft. I do not understand why this would be unless something was in the way (unlikely) or the connecting arm



Monday, 30 January 2012 22:34

All my notes on the Octopus have disappeared thank f**cking Microsoft except the above.

What has been done is this:

- The RFU has been replaced. Calibration was not too difficult. The white/black wire needs to be at about 1 K Ω . The new unit was purchased off eBay fortunately just a few weeks ago. The old unit is functional.
- Noted the reservoir empty of ATF. Attempted to bleed the system but ATF kept disappearing. The solenoid appeared to hold the wheel tight, but the pump was running very slowly and not driving the wheel at a normal speed.
- Testing of the unit included: removing the tiller arm, running the pump with bleed open, and finally disconnecting the pump from the hydraulics. It still ran poorly.
- Taking the pump off of the motor was next. The Octopus motor was full of ATF and not running well. Perhaps there is a broken seal. This is a new motor (but old pump) installed 16 September 2011. Jonathan Ingente of Canada Metals (Octopus) confirms this as a rare event.



Sunday, 05 February 2012 02:44

Working on Fwd Head Vacuflush which keeps cycling (losing vacuum). I have tightened the floor screws, the band, and checked the vacuum unit. That did not work so I changed out the Universal seal and we will see how that goes.

Today we packaged up the Octopus pump and pump motor. Jonathan Ingente of Octopus will replace the motor and mount and test the pump. Shane Brooker will carry it to the USA and pop into the USPS to Blair in Blaine WA. He will take it to Octopus.

Kathy performed Monthly Maintenance as follow:

- Cleaned and polish all winches
- Inspect all chainplates and terminals
- Treated ditch kit with 303 Aerospace Protectant
- Inspect and clean Raw Water filters.
- Scrape Vacuflush toilet seals with special tool
- Rinse line clutches
- Rinse Furler Lower Bearing Unit

Wednesday, 08 February 2012 20:56

- KB polished the binnacle
- Scrubbed the transom and waterline
- Checked scum on waterline. Can't tell if rudder has barnacles.
- Worked on awning.

Sometimes a BW transmission leaks from the bleeder valve when in reverse.

Tuesday, 14 February 2012 00:11

Called Bert at CruzPro re. malfunctioning chain counter.

Voltmeter on sensor wires (B to Grnd) should be 5V if mag not over sensor (otherwise 0).
Same on "C".

Loosen chainwheel clutch to rotate by hand and slowly rotate past the sensor. It should short to ground.

Tuesday, 14 February 2012 02:49

BAD RAW WATER PUMP SEAL!! This is noted as of today. SOLUTION: Replace with spare pump. Take bad pump to USA for rebuilding.

Forward Head Fix for Vacuflush T-3 pump cycling all the time. Turned out to be scale and worn out duckbills. The interior of the pump was heavily calcified.

Disassembled the T-3 pump for forward head. Yes, the duckbills were all bad, but also we had big calcium deposits inside the pump itself. Kathy disassembled the pump. We used a 10% Hydrochloric acid solution which just fizzed away until the scale was all eaten away. It does not hurt the plastic or rubber and if rinsed in a solution of Baking Soda residual acid is neutralized. The pump was beautifully clean when we re-assembled it. Re-installation was straightforward. The only issue was that this did not fix the problem.

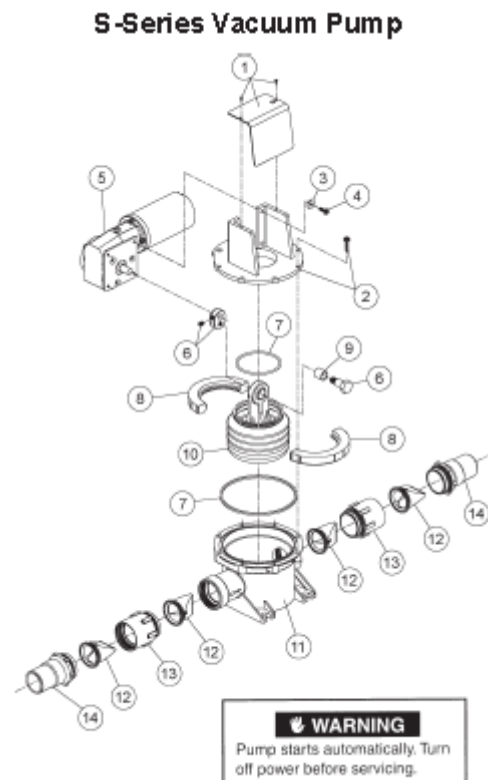
Cleaning the Lines from <http://www.boatus.com/boattech/casey/04.htm>

Heads flushed with salt water accumulate scale deposits in the discharge channels and hoses. Scale deposits cause a head to get progressively harder to flush, and it is scale on the valves that allows water in the discharge line to leak back into the bowl. Calcium deposits eventually lead to total blockage, a most unpleasant prospect.

Avoiding this problem is as easy as running a pint of white vinegar through the head once a month. Move the vinegar through the head slowly, giving the head a single pump every 4 or 5 minutes. The mildly acidic vinegar dissolves fresh scale inside the head and hoses. When the vinegar has passed all the way through the system, pump a gallon of fresh water through to flush the lines.

If you suspect you already have a scale build-up, dissolve it with a 10% solution of muriatic acid, available from most hardware stores. The acid won't harm porcelain, plastic, or rubber parts. It does attack metal, but consequential damage takes a long time. The biggest danger is to eyes and skin, so be sure you observe all label precautions.

Pour two cups of acid into the bowl. It will fizz as it reacts with the calcium deposits on the bowl valve. When the fizzing stops, pump the head-intake closed-just enough to empty the bowl. This moves the acid into the pump. After a few minutes pump again to move the acid into the discharge hose. Let it sit a few more minutes before opening the intake and thoroughly flushing the toilet and lines. The acid is "used up" as it reacts with the calcium, so heavy scaling may call for more than one treatment. Scale and salt also find their way into the anti-siphon valve in the discharge line. Remove the valve and soak it in warm, soapy water to dissolve deposits that could be holding it shut-or open."



Thursday, 16 February 2012 05:52

Today we got back onto it. By using a 1.5" piece of aluminum rod we could test the vacuum pump by separating the toilet from the vacuum generator. The rod kept the seal on the vacuum side and indeed our efforts of yesterday were good. There were no leaks.

Then we took the toilet apart and replaced the floor flange seal and the shaft that rotates the ball. We used up one Vacuflush Ball/Shaft/Cart. kit 385318162. The unit is now fixed.

Saturday, 18 February 2012 06:48

Three things have happened in the engine room:

1. Water was noticed dripping from the shaft of the raw water pump. This could be caused by either:
 - a. Leaking intake hose where it is clamped to the RWP.
 - b. Bad seal on pump
2. The bilge pump, when running, was spitting water and not sucking. *Disassembly showed a broken diaphragm.*
3. The starting alternator pulley was very rusted.

Actions:

1. Replaced with spare RWP. Later: disassemble and inspect for bad seal.
2. Remove bilge pump. Diaphragm was torn. Kathy rebuilt pump with service kit SK880. Re-installed.

3. Replaced pulley, inspected and sprayed with Inox.

Of Note:

1. The two carriage bolts of different lengths used to mount the RWP are important. The larger one goes on the bottom.
2. Tensioning the RWP remains a problem. I still use a screwdriver to lever the pump body but it is a stress on the hose and something better would be nice.
3. I forgot to get the alternator serial number. Next time.
4. The bottom hose attachment (and the top as well) to the RWP are minimal. Why these pumps are manufactured with such a small stub is a mystery. It would be SO NICE if the input and output hoses were more readily detachable. They are only single-clamped at this point; I prefer double-clamping on raw water hoses below the waterline.

V-Belt Drives

I was wondering if the V-belts should be replaced. The following excerpt for Gates Corp.

V-belt drives transmit power through friction between the belt and pulley. With efficiencies ranging from 95% to 98% at installation, V-belt drives use energy more efficiently than roller chain drives, and somewhat less efficiently than synchronous belt drives. V-belt drives are an industry standard, offering a wide range of sizes at relatively low cost, along with ease of installation and quiet operation.

V-belts are manufactured in a variety of materials, cross-sections and reinforcement materials, and are often used singly, in matched sets or in joined configurations. They are well suited for severe duty applications, such as those involving shock loads and high starting loads. Standard V-belt drives operate best in applications of 500 RPM or greater, speed ratios of up to 6:1, and within a limited operating temperature range of -40°F to 130°F. Because V-belts slip when overloaded, they help protect more expensive equipment from load surges. They also allow flexibility in the positioning of the motor and the load.

In a suitable application, the service life of a properly installed and maintained V-belt drive ranges from 20,000 to 25,000 hours. Due to belt slippage, V-belt drives lose up to 5% of their efficiency after installation. V-belts stretch as they wear, making slippage worse, which can decrease efficiency by as much as 10% unless corrected by periodic retensioning. Cogged or notched V-belts can increase efficiency by 2% over standard designs.

Comments from the Peterson Cutter Group dismissed this idea completely. Ranges from 250 hours to several years were reported.

Sunday, 19 February 2012 20:24

After the raw water pump replacement the engine would not start with the key.

Washdown Pump

1. Made new support frame for Groco PSR pump
2. Made base to hold above and pump motor using 12mm LDPE
3. Re-routed line and install vented loop and new pressure switch
4. Re-configured plumbing and hose attachments
5. Installed pump and motor
6. Reconnected hoses
7. Installed solenoid
8. Connected wires.
9. Test

Sunday, 26 February 2012 07:11

Today we installed the modified sound plate which lives underneath the Generator Box.

Noted: 25.5 amps on refriger. Compressor, which is 2A over the usual 23.5.

Sunday, 15 April 2012 01:12

Back on boat after triple bypass surgery on 29 Feb.

In Jerusalem Bay, NSW. Yesterday I put on SCUBA gear and scraped encrustations of barnacles-on-top-of-barnacles off the propeller. We could barely do 4 knots coming down here. It was as if we had a couple of angled 2x4s for a prop.

I wired in a new engine hour meter which we have been running full-stop to catch up to the calculated engine hours at 2014.5.

Bilge pump counter not working. It just won't totalize. We will need a new counter. See Allied Electric <http://www.alliedelec.com/search/productdetail.aspx?SKU=70115444> \$25.00 ea.

Wednesday, 18 April 2012 02:42

Start Battery Removal

- "Exide" battery bought in Noumea 20 months ago is dead.
- Replacing with Optima 34M purchased at www.batteriesdirect.com.au/ A\$275 delivered,

Refrigeration Glitches:

- Reefer stopped working with noise in the controller and error shutdowns.
- The problem was that in disconnecting the starter battery friend Eugene (helping us) also disconnected the ground wire that runs to the controller. I'm surprised it tried to start the unit at all. I have no idea which other wire was acting as ground.
- The power connections to the compressor (3 big wires YOB) are fine.
- In case we did need to use gauges:
 - There is a 3/8" line and a 1/4" line. The "suction" line, the big one, is the one to add the R134a refrigerant to. Uses the BLUE hose. The valve works backwards from a normal valve, as it seats upwards. Clockwise to open, counterclockwise to close. It only take a 1/4 turn to open. There is a black cover over the valve stem.
 - Blue Gauge Hose to suction line (attaches to big tube)

Other:

It is raining very heavily. Water is coming down the binnacle and is found in the cockpit locker as well. The cabin is fairly dry except for leaking around the electrical pass-through near the mast.

Sunday, 22 April 2012 05:23

Moved new generator onto boat.

Installed new Octopus pump/motor and bled autopilot.

Replaced Hatch Seal. This proved to be a big project and the seal got torn in the process. It was repaired with E6000 so it might be OK. Some notes:

Seal Replacement Notes:

1. Carefully place seal to have the part that slides into the aluminium frame properly upright.
2. Use KY Jelly or other to grease the seal
3. Upon re-assembly spread the frames while sliding over the
4. new seal so as NOT TO CUT the new seal.
5. The plastic hinge slugs are keyed to slot into the frame.
6. Insert the inner flat facing the plastic. The second have of the
7. hinge pin pushes in and clips.
5. Re-grease all seals.
6. Use 1/16" welding rod as pins to loosen the jacking nut.

Sunday, 03 June 2012 19:12

Returned from USA with rebuilt raw water pump. DEPCO tech put in new seals, trued the shaft, and new bearings. Cost \$120. Noted is that it has a bronze shaft (the new ones are stainless). He said this particular pump was originally intended for a specific power boat and that the short discharge barb is unusual. I tried to figure out how to extend it, but to no avail. The best idea would be to buy a chunk of bronze, turn it down to be a sleeve/tailpiece, and glue it in with 5200 and set screws.

Kathy bought a new Pfaff sewing machine, leaving us 3 to get rid of. The new wind sensor arrived from LJ Capteurs in France.

Monday, 04 June 2012 02:07

Tested wash-down pump. There is a very small leak at the seal. Pressure is also down. I adjusted the pressure switch to have a higher cut-in/cut-out profile. I think we also need to construct a simple wash-down hose with a minimum of pressure-robbing fittings.

Kathy cleaned the teak floorboards and underneath in the cockpit. Very dirty. The floorboards do need replacing. We also pressure blasted the sink drains. These things STILL give me the willies – about 1mm of PVC between us and sinking. Sheesh.

Tuesday, 12 June 2012 03:45

During the last week we have done serious re-organizing of the boat to the point that we might actually be able to go sailing soon.

Kathy installed the red LED arrays in the Galley and Nav station overhead Alpenglow lamps. She has learned soldering!

Jeff found a new place for the Pelican computer case and finally fixed a tie-down for the dinette table using a stainless ratchet and a webbing strap that runs from the outer bulkhead through footman's loops to the floor near the stainless support post.

Sunday, 17 June 2012 04:57

CURRENT CHARGER CONFIGURATIONS

CHARGER CONFIGURATION	FX2012MT (110V/60HZ)	FX2012ET (240V/50HZ)	SOLAR CC Blue Sky IPN ProRemote	Balmar MC612 Regulator with 210A+100A Alts.
Maximum Amp DC (Shore)	90 adc	100adc	n/a	n/a
Max Amp DC (Off Grid)	90 adc	n/a	20 adc	190 adc
Charger Limit	12 aac	6 aac	25 adc	n/a
Acceptance/Absorb Setpoint	14.3 vdc ⁴	14.2 vdc ⁵	14.5 vdc	14.18 vdc
Acceptance/Absorb Time Limit	4.0 hrs	4.0 hrs	10.0 hrs	36 min (minimum)
Float Setpoint	13.6 vdc	13.2 vdc	13.6 vdc*	13.38 vdc
Float Time Period	2.0 hrs	2.0 hrs	n/a	6.0hrs
Float Current (A/100AH)	n/a	n/a	0.3 a/100ah	n/a
Refloat Setpoint	12.5 vdc	12.5 vdc	n/a	n/a
Equalize Setpoint	15.0 vdc	15.5 vdc	15.0 vdc	Not used
Equalize Time Period	1.0 hrs	10.0 hrs	1.0 hrs	Not used
Low Battery cut-out setpoint	11.4	11.4		
Charge Efficiency			96%	
Self-Discharge Setting			02%	

- NO FLOAT is set

Items highlighted in yellow were changed.

Equalization using FX2012MT and Honda 110V charger was done today: 15.0V for 1.0 Hrs. The volts are registering at the panel. Battery volts are 15.25 at the battery.

Sunday, 17 June 2012 06:12

Tested rebuilt Whale Gusher Titan manual bilge pump without a lot of success. Something is wrong.

We also then pumped out the test water (accumulated rain and some oil of some sort, not black, what could that be? Tranny fluid? Octopus?). The bilge pump was also kind of slow, but did pick up eventually. Pulling it out of the water it sucked air just fine so possibly there is a line blockage. Perhaps I need an inline coarse strainer plus a bigger pickup foot? Hard to fix that now.

Today a letter caught up with us from last month informing us that Kathy's application for Aus residency has been approved. Yay. Kathy has been working on the awning and now making good progress. We also sold 2 of our 4 sewing machines on eBay. The boat is going to be livable soon.

Monday, 18 June 2012 21:06

- Installed new mast step just below the other pair. This made it much easier to work at the masthead. The installation did not go well. I broke a tap and a drill. The drill was dull and the mast aluminum so hard that the tap broke in the hole. This meant relocating the step down 1" because I had no way to remove the tap. So it goes.
- Installed the replacement the CV3F wind sensor. Installation went well. Tested OK
- Noted some of the very old rivet holes that held the PVC raceway before I glued them in are starting to show. The paint is very oxidized and there are many places where it has cracker or bubbled, mostly around fittings.

⁴ Voltage as measured by the Outback is actually 0.15 to 2.0 volts below at-the-battery.

⁵ This is lower because the 240V charger is generally only used at the dock.

- The masthead equipment looked good.
- Lightning rod is much oxidized and cracking at the top and should be replaced.
- Last night the anchor light stopped working. Coincidence? Perhaps its time to change the bulbs but I am concerned about breaking the attachment at the base. It is very thin where the body clips into it.

Mast head again

- Replaced 12V/25W anchor light bulb at masthead
- Removed deteriorated lightning rod
- Removed genoa halyard restrainer which was jamming the halyard shackle. It really isn't necessary to have one.

Sunday, 24 June 2012 07:25

Re-organized Cockpit locker. Didn't need much work as Kathy had it well done.

Worked some on the generator project. Kathy worked hard on the awning project.

Monday, 25 June 2012 02:12

With the new anchor light bulb, night-time current draw has increased to 3.7A.

- Anchor light: 1.7 A
- Other "vampire loads": 1.5a
 - Reefer controls: 166ma * 2 = 333ma (manual) 100ma observed
 - Propane sniffer & control (holding): 300ma (manual) 100ma observed
 - Main Panel / House (except Link 10): 100ma
 - Link 10: 100-150ma.

It is not unreasonable to suspect panel meters to be off by $\pm 0.1a$.

There is a "Dr. LED" amber/yellow LED anchor light that might do. <http://doctorled.com/p21.htm>
SKU 362481 MFG #: DLE 8000043 @ \$43.55. (NO. TOO YELLOW)

Nope, anchor lights must be all around white lights.

Saturday, 30 June 2012 10:38

Up the mast to install a new lightning rod. Some difficulty at the top because I did not think out the lanyard required and it was difficult to hold the rod upright. Unfortunately the new rod is too short by about 18". I forgot to add in the length of the small piece that fell off the old rod. I need to bring it down and probably weld the piece on. Oh well.

Friday, 06 July 2012 07:50

- Bilge pump cycling led to discovery that PSS shaft collar had slipped forwards and the shaft seal was leaking. We removed the dual set screws, repositioned the collar, and swapped out the "dead" set screws with the top (locking) set screws. Problem fixed.
- Excessive leakage of salt water on the terminal board for the aft bilge pump has caused some heavy corrosion and the high-water sensor is not working. This will go on the fix list.
- Drained water at mast step collar.
- Yesterday I lined the high-current locker under the Nav Station with 10mm PVC. It's another Chinese puzzle – no screws required.
- Transmission fluid was down 300 ml. WTF is with the disappearing ATF?

Saturday, 08 August 2020 07:54

- Installed new Dell 23" Monitor. Much wider screen, brighter, and bigger viewing area.
- 230V inverter had an error and would not operate. This cleared up when the log was read. Message was simply "no ac output".
- Installed flyback diode across the propane solenoid coil and this seems to have fixed the problem where the reefer compressor controller errors out while energizing the propane solenoid. There is still a problem when the freezer switches over to refrigerator (e.g. freezer running and then defeat switch is closed and reefer comes on). Perhaps power diodes need to be installed across the refrigerant solenoids.
- Installed Airmar B744VC-INS-JB "Active Seawater Temperature" sensor which is a new paddlewheel for STW which includes the SWT sensor. This is to fix the problem with the SWT sensor built in to the existing transducer that failed some time ago (see 26 Jan 2011).

Monday, 09 July 2012 07:35

Airmar STW/SWT paddlewheel install delayed –I need to buy a connector to go in the junction box so I can remove the paddlewheel for cleaning.

Attempted install of new sensors for the CruzPro chain counter. This necessitated removing the rope capstan which was very difficult and required the use of a gear puller.

There was a lot of granular white corrosion, probably salt and TefGel™ or aluminum oxidation. The stainless shaft was clean but there was some corrosion inside the aluminum capstan at the outer end. Kathy and I worked hard to clean all those pieces and they are fine. We will seriously grease the assembly and TefGel™ the stainless/aluminum contacts. There is not a good seal on the end plate which is simply a washer and nut. I filled the interior with AA grease.

Kathy noticed a water leak in the aft "linen closet" in the aft head. It appears to be from the next-to-last aft portlight on the port side of the boat, just aft of the head portlight. Drat.

Sunday, 15 July 2012 03:54

It turns out that the supposedly "dead" Hall-effect sensor for the Cruzpro™ CH30 chain counter was probably in working condition. The problem turned out to be a loose sensor wire on the main terminal block (TB10) which connects the counter display unit to the sensors at the windlass. Paying \$32 for new sensors plus postage plus waiting two weeks to get them was wasted time and money. Furthermore, the old sensors had to be destroyed to remove them from the windlass.

It was probably a good thing we worked on the windlass because we found the corrosion in the capstan shaft, but otherwise the situation was much like a doctor saying "Hmm, you have some indigestion which is often a symptom of a heart attack. We'll do open heart surgery and if that doesn't work will give you some antacids." I need to remember to think of as many possible reasons for a fault as I can, and then test for the simplest and least expensive one first.

The counter has been re-calibrated and that repair crossed off the list. Now on to the next problem.

Tuesday, 24 July 2012 20:46

In the last week we have:

- Returned the last sewing machine (\$150 restocking fee)
- Finished installation of SWT/STW sensor
- Fixed aft nav light wiring

Tuesday, 31 July 2012 01:27

- Ordered Sailrite™ sewing machine from Brisbane
- Finished Deck/Transom light control box and connected to cockpit switches
- Re-connected the stern nav light
- Noted ATF in engine is at 2/3 on dipstick
- Noted on engine start: the Aqualarm™ water flow sensor did not open. I rapped it a few times with my torch and it started working.
- Attempted to attach radio control unit to the Deck/Transom Light control box but the transmitters would not connect to the receiver after working for just a few minutes. Could be a encoding problem?

Saturday, 04 August 2012 08:36

Finished installation of Aft/Transom light controls with final installation of On-Off pushbuttons mounted on the transom.

Took delivery of Sailrite LSZ-1 Ultrafeed sewing machine yesterday. What a beaut! Kathy is familiarizing herself with the machine.

Saturday, 18 August 2012 08:32

I went up the mast today to install the newly re-conditioned lightning rod. No problem with that, but I noticed increasing problems with the starboard lower spreader. There is point loading on the trailing inboard edge which may be caused by either a misplaced clevis pin, mis-aligned bases, or the shroud position. As seen in the photos below both upper and lower starboard spreader are not setting cleanly on the spreader root. The port spreaders look fine except that I also notice some slight mushrooming at the inboard end of the lower spreader. The question is first, why is this happening and second, what to do now? Possibilities include replacing the spreader (LeFiell still has them) or trimming back to “good meat”. I believe I can remove the spreaders without removing the mast or the shroud.

Monday, 20 August 2012 22:33

Today I contacted Rodney at LeFiell and he says the solution is to WELD the spreader to the root casting. This is what they do nowadays. This is a cheap solution although the spreaders will need repainting. I will probably add a couple of plug welds top and bottom. I never thought of that.

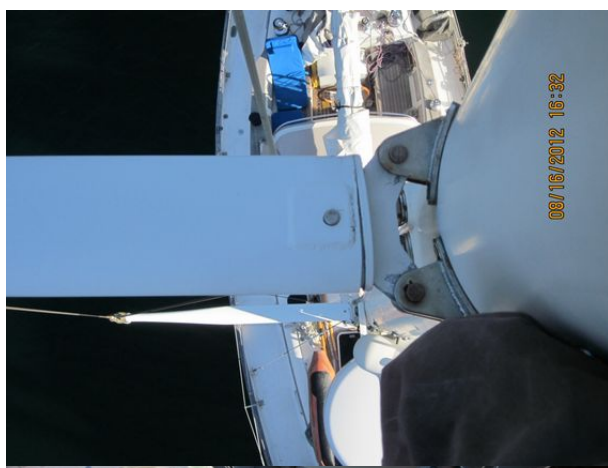


Figure 4. Upper Starboard Spreader. Note Gap.



Figure 3. Lower Starboard Spreader.



Figure 1. Bottom of Lower Starboard Spreader



Figure 2. Trailing edge damage. Lower Stbd Spreader

Tuesday, 21 August 2012 04:22

<http://www.ropeantenna.com/>

RIGGING

<http://www.aspar-rigging.hr/oputaSajlaOdrzavanjeEng.html>

Wire life expectancy

There are many variables to consider when it comes to the longevity of the wire rigging being used with today's modern mast systems.

The most prominent factors are:

- The amount of time and/or miles the yacht has been in service – as a general rule , we recommend complete Level C inspection (see Inspection Tables) of mast and rigging systems after a maximum of 40000 sailing miles or 6 years, whichever comes first. This comprehensive maintenance schedule would include inspection of the mast, wire, turnbuckles and their screws and all associated fittings. We recommend replacing the turnbuckle screws after a maximum of 40000 sailing miles or 6 years (whichever comes first). The screws may last for many additional years, but it is much less expensive to replace a few rigging screws than to replace the mast and all of the rigging.
- What loads are put on the wire in comparison to its breaking strength – production and custom cruising yachts tend to have high safety factors in their rigging because chosen wire sizes are typically very conservative, so rigging loads are generally 15-25% of the breaking strength during normal sailing conditions. However, some boat builders have been known to use smaller sized rigging with less of a safety factor to reduce production costs.
- The yachts predominant sailing conditions – if the yacht is predominantly sailed in heavy air conditions, the life of the wire will be shorter than if the boat was sailed infrequently or in lighter wind conditions. The higher the rigging is stressed on a regular basis, the shorter its life span will be.
- The amount of care and maintenance given to the rigging – if the rigging has been periodically checked, the end fittings rinsed with fresh water, and general care and maintenance have been employed, it will last longer.

DISCUSSION WITH RIGGER (Cliff) AT WEST MARINE SEATTLE

Bronze toggles acceptable to fatigue and also heavier material. Replace lower toggles. Lower toggle is already stressed and has cyclical fatigue. Problems with Dyneema is chafe at spreader ends. SS is abrasion resistant. It has not yet been proven on offshore boats.

Wednesday, 29 August 2012 22:44

This last two days I have taken down the two lower spreaders and had them soda-blasted and the spreader airfoil welded to the root.



The project is documented with a web page:

<http://www.svbeatrix.com/rigging/rerig2012/rerig2012.php>

Total cost is about \$500. \$300 for soda blasting, \$70 for welding, \$125 for paint.



Peter & Bey Series 410 Navigation Lights

Available through FISCO (\$157) and San Diego Marine Exchange (\$169)

Reference 90-401120)

TYPE 410

For Vessels <20m. Colregs 1972 IMCO72

Approvals CE - BHS - GL(Lloyd) - UL1104

Housing: Stainless Steel and Polycarbonate. Rear Mt.

Shock Resistant - Non-Magnetic

Bulb Holder BAY15d. 12v OR 24v

Coloured Lights 25w. White Lights 10w

IP56

Visibility 2nm

A Mounting plate is required for this light

Several mounting options are available

Please choose from the drop down menu

H-106mm x W-105mm x D-82mm

Port / Starboard - 112.5 Degree.

Masthead - 225 Degree

Stern - 135 Degree

Part No: 90-401120
Type 410 Starboard 12v

Part No: 90-402120
Type 410 Port 12v

Part No: 90-403120
Type 410 Masthead 12v

Part No: 90-404120
Type 410 Stern 12v

Wednesday, 05 September 2012 00:38

Today Kathy was reading a book while we were steaming down to Jerusalem Bay and got so engrossed in it that she hit a chartered fishing boat in the Hawkesbury River. Minor damage to the fish boat but some more serious damage to the bow pulpit stanchion bases (ben), starboard nav wiring (broken), and a bent port navigation light. The light may be fixable

I now seriously want an emergency autopilot disengage button on the pedestal. A NC relay which will interrupt the lower power input will do the job. `

Monday, 10 September 2012 04:40

Autopilot stopped working suddenly. The boat under NAV or COMPASS mode was oscillating all over the place. When I finally noticed the rudder position indicator was not showing I checked the RFU under the aft bunk to find the arm connecting the RFU to the quadrant had fallen off due to a loose screw.

We spent almost 22 hours at the dock at the RPAYC and the batteries are very charged. I am going to watch their voltage over the next few hours and see if they discharge at the same values. I cannot reach battery 4 because it is inaccessible. At the next opportunity I will lead some test wires from the battery to a better location.

#5 battery is the spare and is offline at 12.07 volts.

Battery	Fully Charged Volts	1430	
1	2.13		
2	2.13		
3	2.13		
4	Not accessible		
6	2.13		
7	2.11		
Average * 6/5	12.78		

Started at 1430. 12.7 V

Monday, 17 September 2012 20:08

I had a spare red lens for the Peters & Bey Series 410 port navigation light. I was able to bend the bent metal back in shape and the light is repaired except for the welded tab that holds it in place.

The pulpit and stanchion bases were removed. All 4 bases were bent and twisted. With Niall Clifford's help I made a template from doorskin that matched the holes in the deck. Two strips up each side were counter-drilled from below (in the anchor locker) while Niall stabilized and located the strips. Then,

with the strips held in place by loose bolts, we glued a cross strip to form a loose “H” shape, with the bars of the “H” narrow at the top. Then we removed the bolts, rotated the template out from under the anchor rollers, and glued a second cross strip on to the template. We now had an accurate template of the deck to which the stanchions are fastened.

At Niall’s factory we had help from John, who hammered out the stanchion bases. I had found a 6” x 6” x 1/8” piece of 316 stainless which was cut in quarters. John welded the clean plates to the warped bases and they came out great! Niall and I ground down the welding, then finished and polished the bases.

Using our template, we screwed the repaired stanchion bases to a wooden table, then tried to fit the pulpit, which was bent. It did not fit so we took it to Harry. Harry can fix anything. Harry used pieces of wood top and bottom and then clamped the railing so it would bend over the wood. A bit of hammering and bending in the right places brought the pulpit tubes back in alignment.

The tab on the Nav light also got welded on and now we are ready to put it all back together. First we need to drill and fill the deck holes with new epoxy.

To take the pulpit to the factory involved taking the train to Sydney from this tiny 1-car “halt” in a place called Wondabyne. You have to actually flag down the train. To my surprise nobody complained about the large piece of boat we were carrying around and the train guards didn’t say a word. Very good.

Tuesday, 18 September 2012 19:37

Horn stopped working again.

Freshwater pressure pump #1 would not prime for a long time. Tanks were low when it stopped running. Port/Stbd isolated. Went to fuel dock for fill up. Would not pump until tanks were near full.

Discovered more damage at bow roller – retaining ring bent port side plus rollers not working. We’ll need to take this off.

Wednesday, 19 September 2012 11:34

Today we picked up the wire for the re-rigging project. We purchased it from Greg Arcus at Rope and Cable at Manly Vale, NSW. (02 99727099) 2 x 41m of 10mm wire and 1 x 22m of 8mm wire. All 316 1x19 KOS (Korean) stainless.

WIRE SPECIFICATIONS							
	Wire Size	Length (m) (round)	Breaking Strength (kg)	Weight (kg/100m)	Weight (kg)	Price per Meter*	Cost w/GST
316 1x19	8mm	22	5040	31.7	6.974	\$ 5.50	\$ 133.10
316 1x19	10mm	82	7870	49.5	40.59	\$ 7.00	\$ 631.40
Colligo Dux	11mm	18	18400	8.3	1.494	\$ 7.97	\$ 143.46
TOTAL		122			49		\$ 907.96

The terminals are on order from FISCO and the DUX backstay is being organized. I need to get exact measurement first.

Friday, 21 September 2012 21:12

Yesterday Niall Clifford and I went to the Croydon Industries factory to work on the bow roller. The left roller was jammed from the accident and the starboard roller needed cleaning. It turned out that the

bronze bearing (actually an axle) was OK, but worn at the edges. The starboard axle was made in Tahiti when we had our roller straightened there. There is still quite a bit of twist in the whole system but that's the way it is. Any attempt to fix things at this point might compromise the way the unit attaches to the deck.

We added another stainless tube to reinforce the top part of the "ears" and also some stiffeners welded on the edge of the ears. This should strengthen the "ears" so that they won't twist so easily.

We also fabricated and welded a forward stainless plate to receive a Schafer Quick Connect mounting plate which can serve as the attachment point for a spinnaker tack block.

We cleaned and sanded the unit but polishing might be a problem. We'll do the best we can.

The lower spreaders were finished at "The Powder Principal" for \$150 (cost of paint) and are ready to re-install.

Meanwhile, back on Beatrix Kathy has finally adjusted the awning to her satisfaction.

Saturday, 22 September 2012 08:36

Kathy emptied the ditch kit. We snacked on 1995 "hardtack" and it wasn't all that bad. She has bought replacement granola and chocolate bars. The interior was kind of damp and the whole thing needs cleaning and re-stocking.

Today we drilled-and-filled all holes for the bow pulpit stanchion bases and the bow roller – 4 aft and 6 forward. We added an additional forward embedded threaded rod on each side to make a total of 3. Quite the task.

Wednesday, 26 September 2012 08:19

Over the last few days we have continued on the bow projects. Today Kathy cleaned the teak caprail at the forepeak with oxalic acid and the "dolphin seat" with Teka A&B. A&B gets deeper but it is really messy and requires care and flushing. The oxalic acid is easier to use and works fine. The caprail was finished with Deks Olje #1 and looks just great. She also has polished the aluminium bow cleats.

Jeff re-attached the eyestraps and 16mm blocks for the flag halyards under the spreaders. He used 3/16" stainless blind rivets with nylon washers under the eyestrap and TefGel™ all over. The spreader base connector plates were attached to the spreader root with a 2" x 3/8" clevis, which fell just a hair short. This required the use of possibly an undersized cotter pin and just one mylar washer under the cotter. It would be nice to have nylon washers under the head and tail of the clevis. Of course, a bolt would suffice. This clevis is only to hold the assembly of the root and connector together and should have no bearing load at all.

Niall Clifford was down in Sydney and has purchased fasteners and picked up a new set of flares to keep us legal (and safe, presumably, although I feel our flares are still good even though out of date).

Jeff spent some time keeping track of parts and re-ordering or adding them to the list.

Wednesday, 10 October 2012 05:14

360 6431533

Slack D2 off completely

Take up on V1 until they get 10% tension

Measure what we have on V2/D3. If V1 is right size, then V2 should be smaller. Will overload V1.

When 10% on V1 should be 10% on V2.

We need to end up with at least 12-15% on V2 and just barely touching 10% on D2.

Hope V2 not completely re-rigging.

Calculations in riggers apprentice.

Continuous Rig.

D2 have wide open turnbuckles. Make new wires longer. No stretch in the small wires. Measure LOA from bottom of turnbuckle to other end of the wire and deduct ideal turnbuckle length.

KOS ?

Thursday, 11 October 2012 20:30

Sales Dept. sales@loosnaples.com

Saturday, 13 October 2012 22:36

Current Glitch List.

Sydney to Newcastle. Best sailing day ever, maybe. Full spinnaker run for five hours at 8 to 10 knots. Only one day, but the glitch list is big.

- Reefer Hours will not zero out
- Link 10 not working. **FIXED**
- Chain counter not working
- **Autopilot**
 - **Loose connection in A/P controller (?)**.
 - **Rudder Calibration has failed – shows partial right rudder at TDC.**
- **Starboard Secondary Winch not holding. Hopefully a Pawl is bad.**
- AC Panel lights are all out
- NAV data issues:
 - Heading Sensor and AIS not working **FIXED**
 - Can't send/receive routes to Garmin from OpenCPM. (Intermittent, works sometimes, may be a VSPE solution is in order).
 - Need to test Garmin 128

Thursday, 18 October 2012 04:50

Wow, we have been working hard and sailing. We spent a couple of days in Newcastle at the Museum dock, which is only \$25/night. What a great deal. We are now on a Marina mooring (\$20/day includes showers) in Port MacQuarie. The great wind that brought us north died to about 10 knots and then today was due to turn to a E or NE light wind. In the offing next Monday is a strong Southerly Buster that might carry us all the way to Southport.

- Engine Air Cleaner cleaned
- Checked paddlewheel. New one does not fit. Replacement is on order.
- Cleaned dinghy and treated the tubes top and bottom.
- Heads were cleaned and disinfected
- Broken starboard cap-rail pieces was installed. Minor fixes were made to overhead trim and fwd head door and cabinet trim pieces under fwd head sink.
- Re-attached furling line which had been removed for bow repair.
- Reefer defrosted.
- Kindle pickup by UPS at Brooklyn PO was scheduled

Friday, 19 October 2012 08:37

To Do in order of priority

1. Rig order = working on it
2. A/P fix = DONE ✓
3. Zerk Fittings in through-hulls
4. Computer Backup
5. Pay Holidays afloat ✓
6. Invoice to Aaron Henderson \$768 + profit. ✓

Today Kathy and Niall swapped out the staysail for the storm staysail in preparation for a big southerly which might happen on our way North. The trysail was made ready. They worked on servicing the old B32.2 boom winch in preparation for mounting on the mast. It will replace the B16.1 winch there now. They also vacuumed and scrubbed the floors, cleaned the heads.

The last trip destroyed a 2TB hard drive with a bunch of movies on it.

Niall replaced electric plugs on the vacuum and generator.

We all looked at the roller furling, which appears to be more difficult to furl than usual.

I spent the morning on rig analysis and the rest of the day trying to fix the autopilot. The autopilot problem is difficult. The fault 244 as before refers to the rudder feedback unit. Manually driving the Port and Starboard motion using the buttons on the Pilot Computer showed no problems, but during the Dockside setup the Auto Hardover which is the final test fails. The wheel drives to starboard where it appears that the motor keeps running but the solenoid is not activated. This is because the wheel gets loose. The Hardover 2 just doesn't happen, and at the end of the cycle the starboard and port are reversed.

I swapped in the spare Pilot Computer and at first it did not work. I then removed its Version 1.1 chip and replaced it with the Version 3.0 chip from one of the dead Pilots I got from Dave Winwood. Then it worked fine. So the problem is NOT in the computer. I've checked the RFU several times and in several different orientations. Next I will try the old RFU that was still good but had a broken arm. If that fails, all that is left is the control head; and the symptoms don't support that unless there is a loose wire somewhere in the system. I would like to get this fixed so we can continue the journey north without having to hand steer.

The rigging analysis is interesting and also indeterminate. I have found out a few things:

- 1) Oversizing the wire can actually be dangerous as it adds weight aloft and puts extra stress on toggles, terminals, spreaders, mast and chainplates. It is also a LOT more expensive for larger sized terminals.
- 2) The LOOS gauge has its percentage measurements calculated against 304 wire, not 316. Tension, of course, is the same for equal size wires, no matter what alloy it is made of.
- 3) LOOS gauges can go bad. Mine had a stretched spring which read OK for smaller wires and exaggerated the loading for larger wires. (I compared it to a friend's gauge).
- 4) Transverse loads (Shroud Load) is calculated as $RM30 * 1.5 / (Beam / 2)$. For the KP44 the righting moment at 30 degrees is estimated at 72,000 lbs. The load calculates out at 19379 lbs. The recommended safety factor is 2.5.
- 5) The V1 wire in a discontinuous rig bears the load of D1 and V2/D3 (which is a single wire).
- 6) The loads are apportioned at 25% for double lowers(D1), 30% for intermediates (D2), and 30% for the cap shroud (V2/D3). This means that V1 theoretically bears up to 60% of the load. Some of the loading on the D2 does go into the spreader so maybe it is only 50% or so.
- 7) Static tuning guidelines are always given in % of Breaking Load, yet it seems to me that absolute loads are more significant. If I use 10mm wire where 8mm might do, then I would want a lower % of BL on the larger wire to get the same pre-tension load as the 8mm.

I have created a spreadsheet to handle all this calculating. (Rig Design and Tuning.xlsx)

All the research on the Net and study has led me to believe that, except for high-end yacht racing, rig design is mostly based on experience and rules-of-thumb handed down from designer to designer and rigger to rigger. Basing a rig on the vessels 30 degree righting moment (RM30) seems fairly standard, but where did that number come from? It is someone's supposition that RM30 represents the maximum loading a vessel will experience under full sail in a fresh wind. But what about dynamic and shock loading? That appears to be handled with a safety factor of 2.5 to 3.0 which implies some pretty big assumptions.

However, as stated above, too big a rig is dangerous too – it can break the boat! Too weak a rig can break the mast. Most boats don't get into a situation where they are stressed beyond their safety factors; but it can happen.

The odd thing is that Brion Toss specified a rig (as part of a paid consultation) that has a smaller wire than his calculations show. Because of the 20% increased breaking strength over "standard" 1x19 316 wire strengths the size Brion specified would work. Unfortunately I have already bought a fair amount of 10mm wire (compared to 3/8 at 9.5mm) which would be slightly over sized. What I have learned is that the V1 definitely MUST be larger than the wires above it (in the discontinuous rig) as it has to handle loads from both intermediates and uppers. My choice is 10mm Dyform or 7/16" 1x19. I'm pretty sure my final design will be 3/8" uppers and intermediates, the 10mm Dyform or 7/16" 1x19 for the V1. The intermediates will be up-sized to 10mm from 8mm based solely on the statement in Brion's Rigger's Apprentice that the D1 and D2 have similar loadings.

Saturday, 20 October 2012 19:59

Ok, what are the odds of this happening?

We are in Port Macquarie, New South Wales, fixing the autopilot (a bad cable) and waiting for a southerly to take us to Queensland.

A couple of other boats invited us to a potluck barbie at the Port Marina last night and one of the people is Alan Blunt, skipper of Cheyenne, out of Los Angeles.

Alan is an Aussie, but for years owned Seatek Yachting Inc., a spar and rigging business in Wilmington, CA. He knows Jack Kelly and is friends with Doug Peterson.

He was involved in the rigging of the first KP44's and has sailed many miles aboard one.

So, I ask some questions about my re-rigging quandary.

He knew EXACTLY what I was talking about and confirmed and resolved a few key issues I was concerned about.

His recommendations are different from those of Brion Toss in that the uppers are definitely 3/8" (although 5/16" appears to be an adequate strength). As nearly all the Petersons that I have seen have 3/8" uppers I would be reluctant to downsize to 5/16".

Here's what Alan told me:

- 1) The boat's original rig design was CONTINUOUS rigging (two wires to the deck). This was done to save money.
- 2)
 - a) If the rigging is DISCONTINUOUS the V1 element (first vertical) should be 7/16" as it bears the load of the intermediates and uppers.
 - b) Otherwise, the cap shroud, or upper, (V1+V2+D3) should be 3/8".
- 3) The intermediate wires in either case are 5/16".

4) The four lowers are 5/16".

So this is what I have concluded on rigging styles:

RIGGING TYPE PROS AND CONS.

PRO:

Discontinuous rigging is simpler, stronger, uses less wire, has less weight aloft, is easier to replace or re-rig, has only one chainplate, is a series of triangles (i.e. more rigid), and has a simple link plate connection for the lower spreader tip.

Continuous rigging has all turnbuckles on deck for easy tuning, has only two sizes of wire (and terminations), uses less expensive components, and has a better configuration for tension distribution (i.e. one wire per "panel").

CON:

Discontinuous rigging requires much more expensive terminals, 3 sizes of wire, requires 3/4" pins on the V1, uses two large turnbuckles for the V1, and has a D2 turnbuckle above the deck which makes tuning difficult. Also, the Loos PT-3 tension gauge will not work on the 7/16" wire.

Continuous rigging requires two chainplates or a link plate on a single chainplate, is harder to replace, has more weight, and may be less stable (i.e. it has a rhomboidal component - although in a double spreader rig this should not be a problem), and requires lower spreader tips that may exaggerate chafe and fatigue.

References:

Converting to continuous: <http://www.pearson40.net/continuous%20up.htm>

<http://www.riggingonly.com/innerforestay04.htm>

<http://www.allatsea.net/southeast/the-worst-possible-chainplates/>

Sunday, 21 October 2012 09:01

The old Harken sheet winch B32.2ST replaced the B16.1 on the mast. It was serviced by Kathy who is now good enough not to need the exploded views.

She reminded me that both secondary winches were serviced as well.

The autopilot was re-wired directly from the Pilot Computer to the Pilot Control. The fault might have been in the old cable or, more likely, in the 8-pin connector. I need to source another connector or two. The old Cable 8 was removed and Cable 10 replaced it. A/P Pilot Control leads will no longer be in the Network Panel and the schematic (Rev M) needs to reflect this.

Niall fixed the "office" door so it won't fly open if hit from behind by a heavy object.

Kathy found a mop and used it on the floor. Very clean.

Monthly maintenance was all done. Galley drawers were re-organized.

Monday, 22 October 2012 21:46

Wow what a storm. We left Port Mac and sailed into a southerly at 45kn and 5m seas. We ran ahead of the 5 to 6 m waves and constant high winds (gusts to over 50) without a major problem. What a great baot. Some glitches cropped up, as usual, and they are:

1. ER Bilge pump failure. (TURNED OUT TO BE CLOGGED INTAKE)
2. Refrigeration failure. (NOT A PROBLEM. PROBABLY LOST COOLING WATER PUMP PRIME).
3. Storm Staysail.
 - a. The sail needs a longer pennant to raise the sheets above the mast pulpit rails.
 - b. The sheets need to be about 1 to 2 m longer.
 - c. Think about re-locating the staysail track.
 - d. 3 sew-on #3 bronze hanks lost their pistons. Possibly staysail stay was too loose.
 - e. Leech grommets blew out (see photo). Replace with sew-on rings or whip-stitching.
4. EVERYTHING flew out of the aft cabin shelves..
5. Swinging galley basket too weak.
6. Autopilot worked mostly but not when generator was on.
7. Main halyard line clutch is slipping.
8. Wind Vane is hanging by a thread.
9. Watermaker
 - a. Watermaker Pump 1 is not working. (TURNED OUT BREAKER WAS OFF)
 - b. Watermaker is not pumping. (IT "FIXED ITSELF" ONCE IN PORT)

WHAT TO DO? Fix list for the above glitches:

1. Replace storm staysail sheets, make new pennant, get new hanks
2. Move staysail tracks aft.
3. Create lee clothes or fiddles for aft shelving
4. Make or buy toggles to keep doors closed.
5. Replace line clutch and possibly buy new cams
6. Replace wind vane bungee.



Saturday, 27 October 2012 00:56

Noted as fixed:

- Replaced 110V plugs on vacuum and Honda generator
- Anchor locker door hinges screwed back in (should be lift-off hinges someday)
- A "hacker" was found on the SVBEATRIX WiFi network with a PC name of hn-PC. The password encryption was upgraded to PSK2 and a pass phrase chosen. No other intrusions in the last few days.
- Some supplies were stowed into the cockpit lazarette: paint, pieces of Starboard™, etc.

Repairs & Maintenance today:

- ER Bilge pump
 - This was NOT broken, just clogged with debris and very oily. I suspect it was functioning all along but with the calamity and noise of a Force 9 gale it could not be heard.
 - Do I need a "pump running" light? It would have overheated trying to suck down the debris and never succeeding, thus it was on all the time.
 - Note: no screen over the manual bilge pump.
- GROCO Raw Water Filters
 - Cleaned Engine RWF
 - Cleaned Watermaker/Refrigerator RWF
 - Made new Gasket. See D:\usr\SVBeatrix\design gaskets.vsd
 - K cleaned and polished the SS Basket Rod and the bronze bits
- Watermaker
 - Replaced 5μ carbon filter
 - Replace 5 μ pleated filter
 - Cleaned raw water filter and plankton filter
 - Primed

- Running at 586ppm @ 7 gpm. (Should be less ppm and more flow.)

RIGGING AND FURLER WORRIES

Rigging

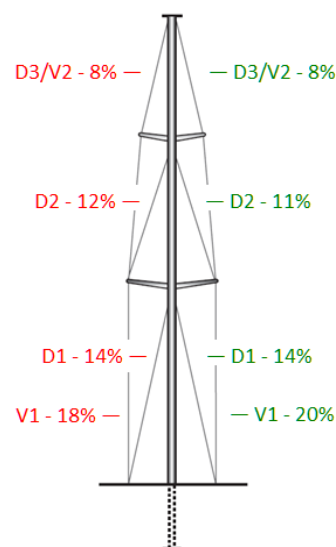
The drama of rigging continues. Rigging is a “dark art” based largely on empirical experience of riggers and nautical designers, and partially on scientific knowledge. Whereas I am certain that very serious computer software is applied to the hull strength and rig design of America’s Cup and ocean racers, I have found very little useful information on Plain Old Cruising Boats. I turned up a few dissertations on the subject. The only useful and applicable formulas comes from Brion Toss’s Rigger’s Apprentice which is based on the 30° righting moment. This is supposedly 72,000 lbs. for our boat. This gives you the ability to calculate a theoretical transverse rig load which is apportioned among the various rigging wires depending on the rig type (discontinuous vs. continuous). I have incorporated this into an [Excel worksheet](#).

Yesterday I examined the 3/8” Hi-Mod compression terminal on the backstay. Although it was difficult to remove (it had not been opened in maybe 10 years) the wire was un-damaged and not corroded. This has convinced me that the uncompromising fail-safe design and ability to remove and replace the termination makes Hi-Mods the best terminals to use. I would never have a worry of a swage failure with Hi-Mods, so we will proceed with the all Hi-Mod option, although it is seriously more expensive than swaging. Yes, swaging is perfectly fine, especially if you pick your rigger, but it can and does fail. Hi-Mods just won’t fail – and they don’t have that “hard edge” or encapsulated non-aerated wire to worry about.

Based on my talks with KP44 rigger Alan Blunt I think the current discontinuous rigging, while more expensive, is the best solution for wire rigging. The big factor is whether to upsize the V1 wires to accommodate the combined loads of the uppers and intermediates. NONE of the existing KP44s that I have seen do this – they mostly have 3/8” wire on the V1, and V2/D3, with 5/16” wire on the D2 and D3. Nevertheless the experience of other skippers on different boats, and the rigging analysis, and common sense all say that a 7/16” V1 would be the correct wire to use.

On the other hand going from 3/8” to 7/16” is quite an expensive jump because of the HUGE price increase of the Hi-Mod terminals, over \$800. When trying to tune the rig a few weeks ago I was up the mast while my mate Niall was on deck and I was trying to get a balance of tension between the uppers and intermediates and I did not quite get it right – the intermediate was tensioned to 12% while the upper was tensioned to 8% (this is 1210 lbs. on the D2 and 1100 lbs. on the D3/V2). More tension needs to be moved to the D3/V2 and probably more tension overall. However this would require around 2300 lbs. on the V1 (which is now reading 1400 lbs. (18-20%) on the Loos PT-3 tension gauge. ⁶

With this setup I could see the top of the mast tipping to leeward under stress (which is not necessarily a problem). The big issue is that the leeward rig should not go slack from lack of pre-tension until it is time to reef. ⁷ It is clear that static measurements are only a start to proper rig tuning and adjustments under sail must be made.



⁶ I have learned that the Loos tends to over-estimate the upper range of tension as it ages and the spring stretches.

⁷ A good description of pre-tension (and many other things) is found in Ivar Dedekam’s book on *Sail and Rig Tuning*.

So, unless I want to tension a 3/8" (or 10mm) wire past 20% of breaking load, or have a lower pre-tension in the uppers and intermediates, I would have to upsize to the 7/16" wire (11mm not available).

On the other hand, the empirical evidence is that these Petersons have been sailing for over 30 years without an obvious problem using 3/8" V1 wire (unless you count stories about slack leeward wires due to lack of pre-tension and my difficulty getting the tensions balanced and high enough in the uppers and intermediates). I would like to poll my Peterson Group on this subject.

PROS of a larger V1: properly balanced pre-tension and loading which makes for a safer and stronger rig.

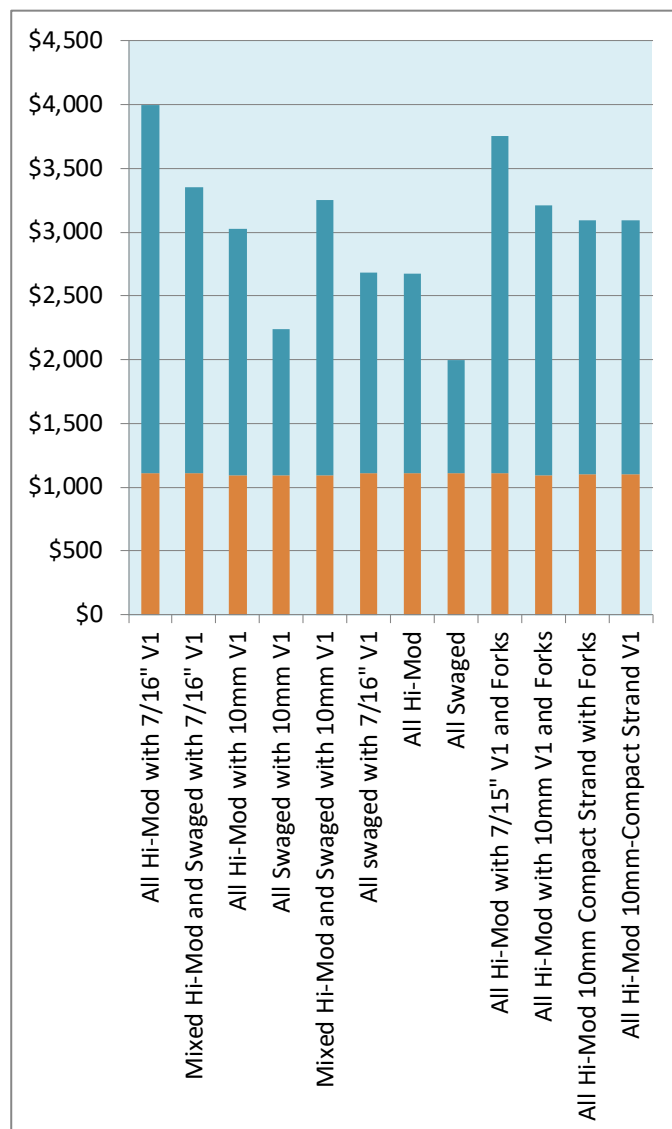
CONS: three wire sizes instead of two, about \$850 more expense, requirement to enlarge pin hole in chainplate to 3/4", and a negligible amount of additional weight (5 lb.).

At this point Chris Kennedy of Fisheries suggested using 10mm Compact Strand (Dyform or Powerflex) which is 16% stronger than the 10mm 1x19 wire as compared to the 7/16" wire which is 27% stronger than 10mm 1x19.

Since the 10mm Compact Strand has not crossed the magical "big boat" threshold this saves over \$800 in rigging expenses while gaining about 60% of the up-sizing advantage of the 7/16" 1x19.

In other words, it is a good compromise between the empirical solution (stick with 3/8"/10mm) and the theoretical/recommended solution (upsized to 7/16").

So, that's what I have done.



RIGGING COMPONENTS - All Hi-Mod 10mm-Compact Strand V1							
Fittings for 1x19 SS Wire	Wire	Eye or Stud Size	Mfg #	Quantity	FISCO #	FISCO \$	Total Cost
Hi-Mod Comp Stud 10mm Dyform Wire x 5/8-18 Thd	10mm-D	5/8"	58CTSM10-D	2	158588	\$ 92.41	\$ 184.81
Hi-Mod Comp Stud 10mm Wire x 5/8-18 Thd	10mm	5/8"	58CTSM10	1		\$ 92.41	\$ 92.41
Hi-Mod Comp Stud 8mm Wire x 5/8-18 Thd	8mm	5/8"	58CTSM08	6		\$ 69.90	\$ 419.41
Hi-Mod Comp Eye 8mm Wire x 5/8" Pin	8mm	5/8"	58CTEM08	6		\$ 69.85	\$ 419.08
Hi-Mod Comp Eye 10mm Wire x 5/8" Pin	10mm	5/8"	58CTEM10	5		\$ 92.33	\$ 461.65
Hi-Mod Comp Eye 10mm Dyform Wire x 5/8" Pin	10mm	5/8"	58CTEM10-D	2	158813	\$ 92.33	\$ 184.66
Colligo Dux Terminals 11mm x 5/8" pin	11mm x 5/8" pin	5/8"	CSS72BLK	2		\$ 58.00	\$ 116.00
Alex. Roberts Eye Jaw Fixed Toggle 5/8"		5/8"	FT-20C	1	01011	\$ 52.24	\$ 52.24
Mast Height = 51' or 15.5m				23		TOTALS	\$ 1,930.26
						USA Shipping (3 boxes)	\$ 144
						Total	\$ 2,074.11

One other option is to replace the lower spreader tip link plates with a solid stainless link plate (\$32 for materials) and use forks instead of eyes. One of Brion Toss' riggers recommended this to Terry Hudkin. I could go ahead with the forks, use the existing link plates INSIDE the forks, and then fabricate the solid link plate when I get back to Niall's factory in Sydney. They can plasma cut and we could finish it off.

Furling

1. Shorten the “tail” at the head of the jib by 4”
2. Drop the Schaeffer drum down 1 hole (20mm)
3. Rake the mast back 1 cm at the step which is about 8 cm at the head. (7.75 fulcrum) Probably add 3 to 4 cm to the jibstay length.
4. Shorten the tang plates attaching the furler to the deck.



Thursday, 01 November 2012 20:46

Scan Marine: DIESEL HEATER

\$500 + shipping

New 40DT is \$2740, discount \$2466

Bruce.

Coaming Covers are needed to keep green water out. Blair has used Tempress hatches with the slam latch. Correspondence with Tempress and Chris at FISCO has stated the cam latches are more watertight so we want the 44330 Cam Latch. *'The Access Cam Hatch is made from a glass filled polypropylene, for strength and durability. All Access hatches are designed for heavy traffic areas, and will withstand people walking or standing upon them. The Access Slam Hatch features a easy close slam latch that forms a weather tight seal just by closing the hatch. Access Hatches also utilize a patented integral hinge assembly that allows for easy lid removal. The beveled and skirted lid covers all fasteners for a clean look above or below decks. The Access Slam Hatch line is the perfect choice for easy dry storage, access to bait or fish wells, or electrical and plumbing lines.'*



1115 Cutout = 8 5/8" x 12 1/2"

1115 Inside = 7 1/4" x 11 1/4"

1115 Outside = 10 3/4" x 15 1/8"

Weight approx 3# per hatch

Fasteners Required 10ea. #12 Pan Head self tapping screws

Note (28/12/14) -- I used 5mm pan head machine screws and tapped the fiberglass.

Friday, 02 November 2012 22:36

A new glitch: bottom watermaker pump not running.

SCUBA Compressor Problems – SA-3 RIX

Second Stage Relief Valve has been leaking air at higher pressures. Correspondence with RIX says to replace it but I will try to fix it. It looks like an O-ring or Gasket has failed.

Saturday, 10 November 2012 08:14

Noted items worked on in the last few days:

- Cleaned and dried wet areas.
- Under the stove drawer space has been emptied.
- Under Captain's Seat in Main Cabin – cleaned, dried and organized
- Cleaned out, washed and dried entire area behind tool box and watermaker
- Ditch kit dried, repacked and treated
- Clears on dodger washed and treated. Fabric covers washed and treated
- Dinghy Hypalon tubes SPF40 top and bottom
- Dinghy bottom wiped down
- Bottom (mostly) scrubbed using SCUBA
 - Enormous tumor of fouling on the forward sonar
 - Quite a few barnacles on the copper plates, prop and rudder
 - Boat goes MUCH better now
- Checked lazarette for salt
- Checked refrigerator power leads for over-heating; nothing found.
- Lubricated wet suit and equipment bag zippers.
- Kathy cleaned stainless knives.
- Replaced main halyard Spinlock XCS
 - Old one had worn cam and base (no wonder it did not hold)
 - Will order replacement
 - Brand new XCS was installed.

Monday, 12 November 2012 23:19

Watermaker membrane may need replacing. It is producing 620 ppm which is just over the recommended 500ppm maximum. Replacement Filmtech SW30-2540 membrane is available for \$255.65 (\$187.50 plus \$68.15) shipping from the Applied Membranes Retail website ([click here](#)). Available in Aus for \$390.

Consultation with Spectra

TEST FOR CLARK PUMP OPERATION:

Measure brine discharge:

Measure product water discharge:

Product Water = 8-9% of Combined flow

CHECK IF MEMBRANE CLOGGED OR DEGRADED

Since pressure is the same, probably not clogged.

Cleaning required if either bad smell in product water biofouling (SC-2 alkaline cleaner) or high pressure (indicates scaling use SC-3 acidic cleaner)

Biofouling is also indicated when the PPM starts high and then gets low.

Thursday, 15 November 2012 00:54

Starter battery will not start the engine. It cranks slowly and has low voltage. This occurred after switching on the SSB to "Start Source" and leaving it overnight. It drained and never came back. We will try a good charge at the dock and perhaps an equalization.

Friday, 16 November 2012 02:03

Placed order for new watermaker membrane

All cargo is arriving in Seattle UPS store. Ready to ship.

Saturday, 17 November 2012 07:10

Started work on the bilge, engine, and engine room.

Engine Hours are 3,031.3

Engine Maintenance Task:

1. Pumped bilge and ragged the oil out of the bilge.
2. Degrease, spray with fresh water, and run engine to dry.
3. Cleaned all bilges with Citrus Cleaner and Hot Water. Fresh water rinsed.
4. Pumped drip tray. Dried with rags.
5. Checked and set valves (valve adjustment)
6. New valve cover gasket in place (one spare left)
7. Removed heat exchanger and cleaned.
8. Inspect end caps and replace if required.
 - a. Bowman 2679
 - b. End caps need replacing. No sealant was required, just the rubber.
 - c. New gasket was used for exhaust.
9. Re-connect broken wires to water temp sensors
10. Checked and cleaned air cleaner
11. Swapped out the raw water pump with the current spare which has a bronze shaft instead of a stainless shaft. Bronze is better. Turns out old pump is stuffed.
12. Replaced O-ring on transmission shift assembly as it appears worn and may be the cause of the leaking ATF.
13. Filterer Replaced
 - a. Both RACORs
 - b. Engine Fuel
 - c. Engine Oil Filter
 - d. Bypass filters (2)
14. Changed engine oil. Took 12-13L including very large bypass filters.
15. Change Transmission Fluid to Synforce
16. Replaced engine coolant. Synforce Longlife Hybrid Organic Acid Technology coolant. 6 years or 12000 hours.
17. Looked for sources of oil and fluid leaks other than the valve cover. None found.
18. Removed and inspected all V-belts. All OK. Replaced and tensioned. **NOTED: small alternator needs mounting holes bushed.**
19. Starter battery
 - a. Insect
 - b. Check cables
 - c. Check Digital Duo Meter
 - d. Check amp draw with alternator radio power source
 - e. Maintenance Equalization
20. Main Battery
 - a. Maintenance Equalization
 - b. Swap battery config.



Bowman 2679 End Cap w/elbow

Parts to be Ordered

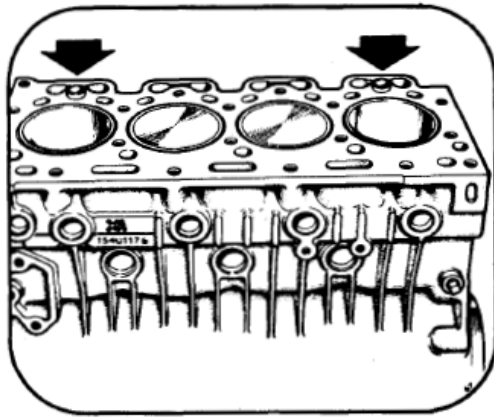
1. Bowman 2679 End Caps (2 or 4)
2. Borg Warner Velvet Drive 4204H [O-ring](#)
3. Exhaust Elbow Gasket Perkins 21826388

VALVE SETTING PROCEDURE

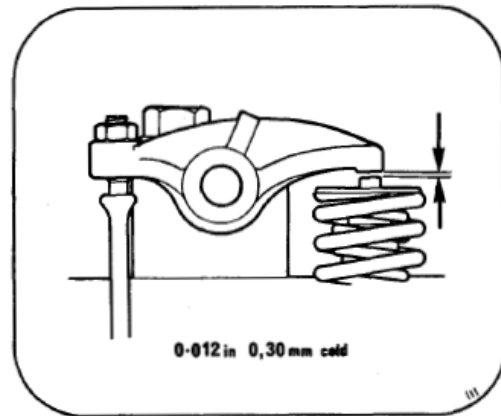
Cylinders are numbered from bow to stern. The valve tip clearance should be set with the engine cold at **0.012 in (0.3 mm)** see Fig. B.8, using the following valve adjustment procedure: -

1. With the valves rocking on No. 4 cylinder (the period between the opening of the inlet valve and the closing of the exhaust), set the clearance on No. 1 cylinder.
2. With the valves rocking on No. 2 cylinder, set the clearance on No. 3 cylinder.
3. With the valves rocking on No. 1 cylinder, set the clearance on No. 4 cylinder.
4. With the valves rocking on No. 3 cylinder, set the clearance on No. 2 cylinder.

The opposite valve was set when the valve was opened on the rocking cylinder. The engine was positioned with the starter motor as there is no facility to turn the engine by hand.



B7



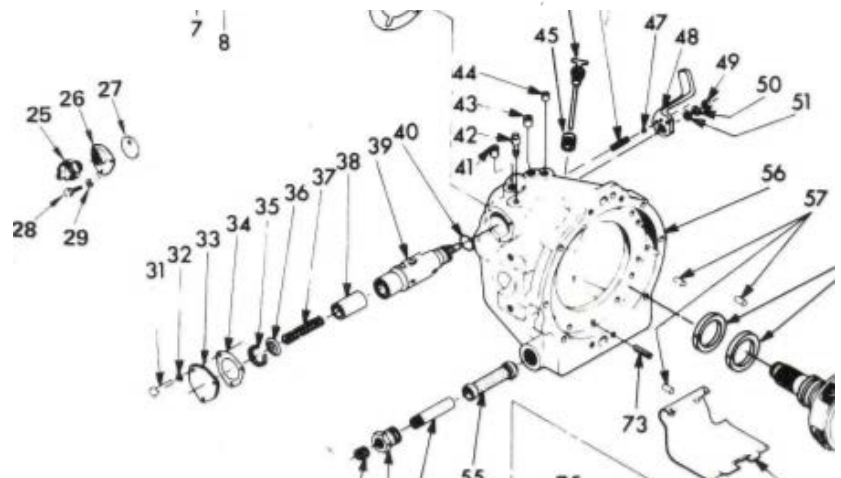
B8

Monday, 19 November 2012 20:37

Continuing the engine room project...

VELVET DRIVE O-RING REPLACEMENT

The “forward/reverse gear transmission valve” (39) is easily removed BUT DON'T LOSE THE DETENT BALL (47) when taking it apart. I did not disassemble the valve; I did replace the worn transmission O-ring. It was “flat” on the rim so hopefully the new O-ring will stop the leaking of ATF.



25,26,27 – neutral switch & cover. [See the Service Manual.](#)

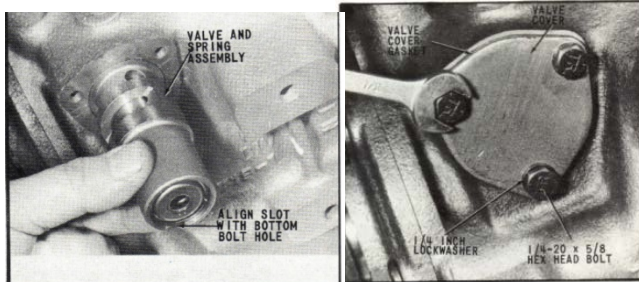


Fig. 74 Assembly of Valve Cover

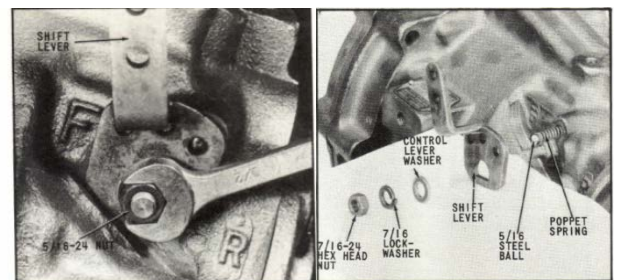


Fig. 76 Shift Lever Assembled

Kathy is cleaning the bilges from bow to stern!

Thursday, 22 November 2012 03:01

Raw water pump on engine was removed to swap out with the rebuild one with the bronze shaft. However, it was discovered that the pulley was wobbling and the shaft distorted. The keys were "smeared" over the shaft and the pulley hole was oval-ed. A new shaft and possibly new pulley are required. I installed the spare pump. NOTE COULD ONLY ATTACH A SINGLE HOSE CLAMP AT BOTTOM AND TOP OF PUMP. This pump is a PAIN. It is expensive and needs rebuilding far too often. I need a different solution for this.

Small alternator wobbles on it's mounting bolt. It may need a bushing.

I blew out the 200A ANL fuse on the parallel DC line when I shorted out my crescent wrench.

Friday, 23 November 2012 19:47

I am having trouble reading the data off the SIIG 4-port serial device. Users on the internet say that Win7 will read the Version 2 hardware. The spare is version 2, but I don't know what is installed unless I go look. It's fairly clear that Version 1 does NOT work. A better solution might be an RS-232 to Bluetooth solution.

Tuesday, 27 November 2012 23:24

The bad water pump, Jabsco 11850, is not replaceable. There are NO pumps available and few parts. Those parts that are available are ridiculously expensive: e.g. \$307 for a new shaft. Possibilities for a fix are:

1. Buy the shaft
2. Fix the shaft
3. Buy a Sherwood H5 which is a drop-in replacement but has issues with the upper inlet being straight instead of curved. The bottom inlet is longer (which is better).

What was finally done was to have a local here in Maryborough, Ken Meyers, who is very old, and very good, rebuild the pump shaft and fabricate an entire lightweight pulley out of aluminium. See more below.

BACKSTAY MEASUREMENTS MADE FOR SIZING A NEW DYNEEMA DUX BACKSTAY:

The overall length from the center of the pin at the mastbox (crane) to the center of the pin at the Harken adjuster top fork is 54' 9.25".

The width of the crane opening is 7/8".

The pin-to-pin distance on the masthead toggle appears to be 2.75". (i.e. adjuster fork to mast toggle is 54' 6.5"). It is hard to measure directly while up the mast but it is probably a standard bronze toggle.

I have no exact measurement on the clearance above the pin in the crane but from the photo it is probably not more than 3/4".

All pins are 5/8" dia.

Clevis Pin on crane is 5/8" x 1 1/2".



At the time the measurement was made the backstay adjuster was set at an extension of 1.5" from the maximum extension.

With the current 3/8" wire, the max tension (20% BS) is at 4.5" extension.

Total stroke is 7".

This leaves 2.5" remaining stroke. (I.e. the wire backstay could be shorter).

Saturday, 01 December 2012 21:44

We have met this wonderful old man (at least 10 years older than I) named Ken Meyer, who has been a mechanic and machinist in Maryborough "for yonks" as they say. He is puzzling over the problem of the water pump. The old iron pulley is too heavy, he says.

Ken has finished the repair and it is truly amazing. He cut off the shaft and made a new part that is coupled and pinned into the spline of the old shaft. It is now threaded onto the pulley! And he also made a whole new pulley. Total cost was \$550 which is a lot of money, but cheaper than a new pump and pulley, and it is arguably better than the original.

Monday, 03 December 2012

[Purchased new Honda Outboard from Webbe Marine](#)

Invoice Nbr 00001932 \$1044.00

HONDA 2.3HP

FRAME: BAV J-2001064

SERIAL : 1063631

Thursday, 06 December 2012 20:33

Today I talked to Carol Hasse for over an hour regarding the issues of jibstay length and pre-bend. She said I should have a minimum of 1½" of pre-bend and maximum 3 to 4" of pre-bend. This is even less than what I have been working with until now. It is clear that when I tightened the jibstay in 2007 to reduce the pre-bend I inadvertently shortened the stay so that the roller furling was not working correctly. Hasse feels that lowering the drum and reducing the length of the sail's pendant at the head should improve everything; and that it is very important to reinstall the halyard restrainer.

CURRENT BOAT TASKS DEC/JAN 2012, MARYBOROUGH QLD

We are at the Mary River Marina for several weeks to re-rig and do sewing projects with the new Sailrite LSZ-1 walking foot sewing machine! We are so glad we have this fabulous machine. This is a small marina (one pontoon only with side tie – hold about a dozen boats) and is right next to the town so it is convenient to walk to stores.

1. Business
 - a. Pay for Yeppoon Repair
 - b. Recharge Jeff Phone
 - c. Recharge Kathy Phone
 - d. Pay IRS
 - e. Make sure \$\$ for mortgage in Westpac by 18th Dec.
 - f. Talk to Westpac re. mortgage
 - g. Get money back from ratbag Telstra for automatic withdrawals from the credit card
2. Engine
 - a. Finish cleanup of engine room
 - b. Install broken exciter wire main alt.
 - c. Clean and Treat rusted bolts and fittings.
 - d. See if old tach will work with more power! **It doesn't.**
 - e. Replace plastic in gauge housing.
 - f. Install seals in rebuilt raw water pump and replace existing pump.
3. Electrical
 - a. More AC Outlets
 - i. Galley
 - ii. Below Table
4. Deck
 - a. Cam Hatches
5. Re-Rigging
 - a. Schedule
 - i. Disassembly
 1. D1 Lowers – remove and replace
 2. Upper spreader – remove shroud cover, lashings and retaining bolt.
 3. D2 – remove wire, tangs, and bolts
 4. V1 – remove wire, tangs, and bolts
 5. Lower spreader – disconnect link plate from spreader
 6. D3/V2 – remove wire, tangs, and bolts.
 - ii. Upper Spreader
 1. Strip old paint, clean and sand
 2. Have roots welded to airfoils
 3. Clean, prime and paint
 - iii. Dye Penetrant Testing and 30X inspection of turnbuckles, toggles, link plates and tangs.
 - iv. Check for mast in column and mast rake
 - v. Reassembly
 1. D1 Lowers (before disassembly of other wires)
 2. D3/V2 install
 3. V1 install
 4. D2 install
 - b. Forestay
 - i. Remove furler and forestay
 - ii. Lower the furling drum (using another toggle instead of shortening tangs)
 - iii. Shorten Genoa head pendant
 - iv. Drill out old connectors

- v. Cut wire (10mm)
 - vi. Assemble foils with new connectors
 - vii. Inspect all clevis pins and rigging pins
 - viii. Install
 - ix. Install halyard restrainer
 - c. Backstay
 - i. Remove/install
 - ii. Connect new antenna
 - d. Lowers
 - i. Remove
 - ii. Inspect tangs
 - iii. Make new wires 8mm 1x19
 - iv. Install
 - e. V1 & Lower Spreader Link Plates
 - i. Remove and inspect Link Plates
 - ii. Make V1 wires from 10mm Dyform (completed June 2013)
 - iii. Install Link Plates
 - f. D2 Intermediates
 - i. Remove wires
 - ii. Remove and inspect tangs, bolt, and compression rod.
 - iii. Inspect tangs, bolt, and compression rod, replace as necessary.
 - iv. Make new D2 wires from 8mm 1x19
 - v. Install
 - g. Uppers (D3/V2 10mm)
 - i. Remove wires
 - ii. Remove and inspect tangs, bolt, and compression rod.
 - iii. Inspect upper spreader and decide if welding of the roots is necessary.
 - 1. Yes, it is necessary.
 - 2. Steve at
 - iv. Inspect tangs, bolt, and compression rod, replace as necessary.
 - v. Make new wire 10mm 1x19
 - vi. Install wire
 - vii. Install spreader boots
 - 1. Upper (leather or nylon)
 - 2. Lower (Leather)
 - h. Miscellaneous Items
 - i. Cotter pin at jibstay masthead
 - ii. Fwd port D2 washer at tang
 - iii. Flipflop block at masthead for chafe relief. NOT NEEDED. WON'T FIT.
 - iv.
6. Sewing Projects
- a. Sail Cover
 - b. Trysail Bag
 - c. Lifeline bags
 - d. Mainsheet bag
 - e. Fender protectors
 - f. Boom line bag for reefing lines
 - g. Chaps for dinghy tubes
7. Other Projects
- a. Install midship cleats port and starboard
 - b. STW paddlewheel
 - c. Fix aft deck light remote switches
 - d. Water heater
 - i. Check wiring
 - ii. Replace element if required

Saturday, 15 December 2012 08:36

So far the job has gone well except for:

1. We had to order new connector links for the roller furler. There was no way to pull the bigger 10mm wire through with the 0.5mm smaller 3/8" wire. This meant disassembling the foils by drilling out the aluminum blind rivets which destroyed the internal connector plates. Schaeffer was terrific and offered to charge us their cost on the spare parts. Shipping was more expensive than the parts.
2. The careful plan for the Hi-Mods went awry. The table below show Qty needed, what was delivered (OH) and what the Invoice showed. The invoice shows a correct shipment, but we received 1 extra 58CTEM10 10mm eye and are short two studs: one 8mm stud (58CTSM516) and one 10mm stud (58CTSM10). This will create a timing issue on finishing the rigging.
3. Fisheries has replaced the missing studs at virtually no charge. Hayn Marine was happy to drop ship via Fedex.
4. A later problem developed in that the Hi-Mod for Dyform (used for the V1 wires) did not fit because the wire was oversize. It turns out that KOS Stainless wire rope is often oversize (explains why it is stronger) . In this case the 10mm wire is actually 10.3mm and it doesn't sit well in the Hi-Mod. I am now in contact with Kevin Bell of Peterson UK and they have found a solution involving modifying the cone, but this will take some time. They will ship the modified cones directly to us in Australia. That's good support!

Terminal	Size	Wire	Catalog Nbr	Qty	Rig Wire	Rcvd	Inv
Hi-Mod Comp Stud 10mm Dyform Wire x 5/8-18 Thd	10mm-D	5/8"	58CTSM10-D	2	V1	2	2
Hi-Mod Comp Eye 10mm Dyform Wire x 5/8" Pin	10mm	5/8"	58CTEM10-D	2	V1	2	2
Hi-Mod Comp Stud 10mm Wire x 5/8-18 Thd	10mm	5/8"	58CTSM10	1	JIB	0	1
Hi-Mod Comp Stud 8mm Wire x 5/8-18 Thd	8mm	5/8"	58CTSM516	6	D1 & D2	5	6
Hi-Mod Comp Eye 8mm Wire x 5/8" Pin	8mm	5/8"	58CTEM08	6	D1 & D2	6	6
Hi-Mod Comp Eye 10mm Wire x 5/8" Pin	10mm	5/8"	58CTEM10	5	D3V2 & JIB	6	5

Friday, 28 December 2012 20:18

The Isotherm water heater is tripping the breaker with a 9A draw (should be 8 amp max).

Friday, 04 January 2013 00:17

Finished new sail cover. Zipper is a "BigZip"

Somewhere in here new zippers were installed in the awning. They are black Delrin water-resistant.



Catalog # 991 - 10mm Water Resistant Coil Separating Zipper, 3/4" Tape, Stainless Steel Nonlock Double Pull Slider, Stainless Steel Pin/Box, Black 42" (starboard) = \$33.50 43" (port) = \$33.50

86.75 = \$45.50

88.25" = \$45.50

Catalog # 1002 - 15mm Molded Plastic Separating Zipper, 1 1/4" Tape, Nonlock Black Single Pull Slider, Black Chain 144" = \$71.50

Total is \$229.50 plus freight.

René Vargas
Lenzip Mfg. Corp.
3000 Tollview Drive
Rolling Meadows, IL 60008-3709 USA
Ph: 847-368-9000
Fx: 847-385-0740

Tuesday, 08 January 2013 21:22

Genoa fix to shorten the luff length and fix the damaged tape.



Strong Track Replacement

#042478

Bought in July 2004

skipl@tidesmarine.com

orderdesk@tidesmarine.com

Niall Clifford said he would carry this back from LAX as checked baggage.

Dim 41" x 41" x 2"

QANTAS two checked bags not to exceed 159" L+W+H. (above is 84)

TNT \$200+

46' 1-3/4" of 7/8" external.

Check with marine OEM.

Valerie said I can purchase the track.

\$7.95/ft replacement but need to return the old track.

Send to OEM Marine.
Skip will be able to instruct them to replace.
Tell them Skip said to give replacement price of \$7.95 per foot.(\$365.70)
Peter at OEM Marine confirmed this is OK

Tuesday, 08 January 2013 22:22

The forestay (inner stay) was pumping during our wild ride up the coast and I have started thinking about how to reinforce the attachment with a rod or wire attached to the keel or hull

Forestay Release Lever

ABI (no longer available)

P/N 2147 CH for chrome release lever for 5/16" wire and 5/8" pin

P/N 2410 CH for chrome release lever base 5/8" pin

Tie rod is 5/8" x 18 UNF thread

Parts Needed:

Rigging Thread Eye Rod without Pin

5/8" hole

5/8-18 thread

3-15/16" long

p/n 58ERRH-P (\$30)



Add turnbuckle with fork (on hand)

Use existing 3/8" swaged stud and add 3/8" Hi-Mod

Thursday, 10 January 2013 05:49

Possible

<http://www.ronstan.com/marine/product.asp?ProdNo=RF68174>

Ronstan pivoting low lead block

Halyward Restrainer Bushing

Harken Part Nbr 945ASSY.

Contact Harken Australia 02 89788666

Full Part is US\$55.17

Contact ADAM

Tuesday, 15 January 2013 06:47

OK! I was right to make the measured jibstay that extra 50mm long. Just a hunch. As it stands the furler drum has been lowered 2" and the sail height reduced about 4". The link plates were replaced with an extra toggle and a bronze 5/8" thick link plate I've been carrying around since San Diego. (see photo).

This assembly seems good enough but it is also possible that I might be able to put the link plates back in (will raise drum the 2") I will have to investigate at the masthead to see for sure. This old bronze link was from a boat that the San Diego Harbor Police were impounding. The owner told the rest of us at the Police Dock to help ourselves to whatever we wanted in the next 15 minutes. I picked up a bronze turnbuckle with the link. So a piece of this bygone boat is now on Beatrix.

Seriously, it would be better to remove the link + toggle and replace them with two link plates. I could make new ones (beefier) or cut down the ones I have.



Tuesday, 15 January 2013 22:51

The leech of the mainsail has lot of holes along its edge. We have used sticky-back sailcloth to cover some of them but the problem is now progressing along the entire length of the leech. Talked with Kelsey at PT Sails. She says this is a sign of aging and that we should buy 5" wide Dacron 8oz tape. We crease the tape and stick it on with high quality steaming tape. Stitch with a Zigzag as big as machine will give with no overcast. Just one row of stitching from head to clew. We are still at the dock in Maryborough and we have the "sail loft" available that we have been using for other projects, so even though it costs more we have ordered 68m of Dacron tape and a roll of high-adhesive seaming tape from Bainbridge in NSW. We only need about 14m so we'll have a lot left over. It should arrive today.

Saturday, 19 January 2013 21:57

Well, that didn't work. Bainbridge shipped the wrong tape. We are in contact with a "local" sailmaker (only 2 hrs south) who will be in the neighborhood on Tuesday and can bring us 15m of tape. That's the good news; we don't have to buy a whole roll,

I re-installed the broken exciter wire jumper from the terminal block to the alternator. Alternator tested and charging. The big tachometer still will not work.

We have re-designed the end of the new sailcover once again and will see how it goes. We are also rebuilding the trysail cover. The trysail now neatly hangs in its track below the boom and is strapped to the mast with 2" webbing. Unfortunately I think I should move the webbing loops (footman loops) farther down the mast. (Note: this has been done)

I started rig tensioning this morning. Of course the jibstay/backstay cannot be measured because there is not enough exposed jibstay wire and the Dyneema Dux 11mm will not work with the Loos PT-3 tension gauge. So, all the tuning I can do with the tension gauge is restricted to the transverse rigging.

It is interesting that tension recommendations are all given in % of breaking load; e.g. "tension the lowers to 10-12%". But this gives different tensions with different wire sizes. What is the goal? Higher tension or don't exceed a safety factor? Makes no sense, since a wire could easily be tensioned to 20% of BL and not be unsafe.

I think the best strategy is to tension to the recommendations but to keep an eye on loading and then, of course, see how the rig performs. Watch out for bend, lean, and S-curve (lowers not right).

I first started with tensioning the 4 lowers to a measured load of 1587 lbs (15% - a bit high maybe?) and set the V1s at 23%.

Next I will go up the mast to adjust the V2/D3 and D1. I'll do that first thing tomorrow.

Wire*	Rig Elem	Breaking Load (Lbs)	Port			Starboard			Initial Settings
			Loos	Tension (Lbs)	%	Loos	Tension (Lbs)	%	
10	D3/V2	16,000	42	1609	10%	44	1918	12%	
8	D2	10,300	27	1587	15%	27	1587	15%	
3/8	V1	14,500	47	3400	23%	47	3400	23%	
8	D1	10,300	27	1587	15%	26	1499	15%	
5/16	JIBSTAY	10,300	29	1850	18%	29	1850	18%	
5/16	FORESTAY	10,300	14	550	5%				

Monday, 28 January 2013 02:00

GLITCH OF THE DAY! Washdown pump motor not turning over.

Wednesday, 30 January 2013 23:56

We have been having low charging levels from FX2012MT with Honda EU2000. The Honda is fine and will put out a max of 15.5aac. I used the heat gun to show that the Honda would power up to handle more loads. Plenty of power is available there.

Next, I Called Outback Power. We went through ALL the charging profiles including "STATUS" for looking at Temp Compensation Voltage vs. Actual Voltage. All is nominal. The only thing I can think of at this point is that with our big deficits (up to -330AH) over the last few days that the two battery meters (Blue Sky IPN) and Link 10 are over-reporting the battery deficit. As I write this we have 14.1vdc and 31A of DC charge current but are showing -73AH on the IPN. I think this is wrong and that the meters need to be reset. We will be in the Marina in 3 days and I can get a full charge and re-set the meters.

Telstra Unlock 1800782489

Monday, 04 February 2013 05:10

Espresso Machine: Talked to Matt at Krups who will send a couple of frother nozzles after talking with the tech, who will call tomorrow.

Monday, 04 February 2013 23:03

Called ICOM to find out why the CommandMic does not control the Hailer function on the ICOM ICM602 VHF Radio. Turns out this was never a feature of that radio, even though it says that the CommandMic has this function. Too late to bitch about it now and I'm not buying a new radio just to yell at people.

Tuesday, 05 February 2013 05:21

- Installed Schaefer Mounting Plate in it's position inboard on the anchor roller assembly.
- Installed jam cleats for EZ-Jax lines.
- Had to pop-rivet two of the recently installed footman's loops to hold the staps for the trysail cover.

Friday, 08 February 2013 20:49

- Repaired storm trysail
 - Sewed on two new bronze hanks
 - Lengthened the sheets by 1.5m so they will reach the primary winches
 - Regatta braid (former spin halyard) was used as sheets. Hope they work under heavy load.
 - Sheets are a single line attached with a "racking seizing"
- Removed stainless steel tool box.
 - Tools now live in nylon tool bags
 - This has tripled the usable space atop the starboard fuel tank in the passageway.
- Defrosted Fridge
- Went to Centrelink

Friday, 08 February 2013 20:58

The autopilot "repair" attempts continue. Symptoms were like those back in Port MacQuarie where the apparent cause was an old cable. The current symptoms are "Fault 244", our old RFU friend, and the inability to establish a dockside rudder setting. I wired up the 715 handheld unit (unused these past few years) to directly plug into the AP computer and this seems to eliminate the cable and 740 control head as the problem.

The problem at the moment is that when the wheel is at the end stop, the actuator does not turn the wheel.

The symptom was refined with experimentation; with the autopilot off and the solenoid energized, the wheel should not turn. But at the extreme ends of the quadrant; i.e. near the end stops, it would turn freely.

AUTOPILOT ACTUATOR BLEEDING

- 1) Undo the 2 brass bleeder screws 2 TURNS ONLY. They are located on either side of the valve block just below the plastic reservoir.
- 2) Energize the solenoid valve coil.
- 3) Turn the steering wheel from full lock left to full lock right and back again for a few minutes. Air will be seen bubbling from the cylinder into the tank. Top up the oil level if needed. Stop the procedure when no more bubbles are observed.
- 4) Close the 2 brass bleeder screws firmly.

Bleeding did not fix anything. No bubbles showed up, even at the end of travel, which is unusual.

I had recently wired up a small box (Bypass Solenoid Control Box) under the autopilot computer with a BLEED and RUN setting so I could energize the bypass valve without having the autopilot on; this is required for bleeding and although I rarely have to bleed the system it was enough of a pain to get power to the solenoid that it was worthwhile; especially today when I was switching it on and off many times to experiment with why it was failing.

Today, I also installed a LED on the Bypass Solenoid Control Box which is lit when the Bypass Solenoid is energized. It tells me there is power to the solenoid.

This LED indicated the solenoid is operating correctly; i.e. in the hardover position the actuator motor is running and the bypass solenoid is energized but the wheel is not turning. This suggested a possible problem in the actuator itself.

So, I connected the Fluke multimeter to the solenoid to measure amps and sure enough, the solenoid was "energized", but not actuating. It only showed amp draw toward the center of the rudder range. This certainly explains the problems doing the Rudder Setup because that required hardover port and starboard motion to calibrate the Rudder Feedback Unit.

This was the glitch in the Autopilot system. The COIL that energizes the bypass valve in the Octopus was going bad.

Fortunately I had a spare coil from Octopus and once installed the autopilot started working perfectly. I wonder how much this problem contributed to the earlier autopilot glitches. Hard to tell. I "fixed" the autopilot a few months ago with a new control cable. Probably it was a number of simultaneous failures.

In putting everything away I knocked the RFU arm off the shaft. Turns out it has a big crack in it, possibly from the knock, but possibly already there since the set screw had to be refit. I replaced it with the RFU arm that Niall Clifford repaired in Port MacQuarie. Now I'll have to fix this newly broken arm. Frankly I think I should build a better arm out of more durable material.

NEW AUTOPILOT RESEARCH: (Fortunately, don't need this yet)

1. Components
 - a. Garmin GHP12 "sailboat" pilot corepack. \$1733 from FISCO.
 - b. Garmin GRF10 Rudder Feedback Sensor, approx. \$200
 - c. Garmin GHC10 Remote Unit, approx. \$270.
2. Questions
 - a. Will it work with the GPSMAP3010C?
 - b. Will it require additional network expander box?
 - c. Should I use the existing RFUs (they are adaptable to the Garmin)
3. Potential sale of Cetrek Components: \$1200
 - a. 90619 - \$350
 - b. 90609 - \$250
 - c. RFU (installed) - \$150
 - d. RFU repaired - \$50
 - e. 90780 Control Head (\$200)
 - f. 90715 Remote Head repaired (\$150)
 - g. 90740 Control Head with bad knob (\$50)

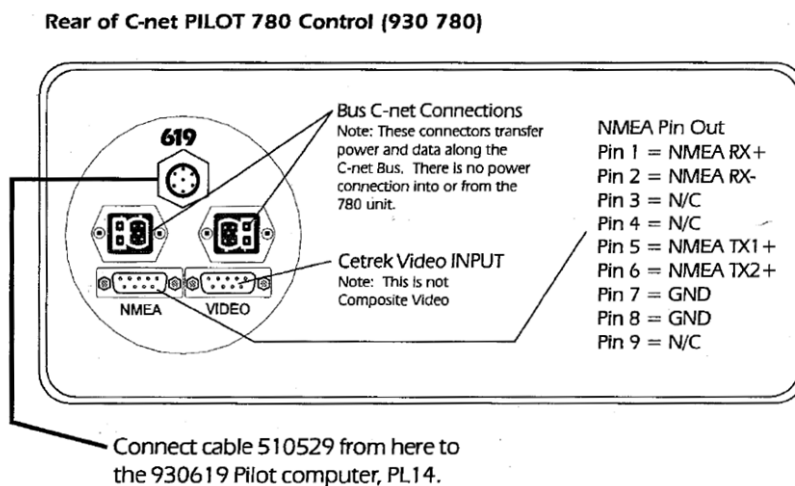
Saturday, 09 February 2013 05:34

Kathy serviced, cleaned and polished our spare Harken B16STC winch; preparatory for selling on eBay.

Freezer is defrosted.

Tuesday, 12 February 2013 03:41

Yesterday and today I continued working on the Cetrek Autopilot. The new Pilot 780 was installed in the Instrument Panel over the companionway; and this also required a separate NMEA input with depth and wind data. This I could get off the data supply to the Garmin GMI-10. Input to the 780 is requires a female DB-9 serial connector on pins 1, 2, and 7. It took hours to figure out that the weak and tiny wires in the standard serial port cable were too small. I ended up soldering up a stock DB-9 and that

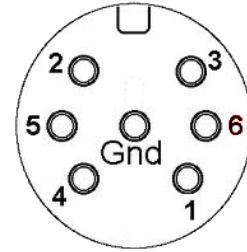


worked (although the soldering is always a messy business).

At this point the unit is definitely receiving and displaying the NMEA data on the stream to the GMI-10. During testing a Fault 66 and Fault 70 appeared, but mostly it works fine. At one time it locked up complete and needed a power off. Are these transient faults due to installation or will they be consistent in the future?

The other issue is that the page refresh and selection is VERY SLOW. It is nice to have the control knob working but in many ways this is too complex. It should be fine if I also can get the handheld unit hooked up. This is working fine, but there are a few problems. First of all, the handheld unit's curly cord is starting to lose its insulation. I have reinforced it with E6000 and some cable tubing. It can be spliced into the old connector.

CETREK CABLE CONNECTIONS 7-PIN			
CONN	715 PILOT	PL10/PL14	AIRMAR C49
1	Grn	Brn	Blu
2	Wht	Pur	Screen
3	Red	Red	Grn
4	Yel	Yel	Pur or Blu/Wht
5	Blue	Orn	Blk, Blk/Wht
6	Blk	Blk	Red
Gnd	Screen	Screen	Wht



The 715 Pilot handheld was soldered to the Airmar Cable according to the above table. It tested OK. Note that the internal wiring is different. This kludge jury-rig might last a while but the curly insulation on the handheld is NOT going to last long. I need to order a Molex connector with 7 wires and a 6-wire curly cord from eBay so I can try to fix this when it breaks.

Wednesday, 13 February 2013 01:24

- Replaced stop pin in the Schaffer Roller Furler (p/n 24-043). Note that there is TefGel™ on the pin but it went in very loose, so maybe Loctite would be more appropriate. The genoa needs to be unfurled to do this.
- Kathy has been putting Deks Olje on the caprail. She feels that putting over the unbleached wood is both easier and better looking because it is darker. She is using 80 grit ('cause she don't have 100).
- Added another stop in the floor boards in Main Cabin Locker 1 where the tools are kept. Better access to tools and supplies now.
- Cut out new Plexiglas window for engine instruments and routed out the opening a bit to allow it to be placed almost flush. The Silicone cartridges had solidified (they were from 2007) and we had to get more to make a gasket.
- Stainless steel toolbox in passage way, over the fuel tank, has been removed and given away in favor of using heavy duty tool bags. We have bought two 16" Milwaukee tool bags and maybe another one or two are in order.
- Received replacement Wallas 40Dt diesel heater. It almost fits in the old place and, unfortunately, we also need to locate a new control panel which does NOT fit in to old place in the panel, not unless I rotate it 90° so it is vertical, as at the right. It might also fit in the spot on the nav panel that was originally for the SSH packet modem.



Friday, 15 February 2013 08:54

- Installed Autopilot Emergency Stop Button.
 - IP64 waterproof pushbutton switch
 - Momentarily supplies negative to PL14//2 which shuts down the system.
 - This feature only available with the 619 pilot computer
- Finished installation of Pilot Control 715.
- Installed socket for CommandMic for ICOM VHF.\

Kathy installed new Plexiglas cover for engine instruments using Sika silicone.

Sunday, 17 February 2013 01:38

- Yesterday the engine raw water pump had a wobbling pulley found during pre-departure check. It was only installed 22/11/12 after being rebuilt by Depco. The "new" rebuilt pulley had never had its seals put in (my fault). We called Kenny back to work on rebuilding the shaft and aluminum pulley on the removed pump (just installed). He will rebuild the second pump to have the beefed up shaft as the first one he rebuilt but it will be a lot cheaper as no new pulley is required.

- Putting in the RWP seals is difficult. Kenny gave us a hollow steel cylinder that fits over the splined end of the shaft and can then be pressed in with drill press or arbor press. Otherwise I need to make a screw press to fit this. All our stock of bearings and seals are now used up and I need to order some more from DEPCO. The carbon face of the shaft seal (which is a 2-part seal) was cracked and I had to sand it smooth. This will lower the lifetime as the carbon wears down.
- Installed and tested without leaks.
- Noted: Small alternator vibrates badly as the 1" foot is oval-ed and needs to be bushed.
- Changed Battery Configuration – swapped 7 out to standby and 5 is online. Equalization done. See battery log.

Monday, 18 February 2013 22:38

Garmin GMI10 has been displaying wind data for a while then the data windows are all black and no wind data is displayed. The GMI10 shares NMEA data input with the Cetrek Pilot which is next to it. It is possible that there is a problem with either the GMI10 cable or the DB9 cable which is paralleled to it and plugs into the Pilot. The GMI10 problem persists even when the DB9 is unplugged, which tends to finger the new DB9 cable. Garmin was contacted and is sending a new cable to Seattle. If this problem continues the next test is to remove the home-made DB9 cable and see if it persists. Then try a new Garmin cable. Then return the items for a \$110 exchange.

Thursday, 21 February 2013 19:57

Glitch of The Day.

Motored down from Garry's anchorage. Glitch of the day was the forward head has stopped working. It looks like a blockage rather than a bad joker valve. The joker valves are fairly new, anyway. The forward head which is usually the pee head has been used for poo for a few days and this might have contributed to the problem. No paper has gone down, of course, but possibly something fell in the toilet. No amount of plunging or pumping is lowering the level so it has to be a blockage. We will deal with it later after our sail down the coast to Brisbane.

In other news, the Pilot 715 handheld appears to not be waterproof and is not working now. I think it is a broken splice and not internal damage. I will need a new curly cord and some way to fasten a waterproof seal into the unit. Rats. The Pilot 780 was finally made to run by properly configuring the Rudder Phasing and Motor Phasing to "B". In the "A" position the rudder moved left when it should have moved right. We are sailing to Brisbane from Tin Can Bay overnight and hopefully it will work OK. The Pilot 740 control head seems to have disappeared into the boat someplace. Several search parties cannot find it anywhere. It will have to turn up. I might need it.

AIS and heading sensor data seems to be missing from the NMEA data stream.

Saturday, 23 February 2013 06:55

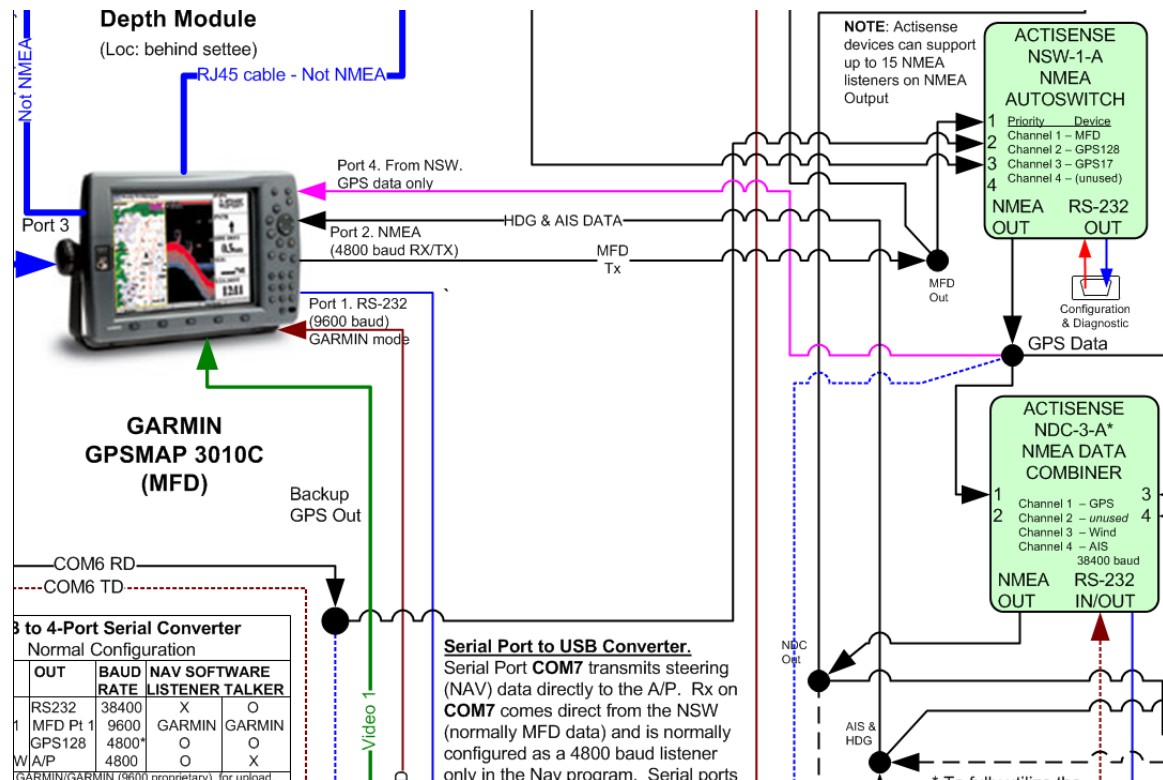
Sailing from Wide Bay to QCYC at Shorncliffe. The "Glitch of the Day" is that the AIS/Heading Sensor data has suddenly appeared again. Normally things break. Today something healed itself.

It MAY have something to do with me searching behind the settee cushion to inspect wiring on the Garmin Depth Sounder Box. The AIS box is behind the back wall of the printer locker. The Depth Souder beeped and disconnected while I was wiggling wires. I suppose I need to both inspect the wires and make sure there are spare cables aboard. NOTE: The AIS / HDG data appears on the GPSMAP 3010C but not on the PC.

The NDC Control Center that is supposed to read individual streams from the NDC-3 does not show the AIS stream either.

The network diagram (below) shows that AIS/HDG data is fed directly to the chartplotter but the serial combiner reads output from the NDC-3. This argues that the problem is with the NDC-3 but in that

case why was nothing seen earlier on the chartplotter? It is conceivable that there were no AIS targets in the Mary River, although I would have thought the Fraser Island Ferries would have AIS.



Sunday, 24 February 2013 02:10

Arrived at QCYC.

Glitches:

Error 244 on the Autopilot

3:42 hrs of engine time only pulled the batteries down 47AH

Engine would not stop with STOP switch. Needed to pull emergency cord.

Monday, 25 February 2013 05:32

New Ipad purchased for me by Graham

GET A SCREEN PROTECTOR says Blair. Highly recommended to do this.

Tuesday, 12 March 2013 04:00

Today we are unblocking the forward head. A strange brown fibrous mass (maybe an ex-turd) was clogging the first duckbill valve. What a mass. Brown shitwater everywhere. I wish I had designed this system with some stop valves, at least for the upward run of the pump discharge. There just isn't much room!

The pump may be getting old. There seems to be a wobble in the motor arm.

Note when removing this pump it is best to remove the 8 screws attaching the pump top to the body. The intake hose needs to be removed from the universal seal.

It is difficult to remove the pump. This would be made easier by running the input hose closer to the inboard wall of the compartment where the vacuum chamber/pump is installed. But in Australia we have 50mm PVC and hoses. So we need to see 1) if we have any 1.5" PVC pip and 2) order in:

- 1.5" PVC 45 deg Street Ell (1)
- 1.5" PVC 90 dig Elbows (not tight curve) (2)

New S-Series Pump: \$687.21

Note: New Halyard at <http://www.dinghyshop.com.au/home/index.php/on-lineshop/category/132-10mm-cruising-dyneema-blended-dyneema-core-with-polyester-cover>

Splicing 8, 12, and 24-strand: <http://www.animatedknots.com/longbury/index.php>

\$549/600' for Amsteel Blue 1/4" or \$1.06/ft

\$912/600' for Amsteel Blue 5/16" or \$1.76/ft

Tuesday, 12 March 2013 21:03

Ordered from Marine Sanitation:

SW Conversion Kit \$287.67.

4 Duckbills

3 sets of O-rings

2 90 elbows

1 street elbow 45

2 2' pipe 1.5"

Uniseal (1)

Sunday, 17 March 2013 07:46

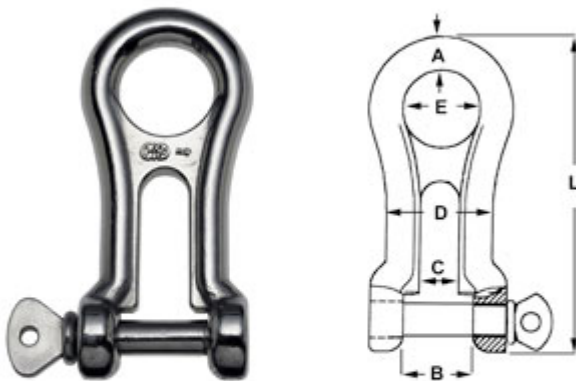
This looks like a good candidate for the second anchor, but in the larger size.

Is 1500 SWL good enough? It seems a little light.

Kong Chain Gripper



Stainless steel 316 grade chain gripper. Made by Kong



Chain Gripper

Available Options	Chain (mm)	Pin (mm)	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	L (mm)	SWL (Kg)	Break Load (Kg)	Code	Price (ex VAT)	
5-8mm Gripper :	5-8	8	8	17	9.5	25.5	19	75	700	2500	CG-8	£11.51	Add
8-12mm Gripper :	8-12	12	12	25	14	38	28	113	1500	5000	CG-12	£23.01	Add

Thursday, 21 March 2013 02:59

Today we tested the resistance on the hot water heater element. It was 14Ω when it should read 50-70 Ω , ALMOST a short circuit. "[220V / 750W Replacement heating element for Isotemp "Regular" water heater tank has orange colored exterior Resistance of element = 50 - 70 Ohms Manufacturer Part #SEE00002HA](#)" is still available. Note, the thermostat unit is NOT AVAILABLE any longer and if it goes we'll have to build a new one or get a new heater. The last time the element was replaced was in Feb 2009.



Figure 5. Part Nbr. ITP-E-O2HA

This will require adding or converting engine room power point to 220VAC.

Friday, 18 October 2013 08:30 UT

After 6 months on the KP46 Wasabi we are not back on *Beatrix*. Actually, at the moment, it's just me (Jeff) because Kathy is in the USA visiting her family.

The first job was totally de-mildewing the boat which was a jungle of green mold. The wood on the cabinets was treated with a varnish for future protection if we would be away. Unfortunately, brand name is not available. (entered Oct 2018) We had no idea we would be away March-September 2013. NEXT TIME, leave a small heater on board. Kathy did the brunt of the cleanup. I removed the water heater to replace the above heating element which www.isootherm-parts.com had sent in our absence. The trick to removing the water heater is to unscrew the two wooden stops which lock the Rix compressor and then, after disconnecting a few hoses, swing the heater around so the business end is exposed. I actually did not test the thermostats. They are held in by notches in a clip and are kind of difficult to install. The heater seems to be working fine.



It took me over 5 re-installs of the heater to fix all the leaks that showed up. I simplified the hose connections and added some barrel joints (easy disconnects) to make it easy to disconnect the hoses. It was a very frustrating experience. Another 5-day job that should have taken one or two days.

Re-wiring for 240vac was more difficult than I expected. The old setup was a simple extension cord plugged into the engine room. In the end I had to run a new 3-conductor cable to the junction box in the engine room and from there another 3-conductor cable to an 8A circuit breaker on the 230v Distribution Panel. The old wire supplies power to an engine power point and one in the galley (behind the sink).



The next super-frustrating job was installing two new Shurflo AquaKing 2.0 3901-0216 pumps. That was hard enough but I have spent the last 4 days trying to solve the problem of why they don't self-prime. First I replaced the hose connectors with brand new ones (3 elbows, 1 straight, $\frac{3}{4}$ " barb). This fixed the problem as the hoses were now firmly attached. But, I did not fasten one of the intakes correctly which explained the ongoing inability to self-prime. Isolating each pump identified which one was the problem; Pump #2. Ok, I fixed the mis-attached fitting. It appeared that the problem was solved, but no. Pump 2 is still slowing losing pressure by bleeding air back into the feed hose and then it won't self-prime. It just runs dry. At this point I cannot work any more on this project so I am going to hope that Pump1 is actually fixed and I will have to re-visit Pump 2 later on. I have taken too much time already on this project and the boat needs cleaning and organizing and there are other high-priority jobs to accomplish in the next month before Kathy returns.

Friday, 25 October 2013 21:45 UT

This has been an excruciating week of procrastination and depression. I can't seem to dig my way out of the unholy mess that *Beatrix* has become. Part of the problem is that I just have not been feeling well and I have this fear my heart disease has returned. I am having symptoms which include insomnia, depression, lack of energy, a bad taste in my mouth (like ashes), poor vision, high BP and pulse rate. Hopefully this is a transient.

Sunday, 27 October 2013 22:42 UT

Fuel Maintenance:

Day Tank was pumped into the empty Port Tank
Some fuel remained in the Day Tank and was polished for 1 hour.
Port tank pumped dry into now empty Day Tank
Starboard tank remains full, Day Tank is Full, Port Tank is Empty.

Thursday, 31 October 2013 07:30 UT

Automatic fuel shutoff for Port tank was added today. There was a bad connector that had to be replaced but after that the sensitive pressure switch worked fine. Still to be done is the Starboard Tank sensor.

The Port tank was full and was polished for five hours.
The Port tank was pumped up with fuel from the Starboard tank.
The remaining fuel (about 1/3 tank) was polished for five hours.

The offline battery was swapped in to the bank.

Tuesday, 05 November 2013 07:18 UT

I spent a lot of time trying to determine how, and if, I could use the Tierney Isolation Transformer with 240->240 volts. It seemed like I could but in practice, it doesn't work. So I have **removed the transformer** as it is heavy and is not doing anything over here. The best solution is to simply not have any AC earth (green wire) on the boat. The AC "safety" ground is now tied to the neutral on the ship side of the shore power connection. The shore power green wire just terminates except for the connection to the reverse polarity light. This might increase the slight chance of electrocution but definitely removes the chance of galvanic corrosion. As I am installing GFP (or RCOD) devices on each main AC circuit which should take care of the electrocution threat. In Australia on average about 1 in 18 million are electrocuted per year. I'm not too worried.

Today I set out to do the "small" job of removing the rotted Strongtrack™ and replacing it with the new one we received months ago. As it turns out, the track can't be installed (or removed) without taking the gooseneck brackets off the mast. This turned out to be a big problem. It's been a long time and the dissimilar metal problem had caused two of the machine screws to be frozen in place. As they are round hex socket heads the Allen wrench was not up to the job. I had to take the small reciprocating saw and cut a slot for a screwdriver. This failed on the first screw. Mal stopped by to help and the two of us tried all sorts of things to get that screw out. I even found the old hammer-driver from 1997 when I was first taking the mast apart. It failed. Finally we had to drill a hole in the screw and use an extractor. That worked. The second frozen screw came out using the slot cut by the saw.

Finally I was able to remove the old track and install the new one, hoist the sail until all the slides were in place, and finally flake and cover it. All is back in place as it should be. It was a long day but at least another job is off the list.

Sunday, 10 November 2013 07:05 UT

Yesterday and today saw the replacement of the two V1 rigging wires. I used the modified cones from Peterson Hi-Mod with the Dyform wire. That stuff is not good. Yes, it's stronger, but it is less tractable to work with and much more difficult to use with the Hi-Mods. I am going to keep the 10mm cones and if there is a next time, I will get new crown rings and return to 10mm wire for the V1's. Still to do to finish the rigging: 1) install the pins to keep the turnbuckle barrels from rotating and 2) sew up the leather covers on the lower spreader tips.

Monday, 11 November 2013 22:28 UT

Plan for painting

Product	Brand	Name and Code	Quantity	Cost*
Epoxy Tie Coat	Hempel	26030 Underwater Primer	0L	
Self-Polishing Anti-Fouling	Hempel	Olympic 86901 Blue	5L	172.95
Water-based Anti-Fouling	MDR	for transducers (from USA)	8oz	9.0
Aluminium Anti-Foul	Hempel	Mille Dynamic Alu 7160A	1L	52.50
Thinner	Hempel	845	1L	15.75

- the only critical day
- Bias Boating

Wednesday, 13 November 2013 08:10 UT

Today I finished wiring the shore power 120/240 select switch with a proper box in the hanging locker and the switch faces on the bulkhead behind the watermaker. I had it all done and it started to trip the RCOD on the marina dock. It was, of course, the green wire. It had worked fine without it. Now the green wire from the shore is not connected to the green wire in the boat. The green wire in the boat is connected to the neutral on the ship side of the switch. There are reasons for this.

By undoing EACH AND EVERY ONE of the green wires behind the main electrical panel I isolated the problem to the main electrical panel itself. None of the outlets or the inverters are a problem. The only thing the green wire should be doing is protecting the metal face of the panel. I don't think the reverse polarity lights are a problem as they were disconnected during testing. At least I have narrowed it down. . I bet it is a LED light on the panel with a neutral running to the wrong AC bus.

Friday, 15 November 2013 07:28 UTC

Finished the electrical re-wiring for the 120/240 select switch and moved the location of the Blue Sky solar charge controller flush to the wall next to the select switch. In cutting out the square hole for the electrical box I accidentally sawed through the plastic conduit and nicked one of the hot wires from the 120/240 switch. As far as I can see it wasn't a cut nor was it in contact with anything else. I just could not face taking it all apart again so I left it as is.

Thursday, 21 November 2013 05:45 UTC

Installed vYachtWifi unit. It works great!
AIS working perfectly after I connected to the correct NMEA source.

Wednesday, 11 December 2013 19:50 UT

Deck: Moved stuff out from under dinghy in order to get more air flow in the boat.

Bilge:

- Bilge smells of diesel/other
- Washed down top of day tank under cockpit locker with hot water & dishwashing liquid.
- Wiped down the oil in the drip tray
- Flushed bilge with fresh water twice
- Left 6" of fresh water and bilge cleaner (orange) in the bilge to set for a while.
- Noticed coolant leak in old hose between engine heat exchanger and engine. Tightened all hose clamps and noted old hose (and old-style hose clamps) for replacement. The slotted hose clamps are part of the problem of stressing the hose.

Dodger:

- New dodger was removed
- Stainless frame was polished with Spotless Stainless
- All equipment dismounted from spray shield preparatory to sanding/sealing

Thursday, 12 December 2013 02:47 UT

Noted: AC shore power cord is "dodgy" (tripped GFI when wet) and is warm to touch. Put a rebuild of this on the list.

Thursday, 12 December 2013 02:47 UT

Noted this morning that the forward large hatch is leaking at the spot where I tore the seal during installation. Note that the hatches are:

- LEWMAR MEDIUM PROFILE MK1 SIZE 70 (1)
- LEWMAR MEDIUM PROFILE MK1 SIZE 60 (2)

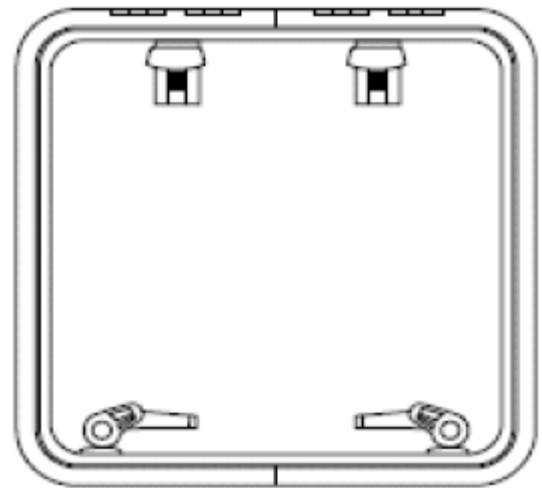
Lens prices are about \$350/\$500 + shipping. Lens Codes are:

- Size 60 Lens Code 3995400
- Size 70 Lens Code 3997002

Better to make our own from purchased marine acrylic.

Also order new seal kits from Select Plastics:

http://www.hatchmasters.com/product_info.php?products_id=101&osCsid=5afa0bc52b9f5b930848b40911e2931e



SIZE 60

Item No.	Description	No. in Product	Part Number
1	Acrylic & Seal - Mk.1 & 2 - 1 stay	1	361549990
1	Acrylic & Seal - Mk.1 & 2 - 2 stays	1	361549099
1	Acrylic & Seal - Mk.1 & 2 - with friction lever	1	361135990
2	Catch Block	1	360924990
3	Friction Lever	1	360917990
3	Friction Lever - Gasket only	Bag of 20	361207999
4	Large handle kit (pair)	1	361680990
5	Handle Kit - Outside Handle	5 pair kit	360919990
6	Hinge Caps	Bag of 10	361027999
6	Hinge Caps	Bag Of 100	361044999
7	Hinge Kit - Mk.1 & 2 - Friction Version	1	361263999
8	Joining insert kit	2	360925999
9	Lid Assembly - Mk.2	1	361173900
10	Lower Frame	1	361148900
11	Seal Kit	1	360964999
12	Upper Frame - Mk.2	1	361161990
13	Flyscreen Only - requires trim and tabs		396609937

Ralph Johnstone **DO IT YOURSELF**

I've done one Lewmar and two Bomar hatches on our H-310 and they still look brand new after three years in service. The 13" X 13" Bomar hatches were about \$15.00 each and the 21" X 21" Lewmar was about \$40.00. After perfecting the installation technique, I've actually decided against the idea of installing Sunbrella UV protection covers for the new hatches. It's easier to just install new lenses every eight or nine years.

On later model Lewmar hatches, I understand the lenses can be replaced by simply sliding out the old one and installing a new one. As your needs replacing, I would suspect it's not a newer model and therefore you have some work in front of you.

Basically, if you have a home woodworking shop, you have everything you need for a professional job which is identical to the original Lewmar hatch a table saw with carbide blade, router, drill press, and assorted Forstner bits.

There's no great skill required in doing this but it's a rather slow, long drawn out affair. Very briefly and without going into too much detail:

1. Remove the hatch cover by pulling out the hinge pin. The replacement work has to be done in the comfort of your shop.
2. Seal the open hatch.
3. As you take the old lens out of the frame, notice how it is assembled. This will make this explanation a little easier to understand.
4. Use an Exacto knife to carefully cut (on the top) the sealant between the aluminum frame and the acrylic lens. The gap is about 3/16". Make numerous cuts until you can force out the lens. Do not damage the lens as you will need it later as a pattern.
5. Use a plastic scouring pad to remove every trace of the old sealant from the aluminum housing. Do not scratch the anodizing on the aluminum frame or you're looking at future corrosion.
6. Use an Exacto knife to quickly and carefully remove the sealant from the old lens.
7. Purchase the tinted acrylic material of your choice from a dealer. Don't waste money getting it cut to size.
8. Use a felt pen to roughly mark out the size of the new lens you're cutting.
9. Cut out the rough size of the new lens on the table saw, leaving about 1/8" waste for trimming. Remember when cutting acrylic, use high speed and very light pressure.
10. Take the old CLEANED lens and attach it to the new, rough cut acrylic sheet using spongy double sided tape.
11. Use a template bit in your hand held router to trim off the waste material on the new acrylic sheet. You now have an exact copy of the outside of the old lens +/- 0.001".
12. Drill out the large handle hole using the Forstner bit and the hinge holes using a twist drill. Your drills must be sharp. I know there are reams of material on how the "professionals" cut acrylic but in my experience, the cuts have been flawless using sharp tools, high speed and very light pressure.
13. Apply a strip of 1/16" thick X 1/4" wide single sided adhesive backed foam rubber around the bottom of the inside of the aluminum frame. The new lens cannot be adhesed directly to the aluminum frame due to their differences in thermal expansion. The foam rubber allows for a "floating motion".
14. Mask the top of the new lens with 1/4" wide elastic automotive masking tape and then cover this tape back a bit with cheap painter's masking tape.
15. Apply the same masking procedure to the aluminum frame.
16. Remove the bottom protective paper from the lens.
17. Drop the lens into the frame and temporarily centre the lens with whatever is at hand.

18. Drill a 1/16" hole in the tip of a tube of Dow Corning #795 to get the smallest extrusion hole possible.
19. Warm the #795. It extrudes much better.
20. Practice forcing the silicone into the bottom of the 3/16" gap between the lens and aluminum frame. This take a bit of practice to avoid air bubbles so be prepared to clean up the lens and frame and try it a few times before you perfect the technique.
21. When finished , IMMEDIATELY pull off all layers of masking tape before the silicone has a chance to set and start tearing.
22. Allow to set for a couple of weeks due to the depth of the bead.
23. Install the hatch lid back on the frame.
24. Tear the protective paper from the top of the lens and you're done.

SIZE 70

Item No.	Description	No. in Product	Part Number
1	Acrylic & Seal - Mk.1 & 2 - with friction lever	1	361137990
1	Acrylic & Seal - Mk.1 & 2 - Hatch with stay	1	361291990
2	Catch Block	1	360924990
3	Friction Lever	2	360917990
3	Friction Lever - Gasket only	Bag of 20	361207999
4	Large handle kit (pair)	1	361680990
5	Handle Kit - Outside Handle	5 pair kit	360919990
6	Hinge Caps	Bag of 10	361027999
6	Hinge Caps	Bag Of 100	361044999
7	Hinge Kit - Mk.1 & 2 - Friction Version	2	361263999
8	Joining insert kit	2	360925999
9	Lid Assembly - Mk.2	1	361175900
9	Lid Assembly - Mk.2 - Hatch with stay	1	361321900
10	Lower Frame	1	361150900
11	Seal Kit	1	360966999
12	Upper Frame - Mk.2	1	361163990
13	Flyscreen Only - requires trim and tabs		396709937

Friday, 13 December 2013 19:23 UT

Yesterday we sanded teak on the splashguard and turtle.

Today coated splashguard, turtle, etc. with Deks Olje 1.

Monday, 16 December 2013 18:22 UT

Kathy and I sanded the cockpit seats.
Moved the latch on the lazarette cover.
Kathy finish sanded the cockpit seats, put a second coat of Deks Olje 1 on splashguard and turtle.
Third coat applied with cheesecloth.

Thursday, 19 December 2013 01:01 UTC

Paint: Casey 0418 884 445 International Paint
Gelcoat: <http://www.ccpcomposites.com.au/gelcoat>

Friday, 20 December 2013 00:31 UT

Dave (Hempel) 0401 692 660

Sand off or compatibility?

Epoxy thinner on a rag was held against the area in question for a minute to see if there is a reaction like wrinkling or softening. The rub with rag to see if it comes off.. Could have some oxidation in 2-pack. 1-pack will have solid color on rag

I tested 3 areas of the boat: cockpit, deck, and where I used Interlux "Brightside" Hatteras White, a 1-part polyurethane.

Monday, 23 December 2013 23:34 UT

Blair Paint:

2-part paint? Interlux Perfection. Very few handpainted decks are nice. Last forever will be Allgrip. Sanded gelcoat and primed it with 545 primer will fill spider cracks. Diamond pattern for Kiwi Grip. Mask off and paint over pattern. Blair used cork decking. Didn't need to sand off. Always buy the best paint. Interlux 333 brushing liquid. Allgrip Allfair is a 2-part putty for feathering.

Whitworths

Deck is approximately 40 m²

Interconnect Primer 4L @ \$174.95 1-5 coats.	\$175
Perfection Undercoat @ \$230 for 3L. 2 coats required.	\$460
Perfection Topcoat @ ~\$100. 2-3 coats. 6-7l required	\$700
TOTAL	\$1335

Wednesday, 25 December 2013 21:41 UT

Kathy continues to apply finish to the exterior teak. It looks so good!

I rebuilt the starboard settee to have a "long bin" locker behind the 3 drawers. Two of the drawers were shortened to allow this. We lost 3" off the drawers but are now able to move all the wood stored next to the aft mattress and in the bottom of the aft cabin closet to this new bin.

The coolant leak continues. A new hose connecting the engine water pump to the outlet body is required but it appears to be 42mm on one end and 47mm on the other. It looks to be just jammed on and not a specific part.

LED LIGHTS

BURNSCO

1 Beechy St

Opuia NZ

32601 Ceiling Light 72LED wht/red/silver NZ \$49.99 16/5/2013

09 4025 204

Tuesday, 30 December 2013

Kathy and Jeff get MARRIED!

We have done a lot of tool re-organization. Big tools are now under the aft bunk.

The GROCO pressure tank in the aft bunk is not working anymore. Apparently the seal has broken. The GROCO is 8" (200mm) x 12.63 (300mm)



Replacement found at: <http://WaterFilterFactory.com.au>

8 Litre Reverse Osmosis Pressurised Holding Tank 35cm x 22cm dia.

Kathy has pretty much finished the wood. Not much left. It looks terrific. We have moved on to a new project – painting the cockpit. Today we removed all the fittings. I can't wait to install the new Cam hatches. Right now it is pouring rain in a thunderstorm which has curtailed our work for the day.

We removed the steering pedestal to replace the steering cable and sent the binnacle, pedestal, dinghy davit bases, and a few other items to the powder coater. \$200 + GST.

POWDER COATING

POWDER COATER USED

Unicoatings Pty Ltd

366 Bilsen Road

Geebung QLD 4014, Australia

+61 7 3865 5858

unicoatings.com.au

sales@unicoatings.com

\$200 cash.

STEERING CABLE

ATS Nets +617 3284 1199

Great store. Has lots of lower prices on standard paints, ropes, etc.

\$100 cash.

Wednesday, 15 January 2014 21:48 UT



Bronze bushings have been installed in the newly cleaned and sanded boom gallows. The bushings “float” slightly in their holes and are secured by custom-made Delrin retainers. The float allows for easy installation of the awning frame studs but will keep the studs from sawing away at the wood.

Thursday, 16 January 2014 02:13 UT

Replaced the pressure accumulator tank in the aft cabin. The new one is slightly bigger (8L) but fits OK. I replaced the 5/8” water hose with 1/4” pressure hose which was a mistake as it turns out it takes some time to pressurize the tank because of the small diameter reducing the water flow. I also added a dedicated valve (to the pressure tank) on the fresh water manifold behind the aft head.

While doing this I inspected the steering cable and noted some heavy corrosion. We decided to remove and replace the steering cable. **Note for replacement:** the upper cable (longer cable) pulls the quadrant to starboard and goes through the single sheave on starboard side of quadrant.

The chain is 5/8” chain. There is one clevis on the end; the other end of the chain has the wire rope thimble attached to a master link. I would like to have two clevises (bails) on each end of the chain.

Wednesday, 22 January 2014 01:00 UT

Over the last week we have been painting the cockpit. Prep included the following:

- Removed all hardware that was possible to remove
- Filled all holes with West System Epoxy thickened with 410 filler
- Prepped for new Cam Access Hatch installation
 - Removed teak trim
 - Cut out old control panel (shocking glass work)
 - Used leftover cut pieces to make half-moon inserts to fill that part of the coaming opening that was too wide.
 - The brilliant technique used was to cut small rectangles of PVC plastic and hot glue them to the face of the half-moon. Then the edges were lathered with thickened epoxy (West System with 406 filler) and the hot glue employed to stick the piece in place. You have to move fast with hot glue but it was the only way to get the half-moon face registered with the face of the coaming. After the epoxy cured a sharp rap with a hammer and pry-bar knocked the plastic off. A sharp smooth flexible knife was used to cut the squeeze out and a final sanding smoothed it all down.



- Sanded all surfaces with a variety of hand and electric sanders.
- An “abrasive nylon end brush” was discovered in the tool bag and proved incredibly good at cleaning out the diamond pattern
- The screws in the cockpit floor were covered with ordinary modelling clay to prevent the slots from being filled with paint. We just painted over them
- Cleaned all dust with vacuum and tack rags.
- Then we washed with Interlux 202 Fiberglass Solvent Wash and final going over with tack cloth.
- Priming was with Norglass WeatherFast Pri-Coat Off-White which is a combination undercoater/primer. It is one-part paint.
- The next day we re-taped and coated with Norglass WeatherFast Gloss Enamel. We used the “roll and tip” method with Kathy rolling. We found that short-nap mini-roller (Mohair) was the thing to use. The paint was a 4:1 mixture (400ml and 100ml) of White and Opal White to tone down the White which was pretty bloody white!
- The results are very satisfactory and immensely better than the pocked, discolored, grotty surfaces before the paintjob.
- Unfortunately it is raining so the second top coat cannot go on in time to “key in”. We will have to wait a full week for the paint to cure and then lightly sand before re-coating.

Saturday, 25 January 2014 02:45 UT

Purchased new Shop-Vac Micro 10L wet/dry vacuum from Big W. By removing the wheels it will barely fit under the aft bunk.

Re-glued the cockpit gratings. Where we could, we installed biscuits in the joints and then coated with plain epoxy; then with thickened epoxy. It should hold on another year or two that way.

Using the 4” grinder with a flap wheel, I ground out the hole in the transom to bevel it for filling.

Dodger was installed. Like Iverson said it takes a special technique:

1. Drape the dodger over the frame
2. Zip only the first few inches.
3. Press down the middle snaps.
4. Stop at the turn button studs.
5. Snap down the last snaps and work back .

Finish zipping up (this is hard). Roll the cloth over the tubing and zip a bit at a time until done.

Monday, 27 January 2014 20:01 UT

Box 31 arrived via USPS yesterday with spare parts including a new 70cm seal for the main hatch. Also some hard drives and a Ubiquiti airGateway to try and get all the WiFi elements into one network.

Missing were the following items from Stoneway Hardware:

Cobalt Drills:

7/64” (2)

3/32 (2)

3/8 (1)

17/64 (1)

5/16” Forstner Bit

Escutcheon pins

Monday, 27 January 2014 23:26 UT

Taylor Made #1005 Hand Pump has broken it's hose. Call Jennifer at Taylor Made +1(518)7739400

Tuesday, 28 January 2014 03:07 UT

Filling hole in transom where Cape Horn used to live. I used circles of wetted-out mat and cloth and we applied maybe 5 or 6 rounds of that, followed by light sanding and filling with 410 thickened West System epoxy. It sagged so we are now going to have to put in a second round of thickened epoxy.

Wednesday, 29 January 2014 03:27 UT

The second round was applied yesterday and today we sanded back the filler using mostly a "long board" which was simply a nice straight piece of wood with some sandpaper glued to it. It was difficult to work with because the transom has so much stuff on it, but we did well. There were a couple of dimples and holes that needed a bit more filler. I used a pencil to draw lines on the transom and if I could not sand the lines off it indicated a dimple. There was only one; and a few pocks.

Thursday, 30 January 2014 01:41 UT

List price Harken 16.1ST 1495, used price 650

Thursday, 30 January 2014 03:35 UT

GET A DISCOUNT !

Your discount will automatically be applied during checkout

5% - Orders \$50 - \$99.99, 10% - Orders \$100 - \$199.99, 15% - Orders \$200 and more

DESIGN LETTERING

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Design & Order Your Vinyl Lettering Decal

Vinyl letters & numbers are **INDIVIDUALLY CUT** (not printed). Lettering has no background. Letters are pre-spaced and can be applied all at once.

Enter your text, choose font, font size and text colour. Choose vinyl type: "Premium", "Reflective", "Marine". Reflective vinyl lettering reflects back light when light is shone on it, similar to road and street signs allowing your signage to glow in the dark. Marine vinyl is suitable for surfaces exposed to seawater commonly used for boat lettering. For decals needing to be applied on the inside of a window and read from the outside choose "Reverse" cut style. Each time you change your text click "Preview" button to update your vinyl lettering decal preview. Your quote will be displayed below the decal preview. Once you are happy with the design click "Add to cart" button.

Text:

BEATRIX

Preview

Font:

10. Arial Rounded MT Bold

View all fonts

Font size:

150mm

View all colours

Colour:

Dark Blue

View all colours

Vinyl type:

Marine

Cut style:

Normal

149mm

BEATRIX

836mm

Please note: Grey background is not part of decal.

Your Vinyl Lettering Decal Specifications & Quote:

Text: BEATRIX

Font: 10. Arial Rounded MT Bold

Font size: 150mm

Quantity (pieces): 1

Overall decal width: 836mm

Overall decal height: 149mm

Colour: Dark Blue

Vinyl type: Marine

Cut style: Normal

Price: AU\$ 36.45

Add to Cart

View Cart

Shopping cart

To preview your lettering click on the decal description in the table below.

Order quantity must be a whole number. GST applies to all products ordered.

If you change **Item Quantity** ("Qty") please click '**Update cart**' before proceeding to checkout.

Remove	Decal description	Qty (pieces)	Total
<div>Remove</div>	<div>BEATRIX</div> <div>BEATRIX (font: 10. Arial Rounded MT Bold; font size: 150mm; colour: Dark Blue; decal width: 836mm; decal height: 149mm; vinyl type: marine; cut style: normal)</div>	<div>1</div>	<div>36.44\$</div>
<div>Remove</div>	<div>BEATRIX</div> <div>BEATRIX (font: 10. Arial Rounded MT Bold; font size: 90mm; colour: Bright Blue; decal width: 500mm; decal height: 90mm; vinyl type: marine; cut style: normal)</div>	<div>2</div>	<div>39.01\$</div>
<div>Remove</div>	<div>SEATTLE, WA</div> <div>SEATTLE, WA (font: 08. Arial bold Italic; font size: 90mm; colour: Bright Blue; decal width: 783mm; decal height: 108mm; vinyl type: marine; cut style: normal)</div>	<div>1</div>	<div>28.57\$</div>
Coupon: 10% DISCOUNT			<div>-10.40\$</div>
			<div>Subtotal: 93.61\$</div>

Tuesday, 04 February 2014 01:02 UT

Beatrix Repair and Maintenance Log

— 195 of 466 —

Jeffrey M. Stander 8/8/2020

Kiwi Grip seems to be the non-skid of choice. \$130/4L here in Australia from [HERE](#).

KiwiGrip anti-slip marine deck coating is a revolutionary, safe, durable, non-skid deck treatment that comes out of the can with a thick, yogurt-like, consistency — but spreads quickly and easily with our proprietary roller. KiwiGrip offers a beautiful, consistent, grippy surface. By varying the application technique, the texture can be adjusted from “fine” to “aggressive.”

Tuesday, 04 February 2014 02:31 UT

Proceeding with installation of Hydrovane: We took most of it apart but about six of the stainless bolts are completely frozen and won't come out of the aluminium castings. Tomorrow we will proceed to the “Modern Engineering Company” where they will hopefully succeed with bigger hammers, hotter torches, and large vises.

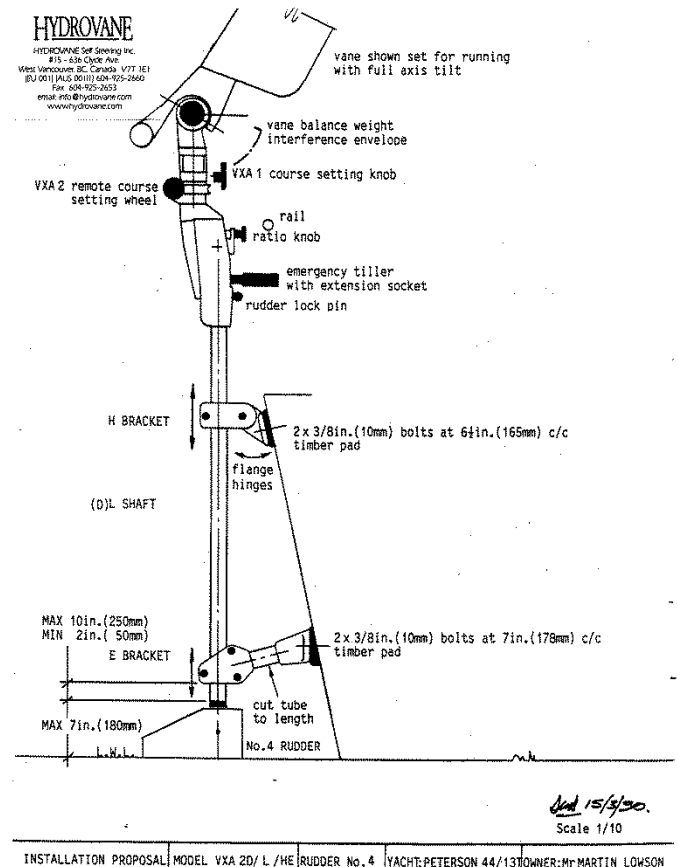
Meanwhile...

We have decided to go with a slightly off-center installation to port so as to leave the swim ladder completely unimpeded. These photos are from the installation on Wheatstrong (MJ Patterson) which has no swim ladder. Unlike Wasabi the lower unit points DOWN at 15°. Also note the tiller extension

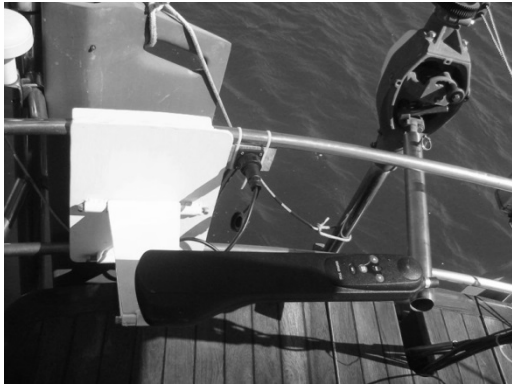


Hydrovane on Wheat strong

We will have solid enough backing plates.



and mount for a tiller steerer. Measuring down from the “E” bracket to the bottom of the unit (when positioned at its lowest point) is 13”. Add 3” clearance above the waterline gives a position of 16” from the waterline to the horizontal centerline of the “E” bracket. That is where we will be mounting the bracket. From the inside of the transom I need to measure 4-3/4” to port and 4” below the lowest chainplate bolt. Note that Wheatstrong’s pads are a lot more robust than the ones we salvaged off *Wasabi* but I am not concerned.



We finished today with beefing up the inside of the transom with epoxy and 1 cloth, 2 mat, 1 cloth 2 mat, 1 cloth. Total was 7 layers but it doesn't seem all that thick.



Wednesday, 12 February 2014 01:55 UT

Prepping the transom for painting with Jotun Penguard.

Recommended from ATS Nets in Clontarf is Hardtop 5L \$190 standard white. Hardtop comes in AS (high gloss) and HB (low gloss) For deck we want a low gloss.

Ultimately we decided to use the Jotun Penguard (5L for \$90) for a high-build undercoat and cover this with Norglass Northane White. .

Friday, 14 February 2014 00:34 UT

Three coats of Jotun Penguard were rolled on. The first coat we attempted tipping. Terrible. It was too hot, the paint was workable for maybe 30 seconds. It was better to roll on without tipping. This morning I sanded back the 3 coats to a very smooth finish with no marks. Kathy has prepped and sanded around the davit bases and the non-diamond areas back to the turning blocks.

Note: Ansell Powder Free Disposable Gloves seem to fit Jeff's hands best. Available at Woolworths.

Call to Norglass Rep: 0297082200 re. Northane Gloss 2-part:

- 1) If satisfied with top coat, only 1 coat is necessary. If dissatisfied it will have to be sanded down and started over.
- 2) Tips:
 - a) Paint early.
 - b) No moisture allowed: Wipe down with methyl alcohol or acetone. Do not use a solvent wash.
 - c) Use a SYNTHETIC BRUSH. This goes against advice found on the internet by Interlux which recommended a badger brush for tipping. For their product, Norglass recommends a synthetic brush.
 - d) Add brushing thinner as necessary. Add more to the pot as you go along. Thinner makes the product flow better by keeping the wetted area wet, but also makes for a thinner coating. Obviously there is a balance that must be achieved. Note that undercoat kicks off much faster than topcoat.
 - e) Leave the paint can in the shade.
 - f) When prepping a deck with pinholes or cracks, squeegee the primer into the holes. The holes MUST be dry (use acetone or metho?) (Use a heat gun; but not around solvents?).

Friday, 14 February 2014 10:22 UT

We went to BIAS Boating to check if “Pearl” color was better than the gloss white we had bought. It’s not.

Finished hand sanding the brush strokes on the aft deck around the stanchion bases and back to the turning blocks. That was difficult. We only have to tape and paint but it looks like the weather MAY not cooperate.

Thursday, 27 February 2014 03:32 UT

Finished installation of the Hyrdovane. Some tweaks are needed to make it fully functional

Thursday, 27 February 2014 06:10 UT

We have started on replacing the steering cables. The new cables are 6mm 7x19 stainless wire rope and have new swaged thimbles and 6mm SS eyebolts on the quadrant end. They have been soaked with lanolin. The longer one is labeled STARBOARD and the shorter one (duh) is labeled PORT. This refers to the direction of the quadrant and not the rudder. I.e. the upper cable (longer cable) pulls the quadrant to starboard and goes through the single sheave on starboard side of quadrant.

Saturday, 01 March 2014 05:13 UTC

Considering the installation (at last) of the solar panels purchased a couple of years ago. These were two Powertech 80W panels to supplement the large 130 Kyocera “Deep Blue” panels mounted on the aft life lines. We are going to mount only one additional panel because of the cumbersome mounting of two panels between the davits (one fits nicely) ; the additional weight on the davits of two versus one panel; and the fact that the Blue Sky Solar Boost 2512i panel is not rated for more than 20A of Short Circuit Current (Isc).

Specifications	Powertech		Kyocera	
Pm	80	W	130	W
Voc	21.6	V	21.9	V
Isc	5.18	A	8.02	A
Vmp	17.6	V	17.6	V
Imp	4.55	A	7.39	A
Size	1210 x 540 x 28		1425 x 652 x 58	
Mass	8.2	kg	11.9	kg
Qty	1		2	

Total Isc	5.18	A	16.04	A
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Grand Total Isc 21.22 A

Controller Maximum Output	25	A
Derated @ 1.25	20	A
Excess Capacity	-1.22	A
Battery Capacity (AH)	925	AH
Max Imp Limit for battery bank	27.75	A

Note on mixing panels: *Unlike connection in series, if among modules connected in parallel there is a module of power output lower than the output of the other modules, this might not affect seriously the total power output of the array, provided that this module has equal to the other modules rated voltage.*([Reference](#)). In our case the voltages are almost identical.

Wednesday, 05 March 2014 07:48 UT

Today I picked up the repaired binnacle from Modern Engineering in Northgate. Allan and Rick had installed new D-Glide yellow bushings and re-bored the bushing sockets for alignment using a 1.5” boring tool. It felt very stiff to me but they assured me that this was intentional and it would not be binding under load. As the fibers of the bushings were used it would ease up a bit. I have to trust them as they are the experts in this field.

Friday, 07 March 2014 22:07 UT

Called Sonya at Marine sanitation. Bret has left the company. A “new Bret” is being trained. Meanwhile, “The Head Guy” is Dave at 206 380 4517 and he is good for consultation.
theboatplumber@gmail.com

Saturday, 08 March 2014 06:02 UT

Installed new davit stabilizer panel. The width is 1267mm.

Monday, 10 March 2014 05:11 UT

Final install of solar panel. Several design mistakes were made in this panel. The plastic (blue) cross-members on the panel should have been thicker and rebated to fit in the frame. This would have allowed a THINNER stabilizer board which would not only have been cheaper but I would not have had to route out a relief to handle the diode box on the back of the panel. I also wasn't careful enough in drilling the screw holes on the frame so I had to oval out several of the holes in the aluminum which removed the new powder coating and also gave me the opportunity to put a few scratches in it.

Wednesday, 12 March 2014 23:43 UT

Underway at last from QCYC in Shorncliffe QLD to Southport via the "Broadwater". Glitches this morning:

1. Engine would not start. Loose wire behind the cockpit panel. Fixed by wiggling wires. Replacement is a priority.
2. Lots of Nav and A/P errors.
 - a. A/P had a blown 5A fuse. It works now.
 - b. The small control was connected. It works.
 - c. The large control panel also works but is MUCH less user friendly for all that it is a big and new model.
 - d. The MULTI at the nav station continuously drops out. It resets with a CNET reboot, then drops out again.
 - e. I had some trouble getting the vYacht WiFi connection properly to the Ipad, but finally it worked.
3. The complexity of the system with its aged serial port combiner and tendencies to drop out is becoming less robust than I like. This needs to be a system that Kathy can use as well as me. And I'm tired of rebooting and configuring.

Right now I have no A/P NAV capability because of configuration issues with OpenCPN and the inability to load to the GARMIN directly from OpenCPN.

Wednesday, 19 March 2014 07:40 UT

The leaking hose in the engine cooling system was replaced. This is the hose that connects the tube leading from the coolant pump to the oil cooler. We replace both of the 200/110 hoses at each end. The proximate cause of failure was a bad hose clamp. All hose clamps were replaced with better clamps. One AWAB clamp and 3 of the Australian t-bar clamps were used. It was a bit difficult getting the engine end of the connector hose over the tube because it was about 3mm bigger. Heat, vaginal lubricant, and muscle did the job.

The engine was flushed with fresh water, drained, and the old coolant added back in. Some rust particles settled out of the old coolant – not a lot.

While doing this job I noticed that the dual belts for the 210A alternator were very different in their tension. These are dual 13A1015 belts. The last new spares were installed.

I also noticed the vibration in the small 110A alternator is growing. The tiny 1" foot is wearing out and probably needs to be bushed. I will have to take it off. Unfortunately this alternator shares a belt with the water pump; which is why this problem is critical and must be fixed.

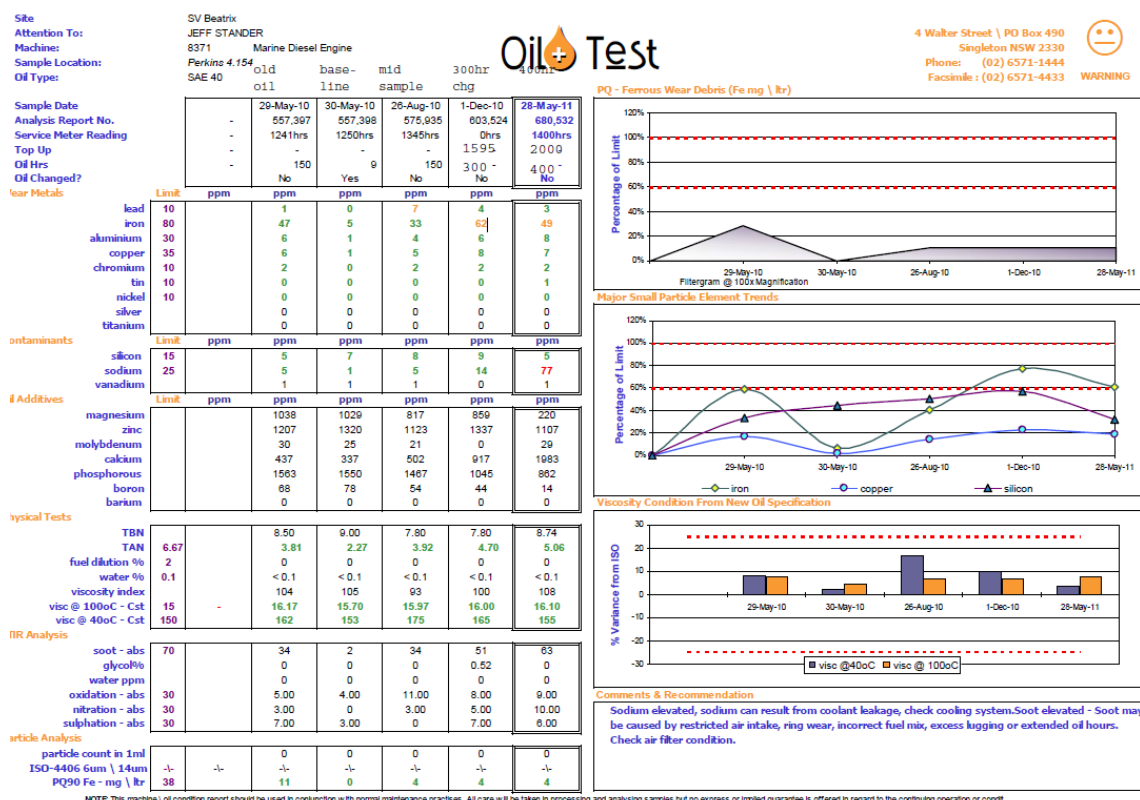
Saturday, 22 March 2014 00:59 UT

We took a trip to Brisbane to visit Modern Engineering at Northgate. Rick and Allan bored a bushed

the alternator foot with a steel bushing. (\$50). The mounting bracket can accommodate either ½” which is the new standard for an alternator mounting bolt, or the current 3/8”. I had forgotten that I had made two small bushings in the bracket to allow installing either a 3/8” or ½” alternator foot. The foot appears very stable now. I might contact Balmar to see if they have an newer case for this unit.

GLITCH NOTE: The water pump is cycling again. Not very often. It does not appear to be an external leak so I am again thinking of pressure bleeding off through the diaphragm valves in the pump. Second Pump is still offline.

I had remembered determining that the engine oil life with the Bypass filters was 300 hours. Looking up the oil test reports (below) confirms this.



Saturday, 22 March 2014 02:16 UT

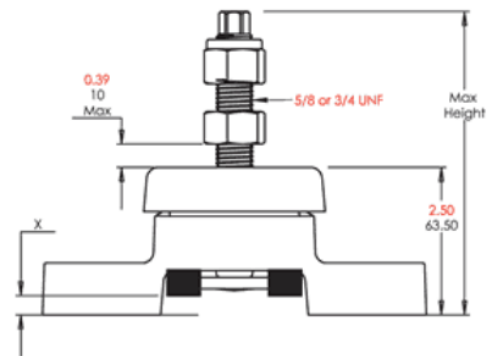
A new and very serious problem has arisen. The port fuel tank which is steel has started to seriously rust on the top. I can barely access a few square cm of tank but it is full of flaked rust. The tank does not hold its pressure when pumped up. I have wished for a long time I had paid for two new port fuel tanks (a 25 gallon day tank and a 90 gallon port main tank) when I had the opportunity back in 2000 in Seattle.

R & D Marine "Super Mounts" Shear Loaded Mount

The R & D Marine Shear Mount is a low height rectangular mounting giving the best combination of lateral stiffness, i.e.

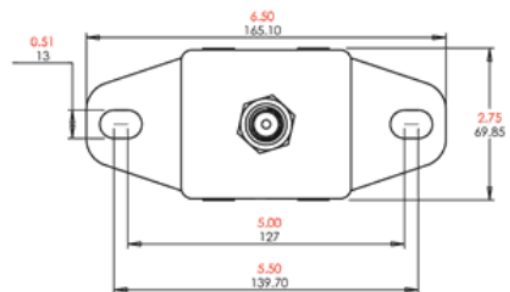
- Direction A** Soft to isolate vibration
- Direction B** Soft to isolate vibration at right angles to crankshaft
- Direction C** Stiff to take propeller thrust

It is fitted with an oil shield to protect the rubber.



**'X' Dimension on initial installation
should not be less than 0.15 Inches (3.8mm)**

Part Number	Capacity (lbs.)	Deflection (in.)
5/8" UNF Stud		
800-062	50-176	.09 - .21
800-024	80-232	.09 - .21
800-025	120-412	.09 - .21
800-026	250-562	.09 - .21
800-027	300-682	.09 - .21
3/4" UNF Stud		
800-028	80-233	.09 - .21
800-029	120-413	.09 - .21
800-030	250-563	.09 - .21
800-031	300-683	.09 - .21
	Pre-loaded .09	



	Stud Diameter	
	5/8" UNF	3/4" UNF
Height Adjusting Nut Thickness:	.55	.43
Maximum Height	5.38	6.50

All dimensions are in inches (1 inch = 2.54 cm., 1 kg = 2.2 lbs.)

Sunday, 23 March 2014 06:18 UT

Today we cleaned up the engine to get rid of some rust and see that the motor mounts are not rusted solid. The 3/4" UNC nuts came off just fine, no problem except for lack of double-joints in the arm. We brushed off the rust, coated with Oxalic Acid, then Duralac. Just in case we don't fix the fuel tank right away.

Engine Weight approx. 500 lb.

From my measurements it looks like we have an 800-028 Mount front and rear.

I haven't really considered (although I should) the option of just ignoring the old tank. With the 55 gallon day tank installed on top of the old tank, and 90 gallons in the starboard tank, we still have 145 gallons(550 liters) of fuel capacity which is actually more than the original fuel capacity when the boat was new.

The old Perkins 4.154 is running fine; only 3000 hours since rebuild and probably good for another 3000 to 5000 hours. It could last another five years or more. If it goes bad in the future (and I still own the boat) then I could fix the old tank. Hmmm, I will think on this; it's certainly the easiest and cheapest option.

The lazarette route means removing refrigeration, hot water heater, engine exhaust hoses and two "floors" as it is a two-layered area with compressors and hot water tank on the bottom level and storage on top. At least removing the engine does not mean destroying and rebuilding anything except the ply

bulkhead separating the engine and tanks. And, I'm afraid to touch that refrigeration system. It has worked so well for so long.

I can probably prep the engine for removal in a day (maybe two) and then it just gets hauled out. This also allows me to fix up some "glitches" like re-tabbing the cracked aft engine room bulkhead, making a better bilge pump sump, relocating an engine oil drip tray; and to replace some items like engine hose clamps, the too-small V-belt pulley for the raw water and small alternator belt.

Another good removal option is to build an A-frame or to use the boom to lift the engine up out the engine room with the chain hoist. The engine could rest in the cockpit or be moved to a dock. If left in the cockpit old tanks would have to be cut up and all new tanks would need to be designed to fit in through the main hatch or the passage access.

Monday, 24 March 2014 06:37 UT

For now, we have declared the bad fuel tank a non-problem. We actually have plenty of fuel capacity and we can leave replacing the tanks until later when we feel like it, or if the Perkins needs replacing.

I finished the installation of alternators and replaced the last but two "bad" perforated hose clamps with T-bar clamps or smooth clamps (not as good as AWAB but better). The hose near the thermostat should be replaced and we'll keep an eye on it; but it might require removing the exhaust manifold and I don't want to think about it unless I see some leaks occurring. Two remaining "bad" hose clamps are near the front of the engine and totally inaccessible.

Wednesday, 26 March 2014 22:34 UT

Yesterday we set about to clean the fuel from the bilge and change the filters. We should have left the cleanup to last as the filter job has added a lot of diesel to the bilge. We removed the 500 and rebuilt it using onboard spares. New seals and O-rings were installed throughout. The bowl was cleaned and the unit re-installed with no problems. I was pleased at the ease of removal from the fuel management system and with the inline bleed pump which allows us to fill the filters to the brim without spillage.

The engine spin-on filter was not too bad to replace, either.

The problems came with the attempt to bleed and re-start the main engine. Bleeding is normally done with the two bleed valves on the CAV pump; then cracking the injector bolts from the back to front (actually I was cracking the return bolts). I did this so many times we had to replace the lower CAV bleed screw because it had become stripped. We are fortunate I had another available.

The following three days included numerous attempts to bleed and start the engine. Bob, from another boat, came to help. He asked about the fuel shutoff solenoid. It appeared to be working fine so he ended up going home without success. We noted that the fuel bleed while the engine was being turned over by the starter was NOT a high-pressure stream. This suggested a fuel flow problem. At this time the ER stop/start switch would not stop the starter when released. Was this a relay problem?

After Bob went home I went on the try to start the motor and actually broke the start/stop switch handle right off. Then, while fiddling with the fuel shutoff the motor started up! I replaced the entire switch and everything seems to be working right.

My conjecture is that the faulty switch was somehow causing the stop relay to engage while the starter was engaged. It is also possible that the butterfly valve was simply shut off and stuck, but I like the other explanation better. In either case the key observation which I missed early on was the lack of high-pressure fuel.

We are also investigating the issue with the generator. Investigations with using DC power direct from the main engine and our Switch back to Honda which starts at 68.5A of charging power and 13.93 volts. After 20 min charging at 70A and 13.95VDC. Cutting in 25A Reefer load reduces to 60A.

Thursday, 27 March 2014 02:17 UT

Plan for painting.

Product	Brand	Name and Code	Qty	Cost*	Cost*
Epoxy Tie Coat	Hempel	26030 Underwater Primer	0L		
Self-Polishing Anti-Fouling	Hempel	Olympic 86901 Blue	10L	172.95	267.96
Water-based Anti-Fouling	MDR	for transducers (from USA)	8oz	9.0	
Aluminium Anti-Foul	Hempel	Mille Dynamic Alu 7160A	1L	52.50	55.00
Thinner	Hempel	845	1L	15.75	16.83
					339.97

Bias Boating Marine Trade Supplies. shop@marinetradesupplies.com.au \$267.96 10L, \$154 incl. GST.
5L. Alu \$55. \$16.83

Friday, 28 March 2014 23:32 UT

Calling Outback Power re. charging issues with FX2012.

Outback is totally convinced that the issues is NOT with the FX. They either fail to charge or charge normally. This behavior is therefore probably due to the generator or wiring (including voltage sensing).

I tried two experiments. One was to monitor behavior of the FX2012ET (250/50) using a borrowed Honda 240v generator and it worked normally; i.e. cutting in the reefer power did not degrade the DC charging current.

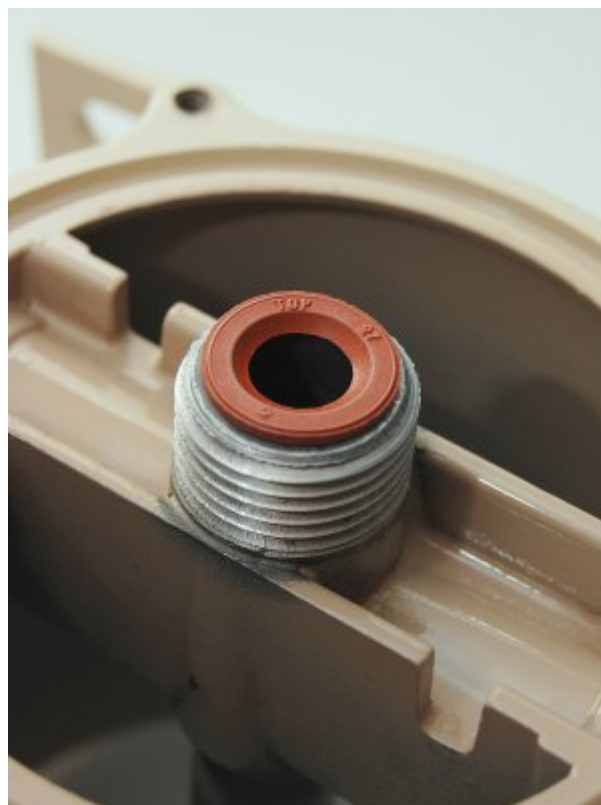
The second experiment was to plug in a heat gun to the 120V Honda; it powered the heat gun without degrading the DC charging current. This suggests the problem is not in the generator.

The only thing left, therefore, is the wiring.

Saturday, 29 March 2014 00:11 UT

Yesterday we rebuilt the Racor 900 “Primary” filter which is used for transfer and polishing. It could not be totally removed like the Racor 900 but it turns out it wasn’t hard to unbolt the bowl and disassemble the rest of it in place. We had a rebuild kit aboard and did a total rebuild; except for the drain valve, which should be replaced because it is very hard to operate. I improved things a bit but I had to drain the bowl by removing the entire valve and the fuel just dumped (mostly) into a small plastic pail. A proper valve with a hose would have been much better.

It is important to put the floating aluminum check ball in correctly. I did it backwards the first time and



it prevented all flow through the filter which was very confusing at first. This is the correct way:

The “secret” to replacing the 4 bowl retainer screws is to use some “Blue Tack” or butyl rubber tape to hold the screw in a socket on an extension rod. This let me reach behind the filter to insert the machine screw into the filter body. All these screws should be hand-started and not over-tightened.

Tuesday, 01 April 2014 23:13 UT

Yesterday I finished installation of the davit-mounted solar panel. I used two wires (from Jaycar) which are designed for external solar panel connections. They are 4mm dia., about AWG11. I had enough AWG10 duplex wire to run to the Solar Fuse Box. The wires are joined with shrink-wrap but connectors. Solar wire disconnects are used to attach the panel so it remains fully removable, as does the davits (once the wires are “unwoven” from the davit brace.

I also re-installed the SSB Antenna Tuner and finally connected the 16AWG SSB antenna wire that is an integral part of the Dyneema Dux backstay. In testing the SSB I found a fault in the Cole-Hersee relay that enables the radio to run on either main battery or starter battery. I have ordered a new relay. Today we are motoring up the Broadwater to Coomera to haul out and paint the bottom.

Wednesday, 02 April 2014 20:51 UT

The boat was hauled out and is very full of barnacle bases. The rudder will need to be stripped down to

bare metal and the removal of the barnacle bases will be very difficult. We have a chemical (\$65/5L) that “melts” the calcium.

Glitches:

- Broken 3-way valve won’t let me divert reefer cooling output.
- Valve needed to isolate intake to watermaker plankton filter otherwise freshwater input doesn’t work for reefer cooling. Solve this problem by converting to freshwater cooling with two 3-way valves.
- Pressure water won’t turn off. **Ok, this fixed itself.**
- Starter battery may shot. This is in warranty for only 2 more weeks. I have charged and isolated the battery and if it stays up at 12.7 volts it is probably OK.
- Aft head Vacuflush is leaking at the seal; needs cleaning and probably replacing. The plastic filter body for the watermaker pre-filter has cracked and will need replacing.

The 3-way valve has been removed and as soon as I can buy some more valves I will rebuild the system with a seawater or freshwater cooling option. (New valves with 316 stainless ball and stem have been ordered from Amazon)

Thursday, 03 April 2014 08:09 UT

Valves found at Amazon with 316 stems and balls. I will order them soon.

Today Kathy scraped barnacles off the port side hull. I worked on the rudder. It was so bad that paint and coatings were flaking off down to the metal. I used a “scrubby” type stripper disk on the 4” grinder then switched to a 40 grit 7” 3M Purple sanding pad. The plan is to coat the aluminum with 3 or 4 coats of epoxy barrier coating and then paint the regular copper based Olympic blue on top. With the aluminum electrically isolated from the anti-foul there should be no galvanic action to corrode the metal.

Our friend Eugene O’Brien on *Amante* drove his boat up to join us and help with the project. What a great guy.

Thursday, 03 April 2014 21:28 UT

Called Jason Romesburg at PYI. He is no longer manager for MaxProp. Sent me to Fred and Jerome. Jerome does the reconditioning the prop. Fred Hutchinson is product manager. hutch@pyiinc.com

18” max size for 44. Engine and reduction ratio to fit what boat is capable of. GO to more blades to make up for torque you have. That’s the only option when you are limited in space.

Saturday, 05 April 2014 18:12 UT

Today we finished hull and rudder prep. The hull had numerous pock marks along the leading edge and towards the keel. What I suspect has happened is that where the antifouling wore off the barnacles, when scraped or blasted off, took a chunk of the epoxy fill with them. It was a big mistake to wait this long to re-antifoul the boat. We sanded out the dings and used a PPG product called Sigmacover 280 which has very high adhesion to prime the surface. Then we used EpiFill as a “bog” to fill the hole as soon as the Sigmacover had hardened to where you can leave a fingerprint impression (i.e. still a bit soft). A final cover of Sigmacover is to be applied today followed by Hempel Olympic blue. The rudder is also coated with Sigmacover followed by Olympic blue.

Tuesday, 08 April 2014 19:15 UT

The job is finished. The areas filled with EpiFill could have been done better as the product shrunk and left dimples. At least it is properly coated. We have 2 full coats and a third coat on leading and trailing edges and most of the hull. The rudder received three coats Sigmacover 280, followed by 1 coat of Hempadur underwater primer followed by 3 coats of Olympic blue. I lost the Aluminum ¼ NPT plug for the rudder so a stainless plug was used. This plug should be replaced with a Nylon plug in the

future.

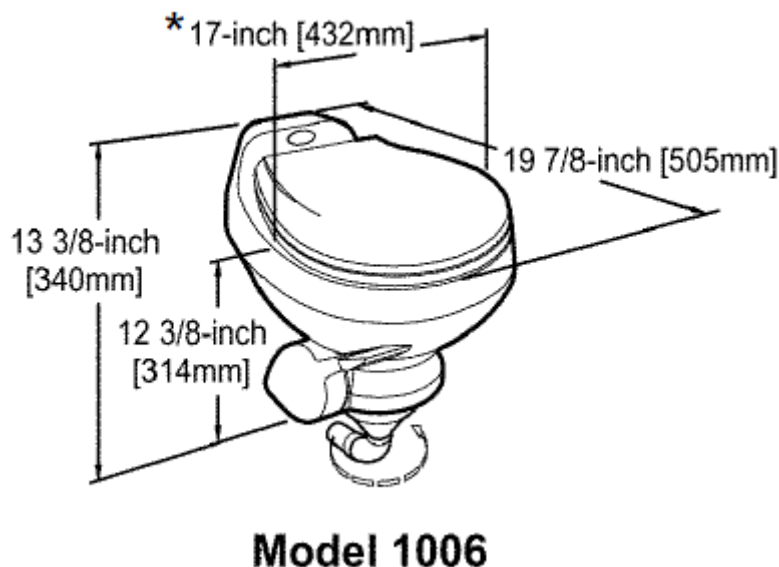
Product	Brand	Name and Code	Quantity	Cost
EpiFill			250g	
Sigmacover 280	PPG		4L pack	
Self-Polishing Anti-Fouling	Hempel	Olympic 86901 Blue	2 x 10L	
Water-based Anti-Fouling		for transducers	100ml	In stock
Hempadur	Hempel	845	20L	

All seacocks were checked and passed inspection. All were disassembled except the port cockpit drain and the engine room bilge. Both were greased. Two of the stainless zerk fittings had to be replaced and two had rusted out and needed the threaded hole chased with a 1/8" NPT tap. I have ordered some 1/8" bronze nipples and elbows to make some of the grease fittings easier to reach and we need to put "grease the seacocks" on a twice yearly maintenance schedule. The deck drains and bilge pumps are not well located. If the engine ever comes out again these should be relocated.

Kathy kept time of our work. Aft deck drains took 2 hours, aft sink and deck drain took 35 min Starboard cockpit drain took 1½ hours, port cockpit drain took 20 minutes, washdown and galley sink drain took 10 minutes each, forward head took 15 minutes for each seacock. Total time was approximately 6 hours. We had to use generator power because there was a problem with shore power. At first it appeared to be a faulty power lead. I fixed the lead but then the shore power RCD tripped out when the FX2012ME inverter/charger connect the boat to shore power. We splashed Tuesday night and the yard let us stay on the approach dock overnight. The shore power worked fine on this pontoon so we did get a full charge.

Saturday, 19 April 2014 02:19 UT

Servicing Vacuflush toilets – complete rebuild of forward head and seal replacements on aft head.



FORWARD HEAD

- Removal and cleaning of vacuum chamber with HCl.
- Disassembly of pump and cleaning with HCl.
- Replacement of Motor with W-series conversion kit: New quiet motor
- New bellows
- O-rings for pump

- Replacement of all 4 duckbills
- Replacement of seals with new seal kit.
- Replacement of vacuum switch. Old one was “rotten” and not functioning correctly.
- Replacement of floor flange seal 385310063.
- Replacement of Cartridge, Ball, and Shaft (kit 318162).
- Painting of pump area under forward dinette seat: Sigmacover 280 and 2 coats of Norglass white.

AFT HEAD

- Replacement of seals with new 385316140 seal kit.
- Greased siphon break Uniseal which was leaking after service. (Should be replaced)

SANITATION SYSTEMS UP AND RUNNING 100% PURRING (per Special K)

HONDA 2.3hp OUTBOARD

- Changed oil 10W-30 250ml
- Greased shaft with grease gun
- Replaced Spark Plug CR4HSB (fixed the poor running performance we have seen)
- Sprayed INOX on all surfaces, especially steel fasteners.
- Gear oil needs to be changed.
- Factory service needs to be done before going offshore (set valves, etc).

HONDA EU2000i GENERATOR

- Changed Oil Changed Spark Plug CR5HSB⁸
- Cleaned air filter.
- Inspected spark arrestor. It needs replacing.

Sunday, 20 April 2014 21:39 UT

Easter Sunday in Southport’s Bum’s Bay. I have been searching for an elusive water leak (or pressure drop) in the ship’s pressure water system. I did the following:

- Replaced the very small hose leading to the accumulator tank under the aft bunk with a 3/8” ID hose. This has helped allow the system to pressurize properly.
- Bled all water out of the tube leading to the pressure gauge in the galley. The pressure gauge was hammering itself silly and making a lot of noise. The line needs to be full of air, not water.
- I also installed a small valve to allow shutting off the pressure gauge so it can be easily bled in the future.
- I removed the non-working Pump #2 for return and exchange. It never worked properly and won’t get the pressure beyond 35#. Pump #1 has now been installed on the bottom. It’s a cool system, but difficult to work on.

Friday, 25 April 2014 01:19 UT

Continuing the pump adventure...

⁸ In changing the Spark Plug Jeff dropped the plug while trying to put in the new one. This is not too hard to do as the plug is slippery and I could only grasp the end. I really needed one of those spark plug sockets which have a rubber seal to grip the plug. Anyway the plug slipped into a cavity below the engine and I had to take the entire generator apart and remove the valve cover to extricate the lost plug. Some of the steel fasteners were rusted and the two at the handle needed to be drilled out. This took all day. Hylomar Aerograde gasket compound was used to seal the valve cover. 1/4-26 UNF threads seemed to match the original fasteners, but it might also be M6 threads. I should look to replace all the external fasteners with stainless ones. Three 1.5” machine bolts were left over and I could not find out where to put them. The machine is all together and appears to be working just fine.

I cross-threaded the output port on Shurflo new pump (Pump #1). This takes a special connector with a hose barb and wing nut. Because I could not (and believe me I tried) thread the plastic make onto the pump's female outlet, I ended up using a standard stainless-mesh reinforced "water supply line", usually used on sinks, toilets, etc. and designed to connect to ½" NPT pipe. This worked.

Putting the plastic (Starboard) pump base back into its place was very difficult. There is a continuing problem with the hold-down studs that are embedded in the floor. A better plan would be to use a couple of flat-head ¼" machine screws welded to a stainless plate which is screwed to the floor. The size of the plate should be around 3" x 11" and the spacing of the ¼" FHMS is 8" on center. Four countersunk fastener holes in the corner would be enough. This should be done as materials and a welder are available.

Sunday, 04 May 2014 20:07 UT

Heavy rain recently saw drips from the hatches. I have 3 new seals and am taking the opportunity to replace the hatch lenses. Eugene O'Brien (*Amante*) helped me remove the lenses and this morning we are going to a plastics factory to have new ones made. It is bloody cold right now, even in Queensland, so I hope they can do it quickly.

The aft hatch may also leak around the base. I will have a look and maybe re-bed the hatch and take the opportunity to

This week I also had a hard disk failure on the "D" drive of my main PC which necessitated re-installing the operating system on the "C" drive (short story is I was using hard symlinks to the Users directory on "D" and Windows lost the plot; I am not doing that anymore). It only took about two days to get it all up and running. I had NortonPC in Sandgate do the initial installation and if I do proper disk images and backups this should not happen again. I did not lose any data that I know of as I was able to copy most everything off the "D" drive.

Saturday, 10 May 2014 06:43 UT

Today Eugene and I replaced all lenses in the hatches. The hinges are very tricky and need to be installed correctly. Each pin half fits into the hatch frame in a particular way – it needs to be in plane with the plastic. Put the second half in after the two pins are inserted.

Saturday, 17 May 2014 07:24 UT

During the last week work progressed on putting Deks Olje 1 and 2 on the aft hatch trim. I still need to remove the old Lifecaulk which was cracked. The generator project has moved along: Connected the GenSep drain directly to the deck drain through-hull under the aft head sink. Tightening the hose barb I noticed a very small wobble – possibly this skin fitting needs to be re-bedded – but no leaks. It is worth watching. I was going to put in a shut-off valve but there was no room to install it without disassembling way too many things. I can't think of any reason I would want to shut off that exhaust water line and, if I did, I could just use the sea cock. This would disable the port deck drains but that is not a big problem. All fuel hoses and raw water hoses are now connected. Raw water has a siphon break after the raw water pump. Exhaust is almost plumbed in.

Once the exhaust is done, to test this I will need to wire up the starter and the fuel pump and that should do it! Oil and coolant need to be added, of course. I had better buy some 30W next time I'm out. It would be nice to use Synforce. After break-in I might switch to synthetic oil. With that big sump it will probably last forever.

Saturday, 17 May 2014 18:49 UT

The starter battery has been offline for some time and has self-discharged to 11.8v. I suspect it is at the end of its life (just past the warranty period, naturally). It should be replaced before we leave for extended cruising. Buy here: <http://www.batteriesdirect.com.au/shop/product/4354/optima-34m.html> Or <http://www.marks4wd.com/optima-batteries/blue-top.html> \$270 or

<http://www.ebay.com.au/itm/OPTIMA-34M-BLUE-TOP-MARINE-AGM-HIGH-CRANKING-SEALED-STARTING-BATTERY-BOAT-4X4-/150884840266> \$244 Call 03 9720 3397 to check if AusPost

The toilet seat hinges have broken in the forward head. I will try to source a set in Australia as it's kind of hard to use the toilet. NOTE: Found that Vacuflush does not sell hinges separately. Working with Marine Sanitation in Seattle I am using a hinge set from a Jabsco toilet that will work. Jabsco part number 29098-1000.

Saturday, 17 May 2014 19:04 UT

Rise of new monetary system Buy 1oz gold bars and 10oz silver bars. Buy bitcoin? Buy into "Golden Income Streams" Silver will do even better than gold. Usually 16:1 is price of gold. Now it is 58:1 During a monetary crisis silver will move up to 16:1 again. Get out of bond funds. Move money out of USA. Buy foreign real estate.

If I ever remove the engine, this place has rear seal kits and other parts:

http://www.parts4engines.com/index.php?main_page=product_info&products_id=610

Diesel engine is wired.

Thursday, 29 May 2014 18:03 UT

Generator engine has been tested and runs perfectly using a couple of switches on a board to enable the fuel pump, glow plugs, and start solenoid. Bleeding was easy. I used the main bleed pump to force fuel through the generator's fuel pump and on to the engine. The Kubota has a small bleed screw on top of the injection pump. Once fuel reached that point I tightened the bleed screw, turned off the fuel pumps and tried a startup. After a couple of revolutions it fired up and ran perfectly.

I am adjusting the throttle stop to keep the engine not at slow idle, but at a minimum RPM for generating without too much vibration.

So the next step is too wire up all sensors, the limit switches, the stop switch, and (temporarily) the Tiny Tach.

Saturday, 31 May 2014 00:26 UT

Analysis of different requirements and options (without Arduino, with Arduino, with Arduino but stated implementation) seems to point towards this:

- Install the remote controls with pre-wiring for USB 16' Active repeater
- Appropriate terminations 3 or 4 wires for Gauges: 3/14 should do.
- 8/20 cable for controller and AUTO and MANUAL THROTTLE.
- Connect remote controls
- Develop Arduino functions including data logging and motor control with PWM.

Monday, 02 June 2014 21:06 UT

Well, I did that. I realized that the USB wiring is only used for programming so it is fine to run a 5m powered USB cable down passageway to the engine. It doesn't need a permanent installation. If I develop a data logging application I will want to use Wi-Fi or Bluetooth. The system neatly separates into a pre-Arduino (Control only) and with Arduino as an add-on.

I also realized that I definitely need the "energize-on-start" type relay. This is available on eBay from China and appears to be the same as the Woodward Stop Solenoid which is \$100 more expensive (and also made in China).

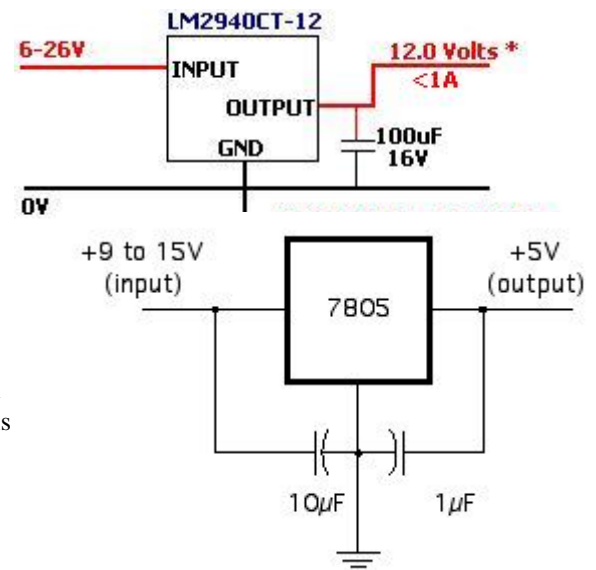
Generator Work Plan

- Make Power Supply box to run on vessel 12V system. Unregulated 12V Regulated 12V (Zener Diode).
- Finalize Physical Control Panel for: AECM103 Controller Tiny Tach AUTO START switch SPST. Manual throttle control switch SPDT (ON)-OFF-(ON); INCR or DECR
- Two gauges
- Relocate SSB Speaker Testing of AECM103 (?)
- Test with engine before installation
- Fix wall for mounting:
 - 1/4" Plastic
 - Teak Frame
 - Teak Plywood
 - Relocate and cover with photo frame.
 - Put speaker back in place.
- Mount Control Panel Run wires from Control Panel
- Install raceway in Engine Room above doors.
- 14/2 or 16/2 POWER cable POS 12V to engine room
- Generator Start Supply NEG to engine room 20/8
- CONTROL CABLE GC-1 to Generator 14/5
- CONTROL CABLE GC-2 to Generator 14/5 CONTROL CABLE GC-3 to Generator
- Tiny Tach to Generator
- Wires from Control to Eng. Run and Sense at Nav Panel Generator sensors
- Install Additional Water Temp Sensor:
 - Gauge sensor is 1/8" NPT.
 - Can be installed on top of heat exchanger.
- Install Oil Pressure Sensors:
 - Drain OIL to allow removal of sensor.
 - Install off engine via hose or adaptors.
- Gauge Sensor is 1/8" NPT SPDT Switch is 15mm thread.
- Generator Wiring and Connections to Engine
- Built Control Box Wrong
- Rebuild the Control Box Generator Wiring Connections to Control Panel Gauges

12 VOLT POWER SUPPLY

Output Currents

- ONE 12V ship power
- TWO 12V regulated Power (1A) to Arduino. (2.1mm lead into Arduino)
- TWO 5V Sockets and Cables: 2.1mm sockets and cables
- Home Built 12V Powered: LM2940CT with at least 22 μ f. (Could have two independent outputs if desired) LM7805 for 5VDC LM7803 for 3.5VDC



Friday, 20 June 2014 22:31 UT

Noted: Left Honda gen running and after returning from a walk the Refrigeration Circuit Breaker had tripped. Resetting it seems to have worked but I have no idea why it tripped.

Saturday, 21 June 2014 10:29 UT

Big setback today. I built the control box for the generator. It was all finished! And then I tried to install it. I had forgotten to check the fit with the control switches and terminals. It just did not work! What a screw-up this was.

I have been letting my hind-brain think about the solution. I realized the control switches only require 8 conductors and therefore can be moved from the control box to the same panel as the fuel system control switches.

Sunday, 22 June 2014 02:00 UT

Renewed both EPIRB registrations with NOAA.

Wednesday, 02 July 2014 23:16 UT

Number One Pressure Water Pump has stopped working.
Starboard Tank fill sensor not working; probably a loose wire.











































































































































































































































































































































































































Thursday, 03 July 2014 08:25 UT

Installation of new Wallas 40dt cabin heater. It is larger than the old one which has created a few problems.

Saturday, 05 July 2014 22:57 UT

The Wallas 40DT installation is complete. It was difficult to get it in but the addition of the home-made aluminum connectors has solved the hose connection problem very handily. The unit is functional without the fuel filter; as soon as I connect that the diesel fuel pump just sucks bubbles. It is either a flaw in the short length of hose or in the filter itself. The control panel is temporarily screwed to the bulkhead behind the nav station seat. Discussion with Scan Marine elicited the following: The O-ring in the fuel connector should not be used; it was just there to hold the fuel line nut in place. Tighten the fuel line connector as hard as possible without the O-ring. Use a wrench on both elbow and nut. The unit has a low voltage cut-out. It won't turn on below 12.4 volts. (see fault table below)

Fault signals and releasing the lock

Colour		Blink interval				Fault description																																																																																																																																																																																																																																																																																																																																																																													
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done this for a few days; but now it shuts down shortly afterwards.

Much progress has been made on installation of the 12V Kubota Generator. I have been working all day all this week to fabricate the control box and run wires.

Wednesday, 16 July 2014 02:25 UT

Almost done; but a big screw-up happened. Somehow there is a short which puts 12V into the negative. I lost the MaxCharge 612 alternator regulator and the oil pressure switch. The Aqualarm raw water flow detector had its switch burned out. The burned out switch actually masked the problem. I got a \$250 price from Balmar for a new 614 regulator. The Aqualarm is now made in a new format with a tall switch on the top. This makes it impossible to use for the generator and barely possible in the main engine room. This costly mistake had bummed me out a bit. It will pass. I just have to forge ahead with the installation; but it will be a couple of weeks before I can get power out of the system. Blah.

Wednesday, 16 July 2014 20:32 UT

The Wallas Heater has become increasingly hard to start. This morning, on the third try, it is exhibiting a glow failure signal. (See Figure 6). I called Mike and Doug at ScanMarine. Did not use power wire supplies with 15A surge and 11A run. They supply a 13' length of 11AWG. Stock wires are probably sufficient. My 14AWG power (especially with the butt connectors) has too much voltage drop. The fix is to either use their power wires or upgrade to 10AWG.

Friday, 18 July 2014 07:30 UT

New 5mm wires installed for Wallas Diesel Heater (approx. 11 AWG) and under operation this confirms a 3% voltage drop (12.55v to 12.15v). It still doesn't work. Startup looks good. Burner starts up normally After a few minutes a whistling/moaning sound is heard. This lasts three or four minutes. After that the yellow light starts flashing rapidly. Then the red light starts flashing rapidly and auto shutdown starts. System turns off. See video

Friday, 18 July 2014 20:31 UT

Heater Trials: It is morning and I am starting the heater with the generator running.

- Volts at 14.07. Success. After charging was done and nominal voltage is 12.68, the unit fails to start with ONLY red icon flashing.
- Starting heater with nominal voltage 12.7. Batts fully charged with 9.3A of solar. Normal flame on occurs. 12.6 volts at heater. Whistling noise this time. Whistling ends and yellow light flashes quickly but red light is steady. Shuts down.
- Repeated the above. Normal startup with flame on and steady red and yellow. Can hear the rumble of the flame. Should I be hearing that? The whistling sound was never heard and I shut the system down manually.
- Sat PM. Would not start. Voltage at 12.5
- Sun AM. Reset error condition. First startup produced single flashing yellow, 1 sec flash was slower than normal. Volts at 13.5 Second try. Starts up normally.
- Mon AM. Started normally with volts at 13.5. Gen Shutdown. Volts drop slowly. Measured voltage at the heater dropped to 11.0v. Meter was reading 12.35 volts. Unit did not shut down. Unit did not make noise.

Could use #6 (1.83%) or #8 (1.11%) for less voltage drop. 11AWG (installed) is 3.57% voltage drop. Calculated voltage drop confirmed by multimeter. Wire run is 12' to main bus and calculations are based on 15A draw.

Apparently the unit will start and then run at lower voltage. The big voltage drop seen (down to 11V) is not acceptable. Fixing the main switch (see below) and running 8 or 6 AWG to the heater will also help.

Sunday, 20 July 2014 20:36 UTC

Mon AM. I have noticed something new after making measurement 8 above. When charging the voltage on the main switchboard buses matches the meter voltage. Otherwise there is a huge voltage drop. I was running the Honda generator and turned it off. Voltage on the meter dropped slowly. I added refrigeration to up the load to around 40 A. Voltage on the meter dropped to 12.3 with 11.9 volts on the bus. This is a 3.2% drop. Somewhere there is a big voltage drop in this system. The studs on the main DC battery switch are too hot to touch for more than 2 sec. This is while charging with +80A. Perhaps the switch is bad or I need a higher capacity switch?

With a 44A draw and meter volts at 12.37, the voltage on either side of the Main Switch is 12.32 and 12.08 which is a 1.9% voltage drop. Temperature must be at least 50°C or above. This still doesn't explain everything but it explains a lot! There is still a 1.3% drop left, but that might be normal. The other possibility is in one or more of the battery junctions. I hope this is NOT the case as wiring up that 4/0 stuff is HARD. I don't think I have the cable for it.

Notes on talk with Doug at Scanmarine:

Flashing yellow after startup followed by flashing red is overheat signal. Flashing yellow at start means low voltage. It takes 15 seconds to do the voltage test. Any error after that is NOT voltage. First starting current can touch 15 amps, but normal run is less than 5 amps and the trip out is 10.5 volts. This means that I MIGHT need a generator running to start the unit but after Flame On it should run fine on anything over 10.5 volts. So no heavier wiring than the 11AWG (5mm) should be necessary. They prefer a direct hookup to the battery but I judge this not worth the effort of re-wiring once again.

Doug suggested that I run this test. Take at least one of the outlet ducts off the heater. On outlets pop the grill and make sure its wide open. Classic overheat is what is on the video.



The system needs intake air. Unobstructed intake air is important as the unit SUCKS air which is less powerful a flow than pushing air. There is a big squirrel cage fan for the blower and a small fan for the combustion chamber. Overheating can occur when there is not enough fresh intake air.

The thermostat is located between the outlet ports. Tripping temp on thermal shutdown is 80°C. It is possible that the narrow constriction of the Y-connectors causes this to heat up.

So, all of this is consistent with the recent behavior we have seen. The unit needs fresh air: either the sliding door must be open OR we need a cockpit hatch open to the coaming OR BOTH. The unit needs voltage to get started and might work fine on lower voltages if it gets enough breathing air. At this moment no special action needs to be taken except to put in the new diesel filter when it arrives along with removing the O-ring from the fuel connector.

Tuesday, 22 July 2014 03:42 UT

Today Kathy and I defrosted the fridge. It surely needed it. We tossed out chunks of frost as big as icebergs.

Tuesday, 22 July 2014 21:02 UT

Talking to Mike at Scanmarine re intermittent failures.

Homework. Take two wrenches and loosen the compressor nut. Let air bubble in and then observe it. Fuel pump starts at 100 seconds. It should move 5/8" with every click.

Pump OK. Not a problem.

Fuel dripping means that the fuel is not being burned. Now it's all about the spark. The howling is consistent with the extra fuel being burned. The whistling sound through the heat exchanger is this extra fuel.

The glow plug is not intermittent on this subject. It either WORKS or DOESN'T WORK. There is no middle ground. If they get weak they don't come back. Glow plug is NOT the problem.

The circuitry can control what the glow plug seas. The howling, dripping, and mysterious light suggests that there is a problem with the control board.

I could replace the glow plug and see what happens.

Issues: Shutdown. Inconsistent starting. Video of howling.

Unit exchange. Item is being shipped Priority Mail to Southport. Should go out Thurs Jul 24.

PRIORITY MAIL EXPRESS INTERNATIONAL. \$180 each way. 25# package. 20x16x11 \$138.95
This means August 4-6 is expected delivery.

Wednesday, 23 July 2014 22:44 UT

I used the wrong type of Oil in the Kubota for the run-in and will need to buy some Diesel-rated 40W.

Sunday, 03 August 2014 06:54 UT

Oil was changed in both main engine and Kubota. (See logs).

There is an ongoing problem with diesel fuel leaking into the bilge. It is definitely associated with topping up the Day Tank. Although I am convinced the VERY rusty port tank is indeed finished, it seems that there is also a problem with the Day Tank. The bilge keeps getting diesel in it and Kathy has been doing yeoman duty pumping it out. The scenario is this:

The bilge was very dry of diesel for the last couple of months. We had a big coolant leak due to use of an improper hose to connect the oil cooler 1.5" ID to the water pump at 2" ID. This was solved using a reducing insert. Unfortunately the insert only brought the 2" hose down to 1.75 but that was enough to clamp it down using Hylomar Aerograde as a sealant. I need to buy TWO reducers from the USA to get the hose down to its proper size. Then we had a big oil leak because Jeff forgot to put the oil filter back on the Kubota before starting it up. I would say 4 liters of oil ended up in the bilge.

Ok, after cleaning all this up, we pumped up the Day Tank and went to add 200L of fuel to the starboard tank. After getting back we had all this diesel leaking in the bilge. The diesel has dropped from 2.5 l/day to 0.5 liters.

Today we connected an air hose to the vent line hose after isolating the tank using the Fuel Management valves (V3 & V4). The fitting I have for measuring pressure has a pressure gauge and a Schrader valve. By adding around 4 to 5PSI to the tank I could hear the hissing of escaping air at two points: 1) The MAMO pressure switch was leaking at it's base and 2) the 5/8" screw-win hose barb on the Wema FLB inspection plate may be cracked (replacement of the O-ring did not help). I think this variety of FLB is no longer made, but we have two FLB replacements one (the FLB-2) has the hose barb and the other is an FLB-1 without the hose barb. Tomorrow I'll replace the screw-in hose barb and if that does not fix it will replace the entire inspection plates.

Thursday, 07 August 2014 20:37 UT

MAMCO is shipping a replacement valve.

Sunday, 10 August 2014 23:00 UT

We ended up replacing the day tank inspection plate with the one spare FLB-2 on board. The FLB-1 and FLB-2 are no longer available in the USA. We have a single FLB-1 left as a spare. Apparently Wema Norway may still have these available.

Replacing the plate stopped the leak. Furthermore, we went on to test the port tank which we had thought was leaking. Since the same kind of leak appeared when topping up the day tank it was possible that the “leaking port tank” actually came from diesel fuel leaking from the day tank top-up.

We started out by putting 2L of methylated spirits (95% ethanol) with a ml of red food dye into the tank. We observed no leaking. Then we completely filled the port tank by pumping fuel out of the starboard tank. Still no leaking. There remains a film of diesel that is probably a remaining oozing of fuel from the top-off leaks on Friday. We hope so. It would be very nice to have the port tank back in service.

On the diesel generator install. I have finished installing the regulator (Balmar MC-614) and the air vent into the aft head. Kathy finished sound-proofing the case. It is running well except that maximum amp output is limited to about 90 amps. It appears that there is enough voltage drop in the system to show 14.2 volts at the alternator and 13.55 volts at the main panel. This is only a 5% voltage drop but is enough to cause the regulator to reduce the alternator output. The answer is to run a 14AWG sense wire (fused 1A) all the way from the main battery.

Tuesday, 12 August 2014 22:35 UT

A 6mm sense wire has been installed direct from the main battery positive bus to the regulator in the generator box. This is roughly equivalent to 12AWG. It definitely solves the regulator problem.

The fuel system continues to be a worry. We are measuring apparently decreasing amounts of fuel in the bilge so maybe it is just continuous seepage (we hope).

A new glitch appeared today. Charging for 2:20 hours of running we see the voltage is 13.62. THERE IS SOMETHING WRONG. Usually it is easily up to 14.2 volts by now. Once the reefer was off the voltage went to 14.16. Then we turned off the Honda and started the main engine. Voltage immediately goes to normal (14.35 for the main engine charging) and 47A. Turned on the refrigerator and voltage dropped and climbed back to 14.35 at 47A, which is what it should do.

I've been watching the diminished charging from the inverter for some time. It could be a combination of where the sense wire is and the voltage drop over the failing main battery switch (which gets quite warm under even minor loads).

Wednesday, 13 August 2014 06:00 UT

Ran engine looking for coolant leaks and diesel fuel leaks. Found no obvious coolant leaks; so where is it coming from? I could see a steady 1drop/sec drip near the aft port corner of the drip pan. The bilge pump hose is very corrupted and it SEEMS to be coming from that hose. When I moved the hose out of the way I could see no more dripping. It is all so inconclusive: tank leak; hose leak, something else?

I checked for coolant leaks at all joints, the pumps, and the end caps. Could there be an internal leak in an end cap? I checked the radiator caps and overflow hoses. Kathy checked the coolant lines to the water heater.

I checked the diesel filter, the fuel pump, all fuel lines and bleed valves, etc. Everything is clean.

While working in the lazarette I noticed a full twist in the steering cables. The cable needs to be unfastened from the quadrant and, if facing forward, untwisted counterclockwise a full twist.

Action items: Untwist the steering cable. Replace bilge pump hose. Continue draining and cleaning the bilge, monitoring changes. Continue monitoring coolant levels.

I replaced the faulty main battery switch with a spare. Unfortunately the stud pattern of the spare is different from the newer model. I disassembled the switch and found pitting. I then rebuilt the faulty switch by sanding from 400 to 2000 grit. I called Blue Sea Systems and they said to go ahead and try the refurbished switch and if it doesn't work they will replace it. The tech was name Gavin.

Thursday, 14 August 2014 07:07 UT

- The replacement main battery switch has remained cool and apparently this has solved the problem of the underperforming Honda+FX charger combination. The voltage drop was throwing off the sensor in the inverter.
- Today I went back to the Kubota generator. I did not have much success. I added a cooling fan to the control box and replaced the 15A circuit breaker with a 20A breaker. These are thermal breakers and are rated up to 60°C.
- I also added a fan to pull cooling air through the interior. I am still getting failures with the 3A breaker but do NOT have a 5A breaker with the proper connections. I can only move up to a 10A breaker which is actually too much. I could, I suppose, use ring terminals for the 5A one that I have. The cables I am using should not have a problem with amperage because they are signal cables and don't really carry any current to speak of. The internal relays are rated up to 85°C. The engine thermostat is set at 85°C so the observed water temperature of 70°C is reasonable. So temperatures are within range except for the circuit breakers.
- **Tasks left to make it run (hopefull):** Upsize the thermal breakers to 5A and 20A. **DONE. No more electrical problems.** Add large muffin fan to move air from the box into the engine room. If this doesn't work, the breakers could be moved out of the box into the switch panel on the fuel system. **Generator Box Tasks left after minimal run achieved.**
 - ~~Make on/off switch for Walbro fuel pump.~~ **Removed mechanical fuel pump and only using Walbro. Move main alternator cable to show direct alternator output.**
 - Add 250A fuse.
 - Replace flow switch.
 - Install current sensor coil.
 - Add wire race on firewall and tidy up all wires.
 - Reprogram the regulator
 - ~~Tighten all belts.~~
 - Secure cables and fuel hose.
 - After the above the next item to install would be the remote panel with gauges and tachometer.

On the fuel issue: The day tank fuel lid appears to NOT be leaking. After emptying the lazarette, we could find no water or fuel leaks hiding in those areas while running and not running the main engine. Jeffrey explored the engine area while it was running. The only serious dripping led him along the bilge pump hose under the drip pan. We do not know where or what was dripping.

On 13th August, Kathy pumped about 250 ml what appeared to be diesel from the bilge. When it settled out though: a layer of ? mark trash/water, a layer of milky, then a greasy layer.

14th August, again there is fluid in the bilge but more sludge because the bilge foot was lifted out of its sump. The water reservoir was NOT less after running the main engine yesterday. The fluids in the bilge approx. a liter: sludge, a yucky layer and an oil layer at the top. The last 250 ml was cloudy but with more diesel appearance. Still not obvious where this is coming from?! Although, port side above the stringer fore and aft has drizzles! Testing my clay damn to be sure it will with stand the bilge sludge without destroying it. Again, tomorrow will access the bilge contents.

Thursday, 14 August 2014 23:54 UT

Today I decided to pump some fuel out of the port tank. First I pumped some from PORT to STBD for 10 minutes. Then I noticed that the DAY tank was empty because that was how we filled the PORT

tank for testing. I started to pump fuel into the DAY tank but set the valves wrong so I was pumping from DAY to PORT instead of the other way around. The PORT tank filled up way past its fill level (but not onto the deck via the vent). I reversed the direction from PORT to DAY and started pumping.

Then I checked the engine room. I noted a rush of fuel in the bilge next to the engine room port aft seacock. Further checking showed fuel dripping down from the DAY tank!!! That made no sense, as it was the port tank that was over-filled.

The PORT tank is now pumped as empty as it can get. Fuel is dripping everywhere and we will have to just mop it up as best as we can.

We pumped out over 20L of fuel from the bilge. There is probably 20L more.

Sunday, 17 August 2014 07:54 UT

Generator

Generator is still having an issue with the fuel. It HAS to be fuel. The electrics are fine with the up-graded circuit breakers (20A and 5A). I have had no breakers opening. Temps are nominal. The failure is one of two modes: either the engine slows down and almost stops, or the engine just stops. When the engine stops the fuel solenoid is still on HOLD and the fuel pump is running. The specs on the Walbro FRB pump are for high volume (55 g/hr) and 6 to 8 PSI. There is also a mechanical fuel pump on the engine itself. Perhaps there is too much fuel pressure? I think I will disconnect the Walbro pump and try that. I also will call Gulf Engine on Tuesday.

Note: Tried running engine without Walbro fuel pump engaged and it ran for 84 minutes, then it died with what seemed to be fuel problems (hard starting). I think I should add a cutoff switch for that pump so it can be used either as bleed pump or fuel pump.

It was disappointing to realize how much less efficient the new generator will be. It will probably cost about twice as much to run as the Honda. What we need to do is get more “top-up” power working on the boat. Perhaps we will use the Honda in tandem with the Kubota.

Fuel

Kathy and I removed about 40L of fuel/water from the bilge to the appropriate dump. We also recycled about 30L of fuel into the starboard tank, much of it taken from the bilge. After loading the starboard tank with the “dirty” fuel we then used the squeeze pump to drain water from the starboard tank’s sump. Oddly we pumped about 15L of water out of the tank before diesel showed up. We were both shocked! Either that water had been accumulating over the years since I last did this (yes, yes, it should be done routinely) or the “dirty” fuel actually had a lot of water. We’ll let it settle overnight and pump again tomorrow. Then we can polish the tank, change the Racor 900 filter, and polish again.

Batteries

Batteries were tested and exchanged. See battery log.

Monday, 18 August 2014 22:25 UT

This morning I talked with Tony at Gulf Diesel in Belle Chasse, LA. We discussed the problems over 4 serial calls (Skype sometimes is a problem) and he feels I should remove the mechanical pump, bypass it, fabricate a cover plate for the pump, and only use the electric Walbro FRB pump. He did suggest that I also replace the Walbro but I’m not convinced it isn’t working properly, although it does seem to suck fuel even when the engine is off. Maybe it IS faulty. Possibly I could use the other bleed pump as a test?

I tried to start the Kubota this morning and it clearly needs a bleed to get it going.

Tuesday, 19 August 2014 00:53 UT

Balmar Belt Buddy is good but the tension arm is curved and that doesn't work. I need to have fabricated the following tension arms. Dimensions are pivot to pivot:

Kubota Alt 27" Large Eng Alt 37" Small Eng Alt 27" w/20° dogleg.

Note: A C-Clamp worked brilliantly to tighten the belts on the Kubota.

Wednesday, 20 August 2014 04:27 UT

Digital Duo Charge Replaced.

Today I began by looking at the starting Battery not charging problem. The Digital Duo Charge had actually MELTED the 30A ATO fuse on the output terminal. I cannot understand why the fuse would melt and not simply blow. I wired in a new fuse holder and tried the system again. The starter battery was way down (12.1 v) and the fuse holders were starting to blow. So next I replaced the DDC with the spare unit. I also paralleled the start and main banks and ran the generator for a while. Now the Start Batt voltage was 14.2 whilst charging. I unparallelled the batteries and ran for a while with the DDC. Main voltage was 14.2 and start batt voltage was 13.87 and climbing. The fuse holders were mildly warm. Things appear to be working normally but we will see over the next few days.

The newer version of the DDC manual (2014) recommends a minimum 8' of output wire to act as a "spring" (weird terminology) to give better charging. I added about 7' of 10AWG wire to the output lead but have not yet run with this in place.

Wallas Diesel Heater fuel filter (inline) was installed.

A problem with the original bleed pump in the fuel system where it exhibited intermittent running was fixed. A wire terminal was not properly crimped and needed to be replaced.

The repaired main battery switch was re-installed and tests fine: no heat detected even under loads of 160A.

Solar panels were checked at the fuse box in the SSB compartment and all 3 panels are generating power.

The Cole Hersee DPST (NC/NO) solenoid which supplies SSB power was replaced as the NC circuit was no longer functioning. This is a strange solenoid in that there are two pairs of contacts: NC and NO. When energized the NC opens and the NO closes. When engaged, the SSB is powered by the start battery. Normally it is powered by the main battery.

Saturday, 23 August 2014, 09:11 AEST

I called Balmar yesterday and spoke to the tech about the DDC. He thinks it is still OK but that a poor electrical connection in the fuses coupled with a high load to fill the drained starter battery led to the overheating. I replaced the melted inline fuse holder with a new one. Things seem to be working fine although there is more heat in the fuses than I like. BSS makes an inline waterproof fuse holder which should work, but it is maxed at 30A. I could also use 30A thermal breakers.

Monday, 25 August 2014, 10:19 AEST

Ok, so Tony at Gulf Engine suggested maybe the problem was in the engine picking up *schmutz* from the pickup tube. I know that there is a ball valve in the fitting at the top of the pickup tube that also could be the problem, but I inspected that and the pickup tube and they both seem OK. I have a new fitting with a ball valve and also a new one without a ball valve.

I could install the full flow pickup (no ball) and polish the DAY tank to remove water, goo, rust, etc.

and then try again with the ball valve.

But then I got to thinking; the main engine runs fine without any problem of fuel delivery and it uses the same pickup tube as the one supposedly creating the problem with the Kubota. The main engine needs at least 2X or 1more fuel supply. Therefore the problem with the Kubota cannot be in the pickup tube. So, attacking this problem logically, what are the differences between the fuel supply to the main engine and to the Kubota diesel?

They use a different fuel pump. The main engine uses its lift pump; the Kubota uses the electrical Walbro pump.

They use a different check valve downstream of V5 (Filter Select Valve).

Monday, 25 August 2014, 11:49 AEST

The normal pickup for the Racor 500 is forward on the tank. The pickup for the polishing system is aft. I had them backwards. Both pickups are now inspected and have functional non-return valves installed. The one for “normal” pickup was not working at all but had failed in the “open” position. It has been replaced.

Some air was in the line and it took a few tries to get the Kubota up and running. It is now running at full speed but using the flow path that allows for the engine bleed pump (not the generator diesel fuel pump) to supply fuel. It died a few times at first (to get air out of the line?) and then after 7 minutes of running it also died but was able to restart.

So, after a few mis-starts which are hopefully due to air in the lines from the repairs to the pickup tubes, we will see how the engine runs. If it can run an hour without dying this will indicate a problem with the Walbro FRB, otherwise I will have to inspect the generator fuel check valve downstream of V5.

Monday, 25 August 2014, 17:11 AEST

The Kubota seems to run fine on the bleed pump and has many shutdowns on the Walbro FRB. This means the problem is in the FRB circuit which includes a bronze check valve (flap type) and the hoses.

Thursday, 28 August 2014, 06:50 AEST

Yesterday I disassembled the panel to see the interior of the fuel system. It all looks OK and the fittings are super tight. I did discover the outlet hose from the FRB to the Kubota was not clamped at the pump. I remedied that. I have also ordered a fuel filter off eBay which filters out any particles larger than 3 to 5 microns. Pressure is max six bars or 87 PSI. This will be the final filtration before the injector pump. **NOTE: This filter was later removed.**



Thursday, 28 August 2014, 08:14 AEST

105°C is normal operating temperature for 210A alternator.

I would recommend you talk to Graham about this one issue I found on Blithe Spirit – the reason for the coolant leak was **gas from the engine pushing the coolant through the cap**. The source of the gas was serious. Happy to discuss further. 0439 369208 - Stuart

Friday, 29 August 2014, 06:29 AEST

More experimenting was done to investigate the problem of the alternator not producing full power. It started out fine at 172A, then dropped off to 88A @ 13.4v. Temp was reading at 100 on the MC614 and the same with the infrared thermometer. I disconnected the alt temp sensor and the amps went up to 120 (which is appropriate for the state of charge), I reconnected the temp sensor and the MC614 displayed 120°. The IR thermometer only showed less than that: 95°-100° with 110° at one point. Low air flow? Confined output? Bad temp sensor??? **Friday, 29 August 2014, 17:30 AEST** I found my spare temperature sensor ("new". I can tell it is a battery sensor by the size of the terminal. The one I have been using ("old") must be an alternator temperature sensor because it has a smaller terminal.

I tested the two units at room temperature (about 20°C) and then in a pan of boiling water (100° C)

Readings in KΩ:

Cool	Hot Old Sensor	42.7	49.63	New Sensor	36.11	41.45
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There is a huge difference. Installing the new sensor has the 614 showing Alt Temp at 82°C. I hope this is correct. It certainly fixed the problem with "overheating".

I was also able to get the 50mm boxer fan running automatically off a NO heat sensitive (closes at 50°C) switch. It is strapped to the hot water fitting that comes off the thermostat. It turns after a couple of minutes as the engine heats up and runs for about an hour after it shuts down.

Wednesday, 03 September 2014, 09:13 AEST

Contaminated Fuel Problem

The oil test came through at 3112 PPM for water contamination and particulate contamination. Rust scale and silica were reported. This means 400L of fuel would have 1.25:L of water, within the range that Synforce DieselTreat™ can handle. I have ordered a 2μ filter for the Racor 900. We should be able to save this fuel.

Coolant Problems

I have not been able to find local sources for a replacement "radiator cap" for the header tank or the engine heat exchanger. I can always glue a rubber disk over the old one to fix the cracked rubber gasket.

We have not test run the engine because of the ill-fitting cap; but I expect (hope) a proper seal will solve the problem. We should not need an "overflow" tank as, in a sense, the header tank should be an overflow tank. It would be nice to have a sight glass as part of the system, but I would have to find a clear hose rated at least 100°C.

Radiator Cap for Header Tank: http://www.thermobypproducts.com/product_p/tb-37-11-5406.htm

Diesel Generator

The diesel generator keeps stopping; unquestionably it is the fuel pump. I will try swapping in the 12V inline pump that Peter off *Daedalus* gave me. Maybe later today. I also have a fairly large sealed 3-5μ inline filter which I can install as a final fuel filter.

Alt temperatures are looking nominal, 60° to 80°

There is still the odd question of charging problems with the diesel generator. It appears to be showing 14.3 bv (battery volts) at the generator but only 13.5 bv at the main electrical panel. This could be due

to a voltage drop (e.g. the bad switch caused a 10% drop) so I need to a) run the bv sensor directly from the battery (1A fused) and also feel the connections for any warmth next time this happens.

Deck

Kathy has been working on the hatch surrounds and companionway hatches for prep and application of the Deks Olje finish.

Wednesday, 03 September 2014, 21:56 AEST

Watermaker Membrane is shot; only producing 590ppm. Filmtech 2.5" x 40 is available delivered for \$323.68 to Sydney from www.wateranywhere.com In Australia, www.membraneshop.com.au has the membrane for A\$351+ \$25 shipping to Chermside. (US\$358).

Thursday, 04 September 2014, 06:17 AEST

What's wrong this morning? It feels like everything has failed:

Engine Room Engine Start/Stop switch broke off. Engine Coolant blasts out of replacement radiator cap which is not the right size. About a liter of coolant is captured in a saucepan but when we try to put it back in the tank the tank fills up and we have leftover fluid. Huh? We are out of water but can't go to the dock because of above problem. Watermaker won't make water < 600ppm. It also needs to be primed Anchor windlass is unreliable because of likely failure of switchable circuit breaker. I have to call the IRS. The internet won't stay connected. There is some problem with the voltage. BV at gen is 14.1, BV at board is 13.4.

Thursday, 04 September 2014, 15:45 AEST

Ok, I took care of the IRS and the internet. The rest didn't show much success. I only worked on the Watermaker and engine problems.

I re-installed the 3-way valve on the reefer cooling output hose to allow connecting the cooling water to the Watermaker system in order to prime the pumps and filters. This worked until I turned on the pumps and then air creeps in. The Spectra system is not getting up to pressure with two pumps running. It should be 80 and has not gone over 70. After a while it drops to 40 with no output. I open the pressure relief valve and can feel air burbling past. Then I close the PR valve and the pressure climbs and some output appears, but it is a very small trickle, at about 900 ppm. Consulting the manual wasn't much help. It could be a problem with pressure lines, the membrane, or the Clark pump check valves or seals.

TALKED TO TONY AT SPECTRA USA: IT IS EITHER FEED PUMPS FLOW or CLARK PUMP. Could be air in system .GET A 12V WASHDOWN PUMP INLINE NEEDS 10-11 lpm. RUN FLOW TEST. TRACE LINE BACK FROM FEED PUMP AND FIND WHERE AIR IS COMING INTO THE SYSTEM (MIGHT BE A SUCTION LEAK). Neil Boll in QLD.

Kathy cut a neoprene washer to glue onto the old pressure cap and it seemed to work to a point but then the coolant flows past the pressure cap and into the drain tube. I contacted Graham Mallet, recommended by Stuart on *Blithe Spirit* and he suggested the problem might be in the thermostat, which I will take out and test tomorrow. There are two spares aboard.

Friday, 05 September 2014, 05:50 AEST

Parts: Header tank pressure cap from Seakamp Engineering, Bellingham WA. Clark Bergman clark@seakamp.com. It turns out that Fisheries Supply stocks them. 2 ordered. Heat exchanger pressure cap is Bowman 2753 Filler Cap Small www.Luxfords.com.au - contacted by form sales@luxfords.com.au \$16eac + \$8 post. Shipping today

Friday, 05 September 2014, 09:07 AEST

Kubota Genset: MC614 regulator shows battery voltage at regulator at 14.1 but it is actually 13.65 as measured at the battery (and the sense wire). Observation is that the MC614 starts out with the correct voltage and then rises to 14.1v on the display. Call to Elvin at Balmar elucidated the fact that the ground should also be as direct as possible since it is part of the sensing circuit. The ground wire is connected to the terminal block

We tried running the Watermaker and it functioned for a short time with normal flow. This supports the conclusion that the problem is air getting into the system; probably from a filter strainer or hose connection.

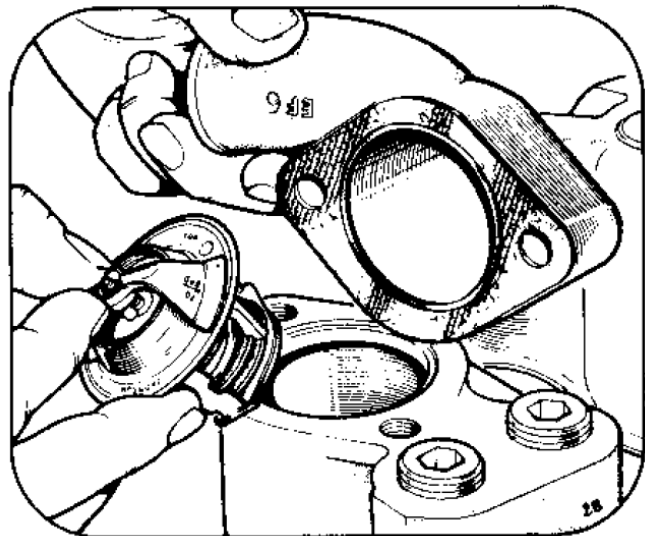
Saturday, 06 September 2014, 16:52 AEST

Happy Birthday to Me.

We finished installing a new Thermostat. The old one worked, but was “wrong” compared to the new one. We boiled water and put both new and old parts into the pot. The new one opened right away; the old one was slower to open and not as fully.

Removing the old part was a horrible job that took me and Peter (off *Daedalus*) a few hours. It was nice to have help.

It's not as easy as in the picture. First we had to saw through the old steel-reinforced hose. There was no way to reach the nut underlying the thermostat housing elbow, which was on a stud (not in the picture). The opposite was a bolt which was easy to remove. The gasket was destroyed in the process, of course. The nut was rounded and getting worse as we tried to bend a 14mm (or 9/16”) end wrench to reach. Clearly the engineers had designed this part without marinizing in mind. Peter finally got the nut off.



To remove the thermostat, which was stuck in fairly hard, we tied a length of small line through the top and pulled it off using a breaker bar as a lever. After that it was off to the hose store to find a thinner-walled 2” ID heater hose to make re-assembly easier.

We had both a new gasket and a new thermostat in spares. To re-assemble the system I cut the hose as short as I could to overlap both the thermostat connection and the heat exchanger hose barb. This allowed me to slide the hose onto the thermostat elbow as far as possible; then slide the mounting hole onto the stud. The hose then was moved as far as possible onto the heat exchanger. Then I could get the nut on and begin to tighten it up. I did this “dry” and then with sealant. Hylomar Aerogarde P32 for the gasket; and Permatex Aviation Form-a-Gasket #3 for the hose sealant. Normally I don't use hose sealant but the aluminum hose connections had been seriously scaled and somewhat corroded. I had de-scaled and sanded them down as much as possible and they were pretty smooth. Nevertheless I felt a non-hardening, non-adhesive sealant was appropriate.

After 2.5 hours we re-filled the cooling system and tried running for a few minutes. This time we also left some airspace in the header tank. Our “test” is being able to stick a finger in the top and feel the liquid. There were NO PROBLEMS during the test. Tomorrow we will up-anchor to get our water tanks full. (Yes, we had to beg water off the *Daedalus* to fill the header tank. Catch-22: we need water to go get water)

Tuesday, 09 September 2014, 09:59 AEST

Possible problems for salt water intrusion into diesel engine:

- Broken seal on water pump allow high pressure water gets pumped into crankcase. **Probably not our problem since engine shows no symptoms of water in the cylinders.**
- Pinhole in exhaust manifold when engine is shut down (and both valves are closed on a cylinder - causing vacuum; water can migrate through the pinhole into the combustion chamber and leak down into the crankcase (plus starts the cylinder walls and pistons rings to 'rust'). **Probably not our problem since engine shows no symptoms of water in the cylinders.**
- Broken head gasket. Water is drawn into the combustion chamber on the down stroke of the piston though the broken head gasket and is removed by 'steam' if the engine is still running; but, will be free water when the engine is stopped (similar to #2) **Probably not our problem since engine shows no symptoms of water in the cylinders.**
- You may see 'carbon' in the freshwater side of the cooling system OR if you add the correct chemicals will cause a special dye to fluoresce (glow) when the water is contaminated with carbon monoxide (plus excess of CO2 when viewed under 'blacklight'. **Probably not our problem since engine shows no symptoms of water in the cylinders.**
- A cracked head should allow water from the fresh water system (coolant) into the cylinders so getting "extra" water should not be a problem. Rusty over raw water pump drain holes caused salt water to back up through the pump shaft into the crank case. **Probably not our problem since engine shows no symptoms of water in the cylinders.**

None of these are the problem since the engine is running fine with no steam, smoke, or hard starting. IF raw water is intruding into the fresh water system it has to come through the heat exchanger. IF raw water is leaving the system, it has to be through hoses and fittings (which all check out to be good as far as we can see) or a problem with the heat exchanger (end caps or pinhole in the core).

I just talked to Mark McBride about this situation. He thinks it is either a) faulty pressure cap + lack of overflow tank (which should "suck" overflow back into the system) or b) a problem with the heat exchanger (e.g. pinhole or core failure). He doubts it is the end caps.

Plan of action:

Install temporary overflow tank (milk bottle with tube). Wait for new filler caps to show up or find one here. See if that fixes problems. If not, proceed to inspect/test heat exchanger.

Wednesday, 10 September 2014, 07:36 AEST

#2 Water Pump is not running. Recently (didn't note when) the #1 pump was replaced with a warranty rebuilt pump from Whitworths. Now the other one has failed. It won't pump up to pressure. I have a spare to swap in, and then we can take this pump in for Warranty.

Yesterday we fixed the Watermaker. There were two problems. One was a loose electrical connection to the pressure switch in the upper pump. The second was an inability to keep air out of the system. The Spectra tech said that could explain ALL the issues with low pressure and low product volume and high TDS readings.

We started with a disassembly and cleaning of the small GROCO sea water strainer. The basket end came off when removed because of scale on the shaft. This was repaired and reused. Gaskets looked OK.

Then the plankton filters in the engine room were checked. We used the output of the refrigeration pump to prime the filters.

We had some issues with air leaks around the filter baskets, but the big leak was in the Fast'n'Tite fittings that connected the two pumps. One could hear the sucking; and also when the pressure water was turned out without the pumps running, there was a leak out of these fittings. Removing the carbon filter gave access to the fittings and a gentle 1/8 of a turn seemed to fix things.

The Watermaker was run for half an hour or more and gave the following readings as measured with a timer and measuring cup:

Pump #1 @ 5.0 gph Pump #2 @ 6.0 gph Both @ 10.5 gph TDS were 574 ppm.

Wednesday, 10 September 2014, 15:14 AEST

We bought a new filler cap. Tridon CA0750. This cap is built for us with an overflow/recovery system. It has dual gaskets; one on the pressure foot and the other inside the cap. It went on quite snugly and clearly has a stronger spring than the old one. The engine was test run for 1 hr with no leaks.

We concurrently ran the Watermaker and it performed perfectly.

In attempting to pump the manual bilge pump it was at first very difficult to get a prime (and I could hear the hiss of pressure leakage) but, when I finally did, it worked for a while then suddenly would not pump at all.

Thursday, 11 September 2014, 11:21 AEST

Yesterday I tried swapping in the inline pump donated to us by Peter on *Daedalus*. It made no difference to the problems of intermittent shutdown. Also, the 120mm exhaust fan has failed to function. Finally one of the shutdowns involved the closure of the fuel solenoid valve.

This problem HAS to be a fuel problem. If the pump is not the problem then it has to be the hoses.

Thursday, 11 September 2014, 14:09 AEST

Well, it didn't work out as planned. First, I cut the fuel hose to the day tank instead of the generator. This required taking off the fuel system cover (lots of screws, but a brilliant design). Then I had to remove and re-install the hose. All the original fuel lines are now very stiff (not quite at brittle) so I used a heat gun to soften the end and a hose clamp, which originally was not required, to get the hose back onto the barbed compression fitting. Then, being all flustered and irritated, I again had to use a knife to remove the hose to the engine fuel supply (5/16 I think) from the hose fitting. Instead of putting in a NEW hose I cut off the old end and re-attached the old hose. Ok, so now that it's in and the engine is bled and running, I will see how it goes. If it dies again, I'll put in new hose.

Thursday, 11 September 2014, 15:23 AEST

The engine stalled twice and died once (after 83min). This is significant. I think I will put the original pump back in and use new hose on both the suction and delivery side of the pump. This would be the time to install the inline fuel filter.

Friday, 12 September 2014, 11:52 AEST

I had to re-prime the Watermaker after having moved the two pre-filters out of the way to access the fuel system. Re-priming is always a pain, but less so because of the pressure water from the refrigerator. It was difficult to find the "sweet spot" between too loose and too tight on the small Sherwood filter. I changed out the O-ring and just hand tightened it until there were no leaks. The Watermaker then had to run somewhat with the pressure relief valve open until all air had passed through the system. The sediment filter has to be loosened until it fills, then tightened. After that, priming each pump separately, they are now running in tandem and pressure up to 80.

Friday, 12 September 2014, 16:47 AEST

I went to remove the "non-functioning" #2 water pressure pump and found it fully functional. It just needed decent priming.

I tightened up the oven handle by removing the front panel and securing the mounting screws. Unfortunately the whole door fell apart with fiberglass insulation everywhere. So, I thought I could take the entire door off. It is quite easy once you know how. To remove the oven door put screws in the holes in the retractor arms to retain them, then lift the arms off their pins inside the door, and pull the door hinges out. Note that the hinges slide inside a receptacle inside the frame.

Kathy moved forward on treating the above deck teaks with Deks Olje.

360 921 6074 Mason fulfillment BBQ after 7

Saturday, 13 September 2014, 16:43 AEST

Added 1.5L Synforce Diesel Treat™ to starboard tank. Nothing else was done (i.e. no stirring).

I ordered the wrong 150A Switchable Thermal Breaker for the windlass. I received a surface mount when it needs to be a panel mount. Nevertheless I connected it to the windlass and we found the same behavior: the windlass under varying light or heavy loads will stop working. Checking the ammeter and the ON light on the breaker nothing seemed amiss. Although there was power available the windlass still worked intermittently. When it stops working, just wait; it starts up again. I don't think the Thermal Breaker is resettable in this way. Is it the motor?

Answer: Yes, it's the brushes.

Tigres Spares Kit – Yes Brushes??? NO! Southern Seas Marine OFFICE, SHOWROOM AND WAREHOUSE: Gold Coast City Marina. Unit A6 /58 Waterways Drive Coomera QLD 4209. Telephone: 0755029666

Airbnb: Copley St Newton MA <https://www.airbnb.com.au/rooms/3858697?checkin=12-03-2015&checkout=17-03-2015&guests=2&s=UByK>

Thursday, 18 September 2014, 14:26 AEST

Running Kubota with BV at 14.4v at the MC-614 regulator display and 13.83v on the panel. About - 175AH.

I tried swapping out the MC-614 for a brand new MC-612. Program set to P04 (AGM). It cycles from 53 to 165 amps and voltage is over at 14.6. Bu on regulator display is 15.4. cv? **Exciter wire > 17v**. This is definitely weird.

Next I re-connected the MC-614 as the MC-612 is definitely not running right. During bulk charge the regulator shows 14.1v with 14.24 on the multimeter. Could be close enough.

With a load (water heater added), Bu is 14.4, multimeter is 14.2, and panel voltage is 14.0. Panel voltage always matches the direct measurement at the battery posts; I trust this measurement.

Note that in order to meet AYBC standards (as follows) I need to make some modifications to the control system.

“Electrically operated fuel pump systems shall be connected to be energized only when the engine ignition switch is on and the engine is running. A momentary manual actuating switch to permit the electrical fuel pump to operate is acceptable for starting.”

Tom @ Balmar. x314. It is imperative to have a common ground point. Straighten out the common ground. Measure resistances; look for low readings 612 are not made anymore; but were thoroughly tested before leaving the factory. Test 612 on main engine. Ground loop current loop?

Friday, 19 September 2014, 09:12 AEST

Talked to Spectra Tech Support USA regarding TDS readings. The tech made two points: 1) that we calibrate the salinity device (will put that off until the spares arrive) and 2) that TDS always drops with increased pressure.

Right now we are seeing 650 ppm at about 70psi with the single pump (the larger one). With both pumps pressure jumps to 90 and TDS drops to about 450. Moving back to a single pump, TDS was about 550.

So, running with both pumps while we have power is a good idea; and continuing to look for air in the system.

Many membranes are replaced when the problem is actually with feed pressure, air entrapped in the system, or a leak somewhere.

Saturday, 20 September 2014, 08:45 AEST

Watermaker with two pumps run this morning: 450ppm to start and 450 to finish.

Sunday, 21 September 2014, 21:03 AEST

Today we found a lot of black oil and water in the bilge. Water from rain and over-fill of the water tanks and shaft seal leak. Oil from... possibly main engine; but certainly from leaking oil filter on the Kubota. The oil level had dropped in the Kubota to where the oil pressure light was coming on.

The bilge was pumped; water overboard and oil into plastic jugs. This led us to discovering that the PSS stainless collar had again slipped on the shaft and water was dripping into the bilge. This must have just started. I was able to re-set the collar but one of the set screws was not removable. A screw extractor worked fine to get it out. I did not have all new set screws so I must find some and replace these soon.

We also drained a small amount of water from the starboard tank and changed the Racor 900 filter to a 2μ element and started with 3 hours of polishing. The filter change was easy. The fuel looks pretty good; I think it will work just fine. We'll test it by direct draw from the starboard tank before committing a transfer into the Day tank.

Kathy continued work on the teak and on varnishing a new shelf built to hold her computer under the dinette table.

Monday, 22 September 2014, 06:16 AEST

The Watermaker is producing 421 ppm this morning using both pumps. It seems to be improving with use.

Wednesday, 01 October 2014, 08:50 AEST

Watermaker working fine at higher pressure (two pumps) and at 445 ppm. I had drained our tanks by forgetting about the flush cycle and going for a walk. Point to remember: NO MORE MULTI-TASKING.

On a more serious matter, the Kubota engine was totally drained of oil while running due to a crack in the threads of the oil pressure sender plumbing. I had thought it leaked from the oil filter, but a bronze nipple cracked; likely due to vibration. I hope no damage was done. The engine seems to run fine. We changed the oil filter and filled the engine with 40W oil, but only ran it a minute before I noticed the stream of oil from the cracked pipe nipple. I will fix it by using a hose and mounting the sensors off the engine.

Friday, 03 October 2014, 05:50 AEST

Installed the new “garage” for Kathy’s computer. It is a wooden box with a door screwed to the bottom of the dinette. It doesn’t interfere with the knees and is a perfect and convenient storage spot.

NOTED: I forgot to turn off the BBQ last night, and even though the BBQ solenoid was switched off, the BBQ was supplied with gas all night long. Something is wrong with the solenoid or the switch.

Saturday, 04 October 2014, 05:58 AEST

Lower pump on Watermaker not running. Measured 120ppm with single pump and 60psi? That is strange. Former measurements were much higher. The water tastes OK. Surely the TDS meter won’t read beyond 999 and hide the 4th digit? After a couple of hours the reading was 720, so yes, the TDS went into 4 digits. **Saturday, 04 October 2014, 14:49 AEST**

Kathy pumped the starboard fuel tank and found 100 ml of settled water in the bottom of the tank.

Sunday, 05 October 2014, 18:18 AEST

Today was a difficult day with the anchor windlass. We changed gear oil and had a bit of a problem as our hand pump would not suck the thick oil. I took off the cover on the left side and had to drill out 3 of the 6 stainless ¼-20 Hex Flat Head Machine Screws. All fasteners were removed and anti-seized with TefGel.

We replaced all 4 motor brushes and used compressed air to clean the motor. Seals and O-rings were replaced on the motor shaft. Some fasteners were replaced. O-ring on the left cover was replaced. Cones were greased. We should order a new cover and bearing I think as the cover is showing quite a bit of corrosion. I did some more online searching and came up with this advice:

Take end off motor, removing brushes first if removable. Carefully clean commutator end where brushes contact with very fine wet and dry. Clean out grooves with something like a wood toothpick/sausage stick. Place wet and dry on perfectly flat surface and gently square up ends of brushes or replace if worn out. Worth knowing that brushes can be bought by size as well as by product-length, breadth and height. Similarly there tend to be standard motors sizes and dimensions which will fit a variety of products. Reassemble

This morning’s retrieval of the anchor worked fine with NO stoppage of the motor. We ran in the brushes for perhaps a total of 10 minutes. There was some issue with the manual drum catching on the plastic fitting which holds the up/down Hall Effect sensors. This was fixed by tightening the fixing screws.

Questions for IMTRA: Can I get cover with bearing? Chain slippage? Manual handle? Motor Cover Gasket for grooved cover – sand out the groove or use 3mm rubber.1994. Talked to RAY at IMTRA. ray@imtra.com GYPSY should say 3/8HT look for wear on edges on gypsy. Sent photos of gasket, chain, and gypsy.

Parts: Cover 481 LWPHP012 Bearing 323 LWPBB013 Handle 352 LWP832

Response from Ray Lavoie <ray@imtra.com>

Your windlass is an older version that Lofrans had a hollowed out space in the motor cover for a round gasket. This was used for only a short time and was replaced with the flat gasket that you now have. The older version became obsolete many years ago.

You can fill the void in the motor housing using a product such as bondo or other joint compound, sanding it smooth and using the flat gasket that you have.

The condition of your gypsy seems to be very good and from your photo's I cannot see any excessive wear.

Your gypsy is designed for 3/8" HT (high tensile) chain. You should verify that you have HT chain and not BBB chain.

The last thing I would have you check or improve on is the fair lead from the bow roller to the gypsy/windlass. If this is off, this will cause the chain to enter the gypsy at an incorrect angle thus causing the chain to not flow smoothly over the gypsy.

- Glitches on the fuel run were: Depth sounder cut out for a few minutes Noted that the bilge cycle counter was over-counting (>4000 cycles? Nah.)
- The microwave stopped working. Don't think it is power unless it has internal fuse.
- Error 66 on the autopilot: *PORT READ CHECKSUM ERROR The messages received by the Pilot Computer for the Autopilot Control is longer than expected. It could be caused by excess electrical noise interfering with the data cables of the Autopilot Control*

Radio noise tips:

1. *Transducer cables should be run separately not bundled together with other wiring or run close to the engine. This can cause noise-generated marks on the fish finder. (Read: Understanding Transducers.)*
2. *Power-line filters such as Newmar's □ PC-10 and PC-25 can silence noise when connected to an instrument's 12-volt power cables. Install the filter close to the offending equipment.*
3. *Those snap-on "ferrite core RF chokes" that are commonly used on computer cables to minimize RF interference (available at Radio Shack and electronic parts stores) also reduce noise on electronics cables.*
4. *In extreme cases, you can often screen out noise being picked up on equipment wiring like a stereo set by substituting the affected wires or cables with shielded wiring.*
5. *Sometimes just twisting the wires together along their entire length can suppress noise intrusion (you can also purchase pre-twisted cable).*
6. *Connecting a wire from an instrument's metal case or grounding stud to your boat's ground can squelch electrical noise.*
7. *A 0.01-microfarad capacitor connected across the two leads of a radio's or stereo's speaker will often eliminate noise caused when transmitting on a radio. This also works for gauges that experience fluctuation when talking on a radio.*

Friday, 10 October 2014, 14:26 AEST

Today we completed a 31.5 hour run from Southport to Moon Point, mostly sailing. The following glitches occurred:

- Sticky Vacuflush
- Autopilot Control Head 870 was discarded and replaced. I always hated it and it kept throwing a system error. The replacement was a brand new 830 Pilot Control. The Autopilot started throwing a different error: 224 Fault. It appears that the hydraulic Octopus motor is running, but the actuator is not moving the rudder. We thought it was only a bleed problem but later found out the motor assembly bolts were working loose.
- Flag Halyard broke off and USA flag dragged behind boat like dead fish. Cargo Net or Fiddles (aluminium?) definitely required in tool locker in companionway.
- Chart Case is ready to fall apart from stress. Fasteners (probably twist locks) need to be installed.
- vYacht Wi-Fi was not available. Rebooting did not help
- Anchor chain is twisted and not settling in the gypsy. FIXED 7 NOV 14 Second anchor is not positioned correctly making it hard to secure the Bruce anchor. FIXED. FASTENED AT PROPER LOCATION ON SWIVEL
- Hydrovane could not be used during AP failure because I have lost the new locking pins and the rudder could not be installed. Hydrovane needs to be raised up.
- TwinScope is worse than ever in maintaining a power-on condition. Either the power plug or power socket is faulty.
- Depth sounder keeps losing the depth at fairly shallow depths (10-50m). Could be dirty transducer?
- Lower feed pump for Watermaker is not working
- Awning zippers that fasten to dodger are pulling off. Need strain relieve straps and snaps. May need a different type of zipper (YYK #10 black delrin) instead of the Lenzip waterproof. The coils pull apart too easily.
- Waterproof zippers for side (rain) curtains leak.
- Shower hose in cockpit not delivering water; probably has a kink. May need replacing. Unkinked.
- Serial port combiner no longer recognized by Windows 7. Generic driver is only one available. Currently giving BSOD. STARTED WORKING AGAIN. PLUG IN AFTER BOOTUP Could consult with Dell XPS Support.⁹
- Davis Quick Fists that hold the boat hook & gaff failed and have been replaced. Rudder stop (rubber pad) has fallen off starboard side. Needs to be re-fastened ASAP. (done 8 Nov)
- PSS Shaft Seal is leaking water at the interface of the steel collar and the carbon block. Try shifting the collar aft again. It might be time to replace the entire system. \$240 is cost. See notes below.

Saturday, 11 October 2014, 09:59 AEST

A/P Problem SOLVED: air in pump head; not primed, needed bleeding. We bled the system (I am SO happy I installed a bleed/bypass switch). It did not seem to change things. Moving the wheel by hand while the pump was running forced fluid into the pump head. I think there is a generic problem to prime/bleed the remote pump. I need to consult with Octopus regarding this issue.

Support Call to Octopus (CanMet): Keep on bleeding. Possibly elevate reservoir. No magic bullet for purging the line. Asked about autopilots. Sitech new autopilot is awesome. No remote course computer.

⁹ While at it, ask Dell about ESATA port expansion or port multiplier to use 2-bay disk caddy. This is the only positive advice I could find on the internet: <http://en.community.dell.com/dell-groups/new-to-community/f/3511/t/19243035> and it is kind of old, may not be applicable to my XPS L502 machine.

Monday, 13 October 2014, 04:35 AEST

At long last the dreaded refrigeration failure. I woke up this morning to find the compressor error light flashing. I checked the cooling water; OK. I checked the power consumption; the compressor is not consuming power and the motor is not attempting start-up. Therefore NOT an overheat problem.

Monday, 13 October 2014, 09:44 AEST

The refrigeration problem is fixed. A small sense wire to the thermal overload switch had broken off. I replaced both ¼" spade terminals to the overload switch and also a male/female pair which pulled apart when I was working on it. Ideally this whole assembly of horrible ¼" terminals should be replaced with DIN rail blocks or even a Euro connector. Meanwhile, the quick-and-dirty solution was to replace the red plastic spade connectors.

Friday, 17 October 2014, 17:19 AEST

Tuning on the Hydrovane. We raised it out of the water as much as possible and finally found a third pin. These pins need to be DEAD STRAIGHT to work right. I hope we find the 3 new ones soon. I think that using 3/8" instead of ¼" pins would have been much smarter.

NOTE: One of three thumb screws holding down the solar panel on the dinghy davits is striped.

We commenced a battery voltage test. Main battery bank is disconnected and we will check voltage in the morning.

Kathy Wichinoxed the bow pulpit. We had a lot of trouble getting the 2nd anchor stowed until I realized the tie-down pin had to be in the second link of the swivel.

Saturday, 18 October 2014, 10:01 AEST

Results of resting voltage test over 20 hours:

RESTING VOLTAGE TEST 17 October - 20 HOURS								
Battery	ALL	1	2	3	4	5	6	7
Start Volts	12.95	2.16	2.15	2.15	2.16	2.15	2.08	2.16
End Volts	12.81	2.14	2.13	2.13	2.14	2.13	2.09	2.14

As far as resting volts are concerned the batteries are in excellent shape. However, they don't seem to have the capacity expected. Next step needs to be a 25A drawdown test.

Sunday, 19 October 2014, 13:38 AEST

Today we are anchored up the river in Bundaberg Town Reach. Kathy noted we diesel in the stringer well portside. I confirmed this; and there is a bit of diesel in the bilge at the moment. Even though I had attempted to shift the collar towards the bellows, the PSS seal leaked on the way up the river, throwing salt water in the shaft space under the aft cabin floorboard. Images show possible damage to the carbon and stainless. It is not leaking while at anchor (although it was a few days ago). The electric switch that runs the aft holding tank pump out was shattered by the storage box under the bunk and needs replaced.



Reply from Fred Hutchinson at PYI:

If the seal does not leak at rest but under power, there is not enough compression on the bellow. I would slide the stainless steel rotor aft 1/4" this should solve the problem. Visually there does not look like there is much compression on the bellow.

If the bellow is more than 6 years old I would look at replacing that part the next time the vessel is hauled.

22 Oct. moved collar about 18mm aft. Set screw cups are worn and should be replaced as soon as I can find some replacements. Testing showed the seal still spraying water. Fred Hutchinson gave this advice:



It is normal for the carbon to move around, but if it is leaking while moving you more than likely have some oil or grease build up on the faces.

Take some 600 grit wet dry sand paper and fold it so that it is rough out on both sides. Pull the carbon away from the steel and slide the paper in between them and let the carbon pinch it in place. Then pull the paper around the shaft 30-40 times to sand away any residue. Then pull the carbon away again, remove the paper and let some water flush out the seal.

Monday, 20 October 2014, 07:41 AEST

More diesel is in the bilge. This is a big problem because it has to be leaking out of the day tank. We pumped up until the alarm went off and left it. Then it exhibited a fair amount of leakage visible in the port stringer well and possibly up to a litre in the bilge. IF THE DAY TANK IS LEAKING WE WILL BE FORCED TO REPLACE ALL PORTSIDE TANKS

Tuesday, 21 October 2014, 11:20 AEST

Over the last three days we have been pumping raw diesel from the bilge (to a container, of course). We cannot figure out where it is coming from but it is definitely associated with the top-up of the day tank. The port tank has been empty for months. It could be a leak in the tank, in a hose, or in a fitting associated with the day tank. We can pressure test again and see what the readings are.

Wednesday, 22 October 2014, 11:35 AEST

Fixed PSS (see above) and added control line to Hydrovane. Continuous line was welded with heat gun. I don't know how well this will work.

Dometic 12V refrigerator needs strongback to keep it from compressing when strapped down. This compression is deforming the walls and makes it difficult to close the door. A wooden spacer will do the job just fine!

Friday, 24 October 2014, 09:49 AEST

Watermaker Pump #2 back in service after repairing faulty electric connection. The butt joint connecting the power switch to the motor/fan had overheated and failed. I replaced this with a shrink-wrap butt joint. This overheated at first in test, but a further solid crimp fixed that and the joint is now cooler. Part of the problem was that the pump's power wires are bare copper and had begun to oxidize. I have no idea why people who make marine electrics use un-tinned wire.

Back in service, the Watermaker's Clark Pump does not seem to be shifting as positively as before (the ball in the flow meter used to drop more suddenly and farther) and the TDS reading is now 565 when it had been 445 when last in service.

Replaced broken switch on aft holding tank pumpout. Moved switch to inside Aft Cabin Port Locker 1.

Kathy got out the Sailrite and sewed patches onto the sail cover which was wearing through already. She also fixed the strap on the Honda genset cover.

Sunday, 26 October 2014, 05:15 AEST

Last night anchored at Moon Pt, Hervey Bay, QLD. I pumped some fuel into the day tank because we had motored all day. I only wanted a partial fill up because of the fuel leaks so I set the timer instead of the automatic shutoff feature. I forgot (when will I learn I cannot trust myself to remember to turn things off) and Kathy smelled the diesel when it pumped out the vent onto the deck. Not much was spilled and I pumped some back into the starboard tank. This morning there is a layer of fuel in the bilge and along the forward stringer well. The aft well appears dry. So, definitely a leak associated with the day tank. Note that no fuel had leaked during the 10.5 hours of motoring (or at least if it had, the diesel fuel had not made its way to the stringer well). The day tank has a fill hose, vent hose, return hose, engine draw, and transfer draw. So it could either be a leaky tank or a hose problem; most likely in the fill hose, transfer draw or return line.

We also attempted to use the Hydrovane. We put up the vane and found it has a possibility of getting fouled on the cellular antenna. Also, the control line was very hard to use and ended up breaking at the weld (I had attempted to melt and weld two ends of a 5mm nylon woven line to make a continuous loop).

Added 250ml of water to the cooling system. **Tuesday, 28 October 2014, 06:07 AEST**

Kathy fixed the awning: she sewed in D-rings for stability mid-point (used when rain curtains are off) and together we installed webbing straps with snaps to relieve the load on the zippers where the awning attaches to the dodger.

I installed a waterproof high-power USB panel-mount charging socket (Poly-Planar USB-PM) in the right cockpit coaming. Somewhere on the boat is a second Poly-Planar and a hole is pre-drilled for it on the port side of the cockpit. There was enough wire to reach to Fuse Block 1 on the main panel. It is fused with a 5A ATO. The Blue Sea USB charger socket was moved to a new installation in the aft cabin starboard next to the bunk. Another Blue Sea USB charger socket was installed along with a cigar lighter socket in the nav station.



Running Watermaker. It takes 2 pumps to reach 603 with pressure at 90 PSI.

Thursday, 30 October 2014, 15:58 AEST

The investigation of the intermittent (possibly permanent) failure of the GSD20 to display sonar data has begun. Brushing the sea slime off the transducer. No joy. Checking status light (blink code) on the Garmin GSD20. Code: **Green blinking, on for 1 second, off for 1/2 second (slow blink)**. Status: GSD 20 is connected to one display device and is operating properly. User should see sonar data on the

display unit. But we don't. Checked connectors on GSD20. They seem fine. It now seems likely that the problem is with the transducer.

Kathy sanded the PSS seal once again. As before, a test run showed improvement.

Thursday, 06 November 2014, 11:04 AEST

Wash-down Pump I had a look at the "12V" motor for the Paragon Senior wash-down pump. It was rated at 90VDC and I thought it was a 12vdc motor. Drat. It is probably burned out but I can take it to the following place for evaluation once in Sydney:

Electric Motor Rewind Service <http://www.electricmotorrewinds.net.au/> Unit 2, 6 Cullen Place, Smithfield, N.S.W. 2164 Phone (02) 9756 6010

Otherwise I can replace it with: Another DC motor ¾ HP AC motor (220v probably) Replace entire pump with new washdown system, either high pressure (160psi) or low pressure (70 psi) system. Generic systems available for \$85 to \$107. Brand names up to \$399.

Depth Sounder

To fix the non-working depth sounder (it was intermittent, then permanently unavailable) I wired and installed the Airmar B744VL-INS-JB Speed & Water Temperature Insert that is a replacement for the SWT and STW sensor/paddlewheel that fits into the B744VL Triducer. This restored the SWT/STW functions and also the depth started working. Unfortunately the sounder is still disappearing intermittently, but mostly it works. This morning it gave a hugely erroneous reading (250m in 25m of water). I don't know what this means but will call someone and discuss it.

***Discussion with Gemco re. Airmar:** A depth transducer has a lifetime in years to 1-5 years. To test use a depth-only transducer which gives accurate readings if held over the boat. Depth only P79-6G (six pin plug to match Garmin) is \$120.00. To set up an account info@gemeco.com send business letterhead and resale certs.*

Friday, 07 November 2014, 16:59 AEST

Approximately 60m (out of 130m) of chain was laid on the visitor's dock at Maclean, NSW to untwist the accumulation of many months on the hook in shallow water. The twisted chain was coming aboard and torqueing its way out of the gypsy slots. It was actually quite a lot of twist. Although I never have thought I needed an anchor swivel, in shallow water this might not be the best idea. Also, strangely, the 50 and 60 colored wire ties that mark the chain had simply disappeared!

New and replacement colored marks were added to the chain

Monday, 10 November 2014, 14:13 AEST

Today we re-glued (3M 5200) the rubber rudder stop back on to its base. The rudder sensor arm was loose because the set screw stripped. I re-threaded the arm with ¼-20 which has fixed it for now. We will need to re-calibrate the autopilot.

Tuesday, 11 November 2014, 10:44 AEST

I found the problem with the generator wiring. A small wire that energizes the Preheat Relay had been caught under a grounding terminal block and pinched so it was grounded. When running the Glow Plug switch it shorted out and threw the 5A breaker.

While doing this I realized the way to energize the Fuel Solenoid Pull Coil was with the starter circuit. The original design was to energize the Fuel Solenoid with the preheat relay and a time-delay relay to shut down the Pull Coil after ½ second. I eliminated the time-delay relay and energized the Pull Coil from the starter switch. This will keep the Pull Coil from overheating as it only takes a few seconds to

start the engine. Pull Coil overheating is only a problem if the engine is over-cranked.

Thursday, 13 November 2014, 05:01 AEST

There is still a leak in the coolant system. This time it was the single-clamped connector hose between the water pump and the brass tube which has to accommodate a 2" to 1½" reduction in size. I either need TWO reducing inserts from NAPA or find the blue silicone reducer hose which I ordered from China.

Tightening up the hose clamp stopped the leak, but it is still a kludgy arrangement. Perhaps the entire connection needs re-thinking.

Friday, 14 November 2014, 06:11 AEST

Glitches Occurring on Overnight trip from Yamba to Pt Macquarie:

- Could not use Autopilot on NAV because no data was available. (Fixed by laying on of hands)
- Kubota Diesel Genset ran for 1 hr without problems. On next start-up attempting to adjust the throttle caused a short circuit on INCR and throttle arm over-run on DECR.
- Oven door handle is loose and comes apart when pulled. Could use stainless grab rail 450mm from Whitworths or perhaps a standard towel rack or grab rail from Bunnings?
- I was reminded that the fiddle over the aft closet creaks underway.

Sunday, 16 November 2014, 15:44 AEST Port Macquarie, NSW

Finished splicing the control line for the Hydrovane so there is an endless line. I did this with a 12-braid 5mm line that had two core strands. The splicing method is a cover bury: Set the lines together at the splicing point. Then move the lines apart 8 traces to allow for shrink. Pull out a strand on each line to mark this point. This is the "bury to" length. Measure back 10 tracers on each line from the "bury to" trace. Mark this point (point A) as the entry point. About a meter back tie a butterfly loop on each line. On both lines, pull out the 2-strand core a distance equal to 30 traces and cut it off. Milk it back into the core. Taper the other line by removing 6 strands. Put the D-splicer wand into the remaining cover about 28traces back and bring it out at the "bury to" mark. Ravel the end and tuck it through the splicing wand. Milk the line and pull on the splicing wand until the ravelled end emerges. Adjust the entry point. Smooth out the cover until the buried cover disappears. Pin or stitch the crossover. Repeat procedure with the other line so there is a crossover at the "bury to" points. Lock-stitch everything. Have a beer.

I whipped a marker onto the #1 reef line and lock-stitched the core where it had come loose from the end.

Wednesday, 19 November 2014, 13:22 AEST

Outlook 2010 has a datafile (Outlook.pst) that has exceeded its allowed size limit. This is because it is an OLD STYLE non-UNICODE style file. I was able to modify the registry to allow larger sizes and at the same time deleted enough items to make things work again. Scanpst.exe just crashed. I am buying a piece of software called UPSTART to help clean, fix, and convert Outlook files.

Thursday, 20 November 2014, 16:24 AEST

I ordered parts from Amazon and Gemeco. Set up wholesale account with Gemeco. Purchased P79-6G transducer and O-rings. From Amazon I ordered serial port to USB device and boxer fans. All sent to UPS store.

Today was a great sail, after the wind came up, from Newcastle to Dangar Island. The afternoon saw us flying the spinnaker at about 160° on port tack and then as we came up into Broken Bay we were sailing with the wind just aft of the starboard beam making 8 to 9 knots.

The glitches for the trip:

- Octopus failed to drive the rudder. We attempted a bleed at sea and that lasted for a few hours. The hydraulics are either leaking or not able to be properly bled. FIXED, WE HOPE.
- The port VHF handheld charging base is not powered up.
- vYacht Wi-Fi is still not functioning. NOT USING PROPER IP NUMBER. HOPEFULLY ONLY A CONFIG ISSUE.
- NAV data USB now creates BSOD even when inserted after everything is booted and powered up. A replacement 4-port serial converter has been ordered.

Hydrovane is easily over-powered. Either it isn't working right (not enough rudder angle) or the boat isn't properly balanced.

Friday, 21 November 2014, 14:18 AEST

The bolts holding the Octopus motor together, two 3/8" very long machine screws, had worked their way loose so the motor was barely attached to the pump. It was straightforward to re-fasten the screws but difficult, as they are long and the target threaded socket was hard to find. I saw a lot of aluminium filings around the pump base and the attached oily hoses. My fear is the loose pump drive has chewed up a bit of the pump housing. It works, so from the "it ain't broke so don't fix it" philosophy I should leave it alone; on the other hand, there could be aluminium shavings inside the pump. I am reluctant to undertake the messy job of removing the pump (although it does have fluid shutoff valves) and motor and inspecting inside.

This has happened before, to the previous motor, in 2011. The current motor and pump was new and installed on 22 April 2012.

(Dec 3) Dave Shannon confirmed by phone to leave the motor alone. What I was seeing was probably NOT from the pump, but from the aluminized sound proofing draped over the motor. The pump has been working fine .

Saturday, 22 November 2014, 14:29 AES

I have been looking into anchor swivels and what I read keeps reaffirming my belief that they are not a good idea. There are lots of stories of lost and nearly-lost anchors from failed swivels (see photo). When you re-set the anchor (or the anchor gets stuck) the pull on the swivel "ears" puts a big sideways stress on the swivel, prying apart the connector ears. Since most of them are stainless steel they work-harden and bend or break. 316 work-hardens more than 304.

However, if you left 3-4 links of chain (or two bow shackles and a link or two) between the swivel and the anchor (like the photo at right) then the pull on the swivel would always be in-line and that bending force would not apply.

This is still not necessarily the best attachment to the anchor. Two forged (not cast) bow shackles are the best as they can handle loads from different directions.

Another attachment possibility is to use a rigging toggle, as illustrated below. Having thought about this, I would never do it. Consider the possibility of shearing the cotter pin if the anchor was dropped on a rock; or that the toggle was not designed for side loads and could spread, also shearing the cotter pin.



Friday, 05 December 2014, 06:02 AEST

A new glitch during our 1-hour trip from Brooklyn NSW to Jerusalem Bay. Pressure water is not holding pressure. We drained the tanks because of a sticky valve on the forward head. Could this be related? It seems likely. Possibly the pump has dirt in the diaphragm. The usual pump-and-circuit isolation drill should find the problem.

Tuesday, 09 December 2014, 08:16 AEST

On Sunday we had one of the best pizzas we ever made.

Wednesday, 10 December 2014, 06:51 AEST

Called in to Tilley hats to order replacement. Tilley Endurables LTM6 Airflo Hat 7¼ Navy Blue

Wednesday, 10 December 2014, 11:29 AEST

Fixing sticky forward Vacuflush.

Best Disassembly Method:

- Flush with fresh water and turn off water supply.
- Remove china toilet bowl.
- Remove vacuum breaker from the UniSeal at the back of the china toilet.
- Remove the four 1/4" nuts holding down the black plastic base.
- Remove the pedal. R
- Remove the Valve Assembly (Two hex head machine screws)
- Unscrew the ball from the shaft.
- Remove the shaft. Rotate the ball 180° and remove it.
- Remove the spring cartridge (one screw).

General clean-up and polishing of ball. The lever sticks in both the up and down position. We improved the down (flush) position somewhat but we still have the sticky up (water in) position. The curved portion of #12 pressed on the mushroom cap of #10. There is supposed to be enough freedom for the mushroom to return the valve to the neutral position, but it does not do that and stays in the water flow only position. It could be caused by any of the components. The Cartridge, Ball, and Shaft were replaced on April 19 of this year.

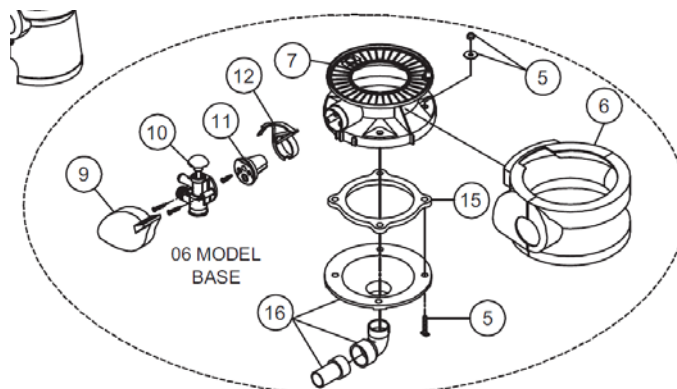
I talked with Tucker from Marine Sanitation and he agrees it HAS to be in the valve, cartridge or lever. I have ordered all three and some extra flanges. If the cartridge proves defective I'll return it for credit.

#10 = water valve kit 385314349

#11 = spring cartridge kit 385236096

#12 = lever lot 385310579

#15 = floor flange 385310063 (3)

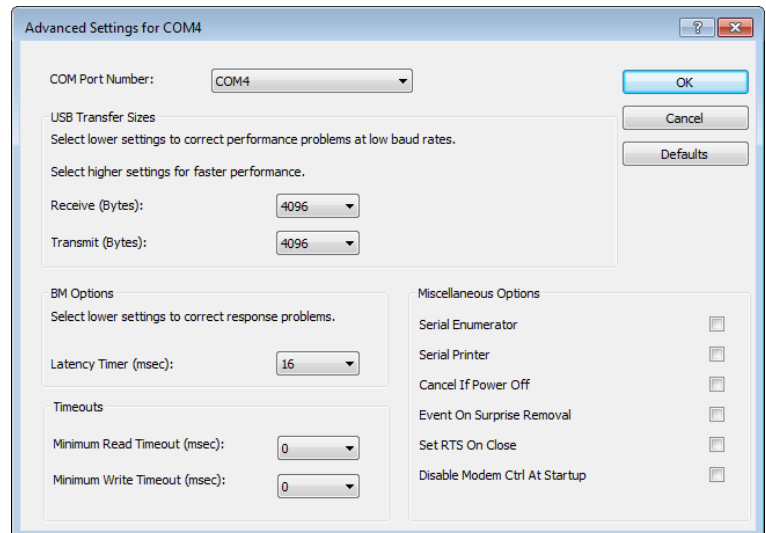


Monday, 15 December 2014, 12:04 AEST

Today I replaced the old serial port combiner with a new Startech device described as an “Industrial” 4 Serial Ports to USB with “COM RETENTION”. The installation went well and ports were assigned: COM4 to COM8. The serial mouse problem returned. I tried the registry tweak [HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\services\sermouse] "Start"=dword:00000004 This did not work. Then Dr. Google supplied the information that there is a setting on the Serial Ports properties in Device Manager. Find the COM Port, then set: Properties->Port Settings->Advanced. On this dialog box Serial Enumerator should be unchecked. Port settings are as follows:

USB to 4-Port Serial Converter					
Normal Configuration					
#	IN	OUT	BAUD RATE	NAV SOFTWARE LISTENER	TALKER
4*	NDC-3A	NDC-3A	38400	O	X
5	MFD Pt 1	MFD Pt 1	9600	GARMIN	GARMIN
6*	NSW-1A	NSW-1A	38400	O	O
7	GPS NSW	A/P	4800	O	X

* Can be used for configuration



Monday, 15 December 2014, 16:51 AEST

The non-working 40mm refrigerator Box Fan was replaced with a newer, more powerful 40mm fan.

Tuesday, 16 December 2014, 12:44 AEST

Today I experimented with the Airmar P79 In-Hull 600 W Adjustable transducer sent from Gemeco. The adaptor cables allowed this to be plug-compatible with the Garmin GSD20. This transducer has worked fine over a period of time (about 30 minutes), indicating to me that the intermittent depth readings we have been seeing are caused by a failing transducer in the B744VL unit. So, where we stand now is that all functionality of the B744VL has died.

Recommendation of Larry Chewing at Airmar is to replace the B744VL. The P79 is only designed for a hull thickness of 12mm so it might not be worth installing it, except to get us to Tasmania.

Wednesday, 17 December 2014, 16:23 AEST

New Halyards are in order for the Main and Genoa. We are now using Samson MLX 3/8" (9mm) blue line which requires a Double Braid Class II splice. It is smaller and stronger than the XLS Extra-T we were previously using. It also splices very nicely with a Yale-style eye-splice (cf. Brion Toss Splicing Book 5). The line clutches have already been re-sized to a 0610 (6mm to 10mm) cam size to accommodate the smaller diameters. Even with new line clutch cams the cost is less and the strength is greater than buying new 7/16" line and, hopefully, it will be less subject to chafe.

Class II

APPLICATIONS: Halyards | Mainsheets | Spinnaker Sheets | Jib/Genoa Sheets | Control Lines

Designed for the club racer, but also suitable for the performance-oriented cruiser, MLX is a new double braid construction that incorporates a first-of-its-kind core with a polyester cover.

The unique core is a blend of a new and exclusive fiber, Innegra[®]S, a high modulus polypropylene (HMPP), and Dyneema[®], a high modulus polyethylene (HMPE). Innegra[®]S is available to the rope industry only through Samson, and provides a bridge between the performance characteristics and price tags of traditional synthetic fibers, such as nylon and polyester, and high-performance synthetic fibers such as Technora[®], Dyneema[®], and Vectran[®].

MLX is a lightweight core-dependent line that has excellent strength and low stretch. The core is Samthane coated to match the color of the cover, making the line strippable for greater weight savings.

SPECIFICATIONS

Size Diameter INCHES	Size Diameter MILLIMETER	Strength Average POUNDS	Weight Per 100 ft. POUNDS
1/4 in.	6 mm	3,800 lb	1.6 lb
5/16 in.	8 mm	4,500 lb	3.0 lb
3/8 in.	9 mm	7,200 lb	3.8 lb
7/16 in.	11 mm	9,500 lb	5.8 lb
1/2 in.	12 mm	15,000 lb	8.2 lb

ELASTIC ELONGATION

10%	20%	30%
0.7%	1.1%	1.4%

After 50 cycles at % of break strength.

FEATURES

- > Core-dependent double braid
- > Dyneema[®]-Innegra[®]S blend core
- > Samthane-coated core that matches the cover
- > Can be tapered
- > Polyester cover
- > High strength
- > Low stretch
- > Lightweight

CONSTRUCTION

Core-dependent double braid

COVER

24-strand solution-dyed polyester

CORE:

Dyneema[®]-Innegra[®]S blend

SPUNCE/CLASS

Double Braid Class II

SPECIFIC GRAVITY 1.15



Sunday, 21 December 2014, 12:25 AEST

New halyards went up. Main halyard has large snap shackle; Genoa halyard has Wichard halyard shackle with thimble. I did discover a serious chafe on the old halyard 8m from the shackle which suggests it occurred while the main was double-reefed. It was sharply delineated (i.e. occurred at a single point on the line) and the core had 2 strands cut through. The cover was neatly cut half way around. We will have to watch the new line for chafing and inspect at that particular point. It is possible that this chafe was caused running downwind in heavy weather with the headboard right over, possible causing the halyard to rub on an exit flange at the masthead. Old genoa halyard recycled to spare spinnaker halyard (stbd). Halyard exits relocated with magnet & nut technique so main is directly above the line clutch, spare main is the high aft-most exit, and the remaining exit is available for a spare forward halyard if desired. Tightened all lifelines and repaired the ring that keeps the furling line clear of the bow cleat. Replaced Second Reef Line with Validator II 3/8" green w/grey tracer. Fixed broken Anchor Buddy. The rubber had slipped out of its hog ring. We tried folding over the rubber and hog-ringing that and then ran some dyneema core line through it and hog ringed that on the outside of the black poly cover line.

Sunday, 21 December 2014, 12:37 AEST

Up the mast: Haul up main and inspect the lay of the shackle and halyard against the mast. Replace halyard restrainer with new bushing. New flag halyard on backstay.

Saturday, 03 January 2015, 14:48 AEST Twofold Bay, NSW

Sydney Fireworks on 1 Jan. Left for Jervis Bay at 0045 and just arrived in Eden, NSW where we anchored under sail in thick fog and very light winds when the engine refused to run on entering Twofold Bay.

Trip Glitches including subsequent problem on the way to Hobart: (★ means urgent priority).

- AIS appeared to drop out but is now back. We had AIS appear to drop off the Chartplotter. Ships which were there were suddenly not there. Coming into Eden, it was working again! I did have COM4 and COM6 inputs switched around so there was no AIS available on COM4, which should be the aggregated data stream from the Actisense NDC-3A data combiner. Proper configuration is at right. Reassignment of the COM ports was done with Device Manager and all data is now where it is supposed to be.
- VHF Radio is not receiving but seems to transmit OK. Possibly this is cause of AIS reception failure as well. I consulted with Shea Weston and suggested the antenna splitter may be the cause. This is easily tested by connecting VHF directly to the antenna. Maybe two antennas is a good idea when upgrading the AIS system.
- SSB Radio does not seem to perform well with the new antennas. This also needs investigation. The antenna wire needs more wire ties and/or protection from accidental abuse.
- ★ Engine non-start discussed above. The engine dies immediately upon start-up and then can't be started. Must be in the control circuit because there is no alarm upon enabling the ignition. "The brooms are dancing!" I lubricated a sticking fuel shutoff valve; tested the oil pressure switch; re-seated all the relays. The likely cause of the problem was the fuel shutoff, but I can't explain why the alarm circuit was not coming on with the START switch was enabled. (7 Jan. – Engine died shortly after starting. Control circuit dead (no alarm). Pulled the AUTO-SHUTDOWN relay and then engine would start. Lack of power to control circuit put the relay in a default state where once oil pressure raised, the engine shut down)
- ★ Definitely time for a main engine control panel rebuild.
- ★ Port nav light has wiring issue and won't light up. It turns out it WAS a bad bulb. Inspecting the Stbd nav light the bulb went bad (shouldn't have removed it under power) so both P & S Nav Light Bulbs have been replaced. This exhausts are supply of bulbs. One of the replacement bulbs was a used one and I had to sand down the contacts to make it work.
- Ongoing fresh water pressure loss. Leaving the bilge pump off showed a fair amount of water accumulating in the bilge with a very slight amount of oil on top. A taste test verifies it as fresh water so it's back to the isolate and conquer water system analysis.
- ★ Mast is out of column. Lowers (or uppers) probably need tightening. I will have to tune up the rig before going out again. I need to check the mast column, if out of true tune the uppers, and then tune the lowers. Mast was out of column approx. 25mm to stbd. I loosened the starboard uppers and tightened the port uppers. All lowers had proper tension. Today, under sail with noticeable heel, there is a very slight lean to stbd from the top spreader to the masthead. We are running with all 3 sails and running backstay so I think this is acceptable.
- Pumped up the day tank to full and then noticed diesel was entering the bilge area behind the port stringer. Bad hose? Bad splash stop? I should be able to find this as all connections are on top.
- Bilge Pump Cycle Counter is adding 10+ counts per cycle.
- ★ Bilge pump is seriously leaking water back into the boat and needs to be repaired. 8th Jan 2015. The problem was a split diaphragm. The base of the pump is plastic and the rubber feet and their mounting holes were all broken/cracked. This is not a listed part for the Jabsco 50880-10000 pump. I am using parts from the shower sump pump until I can get new parts. 15/01/15 Depco Pump found a spare base and is sending it to us! Bilge pump re-installed. Awaiting parts for the Shower Sump Pump
- Possible oil cap leak on main engine. Main engine using too much oil.
- We have lost the barrel nut which holds the batten in the mainsail. This is the lowest batten. We have removed the batten until we can fix it. We need to inspect the leech and all battens.
- We also need to replace a lost pin in one of the batt-slides. Remove a barrel-nut and screw from another batten as an example of what to get from the hardware store.
- The spinnaker needs: wire rope top pennant replaced with Dyneema tack rope replaced with new line using eye-splice and cow-hitch. Some wear noticed along one of the edges. The whole sail needs inspection and minor repair.

USB to 4-Port Serial Converter Normal Configuration					
#	IN	OUT	BAUD RATE	NAV SOFTWARE LISTENER TALKER	
4*	NDC-3A	NDC-3A	38400	O	X
5	MFD Pt 1	MFD Pt 1	9600	GARMIN	GARMIN
6*	NSW-1A	NSW-1A	38400	O	O
7	GPS NSW	A/P	4800	O	X
* Can be used for configuration					

- #1 Fresh water pump is not working. I can hear the motor hum but the no pumping is taking place. 19 Jan 2014 – the pump is working again. Water tanks ran dry and now both pumps are building pressure as they are supposed to.
- Small alternator (port) seems to be excessively wobbling and we need to check the mounts. This was found to be caused by a loose mounting bolt.
- There is a small oil leak in the forward of the two bypass filters. This was tightened by hand (we don't have a large enough filter wrench) and will bear watching.
- The staysail deck fitting is leaking! This needs to be removed and re-bedded and hopefully has not entered the deck. I can't remember if "fill and drill" was the policy at the time it was installed.
- Cam cleats for spinnaker pole control line need servicing (probably should also service the traveller lines).

Accomplishments: Made big progress sorting out the NMEA php library and creating a daemon to condense, truncate, and distill the data from NMEA logging. The daemon is a batch file that runs every 5 minutes using the Windows scheduler. VSPE and PUTTY handle the logging.

Monday, 05 January 2015, 16:54 AEST

En route to Tasmania from Eden. Ran spinnaker. Spinnaker needs three tasks done: Replace wire pennant on top of sail with dyneema. Fix broken cover threads on one of the sheets. Replace tack line with a proper HM line.

Wednesday, 14 January 2015, 07:30 AEST

Discussion with PT Sails regarding Genoa Sacrificial Cover:

They do NOT use bias-cut cloth on the cover – they just roll it out with the selvage edge. They DO NOT use tape or adhesive in stitching it down. This makes it easy to remove.

Wednesday, 14 January 2015, 09:22 AEST

Talked with Doug Miller at Milltech Marine re. AIS and SART. He suggested an alternative which is VHF handheld with GPS enabled and DSC. This has advantage of MOB being able to talk with their boat or to contact other ships and give a precise position. DSC allows waking up the onboard crew. It lacks the advantage of the automatic positioning. I wonder if there is a possibility of intercepting the signal and injecting it into the NMEA system.

Thursday, 15 January 2015, 12:45 AEST

Blew out the galley sink drains with pressure water.

We sold the Carisma S1 Espresso machine for \$1195 so that we are turning it into an AIS transponder.

Monday, 19 January 2015, 10:01 AEST

Sent out for parts for the Krups Espresso Machine Mfg Warranty 2 years

Quality Equipment 53 Federal St N. Hobart 6234 8300

MS622269 Steam Pipe \$15 MS623107 Knob \$15

Thursday, 21 January 2015 Tasmania, RYCT

Today we had a series of problems. First, a bad switch in the engine start panel in the cockpit was not providing 12v power to the circuit. I was able to start the engine by pulling the Auto-stop relay and shorting out the solenoid connectors. This started the engine. We motored to the fuel dock and remarked on the funny sounds coming from the starboard cockpit drain. It turns out this was the sound

of boiling coolant. After fuelling we found that the shaft had broken on the raw water pump and the flailing V-belt had taken out 2 other belts. The only belt left running was one of the two belts connected to the high-output alternator. This is a chain of events similar to what brought on the TMI nuclear power plant disaster. The alarms are there for a reason and I basically bypassed them to get the engine going. What odd luck that the RWP broke at exactly the time I disabled the alarm circuits. On the other hand, what remarkable luck it happened while I was at the fuel dock and had not run the engine long enough to burn it up.

Thursday, 25 June 2015, 10:18 AEST: We were wrong about the proximal cause of the accident. The hose and squeeze bulb assembly used to pump water and dirt out of the fuel tank was stored down in the space between the port stringer and the wall and it was chewed up and destroyed. It is clear that the hose had gotten caught in the belt to the water pump, causing the pump shaft to break and then the rest of the belts.

So the next thing to do is install the backup RWP. I put in a new impeller and gasket. It turns out this pump needed new seals. I discovered this by installing the pump, watching the water leak out of it, and then pulling it out again. I covered one of the bronze tubes and blew into the other. I should have had no air leaking out, but there it was – bad seals. It turns out the pump that had the broken shaft also had bad seals and must have been dripping for a while.

This could have been a problem. With one pump totally broken and the other not working either, what would happen if the second pump could not be fixed? The Jabsco 18500 pumps are completely unavailable. Occasionally a used one turns up on eBay, but I already have a used one. The Sherwood H5 might be able to be made to work. The best idea is to keep these pumps working.

I had, fortunately, exactly one set of seals left. The bosun at the RYCT offered to help install them and I was happy to have his help. I hate installing seals (bearings are even worse). Once the new seals were in place I re-installed the RWP again. It turns out the “new” gasket was not working and it was dripping, although it pumped fine. We saw lots of water gushing out the exhaust pipe. So once again I pulled off the RWP, found a new gasket, coated it with a thin film of Form-A-Gasket on both sides, and put it all together again. It passed the breath test and also has run fine with no leaks. We are in business again. I have ordered 2 new replacement seal sets. I will also find a machinist to make or fix the shaft on the backup pump.

Friday, 23 January 2015, 14:20 AEST

Yesterday we emptied 3 of the 4 line reels as we are trying to get rid of them. The Amsteel and Regatta braid lines have been coiled for stowage. There was only 40m of 3/4” three-strand and we cut these into 11m lengths for dock lines. This revealed a forgotten parachute drogue which we had. As the Jordan Series Drogue is completed we should not need this and will mark it For Sale. This leaves only the JSD left on its reel and we are trying to figure out the best stowage/deployment strategy for that.

Saturday, 24 January 2015, 14:25 AEST

Today I started work to wire up the Vesper XB8000 AIS system. I think it will not be possible unless I either reconfigure the NSW Auto Switch as a combiner, or install the onboard AIS antenna sent with the Vesper

In considering the antenna, we can solve several problems by doing the following:

- Remove the cellular antennas from its current location on the port side lighting stanchion and lower the tube so the wind vane for the Hydrovane will not hit it when leaned over.
- Re-locate the Cellular antenna to the starboard transom on an additional stainless tube mounted like the existing tube. The top of the tube would have an 90° round (or square) base mounted upside down with the tube projecting through long enough for a top-mounted antenna (for WiFi).



- Screw a rectangular piece of plastic or stainless or wood to mount two GPS antennas to either side.

The Vesper is configured and working. MMSI is programmed in and can only be changed by the dealer now.

OpenCPN can see AIS targets if the Vesper WiFi is connected. The Vesper can only send AIS to the data port if 38000 baud is selected. Thus, we need a NDC-4A if we are to be able to feed the GMI-10 on an NMEA0183 network.

Vesper Marine

Com Port: IP Address: 192.168.15.1 Port: 39150

Model: XB8000 Application: 2.02.8779
Serial Number: KW75165 AIS Version: 5.10.8745

Configure Vessel Data

MMSI: 366755340

Name: BEATRIX

Call Sign: WCY6692

Type: Sailing (primary propulsion is sail)

Units: ☒ Metres ☐ Feet *

* Data is always stored in whole metres. Therefore not all dimensions in feet can be represented.

A: 14 B: 0 C: 2 D: 2

2.04.8880

Wednesday, 28 January 2015, 16:09 AEST

Today we looked at the Fresh Water Pressure System again. The pump (or pumps) have been cycling again. Pressure testing with isolating the feed lines showed that if there is any problem it is in the pumps, not the lines leading out from the FW manifold. By isolating input and output lines on both pumps it appeared that one pump was not holding pressure. #2 pump, when the feed valve was opened, would lose pressure as if the diaphragm were leaking or had something stuck in it. Then #1 pump showed similar behaviour. Then both pumps worked fine and held pressure for some time! I cleaned out the intake filter which had some grunge and a circular piece of plastic in it. I never had this problem with the Flojet pumps, which I much prefer to these Shurflo pumps. I already had one Shurflo in for warranty and replaced and now that one as a spare – so we have 2 active pumps in service and one in reserve. We have plenty of water pumps. Anyway there is nothing to do at the moment

Sunday, 01 February 2015, 06:06 AEST

The raw water wash-down pump was removed and 12V motor taken off. The brushes checked out OK but the pump refuses to run. It is a simple permanent magnet motor. I don't know how to fix it. A new

motor in USA costs about \$220 delivered. This is about the same as buying a new pump, although it won't have the same flow rating as the GROCO pump.

This idea sounds interesting:

*I can't speak to the need in the South Pacific. I do have a "solution" to the fender board problem that works for us. For context I have a center cockpit boat with a good sized aft deck ("the dance floor"). I have two 2 x 6 oak boards cut to length so they are long enough to span the opening in the pushpit that provides access to the stern ladder and short enough so they'll fit across the cockpit seats. I made wood brackets for attachment to the pushpit. Storage underway is across the transom gate where they provide a lashing point for diesel, gasoline, and fresh water jugs. At anchor one is alongside with fenders behind to provide a step and lashing point for dinghies coming to visit. In marinas they are fender boards. When needed they go across the cockpit seats with a piece of 3/4" plywood (which also has multiple functions *grin*) clamped over to function as a workbench. I've also used the boards across borrowed saw horses, and picnic table benches to hold a dinghy up for bottom cleaning and between picnic tables for servicing outboard engines.*

Monday, 02 February 2015, 06:05 AEST

We called Doyle Sails and spoke to Elson who agreed to slot is in for a March 2nd to March 7th to replace the Genoa sacrificial cover. This will mean the job will be done prior to our departure.

MONDAY FEB 2 POW MARINA

- PUMP FIX – to APCO STANCHION FIX REINFORCE THE STANCHION BASE
- Call sailmaker re. New Cover for Genoa. If yes: Pick off the cover
- Measure up Sunbrella
- Need refrigerator
- Water Barrel
- Dinghy on Deck
- Work on water pumps as time allows.
- Diesel Heater fuel not drawing.
- Washdown: Clean dinghy and deck

TUESDAY FEB 3 HAULOUT 10:00 RYCT

- Replace Transducer
- Replace PSS Shaft Seal
- See if coat of paint needed – now or after return from USA
- The usual check all through-hulls transducer
- Grease prop
- Untwist chain and add swivel
- Paint anchor?

MONDAY FEB 9 SPLASH

Monday, 02 February 2015, 07:08 AEST

Starting to think about future requirements for offshore cruising:

New MFD and autopilot Garmin MFD Garmin Autopilot Iridium GO Sell old satphone

Tuesday, 03 February 2015, 08:03 AEST

Kathy noted water ingress in Aft Punk Port Locker 3. It appears to be coming from the through-deck for the port solar panels.

Also purchased new Jabsco "Hotshot" 6.0 gpm/70 psi deck washdown pump and kit (includes hose, strainer, and nozzle). Model 82605-0092. Purchased from Whitworth's in Hobart.

Hempel: \$189. Gary at Marineline Paint 03 6224 6448.

Tuesday, 03 February 2015, 11:01 AEST

We hauled out at RYCT. 1½ painful hours of pressure washing. Sore arms and hands. Hooked up refrigeration, set ladders, retrieved items from lazarette and basically prepped for tomorrow's tasks.

HAULOUT TASKS

Product	Brand	Name and Code	Quantity	Cost
Sigmacover 280	PPG		4L pack	
Self-Polishing Anti-Fouling	Hempel	Olympic 86901Blue	5L	\$189.50
Thinner	Hempel	808	1L	\$29.00
Water-based Anti-Fouling		for transducers	100ml	In stock

- Replace Transducer
- Remove old Install new – used old fairing block as it was in perfect condition. Insert plug
- Replace Shaft Seal
- Remove Replace
- Installed new R&D coupling. Need two bolts for shaft flange clamp.
- Paint As needed on hull, propeller, etc.
- Prime with SigmaCoat 280
- Olympic 86901anti-foul 1-2 coats on leading edges, keel bottom, propeller.
- Transducer Paint
- Water Blast and add a coat after return from USA
- The usual Check through-hulls – 1 day.
- LEAVE THIS FOR NEXT HAULOUT ~~Clean, paint, grease, and re-install prop.~~
- Remove MaxProp for repair and install fixed blade prop.
- Zinc replacement. shaft collar zinc. small teardrops. These will be left until the next haulout in 3 months —
- Untwist chain and add galvanized & rated swivel.
- Fix coolant tap and replace coolant in engine.
- Close door on scoop strainers.
- Move Manual Bilge to above waterline with siphon break or vent or one-way valve
- Wiring: Transducer NSW-4-A Install new wash-down pump.

Wednesday, 04 February 2015, 15:22 AEST

With kind help of David aboard Lucinda we have installed a new B744VC-6G 50/200KHZ Bronze TH Long Stem Tri full transducer from Larry Chewning at Gemeco. Cost \$255.30.

The first thing done was to remove all old wiring, shower pump, and waterproof junction box (which had seawater inside, LOL). This cleared the way for removing the old and installing the new.

Methodology

- Removal
 - Remove retaining nut from transducer and nut from anti-rotation bolt. Carefully tap a sharp small paint scraper around the fairing block to separate it from the hull. Use thin end of prybar as a wedge to carefully widen the gap as you continue tapping. Be patient.
 - Remove upper wedges. Twist and turn until the sealant breaks free.
 - Remove fairing block and old transducer. If necessary, hacksaw off the old transducer (it has very thick bronze so a reciprocating saw is in order) and push through to the inside of the hull.

- Installation
 - The old fairing may be useable.
 - Clean up wedge and fairing block and hull and hole.
 - Remove all traces of old sealant.
 - Cut the anti-rotation bolt to length. Push bolt through hull with fairing in place and mark with a Sharpie to get the correct length. Of course, place nut on bolt before sawing. Dress the cut face.
 - Using MEK or acetone, clean the area to be sealed. Do not get any solvent on the black plastic of the transducer face.
 - Dry fit all components.
 - Mask the face of the transducer and the plastic threads and wires prior to using sealant. Apply a coating of silicone grease on the bolt and transducer barrel to protect exposed area from sealant.
 - Use E6000, 3M4200 fast cure, or similar sealant. The sealant need not be very adhesive (in fact, it should not be) but it must be flexible and sea-water resistant.
 - Apply sealant around the edge of the lozenge-shaped bronze insert, nearest the bottom.
 - Apply sealant around the edge of the fairing.
 - Apply sealant in a large bead around the hole in the boat. Press transducer in place.
 - Inside the boat, add sealant in a bead around the transducer barrel and the anti-rotation bolt. Note that E6000 is “self-leveling” and will penetrate into any gaps between the hole and the boat.
 - Hand tighten the retaining nut and bolt nut.
 - Check the fit. If necessary, use a prop to hold the transducer/fairing in place until the sealant sets and then adjust or shim the interior fittings to get a perfect fit under the retaining bolt. Use thickened epoxy and grease the retaining nut to get a perfect fit on the interior wedge.
 - Fill boat with water and test for leaks. ☺

Thursday, 05 February 2015, 19:31 AEST

The PSS went in today. Disconnecting the shaft was a lot of hard work and blood in the bilge. I remembered that once the RFD coupling is removed you use a socket (<1¼” in diameter) to push the shaft out of the aft flange. It has a roll pin, a key, and clamps. The roll pin was cracked and the key was worn so both have been replaced. We took off the MaxProp entirely (except for the bronze boss) and worked the shaft out of the boat to where the PSS bellows and stainless collar could be slipped over the shaft end. Kathy and I polished up what we could. There are deep pits and scratches from the original PSS collar and I will try to avoid these when tightening the collar. I had forgotten that there are two O-rings inside the collar. I will find the old collar and slide it on as a backup to help keep the new collar from sliding up the shaft. It also will help me knock the new collar on past the scratched spot. I am concerned about the O-rings but have not much choice. I suppose I could file the scratches a bit, as they are not under the collar when it is fully installed. I am totally knackered and will finish this job tomorrow.

Saturday, 07 February 2015, 10:22 AEST

PSS Collar would not fit. I ended up having to filing some groove out and then sanding the shaft with decreasing grades of sandpaper. The collar is 1.28” and the shaft is 1.25”, supposedly. A caliper showed a couple of 1.29 high spots, so the sanding worked to just get enough clearance. Note the PSS collar has two O-ring inside. I shifted the bellows forward about 25mm to get the collar of the old location which was quite pitted. I also replaced the rubber wrap with new RigRap™ to cover the original threads in the shaft log. It took a lot of pressure on the new bellows to compress it the required 1” from the “neutral position”. I wonder if the old bellows wasn’t a bit soft, i.e. not putting as much pressure on the collar.

Kathy did wondrous work priming the scraped keel with SigmaCover 280.

Sunday, 08 February 2015, 11:34 AEST

We put on the 3-blade fixed prop (12" x 17" RH). I had to drill yet another hole in the nut and shaft. I can never get them to line up. Note the 3-arm gear puller does NOT work too well to pull off the max prop; the arms keep slipping off the prop. We lashed the arms together with a 1" webbing ratchet and that finally worked to keep it together while it pulled the prop off.

SigmaCover 280 was applied (by Kathy) to the spare prop and to any dings around the hull. Kathy also put Epifill and after four hours put another coat of SigmaCover on those areas. The SigmaCover 280 was stored overnight in the freezer and this kept it from curing. The brushes and stirring sticks, wrapped in Saran Wrap, also were useable after freezing.

Sunday, 08 February 2015, 18:56 AEST

We let out 40m of chain onto the ground to try to get some twist out of the chain. We could see that about 30m of chain has the galvanizing worn off and is noticeably thinner although I did not put the calipers on it. If we removed 30m of chain then we would have about 100m left, which is the "standard" size for cruising boats. I suggest we end-for-end the chain, see what is on the other end (which may be better than this end) and cut off no more than 30m. Then we should have a better response from the gypsy – less slippage and more grip.

Monday, 09 February 2015, 19:59 AEST

Last day of the Australian Wooden Boat Festival. Kathy applied bottom paint and I made an epoxy fillet to fill in the gap under the large bronze retaining nut on the depth sounder.

Tuesday, 10 February 2015, 17:04 AEST

New shaft collar zinc installed. Boat splashed with no leaks.

Wednesday, 11 February 2015, 13:26 AEST

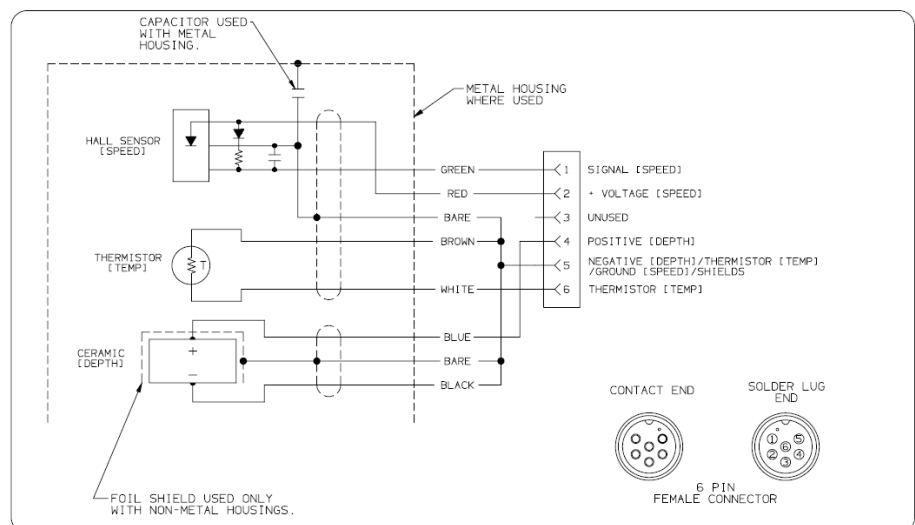
I tried today to put my month-to-month Vodafone contract on hold while we are in USA. I went through 3 layers of Vodafone Support to get to the "Team" that handles real problems. The solution was to change to a \$10/month plan with a \$10/credit for up to 4 months. Then I change back to a \$90/25GB plan when we return. Direct line for this issue is: +1300551198 Case #2-37633436012

Friday, 13 February 2015, 00:40 AEST

Something is wrong with the STW circuit on the new triducer. The display is 0.0kn. An email to lchewining@gemeco.com

"I apologize for the faulty speed sensor (if that is the case).

That should not occur in a brand new transducer. In any case, the best way to determine if the paddle wheel is faulty is to use a volt meter...



Connect the speed sensor to the speed display. Measure across red and shield (ground) on the sensor

wiring. This is the dc supply voltage from the display unit which must be between 5 V and 12 V. **MEASURED AT 8.44V (Ship volts at 13.3) (Mar 4)** Measure across green and shield (ground) on the sensor wiring and spin the . You should read a fluctuating voltage (square wave) between 0 VDC and your measured input supply voltage. **YES, FLUCTUATING VOLTAGE OBSERVED. (Mar 4)** Continue to measure across green and shield and slowly rotate the paddlewheel 1/4 revolution at a time. Each 1/4 turn should generate an on/off status as an output, i.e. 1/4 turn = 0 VDC, next 1/4 turn = supply voltage, next 1/4 turn = 0 VDC, etc. **NOT POSSIBLE IN WATER**

--If you fail to obtain a supply voltage from the display unit, there is a fault with the display. --If you fail to obtain an output signal, the paddlewheel sensor is faulty

I have attached a wiring diagram which will show the wires needed to be tested for speed (red and green).

Since the temperature is working fine there is no reason to replace the entire insert. The paddle wheel can easily be replaced with part # 33-113.”

Monday, 16 February 2015, 18:17 AEST

- Engine
 - Tightened all V-belts
 - Drained water out of Primary Filter
 - Checked secondary filter. It has dirt in it but no water.
- Fixed the sea berth back by installing stainless rail clamps to the backboard. It doesn't flop around now and should last longer and be easier to use. If the self-tapping screws pull out I will have to install T-nuts in the backboard and use #10-24 machine screws.
- New wash-down pump.
 - Jabsco 82906-0092 HotShot Washdown Kit
 - Voltage 12 (Vdc)
 - Cut-Out 70 (psi) 5 (bar)
 - Flow Rate 23lpm (6gpm)
 - Ports 3/4" (19mm)

The old Groco PSR pump was removed. The new pump will fit on the old base if an extender plate is added to move the pump mounts farther towards the side of the boat.

Kathy did a lot of bilge cleaning. It is full of mucky, yucky black, oily, wood bits. She also put all the plumbing into a red Milwaukee bag and removed spare parts from under the galley stove drawer as it can get wet in there when heeling.

Tuesday, 17 February 2015, 09:43 AEST

Troubleshooting the Wallas 40DT with Doug at Scan Marine

- Turn the knob off and on to make thermostat go off and manually engage the pump.
- Rapped the fuel pump with a wrench to try to get it to work.
- Next suggestion: Blow into the vent line to try to get it to pressurize the tank and have it push fuel up the line. The above revealed that the **Vetus Splash Stop has a crack in it!** Possibly that is also the problem with our other tank, too, as I had problems “pressurizing” it.
- Anyway, we used the fuel transfer pump to pump fuel past the top of the tank into the bottom of the Splash Stop reservoir. This raised the fuel level above the Wallas heater and fuel started leaking out of the hose-filter-hose connection.
- I removed the diesel filter and connected the fuel hose directly to the tank. This worked fine and the heater is functioning.

Wednesday, 18 February 2015, 12:40 AEST

The vent line on the aft holding tank is plugged. This was suspected because there we noted sewage being discharged on the hardstand when using the aft head. The plugged vent caused the tank to be pressurized while in use and forced sewage up the dip tube and over the side. **THE VENT HAS BEEN REPLACED**

The new wash-down pump has been tested and works fine.

Wednesday, 18 February 2015, 14:07 AEST

Vetus Splash Stop Repair: Obtain 2' (350mm) of A2 1.5" Should have plenty of 5/8" hose joiners in nylon for the vent lines Replace entire length of 1½" A2 hose on starboard side. Use removed piece of A2 to fill in gap when removing Splash Stop on port side. If necessary, we can replace later with Vetus [FS5116](#) (51mm cap, 18mm vent) Can then properly pressure test the unused old Port Tank.

Thursday, 19 February 2015, 08:26 AEST

Mike at Scanmar. If there is diesel the problem must be a glow plug. Pull the glow plug out of its hole and see if it gets cherry red. 12.3 volts is not enough voltage at the battery voltage.

Fuel is pumping out of the fuel line and I need to try tightening the compression fitting on top of the pump. Also inspect with magnifying glass.

The fuel line is broken. Three blind holes. Need to disassemble the bottom of the unit and thread the delivery end through three blind holes.

Thursday, 19 February 2015, 10:45 AEST

Today we shifted anchorage. Ran engine about 1 hour and noted same problem as yesterday – hot water is not circulating in the calorifier circuit. The header tank is not hot, but if you crack the tank cap it is definitely under pressure. Blair Fraser thinks it is a thermostat problem.

Friday, 20 February 2015, 09:35 AEST

Noted that OpenCPN was not uploading routes. It turns out the checkbox for "Use GRMN (Host) mode for uploads" was not checked. I also noted that there IS GPS data being transmitted using the RMC sentence (Recommended Minimum Specific GPS/TRANSIT data: TIME, POS, COG, SOG). Also, note that GPS is input on MFD Port 2, but I have never actually looked at what comes out of Port 2. It is reserved for proprietary communication with the GPS17, but it might also have other data.

Friday, 20 February 2015, 13:11 AEST

I had a consult with Mark McBride regarding the diesel engine. Problems could also occur in the calorifier line from an air bubble or other blockage. We need to check the calorifier line by looping directly to the engine and see if the line heats up, and seeing if there is water flow through the water heater. **THIS HAS APPARENTLY SELF-REPAIRED**. After 20 hours of running, the water tank is heating properly. It probably was, as Mark suggested, an airlock.

Mark recommends cutting the speed of the refrigeration compressor by 50%. This would make the cycles take longer but dramatically increases the efficiency of the compressor (as well as less wear and less amps). The question is to determine the change in cycles and cycle time as well as the amp draw at varying speeds.

Tuesday, 24 February 2015, 06:32 AEST

The 1st Reefing Line was not holding. I was able to "bulk" the line using 4mm Dyneema inserted into the core. I had no instructions on how to do this, but its standard stuff:

- Tie a stopper knot about 2m up the line from where it needs bulking.
- Pull core out at the end of the line to loosen up the cover.
- Tie an overhand knot in the core end to stop it from accidentally being sucked into the core.
- Pick out a loop of core. Balance the line and make a mark where the core loop exits the cover (farthest away from the end).
- Pull out a lot of core, enough to allow insertion of the bulking line on either side of the mark.
- Cut the bulking material. It can be a length of core or Dyneema braid. Use at least 300mm (12").
- Note that the process compresses this line quite a bit. Bulking with 2mm line won't show much change in overall diameter.
- Taper both ends of the bulking line. Insert a splicing wand or D-splicer into the core at slightly more than half the bulking line's length above the mark on the core. Exit at slightly more than half the length on the other side of the mark on the core.
- Pull the bulking line out and release it from the tool. Don't let the bulking line disappear inside the core, yet. The bulking line inside the core line can easily be incorrectly positioned.
- Pinch the core (with the buried bulking line inside), or stick an awl through the core & bulk line, to hold it in place while you milk the core from the mark towards the ends of the bulking line. The tapered ends should disappear inside the core. No lock stitching is required.
- Start to re-balance the line by smoothing the cover from the stopper knot to the end. The bulked core should disappear inside the cover. As you work on this, there will be a little hernia sticking out. Give the cover a good sharp tug and it will pop inside the cover.
- Smooth the cover out and keep balancing until as much core as possible disappears into the end of the line.
- Finish off the end of the line with a reeving eye, or lockstitch and whipping.

Tuesday, 24 February 2015, 12:23 AEST

The new reefing line is too short. The bulking and reeving eye used up just too much of the line, which was already barely long enough. Fortunately I have more of the same line of the proper length so it I just have to do it over.

Thursday, 26 February 2015, 06:52 AEST

I found this on a "propspeed" replacement:

olaf hart 26-11-2011, 02:22 Take one very clean prop, I sand with wet and dry to get a good shine. Spray with Zinc Chromate primer. Mix ordinary clear silicone sealant in epoxy thinners so it is thin enough to brush. Dont use the silicone with acetic acid solvent, just the normal one. Brush the silicone on before the primer sets, so it bonds well to the metal of the prop. If you have time, brush on another coat of silicone the next day and make sure it has set before you launch the boat.

Thursday, 26 February 2015, 06:53 AEST

Wow, I suffered from some strange disease the last few days. I slept from 8:30 to 9:30 in the morning on Tuesday, slept and rested (too sore to move) all day yesterday, and slept 9 hours last night. I have had back pains, shivering (yesterday morning), normal temp, muscular aches in both upper legs, pain in lower back so I could hardly walk. I seem to be on the mend. I had been taking Ibuprofen and Naproxen for muscle relaxing and this is apparently not something good to do. But, I did not take much. One Naproxen a day and a couple of Ibuprofens. I have no idea what this is but it feels similar to the problem I had a few years ago where I could not walk for a couple of days.

Saturday, 28 February 2015, 10:21 AEST

Called Spectra support with query about the Membrane. Clark Beek sent a couple of tests, which are in the files.

“Now that I look at the old Santa Cruz manual, I see it was available in a few configurations. As far as the flow test, it would be the same as our our current Ventura models, if your system has one feed pump. If it has two feed pumps, it would be the same flow test as our Cape Horn Extreme. I’ve attached both. The idea it to make sure the feed pump is putting out the right quantity of water, and make sure the right proportion of that water is being forced through the membrane. If the flow test comes out within spec, and your water quality is above 600 PPM, then a new membrane is indicated. If something is off with the flow test, it points to a feed pump issue or a Clark Pump issue. Since you just got a rebuilt Clark Pump, the latter is unlikely. Feed pumps get tired, and a new/spare feed pump head and/or diaphragm is the most important spare to carry regardless.”

Saturday, 28 February 2015, 18:05 AEST

We finished two days of work picking the stitches on the Genoa Sacrificial Cover – it made the ultimate sacrifice. After 14 years of dutiful service the “sacrificial lamb” is gone. Tomorrow the sailmaker takes over to sew on a new one and to fix up

The condition of the sail is pretty good, considering its age. The cloth is a bit tired at the leech but overall it should hold up a few more years, especially after the repairs.

We also removed three of the line reels today. There have been four reels of line on my magnificently designed line-reel axle since 2004. We decided three of the reels could be emptied and finally we removed the empty reels. We still have to decide what to do with the Jordan Series Drogue which is one the remaining, and largest, reel.

Tuesday, 03 March 2015, 18:51 AEST

We performed a Watermaker flow test to determine what is wrong with the system. Results are below.

The membrane is now pickled. One jar of SC-1 in the prescribed manner.

Wasted most of today trying to figure out why my back muscles hurt. Consensus is it is a “sprain” and needs heat, massage, and rest. Maybe a few NSAIDs or Panadol, too. We have been working hard to prep the boat to leave it in Tasmania for a couple of months.

The Genoa has been sent to Elson Riddle at Doyle Fraser Sailmakers here in Hobart. He should have the new cover done by Friday. Tomorrow we will probably move to the POW Marina about 5 n.m. up the river.

TESTS	WATERMAKER FLOW TESTS	TDS Start	TDS End	FIXED VOL	TIME	FLOW	FLOW	PRESSURE	BRINE RATIO	Expected	Expected
		ppm	ppm	liter	sec	l/min	l/hr	psi	%	l/hr	%
1	Pumps 1+2 product	570	450	2	319.4	0.38	22.5	70		55.00	
2	Pumps 1 product		589	2	605.5	0.20	11.9	60		25.00	
3	Pumps 2 product	625	574	2	484.0	0.25	14.9	65		30.00	
4	Pumps 1+2 brine+product	669	715	21.75	168.4	7.75	465.1	80	4.85%		9.5%
5	Pumps 1 brine+product	715	715	21.74	287.5	4.54	272.2	75	4.37%		9.5%
6	Pumps 2 brine+product	674	674	21.87	264.9	4.95	297.2	65	5.00%		9.5%
7	Pumps 1+2 brine+product	669	715	1.75	168.4	0.62	37.4	80	8.05%		9.5%
8	Pumps 1 brine+product	715	715	1.74	287.5	0.36	21.8	75	8.00%		9.5%
9	Pumps 2 brine+product	674	674	1.87	264.9	0.42	25.4	65	8.55%		9.5%

Date: 3-Mar-15
 Nominal Voltage: 13.3 vdc
 Model: Santa Cruz 2-pump System
 Pump 1 Original Shurflo: model unknown without dis-assembly.
 Pump 2 Shurflo_8008-943-839 new 3 Nov 2010.
 Note: Clark Pump rebuilt at factory 4 years ago
 Membrane new in 2004, pickled every year until placed in service 2007.
 Product flow appears to double when brine discharge is being tested. Note tests 7,8,9 which were the product component of Tests 4,5,6.
 For convenience, Tests 4,5,6 were made with product flow into one bucket and brine flow into a measured 20 liter bucket.
 Also note increased salinity on second round of tests. Makes no sense to me.

Clark Beek (clark@spectrawatermakers.com) wrote back regarding the above tests:

Yes, a bit of a mystery. I wonder if there's some kind of restriction on your brine discharge line, to cause such a difference between the product flows when you were taking the brine right from the Clark Pump vs. through the normal discharge? The one thing we can conclude for sure is that overall flows are low, so new pump heads, or whole new feed pumps, are in order. The electric motors usually last forever, but I'll leave it to your judgment as to whether to replace the whole pumps or just the heads. To give you an idea, in list prices, new pump heads are \$214 each; whole new feed pumps with heat sink and cooling fans run \$320 each. As to the Clark Pump and membrane, I guess you could take the belt and suspenders approach: Your Clark Pump was rebuilt only 4 years ago, and would normally be good for at least 5, but since there's doubt it's probably worth doing again (\$425). Your membrane is 10 years old, which is pretty long in the tooth for a membrane. You can get them online in the US for around \$200, so you might go for it just to cover all bases. Your system is basically a Cape Horn Xtreme, or the parts of your system could be used to build a Cape Horn Xtreme. The CHE is a \$7000 system, so if you put \$1200 into the system you've got it would be money well spent. If you could choose, I'd say go feed pumps first, then Clark Pump rebuild, then replace membrane, and see which one solves the problem, but since you've got this one shot at a trip to the US and cheap parts/shipping, you might throw the book at it. Sorry I can't be more conclusive, but your flow test results don't point to any one thing except low total from tired feed pumps.

Replace Pumps: SPECTRA Pump Head \$214 SPECTRA Pump \$320 Replacement Pump
<http://www.pumpagents.com/ShurfloPumps/8008-943-839.html> \$230.03 Replacement Pump Head
<http://www.pumpagents.com/ShurfloPumps/94-380-17.html> \$124.40 Rebuild Clark Pump \$425
 (A\$900 or so 'cause THEY have to ship to/from USA). Replace Membrane
http://www.wateranywhere.com/product_info.php?products_id=186 \$220
<http://shop.cruisewater.com/DOW-Filmtec-SW30-2540-Sea-Water-RO-Membrane-SC0008.htm>
 \$187.00

WATERMAKER REBUILD OPTIONS

ITEM	COST
Shurflo 8008-943-839 Pump	\$175.63
Shurflo 8008-943-839 Pump Head	\$93.34
Clark Pump Factory Rebuild	\$425.00
Membrane	\$187.00
TOTAL	\$880.97

The final decision is to acquire one new pump and one replacement pump head. Depco has the best price. We will not replace membranes ore rebuild Clark Pump

Wednesday, 04 March 2015, 19:06 AEST

Today I removed the cracked starboard Vetus Splash Stop. I thought it would be a slam dunk replacement of the Splash Stop with a 1.5" fuel fill hose. Unfortunately there is a 2" deck fill that was required for the Splash Stop. One solution is to use a 1.5" to 2" reducer and a small length of 2" (51mm) hose. (I can use the multi-diameter ube on the bottom of the Splash Stop, cut off). Perhaps a better solution is that the ID of 2" hose is very slightly less than the OD of 1½" hose; simply using black E6000 to glue an overlapping 2" hose onto the 1½" hose should work brilliantly.

Sunday, 08 March 2015, 06:22 AEST

Boat is all prepped for leaving it for 2 months while we are in the USA.

Monday, 23 March 2015, 04:02 AEST

In USA for Nephew Sam Bar Mitzvah.

This received from PYI concerning our MaxProp. Note that brand new 3-blade prop is \$2600 @ 20% discount. This is \$715 over the repair. Maybe could get OEM price from Hutch?

Hi Jeff, So this first estimate is a BASIC RECON \$1160.00, pretty much needs an overhaul, I need to replace the hub(newer style hub), cone, spacer, nut(newer style nut w/locking pins on side), screws, weld 3 teeth in the forward position, balance and polish. The second estimate is re-sheet recon \$1885.00, this includes everything in the first estimate plus resurfacing all three blades front and back. This process builds up the blades then I reshape and balance them, blades are new once more. There is nothing I can do about the body, well if you have any questions just email me or talk to hutch thanks' again for sending in your max prop for me to look at talk to you soon.

Your friend, Jerome Blakely Service Manager 1-800-523-7558 1-425-355-3669
mpservice@pyiinc.com

Sunday, 17 May 2015, 12:18 AEST

HAULOUT TASKS

Product	Brand	Name and Code	Quantity	Cost
Self-Polishing Anti-Fouling	Hempel	Olympic 86901 Blue	2 x 5L	\$379.00
Water-based Anti-Fouling		for transducers	100ml	In stock

- Paint Hand sand with 100 grit. (80-120)
- Clean any waterline stains with oxalic acid prior to sanding. Spray on, wait 10 minutes, wash off.
- Masking Tape As needed on hull, propeller, etc.
- Olympic 86901 anti-foul 1-2 coats on leading edges, keel bottom, propeller.

- Transducer Paint
- Install brand new 18" MaxProp 3-blade classic
- Replace Transducer.
 - This is a warranty replacement Remove old Install new – used old fairing block as it was in perfect condition.
 - Insert plug.
- The usual Check
 - through-hulls – 1 day.
 - Zinc replacement.
 - shaft collar zinc.
 - Small teardrops.
 - Open door on scoop strainers and check them. (ok)

MATERIALS

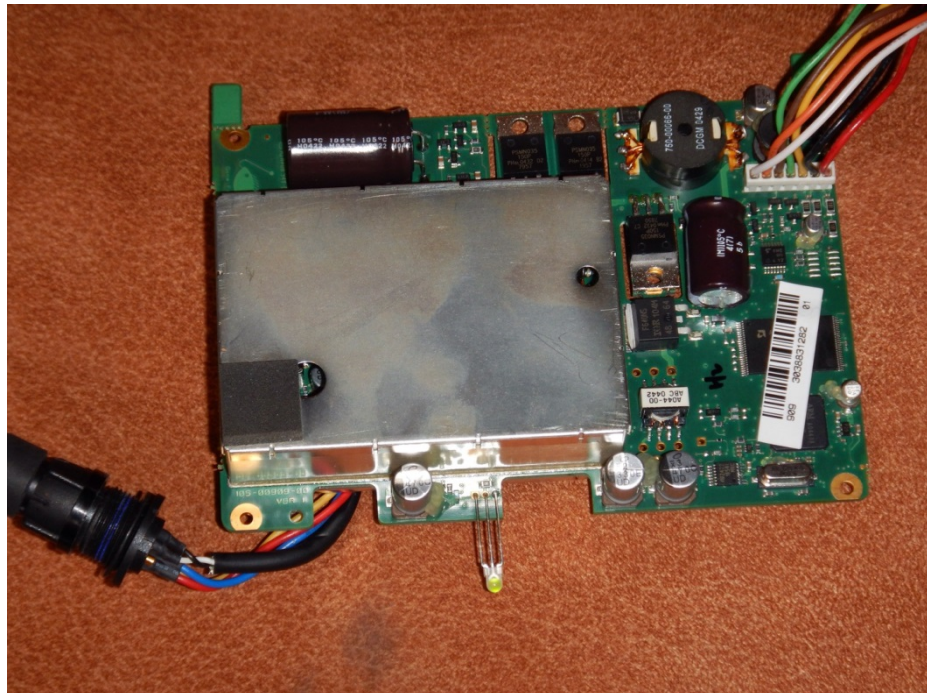
- Paint Hempel 86901 (for less active boats) was used instead of 86951
- Paint Cleanup (Mineral Spirits or Hempel Thinner)
- Rollers
 - (medium 10-12 mm nap, six)
 - Roller Handle and extension
 - Roller Pans (2).
 - Line with Aluminum foil.
 - Rubber Sanding blocks.
- Sandpaper: sheets 100/40/60.
- Flap wheels: 120 and paint removal.
- Plumbers putty (in locker 2 aft). Zincs (in locker #2)
- Tyvek suits (buy 4) Transducer paint
- Face Masks
- 3M Blue Masking Tape (1 roll 2")
- Rubbing and Polishing Compounds for the hull

SCHEDULE

- Sat 16 May
 - Haulout
 - Hose wash. Pressure not needed.
 - Boat pretty clean
 - Noted shaft zinc behind prop was eaten up in just 2 months
 - Other zincs OK. Small zincs bad but had not been replaced at last haulout.
- Sun 17 May
 - Hand sanded entire hull with 100 grit.
 - Noted strange dimple with two tiny holes in port side of rudder, as if something had struck the rudder. The only thing I can think of is some piece of debris in the shallows in Kettering where we grounded in February.
 - There is some salty, smelly water inside the rudder. There is no way to tell if the armature is still good.
 - Copper radio and lightning plates
- Monday 18 May 2015
 - Fixed pinholes in rudder. See note below.
 - Masking Tape 1 3/4 hours Anti-foul 2 hours.
 - First can used was the one bought 2 months ago and it went on very thick as we should have added some thinner.
- Tuesday 19 May 2015
 - Finished painting Coat 2

- Finished repairing the rudder patch
 - Removed faulty transducer.
 - First removed inner fairing block. Separated the hull fairing block from the hull by tapping a paint scraper between the two. Then twisted it out.
- Wednesday 20 May 2015
 - Finished Transducer installation except for wiring and nut for anti-twist bolt, which is missing.
 - Bedded with “Fix15” black.
 - Airmar Model B744VL-6G s/n 3066319
 - Installed Prop.
 - New shaft collar zinc. Note: *“The Zinc screws have never had holes for cotter pins. TefGel not needed on the screws as there is not a problem with galling or corrosion between Stainless and the bronze of the Max-Prop.”*
- Thursday 21 May 2015
 - Tightened large nut on transducer and find small nut for anti-twist bolt.
 - Final coat of anti-foul on waterline, and leading edges of rudder.
 - Not enough paint for full rudder and keel leading edge.
 - Sanded copper plates. Installed 3 new tear-drop zincs on copper grounds.
 - Installed plug in bottom of rudder.
 - Peeled masking tape.
 - Lost a bit of bootstripe near the stern.
 - This new 3M “Blue” brand tape not as good as older model of blue tape.
 - Connect transducer and installed paddlewheel.
 - Through-hull servicing. Unless noted rubber stopcock was disassembled and greased with 3M silicon paste, followed by an injection of silicon RIX grease into the zerk fitting.
 - Galley Washdown
 - Aft Cabin Deck Drains port and starboard
 - Aft Cabin Locker unused through-hull. This one has a newer version of the stopcock and it could not be completely removed
 - Aft Cabin sink
 - Aft Cabin blackwater
 - Painted transducers with water-based transducer paint. 2 coats. 24 hours drying recommended before immersion.
- Friday 22 May 2015
 - Through-hull servicing.
 - Engine raw water.
 - Generator/Watermaker raw water
 - Starboard deck drain. Partially removed only. Greased from outside and with zerk.
 - Port deck drain. No zerk installed. Greased only from outside.
 - Bilge pump (back of cockpit locker)
 - Clean waterline with Oxalic acid if time permits.
 - Splashed at 1300. Unfortunately the new transducer leaked and we had to haul out again. We did not remove the entire transducer but cleaned and sanded the inside fairing block, the hull, and removed some blue tape still attached to the bronze transducer threads. The edge of the hole in the teak block was tapered with a file to allow a better fillet of sealant. Fix15 black sealant was used again.
- Saturday 23 May 2015
 - Tightened nut on transducer.
 - Splashed at 1400.

- Transducer leaking at the anti-rotation bolt. Bosun not happy. He has given us until tomorrow morning to fix it and then we have to go, leak or not.
- We removed the anti-rotation bolt and I found the new tubes of E6000, which is a self-leveling medium viscosity adhesive – great stuff. We used a new bolt and plenty of E6000 so I can't imagine it not sealing.
- Sunday 24 May 2015
 - Splashed at 0930. No leaks at first. They appeared later and were coming from the anti-rotation bolt. I tightened the nut some and the leak stopped.
 - Under way back to POW Bay Marina. On arrival the leaks started up again. More tightening of the anti-rot bolt nut stopped the leak again. We have 4 days tentatively reserved to fix this later in June if it starts leaking again. I tried to connect the new depth transducer to the GSD20 depth sounder unit and the pins were not aligned in the GSD20. I tried to



straighten them out but one broke off. What a stuff-up. [Follow Up 27/05: The pin that broke was the single UNUSED pin in the 6-pin connector. The other problem was a crushed socket on the power/data cable connecting to the GPSMAP. I used a sharp probe to open it up and it works fine now. It is a possibility that there might be a problem with connectivity later on. Spare cables ARE available online; or a simple replacement could be made with a standard 7 or 8 pin connector, even a Deutsch style.]

Monday, 18 May 2015, 08:02 AEST

Awning zippers have failed totally where they connect to the dodger. The probability is that our design simply puts too much strain on them.

Zipper Cross Strengths:

Raindefeyer #10: 135# YKK #10: 75# BigZip #15: 335#

Monday, 18 May 2015, 09:31 AEST

At this haulout two small holes were detected in a single spot that is a “dimple” on the port side of the rudder. They were not there two months ago. I cleaned out the pinholes using a small drill bit and can see that the aluminum at that point is barely 1 cm thick. I don’t know if this is a flaw in the fabrication. The pink epoxy filler is visible behind the holes.

It turns out this area of thin aluminum was one of my fill holes for the epoxy filler installed in Mexico. I fixed it by grinding back an area around the hole, applying SigmaCover 280 and after it dried putting two circles of epoxy cloth (different diameters) and thickened epoxy on top; faired with an old credit card. Tomorrow sanding, more SigmaCover, and then anti-foul should fix it pretty well.

Thursday, 28 May 2015, 12:30 AEST

I have this idea for mounting the second antenna tube on the transom using hinged rail tees to make a vertical between the existing rails.

Hinged Rail Tees

Investment Cast 316 Stainless



Hinged feature allows installation without disassembling existing bimini setup. Also reduces possibility of scratching tubing during installation since it does not need to slide into place.



Order#	Mfg#	Type	Tube O.D.	List
154410	SDL#290603-1	60° Hinged Universal Tee	7/8"	\$25.75
154411	SDL#290604-1	60° Hinged Universal Tee	1"	\$27.75
154412	SDL#290903-1	90° Hinged Tee	7/8"	\$25.75
154413	SDL#290904-1	90° Hinged Tee	1"	\$27.75

Friday, 29 May 2015, 16:42 AEST

I removed the old Standard Horizon handheld HX750x's and replaced them with two new HX870 DSC/GPS waterproof handhelds. If we had an Australian MMSI we would be able to register a separate MMSI for each handheld. In the USA this is not possible:

Obtaining MMSIs for DSC-equipped VHF Handhelds

A handheld VHF transceiver with DSC and an integral global navigation satellite system (e.g. GPS) not intended for dedicated use on a particular ship (e.g. a diver's radio) should be assigned a unique 9-digit number in the format 81M2I3D4X5X6X7X8X9. While currently means do not exist within the U.S. to assign such identities, the Coast Guard has been in discussions with the Federal communications Commission and others on implementing them.

In the interim, VHF handhelds used in the United States should use the MMSI assigned to the ship to which the handheld is primarily associated, even if another radio on that ship uses the same MMSI.

<http://www.navcen.uscg.gov/?pageName=mtMmsi>

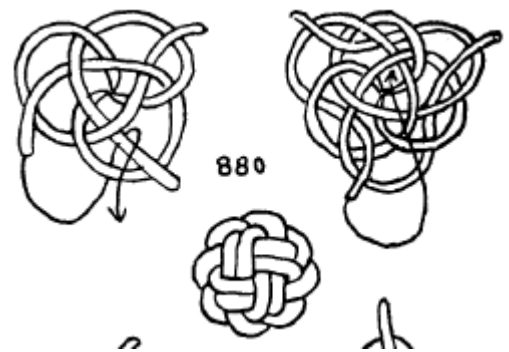
Standard Horizon reports that the same MMSI number used over multiple radios is OK. A DSC call to its own MMSI will be registered on all radios. Note *Beatrix*' MMSI number is **366755340**. We tested the DSC functionality with the

Saturday, 30 May 2015, 07:52 AEST

Attempting to tie a Soft Shackle:

I have a [video of Brion Toss](#) tying his new 400% b/s soft shackle but it is hard to follow. The 2-strand wall-and-crown knot he developed is similar to knot 880 from Ashley's Book of Knots, which I just downloaded in PDF format. This is the description and drawing:

880: A knot of different character, but tied in somewhat the same way, is made as follows: Wall and crown three or four strands. Tuck up each end in turn through the next bight to the right and in advance of the next end. Then tuck each end down to the center in advance of the second standing part to the right. The working drawings show a THREE-STRAND KNOT, and the final drawing shows a completed knot with four strands.



It turns out that Edwards at L-36.com has a complete photo series on how to tie the button. I downloaded it and put it in a [PDF file](#)

Tuesday, 02 June 2015, 16:33 AEST

This morning we installed my first crack at a soft shackle to tile the two genoa sheet eyes to the genoa clew.

The new diesel feed pipe for the Wallas Diesel Heater was installed today. The heater ran on the first test. The installation wasn't difficult except for having to take apart the Chinese puzzle which is the heater.

A disappointment: Our new West Marine Offshore Life Vest with Harness, sans cartridge which had to be left behind due to USA baggage regulations, requires a very special CO² cartridge with a black bayonet at the end.

As it turns out American Airlines was dead wrong: TSA allows carriage of 2 cartridges WITH the life

vest. We had to spend \$250 to have 4 cartridges shipped with hazmat ratings to Sydney. We still have to get them to Hobart if we are going to use them on our trip north from Tasmania.

Sunday, 07 June 2015, 06:40 AEST

I soldered together the components for the JAYCAR Ultrasonic Anti-Fouling Kit. The transducer has been placed under the floorboard in the aft cabin. The Controller has been located in the hidden SSB Radio Compartment (behind starboard bookshelves aft cabin) and is switched from the Nav Panel as AUX 1.

I redesigned the Nav Network (Network Schematic Rev Q) to include the new NBF-3 and NSW-4-A.

Tested SSB Radio and it works fine. Need to check on DSC emergency practices. NOTE that the NMEA position input to the SSB radio must be a very specific NMEA0183 sentence: \$GPGGA. This was disabled in the GPSMAP 3010C MFD and that has been corrected. I also found out that the MFD can receive DSC data with positions. I don't know if they can be directly converted to a go-to waypoint. Both the ICOM M802 SSB and the ICOM M602 VHF can output DSC sentences. Until today I had no idea there was such a thing as DSC sentences. Once I connect the RS-232 output from the VHF (see right) to the MFD I can test this.

④ GPS RECEIVER/EXTERNAL SPEAKER JACK

➡ Connects to a GPS receiver for position and time indications.

- An NMEA0183 ver. 2.0 (sentence formatters RMC, GGA, GNS, GLL) compatible GPS receiver is required. Ask your dealer about suitable GPS receivers.



Actually I was able to use the “simulate” mode on the MFD to test the operation of DSC calls. This confirms that when a DSC call (distress or position) is received it is entered into the DSC Call Log on the DSC tab. **To navigate to a DSC position listed in the DSC tab, use the rocker to highlight the entry, press NAV, then select GO TO DSC and press ENTER.**

Another important item is that in order to RECEIVE distress calls (or any DSC call) it is required to have a separate receiving antenna. I have ordered a METZ WEATHERFAX / DSC RECEIVE ANTENNA 135CM HIGH for installation. As it is a receive only SSB antenna it does not have to be high, just able to see the sky.

Monday, 08 June 2015, 08:48 AEST

Re-configuration of Vesper XB8000 to join the *Beatrix* Broadband network was fairly easy. It required a direct connection via USB cable to the XB8000, which is located behind the back wall of the nav station locker. The USB cable runs into the nav desk and out the back where it is available. It is only necessary for configuration of the XB8000. The IP Number was fixed at 192.168.3.189 so it would be stable for connection to iNavx on the iPads.

Also note that the XB8000 “must utilize its own built-in source of GPS data. It will not process GPS data sent to it on the NMEA 0183 or NMEA 2000* ports.” This means it is required that I install the Vesper GPS Antenna. As long as it sees the sky, it can be installed anywhere.

Tuesday, 09 June 2015, 17:55 AEST

Replaced bad MOSFET on the ultrasonic driver board. This seems to have fixed the problem. The unit is now working and is connected to switch AUX 1 on the nav panel.

I also installed an ON-OFF switch on the vYacht Wi-Fi box so we can either use it or the Vesper for NMEA broadcasting. Now it can be switched off while the XB8000/Mobile Broadband Wi-Fi node is active. It is truly nice to have everything on one Wi-Fi access point. I might need a 10-user modem at some point.

Vesper unit appears to not be working as no data is available. Test this tomorrow. IT WAS A BLOWN FUSE located in the network box above the passageway.

Saturday, 13 June 2015, 08:23 AEST

Finished installing Vesper XB8000 GPS antenna. The placement was on top of the starboard side under the dodger. The antenna cable runs down the PVC weatherhead and from there through the coaming, into the wet locker, and below the NAV station (next to the heating duct) into the back of the locker under the nav station, which is where the Vesper is installed.

Kathy finished the twist-fasteners on the cover/bag for the storm trysail

Kathy has made up canvas covers for Hydrovane tower and the rudder.

Water pressure pump #1 appears to be not running.

Changed propane tank

Saturday, 13 June 2015, 16:52 AEST

Removed port tank SplashStop and connected a segment of 2” hose to the 1.5” hose using the sawed off piece of SplashStop as a reducing connector. We pressure tested to 2 psi and there was a small slow leak which turned out to be a bad O-ring in the deck fill. That is fixed and we are awaiting results of an overnight test at 3psi. Failed after an hour plus time.

Sunday, 14 June 2015, 10:31 AEST

O-rings in all 3 fuel deck fills replaced.

Testing of port fuel tank at 3psi has failed. Once the leaks in the pressure testing unit were fixed there was still a small leak. Under pressure one can see fuel drooling out the bottom of the tank and clearly not part of a fitting so it is unquestionable a failed tank. I had done a possible tank replacement plan and came up with 48 days maximum time to make and install two coupled 170 liter tanks plus the 100 liter day tank. Our current range is 659 n.m. New tanks would allow 1029 n.m.

The plan went like this:

ESTIMATED FUEL TANK REPLACEMENT SCHEDULE		DAYS
1. Remove Engine & Fuel system		7
2. Remove both port tanks Fabricate mockup tanks		3
3. Two 170 liter side-by-side coupled tanks. One 100 liter day tank.		1
4. Check mockup tanks for fit Possible Rebuild and Refit of Mockup.		2
5. Fabricate replacement tanks (3).		10
6. Concurrent task stream while tanks are made:		
a. Clean E.R. and paint Relocate Drip pan Replace hoses as required		10
b. Deeper Bilge Sump		3
c. Install strum box		3
d. Build and glue in tank support platform		2
e. Clean and Paint Engine.		7
f. Possible seal replacement if necessary.		
g. Install new tanks.		
h. Reinstall Engine		
i. Reinstall Fuel system		
j. Unscheduled time.		
TOTAL DAYS		48

This plan was never put into action. It was modified and new tanks made and installed during 2018

Thursday, 18 June 2015, 10:56 AEST

In the last few days:

- Made stainless offset on port antenna pole so the Hydrovane vane clears the cellular antenna.
- Purchased new cellular antenna from “Active Electronics” in Hobart as other was damaged in the project. It is a stronger antenna at 7dbi which should be optimum for a sailboat. A 9dbi was available but would not acquire a signal as well when rolling.
- Made progress on mounting of the starboard antenna pole. It will support a Shakespeare Wi-Fi antenna on top and a METZ 135cm whip antenna for the SSB DSC receive antenna which is offset from the pole by about 10” (6” minimum according to Shea Weston). Finding a tee fitting for the offset took a lot of calls and time. Cables still need to be run.
- Kathy got out the Sailrite and made a fabulous new seat cushion for my nav station. She also created a cover for the Hydrovane and Hydrovane rudder.
- Took off the horseshoe buoy. It is pretty old and needs replacement. I am afraid it could break in half the way it is.
- Retrieved the Honda 2.3hp outboard from its 100 hr service at Maynes Marine in Derwent Park for \$211. Servicing included:
 - Changed eng. oil
 - Changed gear oil
 - New spark plug
 - Removed and drained fuel tank and refill.
 - Changed some rusted fasteners.
 - Lubed linkages and grease nipples Tightened mid-section bolts Tested OK

Thursday, 18 June 2015, 12:57 AEST

I am beginning work on re-designing the NMEA data network to incorporate AIS data into the data stream for all listeners. This involves installation of an Actisense™ NBF-3 buffer and replacement of the NSW-1-A with a NSW-3-A, and adding a new NSW-4-A.

First, I had a reoccurrence of the “crazy mouse” problem. This is easy to fix in Windows 7 by turning off the NAV instruments and then using Device Manager to open the Properties for the serial ports. In the Advanced tab, uncheck the Serial Enumerator to prevent serenum.sys from being associated with this COM port.

Tuesday, 30 June 2015, 09:22 AEST

Project in hand are being worked on.

- New windscreen
- Rebuilt NMEA networking, and installation of DSC (Metz whip) and Wi-Fi antenna (Shakespeare) near the starboard transom. The networking involves installation of a new data combiner (NDC-4-A) and buffer (NBF-3) from Actisense. I tend to overthink things sometimes. I.e. I just re-wired the Garmin GSD20 (depth), GPS17 (GPS) and the GPS3010C MFD to operate as a unit; i.e. the enabling wire from the MFD turns on the other two devices. I originally had the GPS17 installed so as to have it power up even when the MFD was not on. Now that we have an AIS that delivers good GPS data it isn't necessary. Eliminating the GPS17 stand-alone capability allowed me to remove the NDC-3-A as I only need 4 inputs to be combined: WIND, HDG, DSC (from VHF) and the output of the MFD (position, depth, speed, seawater temp., etc.).

Saturday, 11 July 2015, 10:04 AEST

The reworking of the Nav system is done. The only issue seems to be that all the systems must be working to have all the data where it is supposed to be. This is because the GPS data for the AIS must come from the AIS antenna and the GPS data for the Garmin must be on Port 4. They operate at different speeds. I would need a new autoswitch (NSW-4) to allow the AIS data to be used in the system without going through the MFD, especially since the MFD does not accept GPS data on Port 1 or 2. However, I could possibly use a relay (CMOS or physical) to switch the GPS data from the AIS into the NDC-4-A.

Discussion with Jon Josephson at Garmin re. GPSMAP 3010C MFD revealed some more secrets: Port 4, reserved for the GPS17, is the only port on which the MFD can receive GPS data, and it is restricted to 4800 baud input unless operating in GARMIN mode. This can raise the speed but this is probably not important for a slow boat like ours. It is also important if operating with Differential GPS, which we don't use. The implication is that if Port 4 OUT is not connected, the GPS17 will always be in default mode and therefore might be able to be used without the MFD being ON.

Sunday, 12 July 2015, 14:25 AEST

A familiar problem is re-occurring. The GPS 3010C stops sending data over its output ports. It still displays depth, water speed and temp, and position on the screen, but no data is being transmitted.

Normally NMEA data is sent at high speed out of Port 2. Data received on Port 2 is from the Vesper AIS unit. Port 1 is normally reserved for Garmin Host at 9600 for upload/download of routes. I reset Port 1 to send/receive high speed NMEA data (38400) to see what happens when the data stops flowing.

When Port 2 stops, so does Port 1. I re-tested with Port 1 at 4800 and the problem persists. Since Port 1 is connected directly to the Serial-to-USB device as COM5 and Port 2 to the NDC-4-A data combiner (read on COM6), it seems clear to me that the problem is in the GPSMAP 3010C. So far, it is an annoyance, but it could be a safety issue in an emergency.

13 - 24 July 2015

- "Office" (Starboard Locker 3) in main cabin: fixed broken door.
- Pressure Water Pump #1 started working again. "Magic happens"
- Microwave started working again. "Magic happens"
- Kathy made Jeff a new cushion for his nav station seat.
- Installation of new "windscreen" clear and alteration of the awning to fit. Work done by 42SouthMarine here in Derwent Park (Stewart). New zips on the leading edge and a new webbing "batten" running from the aft to the forward stainless bars to keep stress off the zippers.
- Kathy has done almost all the wood trim above decks with Deks Olje 1 and 2.

- New LED lights installed in passageway.
- Cleaned primary and secondary fuel filters including bowls and replacement filters (Kathy)
- Had Outboard engine serviced and made running again.
- Installed DSC (Metz whip) and Wi-Fi antenna (Shakespeare) near the starboard transom.
- Connected DSC receive antenna to SSB.
- Did not connect wireless.

Bought a new Mobile Boost antenna (other was stuffed) and made an offset on the pole to allow clearance for the Hydrovane paddle. Ran coax for Mobile boost antenna but not yet all the way to the main cabin. The mobile antennas is from Cellink:

- NextG 850 / GSM900 / GSM1800 / LTE 4G / 3G-2100 [825-960MHz & 1710-2200MHz]
- Broom Stick Car/Truck/Home Antenna 7dB NEXT G/GSM and 3dB 3G 2100 Black
- Dual-Band Broad-band antenna. Heavy duty fibreglass whip. Suits Mobile phones and Wireless
- Internet bands. NextG & GSM900 = 7dB. 3G & GSM1800 = 3dB. Ground independent. Bullbar, Car,
- Base station or boat. 70cm + Spring base. Requires ½" Bracket. Includes LL195 Low-Loss Cable 5.0M to FME Female

Code	ANT451
Description	Broom Stick Car/Truck/Home Antenna 7dB NEXT G/GSM and 3dB 3G 2100 Black
Type	GSM/3G/4G/LTE/NEXT-G
Price Type	each
Colour	Black
Base	Spring
Length	740mm
Gain	7dB

- Disconnected Garmin GPS17, ran wire through the deck, then used RJ45 Ethernet connectors and a waterproof housing with inline coupler to re-connect the unit. Works perfectly.
- Had two stanchion bases on starboard repaired. These are the first two towards the bow from the gate. An extra ¼" SS 316 plate was welded on to the existing bases (which had to be straightened out).

Friday, 24 July 2015, 11:35 AEST

Yesterday I changed the main engine spin-off filter. After that I tried to bleed the engine and start it but after trying EVERYTHING I did not succeed. Steve from CleanLift came by to help. We made some progress, but the start battery croaked (0 volts measured at the battery, probably a dead cell or a complete discharge and I need to get a new one and try again. Here is what I learned:

- 1) I have been cracking the return line, not the injectors. Injector nuts are ON THE SIDE. (See figure parts 14-17).
- 2) Bleed the filter, if necessary. by opening the banjo nut on the top of the filter housing. It is cold in Tassie. Since the Perkins has no glow plugs, a heat gun aimed down the throat of the air intake helps. He also used Aerostart (ether) to help kick it over. This I thought was not recommended, but he says it can be occasionally helpful.
- 3) Slow cranking. He felt it should be cranking harder. He felt the starter was weak or underpowered. He wants me to test the solenoid independently and to also consider replacing the starter if necessary. The 2/0 wire that makes up the parallel line may be too small to independently power the starter.
- 4) Things to remember:
 - a) If Starter Battery Switch is OFF the starter battery will not charge and the voltage will not be displayed on the main panel ("Battery Bank 2").
 - b) Make sure the sea water intake is closed if multiple non-starts so as not to back-flood and water-lock the engine.

BLEEDING PROCEDURE FROM PERKINS 4.154 SHOP MANUAL

- a) Unscrew by two or three turns, the vent plug on top of the fuel filter cover (not the return pipe to the tank).
- b) Slacken the air vent valve on top of the governor housing (hydraulic governor) Figure 7
- c) Slacken the vent valve fitted on the head locking screw of the fuel injection pump see. Figure 7
- d) Operate the hand priming lever on the lift pump (or use electric bleed pump) until fuel, free from air bubbles rises from each venting point.
- e) Tighten the valves in the following order.
 1. Filter Head Venting Screw
 2. Head locking screw vent valve.
 3. Governor housing vent valve.
- f) Retighten the union nut when fuel, free from air bubbles, issues from around the threads.
- g) The fuel filter is (may be) self-bleeding.
- h) Slacken the union nuts at the atomiser ends of any two of the high pressure pipes Fig 14 - 17.
- i) Set the accelerator at the fully open position and ensure that the "stop" control is in the "run" position.
- j) Rotate the engine with the starter motor until fuel oil, free from air bubbles issues from all the fuel pipes. Some 30 to 60 seconds of rotation may be necessary before this condition is reached, and the time will be dependent upon the speed of rotation and the effectiveness of the bleeding operation described above.
- k) A fully charged battery in a temperate or warm climate will rotate the engine at upwards of 280 RPM, and under these conditions, the remaining air should be expelled in under thirty seconds. Cold conditions or partially discharged batteries may take longer. **THE KEY IS THE LONG BLEED TIME.** Turn the engine until fuel, free from air, issues from both fuel pipes.
- l) Tighten the unions on both fuel pipes, and the engine is ready for starting. It must be realised that this whole operation must be tried out completely and no action to tighten connections must be made until all signs of air bubbles have disappeared. Unless care is taken with this operation, and this could take some four to five minutes of priming, failure to start will occur.

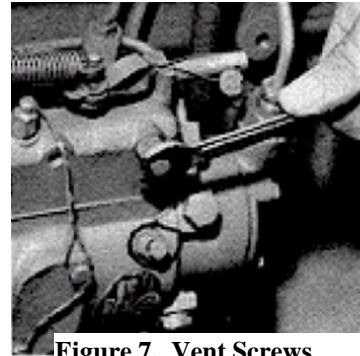
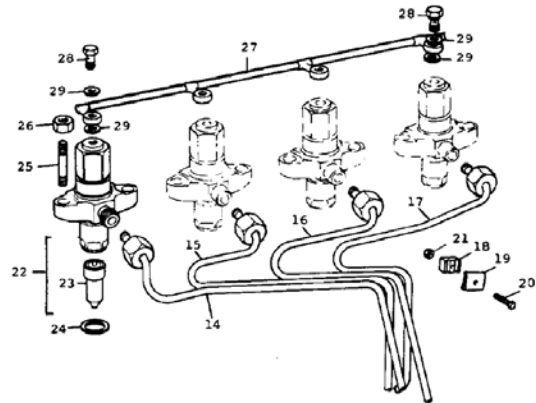


Figure 7. Vent Screws



TURN OFF RAW WATER SEACOCK IF IT DOESN'T START RIGHT AWAY

Also see [this entry](#) on Bleeding Main Engine on *Beatrix*.

Friday, 24 July 2015, 12:58 AEST

Starter Battery was replaced by [Autocraft, Hobart TAS](#) \$265 delivered to POW Marina. It only took 20 minutes to get it delivered – what a nice treat. It is the same Optima 34M, replacing one purchased and installed on 18 April 2012. 3.25 years of life. Warranty is for 2 years.

I tried to bleed the engine again. No luck with starting.

Finished installing stanchions in repaired stanchion bases. Ran lifelines again. They will need re-stretching.

Saturday, 25 July 2015, 16:45 AEST

Lifelines are attached at each end and all lines tightened. I expect the ones that were removed will stretch a bit over the next few weeks.

Kathy continued her marvelous work on finishing all the topside woodwork.

Jeff spliced new reef lines. They are Validator II, 3/8” and required a core-dependent eye-splice for a ring hitch on the boom, a reeving eye at the other end, and bulking where they pass through the line clutches. The splicing was fun and felt successful.

Sunday, 26 July 2015, 15:32 AEST

Fixed the sliding vent in the washboard.

Got engine running at last. Secret? It has to bleed for a LONG TIME. Since the ambient air was 10°C I ran the heat gun down the throat of the air intake. Glitches in the system were STOP SWITCH not working below and in cockpit. Also, when cranking, the starter would disengage as soon as the engine started to pop. Because of this it took about 8 tries for it to turn over. After the successful start and warmup I almost forgot to turn on the sea water, but the alarm kept running and that reminded me.

I also installed two LED striplights in the engine room. They are wire-tied to the aluminum flat bars that support the overhead soundproofing.

These things NEED to be done. A dedicated START switch that directly energizes the engine without using the relay system. A dedicated STOP switch to energize the stop solenoid without using the relay system. An ignition ON switch in the engine room so I don't have to go up-and-down to the cockpit while working on the diesel.

These things SHOULD be done: A manual shutoff cable made with wire and leading to the cockpit. Manufacture heat shields for the Racor filters. Stainless mixing bowls?

I now realize that I originally installed the wrong type Racor filters. The reason for the more expensive marine version is that they have a heat-deflector bowl and this is a Coast Guard requirement. It helps to keep the filters from spilling fuel in case of a fire. It would cost approximately \$500 to replace the filter assembly.

Monday, 27 July 2015, 15:12 AEST

Steve, the diesel mechanic, was by. Charged me only \$40 for his time yesterday. He still thought I needed to test the starter. “It should crank when the START button is enabled and stop when released. To test this I moved the STOP wires on the DPDT START/STOP switch in the engine room so they energized the stop solenoid (cutting off fuel supply) while trying to start the engine. No fuel, no start, it just kept cranking. When the START was released, the start relay de-energized and disconnected the starter solenoid and the starter instantly disengaged. The starter is OK.

I did notice that there is a frayed wire on the STOP circuit and I have replaced it.

Tuesday, 28 July 2015, 13:16 AEST

Today we sailed from Prince of Wales Bay Marina back to the RYCT in Sandy Bay. We put in two reefs to check the new reef lines. The #1 line's bulking missed the mark. The line does slip without the bulking. That will have to be fixed. The Garmin GPSMAP continues to do its dropout thing where the COM ports stop communicating with the NDC-4-A. This results in a drop-out of all the Garmin-sourced NMEA datatypes. This happened twice in the short trip and "lost sonar service" happened once.

● Vesper AIS	● KVM Hdg Sensor	● Garmin MFD
● AIS Unfiltered	● Wind Sensor	● Garmin GPS17
● AIS Contact	● Air Temp	● Depth Sensor
● Position Fix	● Water Speed	● Seawater Temp

I finished the reefing lines with a new bulking on line #1 and Kathy did a round of finishing. I started replacing the old traveler lines with a single line, using one of the left-over lengths of Validator II which was left over from the various reefing line attempts. A bit of overkill but it should be nice. It's also easy to splice.

Wednesday, 29 July 2015, 06:27 AEST

I found a new type [of fuel level sensor](#) that looks really good. (Coupon Code save10off100). I have learned the output of a Standard American sensor 240-33 ohms, which means that the WEMA float sensors are compatible with almost any type of display, and can probably be used in parallel, since they only sense resistance.

Wednesday, 29 July 2015, 17:42 AEST

More finishing work by Kathy. Caprails. Finished traveler line replacement with single line. Important note: one end must not be eye-spliced until it is threaded through the sheaves on the traveler. It does not come apart to allow a clean fit of a double-eye continuous line. Replace vang line with 3/8" XLS Extra black with red tracers. Noted "meat hooks" on the wire rope and broken sheave. I discovered I had in spares a complete set of Harken Big Bullet 38mm blocks labeled "vang". Good for me. The set consists of a 129 (triple) and 128 (double w/becket) which have replaced the worn blocks. There is obviously a LOT of stress and shock on the vang. I should really have the next bigger size of QuickVang but *c'est la vie*. The new vang line looks great. Still to do at a future date: **disassemble the vang, check and service it, and replace the wire rope with new or a dyneema line**. The wire is 3.8mm. (about 5/32"). Hallspars recommends Dyneema™ 3/16" line for replacement. I have 1/8" dyneema. Order has been placed with [Rope Galore](#) for 16m of 5mm Donaghy Ocean 12 Dyneema braided line. **Sunday, 02 August 2015, 10:51 AEST**



Over the past few days: Lots of work by Kathy on refinishing of cap rails. Installation of bright white strip lighting in engine room.. WOW! It's lit up like an operating room (only dirtier). Special bag was made by Kathy to hold the fuel and oil change hoses outside the port stringer. Earlier a loose hose was responsible for breaking belts and the raw water pump shaft when it got caught in the rotating belts. Installation of warm LED strip lighting port and starboard in the main cabin with dimmer switches. **Starboard**. I used LED [DC 12V 8A LED Light Protect Strip Dimmer Adjustable Brightness Controller F5](#) bought on eBay for \$3.35 each. Amp draw is 0.8 @13.25, or 11W. **Port**. I just installed an ON/OFF switch and the dimmer is the Blue Sea Systems 7501 2A dimmer unit (now discontinued) with the toggle switch. This dimmer now operates both the incandescent reading lights and the new strip. Power consumption on port strip is about 0.64 amps (8.5W). By comparison the two reading lamps at full brightness are 1.67 amps (23W). This slightly exceeds the 2A rating if all lights are full bright but this does not seem to be a problem. Re-connected the Vesper AIS output to NDC-4 Port 2 @ 38400. This port is configurable to include/exclude specific sentences. This means that the NDC Control Center software can be used to disable the redundant data.



If Garmin MFD is off, use NDC Control Center to include GPS data on Port 2.

If Garmin MFD is on, use NDC Control Center to block ALL data on Port 2. Apparently a “bug” in the software is that if all the datatypes are unchecked, then all data is included. The workaround is to check an obscure datatype not used by the system.

Friday, 07 August 2015, 07:48 AEST

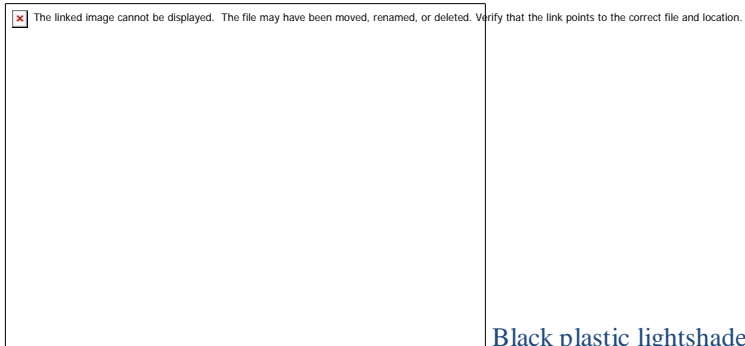
Yesterday saw Kathy putting on final coats of Dek's Olje on the Caprails. The hold-down on the starter battery box was repaired. The hold-down is a piece of StarBoard that had a tenon fitting into a slot against the wall. This had broken off. A piece of aluminum flat bar was fabricated to replace it. Fabricated a white PVC protective panel to cover the wiring in Port Locker 2 next to the dinette.

Friday, 07 August 2015, 14:59 AEST

Bled and tested the autopilot actuator. This took quite a bit of time. I am so happy I installed the BLEED-RUN switch to activate the bypass-disable solenoid without messing around with jumper cables and such. I don't use it often, but it makes things truly easy. Kathy was on the wheel turning it right-to-left and back again and I kept the reservoir full of ATF. It would often bloop out and the bubbles never quite go away when the wheel is hard to port. But it appears that the pump is running correctly (you can hear it) and the wheel turns properly and isn't “soft” when manually turning it with the bypass disabled.

Tuesday, 11 August 2015, 08:48 AEST

Yesterday I installed some red LEDs in the binnacle. The plastic light shade was cracked and it is not held on very well. I got this letter back from the Ritchie Company (Cristin Dixon cdixon@ritchienavigation.com.)



Do you have low level lighting?: Black plastic lightshade about an inch high that sits stationary on the back. If so, the black plastic lightshade for a 6" Globemaster is part# 6G-0065 (\$26.47 plus shipping). If you are looking for dual LED lighting to be installed, we offer 12V green or red or 24V green or red. It comes with approx.. 18" of wire. A lightshade with the lighting installed is \$52.99 plus shipping.

I have decided to hold off on purchasing this for now.

Wednesday, 12 August 2015, 11:06 AEST

Today we topped up fuel and had a brief haulout ("racing slip") to wash the bottom. The boat has been out of the water only about 2 months, and its winter, so there was not one barnacle to be soon. Also no worms were present, even on the copper grounds. All we saw was some brown scum which was easily washed off. It did seem that the aft port side was cleaner then the starboard side so maybe the Ultrasonic Antifouling Device is working. I'll wait a few months more before deciding it works or not.

The Garmin GMI-10 is exhibiting intermittent behavior with data dropouts and (this is new) turning itself off. It seems to do this regardless of whether the AIS is on or off. Since it is only connected to the NBF-3 data buffer it should not be affected by the AIS.

Noted: The clamp on the fitting that attaches the wet exhaust to the Vetus waterlift muffler appears to be leaking a bit of seawater.

Wednesday, 19 August 2015, 12:58 AEST

I modified the Network Panel cover to be removable. Also made a new wire run into the coaming.

Kathy has finished boom gallows re-do. She has installed new leathers with brass escutcheon pins (grey chrome-tanned sailmakers' leather) and completely re-coated the gallows with Dek's Olje. It looks terrific.

Friday, 21 August 2015, 15:26 AEST

The coax for the Wi-Fi antenna and the Mobile Broadband antenna were run from the aft cabin. The Wi-Fi terminates behind the storage boxes and the Mobile Broadband runs up into the coaming near the diesel heater and down the coaming to the new wire run into the Network Panel Box.

After this job the Garmin GPS17 stopped working. This was due to the Ethernet plug coming loose from the inline connector in its waterproof housing just under the deck (Aft Cabin Stbd Locker 1). This was an easy fix but I note it here for future reference.

I have made a PVC mounting cradle for the Broadband "Pocket" Modem and a 5V USB 2.0 charging

unit. The DC-DC converter with 5V output is stock. Pins 2&3 are jumpered on the USB socket to indicate it's OK to charge at high speed (depends on device). It's a cool unit but I'm having trouble fitting it into the box.

I also still have issues with the GMI10 which displays WIND but not any NAV data. That's confusing, because it comes straight out of the NBF-3 data buffer, so position is correctly delivered to other listeners such as the SSB & VHF & CNET. Also, the GMD20 (depth) keeps dropping out from time to time. Strangely it has a positive voltage when disconnected from everything else. That needs investigation. Lastly, COM7 is showing no data.

NMEA 0183 Sentence Information The GMI 10 can receive the following approved NMEA 0183 sentences: BOD, BWC, DBT, DPT, GGA, GLL, GSA, GSV, HDG, HDM, MDA, MTW, MWD, MWV, RMB, RMC, VHW, WPL, and XTE.

My thoughts on connecting the GMI 10 via the NMEA2000 won't work because the Vesper won't yet pass data received on the NMEA0183 port to NMEA2000. The following was received from [Vesper Support](#):

XB-8000 can receive any valid 0183 sentences from connected NMEA0183 devices and that will be multiplexed into the output stream which is then presented over 0183, USB and Wi-Fi output. But, it currently doesn't output NMEA0183 data to NMEA2000 interface, although that is coming in a future firmware update (downloadable and free). Also, please note that due to regulatory restrictions, XB-8000 will not relay GPS or AIS data that isn't internally generated. So, it is always required to connect AIS & GPS antenna to the XB8000 unit. In practice this has no effect because the XB-8000 generates all the necessary GPS and AIS data and that will be outputted over 0183, USB, N2K and Wi-Fi interfaces. Having said above, please find my answer to your questions below

1) Does the XB8000 re-transmit GPS sentences received on the NMEA0183 input? [Thomson]: No. Due to regulatory restrictions, XB-8000 ignores GPS sentences received on NMEA0183 input. It considers GPS sentences only from the connected GPS antenna

2) Does the XB8000 re-transmit DSC messages received on the NMEA0183 input? [Thomson]: Yes. XB-8000 can relay any valid NMEA0183 sentences (except GPS & AIS). The data is output over 0183, USB, N2K and Wi-Fi interfaces.

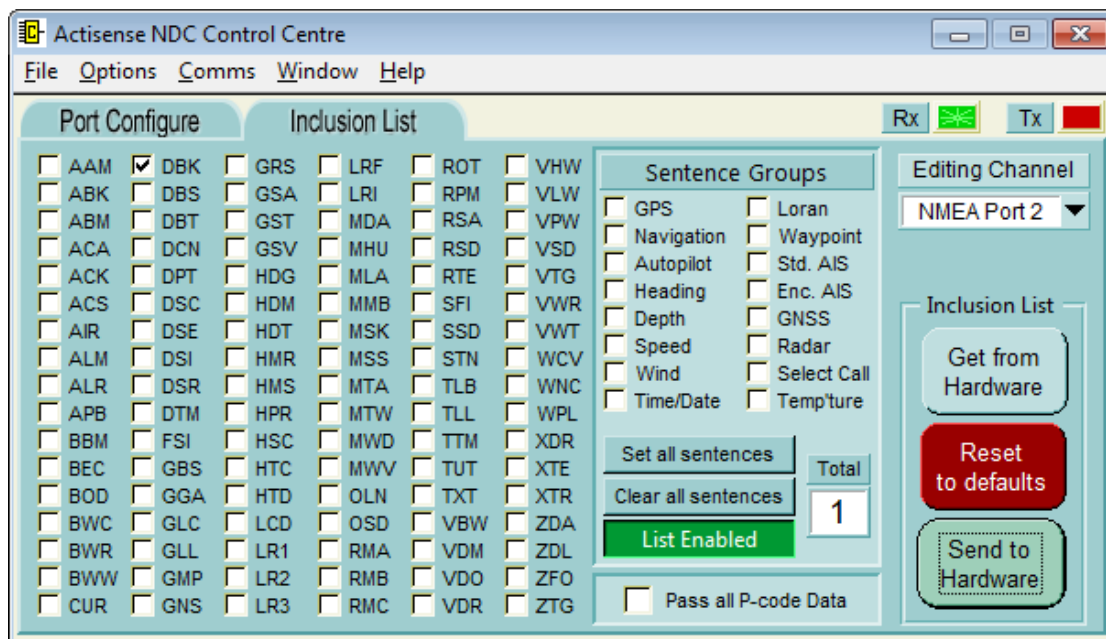
Vesper XB-8000 was updated today to firmware version 5.11.10680.

Sunday, 23 August 2015, 16:29 AEST

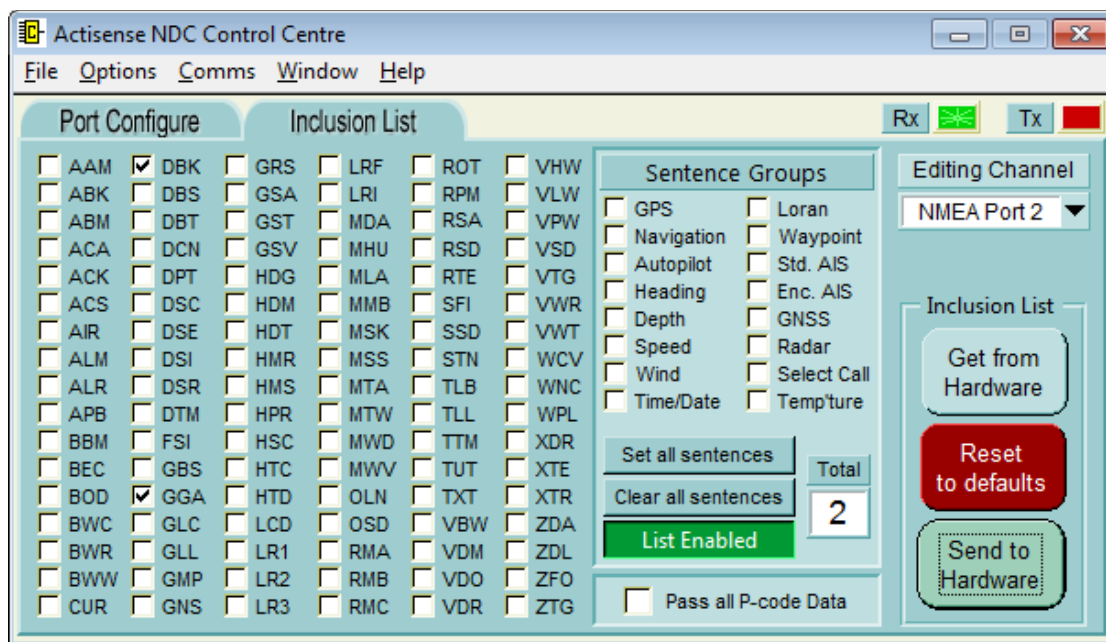
COM7 SHOWS NO DATA Experiments have determined that [COM7 Rx](#) is not receiving data. COM7 normally listens on port 6 of the NBF-3 data buffer which is shared with the VHF and Multi and those are both displaying position, wind, and heading data. So it's not a problem with the input; it must be the serial port itself.

COM7 does transmit data without a problem so the PC nav software (OpenCPN) will send the correct autopilot sentences to the autopilot computer. The problem could be in the serial port connector or possibly internally in the Startech serial port combiner. At this point, since the A/P function is working, I'm putting this on the "do it later" list since it poses zero problems.

GMI 10 More important is the GMI 10 problems. After messing around with the COM7 investigation the GMI 10 is now showing both wind and position data. I have no explanation for this at all. If it were a port issue it would not be displaying wind and heading data. It's just the GPS data that has a problem. If I cut off the AIS input by filtering out everything but DBK (at least one item must be checked) then the GMI 10 will display position. It is supposed to be able to read GGA data, but it won't unless it comes from the Garmin, go figure.



So, to get Vesper XB8000 generated position data to the radios if the chartplotter is off or disabled change the Port 2 inclusion to add the GGA sentence, as shown below. The GMI 10 will not show any position data. If any other sentences are included, the GMI 10 won't work at all. I checked the firmware and it is version 3.70, which is up-to-date (as of April 2012 – I doubt they will do any other upgrades).



Tuesday, 25 August 2015, 17:35 AEST

The shower sump pump with its new base and diaphragm has been wired up to power and the switch in the forward head. It used to be the bilge pump which is now repaired with a new diaphragm and valves. The original shower sump pump had split its diaphragm.\

The A-B switch box that was the Inverter Select Switch has been disassembled and the rotary switch installed in place of the old Wallas diesel heater controller. I had to use grey plastic until I find or buy another sheet of 3mm Delrin. At the same time I brought the USB cables to the Nav Data, SSB, and AIS to an outlet panel at the right of the nav desk. It also has 12V banana plug sockets for testing.

Sunday, 30 August 2015, 11:21 AEST

While generating I noted discrepancy in voltages. FX absorbion setpoint was 14.2v but readings at meters were 14.4 and 14.5. I temporarily dropped absorb setpoint to 14.0. This needs investigation. Something is wrong with the voltage sensing.

Yesterday we started to check out deployment strategies for the Jordan Series Drogue. The chain attachment to the turning blocks is fine. It should be covered with a length of flexible hose or canvas fire hose with a 35mm ID, 3m total length.

Today we are building a flaking bag for the JSD. We realize now that the JSD needs to be deployed by feeding out the length of the drogue with the weighted bitter end going over the rail list. This makes for a controllable deployment as the loop back to the boat will have the little parachutes collapsed.

Wednesday, 02 September 2015, 12:26 AEST

Left the Derwent for Lime Bay and then transitted Denison Canal. It was very shallow at the beginning and here and there along the way (like 0 cm under the keel) and we are now heading to Shoal Bay. We need to stop to spend a couple of hours completing our Jordan Series Drogue deployment bag. It looks like we might have a good shot at sailing north to Sydney today or tomorrow. Winds are northerly at the moment so we are motoring into 11 knots of apparent wind and will probably wait at Shoal Bay or Brian's Corner for southerlies to fill in.

The JSD bag is a work of genius put together by the whole crew. It allows the Drogue to be faked down (in a figure-8) and the loops tied off to keep them from tangling (although it is packed so tight I can't see that happening). The chains attached to the turning blocks are covered in canvas fire hose and led through the hawse-holes in the transom. Then they are wire-tied to the rails and the bridles led through the railing to the bag. The bag contains the bridles, the mooring plate swivel, the drogue itself, and the scuba weights at the end. It should be easy to deploy in 30 seconds.

Saturday, 05 September 2015, 16:16 AEST

Arrived Eden from Maria Island, Tasmania. 369 n.m. 56h19m with 6.6 average speed. We experienced very heavy weather; it was very uncomfortable with stuff thrown about the cabin and deck leaks around the mast.

Lessons learned: If any part of the weather forecast has winds over 30 knots, DON'T GO. If winds shift forward of the beam hoist the storm staysail. In any event pre-rig the storm staysail sheets. Expect that everything not tied, lashed, or in locked cupboard will be re-distributed

Concept: Kids talking object tiles.

0427 898 901

Tuesday, 08 September 2015, 10:16 AEST

Watermaker: Installed brand new upper pump purchased from Depco. Replaced pump head on lower pump. Both pumps are 8008-943-839 Shurflo specific to Spectra watermakers. It is very hard to take all this apart and re-install things. There has been a persistent leak that is proving difficult to fix. I was able to use output from the refrigeration pump with a short hose to prime the filters.

GPS17N: This stopped working on the last passage. Water had ingressed into Aft Cabin Starboard Locker 2 which is where the wire for the GPS came through the deck. It is hard to determine if it is from the through-deck fittings or the stanchion base. Kathy thinks it's the stanchion base. Because of the short lead on the GPS there was no "drip loop" and salt water entered the inline Ethernet connector used to join the wire. This seemed like a good idea at the time and would have been if I could have kept

it dry. It was in a supposedly waterproof enclosure but the salt water had flooded the connections and shorted out the unit. The 2A fuse in the nav box was blown. Cleaning the connection and replacing the fuse has not helped – the GPS17 will simply not turn on. Looks like we will have to get out the spare unit and replace the old one.

Other: Kathy made a snap-on covering for the aft washboard. Kathy repaired awning. Added grommets to line bags for safety lines. Changed sheet attachment to the storm staysail using the same Regatta braid but with a locked Brummel to form a mid-line loop. As I understand it the strength of a Brummel eye is in the buried tail, which I don't have. It certainly appears to be strong enough but I need to do some research on mid-line loops. Alternatively I can create an eye on each of two separate sheets and use a soft-shackle for an attachment. 303 Fabric Guard waterproofing was applied to awning, side curtains, and generator cover.

Wednesday, 09 September 2015, 10:02 AEST

The GPS17N was apparently destroyed by short circuit from salt water intrusion. The spare GPS is a later model: GPS17-HVS (software ver. 2.90). It was installed today. The location under the dodger to port appears to have max signal strength and it was temporarily attached with double-sided mounting tape. Later on it needs a more permanent mounting solution. It needs updating to software version 3.2.

Wednesday, 09 September 2015, 10:23 AEST

Kathy has been complaining about the bad taste of the remaining tank water. We ran a salinity check on it and the reading was 1271 ppm. An internet source quotes an Australian government page that says a salinity of 800 - 2,500ppm "Can be consumed by humans although most would prefer water in the lower half of this range if available".

A check of the deck fills confirmed that one O-ring was missing and the others should be replaced. Our O-ring kit does not have an R-29 1-5/8" in a thin cross-section, probably 1/16".

The watermaker repair has been put off until later as we want to make our passage to Sydney. We think there is enough water (but a bit brackish) for the trip. We leave at noon.

Friday, 11 September 2015, 07:48 AEST

I had to replace the Garmin GPS unit because a salt water intrusion short-circuited the cable where it had been spliced. It was a supposedly watertight connector assembly that did not work out. Fortunately I've been carrying around a spare GPS for the last 15 years. It had been on the transom but I installed the new sensor under the dodger which doesn't seem to degrade the satellite reception at all. All my equipment, once state-of-the-art, is now "discontinued". I'm getting to feel that way myself. At least most of it still works. The new GPS is stuck down with double-sided tape and that will have to be changed.

Tasmania to Sydney Glitch List and Current To-Do List

- Fuel throttle will not hold position at RPM > 1800. I need to tighten the friction fitting. Rubber band is holding it now, putting a little extra forward pressure on the lever to counteract the return spring. The betting pool on how long we keep the rubber band is now open.
- Both latch sets on forward head not working right. New latch sets are on order. Replaced in both doors on 13/11/2015.
- Garmin drops data feed to nav network after just a few minutes. Ok to navigate in compass mode or from PC. The problem appears to be in the serial ports. It could also be in the Actisense devices. It might be possible to use the spare cable for the GPSMAP to test the output of the ports without going through the Actisense.
- Tahitian broom falls off ceiling.
- Leaks
 - Serious leaks around the mast boot.
 - Noticed moisture in teak veneer directly under the portlight over the settee.

- Noticed LOTS of water in wet locker, possibly from one or more of the two stanchion base above.
 - Water on the floor next to the forward head
 - Storm Staysail sheets need to be inspected and attached in a different way.
- Lost one lifeline bag. Put grommets and safety ties on all remaining bags.
- Noted missing bolt in mast hound for vang. Needs to be riveted.
- Make soft shackles out of 8mm Amsteel to replace genoa sheet shackles. Purchased 2.
- The genoa sheet eyes need new whippings.
- Finish watermaker installation.
- Dorade safety line Improve line bag safety tethers.
- Finish GPS17 permanent installation.
- Finish Aft Washboard Cover attachments.
- Fluid Changes
 - Main engine oil
 - Honda Generator oil Transmission
 - ATF
- Finish life vest prep: DSC Radio Attachment
- Kedder track on dinghy has missing nut. Inspect all.
- Valve to engine oil bypass filter feed line is leaking and needs replacing.
- Low alternator output is being caused by faulty alt temp sensor. R&R. (Done 23/11/2015)
- Anchor locker door needs work: Fix latch, replace hinges with liftoff hinges.
- SSB main power not available; it only works off the starter battery. Solenoid NC has open circuit. Higher-rated solenoid is on order.
- Port V1 shroud is showing some scratches in the wire, probably damaged from the Unintended Gybe, and needs to be sanded and polished smooth.
- Assemble seals and bearings on spare engine raw water pump.
- Broken flip-flop block for jib furler line. Substituted a snatch block as a temporary fix. FIXED. Starboard USB charger in cockpit not be working right – won't charge. Installed spare, sent old unit to USA for replacement, ordered another unit coming in next box.
- Starboard vertical stabilizer on dodger frame has broken fasteners. Fixed 07/11/2015.
- Jib furler needs more wraps (at least 4). Done. A new line was required.
- Software update for GPS17 is required. Dinghy chock needs new stainless rail mount and screws.
- Wash-down pump feed hose needs replacement with ¾" x 14" wire-reinforced hose.
- Replace hoses on engine air cleaner.
- Awning tore off the bar and needs repairs
- Harken Traveler destroyed. Replaced with new traveler and new deck block double.
- Schaefer fairlead block destroyed. New one on order.
- Furler and Furling Line
 - Replaced the furling line with 27m 10mm double braid (Donaghy Yachtmaster)
 - Furling line has six wraps on the drum with 6 wraps on the sail.
 - Changed furling line clutch from 0608 to larger diameter cam.
- Tighten loose screws on jib furler collar bracket. Done 3/10/15
- Stanchion Bent. Fixed at Niall's Factory
- Stanchion base damaged. Fixed at Niall's Factory

HOT WATER ISSUES

- Calorifier has air bubble again and won't heat water.
- Noted that water from the engine FW pump circulates both to the heat exchanger and also to the calorifier and on to the header tank. An air bubble or hose blockage would have little effect on the engine cooling system as the header tank keeps the engine's heat exchanger full.
- If it were a bad thermostat hot water would flow even stronger to the calorifier as the flow to the exhaust was partially blocked when the engine is cold.
- Conclusion: it must be an air bubble or blocked hose or calorifier.
- How to test?
 - Partially drain the system.

- Remove the hoses running to and from the calorifier
 - Test if there is good flow. If not, hose problem. Else air bubble – order vent.
- I kept thinking “why an air bubble” when it had worked for over a decade with no problems. I did disconnect the hoses leading to and from the calorifier. Being careful not to swallow any toxic antifreeze I blew into one and except for a couple of little pieces of rusty grot that came out the other hose they seemed clear enough. Then I decided to check the hose leading from the bottom of the header tank to the engine, which would be the “return” line. It was completely plugged at the fitting with rusty flakes. I cleaned it out, replaced the de-zincified fitting (which I broke putting it back together) and lo-and-behold: HOT WATER. The compression fitting cracked. A new hose and fittings was made in Sydney (\$75)

Bruce of Allweld Mobile Welding (Mona Vale) (02)-99734000

Mark McBride recommended a Spirovent air separator. Turns out the problem was a plugged hose, but for future reference, Spirovent makes both air and dirt separators here: **Mechanical Solutions NW** 18296 Andover Park West Tukwila, WA 98188 Phone: 206-575-9001 Fax: 206-575-8520 Website: <http://www.msinw.com>

Saturday, 19 September 2015, 09:15 AEST

Fluke voltage meter is not reading accurate DC volts, e.g. 15.7 vdc when it should be around 14.0. It turns out the problem was a low battery.

Espresso Glasses found: http://olympia.com.au/giftshop/product_info.php?products_id=5521
Cataracts? Check out light-filtering IOLs and to find out if they are suitable.

Sunday, 27 September 2015, 09:25 AEST

Yesterday we got the traveler track installed. It was bedded with [Fix15](#) black adhesive sealant. The track is held down by captive bolt heads (8mm) through the teak beam and deck. The bolts have Mylar washers between the track and wood beam. I had a short (~100mm) offcut of the aluminum track and could slide the stainless keeper and bolt into that, leaving the bolt to project beneath and then I smeared the sealant over the bolt. The short length allowed me to **twist** the bolt into the hole which hopefully created a good solid seal. Then I slid the short length of track off the bolt and move the long track onto the bolt head without disturbing the seal. This method allowed us to properly seal each bolt individually. The other trick is to work half (4 of 8) bolts at a time, sliding the long track onto each bolt proceeding from the middle to the end. This keeps the track from being “fouled” by the lifeline stanchions.

The old traveler line was both too big (at 10mm) and too short for the new system. I read the following online.

1) The biggest issue with traveler lines is that they twist inside the blocks. Any single braid is far less susceptible to this than any double braid. Since the core and cover can start to twist inside each other leading to hockles.

2) The second biggest issue is that the cover can get hung up and pushed down the core causing fattening of the line (another reason to not use double braid).

There are a lot of good single braid lines on the market that will work. Since a traveler typically only has very moderate tension there is no need for high tech stuff like dyneema or salsa. Things like Tenex work fine at much lower prices. That being said I have Amsteel traveler lines since it was in my bag when I went to replace the traveler last time and I was too lazy to replace it after it was on.

Dyneema is slippery stuff, but it works fine in cam cleats, at least in low load applications like travelers. I wouldn't trust a jib sheet to a cam alone.

The traveler is about 20% of the mainsheet load, which normally would not be much more than 1000lbs and, in extreme circumstances (what, you didn't reef in time?) might be 1500 lbs. Thus the traveler line should have a SWL of about 300 pounds, which isn't very much. Amsteel is way overkill for this purpose. So, basically, any line should do it. I just need to pick one for which works in the Jam Cleat, runs freely, and is easy to splice.

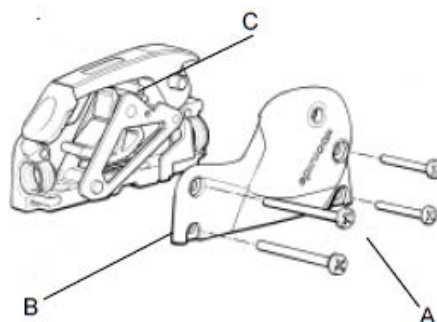
Wednesday, 30 September 2015, 09:22 AEST

The Drain Plug for the Walker Bay 8 Dinghy was lost. The plug is not available separately. Only the entire assembly is available for \$34 in Australia and \$20 [direct from Walker Bay](#). On Friday we found a soft red rubber stopper #9146 from Clark Rubber @ \$5.50 which fits perfectly. A sailmaker's needle can push through the rubber to allow insertion of some Dyneema "Lash-It" twine for the tether.

I noted reduced amps from the solar array. The starboard panel was not contributing any power. The power cable had corroded through on the connections made just under the deck. That had been taking some water ingress lately. All wire through decks need to be checked and fixed if necessary. New connections need to be made.

Saturday, 03 October 2015, 14:51 AEST

Replaced 06-08mm cam on the Spinlock XTS Line Clutch with a 08-14mm cam. The new furler line is 10mm. Cleaned and reassembled. Note that the only way to remove the line clutch is with a ratchet screwdriver and a 1/4"-drive 1/2" socket.



Sunday, 04 October 2015, 06:20 AEST

The replacement of the damaged stanchion base (2nd freestanding on the port side) required removing the original studs that came up through the deck. I therefore started with 4 holes in the deck, none of them "drilled-and-filled" and no way to access below decks because of the wood paneling in the forward paneling. After some thought, this is what I did.

I used a piece of wire with a bent end (paper clip) to reach into the hole and determine the deck thickness (40mm). The holes were then enlarged to 1/2" which is the overall diameter of a 1/4-20 nut. Before drilling I used a countersink to get through the gelcoat to just over 1/2" diameter so I would not crack the gelcoat during drilling. The wood core was dry and clean. The repaired stanchion base was 10mm thick (that's because it's what we had available). Allowing for another 10mm for the top nut I cut four lengths of 1/4-20 AllThread to make studs. The studs were coated with fiberglass Mold Release and let dry. Nuts were attached at one end of each stud. At the top end I attached a washer and another nut. The base plate of the stanchion base was placed on top of the upper nut and the nuts were adjusted so the distance between the bottom of the buried nut to the washer was exactly 40mm while only one thread projected through the base. This was done for all four studs. It was important to not disturb the upper nut so as to keep the 40mm distance. West System Epoxy was mixed and clear epoxy painted onto the walls of the holes with a small brush. I added 406 thickener to the remaining clear epoxy to make a mix that was as thick as it could be and still settle. I troweled some of the thick epoxy onto each stud assembly about half-way up from the bottom. The nut and threads were coated. These were dropped into each hole. The washer kept the stud from falling through the hole and positioned the bottom nut at the bottom of the hole. The stanchion base was slipped over the top of the studs to align everything vertically with each stud properly centered. This step correctly aligns all the studs without any mess. The next morning I removed the stanchion base and the upper nuts and washers on the studs. There was a slight film of epoxy from where some mix had gotten on the bottom of the washers but that was easily cleaned with a knife. At this point the studs were all firmly in place and all that was left to do was filling in the rest of the holes. This was done with more thickened epoxy inserted using a disposable syringe. A toothpick was used to "puddle" the epoxy around each stud to make sure no air bubbles were trapped. A slight mound of epoxy was left above the hole. After a few hours the hardening epoxy had reached the "hard cheese" state and a flexible knife was used to slice off the

epoxy which was above the hole. What I have left is four threaded studs epoxied into the hole. The stanchion base fits on top and is fastened with dome nuts. The advantage to this method of using studs and nuts is that the stud is epoxied in place and should not leak. I.e. any bedding is necessary only to form a mechanical cushion. Because the studs were coated with mold release it is possible to remove them, leaving the nut at the bottom in place, so it is possible that even a stud was bent or destroyed it could be replaced. Otherwise the hole could be drilled out and the entire process repeated.

Friday, 09 October 2015, 13:19 AEST

Sydney Refrigeration Techs to check compressor and gas.

AUSSIE AIR & GAS PTY LTD - PO BOX 734 , Gladesville NSW 2111 - Phone: 0412 372 657 – busy for next 3 weeks Moorebank Marine Refrigeration - Unit 9, 29 Helles Avenue , Moorebank NSW 2170 - Phone: 02 9602 9571 middle of next week. Needs a wharf. (02) 9602 7936 David 0418 967375 Lee 0438184129. These guys charged us \$330 incl. GST for 1 hr of tech time plus travel plus 1kg refrigerant and I they have not fixed the problem. Ned at RSYS for berthing: call (04) 9070162

Monday, 12 October 2015, 07:09 AEST

We have moved to Quarantine Point for the night to get a mooring to assess the anchor chain, possibly invert it, and attach a swivel. The swivel has a frozen pin which I have heated. It had Loctite (probably red high strength) and concentrated heating to over 550°F (2 min. with a torch) will soften the Loctite and allow removal while still hot.

3/8" G4 High-Test Chain Material Diameter: 3/8" / .406" Inside Length: 1.22" Inside Width: 0.57"
Working Load Limit: 5,400 LBS Links Per Foot: 9.8 Weight Per 100 FT.: 153 LBS

I have new Allen head flush D-shackles, 1/2" pin, but they are not the rated Wichard shackles. I got them from fisheries but they are not identified or rated as to SWL or BL.

Thursday, 15 October 2015, 05:27 AEST

Yesterday we moved the boat to the public pontoon in Blackwattle Bay where we spent A\$330 on a refrigerant top-up which meant two things:

Emptying everything out of the cockpit lazarette including the Scuba compressor and, Listening to the refrigerator tech whine about the difficult location of the compressor

We also pulled all the chain out of the upper and lower chain lockers to end-for-end the chain and to install a swivel. We are hoping this will fix the chain jumping off the gypsy. The twist accumulating in the Australian shallow anchorages plus the worn out links on the chain seemed to be the problem. Re-mounting the windlass to get a bit more wrap would be better, but I can't figure out exactly how to do this given the limitations of the anchor roller positioning. The large SeaDog swivel was attached to the anchor with 4 links of chain (cut off from the good end of the anchor chain). This will make sure that there is never any side loading on the swivel. The shackles have Allen head pins which means no protruding pin flanges. In emptying out the lower anchor locker we found the Turks Head to be soaked with saltwater and some corrosion on the chain from saltwater pooled in the aft end of the locker. Now this has a drain which could be blocked but actually appears

Thursday, 15 October 2015, 08:17 AEST

Freezer took 1.9 hours to pull down; obviously the recharge did not change things. I did not record the starting temp. Right now I started the freezer at -17°C and am going to take temperature measurements. The compressor started and sight glass showed flow of refrigerant. At first small purple canister (dryer) on the compressor showed ice rime on the surface. This disappeared after 15 minutes. The coil and compressor case were barely warm to the touch so cooling was operating fine. Amp draw was 23.7 which is normal. No heating observed on the power leads (which was expected considering stable amp

draw). Hot input to cooling coil is 40°C plus or minus. Run time -17°C to -20°C was 0.5 hrs.

Thursday, 15 October 2015, 12:57 AEST

The diesel smell reported by our guests of the other night was indeed a leak at the access plate for the day tank. Repositioning the gasket of the Wema FLB-2 access plate and tightening the locking screw fixed the problem. But, as the FLB-2 is out of production we should consider buying or making access plates for new tanks. The Seabilt Access Plate is perfect but the size is not. We already have 4.5" holes for the Wemas and cutting a 6" hole for an 8" plate would be very hard. I think we should reverse engineer the Seabilt plates to fit the existing holes.

Friday, 16 October 2015, 06:09 AEST

Also, reefer compressor running at 28 amps, now up to 30 amps. Fridge worked yesterday. Not pulling down to -8° seems stuck at -7.8°. Total reefer run was 2.1hrs/3cycles (0.7/cycle). I will switch to Freezer. Noted drop in amp draw to 28 amps, still well above the 23 amps usually seen. Amps seem to be dropping while the freezer is running. Now 24.2 amps. High amps is a symptom of too much refrigerant. Now down to 22.9 to 23.5. Freezer drawdown to -20 took 1.4 hours. Note: the cycle counter did not count up from 0 to 1. It should be higher amps than 23.5. If he added more than 1lb we are in trouble. Did he weight it before and after. A kg is 2.4 lbs. so it could be borderline. It doesn't sound overcharged.

Since the reefer tech may have given me the flu and since we have to do more tests and since it's Friday I will forgo payment to Marine Refrigeration until Monday.

Friday, 16 October 2015, 09:50 AEST

- To calibrate the Fluke 111 DMM it costs \$85 + GST + \$20 return shipping +\$15 outward shipping = \$128.50. Worth it??? Possibly.
- Test calibration against Chinese DMM.
- **Zenith Sales & Calibrations Pty Ltd** Unit 22, 9 Salisbury Rd, Castle Hill NSW 2154 ABN 16 144 873 656 [Route](#)
- Old dive light is dead. Better off to buy a new LED light on eBay.

Saturday, 17 October 2015, 08:09 AEST

Freezer test today: 1.9 hours from -5 to -20. I.e. not much improvement over 2.1. Counter not counting. Did not check amperes. Reefer test today: on -2.6 off -8.0 in 0.3 hrs. which is normal. Counter operated normally. No high current noted. RPM testing be done on freezer @ p.t.=-19°C and 1333hz or 3332 rpm, which may be too fast.

Saturday, 17 October 2015, 16:20 AEST

Finished re-splicing life lines after removal for stanchion repair. Installed new Harken Furling Line Lead Blocks on two stanchions forward. Re-stowed and put protective grease on the spare heat exchanger. K. cleaned and aired the bilges under the main cabin and forward cabin bulkheads. The blockage in the deep anchor locker drain was due to the drain line running on top of the spare heat exchanger. This was corrected.

Sunday, 18 October 2015, 07:32 AEST

Repair of the exciter wire did not fix the problem of low amps from the main engine. It is a faulty temperature sensor on the main alternator that is slowing down the charge.

Freezer showed error on startup several times. High amps, then dropping fairly slowly, now normal. I.e. hard to start. Freezer and Reefer both exhibited this behavior. Is the system over-pressurized?

I finished re-installing the Ronstan flip-flop ratchet block and Spinlock line clutch with new cams and 10mm new furling line. Note that 3/8" and 1/2" sockets with the small ratchet screwdriver 1/4" square drive are required to remove the nuts from the bottom of the teak mounting block. 10-24 machine screws were cut to fit.

4 circuits all run in series. Expansion valve affects superheat. 2 circuits in each plate. 1st plate to 2nd plate 2nd circuit, then back to 1st plate 1st plate?? 2 crossovers between the plates. Expansion affects end of the series. Make sure expansion valve bulb is attached tightly to the suction line in the box and should very tight (about 2 o'clock posn. on the plate), and probe (TPC, common) attached to holding plate.

My boat compressor was taking twice as long as normal to cool the refrigerator and freezer boxes.

The technician was sick with the flu. He spent an hour on the boat and decided that adding refrigerant would fix the problem. He said he put 1kg into the system. This did not fix the problem.

I consulted the engineer who built the system in the USA and he said 0.9 kg was the absolute maximum capacity and since there was already refrigerant in the system that it was likely overcharged.

This did not fix the problem.

I was charged \$110 for the service call, \$110 for the hour the techie was here, and \$80 for refrigerant, plus GST.

I have since found that BOC sells R134a refrigerant for \$16.50/kg including GST which is more than five time the charge made by Moorebank.

Futhermore, Moorebank did not fix the problem. After billing me for \$330 I have exactly the same situation I started with.

They claim a good reputation. But I was totally unsatisfied.

Thursday, 22 October 2015, 10:40 AEST

Cleaned and repaired the Perkins engine's air cleaner. Replaced the hoses (5/8") using elbow cut from pre-bent automobile heater hose.

Replaced washdown pump hose from the seacock to the pump (3/4" all-purpose hose).

Garmin GMS 10 ? 303 NE Tomahawk Island Drive Portland, OR 97217 Phone: (503) 289-9358 FAX: (503) 289-3119

Email jimm@trumeter.com TECHNICAL CONTACT. Part number and date code (on unit).

Friday, 30 October 2015, 05:57 AEST

An inspection of the boom showed the aftermost boom bail had deformed in the wild gybe and needs fixing or replacing. LeFiell used to stock these items but has since closed their marine division. Most stock bails from Ronstan, Schaefer, etc. are under-sized. A replacement bail from www.rigrite.com is available but costly, and requires flange bushings or a new compression tube. The thing to do now is to take off the bent bail, straighten it out, and then swap it with the inner bail. While it is off take pictures and measurements to have a new one fabbed, which should less than buying the Rigrite parts and be an exaxct replacement. (Bail replaced. Gifted from another KP44)

Flange Bushing – 1/2" OD x 3/8" ID: K-9630-6V: SS Flange Bushing is 1/2" OD x 3/8" ID (.498" x .393"). Used with a 3/8" bolt it replaces a 1/2" bolt in Shroud Tang applications to achieve significant weight reduction without any attendant



reduction in bearing surface. 1/2" OD Flange Bushing is 3/4" (.752") long, Flange Head is 3/4" (.738") diameter x 1/16" thick. \$29 each.

Boom Bail, Long - 3/8" x 4" wide: K-11325L: Heavy SS Boom Bail made from 3/8" rod is designed to be attached with (1) 3/8" SS bolt and nut. Formed at 4" wide, width can be varied to fit larger or smaller sections. Bail length, from bolt center, is 7". As used on Kenyon 4060 and similar Boom Sections. \$109.

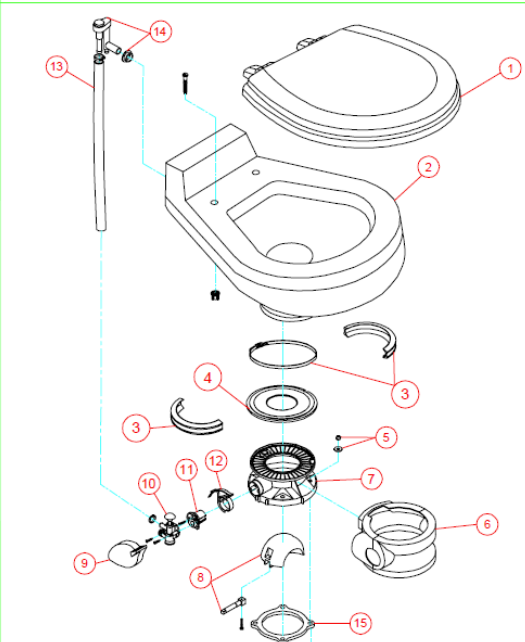
Friday, 30 October 2015, 06:35 AEST

Refrigeration! This morning, with batteries registering 12.35 volts, the compressor would not start. The reefer ammeter showed a large draw >100 amps then declining as the compressor tried to start. This was accompanied by the whoooooop sound. We started the charging cycle and with higher volts and more amps available the compressor started right up. Could be we are having battery problems. We are also having some difficulty with the cycle counter and hour meter.

Friday, 30 October 2015, 15:16 AEST

Forward Vacuflush toilet. It has not been holding the vacuum because the spring is not strong enough to return the cartridge. The cartridge was replaced in 2014. Marine Sanitation said they would take it back if the 2014 cartridge was faulty. It was. Besides that replacement we need to stock up on some other spares. The work done is shown on the diagram below: new seals, new floor flange, new water valve, new lever. An old ball was polished as the one in use is caked with scale and needs cleaning with muriatic acid. We are out of spare balls, so they have gone on the "to buy" list. The water is now retained in the bowl and the new cartridge has solved the return problem and the problem where the lever would not return to a closed position.

PARTS LIST: VACUFLUSH MODELS 1006



ITEM	PART NUMBER	DESCRIPTION
1	385344436	SEAT ASSEMBLY, WHITE 75.46
	385344437	SEAT ASSEMBLY, BONE
2	385310615	CHINA BOWL KIT, WHITE
	385310616	CHINA BOWL KIT, BONE
3	385310025	BAND AND HALF CLAMP, KIT WHITE
	385310048	BAND AND HALF CLAMP, KIT BONE
4	385310677	SEAL REPLACEMENT KIT
5	385310064	MOUNTING HARDWARE
	385310108	PEDESTAL COVER KIT, WHITE
6	385310109	PEDESTAL COVER KIT, BONE
	385310600	PEDESTAL COVER KIT, EBONY
	385310132	BASE KIT, WHITE (inc Items 3-12)
7	385310133	BASE KIT, BONE (inc Items 3-12)
	385310607	BASE KIT, EBONY (inc Items 3-12)
8	385318162	KIT, BALL SHAFT & CART, WHITE (inc Item 11)
	385310177	KIT, BALL SHAFT & CART, EBONY (inc Item 11)
	385310117	PEDAL COVER, WHITE
9	385310118	PEDAL COVER, BONE
	385310593	PEDAL COVER, EBONY
10	385314349	KIT, WATER VALVE
11	385236096	KIT, SPRING CARTRIDGE
12	385310579	KIT, LEVER/CART-TALL BASE
	385340177	HOSE, SUPPLY - BONE
13	385345377	HOSE, SUPPLY - WHITE
14	385316906	VACUUM BREAKER KIT
15	385310063	KIT, FLOOR FLANGE SEAL (inc Item 5)
16	385318864	KIT, FUNNEL 506/806/706 (inc Items 5 & 15)

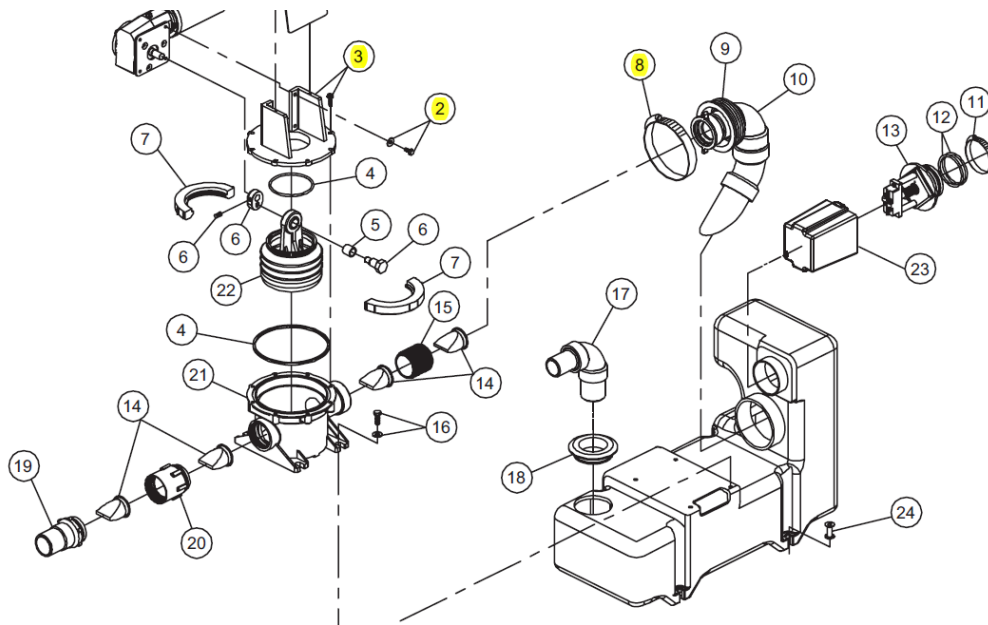
Vacuflush Ball Seal Cleaning Tool
385310805

Vacuflush Bowl Seal Kit 385316140

Saturday, 31 October 2015, 05:12 AEST

The repairs on the toilet fixed one problem, but the pump still cycles. We replaced all 4 duckbills on

the pump (#14), two of which appeared dubious. This did not fix the problem. Note that the hoses were not clogged. We then installed a new Universal Seal grommet (#18). This did not fix the problem. We then noticed two small cracks in the white sanitation hose from the toilet to the vacuum chamber (it connects to #17). This hose needs to be flexed to get to the pump to replace the duckbills. The cracks were on top and Rescue Tape was wrapped around to seal the hose. The pump now cycles every 30 minutes or so instead of every minute so improvement has happened. New hose should be purchased and saved until next time maintenance is needed. The size is 38mm (1½") and 750 mm long.



..... Vacuflush Vacuum Generator Disassembly Notes:

- Use flat food containers to catch the water when disassembling components.
- Remove hose clamps from hose coming from toilet to vacuum chamber.
- Pull pipe out of Universal Seal (18) to allow access to pump mounting bolts.
- Put paper towel in hole to prevent nuts/bolts from dropping into the tank.
- Disconnect vacuum hose from the toilet.
- Uncouple the pump from the tank (9) Unbolt the pump from the vacuum generator.
- Leave inboard bolts in place so the pump can slide out once the outboard bolts are removed.
- Use a pipe wrench to gently remove parts 19 and 20 and 15. Clean everything up. HCL may be used if necessary.
- Replace duckbills (14) and Universal Grommet (18) if necessary.
- Use thread sealant (Loctite) for reassembly.

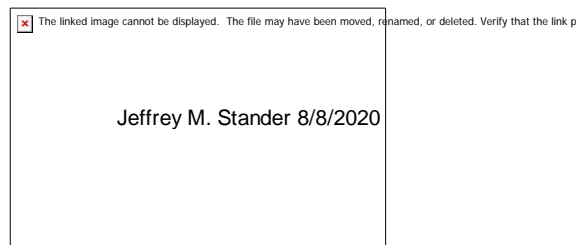
The vacuum is still leaking. Possible problems could be: Vacuum switch leak. Toilet Floor flange leak if not aligned. Toilet Seal leak if not aligned. More tiny cracks in the vacuum hose.

To follow up on this: after an overnight rest, it seems to be working OK now. I think we should get a new hose anyway.

Sunday, 01 November 2015, 12:09 AEST

The SPDT relay that supplies the power to the SSB has failed again just like it did in Aug 2014. There is no continuity across pins 5 & 6. This is the NC connection and is rated at 35A. The radio should not be pulling more than 30A maximum so I don't understand this failure. The solenoid will have to be replaced.

The starboard solar panel is now re-wired with 14 AWG wire. I used



the a spare radar power feed cable that has round insulation so it would fit through the through-deck fitting. It is wired directly to the solar fuse block behind the SSB in the aft cabin. E6000 was added to the antenna cable through-deck fitting insert to hopefully stop a leak. Had a big rainstorm later and no leaks.

Monday, 02 November 2015, 10:27 AEST

Called Stuart at Lidcolme Anaconda to order Spare Part # 504333-01S Sealer Set (right) for our Campfire VFP280 brand vacuum sealer.

Vacuflush was leaking some water onto the floor. I loosened the clamp, reset the toilet on the rubber seal, and thoroughly tightened the band clamp. No more leaks.

Tuesday, 03 November 2015, 09:28 AEST

Yesterday I tested the DSC capabilities of the ICOM-M602 with Eric off of Pied-a-Mer. All functions of the VHF tested out fine, including reception on the Chartplotter. The Chartplotter has its own issues in that it appears to be disconnecting its serial (NMEA0183) port at random intervals, but when working it displayed the log of DSC positions sent by the radio.

I then asked Kathy to take the handheld VHF away from the point and I attempted requesting a position. This worked once. I need to test further. There may still be a problem because both radios have the same MMSI.

Friday, 06 November 2015, 13:45 AEST

I replaced the frayed wire in the Hall Quickvang "C" with 5mm Dyneema, using very small "sailmaker's thimbles". In doing this I discovered that we STILL have sheaves that are two small and



this continues to wear a groove in the aluminum tube and will certainly chafe or fray the Dyneema line. The part is available and listed as a 2 1/4" sheave. I suppose that is the outside diameter, in which case maybe they are worn just a bit, but not much (about 1/16 in diameter). I have wrote Hall Spars and it turns out these are the correct size, just worn (I hope) and we will be receiving new ones shortly (\$32 x 2). Of course, the tube is compromised and probably should be replaced but it appears strong enough to me.

Monday, 09 November 2015, 08:31 AEST

Yesterday we were looking at the Stainless snatch block that I use for stern anchor retrieval. It had seized up completely and when disassembled the bearings were rusted solid. It takes two 35mm OD x 11mm D x 15mm ID ball bearings. Even though it prominently displays 316 on the outside, the inner guts are just POS (plain old steel). I found some stainless bearings available here in Sydney at Hooper Bearing Supply.



We also did a good bit of cleanup in the aft cabin yesterday. Some things are slated for the tip, some for Vinnies, and some to be sold. The sale items are:

Friday, 13 November 2015, 15:17 AEST

Today we finished the final repairs and installation of the new traveler and the port Schaefer 32-17 lead block for the preventer line. I had to chase threads. We also disassembled the starboard Schaefer lead block for inspection. We greased the bearing and cleaned it up. The block base was slightly bent and a tap with a hammer cleaned that up.

Also today I installed new mortise latches in the forward head doors. This involved, first, extracting the old latch set which had the tubular latch element rusted in place. The only way to do it was to cut the head off of a ½" machine bolt and drill a hole in the end. A hole was drilled from the side of the door (at the knob hole) through the tube. The bolt got shoved up the tube and then a pin punch was inserted in the holes drilled in the tube and a nut and spacer allowed for this to be an extractor tool.

The new latch sets are mortise latches so I had to use a doweling jig to drill out the mortise (started with a Forstner bit and finished with a ½" twist drill as the holes were deep. The combination tool with the vibrating saw and good old hand chisels finished off the hole. These mortise latches are not centered in the same way relative to the knob holes so in order to use the existing striker the latch set must be slightly offset on the vertical.

The new latch sets are Merit R&C3486Y with 3486 handles and 3481 Oval Roses. I had to use the old round roses as the oval roses did not cover the old holes.

Thursday, 19 November 2015, 13:16 AEST

- Replaced dead ammeter on freezer/refrigerator control board. This was Model number DCA5-20PC-1-DC4-RL-C which takes a 50mv shunt. The dead unit appeared to have some corrosion on the circuit board and I need to remember to find some conformal coating or spray that I can add to this. Putting in a ceiling in the "wet locker" should help also.
- I just bought 3 new-in-box units on eBay for \$70 including shipping which is a great bargain (\$23 each compared to \$42-\$50 normally).



I did some research on what kind of glue is best for rubber-to-plastic for the new floor boards in the orange ducky. 3M Scotch-Weld PR100 seems to do the trick.

Saturday, 21 November 2015, 16:09 AEST

Today Kathy and I sailed from Sydney to Broken Bay. It was a very quick trip in about 20 knots of Southerly winds. We only had four glitches: A flogging whipping on the genoa sheet caused the lifeline turnbuckle to back off and fall apart. That has been fixed. The whipping still needs repair. The Australian courtesy flag parted at the grommet and so the flag halyard is two-blocked at the spreader. **This has been fixed. Kathy snagged the flag halyard with the fish gaff taped to the extended boat hook, saving me a trip up to the spreader.** The engine room bilge pump was a) not turned on and b) had a clogged foot when I did turn it on. The pump sounds like it needs disassembly and inspection of the joker valves. It seems to be working OK at the moment. The worst glitch was that the Octopus actuator for the auto-pilot acts as if there is air in the line or the cylinder is leaking, i.e. it feels "soft". I remember this happening in June and we bled the lines and that seemed to fix it. We will have to try to bleed this again.

Monday, 23 November 2015, 14:14 AEST

Inspection of the Octopus linear actuator shows an empty reservoir and lots of oil around the base of

the reservoir and at the ends of the cylinder. Some drops are on the quadrant. The rod disappears into the trunnion quite a bit, but it's always done that. There is no marring or scratching on the surface of the rod. We have the "offshore kit" for the seals required to rebuild the cylinder, but no spares for the reservoir. I don't even know if that's a field rebuild or we need to buy a new reservoir block (if that is the problem).

Tuesday, 24 November 2015, 08:29 AEST

I consulted Dave Shannon at Octopus in the morning. He suggests that it is unlikely that two seals would go at the same time. He also stated that the reservoir has a "static" valve so that a leak in the reservoir itself would not affect performance. It is clear that there is air in the cylinder and that could only come from leaky seals or leaky fittings. There is no ATF under the pump and visual inspection of the connections at the actuator look good. He suggested testing the system by filling it and bleeding and then cleaning everything with dish soap and putting down clean pads (paper towels or rags) to catch any drips; this will determine where the problem is.

After that, if we need to replace seals, both should be replaced once the system is disassembled.

Tuesday, 24 November 2015, 10:49 AEST

We bled the Octopus system. Kathy turned the wheel while in "Bleed" mode (but with bleed pump screw valves shut) and that should have locked things up pretty tight. I did notice that when she tried to turn the wheel against the closed bypass there was about 3cm movement of the rod. We then tried to run the Autopilot. It would not turn the wheel and the pump was running but pretty quiet. I then remembered the trick of hauling on the wheel while pushing the "Jog" button and it forced a slug of ATF into the pump head to prime it.

Thursday, 26 November 2015, 15:28 AEST

Inspection of the paper towels showed a large amount of ATF had leaked out of the system. The source of the leak appears to be the base of the plastic reservoir, which was surprising, and unfortunate, because that is not one of the spares carried.

Friday, 27 November 2015, 04:07 AEST

Dave Shannon said to call Coursemaster Autopilots, Richard Chapman, Pres, and they use that bypass valve in their systems. They might be able to help.

Apparently the reservoir never leaks unless damaged. It sits on an O-ring which Never Fails. Possibly there is merely a misalignment. The clamp on the O-ring is a special one because it is perfectly circular, unlike a regular hose clamp. It requires special pliers to perform the action.

Friday, 27 November 2015, 18:37 AEST

I spoke to Paul at Coursemaster in Chatswood NSW. They use the bypass valve made by Octopus and so they had a spare reservoir (\$60) but in talking with Paul he thinks that we may have a bad seal which is pumping air into the system. The air would have overflowed the reservoir and THAT might have caused the dripping around the base of the reservoir. He said the ability to bleed all the air out is very important. On their actuators they have a hose barb on each input port to the cylinder. These barbs, when tight, are closed. Loosen them a bit and they can be attached to a hose in a container of ATF and then the system can be bled with the bypass valve closed (energized) and the bypass screws tight.

Sunday, 29 November 2015, 06:21 AEST

We removed the Octopus and that let us see that the plastic reservoir was not tight on its seal. I was able to push the reservoir back over the O-ring and it seated without a problem. We have decided to re-install and re-bleed the system without installing new seals. If it still fails or leaks, we can then remove and install new seals later. At least it seems fixable for now.

Three other major things worry me at this point. One is the refrigeration which appears to take 2 to 3 times longer to pull down the freezer box or refrigerator box. It is hard to tell because the counters are not working well. The hour meter seems OK but the timer does not seem right. Yesterday afternoon I logged a 0.3hr pull-down time for the refrigerator (which is normal) and this morning it was a 1.4 hours to pull it down. These are full cycles, that is, the compressor is ON at -2.6 and OFF at -8.0. Both the inconsistency of the run time and the length of time is a mystery. I really can't figure this out. The freezer of course takes longer and its start temperature is higher than the normal cycle because we only run it once per day.

So, REALLY BIG PROBLEMS at the moment are: REFRIGERATION BATTERY DECLINE NAVIGATION NETWORK. Failure to continuously receive NMEA data from the MFD

Some of these problems are interlinked. The compressor is running so much that it impacts our power requirements. The batteries exacerbate this because they seem to only have about 200 useable AH (when it should be twice that).

The refrigeration has to be priority one.

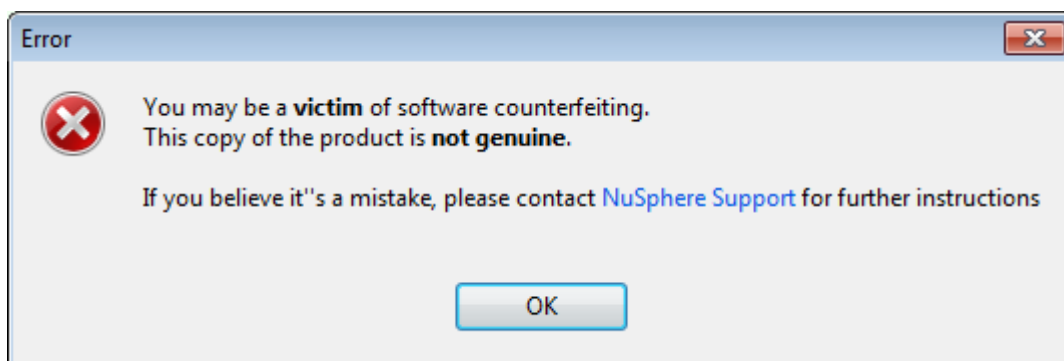
Batteries will be expensive and take a lot of research. I am convinced that LiFePO4 batteries, though expensive, will give us a big savings on power generation. Because they don't need a tapered charge, they should cut our generator time in half, which works out to be about \$1000 a year in fuel savings alone.

Navigation network needs debugging. I certainly need to test a replacement cable for the MFD and see if that helps. The best way is to simply wire it into the existing system. Of course, there might be a problem with the NDC-4-A combiner. Symptoms are continuous dropouts on the GMI-10 display and loss of POSN data to the VHF and SSB radios. Monitoring COM7 (NBF-3) and COM6 (NDC-4) should help pinpoint a failure.

Monday, 30 November 2015, 17:25 AEST

The autopilot actuator (Octopus) was reinstalled today. I noticed that the top of the reservoir cap was just barely fitting under the wooden support beam for the bunk. Possibly two things may have caused the reservoir to be shifted off its base by hitting the beam. One would have been the cap was loose, and thus too high. The other may have been if I left the funnel in the top of the reservoir while bleeding. I think that was what happened. In any case I routed out a little more clearance for the reservoir cap and it is highly unlikely we will have this problem in the future. We will check to see that the reservoir does not leak on our next

Thursday, 03 December 2015, 07:50 AEST



This came up, then PhpED would not work. I attempted a re-install and it said cannot install in 32-bit windows. I suspected that MS had downloaded stuff into my computer that was associated with the W10 upgrade. I rolled back to the restore point before the last update and then the computer went through a very long process of "Startup Repair" but finally it would reboot. Then there were quite a

few tries to get the keyboard to connect. All seems well now, but W10 looks to be full of spyware (for MS) and cloud oriented, which will not work for me. I have to figure out how to get clean updates for Win7. First I need a complete backup of the current state.

Thursday, 03 December 2015, 07:51 AEST

The refrigeration is not working. The screw connectors that fastened on the compressor and connected the wires looked corroded and that might be a problem. I tried to replace them but had some difficulty with the terminal screws not being long enough to solidly crimp the wire. So, I crimped on some ¼" spade terminals which should certainly be adequate to get things running. However, the compressor is now locked. It whoops on startup and the spade terminals get very hot for the few seconds that the controller attempts startup.

Pittwater Refrigeration Tech is Martin @ Summit Refrigeration. 04 1826 0548.

Mark said to use gauges. There is a 3/8" line and a ¼" line. The "suction" line, the big one, is the one to add the R134a refrigerant to. The valve works backwards from a normal valve, as it seats upwards. Clockwise to open, counterclockwise to close. It only take a ¼ turn to open. There is a black cover over the valve stem. Connect blue hose to suction line (blue to big) and red hose to the return line (red to little). Always burp the gauges. The suction line is also called the low side. The discharge is the high side.

Results were: 25PSI Red (return), 32PSI blue (suction).

We tried to start the compressor while banging it with a hammer. We did the same with the leads inverted to make it run backwards (inverting any two leads will do this). No luck. The rotor is locked and **we need a new compressor.**

Changed oil in the Honda genset.

Friday, 04 December 2015, 08:20 AEST

A calm morning – we fixed the flapping leech lines on the Genoa by tucking them in their pockets. The lines had come out of their pockets. We lashed the soft shackles that attach the sheets so the knots are in the clew ring.

Friday, 04 December 2015, 15:00 AEST

The Honda outboard has been defunct for the last 3 days. We drained the tank (found a bit of water), drained the carburetor, and changed the spark plug. That made it run well, but it was leaking fuel, so we also changed two of the three carb gaskets. We also greased the zerks and around the base where it rotates and also the clamps. We should buy replacement spares and a new outboard pad.

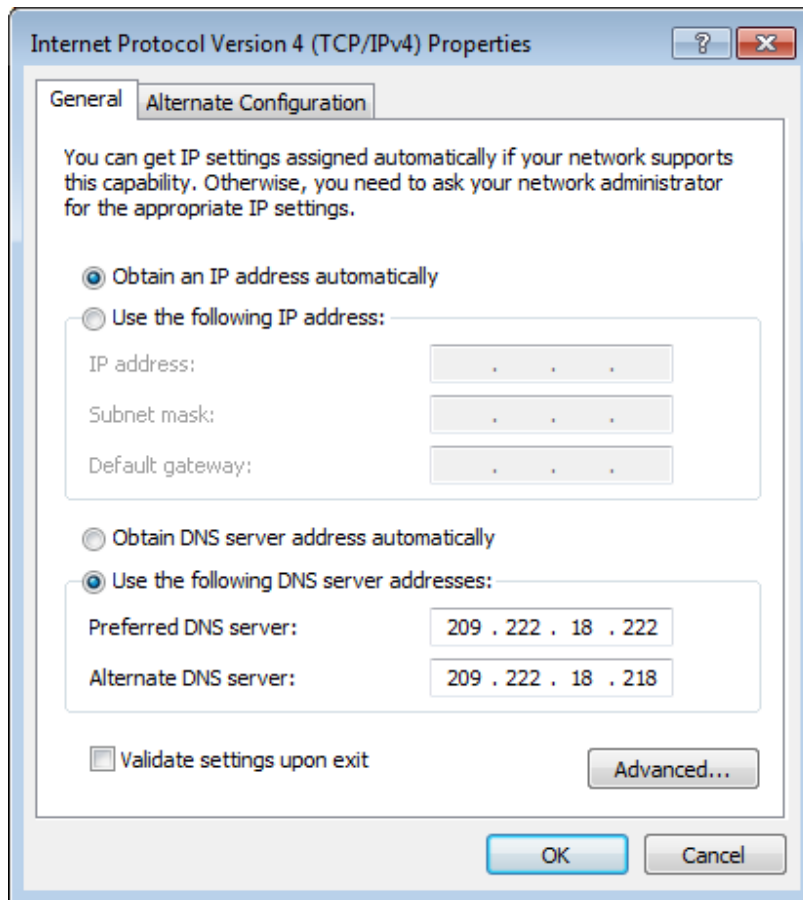
Tuesday, 08 December 2015, 09:59 AEST

Thinking about upgraded solar power. So far I am contemplating Panasonic HIT 240W panels. These are slightly bigger than the existing panels and could be fitted in place of them. This would bring max watts to $240+240+80=560$ watts. Since our existing array of $135+135+80=350$ watts produces as much as 18amps on a perfect day, extrapolation would give us 28 peak amps of input. This is a couple of amps lower than expected and might be due to voltage drops, dirty panels, etc. The calculation was $\text{watts}/14\text{vdc} * 75\%$ giving about 30 amps of expected power at peak. Perhaps if I can mount a 240 on the transom, the total real world input would be 35-38 amps at max. At 5 hours per day this would be over 175AH on a sunny day.0

The Panasonic HIT 240S has a Voc (open circuit voltage) of 52.4vdc and cell efficiency of 21.6%.

The existing controller and remote would not handle this array. An OutbackPower FLEXmax60 would handle up to 750 watts and 60 amps at 12vdc. It would also work with the Mate controller.

A new solar panel system would thus require: New FLEXmax60 Controller Existing Mate 2 Additional wiring of min. 4AWG from controller to batteries Additional wiring of min. 6AWG from the panels 2 to 3 new panels. Modifications to existing stainless railing.



Saturday, 12 December 2015, 10:25 AEST

Kathy commenced winch servicing: It turns out the last servicing was Sept 2011! No wonder the starboard secondary was hard to turn. Once a year is a reasonable servicing time!

#	TYPE	LOC	WINCH	DATE COMPLETED
1	B32.2ST	Cockpit	Control Lines	14/12/2015
2	B40.2ST	Cockpit	Port Secondary	12/12/2015
3	B40.2ST	Cockpit	Starboard Secondary	12/12/2015
4	B40.2ST	Cockpit	Mainsheet	13/12/2015
5	B56.3ST	Cockpit	Port Primary	14/02/2016
6	B56.3ST	Cockpit	Starboard Primary	14/02/2016
7	B40.2ST	Mast S	Main Halyard	15/02/2016
8	B32.2ST	Mast P	Staysail Halyard	16/02/2016
9	B32.1ST	Mast P	Spinnaker / Genoa Halyard	16/02/2016

Wednesday, 16 December 2015, 09:59 AEST

Received from China one DC 8-24V 10-9999 hz 40ma red digital frequency counter to use with the refrigerator compressor. Wiring diagram is at right.

Thursday, 17 December 2015, 10:32 AEST

Off to Tasmania. Added 250ml of water to engine and tightened the RWP belt.

Saturday, 19 December 2015, 12:57 AEST Signed up as roaming station for MarineTraffic



Station has been submitted successfully.



Your station ID is: 2915

In order to activate the Coverage Statistics for your specific Station ID, your data feed must be sent to:

IP address: 5.9.207.224

UDP/TCP port: 8235

If you need information on how to setup an AIS receiving station, please read the page "Cover Your Area" Email us at tech_support@marinetraffic.com for any additional information.

Sunday, 20 December 2015, 11:09 AEST

New parts are required for the dinghy. They are available from inflatableboatparts.com (Ordered on 18/01/15)



**Walker Bay Boat One
Way Drain Plug, WB8/10
#300030176, Single
Drain Plug**



**Walker Bay Cap End RID
Track (Part #17214)**

Monday, 21 December 2015, 15:37

AEST

Two days ago I noticed what I thought was a “clicking” noise in the engine. Listening to the tappets with a screwdriver as a stethoscope did not indicate any problem. Today it is very noticeable. Cutting off the fuel supply to keep the engine from starting allowed us to clearly hear a quick air hiss every engine cycle. I called Gary at Marine Torque in Bundaberg thinks it is a head gasket problem and should be dealt with immediately. I can see no symptoms of head gasket failure: no exhaust smoke of any color, no coolant in the oil, no rising oil level. The engine appears to run fine.

We are leaving Boyd Bay in Twofold Bay and heading back to Eden to have a mechanic have a look. We were hoping to catch the morning winds across Bass Strait.

Tuesday, 22 December 2015, 15:42 AEST

Underway to Tasmania. I noticed the Engine Start Battery is not charging. 5 blinking lights on the Digital Duo Charge mean one of the following:

Start battery temperature too high – Shut down system. CAREFULLY inspect starting battery for signs of overheating. Repair condition and/or replace starting battery. Bad Temperature Sensor cable – Check wiring resistance (approx. 34-40k). Repair or replace Temperature Sensor cable. Bad system grounding – Test ground-side resistance between batteries and charging system. Repair.

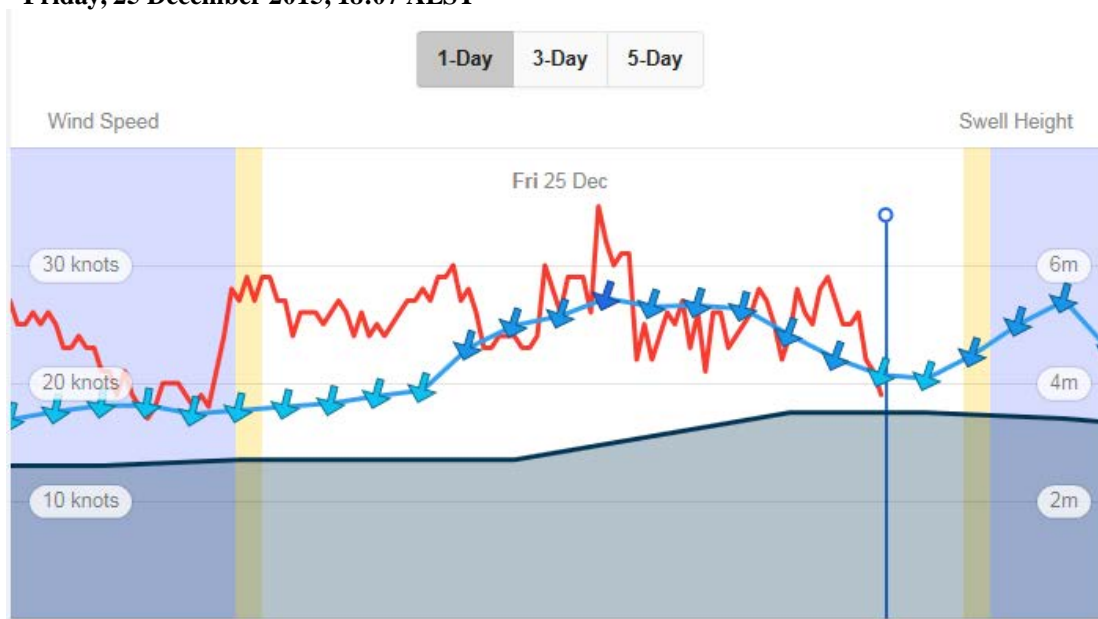
We also had the engine fixed by Philip Mitchell who came by the boat after a difficult raft-up to a large fishing vessel. The problem was the #1 injector seat was not sealed and the compression stroke was blowing air and diesel and soot, which made the strange air noise. It was an easy fix using the old copper washer (we could not find our injectors) which, once cleaned, worked fine.

Thursday, 24 December 2015, 03:30 AEST

We are still underway to Tasmania, just east of Flinders Island. The Octopus actuator stopped working again but we have not inspected it. We had checked it before leaving and the reservoir was full but there were some drops of ATF under the rod at the aft end. The 244 error fault on the autopilot indicates that the actuator is not responding to a/p control.

After a moment of dread I realized we have a Hydrovane and the wind steerer actually works fine. Part of the trick is to apply the right amount of counter-rudder to nullify the natural (and heavy) weather helm of the KP44. Then the Hydrovane rudder can steer the boat adequately. As we had beautiful 2-kt winds on the beam it worked very well. We are expecting following winds today and will see how it does with that.

Friday, 25 December 2015, 18:07 AEST



Issue list Syd-Tas Dec 2015 – no real glitches.

- Fix Ronstan flip-flop block, again, which I ripped off because I did not see that the spinnaker halyard had jammed the genoa and it would not furl.
- Fix safety rope on Hydrovane rudder which is too long, and also needs a loop for using a ratchet to tighten it so it is quiet at night.
- Very noisy in cupboards: Make a fixing device to lock sliding doors in galley Make tiny foam pillows for cabinets?
- Fix wine glass rack with foam backing that works.
- Inspect furler and tangs after hard use across Bass Strait.
- Rebuild the Octopus actuator. Create a power socket for the portable refrigerator.
- The existing socket has a 10% voltage drop and often the refrigerator won't run because of low voltage.
- Have someone pump and weigh the refrigerant and possibly re-install 0.9 kg of R134a.
- Aft cabin doors and lockers need to be lockable for underway use. Same with some other doors in the boat.
- Still having trouble with the water pumps not holding pressure. And, of course, the also pre-existing problem with the serial port failures from the Garmin MFD. It failed today – just shut itself down, plus two other “Lost GPS Service”. I will try a new cable.
- Should also install new solenoid for SSB Should also install new reefer hour meter and totalizer.
- Need to order 50m of double braid for genoa sheets. Best buy 100mm shared from [Sydney Rope Supplies](#) \$188.20 including shipping to Tasmania for 100mm spool. \$94.10 shared ½ spool.

Monday, 28 December 2015, 06:57 AEST

The rubber core in the dinghy “Anchor Buddy” broke and was repaired.

We are sailing to Port Arthur. AP is working fine. We added about 25ml of ATF to the reservoir.

Monday, 28 December 2015, 08:52 AEST

The Garmin GMI10 is not showing wind and GPS or showing very intermittently. Using the software I have I cannot connect on COM7 (NBF-3), but the Vesper seems to be reading the Wind and HDG data from the NBF-3. But, the radios show no position data which indicates a problem with NBF-3. Connection on COM6 to NDC-4 shows no data from MFD.

● Vesper AIS	● KVM Hdg Sensor	● Garmin MFD
● AIS Unfiltered	● Wind Sensor	● Garmin GPS17
● AIS Contact	● Air Temp	● Depth Sensor
● Position Fix	● Water Speed	● Seawater Temp

I have rebooted and noted that DEPTH is missing. The MFD is outputting a null sentence: \$SDDPT,,*57 which probably means the depth sensor is not registering. It could be dirty or is malfunctioning or it is a software problem. Also, GMI10 is showing “water speed”

● Vesper AIS	● KVM Hdg Sensor	● Garmin MFD
● AIS Unfiltered	● Wind Sensor	● Garmin GPS17
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(STW) at nearly double the value. This was fixed by recalibrating the GMI10 water speed. No problem.

Note that the figures shown do not include Vesper & AIS because this data is being read directly from the NDC-4A on COM6. By using the NDC Control Centre software I can narrow it down to MFD Port 2 → NDC-4A Port 3 @ 38400 baud. The data stream simply stops after a while. This means that it can be a problem with the MFD data cable, the MFD itself, or (unlikely) a problem with the NDC-4A. Note: there is a software update 5.9. Existing software is 5.7.

Sunday, 03 January 2016, 11:56 AEST

We are at the public dock in Cygnet. I plugged into shore power and set the switches to 220vac and the yellow light on the Mate 2 flashed while it was sampling the power; then it disconnected. I plugged the shore power into AUX and enabled the 40A ProTech charger and it appears to be working fine. This circuit is a direct line from shore to ProTech.

Have determined the problem is in the yellow Marincos shore power cord which is, arguably, way overkill for a 15A 220VAC circuit. We bought a 25m heavy duty extension cord to replace the shore power cable and everything works fine. I'm not sure where the problem is in that cable. It is a 10AWG cable so it might prove useful for solar or AC wiring elsewhere if the problem with the cabling is in the socket or plug and not the cable itself. We do have a second big shore power cable on board. Neither of the big cables will be required unless we return to North America.

Tuesday, 09 February 2016, 16:15 AEST

Back on the boat after 4 weeks recovering from a knee injury. The refrigerator is still out and I can't start it. I tried bleeding some refrigerant from the high side (discharge, blue line) but I got a lot of oil and some gas out of it. I think maybe we should go ahead with a professional pump-out and re-charge.

The dinghy carburettor was leaking and we replaced the bowl gasket. There is still a problem with a stripped thread on the plate which the carburettor bolts on to. It is on order. For now, the leak has stopped.

Saturday, 13 February 2016, 10:32 AEST

We are working on the Octopus to fix the gland leaks. The instructions are vague on how to do this but apparently it can be done. I wrote [Dave Shannon](#) at CanMet and he gave the following procedure:

Procedure for installing the “O” Rings and Backup Rings into the linear glands of Octopus Actuator.

We use a semi-hooked sharp pointed hand tool to remove the old parts. This type of tool should be available from a local hardware store. Or make one from a coat hanger!!!!

To install new parts:

Be patient!!!! Install the “O” Ring first – use your fingers and a longish flat blade screwdriver. Use the semi-hooked to snug the “O” Ring against the appropriate side of the groove. This makes the job of inserting the Back-Up Ring easier. Ensure that the grooved face of the Back-Up Ring is in the correct orientation when you start out. Install the Back-Up Ring – ensure that the orientation does not “flip” during the early part of this stage. Use your little finger and the flat blade screw driver to assist in “popping” the Back-Up Ring into the gap. Use your little finger to verify that the completed installation is smooth and even.

I know that this works because I just did both of the glands shown in the attached picture.

Regarding the longitudinal scratch – this is potentially serious – you must polish this out if possible. If not repaired; it will chew up your cup seals on the piston.



(Sadly, Dave recently died of cancer)

Sunday, 14 February 2016, 17:21 AEST

Completed seal replacement on the Octopus. Dave’s recommendations (above) were good but I found that 2 5/8” rigging pins from both ends of the glands would “pop” in the O-ring and Back-Up ring. It still was very difficult as the Back-Up Ring has a special side that must face the O-ring and be positioned at the correct end of the gland. The gland with the trunnion was particularly difficult. There were scratches both on rod and inside the tube that needed to be sanded & polished out. I used rubber cement to glue sandpaper to the plastic extension for the vacuum cleaner. It was just the right size. 320/400/600 was used on the tube and 400/600/1000/2000 on the rod.

Kathy finished servicing the two Harken B56.3st primary winches. We had a problem with the starboard winch as the second gear was binding somewhere. After much assembly and disassembly we found that the 2nd gear stack was binding on its bottom plate where it rested on a plastic insert in the aluminum base. I pulled the insert and sanded maybe 0.5mm off the flange. This actually worked! These winches are complex and Kathy has done a great job cleaning and servicing.

On the starboard winch there are two detent balls and springs. I dropped one of the balls down the deck drain. We both had said “be careful of the drains” but did not actually stuff a rag over them. Stupid.

Anyway it turns out that 15 years ago when I bought the winches I stocked a bunch of spare parts including 2 ball & spring sets. Thank you, former Jeff, for being so thoughtful.

Kathy is working on servicing mast winches. Notes and tricks have been added to the PDF instruction files and should be read before servicing.

The Octopus actuator has been reassembled. We bled the cylinder by first sticking the hose from the trunnion end in the ATF jug and pulling the entire length of the shaft out from the rod-end end. This easily filled most of the cylinder. Then we connected the bypass solenoid to voltage, released the bleed screws, and pushed the shaft from one end to the other while keeping the reservoir topped off. The cylinder was held with the reservoir higher than the trunnion end. It only took a couple of cycles to completely bleed the system; this was good because the new seals made it harder to push-pull by hand. I suspect the old seals leaked a bit. I have great hopes for this fixing the A/P problem.

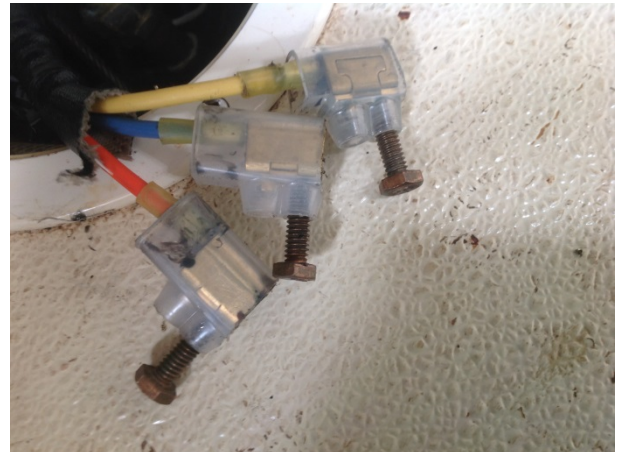
Thursday, 18 February 2016, 10:04 AEST

Haulout coming up on 9 March at the Royal YC for 5 days max:

Preparation Tasks: Get Hempel 86901, paint supplies, and primer possibly. Marineline Chandlers, 1 Lampton Ave., DERWENT PARK. Sheets are ordered from Sydney Ropes.

Thursday, 18 February 2016, 14:38 AEST

Back to refrigeration again. After my last discussion with Mark he said it felt like an electrical problem. So I went back to the connections and found them HOT, probably the blue wire, because it seemed to be the most heat-damaged. I trimmed the wires and re-made new connectors, like below. I took heavy duty connectors and heavy (yellow) butt connectors. I cut half the insulation off the pin connector and ran wire up the full length (I had to drill out the little boss in the center that is there to position two wires. Therefore the wire is squeezed both the crimp and by the brass connector. The end of the connector that is on the compressor power lug had the screw replaced with a bronze hex machine screw so I could use a hex wrench to tighten things. It's a big kludge but at least everything is tight and not heating up. I don't like the exposed hex heads but I can look for a plastic sleeve to cover them.



Running the reefer box took almost two hours to pull down. Some of the long time surely has to do with the box and contents being warm so it will take a few more cycles to settle down, but I think this puts us back to the original problem before the Overfill, which is excessive cycle times. I will not run the freezer (which isn't needed right now) until we are satisfied that the compressor is running.

TIME	Gauge Reading	Sight Glass	Amps	Temp (°C)
13:20	150/35	?	29 drop to 27	~16
13:35	100/25	River	27	-1.4
14:30	80/15	River	27	-2.8
14:50	80/15	River	26	-4.2
15:15	80/14	River	26	-6.1
15:10	85/12	River	26	-8 (done)

Friday, 19 February 2016, 15:14 AEST

Finished USB Port wiring for AIS, NAV data, and SSB connection which are under the Main Panel at the Nav Station. It was tough stuffing the wiring back in. I also screwed down the 12V “cigar lighter” outlet box.

I had a new Redington totalizer and hour meter to install to monitor refrigeration. The totalizer went in OK but the hour meter I ordered was the wrong one. I need to try to exchange it.

Kathy worked on the cap rail, eyebrows forward, bow seat, forward hatch trim as needed. She wet sanded with Deks Olje #1. #2 was applied immediately.

Conversation with Mark.

“Hoses must not leak. O-seal came off. Should fit on a bevel. Check oil level in vacuum pump. Test and exercise the vacuum pump by hooking up to gauge set and pump it. Pump down with yellow hose. See if vacuum holds. Go ahead and pump down the system if checks are good. See if sound changes. Once familiar with the sound of it pumping down go ahead and pump down the whole system. We want to maintain a deep vacuum on the system for a day or two. The manifold service valve should be closed and then open them independently. Think of where the pressure should be.”

Wednesday, 24 February 2016, 14:08 AEST

Fitted new machine screw to hold Honda outboard carburetor tight. It did NOT stop the leaking, which appears to be sourced above the bowl and drop down to the bottom.

Thursday, 25 February 2016, 07:20 AEST

Refrigeration: The vacuum pump is low and oil but appears to work. We used the vacuum pump to evacuate the red hose. It pulled down to 49hg and stayed there for an hour. Then we tested the blue hose. It fell a little bit after an hour and went from 49 to 42 overnight. The O-seal we found apparently was part of a cap as all the hoses have seals; however the seals are cracked at the edges. There is a supply house in Hobart that can provide new seals and new oil for the compressor.

Thursday, 25 February 2016, 19:00 AEST

Today we removed many stainless pieces to have some work done tomorrow: Weld a ring on the autopilot tiller arm Removed the last line reel and the axle. Boat looks cleaner. Removed the life raft rack as preparation to shorten the legs and relocate it to over the aft companionway slide. Note that to lift the raft we wrapped a webbing ratchet around the capsule with a grommet to lift it up. The main halyard did the lifting and a control line was run to a shackle on the rail and then to the secondary winch. Worked a treat! Removed the alternator supports on the Kubota generator so I can take them to the shop for drilling holes for a stiffener plate that I had made at Niall’s factory.

Kathy made major changes to the rain/sun fly. She added WR1 fiberglass battens to the awning and sewed flaps to extend over the zippers and keep the rain from running through the zippers. The battens add support and keep the awning rounded to allow rain to run off.

Friday, 26 February 2016, 10:31 AEST

Made trip to Hobart to get new hoses for the refrigeration gauge set and new oil for the vacuum pump. The pump has been connected to the system and started. I notice some frothiness in oil in the sight glass on the pump.

Friday, 26 February 2016, 12:00 AEST

After over two hours I am only seeing -25 hg when it should be -29.9. The valves are closed and we can see what happens while we go out for a while.

Saturday, 27 February 2016, 08:13 AEST

Overnight the system pressure dropped to 21.5hg. I tightened the new hoses onto the gauges a bit more (they took another ¼ turn) and have re-started the compressor. After ___ minutes the pressure is at -25hg. I closed the service valve and disconnected the blue hose. I then ran the blue hose to both sides of the gauge and turned on the vacuum pump again. After a call to Mark I oiled the seals, replaced the O-ring for the alternate pump input (not used by me) and am just pumping down the yellow hose attached to the blue gauge. It is better – -27hg – but should go to -29hg. I'll let it run a few more minutes. Mark advises that the "smoke" I observed earlier could be water vapor. These pumps are designed for continuous running. After 20min of running the pump can only pull -27hg out of a single hose (I tried it with blue and yellow new hoses). Energize solenoid valve to evacuate the system.

High side low side, expansion valve between high side and low side. Best to operate above 70 or 80. The warmer it is the easier it is to evacuate all the non-condensable out of the oil.

Mark suggests re-plumbing the system so BOTH hoses go to the service valves. This can be done by re-locating the low pressure sensor to the Tee I have been using for the Blue Hose. This has been done.

After evacuation the vacuum should hold.

Sunday, 28 February 2016, 09:08 AEST

Solenoids are open; vacuum pump is running.

Sunday, 28 February 2016, 10:20 AEST

Today we went to Port Cygnet town dock to avoid being anchored on the weekly race start line. . After hooking up to 240vac shore power the Outback Mate controller will not connect to the FX2012ET. This probably means no 240v power once we leave the dock. I have already tested the cables to the Inverter Switch and the problem is not in the switch. This means I have to disassemble the bookshelves to get at the top of the Inverters and test the connections there.

Sunday, 28 February 2016, 11:00 AEST

I turned off the vacuum pump but left the gauges on. Minimum vacuum was -28 in. of hg.

Monday, 29 February 2016, 03:49 AEST

Batteries equalized.

Monday, 29 February 2016, 09:48 AEST

Refrigerator has stopped. I awoke this morning to find the error signal flashing on the compressor controller. Cycling power did not help. The error light started flashing immediately upon turning on the system

[Conversation with Mark:](#)

SYSTEM CHARGING

- Close manifold.
- Pierce can.
- Connect to red hose on the high side (low side will hurt the compressor) and then open red valve and let whole can rush into system as fast as it can. Turn can so liquid flows, not vapor. Let all liquid rush into system.
- **Add liquid on high side with the red (discharge) hose.** First can should go in very quickly. As soon as it's empty close valve and get 2nd can in as quickly as possible with can upside down. We let all liquid rush into the system before the pressure equalizes and we cannot put in any more liquid. As some point the suction side gets up to ambient temp and liquid will not go into the system. The pressure will go down, down, down.
- Then shut valves, turn can right side up, and only put **vapor** in system. At any point we can stop liquid and go to va[pr. Suction pressure will go down.
- **Add vapor on low side with the blue (suction) hose.** Start slowly. If needle jumps that is not good. Put just two cans and let it run. The system should work fine with 24oz. Start first cycle on refrigerator. Keep eye on sight glass. Hope to see "river".

Monday, 29 February 2016, 13:33 AEST

Installed 24oz (680gm) of R134a according to Mark's instructions. I "burped" the hose after connection with the side-piercing device. Kathy held the can high and got about 1½ cans of liquid in on the red line and then switched to adding just vapor on the blue line. I had the solenoid ground wires swapped so the freezer was opened instead of the reefer but I changed that as soon as all the gas was in. The reefer box is now pulling down from ambient at 19°C to its set point of -8°C

The compressor is running at about 3600 RPM and the potentiometer I installed does not seem to make any difference in the speed. Either it is broken or disconnected. The pot changes from 0 to 5v which corresponds to zero to 6500 RPM.

To finish this project:

1. Disconnect controller
2. Pull controller out far enough to run tach and speed control wires to the nav station area
3. Make perf alum cage and install it.
4. Hook up new speed control, or at least short it out to maximum. (It is at maximum now)

Tuesday, 01 March 2016, 07:39 AEST

Fridge took 0.8 hours to pull down from -3.6°C to -8.0°C. Gauges were at 10 and 80 psi but I did not get the final figure.

Now proceeding to pull down the freezer. Mark recommends adding the third can of R134a. This was done without problems.

SUCTION SIDE - Low side pressure (from expansion valve orifice to intake reed valve in compressor) 3/8"
DISCHARGE LINE - Line connecting compress outlet to the condenser inlet. 1/4" tube.

Wednesday, 02 March 2016, 05:49 AEST

This morning the compressor did 3 "whoops" before finally starting up. Freezer is on DEFEAT. Voltage is kind of low 1t 12.16 with -41 amps going out (26 for fridge, the rest for lights and computer). I am monitoring the cycle time. It took 1.6 hours to pull down.

Expansion valve. Take cap off for a day or so and then put it back on.

Need to verify it works well on either F or R.

Test high side valve inside compressor: Turn off water pump and it press goes up to 200 and system shuts down; that's good.

Testing low side valve. If system will pull down to vacuum with just compressor running. Defeat the LP sensor. Try to find Close service valve connected to red hose (discharge) by turning clockwise all the way. Then suction side goes down to below zero.

There is a possibility of the dryer needing to be changed. Sight glass is green.

There is a possibility that the leq line that goes to the expansion valve. Therei is a tiny strainer in the expansion valve and something like burnt oil or a tarry deposit in the tiny strainer. IF this h appened we would have LOW suction pressure and FULL sight glass.

One test is to just run R and see if full sight glass when it is about frozen.

Try changing the set point to so it runs -5° to 0°C on the R, i.e. ST1 & ST2 = -5°. P1=5°. P2=1.1°

Watch frost pattern on freezer. Down one, up the other. Also feel 1:1 2:2 2:1 1:2. Expansion valve is on first circuit, first plate and the expansion valve bulb is on exit of second circuit of first plate. We don't want to freeze first plate and then second plate. We freeze ½ first plate, ½ the second plate, then 2/2 of second plate then 2/2 of first plate. Should hear some hissing on the expansion valve. Opens and close according to the suction line temp. If hold it and warm it up it increases gas going to the plate. Don't do this for a long time (30 sec to 2 min). Should hear and see more liquid entering the plate and plate getting colder.

Suction 20 to 30 is normal, slowly going to zero (or below?).

ACTIONS:

Low side test

High side test

Change set points on R

Note pressures especially blue line as approaches final temp on both R & F.

Note frost, if any, on suction line. How far back is the frost.

Expansion valve. Get acquainted with it. Possibly warm with hands and note consequences.

Wednesday, 02 March 2016, 10:27 AES

SUCTION SIDE - Low side pressure (from expansion valve orifice to intake reed valve in compressor) 3/8"

DISCHARGE LINE - Line connecting compress outlet to the condenser inlet. 1/4" tube.

Running Tests suggested by Mark:

1. **Look for Frost.** Short-cycled R. Down to -7.3 and looking at gauges. **Noted frost all the way back to the compressor and suction pressure at 10 psi positive.** (Should be close to or below 0). Plate temp confirmed by IR thermometer at -7.3.
2. **High Side Test PASSED.** Turned off water pump. Started with R but switched to F as R was fairly cold (-6.6). The pressure rose to almost 200 psi and then shut down. Water cooling turned back on. It was difficult to prime the March pump but by sucking on the alternate outlet in the engine room with the pump running it moved enough water to create a prime. **NEXT TIME** use a length of hose so I don't get salt water all over the diesel transfer pump.
3. **Low Side Test PASSED.** Done too see if system will pull down to vacuum with just compressor running. The LP sensor was taken out of the sensor loop. Service valve connected to red hose (discharge) was closed by turning clockwise all the way. Then suction side gauge showed pump down to vacuum. Test stopped at -25psi. With LP sensor back in the circuit the

system reached an error condition at -20 psi.

4. Freezer Test.

- a. Compressor running for 0.4 hrs. Plate at -1.2° but only frozen bottom half of back plate (which is where the thermal probe is). Suction pressure at +5psi.
- b. Compressor running for 0.8 hrs. Plate at -10.6° Suction at +5psi. Bottom of front plate is now freezing.
- c. Compressor running for 1.4 hrs. Plate at -14°. Suction at +4psi. Back plate bottom half is well frozen, but front plate has some frost top and bottom. Looks like 4th section (top of aft plate) has not frozen yet. I cannot feel where the bulb is on the TX. Frost is all the way back to the suction canister which is totally frosted.
- d. Compressor running for 1.5 hrs. Plate at -15°. Direct measurement with IR thermometer shows back plate at -15 (bottom) and -10 (top) and front plate (top and bottom) at -11. Test stopped.

5. Refrigerator Test.

- a. Compressor running for 0.4 hrs. Plate at -3.2° (Operating range is now 0° to -5°). Suction at +10psi.
- b. Finished at 0.7 hrs. Did not get gauge reading but suspect it is the same. Frost back to service valve.

Wednesday, 02 March 2016, 13:37 AEST

Investigated the MATE controller on the inverters which is no longer finding the FX2012ET. The message is NO DEVICE. RETRY YES? NO? YES just brings up the NO DEVICE message but if NO is pressed the MATE will then control unit but without the green INV on light. With shore power control is also enabled, but without the yellow shore power light. When the Inverter Select Switch is turned slowly to the FX2012MT (120v) it reboots and says FX FOUND and the green inverter light and the yellow AC IN shore power light will work fine.

I tested all the interface cables with a cable tester and also plugged the MATE directly into the FX2012ET, bypassing the selector switch. The same behavior persists, leading me to conclude that the problem is in the FX2012ET.

Discussion with Outback Power:

Try checking if CAT5 socket wires are straight. AC Board and Control Board are not screwed down and can be removed. Top comes off, put top to side, and then disconnect ribbon cables and slide it up. Instructions on YouTube channel (Outback Power Tech Support). Also “WATT school” YouTube channel. Ribbon cables are tricky putting it back together. Possibly the cable could move the pins because we’re a boat. Just bring control board if no fix is possible. (and MATE)

For now, leave things the way they are and get into the system before leaving for the USA.

REFRIGERATION

Frosting back all the way may mean the Expansion valve is open too much. Useful test. The bulb is in there. We want to take the box temp probe and put it next to the bulb so we are only measuring suction line temperature from the plate. What we want to do is change the press/temp or press/temp and of the suction at the exit of the plate. At approx. the same time we want to record the blue gauge pressure. We need a press temp chart for R134a. Gives lots of info on adjusting superheat. In the short synopsis press & temp relationship are equal. It is linear. If you can measure the press you know the temp and vice versa. We are measuring superheat; the amount of evaporation taking place between the plate and the compressor. To complicate this the TX opens and closes and the readings change. An instantaneous thing won’t give us data. We don’t care about the “hunting”. We convert the suction press from temp and subtract and that is the superheat. It sounds like we don’t have enough superheat. Record minute by minute and record suction pressure and temperature. Need a temp probe for the Fluke MM. It will

come down and then start to flatten out. If it flattens out completely then it is not working.

Bought SigmaCover 280 at Spectrum Car paints 03 627 266 44. Derwent Park.

Friday, 11 March 2016, 06:49 AEST

HAULOUT AT RYCT, HOBART, TAS

Product	Brand	Name and Code	Quantity	Cost
Hempel Anti-Foul Thinner	Hempel	Hempel 808AF	1L	\$29.00
Epoxy Thinner	Hempel	Hempel 844	4L	\$25.80
Undercoat 2-part	PPG	SigmaCover 280	4L	\$68.13
Self-Polishing Anti-Fouling	Hempel	Olympic 86901 Blue	1 x 5L	\$183.00
Water-based Anti-Fouling		for transducers	100ml	In stock
Marine Filler	International	Epifill	220ml	\$32.00
Oxalic Acid	Diggers			
ScotchBrite	3M	Red Scrubbies	220ml	\$32.00

TASKS

- Hull Hand sand with 100 grit. (80-120)
- Clean any waterline stains with oxalic acid prior to sanding. Spray on, wait 10 minutes, wash off.
- Masking Tape as needed on hull, propeller, etc.
- Olympic 86901
 - One complete coat all the way around.
 - anti-foul from waterline to 1m.
 - 2 more coats on leading edges, rudder, keel bottom
- Propeller
 - Factory coating on Max-Prop is gone. It was pitted and lost its integrity.
 - Sanded off remainder.
 - PropSpeed applied. \$130 by Tom from Bilge Rats
- Water-based Transducer Paint
- Fix keel damage. Dings and chips from grounding at Port Cygnet wharf (not our fault). Also some areas on aft of rudder skeg, forward of the rudder
 - Grind out chips.
 - Sand
 - Coat with SigmaCover 280
 - Epifill (16hr cure)
 - Fair and sands Epifill
 - Recoat with Sigma
- The usual Check
 - Through-hulls – 1 day.
 - Zinc replacement.
 - shaft collar zinc.
 - Small teardrops.
 - Open door on scoop strainers and check them.
 - GREASE THE PROP?
 - Remove and clean engine room raw water strainers

MATERIALS

- Paint Hempel 86901 (for less active boats) was used instead of 86951
- Paint Cleanup (Mineral Spirits or Hempel Thinner)
- Rollers
 - (medium 10-12 mm nap, six) x 230mm
 - Roller Handle and extension
 - Roller Pan
 - Line with Aluminum foil.
 - Rubber Sanding blocks.
- Sandpaper: sheets 100/40/60.
- 3M Red Scotch-Brite Scrubbers
- Flap wheels: 120 and paint removal.
- Oxalic Acid
- Butyl Rubber
- Safety Gear
 - Tyvek suits (2)
 - Dust Masks
 - Solvent Masks
 - Gloves
 - Latex
 - Nitrile (for solvent-based paint)
 - Heavy-duty kitchen gloves
- Transducer paint
- Face Masks
- Long Handled sanding plates
- Stiff brush
- 3M Blue Masking Tape (1 roll 2")
- Epifill if necessary

HAULOUT LOG

Wed, 09 March 2016, 0900 AEST

- Haulout
- Pressure Wash
- Noted some damage on keel bottom from Port Cygnet Wharf when tide went out.
- Connected refrigeration. Setup power and water hose.
- Sanded prop for PropSpeed™.
- Kathy commenced wet sanding.
- Noted MISSING ZINCS on the lightning ground. Stray currents?
- Scoop strainers were full of white worm casings.

Thu, 10 March 2016, 0900 AEST

- Oxalic Acid mixture on topsides.
 - Pre-wet surface.
 - Dip sponge in acid and go over the area
 - Let sit 10-15 minutes. Stain disappears. Rinse.
 - Dry with wet chamois.
- Waterline
 - Oxalic acid mixture with scrubby applied to boot stripe and waterline.
 - Flush with fresh water after 10 min.
 - Scrubby (3M red) on old paint.
 - Wet surface wetted if not already wet.
 - Rust found on transom bolt heads and flanges. Treated with Oxalic acid.
- Clear aft deck and put down plastic. Put mat on bottom of ladder.

Fri, 11 March 2016, 0900 AEST

- Use Epifill to fill dings.
- Oxalic acid on waterline all around
- Oxalic acid scrub on topsides. This cleaned up the brown stains.
- Scrub or Sand hull to 1m below waterline; also rudder and leading edges
- 7 Through-hulls inspected and 6 greased
 - Reefer/Watermaker stopcock is in use for refrigeration and will have to wait until just before we splash.
 - I cannot reach deck drain port seacock so I just worked it around without greasing it.
 - None were dis-assembled this time as that happened early last year. This job could actually be done in the water, except...
 - The forward head outlet had some heavy scale in it that was keeping me from turning the stopcock from the inside. I had to go outside and use a flathead screwdriver to rout out the scale – then it worked.
 - Greasing with the zerk fittings only gets one side. I think we should institute a policy to work the stopcocks every 3 months.
- Re-filled Epifill in PM due to some residual dimples.

Sat, 12 March 2016, 0900 AEST

- Kathy finished polishing the topsides. Some grey stains were tested with Comet and still would not come off. Perhaps they are showing the underlying fiberglass.
- All sanding done; ready to paint except for areas with Epifill.
- Sand Epifill and Cover with SigmaCover 280.
- Through-hulls finished except for inaccessible Bilge Cock and the Reefer seacock in use.

Sun, 13 March 2016, 0900 AEST

- Tape the waterline
- Apply 1st coat Hempel anti-foul
 - It went on very thick and only covered the entire boat less the starboard side from the top of the keel to the waterline.
 - I think the problem was putting the Hempel on too heavy. I suggest making three quick passes with the roller to spread most of the paint and then going back over to fill in.
 - Also, the roller must be parallel to the ground so it hits the hull evenly.
 - Suggest using a small roller to carefully apply paint below the masking tape.
 - The masking tape was 3M Blue which is different than before – it is easy to snap-tear in a clean break and seems to stick and release well. It is supposed to be 8 day tape.

Mon, 14 March 2016, 0900 AEST**IT'S A BLOODY PUBLIC HOLIDAY "8 HOURS DAY" WTF**

- Attach 3 teardrop zincs: 2 on lightning ground & 1 on the radio ground
- Greased MaxPrp
- Put putty over nuts.
- K Birthday! Went to see "Hail, Caesar" at State Theatre and eat Fish 'n' Onion Rings at Mako's Fish in North Hobart

Tues, 15 March 2016, 0900 AEST

- Bought 5 more liters Hempel Soft Blue for \$179
- Sand Starboard Side where strap was.
- Finish 1st coat of Hempel on port side from waterline to 3' below waterline.
- Apply 2nd coat Hempel
 - below waterline only 2-3'
 - Rudder
 - Leading Edges
 - Bottom of Keel
- Transducer Anti Fouling

Wed, 16 March 2016, 0900 AEST

- Bosun installed strap to support bow; removed jackstand. Cardboard used to protect against strap chafe on hull.
- Last bit of Hempel applied to area formerly under forward jackstand.
- Stripped 3M Blue tape. Very good tape but also very adhesive and in places the boot stripe was damaged.
- Ready to Splash at 0800 tomorrow.

Sunday, 13 March 2016, 09:22 AEST

Note: refrigeration compressor would not start at first due to “whooping”. Then OK.

Thursday, 17 March 2016, 10:37 AEST

Back in water. Cleanup underway.

DEPTH SOUNDER IS NOT READING. SWT and STW are OK.

I isolated the fresh water pumps to find out which one is leaking pressure through the diaphragms. It is pump #2. Pump #1 is holding. These have 3-year warranties so we should be able to return them for servicing.

The refrigeration has been running with reefer only with set points on at -1°C and off at -6°C. Un-monitored cycle time over the last week is 22 min/cycle at this set point. It climbed to 30 min/cycle on the hard but now is back to about 23 min/cycle. At 6.2 cycles per day and 25 amps while running that adds up to about 68 amp-hours per day.

Friday, 18 March 2016, 09:26 AEST

Heavy rain and strong winds today. A serious deck leak is noted at the staysail stay base. This needs to be removed and re-bedded. I thought we had fixed that earlier (2010) but apparently not.

Monday, 21 March 2016, 05:07 AEST

We are in the RYCT marina and Kathy has been doing lots of cleanup work and stowage. I’ve gone back to working on the Kubota generator. I installed the new raw water flow sensor and modified and installed the Balmar “Belt Buddy” belt tensioner and it works perfectly. This is so much better than trying to pry the alternator up while tightening the mounting bolt. I have designed better tensioner arms and will have them waterjet cut in the USA when we visit. Today I am making a mounting for the inline fuel filter and will then move on to installing a fuse box, sensing coil and some minor re-wiring. That should make the KubGen operational. I still have to connect the main controls at the Nav station.

Tuesday, 22 March 2016, 07:24 AEST

Yesterday I added a decent mounting bracket for the KubGen.

Friday, 25 March 2016, 12:52 AEST

Finished making new genoa, staysail and storm staysail sheets. The line was generic “Offshore Yacht Braid” which is a dacron double-braid. It spliced fairly well after I learned the rope. Two tricks are to 1) remember to pull on the buried core and the cover to tighten up the crossover and 2) tension the line by hooking a grommet to the coaming cleat, running the line by way of the aft turning block to the main winch. This give a long run of line to stretch out and seems to make it easy to pop the bunched part of the crossover (it always bunches) into the cover.

I also made a second spinnaker pole afterguy out of 3/8” XLS.

Monday, 28 March 2016, 15:57 AEST

“The Saga of the Paint”

Over the last few days we have been re-coating the “smooth” part of the aft cabin coach house. Wrong paint and wrong application: started with Jotun Penguard HB white 2-part undercoat. Again Wrong product: Kathy applied with a roller/brush- 2 coats of white Norglass Northane – also 2-part paint. The results were not very good. We put it on too thick and it has lots of brush strokes.

This, as it turned out, was not what we did in the cockpit. When we looked backwards in this log to [22 Jan 2014](#) where we realized we needed to use Norglass [Weatherfast](#), white and opal white 4:1 which is one-part modified polyurethane enamel paint.

As everything can be forgiven with a little sandpaper and much sanding and more paint, we proceeded to buy some Norglass [Shipshape](#); which is a heavy solids undercoat very suitable for covering the earlier erroneous paint product. Two coats of that and sanding with 180 (machine and hand work with a cork block) brought it all back to smooth again. Shipshape needed to cure 24 hours plus to be sanded!

Then we researched “roll and tip”, watching YouTube videos and reading articles. We ended up with a terrifically nice finish of 2 coats of Weatherfast white mixed 4:1 with Weatherfast Opal. A new friend, John Brown from Melbourne (Glen Iris, near Ringwood) of “*Jimmy Blacksmith*”, helped by wielding a cutting brush to get the corners while Kathy followed with the mohair small roller and I brought up the rear to tip out the bubbles from the roller. It all went on pretty well and amazingly settled down to a very nice gloss – not a spray finish, but amazingly close.

Here is the basic method for Weatherfast 1-part enamel:

- Prep
 - First coat goes over 180 grit sanded primer cleaned with acetone.
 - Second coat goes over 400 grit lightly sanded first coat wiped with real tack rags after sanding
- Tape with blue tape. Be generous. Be careful of the edges; press down and try to use long tape runs.
- 2 or 3-person team to:
 - Trim – paint corners and places the roller can’t reach
 - Roll – small mohair roller is fairly dry and puts on even coat of thin paint
 - Tip – use a good quality tipping brush and gently stroke out the bubbles left by the roller

The secrets learned are:

- SECRET – RTFL. Read the log to see what successes and problems we had last time we did this.
- SECRET: Use THIN PAINT (5 – 10% brushing thinner) which flows better. As you use the paint the thinner evaporates so add more thinner as needed. Measure your quantity of paint in a measured cup. Pour quantity of thinner in separate marked measuring cup. This can then be poured and stirred into the paint.
- SECRET: Roller has to be almost dry with a small amount of paint so a thin coat can be applied and immediately tipped without sags or runs.
- SECRET: PUT ON A THIN COAT OF THIN PAINT!
- SECRET: FOLLOW THE WET EDGE. Keep moving forward. Have a painting plan. Everyone needs to know the painting plan to have the project flow smoothly. It seems to work best if Jeff tips and Kathy rolls.
- Once the paint is down you cannot go back. Leave problems for sanding and a later coat.
- We painted some worn patches of the cockpit which was done in 2014. It worked amazingly well. A little sanding and you can simply cover the enamel with new paint. We will try burnishing in the new paint with 1000 or 2000 grit and see how it looks.
- If re-coated within 24 hours Weatherfast will “key in” chemically and not need any sanding

- other than knocking down any bubbles or dust.
- Shipshape primer requires a minimum of 24 hours (30 or more is best) to cure before sanding.
- ***Weather Note:*** *This project was done in Hobart during the fall and temperatures were around 18°. Humidity about 50%. The sky was partly cloudy which made for cool, shaded painting days. It was warm enough for the paint to dry but not so warm that it thickened up too quickly. Fortunately the winds were zero to 5 knots and not a problem for us.*
- SECRET: Have all equipment ready at hand.
 - Roller handle and more than one roller. Prep rollers by wrapping blue tape around them to de fuzz them.
 - Rags (have a solvent soaked rag ready to clean up boo-boos. There is no time to go looking for one while painting.)
 - Thinner/Brushing Liquid (e.g 303)
 - Paint
 - Stirring Sticks
 - Paint lid opener
 - Mixing containers
 - Paper cups to dip paint from can
 - Two brushes: one for trimming out, larger brush for tipping
 - Stirring sticks:
 - Chopsticks
 - Tongue depressors
 - Bigger stirrers
 - Clean up Gear
 - Paper towels
 - Mineral turpentine
 - Dish soap and water
 - Brush Conditioner/Cleaner

Wednesday, 30 March 2016, 07:45 AEST

Sailing conundrums. When to leave?

1. Be on the East Coasts by Friday for good chance to sail to Eden. This means leave for east coast TODAY and get Brian to take bus on Friday.
 - i. Finish priority tasks
 - ii. Provisioning
 - iii. Cooking
 - iv. Arrange Brian transport.
 1. Airporter to Liverpool
 2. 4PM Bus to Orford from Tassielink Transit at 64 Brisbane St, Hobart TAS 7000, Australia
2. Next possible window is next Wed (1 week) but models differ. Would have to leave on Monday for the East Coast.

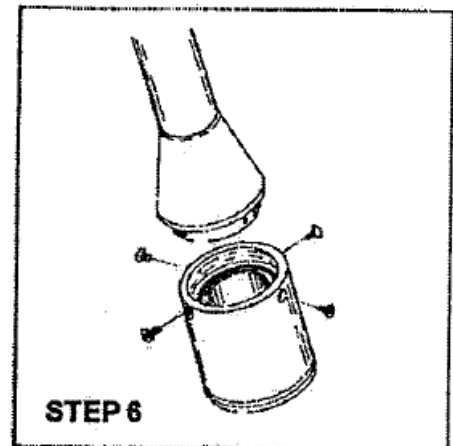
1. PRIORITY ONE. Hobart to Sydney minimum sailing requirements.
 - a. New Genoa Sheets.
 - b. New Staysail Sheets (2 sets)
 - c. Attach Staysail sheets
 - d. Mount the Life Raft Rack and life raft.
 - e. Tighten belt on the raw water pump
 - f. Re-Install arm for main alternator & small alternator.
 - g. Engine bilge shutoff not working
 - h. Clean engine bilge foot.
 - i. Fuel Fill O-rings
 - j. Day Tank Sensor Wires
 - k. Fix cockpit grating.
 - l. Check / Clean engine air cleaner.
 - m. Provisions and Stowage
 - n. Paint the Deck so we can re-install deck hardware.
 - o. Temporarily plug holes at old Life Raft Rack site.
 - p. Boom gallows base fasteners re-installed.
 - q. Wood Restrainer & Shock Cord for SodaStream device.
 - r. Depth Sounder wiring check if possible.
 - s. Deploy backup sounder.
 - t. Up the mast check
 - u. Comforter to fwd cabin
 - v. LifePruf case on iPad – switch to Telstra SIM. Cancel Voda.
 - w. Contact Cleaner on Twinscope.
2. PRIORITY TWO. Desirable Tasks.
 - a. Fix windshield from Stewart
 - b. Finish commissioning the Kubota generator.
 - c. Galley pump ShurFlo Whitworths or bring to USA for repair.
 - d. Refrigerator research and testing.
 - e. Storm Staysail Sheets
 - f. Staysail Sheets
 - g. New headliner
 - i. Research
 - ii. Test
 - iii. Install
 - h. Aft coach-house paint enamel smooth areas
 - i. Paint other smooth areas of the deck.
 - j. Deck Non-skid Kiwi Grip
 - k. Watermaker repairs
3. PRIORITY THREE – BEFORE USA TRIP
 - a. Finish refrigeration fix or decide to bring home
 - b. Add “Belt Buddy” to alternator arms in ER.
 - c. Decide what parts are required for:
 - i. FX2012ET (220v)
 - ii. Depth Sounder
 - iii. Refrigeration
 - iv. Watermaker
 - v. Nav data issues with GMI-10 and GPSMAP.
 - vi. Tigres anchor windlass
 - vii. BBQ (shift knob to right side)
4. PRIORITY FOUR – Probably won’t happen until after the USA trip
 - a. Genset Controls
 - b. Engine Controls

Thursday, 31 March 2016, 13:24 AEST

Greased cones on Tigres anchor windlass. They showed some de-zincification; a very fine layer of pink copper on the outside cone. The key appears wobbly in its keyway and we need to disassemble and see if new parts are needed.

The day tank “tank full” sensor switch (Mamco NC pressure switch 0.25psi) failed and was replaced with the one on the dead port tank.

The ¼-20 flat head machine screws that connect the jib furler drum to the “torque tube” were all loose. They had been fastened down with TefGel as an anti-seizing compound but they obviously needed Loctite. They were re-installed with medium strength Loctite.



The “windshield” from Stewart at 42North (North Sails) was tweaked by Stewart and it is marginally less wibbly.

Friday, 01 April 2016, 10:23 AEST

After replacing the broken fuel level sensor and pumping the Day Tank we got a lot of diesel smell in the boat. Inspection of the Wema FLB-2 plate shows it leaked again from under the plate. This is now an urgent matter to either find another FLB-2 or replace with something home-made.

I built a very cool restrainer for Kathy’s SodaStream™ device. It now sits handily in the corner of the galley bench.

Saturday, 02 April 2016, 06:40 AEST

There is a very small leak at the anti-rotation bolt for the transducer fairing block. NEXT HAUOUT REMOVE THE BOLT AND RE-INSTALL. I put Butyl rubber under the washer and tightened it down one turn which helped; it might do the trick for now.

Kathy noted melted raceway cover next to the exhaust tube. Jeff removed the insulation and inspected the pipe but there was no obvious problem. We can’t determine when that melted although it is obviously from close proximity to the exhaust riser. The wires in the raceway were not damaged in any way.

Testing the depth sounder by substituting the through-the-hull spare sounder shows that the GSD20 black box is fine. The problem is either in the Airmar unit or it’s wiring. I can’t fix this right now so we will have to get by with the Interphase and knowing we can deploy the spare sounder over the side when approaching a harbor. Drat.

Saturday, 02 April 2016, 17:10 AEST

The life raft frame was mounted today using 3/8”UNC studs and dome nuts. It was a difficult task to achieve perfect alignment and the port forward stud required some carving of the woodwork in the aft head to get a nut and washer in place. We used rubber washers and no sealant, as usual.

I checked the bilge pump and cleaned out some of the oil from the drip dray. We added a bit of engine oil, too.

We also re-installed all the deck hardware on the aft coach house so we are new ready to sail.

Sunday, 03 April 2016, 12:57 AEST

Jeff went up the mast to inspect. Two cotter pins on the lower spreader tips (one each) were not spread and this was fixed. Blobs of silicone were placed on all exposed cotter pins at the lower spreader tips.

Sunday, 03 April 2016, 20:43 AEST

BBQ was weak and went out. Maybe need new one? Maybe solenoid problems?

Re-mounted the life raft cradle in new position. Ditch kit will ride downstairs for a while.

Monday, 04 April 2016, 08:18 AEST

Prepping for departure. Went into the lazarette again to check on seating of the Wemal FLB-2 plate. I backed off the holding nut and re-seated the O-ring. Nobody is willing to test it.

Monday, 11 April 2016, 17:24 AEST

PRINCE OF WALES MARINA IN TASMANIA TO BLACKWATTLE BAY, SYDNEY, NSW

GLITCHES:

1. Frayed pennant on staysail needs replacing.
2. Worn-out short bungee cord for EZ-JAX needs replacement.
3. Leaking seawater into the forward cabin from the staysail deck fitting
4. Leaking seawater into the “wine cellar” in the aft cabin.
5. Split diesel return line. REPAIRED under way. Replace ¼” hose later.
6. Broken shaft on raw water pump. Rebuilt backup up pump at anchor. FIXED. New bearing and seals to the new stainless shaft fabricated last year in Derwent Park. Now we need another new shaft. There is a “bearing seal” in the diagram that is missing from both pumps. Contact George at Depco regarding this.
7. Steering cable jumped its groove on the quadrant and was binding and making it difficult to steer. This occurred because the cable had stretched and became slack. I took this opportunity to straight out the twist in the two cables where the run behind the day tank. FIXED
8. The Octopus Pump was unscrewing its motor from the hydraulic pump. FIXED
9. The system was bled and tested. Dockside and sea trials were made and the compass calibrated.
10. We had 3 uncontrolled gibes (novice at helm + weird steering issue) and we need to remove and inspect the gooseneck because there is a lot of play in it.
11. Aft Nav light was not working. The deck lights were glowing dimly, too. Connecting the loose ground wire for the NAV light fixed the problem.
12. It becomes increasingly clear that the problem with the NAV system is that the MFD is losing its serial port connection with the rest of the boat.
13. From Jervis Bay north the engine was not charging any batteries. Starter battery was very low voltage and main was down over 200AH when we arrived in Quarantine Bay. FIXED

Tuesday, 12 April 2016, 19:47 AEST – South of Jervis Bay.

The autopilot was making a great clatter earlier today and we found the same issue as noted above – the long 10-32 machine screws that hold the motor together had detached. There was also quite a bit of black oil inside the motor. Is it possible that the oil had denatured the Loctite that held the screws in place? More likely, the loosening of the motor screws let oil leak past the O-ring. I think this is the same motor that failed in 2011. The log suggests we fixed the motor; but I remember sending the unit in to Canmet to have it checked over. I’m not sure; I do have a record and invoice for a new rod-end which was replaced at that time. A partial solution might be to use studs and high-strength Loctite instead of a machine screw.

We attempted an at-sea repair but the screws were damaged enough that we could not screw them into

their threaded sockets on the pump end. After finding safe harbor in Jervis Bay we replaced the entire pump/motor assembly with the brand new one in our stores.

This time we had the shutoff valve assembly and were able to preserve the prime in the hydraulic lines to the actuator. We used the above “syringe method” to pre-fill the pump. Once we turned on the system it needed manual assistance to get the first slug of hydraulic fluid into the pump. After that it worked fine; we cycled the wheel several times (hard-over to hard-over) with the Autopilot and then bled the system from the cylinder end. A few bubbles were noted at first. No problems have appeared during the rest of the voyage.

This new pump is much quieter in operation than the original.

Contact Dave Shannon @ Ocotpus about sending in the bad pump. DONE. R/A is in the email.

Saturday, 16 April 2016, 06:54 AEST

Yesterday we talked with Andrew at Holland Engineering in Marrickville and he suggested the shaft breakage MIGHT have been due to the loss of load-bearing diameter by using a threaded shaft instead of the full width shaft with a Woodruff key. I remember our problem with the first breakdown (years ago, in Mexico) had to do with that keyway being chewed up either in the pump or the pulley. The original pulley was steel. DEPCO has replacement pulleys for sale. Also shafts are available in Brisbane for US\$288 which is about \$100 cheaper than USA sources, if you can even find one.

Looking for parts for the Jabsco 11850 pump:

I talked with George Hecht at Depco today and he is looking up prices. I apparently have left off the bearing seal.

http://www.pumpvendor.com/Jabsco_11850_series.html has the pulleys and seal kits

<http://www.marineengineparts.com/jabsco-11977-0000-shaft-kit.html> has 1 shaft kit and claims they get them from Jabsco direct.

<http://www.go2marine.com/product/205925F/jabsco-pump-replacement-parts-bearing.html> has parts

<http://www.freeportmarine.com/jabsco-engine-cooling-pump-8-9-gallons-per-minute-1.html> had one BRAND NEW PUMP for \$374.99 (free ship). Totally amazing!!! We bought it. Terrific.

Stainless shaft that is on the engine now was custom made by Apco Engineering in Derwent Park (03-6272-8344)

Try: <http://www.blackburnmarinesupply.com/> Nothing. No engine pumps.

<http://www.amazon.com/Jabsco-Part-Number-11850-0701/dp/B00E5UXUZS> has one for \$1185.

http://www.aquaintl.com/Bracket%20Mount%201%20inch%20Pump%2011850%20series.html?category_id=527 is in Singapore and they have been written.

+19853843000

Pulley from Depco (Alum) with slot.

\$169.12 for 2

\$203.96 for 1

Jabsco Brisbane (<mailto:gordon@jabscobrisbane.com.au>) has shafts and seals:

Shaft A\$395.00

Mech seal A\$149.75

Sunday, 17 April 2016, 12:23 AEST

Fixed main engine charging problem. The blue exciter wire to the 100A alternator had come off, most likely because of its proximity to the oil dipstick. Wire ties were added to hold the hoses and wires out of the way of the dipstick.

At the time I also noted:

- Salt crystals at outlet end of the raw water flow alarm (Aqualarm).
- Very small ooze of water at the aft heat exchanger end cap.
- A slight amount of diesel fuel at the return cap on cylinder 3.

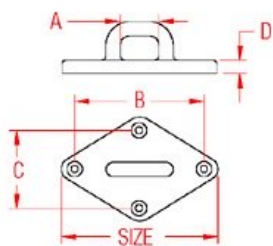
I tightened the hose clamps on the end cap $\frac{1}{2}$ - $\frac{3}{4}$ turn and that seemed to fix the end cap leak. The Aqualarm issue will take a bit more work as if it has to come off completely that will require breaking the seals on the end cap; i.e. the manifold has to be drained of coolant and the raw water also drained out of the manifold. I rotated the alarm unit a third-turn without disassembly by backing off the hose clamps. I torqued the cap nuts on the injectors a slight amount.

Monday, 18 April 2016, 09:34 AEST

I tested the alternators with a low battery and although they worked fine for a few minutes the power output dropped to zero. It was the 15A fuse for alternator power that had blown. Actually, looking in the fuse supply box, I found a 3A fuse in the 15A place, so maybe it was the wrong fuse all along. Unfortunately I already had tossed out the old fuse. I replaced it with a 20A fuse and it is working fine; however, looking at the Installation Manual for the regulator it recommends a 10A fuse. So, it should definitely be working with a 10 fuse. Therefore, I went back to the 15A fuse and we'll see if that lasts and if not I will test the current with a meter across the fuse-holder and see what is going on.

Monday, 18 April 2016, 11:50 AEST

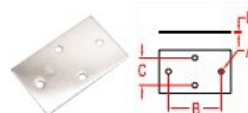
I am looking at a design for a tie-wire to strengthen the staysail stay. It is 42"-44" from the inside of the ABI Deck Fitting to an eye-bolt fastened at the base of the anchor locker. The bottom eye-bolt could be the Suncor Heavy Duty Diamond Pad Eye (below) with a backing plate. It would mount vertically. The top eye-bolt is 5/8-18 (UNF). There should be a turnbuckle. I also think I have a super-strength padeye from Harken on board.



ITEM	SIZE	A	B	C	D	WLL (LB)	FAST.	WT (LB)
S3702-0000	3-1/4"	0.76"	2.37"	1.23"	0.26"	2,000	1/4"	0.30
S3703-0000	4"	1.00"	3.00"	1.56"	0.28"	3,000	5/16"	0.49
HD DIAMOND BACKPLATE (STAINLESS STEEL)								
S3702-BP00	3-1/4"	1/4"	2.37"	1.23"	0.08"			0.11
S3703-0001	4"	5/16"	3.00"	1.56"	0.06"			0.17

NOTE: HEAVY DUTY, ONE PIECE PRECISION CASTING, WITHOUT WELDS. FOR MAXIMUM LOAD DISTRIBUTION USE HD BACKPLATE.

Reference the [Fastener Matching Chart](#) for compatible fasteners.



Monday, 18 April 2016, 19:58 AEST

1. Re-bedded the ABI Staysail Lever Base Plate which had been leaking. I removed the rubber gasket and used butyl rubber instead. I used a countersink bit to create a chamfer on the bolt holes and around the through-deck fitting. Lots of butyl around the bolts so hopefully the water will stay out of the forward cabin.
2. Started work on the wood tops for the upright stanchions on either side of the aft hatch. I have decided to make the wood rail in 3 parts around the sides and back. They will fit perfectly to allow jerry jugs to be tied to them; alternatively they will support a router table.

Tuesday, 19 April 2016, 14:14 AEST

- Exchanged Battery Standby Cell.
- Made new pennant in 10mm Dyneema for storm staysail. Replaced ClamCleave for leech line.

Wednesday, 20 April 2016, 07:43 AEST

Kathy noted water on the port side of the "shelf" above the shaft under the aft cabin floorboard. I believe this is "normal" seepage from the rudder post. We need to re-pack the rudder post log.

Raw Water Pumps

Pump #	Condition	Shaft	Pulley	Comments
1	Used	Custom Threaded s/s	Custom Threaded	Running in engine now.
2	Used	Factory Keyed Stainless	Used Aluminum threaded ¹⁰	Purchase shaft from Jabsco Brisbane ¹⁰
3	New	Factory Keyed Stainless ¹¹	New Aluminum Keyed	Purchase pulley from Depco

One new pump has been shipped. We need to order at least one of the proper pulleys (DEPCO or standard parts conversion like on pump #1) and at least one shaft from Brisbane.

¹⁰ Either pulley must be converted to keyed, or shaft converted from keyed to threaded

¹¹ Assumed that new pump has stainless keyed shaft

Thursday, 21 April 2016, 18:03 AEST

Today was mostly spent on debugging the navigational equipment. I re-installed the software update on the MFD. It is NOT the latest as the Garmin Updater won't work on 64-bit systems (stupid). I need to remember to bring the Garmin cards in for updating to the latest OS and to update our charts.

I connected the GMI-10 directly to the GPSMAP 3010C chartplotter (MFD) and found that a) the GMI-10 stopped dropping out (could have been the new cable, but unlikely) and the MFD data has been continuously generated for several hours. Using the NDC Control Centre, my NMEA Data Stream program, and PuTTY I can see the data flowing. With the GMI-10 connected directly to the MFD I had to reduce the baud rate on Port 2 to 4800. The NBF buffer seems to be working to filter data from WIND and HDG and pass them to the Vesper. The problem might be in the output from the buffer to the Network Panel, which I can investigate tomorrow. Could be wiring; could be the buffer itself (doubtful, since it is transmitting and reading data).

The screenshot displays the 'NMEA Data Stream over Wi-Fi' web interface. At the top, it shows the location as Blackwattle Bay Anchorage, Sydney, and the time as 21/04/2016 8:04:24 AM UTC. The interface includes a 'Port Configure' section with settings for RS232 or IN/OUT 0 or USB, including baud rates (4800, 38400) and a 'Clone output mode' set to 'Enabled'. A 'Data Stream' section shows a list of NMEA sentences being received, such as 'SHCHDM,074.0,M*2A' and 'SPLCJEC9B,759C,C700,0056,41,77'. A 'Control Centre Port Status' section shows a bar chart of data flow. On the right, there are buttons for 'Show NMEA ALL DATATYPES', 'Show NMEA MINIMUM DATATYPES', 'Show NMEA LOGGING DATATYPES', 'Show NMEA ACCEPTABLE DATATYPES', 'Show POST', 'Show INI File', 'Edit INI File', and 'MMSI 366755340'. A 'COM5 - PuTTY' window is open in the foreground, showing a stream of NMEA sentences like '\$GPRMB,A,0.01,R,002.91,BLACKW,3352.2681,S,15110.9068,E,0.041,257.3,V,A*52'.

Monday, 25 April 2016, 20:30 AEST

The second problem cropped up today. This problem is not that the data output stream from the GPSMAP is disappearing, but that the unit itself seems to lose connectivity to the external devices, specifically the GSD20 and GPS17. This happens at intervals from 20 minutes to several hours and is simply fixed by a reboot. The implication here is that we need a new chartplotter/radar display. Hmm. I haven't checked if it loses the radar? I turned on the radar and even thought the GPSMAP drops the NAV and DPT the radar is still connected; so it is something in the serial ports.

Today I removed the raw water pump again. This time I put a champagne cork in the output hose so it would not leak seawater back into the bilge. I really don't like the single-clamp hoses on the input and output ports; they are a possible point of failure. This time I used a locking nut on the threaded shaft to hold the pulley in position off of the bearing. I also installed the U-cup bearing seal which I had left out earlier. The unit now seems solid and I hope it runs a long time. The pulley is threaded onto the shaft and has Loctite applied to both the pulley and the locking nut. I did not have the exact size of nut so I had to drill and tap some brass nuts that were intended to fit the shaft but were a metric thread. The nut is a bit sloppy but will hold for now.

Wednesday, 27 April 2016, 12:46 AEST

Talk with Jon Jameson from Garmin:

CHECK GPS SENSOR – IS IT WORKING?

DEPTH AND GPS SHARE INTERNAL COMMUNICATIONS

GSD20 NO LONGER SUPPORTED AND HAVE A LIFESPAN. DON'T TRUST IT

GOOD NEWS IS THERE IS A REPLACEMENT DISPLAY THAT USES SAME TRANSDUCER.

NEW DISPLAYS ALL HAVE SONAR BUILT-IN. 1040xs (PRELOADED CHARTS) ALSO

ELIMINATES GPS ANTENNA. NMEA BOTH HANDLED NICELY. 1020XS IS LESS

EXPENSIVE. CONVERTER BOX. WI-FI.

CAN BUY A HYDRAULIC RETRO KIT. ALL NEW ELECTRONICS AND TWO CABLES AND
CAN ADD ACTUATOR AND FEEDBACK CABLE. \$2000.

CAN TURN CARDS IN FOR A VALUE AND BUY NEW ONES.

Check [Portland Marine Electronics](#). \$1728 w/o transducer until end of May.

Also [TheGPSstore](#)

Go with the 1020XS without transducer and then get a transducer adapter box and use the transducer you currently have.

<https://buy.garmin.com/en-AU/AU/marine-products/fishfindergpscombos/gpsmap-1020xs/prod138031.html>

<https://buy.garmin.com/en-US/US/shop-by-accessories/transducer-accessories/6-pin-transducer-to-8-pin-sounder-adapter-wire-block/prod85643.html>

If you're looking to upgrade to CHRP the best option would be the GT15 since you could install it in hull and not have to haul the boat.

<https://buy.garmin.com/en-US/US/on-the-water/transducers/garmin-gt15m-ih-plastic-in-hull-mid-band-chirp-transducer-85-165-khz-600w-8-pin-/prod530269.html>

Wednesday, 27 April 2016, 16:46 AEST

Today I disassembled the Inverter FX2012ET (220VAC). Cleaning the terminals and inspecting the Ethernet plug did not help any. The MATE™ display still shows "NO DEVICE FOUND" so I am taking the 3 boards back to the USA to send to Outback Power.

Thursday, 28 April 2016, 10:51 AEST

Testing both reefer and GPSMAP 3010C. The chartplotter, disconnected from the NMEA network, has not died with almost 24 hrs. of operation. This is different from the several reboots required a few days ago. Also, I have pretty conclusively found that the problem with the transducer is in the GSD20 black box connector. Manually holding the connector in place causes the sonar to work fine. It is not worth it to buy a "new" GSD20 as they are discontinued. Given the benefits of an upgrade it would be best to buy a new Chartplotter and bypass the GSD20. We can use the existing transducer, or replace or add new transducers to get the DownVu and SideView. What we really need is forward view, but that requires Panoptix which is quite expensive.

Tuesday, 10 May 2016, 02:08 AEST

Talked with Calvin (might be Caldin) at Outback Power. We are buying a new Control Board on exchange which will net out at \$120 for the board. They do NOT test or repair any boards so it's just an

exchange. They will ship to Nora in Portland and I will send back the offending board as an exchange. RMA# 50113153. Calvin has informed me that they are now repairing returned boards because they are not manufacturing them anymore and they have a limited amount of stock for exchange. This applies to both the FX2012ME and FX2012ET. This could be a problem if an inverter fails again and they are out of boards.

Thursday, 16 June 2016, 04:59 AEST

Word from Mark is that he has found the system leak in the refrigeration unit. When I had “fixed” the power leads last time I cracked the seal into the compressor. I.e. the compressor is dead! We can either fix the old unit or replace it with Frigoboat Keel Cooler units – one for the freezer and one for the refrigerator. This is bad news as the repairs will likely be expensive.

Saturday, 02 July 2016, 04:15 AEST

We are back from the USA and have moved the boat of the rented mooring at Killarney in Middle Harbor and proceeded to our old favorite – Blackwattle Bay. It is cold and the heater would not start. We watched a movie and went to bed. Still jet-lagged, I awoke at 0400 and found the heater problem was a loose control cable. It is now working and providing lovely heat.

The water leak behind the engine air intake needs to be fixed, but isolating the aft hoses at the manifold under the sink has allowed us to have a functioning galley and forward head, but without any hot water. Hopefully this is a simple repair.

Sunday, 03 July 2016, 11:55 AEST

The water hose repair was simple. There was a leak at the elbow which comes through the wall and supplies the hot water heater (HWH Supply). It was necessary to remove the engine air intake tubes (easy) and the elbow was behind that. Cutting off 25mm of hose fixed the problem.

Niall Clifford brought over our 200 pounds of luggage from the USA and it remains to be sorted and stowed.

Monday, 04 July 2016, 07:45 AEST

Upgraded Vesper 8000 software and firmware to **Application Version 3.00.12965** and firmware version **5.16.12968**

Discussed refrigeration options with Peter at Oze fridge. Very nice guy and says that working with customers is what they like to do. We would need all new eutectic plates as well as two systems.

Tuesday, 05 July 2016, 11:00 AEST

I reinstalled the PC boards in the FX2012ET. The good news: the Mate 2 now recognizes the new FX2012ET. The bad news that it doesn't invert. Status is:

- Inverter function turned off with the Mate.
- Voltage light on inverter panel is RED for LOW BATTERY. On connecting power it flashes green first.
- When inverter function is enabled
 - LOW BATTERY light remains on.
 - The Yellow light on the Mate flashes as if it were trying to use shore power. The INV light is solid green.
 - On the Inverter Panel we have a green INVERTER light, flashing Y and R on AC IN and ERROR.
 - No voltage is apparent at AC OUT

Wednesday, 06 July 2016, 05:14 AEST

Wallas 40DT diesel heater was in “locked” mode this morning. I had to call support for the unlocking sequence as it was not very clear in the manual. I got it started and annotated the manual. The probable cause was leaving the sliding doors closed. It might be worth thinking about another way to get fresh air into that location.

FX2012ET Inverter/Charger is still dysfunctional. I called Outback Power and spoke to Kim, who, after a series of tests involving the swapping of ribbon cables between the AC board and the control board, has decided to send us a complete board swap “under warranty” all the way to Sydney, including return Fedex Shipping. Wow.

Thursday, 07 July 2016, 04:57 AEST

The installation of the new Garmin 1020xs Chartplotter is underway. A lot of wires have disappeared as the new unit has only 8 wires in the power/data cable instead of 12 from the old unit. It has direct connection of the Sonar Transducer and no external GPS (5 wires), and no GDS20 sounder box (5 wires). Communication with the GMI10 display will eventually be with N2K.

Tuesday, 12 July 2016, 08:19 AEST

Yesterday the boat hit a rock while heading for Cammeray. We were on the wrong side of a marker. It did not sound like any damage was done but possible the keel may need some sanding and painting. I will have to check it underwater when the water gets warmer.

The cold water supply hose popped off its hose barb yesterday and was fixed this morning.

Wednesday, 13 July 2016, 13:49 AEST

- Fixed the fishing net with a new spring clip for the sliding handle.
- Added new clevis pins to the dinghy clips.
- Got out the large router and router table and made the rails for the work table over the aft hatch. Kathy sanded and stained the red oak rails. Made new side rails, too.
- Finished design for solar panel rails

Friday, 15 July 2016, 16:55 AEST

The new control and AC boards for the FX2012ET were installed and the 240v inverter is now working. Parameters were set to match those in the [Battery Log and Charge Configuration](#) document.

CHARGER CONFIGURATION	FX2012ET (240V/50HZ)
Maximum Amp DC (Shore)	100adc
Charger Limit (Max Amps AC)	7 aac
Acceptance/Absorb Setpoint*	14.2 vdc
Acceptance/Absorb Time Limit**	5.1 hrs.
Float Setpoint (volts)	13.3 vdc
Float Time Period (Min or Set)	2.0 hrs
Refloat Setpoint	12.5 vdc
Equalize Setpoint	15.0 vdc
Equalize Time Period	1.0 hrs.
Low Battery cut-out setpoint	11.4

Sunday, 17 July 2016, 13:03 AEST

Two new glitches showed up this morning:

1. There seems to be something wrong with the diesel ignition system. The alarm circuit remains off for a minute or two and then engages. I can't tell if it's a relay, a sensor, or what. The wiring diagram suggests a stuck sensor (Eng Water Temp, Raw Water Flow, Oil Press or Exhaust Temp) or a loose wire TB4 (Eng Run) or TB6-18 or TB6-19.
2. The main alternator has died. A full field test reveals zero power being generated. This makes it an internal fault which could be diodes, rotor, or stator.

Tuesday, 19 July 2016, 13:04 AEST

Made a good charge today with the Honda genset, but the ending chg amps is still 16.3, so I suspect this needs a BIG positive charge to keep the batts truly up. I think the addition of 480W of solar will fix this.

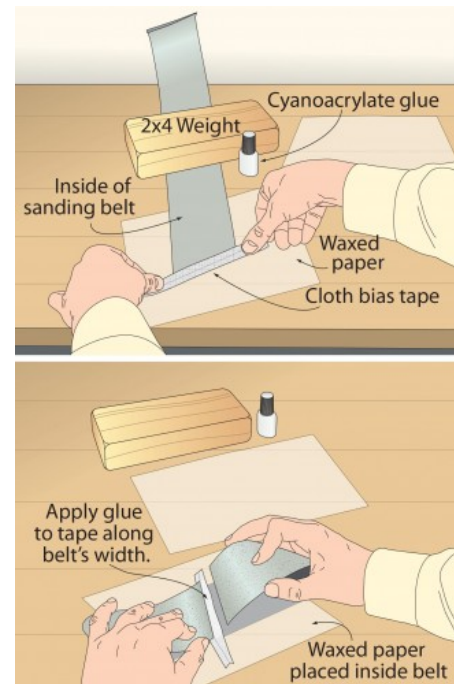
I have discovered that my sanding belts have a shelf life and most of them are now breaking their seam tape. As it turns out there are several ways of repairing the belts. A google of "how to repair a sanding belt" turned up these methods:

1. Buy new tapes ([3M purple from FISCO](#) or [Hermes aluminum oxide](#) semi-open at half the price.
2. [Bias Tape & Superglue](#)

First, peel the remaining factory tape off the belt splice. Cut a piece of cloth bias tape (wide single-fold type, available at fabric stores) about 2" longer than the width of the belt. Lay one end of the belt, grit-side down, on the bench; then apply cyanoacrylate glue to the end of the belt. Lay half of the bias tape's width on the glue, place waxed paper over the tape, and use a weight to press down on it for about 30 seconds, or until the glue sets. Wrap the belt around and repeat the gluing process to reconnect the ends of the belt. Trim off the excess tape, and the belt's ready to use.

3. Scotch Bi-Directional Filament Tape 8959 (Heavy duty wrapping tape): \$7/roll at Walmart

This tape is the best I found for fabricating/repairing sanding belts it's rubber based adhesive and bonds extremely well to dry rubber contact adhesive. The belt edges must be thoroughly cleaned with lacquer thinner or scuffed clean with sandpaper, don't skip this step! Make sure the 30 to 45 degree splice fits so the ends of the belt are perfectly parallel or the belt will never track correctly. Then apply a thin coat of solvent based contact adhesive to the cleaned surfaces. I haven't tried water base contact adhesive which may work. Let the contact adhesive dry to the point where paper will not adhere to surface. I use an unusable belt/scrap with adhesive applied at the same time to do this test. Clamp the seam edges with boards set back slightly more than 1/2 tape width as tape guides recheck parallel belt ends do this while the contact adhesive is drying. On narrow belts equal or less than the tape width apply the tape parallel to the belt with tapered ends for more strength using a larger tape edge overlap. This maybe done on belts up to 6 inches belts too. Apply the Scotch 8959 tape by using a small piece of swimming pool noodle or other firm foam/rubber like a squeegee pressing firmly and leaving overlap on both ends, make sure there are no air bubbles and the tape is perfectly flat covering both splice ends equally. Once the tape is applied to the contact adhesive surface it will be impossible to remove so take time to do this correctly. Allow the seam to rest at least 24 hours then test by sliding a round steel over the seam both directions looking for lifted edges. Then apply a coat of poly urethane paint to seal the tape edges only. Now trim the overlapping end edges of tape. Re-coat lifted edges with poly urethane if needed. Normally I apply auto paste wax to the seam for high speed belt sanders and have had no slippage. The wax allows the seam to wear in smooth when new. This wax works well on the platen surface to reduce friction and heat. Rubber drive rollers grip/life can be improved using auto belt dressing. Start sanding with light pressure gradually increasing as the joint smooths out. Belts made this way maybe used in either direction since the seam is only a few mils thick. I have inquired about getting factory seam tape and been told it is not available for consumers so don't even ask, this is the DIY



best alternative I have found. This also works for sandpaper conveyor belts like my Jet 16-32 drum sander. Used wide belt sander belts are usually available at cabinet maker shops for the asking since they don't have time to clean them. The belt maybe cleaned using a strong cleaner like Simple Green/409 allowed to soak in then and a scrub brush to remove caked on resin finally rinsed clean with water and allowed to dry. Belts made this way maybe cleaned also. Belts maybe run in both directions to get a new cutting edge. I also reinforce wood joints especially splices using the same procedure. Good luck and happy woodworking and thanks 3M for this great tape.

Thursday, 21 July 2016, 04:21 AEST

Replaced black ink cartridge in HP5520 printer.

Friday, 22 July 2016, 09:10 AEST

Timm from Balmar.

Small alternator test with no temp sensors. Test with full field test. Check voltage on blue wire. 12v for running. 4-8 for half power. Directly measure RPM on the alternator. Could be bad brushes? That would reduce output.

Big 210A Alternator tests. 3 leads from stator to rectifier. There is a nut which holds the leads on. Three leads take readings in pairs. Look for continuity. Then test the rotor for continuity. Put meter on both sides of slip ring to see if it has continuity. Test each slip ring against the shaft. This should have no continuity. Test ohms to see if short. Or case. sales@wranglerpower.com

Balmar 8 Series Model 81-100-12 no visible s/n

Battery State: 12.5 battery voltage. -83 AH.

All sensors disconnected

3789 main alt RPM

1830 engine RPM

Expected net amps = 80-90.

Amp reading = 34.5; - house amps (-15)

Net Amps = 50

Exciter: 11.82 volts on blue wire

Full Field Test with 12.5 volts yielded net 55 amps.

Output appears to be degraded to approx. 2/3 of expected amps.

This alternator was eventually discarded

Alternator Series/Output	Cold/Hot Output (Amps/Alternator RPM)									
	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000
81, 812 50A, 12V	10	48	50	52	53	54	54	55	56	56
	10	40	43	44	44	45	45	46	47	47
81, 812 65A, 12V	16	53	61	63	65	66	66	67	67	68
	16	46	51	53	54	55	57	58	59	60
81, 812 100A, 12V	18	60	81	89	94	101	102	104	105	106
	17	51	74	82	84	89	91	93	95	98

Balmar Series 9 Model 94-175 1 Dual Output 175A/210A s/n 69706

Tested diodes: all are good.

Replaced Brushes

Symptoms: No power generated, no spark when field wire connected directly to battery or to MC612 regulator.

Stator continuity: 3 leads tested as pairs all have continuity with resistance about 0.5Ω

Rotor continuity: NO CONTINUITY ON SLIP RINGS (bad). No continuity to shaft (good).

Saturday, 23 July 2016, 10:25 AEST

The rotor is indeed dead and needs replacement. Unfortunately the rotor is no longer available. Apparently Balmar moved their factory and sold 25 pallets of used and new parts and obsolete alternators to a guy who set up an eBay store to sell them. The store is Discount_Marine. Options are:

- Buy a new alternator
- Fix old one:
 - Professional Rewind
 - DIY Rewind.
- Find a replacement rotor (hard to do).

Thursday, 28 July 2016, 17:11 AEST

Today I worked on articles (hard to do) and on Tuesday I finished the support and benchtop system for my workbench. Yesterday I sent detailed photos and measurements of the rotor to Timm at Balmar.

Timm McVey from Balmar wrote: *It sure looks the same as our current model part # PAS-0131FW your cost before shipping is \$239.15 and stock is good.*

So, we can fix this after all. I now need to work on the other two alternators (210A on the genset; 100A on the main engine) to see if they are functional. That will be my top priority the rest of this week.

Saturday, 30 July 2016, 19:28 AEST

Today we went to the Sydney Boat Show and saw bunches of expensive stuff. We bought a battery conditioner that is GUARANTEED to restore life to our batteries or our money back. We also spent some time talking to this man from www.oceanvolt.com who has developed a system of using LiFe batteries to power a boat's propeller – like an electric car only different. Very intriguing stuff.

I did take apart the 100A alternator to find melted cables and probable bad diodes. This means that both alternators in the engine room have suffered faults. I will need to put the reserve 50A alternator in service to allow the engine to run. This will be my priority job for tomorrow, followed by attempting to put the diesel generator in service at last.

I also determined that the “175A” alternator was upgraded to a 210A alternator when it received a new stator in 2010. To summarize, at the present, there are four alternators on board:

- **Balmar 8 Series Model 81-50 no visible s/n** (reserve spare)
- **Balmar Series 9 Model 94-175 1 Dual Output 210A s/n 69706 (210A Stator in 2010)** (main engine)
- **Balmar Series 9 Model 91-100 s/n 4390** (main engine)
- **Balmar Series 94 Model 94-210-12 210A s/n 11510910SS** (Kubota generator)

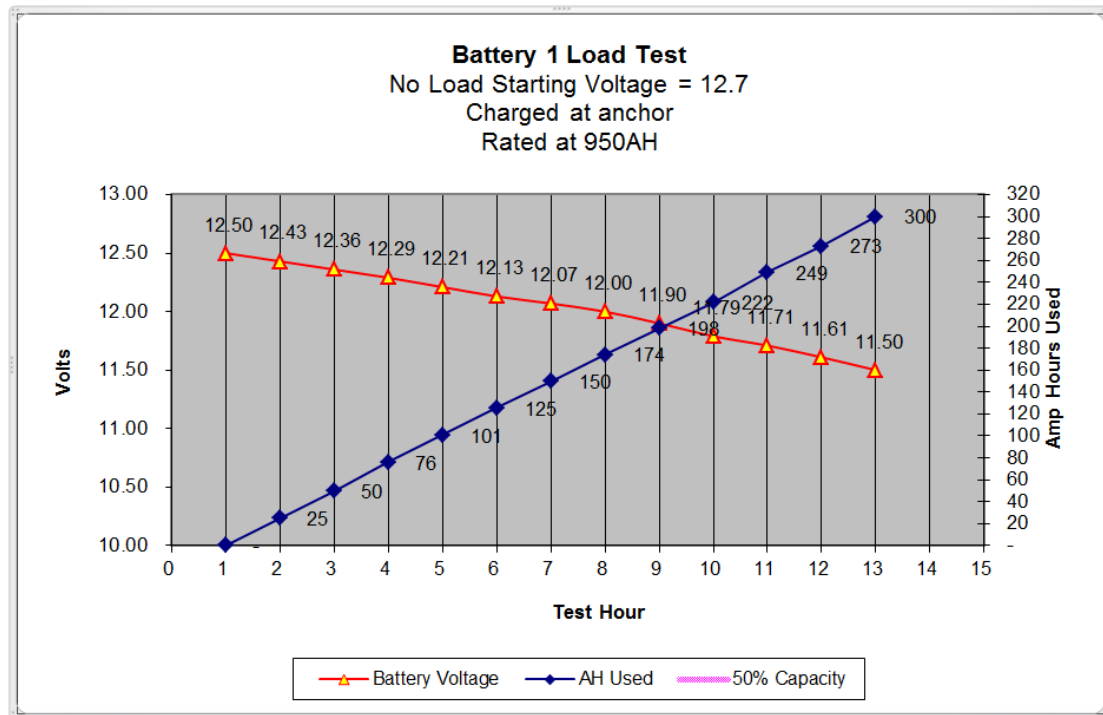
Monday, 01 August 2016, 12:57 AEST

Installation of the reserve 50A Series 81 Balmar alternator was done. The main problem was that it has a 1” foot with a ½” bore. The 100-A alternator it is standing in for has a 2” foot with a 5/16” bore. I am sure I used to have a bushing made up for it but they are missing, probably in the bilge. What I was able to MacGyver up was a ¼” bronze pipe nipple threaded into a ¼” coupling. The coupling acted as the spacer and the pipe, with a bit of sanding using a portable drill, acted as the bushing. This morning we went to water-up and the alternator worked just fine. Its charge curve shows that it can generate a lot more power than the rated amps. It worked fine!

We also finished a long load test on the batteries. Formerly, when we had parallel banks, it was easy. Discharging a single 900AH bank, even one that is probably degraded to ½ of its capacity, takes a while. Results are pictured on the next page.

Conclusions from this test are that the batteries are not completely dead, but are behaving as if they were about 425AH instead of 950AH. I think we could have charged the batteries higher in the beginning, but that probably would only have added another 25-amp-hours at the beginning. Without being at a dock it is difficult to get a full charge. Upgrading to more solar should solve this problem. The main conclusion is that the health of the batteries, as a degraded bank, is not bad and we can likely keep using this bank for another year or two. We should be able to finish the solar project in a couple of months and this should enable full-charge at the top of the curve for this battery bank.

Parts (offshore kit for the Series 9 and new rotor for Series 94) have been ordered from Balmar.



Tuesday, 02 August 2016, 06:10 AEST

Long talk with Tom Duffy (tom@solar-biz.com) about the above test. Tom had this to say:

When you discharge a battery you get sulfation. When you charge it goes away. That is why we need a full charge every day. If it stays there it hardens in 30 days and in 60 days it crystallizes and seals off the plate.

MegaPulse is a waste of money.

To melt the crystallization you have to try a long equalization, perhaps 6-7 hours at 15 volts and try to improve this.

87% die of abuse. Not charged correctly.

13% die from positive grid dying and falling apart.

Need full charge every 10 days.

Measure each cell. When voltage exceeds 0.05 volts from highest to lowest cell; then equalize.

Equalization: Justin is dead wrong.

Don't do an equalization unless it is necessary (0.05 volts delta or greater). And THEN need to check and see if everything is brought within 0.05 volts. If not, do it again the next day.

SUPER-EQUALIZATION:

- This is only ONCE in the life of the battery.
- Normally you would not overcharge a sealed battery that long but this is the only way to bring it back.
- 15.0 volts for six hours.
- Don't use the Outback temp sensor.
- Monitor directly by touch or IR thermometer.
- VERY CAREFULLY WATCH THE TEMPERATURE.

Found good website: www.batteryuniversity.com They had this to say about sulfation:

There are two types of sulfation: reversible (or soft sulfation), and permanent (or hard sulfation). If a battery is serviced early, reversible sulfation can often be corrected by applying an overcharge to an already fully charged battery in the form of a regulated current of about 200mA. The battery terminal voltage is allowed to rise to between 2.50 and 2.66V/cell (15 and 16V on a 12V mono block) for about 24 hours. Increasing the battery temperature to 50–60°C (122–140°F) during the corrective service further helps in dissolving the crystals.

Permanent sulfation sets in when the battery has been in a low state-of-charge for weeks or months. At this stage, no form of restoration seems possible; however, the recovery yield is not fully understood. To everyone's amazement, new lead acid batteries can often be fully restored after dwelling in a low-voltage condition for many weeks. Other factors may play a role.

A subtle indication whether lead acid can be recovered or not is visible on the voltage discharge curve. If a fully charged battery retains a stable voltage profile on discharge, chances of reactivation are better than if the voltage drops rapidly with load.

Several companies offer anti-sulfation devices that apply pulses to the battery terminals to prevent and reverse sulfation. Such technologies will lower the sulfation on a healthy battery, but they cannot effectively reverse the condition once present. It's a "one size fits all" approach and the method is unscientific.

Applying random pulses or blindly inducing an overcharge can harm the battery by promoting grid corrosion. There are no simple methods to measure sulfation, nor are commercial chargers available that apply a calculated overcharge to dissolve the crystals. As with medicine, the most effective remedy is to apply a corrective service for the time needed and not longer.

http://batteryuniversity.com/learn/article/sulfation_and_how_to_prevent_it

I asked Tom about an item on eBay that could charge the 7th cell at voltage for 8 hours. This should do it he said.

Lab Adjustable DC Power Supply Precision Variable Digital Voltage 0-10A 0-30V

Wednesday, 10 August 2016, 10:51 AEST

Night-time power consumption: 3.45A

This has been identified as:

- Incandescent Anchor light: 1.7 A
- Anti-fouling device: 0.25A
- Other Loads: 1.5A
 - Reefer controls: 166ma * 2 = 333ma (manual) 100ma observed
 - Propane sniffer & control (holding): 300ma (manual) 100ma observed
 - Main Panel / House (except Link 10): 100ma
 - Link 10: 100-150ma.
 - Vampire: 1.1A

Running engine with the single 50A alternator. Noted 14.4 volts. This should be less as absorption is supposed to be 14.18. The MC-612 and MC-614 regulator settings need to be checked.

Last stages of Kubota diesel genset are being done.

This morning the engine would not start and it turned out to be a problem with the corroded wiring in the old cockpit switch panel which is slated for replacement.

Kathy has done a great job of prepping the Orange Ducky (9' Polaris Inflatable) for sale.

Tuesday, 16 August 2016, 07:26 AEST

I am charging this morning with only the single 50A alternator as the other alternators await repair. I noted that it is operating at about half output with a stator temperature of 88°C, the case temp is 57-67°C. The Alt Temp is not connected. This made me wonder exactly what might be happening with two alternators and only one temp sensor. Can I use the Batt Sensor? Should I get a MC-612-Dual?

Tuesday, 23 August 2016, 05:45 AEST

The last week has been about Science Week in Sydney; cleaning and organizing; researching and planning the solar array, router table makeover, and LiFePO4 service bank design; and trying to finalize the Kubota Genset installation.

This is an interesting link: <http://svdenalirosenc43.blogspot.com.au/p/satellite-communications.html> on using Iridium phone instead of Go. It has the advantage of not requiring new equipment! Check it out.

Wednesday, 24 August 2016, 07:53 AEST –Garmin 1020XS Chartplotter to the depth sounder:

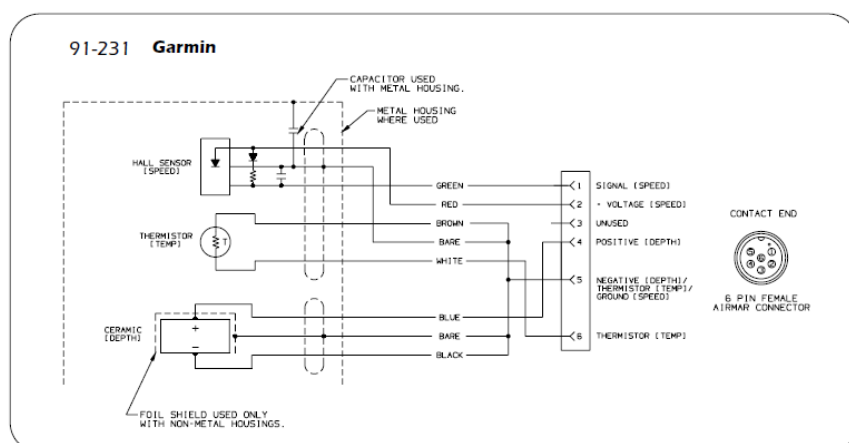
I was not able to get the B744VL transducer to run. I had some difficulty deciphering the correct wires and finally was able to get a P79 transducer to work. The wires were deciphered from the below drawing, but I was working with the old connector from the dead GMD20 and this is a mirror image. Therefore I had flipped DEPTH+/NEG with the Speed Sensor. This produced voltage on the neg wire.

The P79 has only 3 wires: DEPTH+, NEG, and a connection to the thermistor wire (but no thermistor). The 5 wires from the B744VL include speed and temp. I was able to test both transducers and a B744-INS insert which has a wired insert with paddlewheel and temp sensing.

In the end I tested all combinations of the equipment elements wired directly to the GPSMAP and was only able to get decent depth displays with 50khz on the B744 and NO temp or speed. Does this mean that we did NOT need a new Chartplotter? I don't think I ever tested the GPS3010C on separate frequencies. Too late now; I've destroyed the GSD20. And, anyway, I want the NMEA2000 net.

	200khz	50khz	Temp	Speed
B744VL	√	X	X	0.0*
B744VL-INS	n/a	n/a	X	X
P79	√	√	X	X

*untested until we up-anchor and move



AIRMAR WIRE COLOR	FUNCTION	6-PIN NBR	6-PIN COLOR	7-PIN	CABLE	BOX LEADS
BLUE	DEPTH+	4	BLACK	RED	RED	1
BRN/BARE/BLACK	NEG	5	WHITE	BLACK	BLACK	2, 4
RED	SPEED POWER +	2	RED	YELLOW	WHT/BRN	7
GREEN	SPEED SIGNAL	1	YELLOW	GREEN	WHT/GRN	8
WHITE	THERMISTOR	6	BLUE	WHITE	ORANGE	5

Sunday, 28 August 2016, 16:50 AEST

Whilst motoring to MHYC in Middle Harbor I noted the main engine supplying voltage of 14.41 at 5.7amps. This is just a wee bit too high and needs to be adjusted.

Sunday, 28 August 2016, 17:56 AEST

Testing speed sensor underway. DMM shows 5.4vdc. Logic probe shows square wave > 1mhz. Logic probe also shows high speed pulsing IN MID AIR when held near the GDS24.

Wednesday, 14 September 2016, 05:04 AEST

Garmin Australia (Case CAS-123878-N9S6L3) has replaced the original 1020xs with a refurbished unit, s/n 3MP004308. This has fixed the problem with the temp sensor, but we still have no STW. It could be the transducer, but what about the square waves from the speed sensor? Everything else is working fine. We have the new N2K network plus the old NMEA0183 network and all is running well.

The GMI-10 onboard is an older model and is not bus-powered. The GMI-20 is a much nicer display, but sells for over \$500. None of the Garmin devices will display the XDR air temp output from the CV3F wind sensor. LJ Capteurs has said there is are add-ons to the CV3F to provide MVD wind/temp output plus BARO output. The choice is to either use the NMEA0183 or the N2K. The 0183 upgrade is more expensive, but doesn't need another Tee and Drop cable like the N2K, so the costs are comparable. Since my Nav display is 0183 I should probably buy that version of the upgrade. Another option is to make an Arduino translator XDR to MVD and add baro pressure using an external sensor, if I want. Sounds like more fun; and I already have the components. Lots of "recipes" for this kind of thing are on the net.

Here is what Jon Josephson wrote me re. NMEA 0183:

First let me just warn you that support for NMEA 0183 is slowly dying in the marine electronics world so asking for any changes in 0183 is like asking Windows to support Win Vista software. This is true across all of the manufactures heck B&G stopped NMEA 0183 on all the GO products your best option is to try and get everything onto the NMEA 2000 bus where it's much easier to manage.

Yeah Jon? Even Microsoft supports its legacy products. The problem is that, back when MWD was deprecated in 2008, Garmin did not support the XDR sentence. It's just a little programming, why was it not done, or cannot be done now?

Some glitches have occurred because of the dual source of GPS data entering the networks. The chartplotter was having trouble displaying the ETA for routes. Setting the Preferred Sources to Internal for the 1020xs GPS seemed to solve the problem.

The only remaining issue with the NAV system is that the physical connection to the back of the Autopilot control is not solid. I will try cleaning it.

The huge list of remaining projects remains. Top priorities are a new engine control panel (and wiring), rebuilding of the two engine alternators, additional solar panels, and getting the Kubota diesel generator online (It is having fuel supply issues.) We are making a replacement router table top out of Trespa™, which should be waterproof and rock solid. Niall Clifford's factory is helping with fabrication on all of these items. It's great to have Niall as a friend and resource to help.

Kathy is struggling with cleaning up her reams of old papers and, in general, making the boat a neater place to live.

Wednesday, 14 September 2016, 09:23 AEST

Ordered new Honda 2.3 carburetor from Waypoint Marine Group. They will drop it off at UPS Store Fremont.

Thursday, 15 September 2016, 05:58 AEST

"I really love living in Australia but I have learned that the local myth that this country was founded by convicts is false. It was actually founded by soldiers and jailors. I know this because of their fondness for rules. Here in Australia they have thousands of them covering the most trivial and amazing things, e.g. only licensed electricians are allowed to change a light bulb.

Basically, Australians (invoking the convict side of their heritage) ignore the more stupid rules and regulations.

Many rules apply to boaters (we also ignore the more stupid ones) but it is very clear that "live-aboards" are considered no more than homeless people with expensive floating shopping trolleys (carts). The state of NSW wants us on a mooring (illegal to live aboard on a mooring) or in a marina (pretty much the same with a few lucky exceptions). Heck, we don't want Sydney Harbor to look like Hong Kong either, but we do want to live the way we choose as long as we are not being too disruptive. I think the pretty boats anchored in front of your million-dollar condo are part of the diverse and interesting city-scape visible from your balcony.

Fortunately we are seldom hassled.

However, a couple of weeks ago, the Maritime Police came by to warn me that I really need to register the boat in New South Wales. This was not expensive for us "old age pensioners" so I started on the registration; but first I needed something called a "boatcode" or HIN. It did not matter that I was a USA flagged vessel (duty-paid in Australia). If you spend more than 3 months in NSW, you need to register the boat.

But first, I had to prove ownership. Nineteen years of USCG Documentation papers with my name as owner proved nothing. "Anyone can make a document". I needed to show my original bill-of-sale. I could not find it. I was told to go to a JP (similar to a notary), and a total stranger, and have him witness a "Statutory Declaration" giving the sale price, date, and that I was the owner; that would do. How is that better than an official document? That was just another paper, I pointed out. "Welcome to New South Wales", he said".

I went and had my Stat-Dec signed; now I could have the "boatcode".

But wait, there's more! I thought I had a valid HIN (Hull Identification Number). Beatrix's HIN is JKY442760380. It used to be on an embossed Dymo label on the transom. It probably disappeared when we painted the transom. The man responsible for enumerating our boat said that the code should be hidden somewhere else in the boat, otherwise he could not accept the nineteen years of USCG documents showing my HIN. "Anyone can make a document. Welcome to New South Wales, Mate".

Since I have never seen the number other than on the embossed label on the transom, we reluctantly had to accept the new HIN from NSW Maritime. He pop-riveted a small plate to the transom and a duplicate in the cockpit locker. As long as we are in Australian Waters (and elsewhere I presume) our new HIN is AU-WWA191389AB6. This number has no meaning, no history. JKY442760380 was cool; it told you that it was a KP44, hull 276, built in March 1980. As we are still a USA-flagged vessel, I have not considered how this affects our USCG Documentation. I will ignore that for now.

So now I have all the paperwork to go back to the Roads and Maritime registration office in the mall to get my registry.

Has anyone with a KP44 discovered the second location (if any) of the original HIN? I'd like to know. If not, can I borrow your Dymo embossing machine?"

Thursday, 15 September 2016, 13:46 AEST

I was noting that the GMI-10 will not display any of the 0183 data unless the MFD is on. This is normal. There are only three devices on the NMEA 2000 network at the moment – Vesper AIS, GMI-10, GPSMAP1020xs. See below as to why the data is not getting through to the GMI-10 when the chartplotter is off. (Note: the NMEA 0183 network is active and so the Cetrek Multi at the NAV station is displaying everything just fine).

From Vesper Support:

Currently we support NMEA2000 to NMEA0183 translation only. The PGN's that your XB-8000 will translate now correspond to wind, depth, speed, heading, temperature and log. The PGN numbers are listed in the link - <http://www.vespermarine.com/guide/xb8000/> under 'PGN List'. All those that are shown as received are translated into 0183 and output through NMEA0183 output interface. If you don't want your XB to translate the PGN to 0183 sentence, then you can disable this feature under 'NMEA0183' tab of vmAIS utility.

Your XB doesn't support the reverse conversion (i.e. NMEA0183 to NMEA2000 PGN). We are currently working on this and hopefully in next release you'll see this feature support in XB.

New versions of the Vesper software and firmware were downloaded and installed. All Garmin devices are up to date.

Friday, 16 September 2016, 18:23 AEST

I repaired the 210A alternator with a new stator, installed it and tested it. The first issue was no charging was happening. This turned out to be a bad fuse in the red power wire to the 612 regulator. Then it worked; except it was putting out just a few amps (18A) as the batteries were nearly full. The volts were about 12.9vdc. The alternator then heated up to the point that Kathy said she smelled something burning and I could see a wisp of smoke and the case was very hot. It could be just some dirt or grease burning but why should it be so hot with so few amps? Disassembly of the alternator showed no bad assembly or wiring that I could see.

Tuesday, 27 September 2016, 08:26 AEST

I talked to Timm at Balmar regarding the 100A Series 91 and he says that NO ONE there recognizes this unit nor knows how to fix it. I guess it's toast. We have ordered a new 210A Stator for the engine alternator.

Wednesday, 12 October 2016, 10:14 AEST

Lots of work is underway. I have installed a CellLog 8s battery logger next to the Windlass switch/breaker at the side of the Nav station. It monitors individual cells in a battery bank and is ideal for the 6-cell series bank now installed. I had to move aside two batteries to connect to all the batteries. Testing with the Fluke meter confirms the accuracy of the unit. It has the capability to connect to the PC via USB to a COM port. It was simple to write an interface that displaces the output.



Sunday, 16 October 2016, 09:11 AEST

How does the FX2012 battery charging algorithm work?

Both the inverter and charge controller's work by first delivering a constant current charge to the batteries until a target voltage is reached. This is called the "bulk" charging stage.

Once the batteries have reached the approximate target voltage, the charger then switches from constant current to a constant voltage mode. This is called the "absorb" mode. During this phase the charger slowly reduces the charging current to maintain a steady charging voltage.

The last stage of the charge cycle is called "float". This is when the charger reduces target to a pre-set lower voltage and delivers a "trickle" or "maintenance" charge to keep the batteries at a "full" or "charged" state.

OutBack inverters can also enter a "Silent" mode and shut the charger off completely at the end of a charge cycle. This allows the battery voltage to naturally drift down to a preset level at which point the inverter will begin "Float" charging the batteries again. This mode will save small amounts of energy and depending on the technology is sometimes more effective at maintaining a battery. These voltage set-points are battery dependent and are obtained from the battery vendor.

Cell 1	2.172 volts	Batt 7
Cell 2	2.167 volts	Batt 4
Cell 3	2.164 volts	Batt 3
Cell 4	2.162 volts	Batt 2
Cell 5	2.164 volts	Batt 1
Cell 6	2.155 volts	Batt 6

Monday, 17 October 2016, 15:24 AEST

The Dometic CF25 portable fridge is not running due to low voltage. It draws around 6A and the voltage drop is from 12.2v to 10.7v. It has a low and high cutout profile when the voltage drops to 10.4v or exceeds. The cigar lighter connector tip is usually quite warm, or even hot, so I know there is not a good connection there. I can get a better blade connector from Jaycar.

Wednesday, 19 October 2016, 09:53 AEST

Cell 1	2.503 volts	Batt 7	2.526 over	2.039 min
Cell 2	2.491 volts	Batt 4	2.500 over	2.035 min
Cell 3	2.335 volts	Batt 3	2.373 max	2.034 min
Cell 4	2.337 volts	Batt 2	2.378 max	2.033 min
Cell 5	2.365 volts	Batt 1	2.369 over	2.039 min
Cell 6	2.332 volts	Batt 6	2.378 max	1.991 min
Cell-Sum	14.392 volts	Pack	14.429 over	12.217 min
Pack-Volts	14.363 volts	Pack	14.408 over	12.199 min
Pack-Delta	0.029 volts	Pack	0.031 max	0.016 min

This is the picture at -20AH with the engine running!

Friday, 21 October 2016, 06:31 AEST

This morning we only had < 30 AH. This chart on the left with 13.72 pack volts and 25A of charging power.

Why is Cell 1 so high compared to the other cells?

Dropping the absorb setpoint to 13.6 (from 13.7, right image) reduced the overall charge voltage; but Cell 7 is still being charged at 2.429v.

Log Started 2016.10.20 20:29:06 UTC

Cell 1	2.396 volts	Batt 7	2.408 over	2.373 min
Cell 2	2.281 volts	Batt 4	2.292 max	2.268 min
Cell 3	2.264 volts	Batt 3	2.270 max	2.252 min
Cell 4	2.252 volts	Batt 2	2.261 max	2.247 min
Cell 5	2.255 volts	Batt 1	2.264 max	2.244 min
Cell 6	2.230 volts	Batt 6	2.241 max	2.217 min
Cell-Sum	13.708 volts	Pack	13.735 max	13.646 min
Pack-Volts	13.678 volts	Pack	13.719 max	13.621 min
Pack-Delta	0.03 volts	Pack	0.031 max	0.016 min

Cell 1	2.429 volts	Batt 7	2.495 over	2.373 min
Cell 2	2.261 volts	Batt 4	2.292 max	2.237 min
Cell 3	2.244 volts	Batt 3	2.270 max	2.220 min
Cell 4	2.231 volts	Batt 2	2.261 max	2.219 min
Cell 5	2.236 volts	Batt 1	2.264 max	2.223 min
Cell 6	2.209 volts	Batt 6	2.244 max	2.196 min
Cell-Sum	13.631 volts	Pack	13.749 max	13.547 min
Pack-Volts	13.610 volts	Pack	13.726 max	13.525 min
Pack-Delta	0.021 volts	Pack	0.031 max	0.016 min

Friday, 28 October 2016, 18:49 AEST

Tonight Kathy and I repaired the Honda outboard by replacing the carburetor and the carb. attachment plate which had the threads stripped out. It works perfectly. We noted the usual problems of corroding steel fasteners.

Other projects that are underway are the cockpit control panel which went to get its face put on and will be ready tomorrow.

I rebuilt the alternator with the new stator and it started to get hot and put out very few amps (~20A) which were the same symptoms before it “smoked” itself last time. I’m sure it did not seriously overheat but I’m not happy to have to take it apart for the n^{th} time. I’ll call Balmar in the morning to try to figure out the problem. It has to be either wiring is wrong or diodes are bad.

I did get all “belt buddies” installed which adjust the belt tension on the alternators. I lost the spacer to

the bilge; the one that keeps the alternator in position on the bolt. I had been trying to insert it at the aft end of the foot but it goes at the forward end. Since it was truly lost I had to make a replacement out of a rectangle of Delrin which gave me something to hang on to while I was getting everything inserted.

I replaced the 1TB drive in my computer with a 1TB SSD drive. I had forgotten I needed to reduce the space a bit.

Saturday, 29 October 2016, 07:28 AEST

Discussions with Balmar suggest that the diodes may be bad. Unfortunately the “offshore kit” supplied recently is for some other alternator. This alternator has 18 diodes: 6 on the case and 6 each on the heat sink plates. They are all “Red” diodes. Tomorrow I might have some answer from Balmar after Timm talks to Lou.

Thursday, 03 November 2016, 10:12 AEST

I discovered the 30A inline fuse from the Digital Duo Charge output to the Start Bus was actually melted into the holder and needed a total replacement. This was noticed when during a charging cycle the Start Bat voltage was 12.8 while the charging voltage was 13.7. The DDC was working (output and input both 13.7v and green light ON) so it HAD to be a fuse. I’m surprised it got so hot before fusing.

Saturday, 05 November 2016, 10:02 AEST

Here is the answer from Timm McVey at Balmar regarding the 215 amp alternator. Customer service above and beyond.

Here’s what I got for you I found some diodes in the obsolete inventory also I went to the bone yard and grabbed a bunch of different insulators, screws, nuts etc. I seem to have enough diodes and parts and insulators some assembly required. Lou says yours is a case ground unit so all the diodes in the case should be negative. We are both assuming the rest are positive with the red dot since none of this stuff is in our inventory I am going to take it down to the post office this afternoon and mail it to your ups address in Fremont. This is going out no packing slip \$5.00 value as used alternator parts with my return address no connection to Balmar. If it works out you can send me a Harley shirt and poker chip from an Aussie Harley dealer if there is one. If it doesn’t work I will sell you an alternator.

Wednesday, 09 November 2016, 09:28 AEST

Work has progressed on the Cockpit Control Panel. The major controls (engine ignition/start/stop are in place). The Engine and Pressure gauges are functional. Water Temp has a problem. The horn is functional. The tachometer is hooked up. The beauty of this box is that the wires are connected to terminals plugs that connect on the back of the control box. I can add one wire or function at a time.

Two glitches this morning:

1. The Espresso machine has stopped working. It was working erratically and now it won’t turn on. It may be the death of it.

The propane sensor has stopped working. This happened when Kathy was stuffing the locker behind the companionway with spray cans so it is likely a loose wire someplace. Easy to check.

Friday, 18 November 2016, 19:15 AEST

New glitches:

- Water pump #1 runs but does not pump water. Is it isolated?
- Microwave not working; fault in membrane switches.
- New control panel
 - temp gauge not working.
 - diesel tach not working.

Friday, 18 November 2016, 20:13 AEST

Kathy cleaned out engine room bilge (not finished yet). Lost screwdriver and alternator spacer were found (how did she do that?). Kathy was amazed at the lack water in the bilge (just oil). We need to make an attempt to get some of that oil out. Perkins leaks oil.

Saturday, 19 November 2016, 13:38 AEST

The Honda outboard is not working. We found water in the fuel but still cannot start it.

Cockpit Control Debugging:

- Water temp gauge not working
 - 1378Ω measured. Should be 240Ω at 120°F.
 - Suspect incorrect temp sender. New one on order.
- Tachometer has stopped working; I suspect the SMA connectors. I tried to add new ones but used up all my stock of connectors. It is just too hard to solder them. The coax, also, is old and has corroded.
- The anchor control still needs its wiring to be connected.
- Engine Oil Pressure of 40 psi is OK. Shop manual states “Normal oil pressure is 30/60 P.S.I.”

The control panel I built for the Kubota generator was broken. I used to keep it safe and secure but lately it has not been well taken care of and now the front plate is cracked. I need to design a new one that can be fabricated (cut) at Niall's factory, along with a backing box.

Wednesday, 23 November 2016, 07:14 AEST

A newly built and re-designed Automatic Solar Switch was installed to handle the Automatic Anchor Light and also send a negative signal at night to the Cockpit Control Panel so it can turn on night lights and cockpit lights.

Sunday, 27 November 2016, 06:46 AEST

Fabrication is still underway on the new solar panel mounts. All mounting hardware is in place. What is left is the grab bar on the starboard side and deck fittings and wiring.

Kathy adjusted the hatch dogs on both forward hatches. Some leaks in the forward hatch may be due to the former looseness of the locking handles.

Jeff finished the Deck Light controls on the main panel and cockpit control. The former unused ERR flashing red LED was repurposed to flash whenever a deck light is on in case we forget.

Kathy is repairing the refrigeration door which had detached from the base.

The repaired refrigeration unit is in the mail heading for Australia.

Sunday, 27 November 2016, 19:40 AEST

Today I hooked up the CH30 Chain Controller for the Lofrans Tigres Windlass and LO it works! UP and DOWN controls worked. The Hall Effect sensors tested good and all I had to do was replace the magnet in the Emergency Wheel. Instead of gluing a magnet on the outside, I tapped a spoke and screwed down a “doughnut” magnet (see right). This apparently works fine, but we will see how it works with re-calibration. While I was at it I serviced the cones on the gypsy. Also, the rope drum had a missing key for the keyways. I fabricated a new one from SS ¼” key stock.



Kathy serviced the forward head Vacuflush replacing the ball, shaft, floor flange and fasteners. Clean rubber seals (used) were installed because they look fine.

Monday, 28 November 2016, 18:10 AEST

Problems were found in the VG2 vacuum generator. Leaking of poo water was noted inside the bellows. This is likely due to O-ring failure or misalignment of flanges on the pump cover. The bellows was replaced. The old bellows may be OK but needs cleaning. The O-Rings were replaced (kit 8385310151). Note the set screw on the eccentric matches a detent on the motor shaft. It made a heck of a noise when we turned it on because the set screw was not properly seated.

Thursday, 01 December 2016, 11:59 AEST

All of a sudden, a very brittle hose connecting the pressure pump to the outlet supply developed a pinhole. It is white and stamped 20mm sanitation. The other 3/4" white sanitation hose is still flexible. I suspect this product was purchased locally. It is not a suction line and so could be an ordinary clear flex hose.

[Forespar SW-4 Sink Waste 90° Item Nbr 90717 by 2" cutout by 1" male pipe](#)
[MARINE EAST Plastic Hose Reducers, Barbed](#)

Galley Sink Drains

For future use, consider this:

Features:

- Stainless Steel flange
- Low profile
- Chain stopper included
- Ultra-mirror finish

Specifications:

- For 2" drains
- Dimensions: ◦ Outer diameter: 2-3/4"
- Inner diameter: 2-1/16"
- 1" hose barb

NOTE: Two have been purchased. Not installed as of 26 Aug 2017. Installed 4 Oct 2018.



Ambassador 95° Elbow Sink Drain Kit

- Designed for 2" Drains
- Low Profile
- Includes Chain Stopper

Item #:	502848	See All Ambassadors View Similar Why Buy from us
Brand:	Ambassador / Shurflo	
Model #:	S00-0101-UP	
Shipping Weight:	0.30 Lbs.	
List Price:	\$29.00	
Our Price:	\$24.99	
Status:	Call to confirm	

Saturday, 03 December 2016, 05:57 AEST

Found bad connection in spade connector for C1 orange cable which provides power to the MC-614 regulator. Alt output was about 27A. Did not note the RPM.

Received delivery of repaired compressor and controller, some Honda Outboard parts, and miscellaneous fasteners.

Mark sent this along with the repaired reefer system:

The speed control and other wires from that new terminal strip can be extended to wherever you want. The speed control and tach work as expected. I think the current speed is set to about 2/3 full speed. About. It can be slowed down to almost nothing.

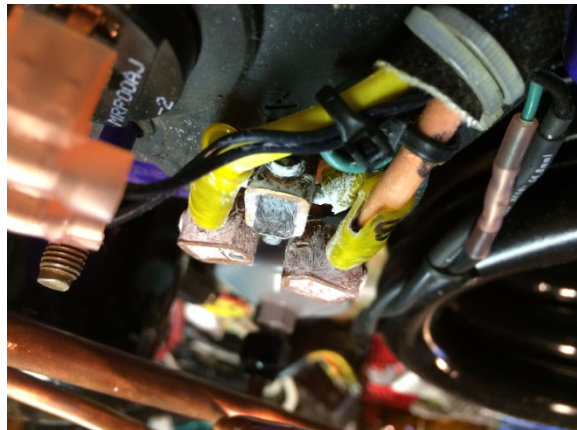
The invoice included with the unit is for half the remaining balance. Total comes to \$2,440.00, and you paid \$1,000 earlier, leaving balance of \$1,440.00.

I am not charging for the many missteps and head scratching along the way, or for parts purchased but not used. The base, some tubing, and the high pressure switch are the only things kept from the original condensing unit.

I am sorry that this took so long, but I am happy to say that I have great confidence in the unit, and am getting some confidence back into myself as well.

Anyway, I'm glad the unit made it to you. I look forward to helping you with the install. The unit can be placed into position, but please don't touch the valves until we talk. It's okay to connect wiring between the pieces, but the plumbing I'd like to be in on. The water can be connected as well. The condensing unit does contain a full 2 lbs. of R134a. (;

I can send photos of the new compressor wire connections, but if you look for yourself (I'd rather you didn't), please return the covers EXACTLY as they are now. I made the cover in two pieces so the overheat switch is maintaining better contact with the compressor. The wire connections are similar to the ones you used, but they are not insulated and they are about 80% smaller, so they fit better. AND, there won't be so much current going through them if the compressor is slowed down. Which will also increase efficiency and use fewer amp hours per day!



Friday, 16 December 2016, 08:56 AEST

Debugging the refrigeration:

Situation: The Carels are not showing any sign of operation. The compressor starts and exhibits the speed (frequency) display, which means that 12v on the WP is operating. The solenoids are functional but do not operate when grounded because “+” goes to zero volts. There must be a wiring problem. It is nearly inaccessible to reach terminal block while the controller unit is connected to the compressor, but I did it.

YES. The SVA wire to the solenoids had broken off at the ring terminal. The Carels have lit up! But the solenoids were not energizing. This was a blown 2A fuse on the SVA wire. Now the compressor is cooling the reefer box. I have checked the water pump and fuse box. Frequency of 1492 => 3730 RPM and 24A. Using the 10kΩ trim pot, I dropped the frequency to 1048 (2620 RPM) and 18A. Strangely, if I drop the frequency below 1000 hz the display goes nuts (flickers with unreadable numbers) and the compressor starts vibrating. I am not sure why that happens.

I have not started the Freezer (left in Defeat mode) as we don't need it right now (nothing to freeze).

Noted: Hour meter is not running, the signal cable wires have some insulation missing where they

connect to the probes, and we need insulation replaced on the copper condenser line where it has worn off. The box fan has a wire disconnected – small stuff.

Turned up speed to 1550hz (3875 RPM) and we have 24.4A. This is about max, I think. For now I have set the system at 1452hz (3630 RPM) and it draws 22.4 to 23.0 amps. Not sure why it fluctuates.

Saturday, 17 December 2016, 10:18 AEST

After 4 hours of run time reefer holding plate temp remains at -6.9C (target setpoint -8.0C). IR thermometer read -5.5C. This is the same problem we had way back before I broke the compressor and had to get this new one. I have written Mark for advice. Perhaps, for now, simply raise ST1. I need the new hour meter.

Tuesday, 20 December 2016, 15:33 AEST

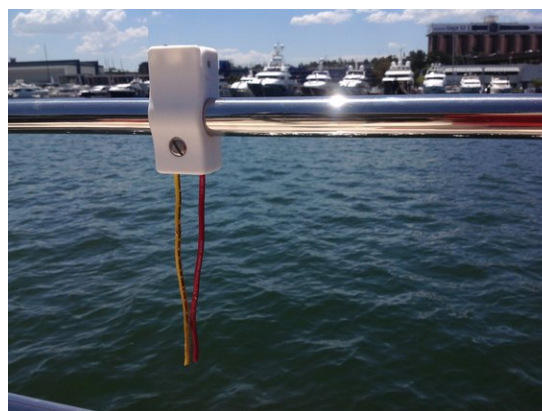
I talked to Mark and he said to a) test the freezer and b) keep an eye on the sight glass. We are running at 22.7A, 1416hz, and starting at 25.5°C. Plate is already pulling down. ST1 is at 19°C and P1 is at 5.6°C. We're watching the sight glass with a remote USB camera. At first, now liquid was visible; after 5 minutes a steady flow is visible.

NOTE: Reefer hour meter is functional when monitoring freezer, not refrigerator.

Monday, 26 December 2016, 05:38 AEST

Eden, NSW. We have started our passage to Tasmania. The solar panels are in place and the wiring has been run. The adjustable braces need to be installed and the wires connected. The Victron 100/30 solar panel charge controller is apparently too small; the 100/50 is the correct unit. There is an exact copy, apparently well made, from China that can be used. This gives me the option of going all "Victron", including two displays, and replacing the IPN gear. However, the modern MPPT units work well together, apparently, so I could just sell the Victron 100/30. I'm not sure how much benefit there is in unifying the solar controllers.

Interestingly, the new panels operate at 48v (the old panels at 21.6v), so two controllers are needed. I did not realize how oversize my wiring is for 48v. #10AWG would have done the job, and I am using 6AWG. Kathy suggested running the wires INSIDE the tube; and this worked out very well. A piece of nylon conduit, sealed in with UV6000, runs up through the deck and into the tube. Two 10AWG wires, inserted from two holes in the top of the rail, were pushed down to the deck. A modified rail clamp is used to stabilize the wires and they project out the bottom of the clamp. Standard MC4 solar connectors are used on the new panels (unlike the terminal blocks on the KC130s).



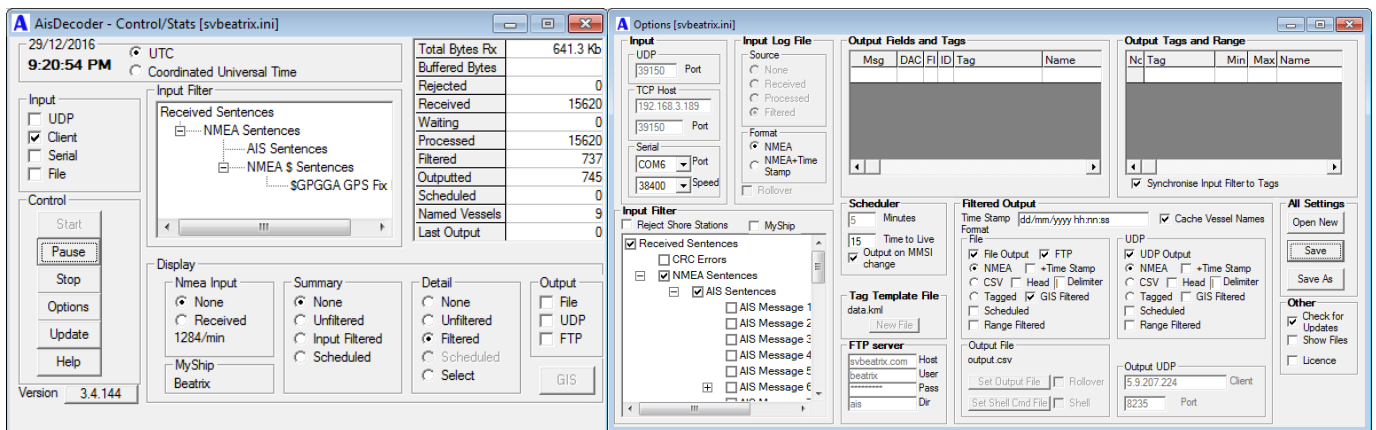
We are slowly coming to terms with the refrigeration. I think it could work better, but it might need adjustment of the expansion valves, esp. on the reefer. At the moment we are running the freezer with ST1=-18° and P1=5.8°. It takes a while to draw down, which seems to vary, but it only needs to be

done once per day. I have been slowly setting the refrigerator to a lower temp. Current settings are ST1=-3.5 and P2=2.5°. At this setting the unit is acting more like an evaporator plate than a eutectic system.

Yesterday I reconstructed the aft/transom deck light unit. The automotive relays are replaced with latching relays from China. They worked well with the forward deck light, but there is a glitch with the aft units. I can trigger the latch directly but the remote switch from the control panel causes flaky behavior – the relay chatters and several quick taps are necessary to lock it in. It turns off without problems. Either there is a flaw in the control wire to the cockpit or this batch of relays is off. Either way, I can test the problem with a long direct wire or try a different relay unit.

Friday, 30 December 2016, 07:20 AEST

Finally got AIS talking again to MarineTraffic. Setup is reproduced below. The key points are to use TCP (not UDP) input.



Sunday, 01 January 2017, 09:22 AEST

We noticed an issue with the Trip Odometer on the Garmin 1040xs over-reporting the miles by about 37%. This is probably due to me changing the GPS source to the Vesper instead of the Garmin built-in. Thanks to Jon Josephson

for helping figure this out. He also noted that it is important to disable WAAS when outside the USA as it can lead to erroneous positions.

Wednesday, 04 January 2017, 04:04 AEST

Uncontrolled Equalization

We connected to shore power at the RYCT and kept tripping the RCD on shore. The ProMariner charger was turned on as backup; and I forgot it automatically went to Equalization Mode so it ran all night and seriously overcharged the batteries. I'll call this the "hail Mary" equalization I was trying to do and hope it hasn't totally ruined them. End results were 61AH to the positive and 15.2vdc. I left it at 2200h and woke up at 0500. The charger was off so I don't know exactly how long it was running; perhaps 3 to 5 hours. What a piece of shit. 12.65 at -

Battery Cell Voltage				
localhost — Lighthouse Development Server				
Raw Data Count 153750				
Log Started 2017.01.03 18:00:49 UTC				
Cell 1	2.542 volts	Batt 7	2.566 over	2.057 min
Cell 2	2.593 volts	Batt 4	2.593 over	2.064 min
Cell 3	2.488 volts	Batt 3	2.497 over	2.062 min
Cell 4	2.529 volts	Batt 2	2.529 over	2.060 min
Cell 5	2.557 volts	Batt 1	2.559 over	2.067 min
Cell 6	2.548 volts	Batt 6	2.560 over	2.044 min
Cell-Sum	15.281 volts	Pack	15.312 over	12.376 min
Pack-Volts	15.257 volts	Pack	15.288 over	12.354 min
Pack-Delta	0.024 volts	Pack	0.031 max	0.016 min

1.7v is the resting voltage. It could be OK, but I won't be equalizing again.

Wednesday, 04 January 2017, 13:41 AEST

Sailing from RYCT to Port Cygnet has raised some more questions on the GPSMAP 1020xs:

1. How to turn off the waypoint labels on a route? They obscure objects on the map.
2. Why could the software not issue a visual warning (or audio) when the route runs over land or a minimum depth.
3. Suggest a "follow-on" mode for vessel movement instead of centered.
4. Page-Dn / Page-Up buttons work fine when selecting waypoint labels. Scroll-right and scroll-left on the 4-position key skips an entry.

Thursday, 05 January 2017, 14:49 AEST

This is the glitch list / task list for the passage Sydney to Tasmania:

- Port forward lifeline turnbuckle is bent. Fix or replace.
- Chain counter up sensor not always working. Could be loose wires or sensor or magnet position. Right now it appears to be OK.
- Binnacle lights not working.
- Leaking fasteners at footman's loop near starboard primary winch.
- Genoa has torn seam near leech.
- Need to figure out how to better tighten genoa leech lines. Possible small batten to keep jammer in line? Velcro tab? Series jammers?
- Check mast partner seating.
- Make aft cabin shelves spill-proof
- Galley sliding doors need to be finished and a method for locking installed.
- Grease the spinnaker pole fittings.
- Waterproof rain covers and awnings.
- Install LED lights in mast.

Not too bad, really. Mostly it was just noticing things to be done. Nothing was broken this time.

Kathy forgot to secure the dinghy to the transom mount and the dinghy got towed behind the boat like a dead fish. Happily no harm was done.

I need to finish alternator, generator, solar, cockpit lights, engine room exhaust, and aft deck lights. Our redundant power generation is down to ONLY the Honda generator so either new solar, Balmar alternator or Kubota genset needs to be fixed as a priority.

The bilge pump seems to be running excessively and I have degreased it so we can tell if it's fresh or salt.

Wednesday, 11 January 2017, 07:19 AEST

The Honda EU2000i is not working; this was our last power source except for existing solar and the small generator on the main engine. The symptoms are that it starts fine but will not keep running once the choke is closed. It runs for a bit, stutters, and then shuts down. Replacing the old spark plug did not help any.

We are out of redundancy. The options are to:

- Seek shore power at a marina
 - Except there is an apparent ground fault and we might not be able to use the marina's power.

- The alternate charger works, but has to be monitored as it goes into an auto-equalization mode without warning.
- **Fix the Honda**
- See if I can fix the Kubota's fuel supply problem.
- Swap the big alternator out of the Kubota into the main engine.
- Bring one or both of the new solar panels online:

Wednesday, 11 January 2017, 10:44 AEST

We fixed the Honda: installed new spark plug, cleaned the fuel tank and fuel filter, cleaned the air filter. Dirt, rusty water was found in fuel. We ended up with one fastener extra of the wrong size (too short). We unscrewed all the other fasteners and they were all the correct length. It's a mystery.

Thursday, 12 January 2017, 05:29 AEST

Just had a glitch in refrigeration. The compressor would attempt startup, spool up a bit, then cut out, and repeat. No error light showed; just a power cut and a restart. The cycle took about a second.

I switched to the freezer, then back to the refrigerator. It made no difference. Eventually it did not cut out. The refrigerator cycle finished, and then back to the freezer. It made one error cycled, then started. This could be (likely is) a low voltage issue as the generator is not running and the voltage is low. If it does it again I'll keep an eye on the volts. On the other hand, the cycling startup was a "kill" that zeroed out Carel displays, so maybe it's a surge thing. Note that an active changeover (from freezer to refrigerator) or turning the LPG solenoid on/off sometimes induces an error (but, it is a real error with the error light flashing while it attempts a restart). This had NO error light.

Looking at setting up an Arduino or other device to:

- Measure cycles for refrigerator and freezer.
 - Time Stamp
 - Duration of cycle
 - State (short cycle or full cycle)
 - Start Temp (°C)
 - Box
 - Plate
 - End temp (°C)
 - Box
 - Plate
 - Compressor Speed (Frequency)
 - Compressor Amps
 - Error state.
 - Ambient Air Temp (°C)
 - Cooling Water Temp (°C). Insert waterproof temp sensor in water intake.
- Log Cycles
 - Data Export (Wi-Fi or USB)
- Control:
 - LBCO below a set voltage
 - Short cycles
 - when extra power available (e.g. above a set voltage)
 - night mode (off or reduced cycle at night)
 - Short cycle button (external)
 - Daily freezer cycle. (Set point and range)
 - Daily refrigerator cycle (Set point and range)
 - Set Compressor Speed
- Human Interface
 - USB or Wi-Fi Programming / Data interface
 - LCD touch screen or LCD display with buttons
 - Settings (see Control)

- LBCO value
- Short cycle cut-in voltage
- Short cycle delay (0-120 min)
- Night mode on/off
- Daily freezer cycle. (Set point and range)
- Daily refrigerator cycle (Set point and range)
- Set Compressor Speed
- Wi-Fi Interface
 - Export UDP ipn:port
- Current Box Temperatures display
- Current Plate Temps (selected) display
- Statistics Display
 - Data Range (all, partial, recent)
 - Freezer and Refrigerator Individual Stats
 - Average cycle time (full cycles only) min/cycle
 - Average Cycles / Day
 - Daily Run Time (hh:mm/day)
 - Daily Power Usage (amp-hrs./day)
 - Estimated Daily Hold-Over time (hh:mm).
 - System Stats
 - Daily Run Time (hh:mm/day)
 - Daily Power Usage (amp-hrs./day)

See <http://www.tweaking4all.com/hardware/arduino/arduino-ds18b20-temperature-sensor/>

Friday, 13 January 2017, 04:45 AEST

Refrigeration start glitch occurred but started up after about 3 tries. Voltage was 12.2. No noticeable voltage drop on startup. Next startup was a total failure, but the voltage was lower with -31amp draw from heater, computer, etc. I looked more carefully to see a single flash of the Refrigeration error lights followed by complete power off (Carel thermostats and ammeter), the restart attempt. This time it would not restart.

Tuesday, 17 January 2017, 07:55 AEST

Interesting software here: <http://www.expertgps.com/gps-receivers/Garmin-GPSMAP-1040xs.asp>

Tuesday, 17 January 2017, 07:55 AEST

Panasonic HIT 240 panels are installed. I finished the solar panel wiring yesterday. Starboard panel is fully functional with bracing in place. It is a 2-person job to extend the panel and if not down both sides at once twist is introduced which could stress the tempered glass. This is also something to worry about if a corner gets a hit from a wave. I don't know how to stop twist without adding more weight. If I could make a lever to deploy the panel from the center that would help, but you still need to fasten the grips from each end. I think a re-design of the braces would have a detent at the top of the slide and NO detents at the bottom. Experience has taught me the futility of trying to adjust the panels.

Kathy cleaned the carburetor and main jet on the little Honda generator, which helped a lot. It is still surging on a cold start in ECO mode but does hang in until the inverter asks for power, after which it goes to full throttle and runs fine.

“Free batteries for life” coupons emailed to Survitec for their 5-year replacement.

Saturday, 21 January 2017, 04:56 AEST

A strange electrical glitch occurred this morning. On attempting to start the diesel heater, it shut itself down abruptly. The “deck light” pilot LED was flashing. Turning the deck lights on and off had no effect on this. Turning off the cockpit panel power (START off) had no effect. Suddenly the light went

out and the heater turned on and ignited normally. Everything seems normal now. I have absolutely no explanation for this.

Just now the refrigeration “hiccupped”; i.e. the refrigeration attempted startup and then powered down. This repeated several times and then it started right up. 22A. No problem with the deck light indicator. This has happened before. Another anomaly is 11.75v on the Link 10 and 12.68v on the BSS panel meter. Ah, the panel meter battery bank switch was set to the starter battery. Voltage is indeed 11.75 on both banks. This could explain the startup problem with the refrigeration compressor. I have turned off the refrigerator for now to save power. We are back to 12.10v.

Saturday, 21 January 2017, 07:45 AEST

I have begun rebuilding the 210A Balmar 94-series alternator. So far we have a new rotor (\$239), a new stator (\$139), and all new diodes. Getting the diodes out was a real job. At first I was driving them out with a ball-peen hammer and a punch. That did not work. Then I used a long ½” socket with the ball-peen hammer. That didn’t work, either. Then I used a 4-pound sledge. That worked. Installing is a different matter. It was easy with the drill press vise (until it broke). Then I moved to the bench vise. I made the mistake of hooking up both leads on the dual diodes and this prevents me from using the socket as a driver.

Monday, 23 January 2017, 17:31 AEST

I solved my problem by removing one of the diodes on each dual diode assembly. I just used pliers to twist off the crimp and then the woven wire lead came out. In re-installing the diodes I used a 3/8” socket as a driver and the other vise to press fit each diode. The single ones with leads had the lead squished up inside the socket and the other either had two terminals instead of one for a pair, or I crimped the second diode onto the lead once it was pressed in place.

I then moved on to assembly. First, I forgot to put the insulating spacers under the internal aluminum diode plates. This shorted the hot lead to the case. Sparks ensued when I tried to hook up the alternator hot wire. Next, I had installed the two new output terminals sent by Timm and Balmar. It turns out these did not work when the insulating spacers were in place so I had to re-use the originals. Finally, everything was back in place with the stator installed. The unit was mounted on the engine and hooked up again. I tested the magnetic field and that worked fine. Next I gave it a full field test and up to 75 amps was noted. Then the regulator stopped working; this turned out to be a blown fuse in the battery sense wire. Using the sense wire as a power source to test the alternator was clearly not the thing to do; not unless I put in a bigger fuse. So everything now appears to work and I will undertake a full test in the morning when the batteries are lower.

NOTE: there is a crust of salt near the raw water pump intake. Not much water is leaking, a few drops, so tightening the hose clamps might solve this problem. We also have to look at water that is coming into the bilge from the rudder post.

Tuesday, 24 January 2017, 06:05 AEST

The alternator has passed its test. It produced 114A at 1500 engine RPM, tailing down over ½ hr. to 48.3 as the batteries have filled up. They were only at -71ah to start. The Dash Lamp was noted as running but after unplugging and reconnecting the Alt Temp connection on the regulator it settled down to normal. Perhaps the signal LED is not resetting correctly. Also, the deck lights came on unexpectedly. I don’t understand why the deck lights are toggled on. One of the aft lights and the forward deck light were on

The MC-612 regulator needs to be adjusted to not overcharge the individual cells. I still don't understand why cells are charging at different rates. The data below were taken during this morning's alternator test. 2.38v is the individual cell threshold.

The standard AGM program has been reset to PRG-1 Universal Factory Program which reduces the bulk and absorption times (see table).

Cell 1	2.490 volts	Batt 7	2.492 over	2.479 min
Cell 2	2.504 volts	Batt 4	2.518 over	2.503 min
Cell 3	2.317 volts	Batt 3	2.323 max	2.315 min
Cell 4	2.334 volts	Batt 2	2.343 max	2.330 min
Cell 5	2.386 volts	Batt 1	2.392 over	2.382 min
Cell 6	2.281 volts	Batt 6	2.281 max	2.265 min
Cell-Sum	14.338 volts	Pack	14.349 over	14.306 min
Pack-Volts	14.312 volts	Pack	14.328 over	14.288 min
Pack-Delta	0.026 volts	Pack	0.031 max	0.016 min

Running the alternator with the changed profile still has over-volted cells, but not as bad as before. I could set a custom profile to lower the bulk voltage even more.

Primary Program Settings	PRG-1 Universal Factory Program	PRG-4 Absorbed Glass Mat (AGM)
Mode		
Start Delay (Seconds)	1	1
Ramp Up (Seconds)	60	60
Bulk Voltage (Max)	14.10	14.38
Bulk Time (Minimum)	36 min.	36 min.
Absorption Voltage	13.90	14.18
Absorption Time (Minimum)	36 min.	36 min.
Float Voltage	13.42	13.38
Float Time (Maximum)	6 hr.	6 hr.
High Voltage Alarm	15.20	15.38
Low Voltage Alarm	12.80	12.80
Max Battery Temperature	125F/52C	125F/52C
Max Alternator Temperature	225F/107C	225F/107C
Equalization (User Prog.)	Yes	Yes

Cell 1	2.369 volts	Batt 7	2.379 max	2.359 min
Cell 2	2.390 volts	Batt 4	2.396 over	2.346 min
Cell 3	2.304 volts	Batt 3	2.313 max	2.302 min
Cell 4	2.324 volts	Batt 2	2.354 max	2.324 min
Cell 5	2.398 volts	Batt 1	2.429 over	2.397 min
Cell 6	2.256 volts	Batt 6	2.263 max	2.251 min
Cell-Sum	14.060 volts	Pack	14.122 max	14.025 min
Pack-Volts	14.041 volts	Pack	14.091 max	14.009 min
Pack-Delta	0.019 volts	Pack	0.031 max	0.016 min

Wednesday, 08 February 2017, 14:20 AEST

Yesterday, I returned from USA with spares, etc. including the last replacement [GE Microwave](#). The old one was removed with difficulty. Removal notes:

1. Remove panels in back of top shelf to access electrical socket into which the microwave is connected.
2. Remove all fiddles
3. Remove two top front hangar screws which holds the microwave to the upper shelf.
4. Back out two screws holding the piece of wood underneath the microwave. These screw into the wooden tea piece from either end. Then carefully move the vertical wooden piece on the left to allow the bottom piece to be removed.
5. Slide the microwave unit out of its surround.

The new microwave has a rumble in the motor. I might disassemble and keep the motor/bearing unit from the defunct one.

I also replaced the shunt for the solar amps meter with the correct model: 100ma/100v

Thursday, 09 February 2017, 04:47 AEST

The SEL switch on the Link 10 Battery Monitor has cracked (presumably from long usage over the last 15 years or so; at least 55,000 presses). It is worth thinking about a replacement soon.

Sunday, 12 February 2017, 07:18 AEST

The port HIT240 solar panel was connected to the controller yesterday. The weather has been cloudy so we don't have a good sense of the additional power.

This morning's glitch is the engine hour meter has reset itself. The meter was installed about 5 years ago and has an internal battery that should last 15+ years. Not sure what is happening. I still have engine hour data on the Operations Log.

Monday, 13 February 2017, 07:18 AEST

I was thinking about Jordan Drogues as the topic came up over the weekend at the Australian Wooden Boat Festival. Adam on *Bravo* recommended reading "Captain Fatty" Goodlander's book on Heavy Weather sailing and I was doing some googling this morning as well as reading the book on Kindle.

1. The drogue must be ready and easy to deploy.
2. It is important that the rudder be locked amidships. The wheel must be centered and lashed as the wheel brake is not strong enough. Another consideration: the chain pin on the wheel is small. You would not want to lose the rudder. If the weather were bad enough the quadrant should be locked. On *Beatrix* we can lock the rudder quadrant by using the Bleed Mode on the autopilot. It might be possible to install an easy-to-use quadrant lock involving a pin that could be dropped through the quadrant.
3. At some stage we NEED to test deployment and retrieval; possibly in Storm Bay while we are here in Tassie.

I also was giving some thought to the easiest way to install a bridle attachment for the JSD. I believe in our attachment to the turning blocks, but for a simple, easy, strong, general solution for the Peterson Cutter I think this is ideal:

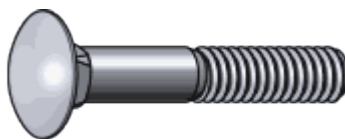
Use West System epoxy to attach a balk of American white oak that fits snugly in the corner of the transom; attaching to the deck, the hull, and the transom. Noting that epoxy has more than 2000 psi tensile strength the oak should be plenty strong. Make sure the oak piece is heavily roughed with 30 grit abrasive. The hull must be ground to be clean and rough. Clean up with acetone (wear a solvent mask).

Drill 5 holes through the hull (each side) to match the holes in the chainplate and fasten with stainless carriage bolts.

The chainplate projects vertically out of the transom.

Schaefer 5/8" Pin Straight Chainplate **84-91 \$162.82**

Pin Hole 5/8" (16 mm)
Max. Wire 3/8" (8 mm)
Fastener Holes (5), 1/2" (13 mm),
Length 16" (406 mm)
Width 1-1/2" (38 mm)
Thickness 3/8" (8 mm)
Weight 2 lbs. 8 oz. (1.13 kg)



Use carriage bolts with the heads ground smooth and polished.
316 SS ½"/13mm carriage bolts are available for approximately \$6 each from:
https://www.boltdepot.com/Carriage_bolts_Stainless_steel_316_1_2-13.aspx

Wednesday, 15 February 2017, 05:07 AEST

Early morning. Refrigerator trying to start but won't. -80AH, volts at 12.2. 20A draw before reefer start. Voltage is obviously too low. System tries to start, goes black. Manual re-start tried. Turned off inverter and tried again. After a couple of attempts it started. Now we have 40A draw down to 12.03. Batteries obviously not good. Note reefer hour meter NOT working.

Wednesday, 22 February 2017, 05:45 AEST

REPLACED FORWARD DECK CLEATS – ALUMINIUM WITH FOUR MOUNTING FEET

This last week Kathy and I have been replacing the two forward deck cleats. One of them had begun to pull away from the bulwark and had a large chunk of cleat simply pop off the body. As it turned out, these original cleats are hollow aluminum castings and this one had corroded from the inside out. As I worked on removing the cleats I developed a methodology; the first cleat was messy to fix while the second (port) cleat was easier. If/When we replace the aft cleats (as we should) it will be much simpler.

The bulwark as constructed has a space between the deck and the hull. There is approximately 15mm of wood which is epoxied to the deck, then a gap, then the outer hull. It appeared that the cleats had been fastened before the hull was in place as they are simple flathead (countersunk) machine screws with a washer and nut behind the wood. Each bolt was a separate challenge. Before I knew that the nut was not itself bedded I tried to unscrew the machine screws. This only worked with the top two nuts on the port side. Starting on the starboard side I tried to drill out the screw heads. This worked on the top where I could get to them. At that point, since the starboard cleat was loose where it had pulled away from the surface, I sawed through the aluminum with a Hackzall to free the cleat. On the port side I had to saw through the lower feet to free the cleat.

Once the cleats were removed I used a 7/8" hole saw without the pilot bit to drill a large hole to accommodate the remaining machine screw, nut, and washer. I used a piece of 10mm PVC plastic with a 7/8" hole to guide the hole saw until it had some depth and could become self-guiding. I was careful to not drill into the hull.

I now had 4 7/8" holes roughly corresponding to the new cleat's feet. I used a router bit and laminate trimmer to hog out some of the wood inside the bulwark. This is to allow the epoxy filler to have a solid base to press on.

The next step was to use my fingers to press some

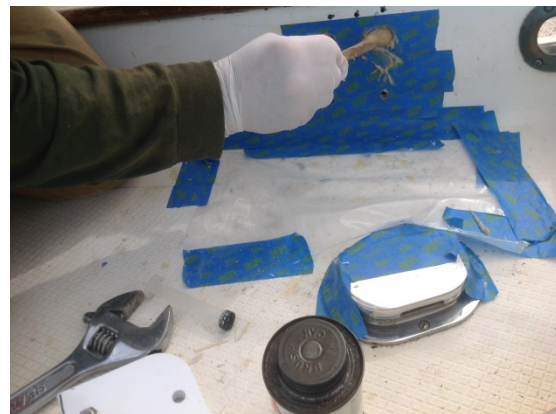


fiberglass matting around the vertical sides and bottom edge of the square formed by the four holes. This is to restrict the flow of the epoxy filler. The area was wetted out with un-thickened epoxy (resin+hardener) 403 thickener was used to create a thick but still pour-able paste to fill up to the lower holes. After this had set up a bit (about an hour) a thicker paste (peanut butter) was created to fill the holes.

I added one 3/8" hole and two threaded holes to the grey plastic jig to assist in aligning the holes and setting the proper depth. The concept is to get one lower hole correct, then the jig aligns the second lower hole correctly, then the intervening space is filled from the open top holes. Last, the two top holes are filled.

Because the plastic jig is threaded I can use over-long 3/8"-16 machine screws with a nut on the end. I adjust the position of the screw so the nut at the correct depth. The screw is treated with mold release. When pressed into the filled hole the nut remains embedded in the hardened epoxy and threads are "cast" into the rest of the plug.

Grease the jigs with Silicone paste prior to use. Use masking tape to keep the squeeze out from sticking to the bulwark.



The three small holes at the top are used to inject a final fill with barely thickened epoxy so a syringe can be filled by sucking up the mix.

After the top bolts set, make sure the screws can be removed. It isn't necessary to remove them completely, just make sure they can turn. Touch with a countersink to make a gasket socket.

Remove tape and sand down to original level. Fill any nicks and gouges with Epi-Fill or other filler and sand again.

Paint as necessary.

Fasten cleats using butyl rubber around the screws to seal against water intrusion. The rubber should set into the countersunk space around the screws.

Final machine screws must be of the proper length. If it is desirable to make the cleats removable, coat with Mold Release or silicone grease before insertion. Use un-thinned epoxy to the screws out to where the embedded nut is (i.e. don't glue the screw to the nut).

Wednesday, 22 February 2017, 09:36 AEST

Underway from POW to Hobart two glitches, again: engine hour meter was reset and the Deck Lights turned themselves on. Deck lights are associated with engine start bit also during the engine run. It could be due to a local surge or something in the deck lights wiring or in the control box.

<Note Added 27 Feb> In the morning I turned on the Wallas heater and immediately heard a "click", then the Deck Lights warning light was flashing AS WELL AS THE REFRIGERATION AMMETER! This The heater would not start. The actual forward deck light was not on, nor would anything, including opening the main battery switch, stop the flashing light and meter display. I left the

refrigeration system off and after several minutes it just stopped (I am guessing this has to do with the heater resetting itself). Now everything is working as normal. ???

Saturday, 25 February 2017, 07:20 AEST

Lower spreader boots were sewn on. The original boots did not fit comfortable so only the ends of the boots could be sewn. Ideally a bigger, redesigned boot should be made if these don't hold.

Sunday, 26 February 2017, 10:17 AEST

Noted salt crystals around the RWP. Washed the crystals off and inspected while running. It looks like the cover gasket is leaking.

Wednesday, 22 March 2017, 06:19 AEST

Over the past 3 weeks (March 1 to March 24) we are on the hard at RYCT in Hobart. The following tasks were done:

- Fix keel damage
 - Grind out scratches
 - Fill with International filler
 - Faired patches
 - Norglass sandable primer Shipshape
 - Light sanding and coating with Hempel Underwater Primer (grey)
 - Hempel Olympic blue anti-foul over repaired areas, waterline, and leading edges as needed.
- Prop
 - Disassembled because it was not correctly assembled. Numbered parts are now all in the correct place.
 - Coated with PropSpeed.
- Zincs
 - Replaced 3 small teardrop zincs (CMT20) and prop zinc.
 - All other zincs have plenty of material left and were not changed.
- Checked all through hulls
 - Cockpit port seacock needs dedicated extension handle
- Paint deck cleat area
 - Shipshape
 - 1-pack Norglass Enamel
- Find Aluminum plug for rudder
- Replace/Repair Raw Water Pump
 - Three screws had "rotted". Need to check for galvanic leakage.
 - Replaced with our new pump.
- Relocated PSS injector line higher up to avoid siphoning when raw water pump is removed.
- Painted topsides with roller method
 - See project plan for details of application.
 - Filled pinholes and dents with bog.
 - Sanded hull
 - 3 coats of Norglass Shipshape sandable primer
 - 1 coat of Norglass 2pk Northane Gloss white
 - 1 coat of Shipshape by mistake. Had to start over
 - 2 coats of Norglass 2pk Northane Gloss white
 - New cove trim in vinyl
 - Did away with the bootstripe.

Thursday, 23 March 2017, 09:22 AEST

Tested paddlewheel and we have a faulty sensor, again. The test was performed at the GSD24 adaptor. The results show 8vdc across the red wire (#7 red) but a fluctuating pulse with a logic probe across the data wire (#8 green). Testing across the green wire shows constant voltage. The only solution at this point is to use (or try) the [B744VL-INS](#) insert.

Friday, 31 March 2017, 06:56 AEST

Add repairs made last week:

- Engine temp sensor and switch replaced. Is there a way to test the switch.
- Fix slider in spinnaker pole mast attachment
- Changed engine oil and filters. This was a very messy job. The big bypass filters are changed and it is a messy job. Using a 2L yoghurt container might work better than the plastic bag (or a bag in a yoghurt container might be better)
- Rewired FWD DECK LIGHT to power to DECK LIGHTS circuit on main panel
- Kathy sewed genoa seams that had bad threads. This should have been done by the sailmaker last year when the new sacrificial cover was applied. Consultation with Allison at PT Sails concluded that it was OK to overstitch (zigzag) the seams with new holes (although the best way was to get the needle to go through the old holes). Kathy is not able to make consistent stitches with the Sailrite.
- Fixed broken snap in NAV station curtain.
- SCUBA tanks were certified and filled in Hobart. \$70 for both.

Voyaging Hobart to Sydney Glitch List

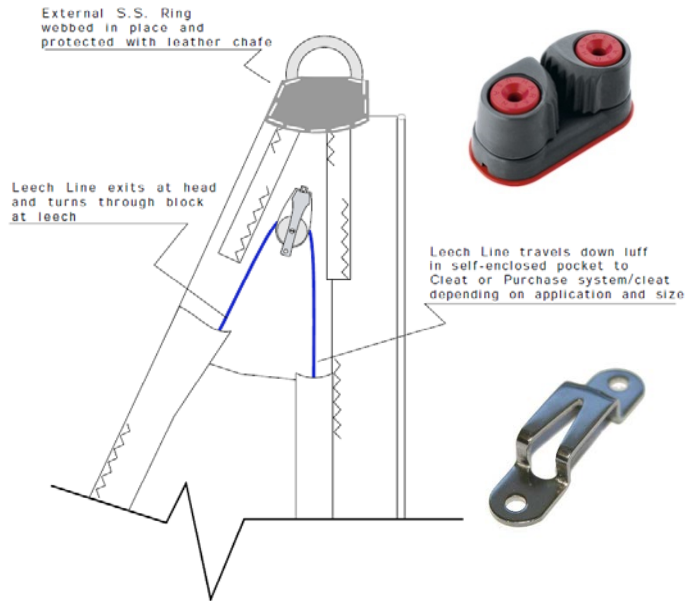
- USB Serial Port not working for NAV Data. No signal coming through. Same for AIS connection.
- **iNavx not representing proper HDG. Data is good but display is not. Solution was to set HDG only as input.**
- Rudder Post still has small leak
- Shaft collar for PSS slipped forward ¼" past the bellows! Need new set screws. It would be a good idea to get an SRC-112 Shaft Retention Collar from PYI as a backup.
- Reefer control panel cover needs to be done.
- Deck light glitch (comes on when engine runs)
- Need safety latch for gate snap shackles
- **Forward head seal leak. This has been cleaned and hopefully it is fixed.**
- Throttle glitch: would not go forward. Fixed. May have interference from stuff next to the stringer.
- **Fuel shutoff valve stuck again. This is NOT a problem with the fuel shutoff, but with a sticking solenoid.**
- Steering feels stiff: check steering system
- Wineglass holder needs re-visiting so glasses don't rattle or move.
- Replace broken "Davis Fist" which holds the boat hook.
- T-track end stops are missing on deck. Find replacements and install.
- Reattach starboard rail clip on awning.
- Replace leaking bypass oil filter shutoff valve.
- Batten slide on 4th from top batten pulled out of the Strong Track. Probably this was due to me tightening the reef line before the halyard, which would put undue stress on the track. This needs to be reinstalled.
- Tachometer light has failed.
- **Pineapple staysail has some abraded areas. Fixed with sticky tape.**
- **Aft door lock loose. Tightened.**

Friday, 07 April 2017, 11:25 AEST

I have been thinking about the problem with tightening and securing a genoa leech line. NeilPryde has a design for [Genoa Up and Over Leech Line](#). I am not sure what happens to the cleat and block when the sail is reefed. Probably nothing if sufficient material (possibly a leather) is around the equipment.

I also found an example of this [stainless V Cleat](#) that might be easier to work with (but probably harder on the line) than the sales.

Another idea was to add a small jam cleat that is more robust and easy to use, but probably too “proud”.



Sunday, 09 April 2017, 10:21 AEST

Today we raised and lowered both staysails (storm and regular) to measure and assess use of a whisker pole.

Monday, 10 April 2017, 07:57 AEST

John Vallentine on *Tainui* wrote:

“I have Schaeffer batten shoes and they have one problem – the stainless slides screw into the polycarbonate housing and the thread in the housing can strip. This has happened 3 times to us. There is a simple fix – welding a longer screw onto the slide, which can then go right into the housing and a nut can be attached to it inside the housing. I have told Schaeffer about this but they reckon it would be too hard to re-tool their factory. Our main has seen some heavy weather but we’ve always treated it with care. I don’t think this problem has been our fault.”

This is something we should check out on our own batt-slides.

Monday, 10 April 2017, 12:02 AEST

We got out our two remaining Spinlock Powerclutch XCS; one was new and one needed repair. The repaired clutch (formerly for the main halyard) had abrasions in the aluminum cam and base so both were replaced. Both clutches are 0814 cams. We will put one on each side of the mast: port will handle either the spinnaker halyard or staysail halyard. The starboard clutch will be available for the spare spinnaker halyard or the spare main/trysail halyard.

Apparently Spinlock has new “Ceramic Coatings [that] allow the Cam or Jaws to engage quicker on a loaded line, taking up the load faster and with less creep. On smaller diameter lines this is particularly noticeable and once engaged the ceramic coated Cam or Jaws offer significantly improved consistent holding. ... Ceramic coated parts offer increased resistance to abrasion and wear.”

The ceramic parts are available as replacements and any new spares will (should be) of this variety.

<http://www.techflex.com.au/techflex-braided-sleeving-products/carbon-fiber/sizes>

Saturday, 15 April 2017, 16:01 AEST

Noted today while starting engine: 3 FULL GLASSES (1.5l) of water added to cooling system.

Sunday, 16 April 2017, 11:59 AEST

- The shaft collar for PSS slipped forward ¼” past the bellows! New ¼-20 x 3/8” set screws were installed with the old set screws as backup on top. Medium Strength Threadlocker was used. It would be a good idea to get an SRC-112 Shaft Retention Collar from PYI as a backup.
- Reattached starboard rail clip on awning.
- Pennant replaced on storm staysail (was wire, now Dyneema)
- Forward Head seal cleaned and greased.
- Aft door lock set screw was loose. This is fixed.
- We checked Honda Outboard to find source of oily residue. OMG the oil was totally EMPTY! We put in new oil but forgot to measure the amount. It is 175-200ml. Oil near the swivel might indicate a leak. Also noted rusty fasteners – we have to keep on top of this. The last recorded oil change was 2 years ago; this might not be correct.

Wednesday, 19 April 2017, 08:14 AEST

On water run from Manly anchorage: sticky engine stop solenoid. This is now a chronic problem. One of the water tank deck plugs had a damaged O-ring and it took a lot of force to remove. The O-ring was replaced, but with an undersized one that had to be stretched to fit.

Fabricated and installed a cover for the Refrigeration Control box on the galley counter. It is made of that white coated perforated aluminium I’ve been carrying around forever. K made me do it. It’s good.

Saturday, 22 April 2017, 09:10 AEST

The “Boat Beast” strikes again. Two major problems have arisen.

HONDA OUTBOARD

The outboard motor engine oil leaks out over a period of a few days. This is apparently not uncommon, according to accounts on the web. It must be a gasket and/or oil seal. This is repairable by us or a mechanic, but it’s likely that the parts will have to be ordered. Hopefully, they are in the country. If they have to come from Japan, I may as well import them from the USA.

HONDA GENERATOR

The Honda EU2000i 110v generator has stopped producing AC power. We followed the troubleshooting diagnostic tree and determined the output of the stator windings was out of spec. The genset is over 3287 hours old and may be at the end of its life. OTOH a new stator costs about \$100 in the US. We also have a defunct genset (bad inverter) stored at Niall’s factory and if it has a good stator we good cannibalize it. I know the engine has way less hours than the current unit so perhaps we could use that motor, the stator, and the inverter from the current unit. It might take a day or two to make that happen. Meanwhile, I am pushing up finishing the Kubota job so that if we do need a new Honda EU2000i Kathy can buy it in the USA and bring it back in June unless we switch to the 240v Aussie version. If a stator/rotor assembly is needed they can be ordered [here](#). However, before that, it is worth cannibalizing the old generator and also checking the wiring loom. Apparently loose wiring can also cause the symptoms of zero output and rough idling.

RUDDER TUBE

Kathy had concerns that the steering appeared to be stiff so we undertook an inspection. The quadrant and pulleys under the bunk and in the engine room looked fine, but I noticed a lot more water seepage around the tube where it comes up from the rudder. We tested the situation by having K turn the wheel back and forth while I took pictures of the play in the rudder tube.

I enhanced my testing of the rudder by tying a line from the emergency padeye (at the trailing top edge of the rudder), pulling the rudder hard to port and then using the wheel to force the rudder the other way. This would better simulate the wheel trying to turn against the full force of the rudder while underway. It also confirmed that it would be easy to control the rudder externally in an emergency.

<https://youtu.be/9JS8IIXRKds> is the video of this.

I can do this in the water as there should not be much inrush considering the tight fit of the rudder post in the tube. The bilge pump could handle it for the few minutes it took to slide the “stabilizer” over the threaded rudder tube.

Diving under the boat this morning while Kathy works the wheel confirmed that the hinges are sound. I just inspected those 3 weeks ago on the hard in Hobart and they looked fine. Too bad we did not know about wobbliness of the upper end of the tube.



Continued below on April 25. The area around the tube is actually too small to do the suggested fix.

Sunday, 23 April 2017, 06:28 AEST

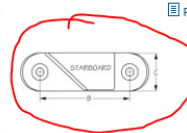
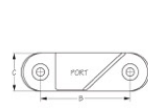
The main engine has been using excessive amounts of cooling water. (I suspect we have now diluted the coolant quite a bit). It looks like the hose from the header tank to the engine could be leaking. In any event, we have a custom made replacement hose that needs to go in, so now is the time.

I worked yesterday on the Kubota generator and believe I have the answer to the problem of running a few minutes and dying – the canister fuel filter is holding air and when a bubble gets into the engine it kills it. I disconnected the fuel line and bled the line and fuel filter. It fixed it for a while, but it seems there was still air in the canister because if I tilted it upright, the engine died immediately.

Sunday, 23 April 2017, 08:52 AEST

We took off the genoa for K to inspect seams and stitching and see if repairs are holding. We looked at the leech lines and discovered we have a PORT Clamcleat on the STARBOARD side of the sail. This seems a mistake, but all the spare Clamcleats on board are of the CL241 (port) variety and we probably need a starboard Clamcleat to allow us to set the leech line by pulling BACK on line. Consultation with PT Sails suggested we punch through the sail and move the leech line to port. They can also order and sell the correct Clamcleat to us.

[Home](#) > [Clamcleat®](#) > [Sail Cleats](#)



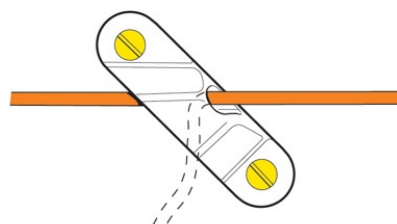
[Print](#)

CLAMCLEAT® RACING SAIL LINE PORT & STARBOARD

Aluminum

Bulk	Display	Clamcleat® No.	A	B	C	Rope Size	Finish	Fastener	Weight	Std. Pack	Add to List
002410	002410-1	CL241(Port)	2-3/4"	1-15/16"	13/16"	1/8"-1/4"	Silver	#8 FH	.04	10 ea	+
002415	002415-1	CL241AN (Port)	2-3/4"	1-15/16"	13/16"	1/8"-1/4"	Anodized	#8 FH	.04	10 ea	+
002730	002730-1	CL273 (Starboard)	2-3/4"	1-15/16"	13/16"	1/8"-1/4"	Silver	#8 FH	.04	10 ea	+
002735	n/a	CL273AN (Starboard)	2-3/4"	1-15/16"	13/16"	1/8"-1/4"	Anodized	#8 FH	.04	10 ea	+
002120BP	n/a	Backing Plate							.01	10 ea	+

The tooth design allows a quick, positive lock that is easy to release, add to this its low profile and ability to hold high loads, makes it ideal for tensioning leech line on larger sails. The integrated rope guide also make it suitable for adjusting & securing reefing points. Manufactured from aluminum for light weight and durable performance it can be mounted in two positions. The CL241 has a silver stove enamel finish for a cost effective, high quality finish. The CL241AN has a hard anodized finish to give the ultimate hard wearing surface. The Starboard version of this cleat is CL273. The plastic equivalent version of this cleat is the CL233. Use a back plate when riveting a cleat onto fabric as it will prevent the rivet pulling through.



Sunday, 23 April 2017, 12:16 AEST

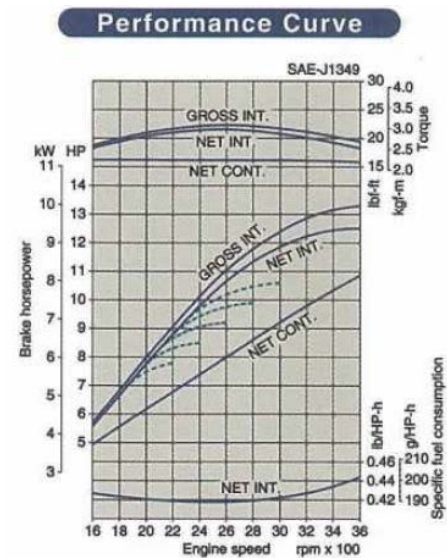
Harkening back a week ago, the Honda 2.3 outboard was empty of oil and we filled it up. Now oil has been leaking down onto the deck and is coating the aft vents.

Tuesday, 25 April 2017, 18:36 AEST

The Kubota generator was run successfully these last two days. It provided enough power to charge within 1 hr, followed by solar (except today when it rained). It still hiccups occasionally and I had to restart twice. We are going to clean the filter and check the fuel lines as this is clearly air in the fuel.

Calculated fuel consumption of Kubota:

$$190 \text{ g/HP-h} * 10\text{hp} / 832\text{g/l} = 2.3 \text{ l/hr}$$
$$0.42 \text{ lb/HP-h} * 10\text{hp} / 6.93 \text{ lb/gal} = .605 \text{ gal/hr}$$

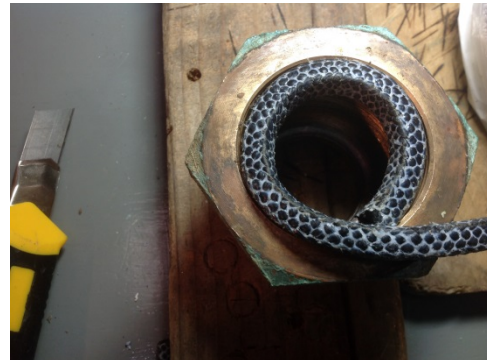


Rudder

I worked again at the rudder issue. I picked off the useless sealant around the base of the tube and also test-drilled a couple of holes to confirm that the “shelf” appears to be solid fiberglass. Leaking appears to be mostly from the stuffing box. The stuffing box and lock nut are on top. There appears to be a thick bronze flange under the nut at the bottom.

The autopilot tiller and quadrant were removed.

Peter on Blackbird came over to help. He was sceptical at first because we were in the water but that was never a problem. The bilge pump wasn't even running continuously. We had some difficulty removing the parts. The stuffing box itself was removed with a pipe wrench. The locking nut (packing nut) was also moveable. I picked out the old stuffing, cleaned the threads with a pick, and repacked with the typical three rows of packing with the cuts offset by 120°. It was some effort to get the repacked fitting over the shaft and onto the log, after that we tightened it until it no longer leaked. We also used a bit of TefGel on the threads. We repacked with [Tefpack Synthetic Shaft Packing, 2' x 5/16"](#) and the leaks have stopped, at least from the stuffing box.



We had failed to move the bottom nut because there is NO WAY to swing a pipe wrench at the bottom of the threaded tube. I did note the nut diameter is 3" and I might look into making a special wrench for this purpose e of the nut to drive it in the direction you want to go. At first, I loosened the nut a bit, and then drove it as tight as I could.

Guess what! The rudder post tube no longer wobbles or has noticeable play. It still leaks, however, but I think it can be left, if watched and inspected, until the next haulout. At that time it could be replaced or repaired with a seal of some sort under that bronze flange (or spacer or whatever it is). Possibly a top bearing could be used instead of the stuffing box. At least it's not a problem now.

I also discovered that the steering cable was too tight. Letting it loose a bit seemed to help the steering, but it still seems to be stiff when under power. I think that there may still be enough movement in the tube to bind the shaft when the rudder is loaded. This is not a good thing, but at least I have more confidence in being able to deal with this as a problem to be researched and solved, and not as an emergency.

Sunday, 30 April 2017, 13:22 AEST

Replaced both F1 and F2 fuel filter elements with 10 μ filters. LOTS of sludge was in the F2 and the cartridge was grey with dirt. The F1 (large) filter also had some sludge and water in the chamber. The bowls were removed and cleaned and new gaskets used in the F2. The drain plug in the F2 had a bad seal which was replaced. I think I missed an O-ring at the drain plug but I could not get the rubber seal off without destroying it and it does not leak anyway.

Removed the boot on the main engine stop solenoid and greased the cylinder. This seems to have fixed the “sticky” shut off for now. I hope we don’t need a new solenoid as they are expensive: Stop Solenoid - Reference 12D-001 \$159+shipping from Trans Atlantic Diesels, Inc. tadinc@earthlink.net

Tuesday, 02 May 2017, 17:22 AEST

The Kubota genset had a glitch where the power to the control box and control switches “disappeared” and then would come back after a while. I had trouble diagnosing it because the Fluke DMM test leads were also bad. Then the HDMI cable to the computer monitor died. Now I’m three down in the stack. I found a replacement cable, used some cheap Chinese leads I had (they don’t mate well with the Fluke) and finally, finally found a faulty crimp on the terminal that attaches to the starter motor and powers the control box. It had a bad crimp and was a size too small. I can’t believe I did that. New crimp is installed and the generator is running well. It might still have a bit of air to deal with and I’m not so sure where it might be entering the fuel line.

Remaining generator problems are: dome nuts on top plate, carriage bolts on the vertical part of the top plate, replacement of the water temp alarm switch, replacement of the 50°C fan switch with a 70°C fan switch, and figuring out how to deal with the water flow alarm.

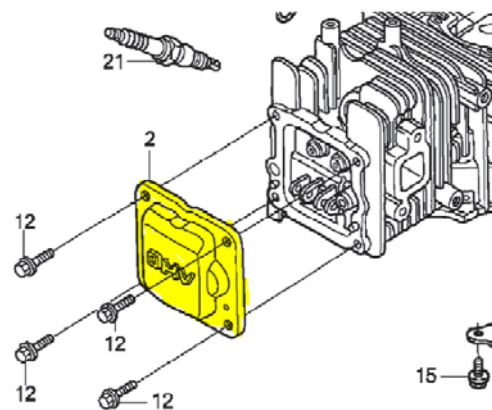
Wednesday, 03 May 2017, 12:55 AEST

I attempted a test install of the Outback Hub-4 and found it controls BOTH inverter/chargers at the same time (i.e. master/slave mode). It needs to be configured differently, if possible. After connecting both inverters the 120vac FX2012MT had a “stack error” which required resetting factory defaults to clear it. Out back says “It is possible to clear an error by resetting the inverter. The inverter must be turned off, and then on, to reset it”.

Wednesday, 03 May 2017, 15:21 AEST

I talked with Graham at Brooklyn Yamaha and thanked him for diagnosing the oil leak problem. He gave me a part number (12311-ZVA-000-ZA) for the rocker cover and I have ordered a replacement from Callaghans Marine, also in Brooklyn, which was THE GUY I had thought we were with. So, it cost \$110 to diagnose the problem and I’ll try to fix it myself and maybe the engine will run some more. We also have the option of repairing and selling the old one and purchasing a new BF2.3. We will sail to Brooklyn and pick the part then.

The part was installed on 16 May. We used [Loctite 587](#) which is a “gasket maker” and appears to be similar to what was inside. It was tricky to remove and replace the cover and the vertical bars in the plastic casing aft had to be permanently removed.



Wednesday, 10 May 2017, 14:46 AEST

New batteries (6 x 900AH GPL-6CT-2V AGMs \$4039.20) are on order and will be delivered tomorrow at the RMYC in Newport, NSW. Purchased from:

Federal Batteries (Ryde Batteries Wholesale Pty Ltd) 1300 133 980 Peter Blume peterb@federalbatteries.com.au New South Wales (Head Office) Unit G/10-16 South St, Rydalmere, NSW 2116 Australia Phone: 02 9638 5222 Fax: 02 9638 3427

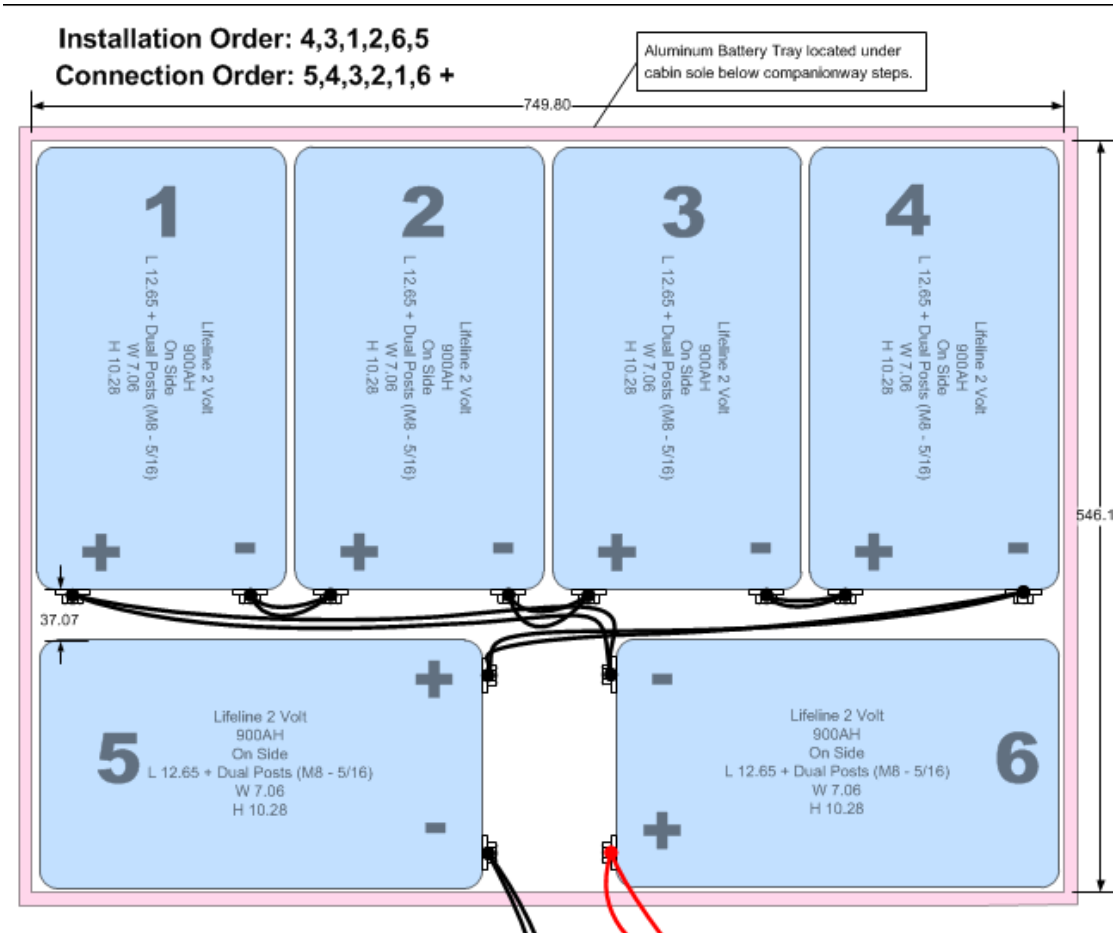
Wednesday, 10 May 2017, 15:00 AEST

Work was done on the Honda Outboard 2.3hp at Brooklyn Marine Services as follows:

- Mechanical - Labour
- Removed air cowling
- Start and run engine, check for oil leak
- Found oil leak at rocker cover
- Advised owner - to repair himself
- Re-assemble air cowling and air box
- Also found crank case breather hose kinked blocking engine breathing

Monday, 15 May 2017, 07:34 AEST

Batteries were installed. It took 1.5 days and most of the time was spent on installing battery 5. The new configuration is below. We replaced the rubber mat with 3mm neoprene (from Clark Rubber) and used K-Y Jelly to lubricate the mat so the batteries would slide in place. The "X" connectors between 2 and 3 must curve towards the stern to allow the bottom cable from 4 to 5 to move vertically. This is necessary to be able to fasten the cable from the bottom of 4 to the bottom of 5 before 5 is lowered into place. Note that all batteries are on their side with the small dimension face down. This is shown in the following image.



Monday, 15 May 2017, 07:49 AEST

The Kubota generator has been having “hiccups” and shutdowns due to fuel issues. I replaced the HEP-02A 12v fuel pump and the problems are less, but have not gone away entirely. The next thing I want to try is to remove any loops in the fuel supply so air cannot be trapped; i.e. exit the fuel supply and run straight through the fuel pump to the engine.

Monday, 15 May 2017, 07:49 AEST

New batteries are being charged by the Kubota generator. Max amps are

The other worry is that Cell 1 (Battery #5) shows as being over-charged compared to the other cells. The data below is from the Junsu CellLog and has been confirmed with my Fluke DMM.

Cell 1 (MAX)	2.491 volts	Batt 5	2.563 over	2.155 min
Cell 2	2.344 volts	Batt 4	2.370 max	2.151 min
Cell 3	2.306 volts	Batt 3	2.307 max	2.153 min
Cell 4 (MIN)	2.284 volts	Batt 2	2.286 max	2.147 min
Cell 5	2.301 volts	Batt 1	2.306 max	2.150 min
Cell 6	2.301 volts	Batt 6	2.304 max	2.144 min

Cell-Sum	14.043 volts	Pack	14.068 max	12.929 min
Pack-Volts	14.027 volts	Pack	14.039 max	12.903 min
Pack-Delta	0.016 volts	Pack	0.031 max	0.016 min
Cell Max-Min	0.207 volts	Pack	0.2491 max	0.2284 min

As the batteries approach full (~ -35AH) the over-voltage shifts and the max-min cell voltages drop also.

Cell 1	2.365 volts	Batt 5	2.563 over	2.155 min
Cell 2 (MAX)	2.388 volts	Batt 4	2.394 over	2.151 min
Cell 3	2.300 volts	Batt 3	2.307 max	2.153 min
Cell 4 (MIN)	2.269 volts	Batt 2	2.286 max	2.147 min
Cell 5	2.313 volts	Batt 1	2.320 max	2.150 min
Cell 6	2.292 volts	Batt 6	2.304 max	2.144 min

Cell-Sum	13.958 volts	Pack	14.068 max	12.929 min
Pack-Volts	13.927 volts	Pack	14.039 max	12.903 min
Pack-Delta	0.031 volts	Pack	0.031 max	0.016 min
Cell Max-Min	0.119 volts	Pack	0.2388 max	0.2269 min

But then... the individual cells go high! Below, #2 is max. and both #1 and #2 have too high a voltage. The “average” voltage is just fine at 14.17, but I don’t understand the variance of the cell voltages under charge.

Cell 1	2.448 volts	Batt 5	2.563 over	2.097 min
Cell 2 (MAX)	2.486 volts	Batt 4	2.488 over	2.095 min
Cell 3	2.306 volts	Batt 3	2.350 max	2.101 min
Cell 4 (MIN)	2.276 volts	Batt 2	2.317 max	2.092 min
Cell 5	2.336 volts	Batt 1	2.357 max	2.099 min
Cell 6	2.293 volts	Batt 6	2.326 max	2.080 min

Cell-Sum	14.172 volts	Pack	14.192 max	12.620 min
Pack-Volts	14.145 volts	Pack	14.163 max	12.594 min
Pack-Delta	0.027 volts	Pack	0.031 max	0.016 min
Cell Max-Min	0.210 volts	Pack	0.2486 max	0.2276 min

The next image shows the batteries post-charging. Solar meter shows only 1.6 amps in with net -12 amps out. Charge status on IPN is “bulk”. Why? This should be charging more or at least be on “float”. Cycling the IPN did not change anything. Maybe the problem is it'

Cell 1 (MAX)	2.189 volts	Batt 5	2.563 over	2.097 min
Cell 2	2.182 volts	Batt 4	2.517 over	2.095 min
Cell 3	2.184 volts	Batt 3	2.350 max	2.101 min
Cell 4 (MIN)	2.175 volts	Batt 2	2.317 max	2.092 min
Cell 5	2.178 volts	Batt 1	2.375 max	2.099 min
Cell 6	2.177 volts	Batt 6	2.326 max	2.080 min

Cell-Sum	13.102 volts	Pack	14.263 max	12.620 min
Pack-Volts	13.085 volts	Pack	14.237 max	12.594 min
Pack-Delta	0.017 volts	Pack	0.031 max	0.016 min
Cell Max-Min	0.014 volts	Pack	0.2189 max	0.2175 min

We left the boat all day until 1500 with no loads. Link 10 reported 18.3 positive AH; IPN reported 0AH as it does not ever show charge state over 100%. Volts were at 13.24 and solar amps at about 6.

Cell 1 (MAX)	2.168 volts	Batt 5	2.563 over	2.097 min
Cell 2	2.163 volts	Batt 4	2.517 over	2.095 min
Cell 3	2.164 volts	Batt 3	2.350 max	2.101 min
Cell 4 (MIN)	2.157 volts	Batt 2	2.317 max	2.092 min
Cell 5	2.162 volts	Batt 1	2.375 max	2.099 min
Cell 6	2.158 volts	Batt 6	2.326 max	2.080 min

Cell-Sum	12.997 volts	Pack	14.263 max	12.620 min
Pack-Volts	12.972 volts	Pack	14.237 max	12.594 min
Pack-Delta	0.025 volts	Pack	0.031 max	0.016 min
Cell Max-Min	0.011 volts	Pack	0.2168 max	0.2157 min

Tuesday, 16 May 2017, 08:14 AEST

Raw Data Count 12006

Log Started 2017.05.15 22:12:10 UTC

Cell 1 (MAX)	2.536 volts	Batt 5	2.577 over	2.168 min
Cell 2	2.351 volts	Batt 4	2.413 over	2.164 min
Cell 3	2.317 volts	Batt 3	2.323 max	2.167 min
Cell 4 (MIN)	2.289 volts	Batt 2	2.304 max	2.161 min
Cell 5	2.311 volts	Batt 1	2.320 max	2.164 min
Cell 6	2.301 volts	Batt 6	2.325 max	2.158 min

Cell-Sum	14.126 volts	Pack	14.164 max	13.000 min
Pack-Volts	14.105 volts	Pack	14.140 max	12.983 min
Pack-Delta	0.021 volts	Pack	0.031 max	0.016 min
Cell Max-Min	0.247 volts	Pack	0.2536 max	0.2289 min

I had hoped that a full charge would “balance” the cells, but this did not happen. This morning’s startup graph (-53AH remaining) looks like this. Charge current is 46.1A. When this much current is flowing the voltage meters show discrepancies.

Just read at 80A: 14.00v (Link10), IPN(14.1v), 14.16v (Blue Sea), 14.116v Junsu

Direct measurement with Fluke DMM confirms Junsu is the accurate.

Log Started 2017.05.20 23:30:09 UTC

Tuesday, 23 May 2017, 05:23 AEST

Batteries. Over the past week the batteries were equalized for 8 hrs. at 15.5v. According to the manufacturer this one battery may have a higher level of saturation. The plan is, having equalized the bank, that the cells will achieve balance. However, I can see no improvement yet (below). Note that “Batt 5” and “Batt 6” were re-labeled because I swapped them to see if the problem was in the cell or the cabling. Definitely in the cell. More details are in the battery log.

Cell 1 (MIN)	2.298 volts	Batt 5	2.346 max	2.142 min
Cell 2	2.356 volts	Batt 4	2.388 over	2.144 min
Cell 3	2.309 volts	Batt 3	2.353 max	2.149 min
Cell 4	2.306 volts	Batt 2	2.365 max	2.146 min
Cell 5	2.339 volts	Batt 1	2.380 over	2.136 min
Cell 6 (MAX)	2.525 volts	Batt 6	2.619 over	2.139 min

Cell-Sum	14.156 volts	Pack	14.337 max	12.881 min
Pack-Volts	14.133 volts	Pack	14.309 max	12.859 min
Pack-Delta	0.023 volts	Pack	0.031 max	0.016 min
Cell Max-Min	0.227 volts	Pack	0.2525 max	0.2298 min

At this point I will continue to monitor the next 20 cycles and get back to [Jim at Lifeline](#) with the results.

Generator

The fuel pump on the Kubota generator was removed. It was a new HEP-02A. I replaced it with a used Walbro FRB13 and also re-routed the fuel line run. The inlet to the FRB is on the bottom of the pump and the outlet at the top has a smooth run (no loop). It took some effort to bleed the system and prime the Walbro. It is supposed to be self-priming but I had to push from upstream of the filter using the engine bleed pump.

The Kubota engine is running better and starts right up, but it still dies after about 20 minutes of running. It as if air accumulates and then a bubble hits the injection pump. The hoses are new and I cut off the ends in swapping pumps so I doubt the hose is the problem, but what could it be? My next move is to re-install the engine lift pump.

Tuesday, 23 May 2017, 09:43 AEST

A fitting ' behind headstay. Furling drifter headstay. No pole.

Trysail as steadying sail.

Sail \$6000

Stuff \$1800

Selden furler.

48 deg no online. Feb 17

Thursday, 25 May 2017, 09:39 AEST

I think it HAS to be air in the fuel. The fuel runs from a day tank to a Racor 500 then splits into a feed to the main engine (with check valve) and feed to the generator (with check valve). The fuel is sucked through the Racor, rather than pushed. In the case of the main engine the engine's lift pump has provided plenty of fuel. The suction is monitored downstream from the filter and shows nominal values. The filter was changed and the canister cleaned a few weeks ago. The main engine has always run without fuel issues. On the generator feed side there is a Walbro FRB13 fuel pump that also sucks out of the Racor and provides pressurized diesel to the Kubota. The Kubota also has its own lift pump, which I removed.

I also have another electric fuel pump UPSTREAM of the Racor filter (before the tee to the two engines) to use as a bleed pump for changing filters or a backup.

1. I have used the backup electric pump to pressurize the fuel in the line with the engine off. No leaks are apparent.
2. I changed the fuel pump from a HEP-2A to the FRB13. The problem persists: i.e. it is not the fuel pump.
3. I shortened the hose run to avoid a loop which could trap air. Made no difference.
4. I checked the injectors, bleed screw, and banjo fittings for torque. All good. It still runs 20-22 minutes and dies.

IT HAS TO BE AIR IN THE FUEL LINE, RIGHT? What else could it be?

Other options:

1. Open up the fuel system and
 - a. check the compression fittings in the generator fuel circuit. **Looks OK.**
 - b. check the non-return valve. **Looks OK.**
2. Replace the hose.
3. Re-install the lift pump on the engine. (I can't see why that would make any difference).

Thursday, 25 May 2017, 15:24 AEST

I noticed a bit of fuel at the Algae-X end of the hose from the Algae-X to the transfer pump. The hose was very stiff and I had to cut off the ends. I replaced with new hose.

I also checked the fuel level in the Racor 500 and had to pump up about 30mm of fuel to cover the top of the filter.

Kubota Genset:

- The 50°C temp switch for the cooling fans was swapped for a 70°C switch. I should have checked the actual temperature, which is 65°. Now I have to swap the 50°C switch back in.
- I found my Perkins spare engine hot water temp alarm switch and installed it in the Kubota.

- The raw water flow was tested at the siphon break inlet hose at 4gpm. This confirms the pump is operating OK but that the Aqualarm is not. It is supposed to open the switch at 2gpm but that is not happening. With the water system intact the flow will be even less.

Friday, 26 May 2017, 08:19 AEST

The Kubota has run without a hiccup for 1 hour. The only “new” thing is the filling of the racor. I can’t believe that would have been a problem. The main engine never had an issue? I’ll work on the Kubota water flow alarm today. What I need is to buy a 60° thermostat switch.

Friday, 26 May 2017, 11:39 AEST

This is a new site to remember: [Electric Latching Valves](#). I am trying to figure out how to add a freshwater washdown for the outboard.

Initial thinking is to run water from the aft f/w manifold to a deck fill fitting near the outboard. An electric latching valve (\$25) could be used to prevent a leak or forgotten hose from draining the fresh water tanks. Ideally it would work on a timer, e.g. push a button and the valve opens for a set time period.

Another option is to run the water line from the coaming to the aft deck and control it with a manual valve inside the coaming. This is simpler and doesn’t involve electricity; but the valve could be forgotten and left on, unless you had one of those time delay valves (which are quite expensive)

Friday, 26 May 2017, 17:28 AEST

Kubota:

I Installed a 60°C thermostatic switch to power the box cooling fans. Note the fans also suck fresh air into the box helping to cool the control panel and alternator, and make sure the engine has oxygen.

I am testing Aqualarm units. The new model works fine but has to either be relocated or inverted. The old unit failed it’s test but should be repeated just in case I tested it with the raw water shut off.

There is something wrong with the alarm lights on the manual control panel. BLUE should come on when the siren is disabled, period. The actual alarm LED is the RED which should come on when the power is applied and go off when the engine is running, regardless of the SIREN DISABLED switch. This needs to be debugged tomorrow.

Monday, 29 May 2017, 17:55 AEST

I skipped running the generator yesterday and was down to -294AH. The Kubota would run and then die; same symptoms as before.

The oil pressure switch has 3 contacts and they were wired up wrong. I tested the functioning with the DMM. Re-wiring correctly still did not fix the alarm lights issue. I tightened the belts, added a new oil pressure sensor, and restored the mechanical lift pump. I checked the Racor for head space and there was a little bit of air at the top – not enough to be concerned.

Tomorrow we will see if this made any difference. If not, I am down to a leak in the Generator Supply Shutoff Valve or perhaps the hose. I would be surprised because the hose is fairly new.

This air problem HAS to be on the generator side of the fuel circuit as I have no problems at all with the main engine (unless somehow the main engine can a little air better than the 2cyl Kubota)

Wednesday, 31 May 2017, 05:47 AEST

Yesterday I was successful in having the Kubota run for almost 2 hours with no shutdown. In restoring

the lift pump I opened the drain plug for the coolant by mistake and forget to refill the tank. This means the engine ran for 2 hours without full coolant. I hope this hasn't done any damage. Two things of note. On startup today it chugged on 1 cylinder for almost 1 minute for revving up to full speed. Secondly on shutdown last night the solenoid did not close. Was it too hot? I will be watching these things.

DAMN! I just noticed the boat filling with steam from an overheated engine. I FORGET TO TURN THE RAW WATER BACK ON! The alarm system is still under development and I may have seriously overheated the engine. I hope it hasn't seized. I will wait for it to cool down before starting again.

Ok, it started right up. It looks like I had an old fashioned boil-over. I will have to replace the coolant. I'll buy some antifreeze when I go to town.

Thursday, 01 June 2017, 06:15 AEST

I tried to start the Kubota this morning and it took a good minute to lug along on 1 cylinder before it kicked in. Fuel problem or damage from yesterday's overheating. Once started I noticed that there was something going on in the main engine room and it turns out that there was a failure in the short piece of wet exhaust hose. The cover is damaged and the hose has slipped off the pipe leading to the Centek waterlift. The problem could be just with the hose slipping, but I should replace it if I have a spare piece.

I am using main engine for battery charging this morning. It took a liter to fill the header tank, and ½ a liter yesterday. Until I find the coolant leak I should check the engine at least every other hour, maybe every hour. There is nothing I can see in the engine room. No drips or leaks. I could start with replacing the old header-to-engine-block hose with the new one I already have had made up.

Most of the day was spent in Sydney. I tried to find a 60° NO thermostatic switch but that is not available at Jaycar. I ordered some from China at ridiculous low price but it may not show up for six weeks.

Friday, 02 June

I replaced the 1.5" hose and it appears to run OK now. I can't believe I mixed the alarm issue with forgetting to open the raw water valve. I should have put some tape over the ignition switch. Hopefully no harm done, but I have to check the engine oil and exhaust and maybe do a combustion system gas analysis.

Saturday, 10 June 2017, 05:42 AEST

----- Malware Bytes Problem Started Here -----

I seem to have some kind of virus-y thing in the original Repair and Maintenance Manual. I'm not sure how long the bug has been there but Malwarebytes was not working for a while. Now it is detecting an "Exploit Payload Process". I'm not sure what to do about it. I tried turning off exploit protection and cutting-and-pasting but the problem remained. I'll just write here for now and try to fix things later. Part of the problem is I'm not doing windows updates right now. They cause problems; but I'm falling behind in having a secure system. I really have to work on computers soon, and do the taxes, and fix the refrigeration...

There is too much coming down on me right now. Too many problems to fix. Here is the report:

```
Exploit: 1
Malware.Exploit.Agent.Generic, , Blocked, [0], [392684],0.0.0

-Exploit Data-
Affected Application: Microsoft Office Word
```

Protection Layer: Application Behavior Protection Protection Technique: Exploit payload process blocked File Name: C:\Program Files (x86)\Common Files\Microsoft Shared\OFFICE14\FLTLDR.EXE C:\Program Files (x86)\Common Files\Microsoft Shared\GRPHFLT\JPEGIM32.FLT URL:

Note: Malwarebytes Support subsequently exchanged a bunch of correspondence and in the end we determined the way to handle this was to register this particular file as an “exception”

Note: The next release of Malwarebytes solved this problem but I can no longer exclude the local network (127.0.0.1) so I have had to turn it off altogether.

Refrigeration is not working due to me short circuiting a control wire while re-installing the refrigeration board in the new panel on the bulkhead behind the nav station. The compressor runs but keeps restarting. It takes a full second at very high amps; then drops to 4.5amps, runs for a few seconds, then attempts a restart. The ERR light is not on (may be blown). The water pump runs, the solenoids connect, the compressor sounds normal. I called Mark. First steps to take are:

1. Check all fuses.
2. Check ohms on each leg of main cables to compressor.
3. Check if ERR light itself is functional.
4. Jumper over HP and HT sensors to see if they are interfering (doubtful)
5. Install endoscope to watch site glass.
6. Remove and inspect controller unit for damage.

Mark has new board but would need to rebuild the whole box. **BOX SENT TO MARK. IT HAS BEEN REPAIRED, RETURNED WITH KATHY FROM TN, AND INSTALLED. ALL OK NOW.**

Tuesday, 13 June 2017, 09:26 AEST

Kubota still has shutdown glitches but not as many as earlier. I still think it has to be either the hose or the shutoff valve. I assume it has to be from air in the line.

The small thermostat switch has broken off a tab and the fan did not run. Fix:

- Fasten down the wires so the tabs don't flex.
- Move thermostat switch OFF the engine, i.e. run in box.

~~Add system to run fans when engine is on.~~ Too complicated; would require a relay. I could add an additional parallel NO thermostat switch which is off the engine and in the box, say a 50° one.

Tuesday, 13 June 2017, 18:14 AEST

This has to be reported right now; it's too weird. I turn on the Wallas heater and it goes dark and the Deck Lts LED flashing. It does this for a while and then it goes out and the Wallas goes back to startup mode. Then the flashing red LED starts again and the Wallas goes dark. Then the LED goes out and the Wallas starts. This time it lights up and starts heating. The deck lights did never went on; just the indicator. Once the Wallas is running the Deck Light switch turns on the actual deck light as its supposed to do.

Sunday, 18 June 2017, 14:21 AEST

Generator still has running issues – it stops from time to time. I have been working on the generator control. After 6 years in storage the controller module from www.gencontrol.uk.co has rusted and is not fixable. A new one costs about \$108.88 including shipping. I also discovered the preheating may not be necessary. It is very unlikely that the engine will drop below 10°C. I think it can't hurt, though, to reorder the same configuration as last time with 4 seconds of preheat. The new unit is called a

AECM104FBSi

Tuesday, 20 June 2017, 07:10 AEST

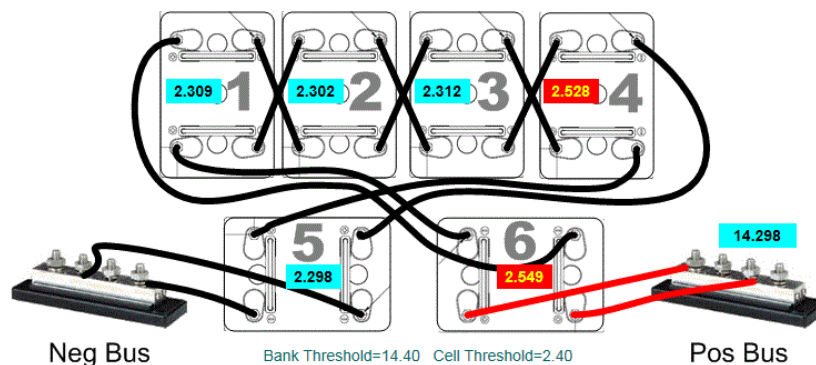
The DECK LTS glitch occurred today when I turned on the aft cabin overhead light. The heater was off. Whatever is going on may have nothing to do with the heater. All of the wires are disconnected from the Deck Light Latching Module. When this happens again I should test if the aft cabin light is also not working and should also monitor amperage. I might have a ground fault. It does go away after a bit. I think the next focus needs to be on the DECK LTS indicator light wiring and/or in the Wet Locker.

Ambient temperature	Preheating time	
	Ordinary heat type	With glow lamp timer
Above 10°C (50°F)	NO NEED	See NOTE:
10°C (50°F) to -5°C (23°F)	Approx. 5 seconds	
*Below -5°C (23°F)	Approx. 10 seconds	
Limit of continuous use	20 seconds	

Tuesday, 20 June 2017, 17:21 AEST

I have received the SmartGauge and have contacted Timm McVey at Balmar about installation:

I'm not sure you understood that these are **six 2V cells in a serial string**. For purposes of the SmartGauge this is **ONE BIG 12v BATTERY** with two positive and two negative terminals running to a terminating busbar at each end. The diagram below shows these 2V cells and the SmartGauge, being a 12v monitor, has to attach to Cell 5 Neg and Cell 6 Pos on or before the busbars.



The SmartGauge has to work on 12v and therefore must connect to the positive and negative ends of a series bank. There are no parallel strings in my bank design.

The problem is that the batteries are 4-terminal batteries. The below diagram is from the Lifeline Battery Technical Manual on how to connect series batteries. My existing connections are like Option A. So please tell me what to do.

- 1) **Option A: Connect to my existing external busbars (Neg Bus and Pos Bus above). There are no loads between the busbars and the battery terminals.**
- 2) **Option B: add terminating busbars made of heavy copper rectangle (¼" x 1" should suffice with ampacity > 400A @ 30°C rise, ¼" x 1.25" is also feasible)**

Normally I would say there was no electrical difference between Option A and Option B, but the SmartGauge is something different and I need some confirmation on the best method. Clearly Option A is simpler and already installed.

The linked image cannot be displayed. The file may have been moved, renamed, or deleted. Verify that the link points to the correct file and location.

Friday, 23 June 2017, 03:21 AEST

I have my answer from [Mike Corbet](#) at Merlin Equipment:

I have spoken to all and sundry here and have had a unanimous answer:

The internal resistance between the two positive or two negative terminals in each cell will be so small (well, it should be!) that it doesn't matter which you take the reading from. Therefore you should take the Smartgauge to the positive terminal of the start of your bank (first in series) and then negative terminal from the end of the bank (last in series). I hope that helps, but if you have any questions then please let me know and I will be happy to try and help.

This is good because no further modifications need to be made.

Monday, 26 June 2017, 17:33 AEST

Today I replaced the anomalous Cell 6 in the battery bank. Help was received from Geoff Sherman of Newport, NSW. Hell of a hard job.

Tuesday, 27 June 2017, 08:10 AEST

The First charge on new cell SHOWS THE SAME PROBLEM but even worse. I checked with the Fluke and the DMM reading is less than the CellLog reading by about 20mv. I turned off the MegaPulse just in case that was messing things up.

Logfile: D:/usr/SV/Beatrix/Data Logging/Battery Cell Logs/Realtime_2017_06_26.log
Raw Data Count 3674
Log Started 2017.06.05 23:09:48 UTC

Cell 1	2.308 volts	Batt 5	2.335 max	2.035 min	
Cell 2	2.342 volts	Batt 4	2.352 max	2.087 min	+0.034
Cell 3	2.313 volts	Batt 3	2.325 max	2.094 min	-0.029
Cell 4 (MIN)	2.307 volts	Batt 2	2.318 max	2.089 min	-0.006
Cell 5	2.308 volts	Batt 1	2.325 max	2.078 min	+0.001
Cell 6 (MAX)	2.639 volts	Batt 6	2.648 max	2.072 min	+0.331

Cell-Sum	14.242 volts	Pack	14.281 max	12.512 min
Pack-Volts	14.217 volts	Pack	14.253 max	12.496 min
Pack-Delta	0.025 volts	Pack	0.031 max	0.016 min
Cell Max-Min	.332 volts	Pack	2.639 max	2.307 min

The next task, then, is to install the SmartGauge and relocate the sense wires for everything. This would be best with a battery terminal mount fuse block to which I can run all of the sense wires for alternator regulators and gauges.

Maybe the bank will settle down later. Otherwise I need to swap cells again to prove the problem. Maybe the "old cells" are OK and all the "new" cells are not. It only matters that they are not the same.

Thursday, 29 June 2017, 07:05 AEST

From Mike Corbet mike.corbet@merlinequipment.com

The pulses up to 37v will definitely cause an error code to appear – the EO4 / HI display. It only needs to be momentary and it will display the error code until it is cleared manually (the code stays being displayed so that if you are away from the boat when something occurs you don't miss it etc), and if the unit pulses that voltage every now and again then it will just give you continuous error messages. I would think that removing the MegaPulse will mean the Smartgauge functions better.

The other option you could take would be to disable the alarm functions on the Smartgauge via the programming menu – but this will mean that when the error codes should appear in the event of a genuine problem they obviously won't. This could potentially lead to avoidable damage being done to the bank etc.

Friday, 30 June 2017, 08:09 AEST

Wallas 40DT needs overhauled. www.dieselheat.com.au

Needs to go **direct to battery** with 15A fuse. Use 12 or 10 gauge because we draw 10A on startup.

Saturday, 01 July 2017, 05:13 AEST

I checked the Wallas wiring this morning and it looks like it should work. The Wallas runs to a 20A fused 12AWG wire on Fuse Block 5. This fuse block is powered by a connection to the main house bus on back of the DC Main power distribution panel. I pulled all the other fuses on Fuse Block 5 which, effectively, should create a good connection all the way to the battery. The Wallas still failed to start correctly and went into lock mode. I cleared the lock and it still was failing. But, when I turned off the solar panel circuit breakers, it went right into start mode. This does not yet prove anything as it has so far managed to start. What I need is to confirm this next time I start the heater.

Saturday, 01 July 2017, 20:06 AEST

Today I was running flexible conduit for wiring from the battery to the main switch panel so as to install a new SmartGauge battery monitor. I had tested that the wire nicely slid inside the conduit so I did not start with a mouse line already inside (which was not smart) and I found I just could not get the wires all the way to the other end.

This is the cool part. I got my air hose rig which hooks up to a scuba tank. I tied a small nut at the end of a long length of sewing thread and used the air nozzle to blast the nut and thread completely through the conduit. After that it was easy to tie a mouse line to the thread and pull it through.

Monday, 03 July 2017, 10:40 AEST

In talking with Blair Fraser he mentioned an electrical issue he had with similar symptoms that turned out to be a bad ground wire. It makes more sense than the BS about "direct to battery" wire for the Wallas heater. I did find a loose ground screw on Fuse Block 5 which could possibly be an issue. I had not been labeling wires to the grounds so I don't know where this wire leads. Also, this ground fault could be caused by a bad crimp.

Monday, 03 July 2017, 16:54 AEST

This was a good day. I finished the electrical installation of the Merlin/Balmar SmartGauge which, although it is a simple connection of 3 wires, required running those wires from the main bank to behind the nav panel and from the start battery to the nav panel, where the SmartGauge is being installed. It is hooked up right now. Thankfully I had left fish lines in the most difficult places.

Friday, 07 July 2017, 09:38 AEST

SmartGauge is also good for generator autostart/autostop. I have installed the wiring for that.

I finished building the generator control panel but there are glitches.

- The original design was for sensing the AC coming up and disengaging the starting. Without that signal the AECM104 control box simply doesn't keep the engine running.
- TinyTach hooked up. I have to find the TinyTach cable and connect it.
- The ammeter is not yet installed
- The AUTO switch is not hooked up. I need a different switch and Kathy is bringing it back from the USA.
- Worse, the engine gauges stopped working! It could be a sensor problem, a wiring problem, or cheap gauges. The engine INCR and DECR buttons work fine. All that work and only 2 buttons are functional.

I used Deutsch style connectors for connecting the various cables to the control panel. The trick is to crimp them so the squished crimps are tight and round. Any little protrusions and the blue inserts won't go in. Also, if needed to be removed, inside are little locking pieces that can be released with the flat tool while pulling or better pushing on the pin or socket.

Also noted, while experimenting with the alternator's Stator tab output that the Kubota won't run well if the main engine is on. This surprises me as the Kubota has a Walbro Fuel Pump as well as mechanical lift pump. Yet, the main never misses a beat. I think there is something strange about the fuel line from the Tee in the fuel system to the generator. Maybe I will replace that small shutoff valve and then, if that doesn't make it nicer, I will replace the entire hose. Mostly it runs for a whole cycle now.



Sunday, 09 July 2017, 12:04 AEST

I worked hard on Excel graphing tool to display the battery state. I'm concerned that the SmartGauge is not registering more than 83 even when batteries seem fully charged to me. I will wait longer and see.

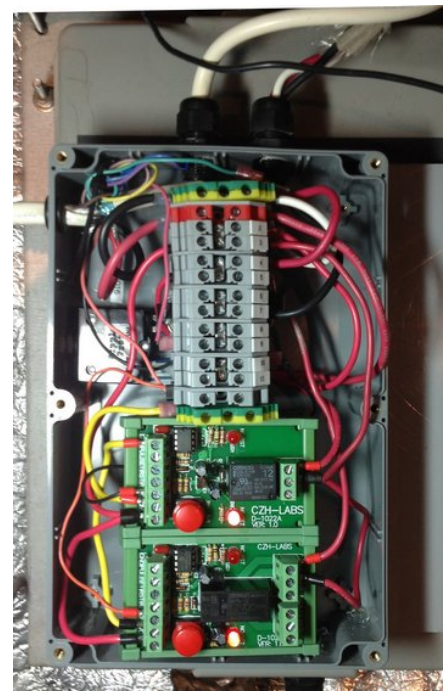
I finished installing the new Aft and Transom deck light controls with the more robust latching relay boards. These are designed to take a number of inputs. I am using the "R/S" mode which toggles the relays on a negative input. One push on, another push off. I just realized I had installed the power leads to the lights on the NC-COM terminals of the relays which means that 99% of the time the relays are active to hold the lights OFF. It needs to be the other way around. I have made that change.

Next week I may try to install a remote radio controller which will allow us to turn on the lights as we approach the boat.

I hope this doesn't get fried the first time I transmit with the HF radio.

Sunday, 09 July 2017, 12:54 AEST

I'm not sure why I bothered with auto gen control. It is hardly necessary for our purposes. I just really needed a remote panel with gauges, tach, hour meter and start/stop. Feh. But it is installed now so I might as well proceed. Victor at GenControl in the UK has burned a new chip to utilize the OP normal signal (NO shuts on high pressure). I have to connect the pressure switch to cable GC-2 blue which already runs to the control panel. No room for another DIN terminal block. I'll figure it out. Shane Dagliesh has said he could burn the chips for me if I send pseudo-code.



Design requirements for Kubota generator control

1. Speed switch signals when to stop starting
 - a. Simply disengaging the starter a couple of seconds after the O.P rises might do it. That is inherent in the design of the control box, which is getting a new chip to allow this.
 - b. Or, the stator tap off the alternator puts out about 8VAC with a square wave of 200-600hz. It can be used as a tachometer signal for adjusting the motor speed.
2. Motor Speed Control
 - a. The engine starts by default with the throttle down. Energizing the glow plug also energizes the DECR circuit.
 - b. This is the most important function:
 - i. After start, increase speed.
 - ii. As current drops, decrease speed to set points. Could use Hbridge motor controller or timed signals, e.g. at startup increase to max, read current and DECR by x seconds.
 - iii. Would like to avoid installing more complexity, such as a throttle position indication.
 - iv. If necessary could install a mid-position limit switch so we had only HIGH, MEDIUM, and LOW. That would be fine. I need to investigate if the current setting of high is not too high. It doesn't take much to run the alternator.
3. RPM
 - a. Reads Alt stator tab
 - b. After starting, speed the motor up.
 - c. Measure DC current using
 - i. voltage drop on 500a/50mv shunt. This means reading below 50a would be only be 10mv. I am not sure how accurate the atmega is.
 - ii. Use an existing 200A shunt like on the right. < \$20.
 - iii. Use the coil I have installed around the high voltage cable.
 - iv. Plenty of posts exist about doing this. Reference voltages are available.
 - d. Use current reading of 30A to stop the generator.
 - e. Use voltage reading to start the generator
 - f. Check if SmartGauge is valid during charging to use SOC as the start/stop signal.



Tuesday, 11 July 2017, 16:16 AEST

I spent much of the day doing business on the computer. I did attempt to install the Datal DCA5-20PC-1-DC1 ammeter which is a very nice little unit. I have lots of them. This is for a LOW-SIDE shunt which is mounted at the back near the floor (i.e. impossible to reach) and must be wired wrong, because the display is not showing the right number of amps. It showed about 3.1 amps when it should have been 20. When the DECR button is pressed, the amps jump. Must be bad wiring.

Thursday, 13 July 2017, 18:17 AEST

I have been monitoring the battery bank cells with a new spreadsheet that reads to logs, formats the results and displays them in a graph. An update of the PuTTY software, called ExtraPuTTY, can date stamp each line of data.

The batteries continue to show a heavy overvoltage on cell 6, then as the bank charges up, Cell 4 goes into overvolts. The SmartGauge never gets over 84% SOC. I don't know why because I'm sure I have been charging much closer than that.

I added the neg. signal from the SPDT Oil Pressure Switch to send neg. to the control panel when the

oil pressure is high. This will be used by the new programming of the generator starter. My install of the Datel DCA5-20PC-1-DC1 “low-side” ammeter has not worked. I just traced the wires from the shunt back to the Control Panel; the fault must be either in the shunt (wrong type) or in the wiring in the Control Panel.

I also added a little bit of concentrated Synforce anti-freeze coolant to the Kubota.

One more issue was noticing a lot of salt crystals at the injector tube. I removed the rubber hose from the heat exchanger to the injector, inspected it, replaced the lower hose clamp with a smaller clamp, and cleaned up the salt. I think the problem was the lower hose clamp was too big and when tightened down it felt tight but was actually at the minimum diameter of the clamp. Note: use the right-angle drive attachment for the nut driver on the clamps. It was too tight to swing a ratchet screwdriver or use a flat-blade screwdriver.

Friday, 14 July 2017, 09:32 AEST

The digital ammeter on the Genset Control Panel continues to give bad readings. I checked the GC-2 cable and its connections all the way from the shunt to the terminal block (TB-G3-34,35) to the Control Panel and the connections to the Deutsch plugs and the meter. I swapped out the meter for a spare; still no joy. This leaves the shunt as the only possible source of the problem. I just tried to measure the mv across the shunt and came up with a figure close to 4mv, which translates into about 40A which is correct. So why is the display not working? The only “mystery” left is the integrity of the cable. If the ammeter works connected DIRECTLY to the shunt back at the generator box I’ll have to suspect the cable or the connectors. I’ll leave this until later and work with a cool generator.

Saturday, 15 July 2017, 09:04 AEST

I was wrong about the mv measurement across the shunt. It is not there.

Checked on the installed firmware versions from Blue Sky Systems. Current versions are:

- IPN ProRemote 590002-01 v3.1
- 2512i 590004-01 v2.1

They are definitely out of date. Ryan Gurin @ techsupport@blueskyenergyinc.com is sending replacements.

Sent in recent battery logs to Peter Blume at Federal Batteries. The spreadsheet I’ve created is amazing in plotting the cell and pack logs.

Monday, 17 July 2017, 08:56 AEST

The problem is that the alternator ground is not isolated. If I want to measure alt output I will have to change the cabling to allow for a high-side shunt or not use a shunt at all.

Sunday, 23 July 2017, 09:25 AEST

I relocated the Solar Controller to the Gear Locker (“Wet” Locker). In doing this I realized that the 51v solar panels used maybe 5amps per panel so the wire sizes are very big for the current. I had to run a new ground to the Gear Locker and installed a new conduit to do this. It was a lot of work.

The Kubota diesel generator throttle control was not working. Then it started working again. I need to check for loose connections.

Tuesday, 25 July 2017, 09:56 AEST

Jim Godber has written back that the battery engineers say that the voltage anomalies are normal and should eventually settle down; but that they will never all be equal under charge.

I noticed that the start battery is at 13.75vdc while the main battery is at 14.3vdc. I thought that the Digital Duo Charge (which shows a green charging light) would be at the same voltage! I need to ask Timm at Balmar about this.

Thursday, 27 July 2017, 17:37 AEST

The last 2 days, aside from working on the Battery Graphing Tool, I undertook to install a 4-channel remote control device that allows for a “jog” function that provides a pulsed energizing of the onboard relays. All the necessary connections to control the Forward Deck Light, the Aft Deck Light, and the Transom light plus power and ground exist in the new Cockpit Control Panel. I mounted a plastic enclosure on the back cover and drilled a hole into the CP box. A 6-pin Deutsch connector connects the wiring inside the box so I can easily remove the back cover and get to the guts of it. Just for fun, the 4th channel of the remote is hooked to the horn. Whether this equipment will weather the weather is to be seen. Wiring details are on the Visio schematic.

As the SSB is now reconnected, I tried a few transmissions and it is weird. A couple of times it did turn the deck lights on, even when I disconnected the wireless remote. Now it seems to not be interfering with it now that everything is connected. Cabling is in place that can be adapted to a ON/OFF switch for the wireless remote. Over the next several days testing of the unit seems to be fine, without interference from the SSB.

Tuesday, 01 August 2017, 11:04 AEST

Kathy has returned from her 2 month visit to America and brought back the new Compressor Controller which I had fried earlier. I installed it without any drama and it works fine. I added a type of terminal block that allows the J1 signals (tach, error, etc) to be easily disconnected from the Controller box.

A new Jabsco #35760-0092 4” Flangemount Continuous Duty Blower has replaced the old engine room blower (same model, bad bearings). Again, not a dramatic job, but I had used aluminium slot-head machine screws into an aluminium plate and even so there was corrosion. I had to chase the old threads and replaced the old screws with ¼-20 hex head SS machine screws for easier removal.



Also the defunct auxiliary shore power charger was removed and replaced with a new ProMariner 1240P 40amp universal input battery charger. This cost US\$280 direct from the manufacturer because the old ProMariner had died. I only stayed with ProMariner because their new charger is identical with the Sterling 40A charger, only differently branded. I trust Sterling. It was an easy install although I had to splice and lengthen the AC leads. I did not like doing that (butt joints) but it would have taken a lot of painful effort to connect a new line to the Aux Shore Power input.



Friday, 04 August 2017, 08:43 AEST

I installed the new controller chip and the Gen Control Box is now effectively finished. Tach is not hooked up yet, nor is the Auto Start feature. Occasionally (why?) the throttle INCR/DECR is intermittently not working which I think is a problem either with the limit switches or more likely with the wires or connectors to the actuator.

Future refinements might include a temp switch to disable the pre-heat function in warm weather or on restart (fairly simple to do), a way to automatically slow down the motor as charge increases, and a positive engine start signal!

The generator is still stopping at random moments. Today is particularly bad.
FIXED. The hose barb into the bottom of the generator fuel supply valve needed another ¼ turn.

Main engine air filter was cleaned.



Refrigeration seems to be working OK but freezer does not pull down well. It stops pulling down at -17°C.

Saturday, 05 August 2017, 18:46 AEST

Today I changed the hose from the bottom of the header tank to the engine. This is the return line from the water heater. The hose was specially made some months ago and has two swivels and ½” pipe thread (probably BSP not NPT) on the ends. It takes a 7/8” wrench to remove. Old fittings were discarded.

Part of this process was to change the coolant. So much had been lost that no green was noticeable; just rusty water. We flushed the engine with tap water then drained it again and added demineralized water and Synforce 100 coolant: 5L of water and 5L of concentrated antifreeze.

After running the engine to mix up the coolant we left it overnight and added an additional 1L the next day. We shall see over the next few days if the coolant level remains full.

Tightened main alternator fan belts. I LOVE THE BELT-BUDDY!

Monday, 07 August 2017, 05:07 AEST

Yesterday I determined the alternator ground is NOT isolated, thus making it impossible to use a DC1 type Murata meter. I have a bunch of these and should sell them, as they are not very useful. I am down to ONE DC4 type, as I sold a spare to Bruce Jameson.

Monday, 07 August 2017, 08:58 AEST

There was a squeal coming from the main engine big alternator. I slacked the tension half-a-turn and the squeal disappeared.

Installed new firmware for the Blue Sky solar products:

- Version 4.0 in the IPN-ProRemote
- Version 3.3 in the Solar Boost 2512i

Saturday, 12 August 2017, 05:49 AEST

Commencing a C10 test on the battery bank to establish a baseline capacity.

“The approximate 10 hour rate for the GPL-6CT-2V is 85 Amps. I recommend that they discharge the bank at 85 amps to 10.5 volts. This test will run approximately 10 hours and is the best way to determine battery bank capacity” – from Paul Hollett, engineer at Concorde.

Sunday, 13 August 2017, 12:37 AEST

Every voyage seems to have glitches. Today was a 12nm run from Newport to Jerusalem Bay (NSW) and the anchor chain counter is not working (probably wiring – check connectors) and the ENG light is not coming on (probably the same thing).

Wednesday, 16 August 2017, 12:50 AEST

Well, the glitches keep on a-coming. These are more serious.

Kathy had been saying she smelled diesel from the day I got back. Today we found it; in the bilge. I left the fuel system valves in an abnormal position such that the fuel to both gen and main diesel engines was drawn directly from the Starboard Tank, unfiltered, and then the fuel return was to the Day Tank. This tank is higher than the others and a hose fault would have been exacerbated.

The Day Tank was full and getting fuller as returned fuel was pumped into it and this probably caused

a pressure situation so it leaked either from a crack in the fuel return hose on the main engine (noticed today) or from the seal leaking around the inspection port on the Day Tank. There was no fuel coming out the vent lines. The two had been noted earlier and I had the replacement return hose available. It is 1/4" (6.4 mm) rubber fuel hose. It was difficult but not complicated to replace the old line. I used the push-on fittings. On the engine end I did use a hose clamp, but not too tight. I think that is why fuel lines are push-on; too tight a hose fitting can cause it to crack under vibration and heat.

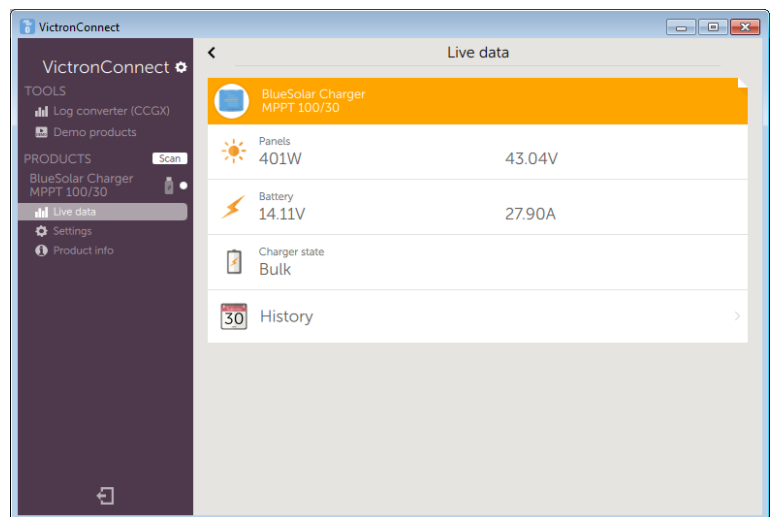
Note: The upper (day) fuel tank was probably leaking through pinholes on the surface. Both port fuel tanks were subsequently removed for replacement. (11 September 2018)

The other big glitch of the day was that I broke the head on the anode of the heat exchanger for the Kubota genset. I had noticed a lot of salt crystals, and was spraying with Salt-X and looking for the leak. It was clearly around the brass hex bolt which, when I broke it off trying to tighten it, turned out to be the Zinc anode for the heat exchanger (070 on right). We will journey to Sydney to purchase a replacement and a spare from www.betadiesel.com.au. Note: They charged us 3X cost on zincs and way more on O-rings. Total rip-off. Should have not gotten the spares. Order [from USA](#) next time. Zinc is EOBC. 1/4" NPT x 3/8" x 3/4" zinc.

Why did this happen? Perhaps it is because the ground is to the main engine block and not direct to the battery. I need some advice on this.

Friday, 18 August 2017, 10:53 AEST

I downloaded a Victron software product that appears to work with the MPPT 100/30 that I have installed. Here is an example showing a good 401W being used. The battery voltage of 14.11 is not reflected by the voltage shown on the main panel gauges (e.g. SmartGauge which shows 13.6). This is a voltage drop of nearly 0.5 amp which should not be acceptable, but which we may have to live with. Measurements with the DMM suggest the drop is in the OPD connections, short connector cables (at least one feels warm) and definitely in the shunt. Perhaps one of the bigger 50mv shunts would have less resistance? Clearly this is operating at close to maximum watts.



The MPPT voltage sense corresponds to the Battery Voltage at night or early morning, which makes sense. As the output from the solar panels rises, the resistance in the system increases.

(Sunday) I have tested the resistance at various points with the DMM. Of note is that the tested object needs to not have any voltage, or current flowing, as it interferes with the measurement (?). Nothing stands out as a serious voltage drop through the power panel. The voltage drop of 3% is commensurate with the distance and wire sizes from the MPPT controller to the battery. The only solutions I can think of (aside from messing with the temperature compensator, which is too complex) is to relocate the charge controllers closer to the battery (ouch), increase the cable size on the house bank load, or create a secondary charge bus (good idea for when LiFePO4 batteries get installed) with a large cable. The circuit breakers and shunt could be moved, too, but it all probably isn't worth the effort as it only becomes meaningful when we have 25A or more of solar input. The best solution is too look for a better designed solar charge controller with a battery sense wire.

Friday, 18 August 2017, 11:20 AEST

Another small glitch was a ringing sound while the main engine is running. It sure sounded like an alternator fan touching something. Investigation revealed the spacer block on the mounting of the main alternator was just within a hair's breadth of the fan blade. I eased the tension and the noise disappeared. Solution: Shave the spacer block down at least 1 mm.

Saturday, 19 August 2017, 17:08 AEST

We finished installing the new anode in the Kubota generator. We had been sold the wrong O-rings so it was necessary to use the originals, but it seems to be OK. It is difficult to tighten the bolt into the heat exchanger; it has to be done 1/6 of a turn at a time because it is so close to the exhaust water hose. Also, the bolts have an M8 Bonded Seal which we failed to buy. Nevertheless the engine seems to work fine. We filled it with new 50/50 coolant.

I also finished installing the power supply to the alternator panel meter so it is energized when either the generator or engine is running. The display seems to be accurate but it won't read the auxiliary alternator on the main engine; I have to track down why.

Sunday, 20 August 2017, 09:11 AEST

I am frustrated by the lack of readability of the TinyTach™ and looked online for an alternative. There is Tachometer 3" SeaStar 68413P 0-4000RPM which matches the gauges I have now, and is beautiful, but at 3" it is TOO BIG to fit in any configuration of the control panel without removing the fuel gauge. I think if I want to replace the TinyTach™ I need to use a red digital LED display.



Sunday, 20 August 2017, 17:45 AEST

Today I modified a bracket to hold the new, second Dell Monitor (SE2417) at the dinette. I bought it as a spare but we started watching it; so I used the Humancentric VESA adapter bracket and was able to attach it with a block of Delrin to the old RAM bracket on the mast over the dinette table.

I also found this piece of information from Jim Godber: *"A fully charged battery is when it reaches 1% of the rated capacity. You have a 400 amp bank so they reach 4 amps. Also can you adjust your bulk and absorption charge rate to 14.4 volts?"* Actually, since we have a 900A bank, fully charged would be 9 amps, and we routinely do better than that. I have changed the battery type on the Smartgauge back to "1" as it more accurately reflects this. I can boost some of the charge units a bit.

Another piece of info is that the Victron *"MPPT will go to bulk mode when the battery voltage drops below the float setting for more than 1 minute (100mV @12V system, 200mV @24V system)"*. This is true; I've watched it do that.

Monday, 21 August 2017, 11:57 AEST

Kathy and I replaced the old Clamcleat with a proper Starboard Clamcleat so we can possibly actually use the leech line.

Friday, 25 August 2017, 07:22 AEST

The water pressure has been dropping to 10psi overnight during the last few days. Last night we cut off all valves on the water manifold and left the pumps off. Pressure was 40psi. The pump isolation valves were NOT closed. There was 5psi drop overall. Opening up the valves one-by-one showed a possible (5psi) drop when the hot water input was opened. All other valves showed no drop. Overall pressure after opening all valves (allowing equalization from both accumulator tanks) was close to 40psi. This indicates no problems so perhaps we were having some backflush in one of the pumps. The only thing to do is keep monitoring.

The FBB1212ehe fan used to cool the generator box has died. Purchase records show we have a spare but it's not on inventory and we can't find it. This is a very high-volume fan that has a 3A draw and should empty the box every few seconds. It is not available here in Aus and will take weeks to ship so we will probably have to put in a smaller fan in the meantime.

Friday, 25 August 2017, 18:08 AEST

Generator box exhaust fan was installed. It is another 120mm fan with ½ the air flow but 1/10 the current. It will probably do until a more powerful fan can be ordered. Fan is from Jaycar:

Model Nbr: YX2522
Air volume: 88CFM (2.5M3/min)
Noise: 42dB(A)
Size: 120 x 120 x 25mm
Impeller and Housing: Plastic, fibreglass filled
Bearing system: Ball
Speed: 3,000 RPM
Current: 360mA

It appears to adequately cool the box while consuming 1/10th the amount of power.

Saturday, 26 August 2017, 09:10 AEST

Malware bytes problems with this program have been fixed. The MB developers actually worked specifically on it to make it work with the new release. Unfortunately the new release of MB is not allowing me to exclude 127.0.0.1 (my local server) from being scanned and I have had to disable MB altogether. I've notified their support people.

The aft deck light had stopped working. The bistable latching relay module had failed and I replaced it with a spare. Cheap Chinese electronics can't be relied on, so carry replacements.

The cockpit control panel has a Tempress hatch cover with a clear window. The window had come loose. I re-glued it with UV6000 for a seal and then installed a newly fabbed retainer that adds mechanical strength. It should be fine now.

Sunday, 27 August 2017, 14:19 AEST

HONDA GENERATOR

Honda 1: Oct 17 2008 (American Samoa) EAAJ 1740701

Honda 2: 30 Nov 2010 EAAJ 2057324

The Honda EU2000i 110v generator had stopped producing AC power a long time ago. We followed the troubleshooting diagnostic tree and determined the output of the stator windings was out of spec. The genset is over 3287 hours. We had an older model, stored at a friend's house, with only 942.6 hours on it. The inverter had gone bad and at US\$500 for a new unit it seemed wiser to purchase a new unit. Now that the "new" unit has a bad stator we have undertaken to swap the inverter from the "new" 2010 unit to the "old" 2008 unit. Unfortunately the wiring harness and connector sockets on the "new" inverter had changed so a bit of dicing and splicing was in order.

We did the job – one good generator from two bad ones. Kathy and I felt very good about this. The hybrid Honda generator engine hours now are now 942.

Thursday, 07 September 2017, 13:23 AEST

Happy Birthday. Yesterday I turned sixty-fifteen. I've outlived my Dad by 19 years.

Current serious issues involve

- Air is once again getting into the fuel line of the Kubota diesel generator.
- The water pressure system has a leak somewhere. The usual "divide and conquer" using the manifold valves appears to show the leak is in the hot water system. **Note: This turned out to be from a leak in the shower hot water hose after the manifold. With the Shower Hot valve closed there is no pressure drop. This was fixed 19/09/2017.**

- There is a HUGE voltage drop between the solar controller output and the battery. As far as I can tell the voltage drop is occurring after the solar panel meter shunt; i.e. at the house bus. I probably should wire this directly to the batteries, bypassing the house bus.

I found a large 2/0 cable that PULLED OUT OF THE BATTERY LUG! This was made before I had the hydraulic crimper. It is one of the negative cables and should not be causing this voltage drop. I'll need to repair it before charging again and will need to check all the battery cables both physically and for internal resistance. **DONE**

Thursday, 14 September 2017, 10:23 AEST

Today we sailed from Broken Bay to Lake Macquarie. Winds were strong (max gust was 42.2kn). We did well, reefing the main early and then rolling up the furling jib, heaving to, and putting up the storm staysail. Note that the staysail really needs a new location for the deck blocks. We just could not get the sail as tight as we wanted to.

Even though we had been careful not to fill the Day Tank to the top it looks like there might (not certain) be a fair amount of diesel in the bilges. I think it comes from the Wema plate that is no longer sealing correctly. I can inspect it and perhaps adjust it but we really need a new inspection plate. I have the design, but not the materials; it would need to be cut at Niall's factory.

PGN#	PGN Name	Receive	Transmit	Update Rate (ms)
127250	Vessel Heading	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	500
128259	Vessel Speed	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
128267	Water Depth	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
128275	Distance Log	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
129025	Position Rapid	<input type="checkbox"/>	<input checked="" type="checkbox"/>	500
129026	COG/SOG Rapid	<input type="checkbox"/>	<input checked="" type="checkbox"/>	500
129029	GNSS Position	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1000
129283	Cross Track Error	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1000
129284	Navigation Data	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1000
129285	Route/WP Info	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
129540	GNSS Satellites	<input type="checkbox"/>	<input checked="" type="checkbox"/>	1000

We also have a glitch with the GPSMap in that the time-to-destination and time-to-waypoint are flashing on and off, being replaced with a dashed line. To fix this, cycling the power on the AIS works. I thought it must be a conflicting signal on the NMEA 2000 network from the AIS. I used the AIS Configuration tool to turn of "Position Rapid" but that did not do anything. I probably need to contact Garmin or Vesper about this.

Thursday, 14 September 2017, 18:33 AEST

The Wallas Diesel Heater failed to start. Again, there was the totally bizarre problem where the Deck Lights warning LED flashes on the panel and the Wallas won't start. The fan could be heard trying to run and being slow. Last time this happened I found a loose ground connection.

Friday, 15 September 2017, 18:55 AEST

We discovered the leak in the water system as being in the shower in the forward head. Isolating by the manifold valves made it easy, although we got confused because it seemed to be in the hot water system, only it was forward head hot water.

Monday, 18 September 2017, 10:39 AEST

Yesterday Kathy noticed during the engine inspection (prior to shifting anchorages) that some coolant had dripped from the elbow & hose connecting the thermostat to the heat exchanger. The hose clamp had stopped holding. It was a supposedly quality stainless clamp with stainless worm drive, but the worm wasn't holding under tension. It was replaced with an AWAB clamp; I know these are good clamps (now discontinued I find out).

I also swapped over the two circuit breakers that service the two solar charge controllers. The higher amperage array (2x240w) was running through a 30A breaker which felt warmish. The smaller was on a 40A breaker, which was backwards from the design. I swapped these around.

Two other sources of voltage drop were in the House Disconnect rotary battery switch and the Main Battery Disconnect switch. Both felt warm, with the smaller BSS9006 switch quite warm. The BSS9004e Main Bat Switch was exchanged for a new one. Some time ago BSS had sent me a

replacement switch but I never got around to installing it as the repaired original switch was fine, at least until recently. The smaller House Disconnect Switch was replaced with a BSS 300A eSeries mini-switch (Part 6006) originally used when I had 6v cells.

I believe we gained a lot of ground with these changes. I am now seeing a voltage drop of 0.4 to 0.5 volts between the output of the solar chargers and the battery. This is around 3%. This could probably be improved by a direct wire from the solar ammeter shunt on the back of the main panel to the battery. Cutoff would not be through the battery switch but would be on the panel.

I do need to contact BSS about whether the standard rocker switch circuit breakers can function as on/off switches in this application.

Tuesday, 19 September 2017, 13:54 AEST

The hot water line to the forward head shower fitting was leaking near the Whale one-way valve which prevents hot water flowing back to the cold side. The 1-way valve is ½” and the hose is smaller so two reducing adaptors and two short lengths of hose are required. I replaced both short lengths of hose, replaced the 1-way valve, and cut off the ends of the hose from the manifold and to the shower head. The leak has been fixed.

Friday, 29 September 2017, 08:46 AEST

We are running the resurrected Honda 1 for charging today. It is working perfectly. I learned this on the Internet:

Have you ever [cleaned] the combustion chamber? Honda recommends doing this every 300 hours.

I took my 6 year old EU1000i down to my local Honda dealer to get this done after several hundred hours of use. I envisioned them removing the cylinder head and scraping the carbon off. They laughed then told me how to do it myself.

Basically, you get a can of Sea Foam spray cleaner (or outboard motor de-carboning spray). Make sure both intake valves are closed by slowly pulling the starting rope until you feel resistance - this is when both valves are closed and the piston is at the start of the compression cycle. I was told to pull the rope once or twice slowly to allow the foam to contact the tops of the valves (exhaust valve specifically)

Now remove the spark plug and using the spray tube, fill the combustion chamber with the Sea Foam by spraying it into the spark plug hole.

Let the engine sit for about 15 minutes, then vigorously pull the starting rope several times. Hold a rag over the spark plug hole as you do this, as the Sea Foam and softened carbon will spray out.

Put the spark plug back in, start the engine to get rid of any residue in the cylinder, then shut it down, change the oil and clean the muffler spark arrester screen.

Monday, 02 October 2017, 17:10 AEST

Monday, 02 October 2017, 17:10 AEST

I tried yesterday to fix the air leak in the Kubota without success. I tightened hose clamps and checked the torque on fittings. I'm back to thinking either pinhole in a hose or the shutoff valve. I realized I cannot use the “auto” mode without the speed controller being built. I also again experienced a failure of the manual throttle. This seems to come and go which makes repair difficult.

Another glitch is that HDG is not coming through to the

Today we charged batteries quite full while motoring in the morning. The Victron MPPT controller

was in FLOAT mode, showing 14.6 bat volts, and not delivering power. The Blue Sky worked perfectly. I measured voltages all along the way and determined there was no significant voltage drop. The issue is that the measurement at the output terminal of the MPPT was 13.3v while the MPPT control panel showed 14.6. I doubt the control panel is the problem and in any case it was delivering about 1 adc of power. A “DISQUS” post on Victron’s website earned a response to “contact my dealer” so I’ve done that. It is a “worldwide 5 year warranty” so hopefully we can replace this.

We just made a new canvas tarp to cover our dodger while we are away delivering a catamaran from Moololaba to Pittwater with Dean Wallas.

I don’t like leaving *Beatrix* at this moment because of the possibly dicky solar controller without an LBCO and without an autostart-capable generator. Future fixes could include a daylight-only limit on the refrigeration (needs a relay off the anchor light module with possible time delay).

Tuesday, 03 October 2017, 09:59 AEST

I contacted Peter Blume about the now permanently deranged Victron MPPT 100/30 charge controller.

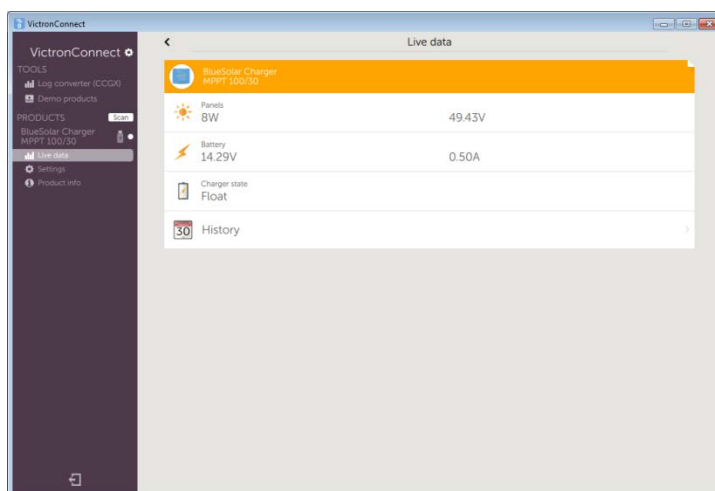
BlueSolar MPPT 100/30
SCC020030200
HQ15493DJYS

Installation was in December 2016. It has a 5-year worldwide warranty.

Live data for the unit is below. Note battery says 14.55v but measurement with DMM at output terminal of the MPPT is 12.7v.

The MPPT is not letting any power through!

I manually shut off and restarted the unit. It spent a minute in BULK mode, then into ABSORB mode where after 1 minute it went into FLOAT mode, still showing the erroneous 14.55v. The panels show voltage so the problem has to be with the MPPT.



Note 19 October 2017: Warranty is being honored through Peter Blume at Federal Batteries. It is ready to pickup. Old unit will be exchanged.

Thursday, 19 October 2017, 11:51 AEST

5.14%

131900 option 6 for Mortgage Relations Team.
Call Octopus
OCTAF1212LAR12
OCTAF1212LAM12

Saturday, 21 October 2017, 05:58 AEST

I asked Victron if the circuit breaker being opened under load (on the battery side) could cause a problem. Here is the answer:

Johannes Boonstra

In the most extreme situation you could have a DC voltage overshoot of about 5Vdc but this doesn’t harm the charge controller itself.

Tuesday, 24 October 2017, 14:49 AEST

We are looking for a substance to de-carbonize the small Honda 4-stroke engines. Seafoam is supposed to be the best.

Seafoam is made up of the following:-

50% Pale Oil (refrigerant mineral oil or 2 stroke oil will do)

30% Naptha (Zippo lighter fluid or camping stores)

20% Isopropyl Alcohol (Bunnings)

Thursday, 26 October 2017, 06:33 AEST

Kathy noticed an issue while checking the main diesel. Rust around the top of the header tank cap and some rust in the bilge. The bilge seems free of oil and diesel but we still have routine leaks from the rudder post.

Sunday, 29 October 2017, 08:18 AEST

Today it is time to tackle the electrical glitches which are affecting the solar controller and the aft deck lights and more.

State: DECK LTS off; FWD SOLAR off; MPPT set to NOT CHARGING, MPPT 0V/0A

When I turn MPPT on I get 14.34V/0A and rapid progression BULK to ABSORB to FLOAT.

Finally it shows 14.26V/5.10A

Deck lights are on, pilot light flashing.

First I discovered a cold joint in the BAT+ lead from the MPPT where it attached to the FWD SOLAR circuit breaker. Another bad connection was where the BAT- lead attached to the neg. bus bar. I moved this wire to the bottom of the bus bar where it is stacked with the main negative leads to the battery.

I still need to further refine the voltage drop. This is a REVERSE VOLTAGE DROP whereby the voltage reads higher at the MPPT and lower at the connection to the house bank. I think removing as many connections as possible should help. Right now, at 30A output, the V.D. is about 4%.

Aft Deck Lights: I found that both of the bistable latching relays were not working anymore. I replaced the units and they work fine. I remember that they stopped working on at a time but their lack of functionality was disguised by the other goings on. It is hard to imagine they both died because of internal faults. I will order backup spares. Apparently there is a newer version from the manufacturers and what is selling on eBay is "old stock".

Diesel Heat: Tested @ 13vdc and works fine.

Saturday, 04 November 2017

Dean Wallis came over to have a look at the rudder post leaks. We found water leaking from both the rudder post packing gland and outside the rudder tube. We tightened the packing gland until the leaking stopped (but not too tight as we did not want the rudder post to bind) and then clamped hard as we could (Dean did it; strong man) on the nut holding the rudder post. Since then (over 2 days) we had zero bilge pump cycles which has not happened for a long time. It rained hard overnight so there was a single cycle this morning; rain leaks into the boat from the anchor locker.

Sunday, 05 November 2017, 07:52 AEST

- Aft Deck Light latching relay has stopped functioning again. Transom light still works. FIXED (see below)
- A bucket of saltwater was added to the tanks inadvertently while catching rainwater. It appears to be a small enough amount that it doesn't affect the potability.

- While charging with the Honda it cuts out with a large load (e.g. microwave). It could be either the inverter or the generator. Sometimes the inverter drops the load (flashing yellow light) and sometimes it is the Honda cutting the power (it takes a restart to restore power from the generator). Also noted was warmth in the charging cable. This COULD be the problem and the cable should be replaced or rebuilt.

Monday, 06 November 2017, 14:53 AEST

Today we installed a new O-Ring in the Wema FLB-2 flange on the Day Tank. We had hoped the problem with the leaking diesel was with the FLB because that's the place we saw diesel. However, after cleaning the rim of the open tank hole, and replacing the O-Ring with a new one, we still had fuel apparently leaking out from under the wooden floor on top of the tank in the forward inboard location. Could this be a stress fracture in the tank? I'm not sure how to approach this at this time, except having two tanks out of service is not tenable. Either the tank needs to be fixed or replaced. I suppose I can but the floorboard to expose that corner of the tank and see what the problem is.

Monday, 06 November 2017, 15:56 AEST

The ground connection of each D-100A relay board must be connected directly to ground via the terminal block. This seems to have fixed the problem with the Aft Deck Light not working.

Tuesday, 07 November 2017, 07:21 AEST

While underway to Newport from Jerusalem Bay the Engine Alternators were not producing power. I moved brown wire to direct positive and regulator started up. Problem seems to be with the Main Battery Switch AFD. Also, the engine alternator output panel meter is not powered up. For now we have charging power again but this is a new glitch to figure out.

Thursday, 09 November 2017, 16:41 AEST

Replaced the leaking bypass filter shutoff valve.

Cleaned and crimped connections on oil pressure switch (NO).

Friday, 10 November 2017, 06:42 AEST

NO Oil Pressure switch function OK but glitch persists where Eng Run on C1-Brn shows 0 volts. I swapped relays out and the problem persisted so I don't think it is the O.P. Status relay. It could be the relay is not energized? Need to track this down.

Sunday, 12 November 2017, 06:48 AEST

The glitch was due to a bad ring terminal at the NO Oil Pressure Switch. This was discovered when I bypassed the OP switch with a test lead and found it momentarily engaging the OP relay when I wiggled the wire. Replacing the ring terminal has fixed the problem.

Kathy and I also worked on the day tank leaks. We used a combo tool and the small skill saw to cut out two sections of floorboard. The first section revealed lots of pitting and several pinholes which went through. A temporary fix was to use pan-head self-tapping screws with an O-ring to make a seal. After pumping up the tank more leaks were discovered and a second section of floorboard was removed to reveal several more pinholes. At this time we have plugged all apparent leaks.

Wednesday, 15 November 2017, 14:41 AEST

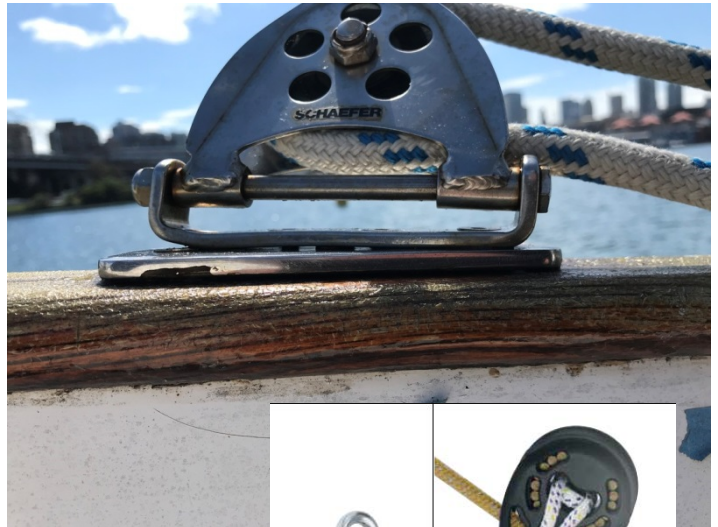
- Found a problem with the RIX Scuba compressor whereby a valve at the tank connection is leaking. When last tested it was with an empty tank so we would not have noticed a leaking valve. This time I used a mostly full tank for the test and air was hissing out around the valve knob. The hose is also cracked. We need to buy a new hose and valve.

- Footman's Loop near the starboard traveler/companionway was re-fastened with rubber washers as it was leaking. Fill-and-drill had been done but the wood screws were not sealing.
- Tightened the nut on the life raft port aft stanchion.
- Re-applied TefGel™ on all the traveler hex-head machine screws.
- Added a fairlead on the life raft starboard aft stanchion to lead the traveler line away from the strapped down Jerry Jug.
- Found a missing cotter pin on the 1/4" x 1 1/4" clevis connecting the mainsheet block to the traveler. The clevis pin looked worn and it was swapped with a pin from the spare halyard restrainer. Replacements are on the "to order". Kathy had found this cotter pin months ago and we did not know where it came from. New old rule: **When you find something on the deck; find out where it came from.**
- Kathy Cleaned refrigerator totally. Cause a Non "lock N lock" container flipped open and spilled all the way to bottom of refrigerator!
- Jeff dove on the bottom of the boat with Scuba. I plain ran out of steam trying to scrape off the monstrous accumulation of barnacles and oysters on the bottom of the keel. The rest of the boat is lightly coated with slime but no barnacles seen (visibility was not good, however).
- The prop was clean but there were some barnacles on the shaft.
- Checked PSS and also noted no more leaking water from the rudder post.

Friday, 17 November 2017, 11:49 AEST

Today, actually much earlier in the year! we noticed a bent bracket on our starboard flip-flop block for the preventer. This is a Schaefer 32-17 with SWL of 3000 lbs (1362kg). I have written Steve Majkut at Schafer about a replacement bracket. I think if I can get new brackets they should be reinforced with a welded stiffener strip on the bottom. Original quote for the bracket was \$86, Steve came back with \$61 quote.! I think Jeff ask a replacement pin, too. Do not know if it is to be enclosed. ?

Replacing this with something like the Harken 100mm blocks (shown at right) would be very expensive (> \$1200).



In the meantime I need to re-mount this block with the bent part aft as it is clearly the forward part of the bracket that is taking the brunt of the force.

Another idea is to use a footblock like the Harken 75mm ESP ahead of the flip-flip (and to swap port to starboard)



Friday, 24 November 2017, 09:28 AEST

Testing the SCUBA compressor. I removed the leaking valve and connected a tank. I disassembled the Stage 2 relief valve. It looks OK. The gasoline motor starts well but no air is coming out of Stage 3 and no leaks in Stage 2 & 3 relief valves. When the motor is stopped there is an air bleed that is probably somewhere in Stage 1. I also fixed a broken wire on the high pressure switch.

Next step is to follow troubleshooting steps in the manual:

- Pressurize system and check for leaks
- Check 1st Stage Pressure Relief valve.

Tuesday, 28 November 2017, 16:52 AEST

Forward head pedal is sticking at the bottom of the down stroke. Must reach down and pull it up with your hand. This started after travelling from Mullet Creek to Black Wattle Bay. Gen Ma and Lynton Blessington were on board with us. Sometimes when new people are on board and not familiar with the workings of the toilet flush, strange things happen.

Anyway, finally today, after many days of saying it is on the list and needs to be remedied. First thought the pedal needed lubricant, but the area to be lubricated cannot be reached until the toilet bowl is removed from the base. So away I go with a screwdriver and Jeff's assistance in removing the plug from the back of toilet. Remove the two seals underneath the toilet bowl. All items were placed in soapy water for a cleanup. The inside of the base was very nasty with black and brown water! The seals were replaced with older seals with the drain holes. Thin seal is placed on base first, followed by thick seal. Used the SeaLand toilet bowl and seal cleaner on base, ball, inside where pedal lever came inside the base and under the rim of the toilet bowl! Put silicone lubricate on white button on pedal area. Very important to get the band around the white enclosures on the toilet base Tight! Or air escapes and the Vacuflush cycles!

Jeff will call tomorrow and ask about the difference between seals with and without holes: **ANSWER: DO NOT USE SEAL WITH HOLE (OR AT LEAST LOCATE SO HOLE IN BASE IS COVERED BY SEAL)**

Also cleaned and polished the SS shower enclosure.

Floor needs more Dek's Olje treatment. I would like to fill in the missing wood cedar piece and put a wood cover over the aft section where the water hose comes to toilet.

Saturday, 02 December 2017, 07:50 AEST

The ship's horn went on the other day and stayed on after Kathy blasted a farewell to Stuart on Time Bandit as he was leaving. I had to pull the horn relay to stop it. I had forgotten that this is on a fuse (FB1-1) and not connected to any of the front panel switches. Today I went to "fix" it and plugged the relay back into its socket and there was no problem. Perhaps the cockpit button was "sticky" or the automotive relay (never had that happen before) but it's now "fixed".

Thursday, 07 December 2017, 07:34 AEST

The copper "header tank" for the diesel coolant is getting corroded and might need replacing soon. These tanks are now made to order. The cost would be \$190 with fittings added for sight glasses. Call Chad when we are ready.

Seakamp Engineering Inc.
3985 Hammer Dr.
Bellingham WA 98266 USA
Tel. 360-734-2788
Fax. 360-671-0658

Saturday, 09 December 2017, 12:14 AEST

Spare Raw Water Pumps. Replaced the impeller and gasket on spare pump 2 and rebuilt spare pump 3 (the pump with the smooth aluminum pulley) . Pump 3 has new shaft, bearing, seals and impeller. I had no press so had to carefully tap in bearings and seals with a ball peen. I was careful to only put pressure on the inner bearing. It seems to be just fine.

We pumped about 250ml from the starboard diesel tank sump and found a very small amount of dirty water in the bottom. That's good. We may have to use the starboard tank on the way down.

Tuesday, 12 December 2017, 05:40 AEST

Departing today from Sydney to Tasmania. Cleaned engine air filter.

Noted that the overflow from the header tank is leaking coolant. Maybe need an overflow tank or stronger pressure cap or, more likely, there is some blockage in the hoses or the bottom fitting on the header tank.

Tuesday, 12 December 2017, 19:02 AEST

Under way. Water level normal.

Saturday, 16 December 2017, 04:36 AEST

Replaced torn diaphragm in engine room bilge pump (Jabsco).

Rudder post stuffing box was leaking and was tightened. It might be the locking nut needs to be tightened more.

Sunday, 17 December 2017, 09:42 AEST

GLITCH LIST BASS STRAIT CROSSING:

- Cetrek MULTI has error in apparent wind display. There is a discrepancy between this and the Garmin. FIXED: See below
- Apple USB cable is stuck in the computer and cannot be pulled out. Disassembly required.
- Starter battery is not being charged. Digital Duo Charge shows green light for charging but no power. Temporarily using Parallel mode to charge the start battery. Probable cause is blown fuse on DDC charging cables. The problem was discovered because I put a “start bat charging” pilot light on the control panel. The Parallel pilot light also works. Good on me!
- Still seeing overflow on the header tank. Need to clamp the overflow hose and maybe install an overflow tank.
- Inner forestay base is leaking
- Big CRACK sound somewhere in mast. Not gooseneck, not vang. ?? MAY BE FIXED 19/12/17. Noted the CRACK sound when pulling down the boom into the gallows. It was from the bent boom bale that had been twisted when the flip-flop block failed during a gybe. Ian Berger and I replaced the bale with a “new” more hefty one give us by another KP44.
- Broken line clutch for Reefing Line #1. FIXED. Needed lubrication.
- Control Panel’s night light is not coming on and night.
- Boom End at mast has loose screw. It needs to have a backing plate welded in.
- Ship’s Bell fell off because the fastening nut unscrewed itself. Should we keep it or not? Kathy can decide. (She wants it back)
- Ding in the bow. Needs filling.
- 17/12/17 Engine would not shut down with regular or emergency stop. I needed to pull the manual lanyard to stop it. Also noted engine temp alarm wire disconnected. SEEMS TO BE WORKING AGAIN – NOT SURE WHY.

Sunday, 17 December 2017, 17:52 AEST

Found cotter pin on upper rigging pin of the gooseneck working its way out of the pin-hole. It might have compressed itself with the turning of the pin. I pushed it back in and spread the pin.

Tuesday, 19 December 2017, 14:39 AEST

Checked the engine coolant after 28 hours of solid motoring and added 600ml of coolant. This brought the level up to 50cm below the fill cap from about 75cm below the fill cap. I.e. the engine had enough coolant even though there is leakage from the overflow hose at the cap.

Updated the XB-8000 AIS to the latest firmware: AIS Version 5.20.17443.

The Cetrek Display Glitch showing bad wind data is apparently caused by the presence of an NMEA0183 WIMVW wind/direction sentence which is conflicting with the IIMVW sentence generated by the CVF3 masthead wind sensor. For example:

```
3707832,V,SRL,IIMWV,352.0,R,020.60,N,A  
3708210,V,SRL,WIMWV,1.00,R,24.05,S,A  
3708268,V,SRL,IIMWV,354.0,R,018.30,N,A  
3708676,V,SRL,IIMWV,355.0,R,016.30,N,A  
3709171,V,SRL,IIMWV,352.0,R,020.60,N,A
```

The source seems to be from the GARMIN. To fix the problem go to **Settings->NMEA 0183 Setup->Garmin** which produces the display at right allowing WIMWV to be turned off.



Wednesday, 20 December 2017, 14:42 AEST

The bent aft-most boom bale was replaced with a heftier one given to us from another KP44 who moved to using Dyneema strops in place of the stainless bales.

NOTE: The MC-612 on the main engine drops into float mode too soon for the big battery bank, which means that the charge curve takes a loooooong time to reach 100% SOC.

Friday, 22 December 2017, 18:28 AEST

Stupid, stupid, stupid. I let wishful thinking and lack of caution bring me into a dock where our crew wanted to get off. The dock was a bunch of pilings with a deck and the wind gusted up to push the bow onto a piling which cracked and split part of the teak cap rail. Now I have to try to clamp the splits together and try to glue everything up. If that doesn't work, I'll need a new piece of teak and have to scarf it in. I should know better.

Saturday, 23 December 2017, 16:27 AEST

Location: POW Marina, Derwent Park, TAS.

Need new teak caprail from teak piece 1200 x 90 x 30

Added 1 L engine oil
Added 250ml coolant

Tuesday, 26 December 2017, 16:16 AEST

Used solar power energy to power the 220v hot water element.

Sunday, 31 December 2017, 16:16 AEST

ANNIVERSARY! Ten Years Since We Arrived in Australia.

In the last week we:

- Repaired the cap rail using Gerald's epoxy putt and then GluVit™. I filled the cracks and then clamped the rail together. My thinking was this was a temporary repair until I could get some wood for a new cap rail, but it looked good enough to just keep. I might have planned the job

- better (GluVit™ first then filler, then sand, then more GluVit™, leaving room for some filler.
- Took apart the squeaky bow roller.
 - Starboard roller has 3/4" bronze axle and was wearing down. There is no way to grease it without taking the axle out. It would be easy to make new axles from bronze rod with a core and zerk fittings at the ends. Could use the same axles, actually, if I could find bronze hex bolts with a large "body length".
 - Swapped rollers. The axles are of different lengths.
 - Greased everything with "A" type lanolin grease.
- Finished the cockpit lighting.
- Found cotter pin on jibstay¹² toggle not spread far enough apart.
- GluVit™ was used on the oars. K wants to paint or refinish them.
- GluVit™ used on cracked lazarette lid.
- Used Gerald Putty on loose pieces of the cockpit grating.
- Reorganized the cockpit lazarette and disposed of many old lines which were immediately snapped up when left in the Marina Laundry.
- Found leaky brush cleaner can in the main cabin starboard locker 2. Kathy hates the chemicals and we are working to find a new place for them.

Tuesday, 02 January 2018, 15:32 AEST

I finished installation of an overflow tank on the coolant header tank. This should (I hope) stop the coolant loss through the overflow tube. The tank is attached with two large thumbscrews on a PVC mount plate to make it easy to move if servicing other items. There was not a lot of choice of where to put this. I think we will need a fill tube from PVC plumbing in case we need to add coolant.

While doing the above I started the engine for a few minutes and noticed a diesel leak from the gaskets of the lift pump. I will remove and replace the lift pump as soon as I can. Unless we extend we have 3 more days in the marina. (A new lift pump, should we replace the spare, costs US\$42.83 [here](#)).

This is going to be a bigger job than I expected. The lift pump was last replaced Aug 2005 in Glacier Bay, Alaska. To replace the lift pump we had to move the oil cooler which also meant draining the coolant and removing the oil change pump.

¹² [Terminology](#): let's call the inner stay the forestay, the inner sail the forestays'l, the outer stay the jibstay, and the outer sail the jibstays'l or Genoa, so we can be clear on which is which.

Wednesday, 03 January 2018, 18:14 AEST

New lift pump is installed. Methodology as follows:

REMOVE AND REPLACE ENGINE LIFT PUMP

1. Drain coolant.
2. Remove oil change pump by removing 2 7/16" Nylock nuts from the two studs at base of pedestal. Move out of the way; no need to disconnect anything.
3. Remove 4 1/2" Nylock nuts holding oil cooler bracket in place. Remove bracket.
4. Remove top oil line to oil cooler. DO NOT REMOVE BOTTOM OIL LINE (it will spill oil)
5. Disconnect 1-3/4" hose connecting heat exchanger to oil cooler.
6. Move oil cooler out of way. Do not disconnect any other hoses.
7. Remove lift pump.
 - a. Remove fuel feed compression nut. 9/16" wrench
 - b. Remove 2 1/2" nuts and washers.
 - c. Remove fuel output line. 9/16" wrench
8. Test lift pump with pressure gauge.
 - a. If not already done tap out the input & output ports to allow at least one full turn for a 1/4" NPT thread.
 - b. Attach a valve to the input
 - c. Attach pressure gauge to output.
 - d. Use hand lever to pump up to 3 or 4 psi. Close valve. Wait 10 minutes and see if pressure drops.
9. Install Lift Pump.
 - a. Reverse Step 7.
 - b. Crack the banjo fitting on the fuel filter input to which the output line from the lift pump is connected.
 - c. Run the electric bleed pump until fuel comes out at the banjo fitting.
 - d. Test the manual lift to see if the lift pump is working.
 - e. Tighten the banjo fitting.
10. Replace the 1-3/4" hose from the heat exchanger to the oil cooler. Use new hose if necessary. MAKE SURE UPPER OIL LINE REMAINS DISCONNECTED. To help, a 1" webbing ratchet can be used to ease the oil cooler into place and hold it there while the hose clamps on the hose are tightened.
11. Replace bracket. This is harder than taking out the bolts. Use a socket on a long extension to re-fasten the bolts. Use a smaller nut inside the socket to make it shallower and allow the bolt to be pushed into its threaded hole. Be careful not to cross-thread.
12. Reconnect upper oil line to oil cooler.
13. Re-install the oil change pump.
14. Put the coolant back into the system. Make sure to first fill the heat exchanger, then the header tank.
15. The engine should start without needing to be bled. Run long enough to make sure everything is working properly.

Thursday, 04 January 2018, 17:08 AEST

Ok, well, the fuel was still leaking after installing the new lift pump. Further investigation with my USB endoscope revealed that the outlet fitting was leaking. The rubber seals in the lift pump were new so it could not have been them. It is very likely that the "old" lift pump was functioning perfectly.



The leak turned out to be a failure in the connection of the steel fuel line to the lift pump. It appears there is no brass “olive” on the outlet pipe, but according [to parts4engines.com](http://to.parts4engines.com) there are no brass olives, just what they are calling “rubber olives”. This connection has what appears to be a soldered ring around the line to connect with the seal inside the pump outlet. Tightening the fitting on the copper tube was supposed to bring this barrier against the internal rubber seal, but it was not working. To “fix” this I placed a ¼” Nitrile O-ring around the fuel line and the leak has stopped. I’m not sure if this can be considered a permanent fix or a temporary fix.

To remove the copper fuel line from the lift pump, the lift pump fastening nuts had to be removed to allow just enough play to unfasten the output fitting. Fortunately it was not necessary to remove the oil cooler and oil change pump.

https://www.youtube.com/watch?v=XceWi57_5vk for fuel lines.

Monday, 08 January 2018, 09:27 AEST

We left POW Marina to motor south to Port Cygnet, but the engine died as soon as we rounded the corner and across from Incat. I had set the fuel source lever set to DAY (the empty dead tank). I had remembered in the night to set the valve but was too sleepy to set it correctly and forgot about it in the morning (which was why I set it last night). As usual (scan this document) bleeding this engine is a horrible process. As long as we had to do this we replaced the onboard final filter (BF988) which was due for a change. I tried to loosen the “filter bleed” screw on top of the fuel filter fitting but it was just spinning. It probably is a “self-bleeding” feature. Anyway I left it alone and moved on to try to bleed by cracking the outlet from the filter and running the electric bleed pump. No fuel came out. I tested the fuel supply by running the bleed pump and cracking the banjo fitting at the filter input. Plenty of fuel was there. I then followed the usual procedure. I never noticed high pressure with step 4, but maybe I just can’t see it. Eventually the engine starts. It takes a lot of tries.

BLEEDING THE MAIN ENGINE

1. In the situation where, due to a repair (e.g. lift pump replacement), no air has entered the fuel filter and the injection pump is full, try cracking the banjo fitting on intake #3 on the fuel filter and running the bleed pump until no bubbles appear. Then try to start the engine. It might work.
2. Make sure bleed pump is on line (Valve V9) and fuel supply is routed through the pump (V3 and V4 to Main) and Primary Filter (V8) is isolated.
3. Loosen CAV pump bleed screws, first lower, then upper screws. Run bleed pump until no air.
4. Loosen nuts on all four return lines, bleed with pump until no air, and then tighten one at a time,
5. Then loosen unions on 2 injectors, put throttle to the max, then run the engine to pump fuel through. Tighten injector unions while running. IT CAN TAKE 30-60 SECONDS of engine rotation before it starts! Sometimes even more. All air must be out of the system.
6. Repeat 3-5 until engine starts.
7. **TURN OFF RAW WATER SEACOCK IF ENGINE DOESN'T START RIGHT AWAY**

Also see [BLEEDING PROCEDURE FROM PERKINS SHOP MANUAL](#).

Monday, 08 January 2018, 18:09 AEST

Replaced torn Davis “Quick Fist” rubber clamps that got ripped by a stray sheet.



Tuesday, 16 January 2018, 05:18 AEST

Wallas Diesel Heater failed to start this morning with an under-voltage fault. Voltage was 12.5 so should not be a problem. Too much voltage drop is the problem; either a loose terminal or bad crimp someplace. I got it running by waiting for a bit more solar amps and turning off other loads. After about an hour it suddenly stopped – complete shutdown. I restarted the unit.



Monday, 29 January 2018, 06:46 AEST

Wallas re-tested without any problems. I suspect the issue was primarily that the fuel hose end was exposed when the tank was less than 1/8 full. Maybe so, but then...

UNDervoltage ISSUE SOLVED. It was a slightly loose nut connecting Fuse Box 5 neg. connections to the DC neg. bus behind the control panel (2 Feb).

Kathy installed a new Vacuflush seal kit. It seems to hold vacuum now. New rule: don't re-use old seals even if they look OK. Replacement has been ordered.

Main Engine seems to be using a lot more oil than I remember.

The aft deck lights are not working again. The transom latching relay would not turn off. I then doubled up both lights on the aft deck light and now both have failed. Is this a problem with the installation or with the latching relay modules? The one that controls the forward deck light has never given me a problem, so I suspect something is wrong with the way I've wired the aft modules.

Monday, 29 January 2018, 08:06 AEST

Motoring north from Recherche Bay in Tasmania. Wind data kept disappearing on the Garmin devices (chartplotter and GMI10 display). I used the iPad and my [NMEA Data Stream over Wi-Fi](#) web app to confirm that the data was indeed present; therefore the problem was in the Garmin GPSMap. It turned out to be an issue with the NMEA 2000 connection at the back of the Garmin. Wiggling it seemed to momentarily restore the wind data. I cleaned the contacts with CDC Contact Cleaner and so far it is working again.

Tuesday, 30 January 2018, 09:19 AEST

Motoring again; Alexanders Bay to Hobart. Noticed the engine is not charging like it should. I believe the issue lies with the Acceptance/Absorption time limit. Current records show this at 18min. Voltage readings show it going into float mode way before charging is completed. I believe 5 to 6 hours is better. All charge configurations should be re-visited. Switching off the regular has bumped the voltage from 13.3 to 14.43 which means it is in absorb phase. It should drop back in 10 minutes if indeed the setting is 18 min.

Sunday, 04 February 2018, 04:54 AEST

This last week (at POW Marina, TAS):

1. Kathy cleaned the dodger with detergent and water and waterproofed the Sunbrella cloth with Aerospace 303.
2. The diesel heater was fixed (loose nut on negative bus)

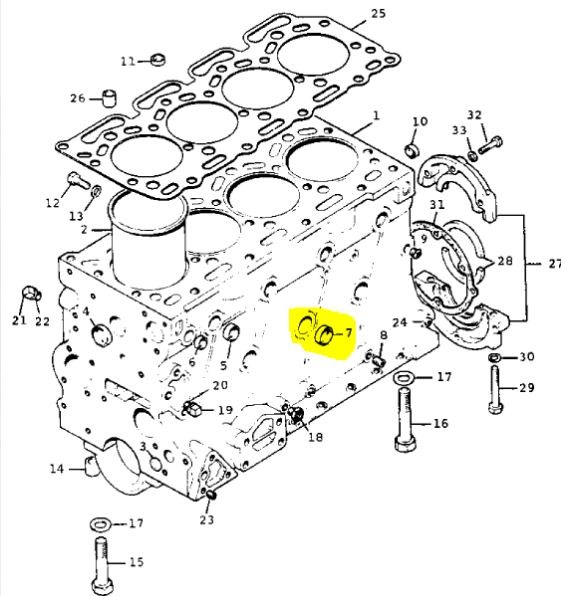
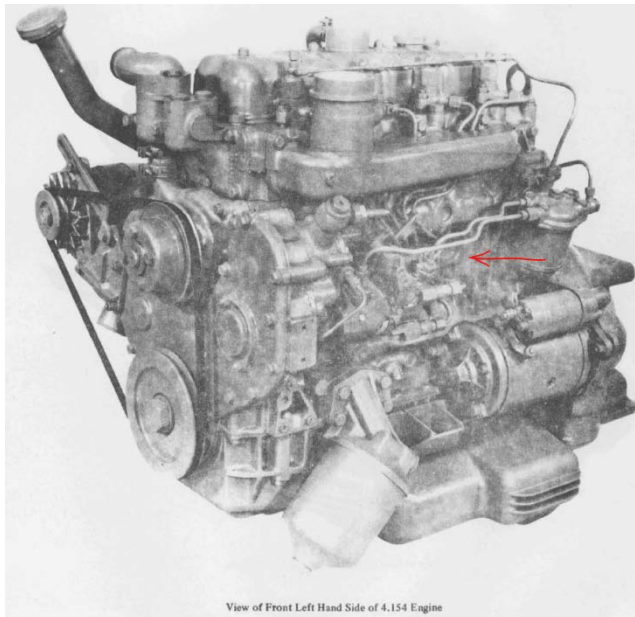
The lack of NAV data on the serial port was determined to be a dead serial port combiner. A replacement Startech 4-Port USB to Serial adapter is on order from Amazon. (\$86 w/shipping)



Sunday, 04 February 2018, 14:33 AEST

Big Trouble. Leaking coolant turned into a flood; perhaps 3 litres in 15 minutes. All of it ended up in the bilge. There is no contamination of the oil or white or black smoke. At first I thought it might be a blown head gasket to the outside of the engine but on looking closer I can see heaps of coolant escaping from the aft-most water jacket plug (#7 below, shows the middle plug). I don't know how one can remove the plug or replace it. It looks like a pressed-in part.

It was hard to take photos, but I have two showing the leaking coolant. One shows a chopstick pressed into the recess where the plug is. Part number of plug is 32418119. I was wondering if I can't clean it out and put epoxy putty in place.



Tuesday, 06 February 2018, 17:19 AEST

It turns out this part is a “Welsh plug” or “Core Plug”; a common item found in all cast iron engines. The core plug is used to fill the sand casting core holes found on found on water-cooled engines. At the right is a picture of a corroded core plug. On our Perkins 4.154 there are dozens of these things, but the one that failed was in the coolant space on the port side. There are lots of YouTube videos on how to change the plug. I used a pin punch to “turn” the corroded plug and plucked it out with pliers. Just getting to the plug was arduous as it required removing a fuel line and the stop solenoid.

120 grit sandpaper was used to clean the hole. Form-A-Gasket #3 was applied to both the hole and the rim of the plug. As it turned out the 24mm plug was too small and the 25mm was too big by an RCH. I had to file the plug down by a fraction of a mm to get it to fit. Swinging a hammer was difficult. I used a hex socket inside the rim of the core plug to hammer it home. The socket had to fit loosely because the edges contract as the plug gets hammered in.

Reinstalling the solenoid was hard because the bolts were under the solenoid's mounting flange. A combination of flexible extension and socket wrench was used. Butyl rubber was used to secure the bolts and washers inside the socket.

I lost the short machine screw used to attach the plate to the solenoid. This plate has a hole through which a rod is hooked. The rod attaches to the shutoff valve on the fuel pump. The screw got lost in the bilge so I used a longer screw with a couple of nuts to allow



adjustment of the plate. Unfortunately this made the rod too short so the solenoid would no longer stop the motor. Rather than take everything apart again I bent the rod to make it shorter.

At this time we also flushed the engine with a Coolant Flush product. This involved a flush, a flush with the product and a 25 minute run time, a final flush, and adding the coolant. We are using a highly concentrated rust inhibitor that only takes 500ml for the 10L of coolant that the engine uses. This can not be mixed with regular ethylene glycol. It will save us lugging around large bottles of coolant.

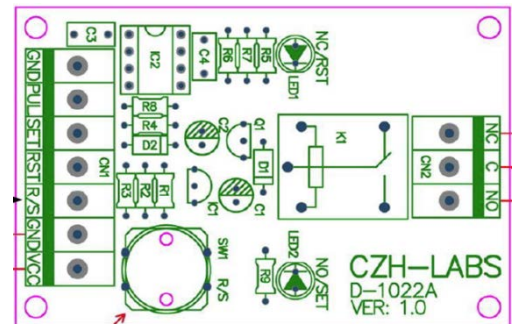
This was also an oil change day. We found some 40W mono (not common in Tasmania). We also did an engine flush for the first time. You add this stuff to the old oil, run the engine for a while and then change the oil. We left it overnight after draining the oil because of the leaking core plug. All is back together now.

Wednesday, 14 February 2018, 04:29 AEST

Over the last week we have been experiencing an empty header tank before running the engine. We fill the tank (about 2.2L) and then, as the engine runs, it fills the overflow tank. Overnight, the coolant disappears. I am theorizing there is a leak between the raw water and coolant, possibly in the heat exchanger, which allows the coolant drain until it is at (or close to) sea level. I might be able to test this by filling the header tank this morning, closing the raw water sea cock, and seeing if the coolant level stays up.

We are holed up in a northerly Near Gale in the Duck Pond in Tasmania. Yesterday we accomplished the following:

1. Replaced the cap on the header tank.
2. Fixed the failure of the engine solenoid to stop the engine. This was because the locking nut on my "repair" of the solenoid (see last entry) had loosened. I applied Loctite and tightened it well. The return spring on the solenoid might be a wee bit weak; or the valve is sticky. As long as it works I'll live with it. I re-attached the pull-line to manually stop the engine. I should look for a T-handle emergency stop that can be used externally
3. New bistable latching relays were installed in the deck light control box attached to the transom. That is now a failure of FOUR of these relay boards. The only thing different is that the GND is now attached at the terminal next to VCC. Since both GND terminals are connected by a wide bus on the PCB I can't see how this makes a difference. An identical unit in the main control panel (Nav station) has never failed. I don't think the fault is in the relay boards. The only thing I could think of is that they are mounted on top of the SSB antenna tuner which might cause an EMP, but I have not used the SSB for a long time. If they fail again I will re-locate the control box away from the antenna system.
4. I started on tracking down the air leak in the diesel supply system to the Kubota generator. I have some very solid rubber hose and constant pressure spring clamps. To start I bypassed the Walbro fuel pump and went straight from the generator fuel feed line from the fuel control system to the lift pump on the Kubota. I replaced the short length of hose from the lift pump to the injector pump. So, all new hose. The engine was easy to get started but it still runs only about 5 minutes at a time before it dies. The only remaining point of air ingress would be the shutoff valve for generator fuel feed. I have located a replacement valve, installed it, and found that the generator ran for over an hour without stopping, although it did have a couple of slowdowns. **PROBLEM FOUND. It was a leaking hose FROM the injector pump to the injectors.**



Saturday, 17 February 2018, 17:57 AEST

After removing the hot water heater and cutting all fuel lines; the fuel tanks were successfully removed with 12 hours of hard labor by my shipwright mate, Donald Douglas, off *Atmosphere*. The aluminium tank on top was relatively easy; the iron tank was more difficult. Surgery on the cockpit lazarette floor was necessary.

We were surprised to find a lot of fuel in each tank (about 25l on top and probably 30l in the bottom tank). The aluminium tank was easiest to remove and it is now out of the boat; the mild steel tank (rusty as can be on the outside) was surprisingly strong in cross-section. The tanks are removed with a circular saw and Hackzall; for the steel tank we also are using an abrasive cutting wheel but it created a lot of smoke. Cutting the tanks in half was required to lift them out of the boat through the locker lid.

While this is going on we still have to remove and inspect/repair the exhaust manifold/heat exchanger on the Perkins 4.154.

In addition the oil change pump is blowing fuses. I need to fix that soon.

Friday, 23 February 2018, 06:45 AEST

The oil change pump was removed and tested. It turns out the problem is that if the pump outlets are not connected to the hoses the pump is locked and the fuse blows because the motor cannot turn. The data sheet on the pump actually discusses this issue. I took the opportunity to rebuild the control box with a new reversing switch and a 10A push-to-reset circuit breaker. The circuit still includes a 15A fuse on Fuse Box 4.

The engine coolant problem turned out to be a defective heat exchanger core. Removing the core required disassembling the exhaust riser where it connects to the engine, moving it out of the way, taking off the end cap, and removing the core. It was very difficult to remove but it finally came out by wiggling both ends. The old end caps had to go, too. I used the new end caps to make a pressure testing rig by clamping them to the core, plugging one with a wine cork, and attaching the other end to a very low pressure air hose. This rig was submerged in a dock barrow full of water and the leak became very obvious. I tested our spare core and it was sound.

I also took this opportunity to replace the Aqualarm raw water flow alarm unit (which has been occasionally sticking for some time now) with a new unit. The new unit has its switch mechanism in a "tower" on top of the flow, which necessitated removing the engine room fire extinguisher. The extinguisher will now have to be relocated, perhaps to a new or refurbished port engine room wall. I also can see there is more room on the forward firewall to allow a nice rebuild of the messy engine room electrical system.

A new E.R. start/stop switch replaces the old switch with the broken toggle.

The "new" core is in place with new end caps. I did not use any gasket sealer but just clamped the new rubber to the cleaned core and heat exchanger. I did clean and sand the aluminium and cupronickel ends and also ran a flap wheel up the inside of the heat exchanger to free things up. There were tiny little barnacles observed inside. In the future we might use Bilge Blaster to try to clean those, but a consultation with a diesel mechanic indicated that it was OK to just go ahead and re-install the system. I have connected the output and input engine exhaust water lines to the calorifier as the hot water heater is out of the boat. We are now ready for a test.

Test completed. One run with pure water then added 1L of Tectaloy Xtra Gold antifreeze/corrosion inhibitor concentrate. Engine is functional. I tested the coolant for PPM with a salinity tester (HM Model) and it registered at 255 PPM. I don't know if this is a valid benchmark should there be more salt intrusion.

Tuesday, 27 February 2018, 10:22 AEST

HP case number printer 5010763820

Wednesday, 28 Feb 2018

ANNUAL HAULOUT

Haulout on cradle 17 at RYCT slipyard on 190mm blocks. The blocks were set too far back because the bosun needed to get by the solar panels. Next haulout remove forward solar panels first.

The boat was engulfed in marine fouling organisms. No wonder we were sailing so slow. I don't think it was too bad when we left NSW in December but I have never seen such a veritable garden on our hull before.

When we had pressure washed the hull and cleared what was exposed of the keel we found the bottom of the keel deeply scratched down to the underlying matt. It was clear we should re-glass the keel but the blocks did not leave much vertical clearance!

Thursday, 1 Mar 2018

Kathy commenced working on light sanding of the hull. Jeff ground down the grunge on the copper lightning plate, the SSB radio ground, and removed zincs. The prop zinc, radio ground zinc, rudder zinc, and "Divers Dream" zinc are still good. The teardrop zincs on the lightning ground and shaft will be replaced.

The shaft shows no movement so we will not replace any Cutless™ bearings.

PropSpeed™ is slightly worn.

We ground down places in the hull that needed some epoxy filler.

Discussion was had with the bosun (Anthony) on the efficacy of fixing the keel at the RYCT. He suggested we go to a travel-lift yard so as to get more height and to accurately position the boat.

Friday, 2 Mar 2018

We decided to fix the keel in place using sanding boards and wire wheels to condition the keel base. 40grit sandpaper glued to a board worked great.

We finished all of the sanding to the waterline.

Late in the afternoon we Ubered our way to the Fiberglass Shop and the Hardware store for supplies to use over the weekend. Josh at the FS said we should use a layer of matt, then cloth, then matt. We bought a piece of plywood and 20mil plastic to let us wet out the layup and lift it on to the bottom of the keel.

Saturday, 03 March 2018, 17:07 AEST

Today we used Interfill 833 (?) epoxy filler on the keel base. Acetone washed first. Application with a broad scraper or trowel was easy, but we were required to kneel down and peer into the gap under the keel to see how we were doing. The filler set up in a few hours, allowing us to easily sand any high spots. I think if it were fully cured it would be harder to sand. A couple of missed spots were fixed using a credit card as an applicator. These work great for this purpose. We are ready to apply the fiberglass tomorrow.

Anthony (yard bosun) said we had to sand all the way back to raw fiberglass for the repair, including up the sides.

Sunday, 04 March 2018

Fiberglass was applied to the areas not under the blocks. We laid up 3 layers: chopped matt, sewn glass cloth, and a final layer of matt. Each layer was slightly bigger than the previous and the final layer was wrapped around the keel to about 50mm up the side.

It was a messy business applying overhead in the narrow space (90mm) between the keel and the cradle bed. One method suggested online was to wrap the glass around a PVC tube and then unroll it. We decided to wet out the glass on a piece of plywood covered with plastic and lift it in place. In all cases we first wetted the raw keel with slightly thickened epoxy. We are using West System Epoxy 105 with slow hardener.

We started with the shortest area at the bow of the boat. This method did not work so well so with both of us on opposite sides we got our hands under the wetted fiberglass (3 layers all wetted out at once) and lift in place and smooth it out. A fiberglass roller (corrugated roller) was the best tool for getting out air bubbles.

On our next attempt (the stern) was a bit better but more difficult to get the cloth or matt to conform to the surface. We added one layer at a time. This was more manageable in terms of exact positioning.

Our final work was the long stretch of keel between the two support blocks on the cradle. We used the same procedure: wet the keel, apply each layer of pre-wetted cut material, smooth out, roll out bubbles.

Monday, 05 March 2018

Sanding and fairing of repaired areas using Interfill 2-part epoxy filler.

Removal and re-installation of the transducer fairing's anti-rotation bolt. The sealant used was 3M 4000UV. The bolt had shown leaks in the past.

Tuesday, 06 March 2018

Sanded filled areas, then application of 2 coats of SigmaCover 280 over repaired areas. SigmaCover is a kind of universal primer which sticks to anything.

Started on inspecting and greasing of seacocks. 5 out of 14 were done.

Wednesday, 07 March 2018

The remaining seacocks were disassembled and greased except for the bilge pump stopcock and the port cockpit drain stopcock (which is virtually unreachable).

The boat was moved into the water and shifted forward to allow repairing that area of the keel which had been resting on blocks. Kathy inspected the seacocks and pumped the bilge. She noted the anti-rotation bolt was not showing any water leaks. The boat was rinsed with fresh water (not pressure washed).

The newly exposed keel areas were sanded, acetone-washed, and filled with West System epoxy filler as the shop had run out of Interfill. I did not like it as it was stiffer product and harder to trowel onto the keel. It also set up quicker and was getting even stiffer as I tried to get a smooth fill.

Thursday, 08 March 2018

New fiberglass was applied to the areas that had been previously inaccessible. Same method was used: grind down to glass on the side, sand underneath as best as we can, acetone-wash, wet-out with thickened epoxy, wetted-out matt/cloth/matt applied and rolled out with corrugated roller. (Note: roller can be "cleaned" with a torch to burn off hardened epoxy).

The big task for Jeff (with Kathy's help) was to fix the wiggling rudder tube. No amount of tightening had stopped the movement (and slight water leakage) at the point where the threaded bronze tube projected into the boat. The small "deck" where the rudder tube emerges is apparently a kind of box. In the early boats this was made of wood that rotted out. Later boats had the space filled with chopped strand and bits of fiberglass and lots of voids. This info was from Dean Wallis on *Weta*. We discussed the method of fixing the issue. I like reaching out to my extended support team like Blair Fraser and Dean. Anyway, I used a variety of destructo tools (cold chisel, drill, and the hugely useful Milwaukee Combo Tool with vibrating saw attachment) to cut away the glass at the base of the tube. It looked strong and OK. I did not go through into the gap below. Then I cleaned up the area with a wire brush. The rod was taped so it would stay clean and then Kathy and I cut successive layers of matt and cloth to apply 5 large layers and 2 small layers around the tube. Each layer had a whole in it. Before these layers a mixture of cut chopped strand (e.g. "cat-hair") and thickened epoxy was used to fill in the cut-out at the base of the tube. Once level with the surface we used the layers of matt & cloth. It went down well – I can't see this tube moving AT ALL once the epoxy is set. The last task was to grease up the heavy bronze collar, slide it down the threaded tube, and press it into the wet fiberglass. The idea was to form a circular depression that would help lock the tube in place. In practice that did not work as expected. The depression is very slight. Nevertheless I still think this tube will not wobble any more.

Friday, 09 March 2019

Masking tape was applied on the port waterline and Kathy applied anti-fouling below the waterline and on leading edges and areas which needed it. We chose NOT to recoat the entire boat as most of it appears to have a lot of good antifouling left. We have **5L of Hempel 86901** and do not want to use more than that.

Ian Berger stopped by and helped Kathy with applying epoxy filler to the remaining areas. There was a bubble in the aft fiberglass wrap around the keel. It got cut off and the area had 2 layers of chopped matt applied. Ian and Kathy sanded down the previous epoxy filler.

Saturday, March 10, 2018

Kathy finished applying 2 coats of SigmaCover 280 over the last of keel repair and any other spots. It was a warm day so we pushed the recoat time to about 4 hours (8 hrs. were recommended). Finally she applied HEMPEL'S UNDERWATER PRIMER 26030 over the SigmaCover.

Tape removed on port side. Scaffolds were moved and tape applied on starboard side. Kathy finished rolling on Olympic 86901 (ablative anti-foul, blue) below the waterline and at leading edges.

Jeff finished the rudder tube repair. It was necessary to further clean up the tube threads which had very hard epoxy on them right at the bottom of the tube. A serrated utility knife seemed to be the best way as it was hard to get a rotating wire brush into that space. Finally it fit. 3M 4000UV adhesive/sealant was used under the bronze collar. If this ever has to be removed it will be very difficult. 3M Adhesive Remover was used to clean up.

The rudder was swung back and forth (no stops, because the quadrant was off) and it did seem to bind a bit when swung to port, but that was way past its normal swing of about 32°.

After about 4 hours dry time the shaft nut was tightened again with a tiny bit of squeeze-out observed. The shaft log was installed and tightened. The ease of rudder swing was noted before and after this. It seemed to be the same even as the log was screwed down tight. The quadrant and autopilot tiller were re-installed. One of the steering cables had slipped off its sheave in the engine room; after fixing that the steering cable were snugged up to their original positions and the rudder was then centered. The Cetrek autopilot needed to go through its dockside setup again to re-acquire the correct rudder angle position. Apparently disconnecting the rudder angle sensor had confused it.

Sunday, 11 March 2018, 07:46 AEST

Kathy finishing application of anti-foul at critical points on the hull, under the keel.

Zincs replaced:

1. 2 CMT-20 small teardrops on the lightning ground. (Radio ground zinc is OK)
2. 1 CMT-21 large teardrop on rudder (starboard side only; port OK). ¼-20 thread worn out so fixed with Recoil™ stainless insert and new ¼-20 socket head machine screw.
3. 1¼ x 31.7mm collar zinc for prop shaft

Monday, 12 March 2018

Kathy painted the rudder and keel with anti-foul. Jeff serviced the two remaining through-hulls. Because the fuel tanks were out I was actually able to reach and rotate the port cockpit drain seacock and grease it from the outside. The usually inaccessible bilge pump stopcock was also fully serviced. Jeff also worked a lot on measuring and planning the hot water heater re-location and fuel tank replacement.

We commenced on general cleanup.

Tuesday, 13 March 2018

- K applied another coat of Olympic blue on the rudder and critical places.
- K plugged fasteners on zincs with plumber's putty
- J waxed starboard side
 - Water wash
 - Stubborn spots removed with Magic Eraser
 - Hand application of 3M Marine Wax (wax only, no cleaner or polisher). New paint, neh?
- K cleaned and scrubbed the transom. Lots of rust drips under the exhaust tubes.

Wednesday, 14 March 2018

- Finish applying Olympic blue and remove tape.
- Plumbers putty in zinc fasteners.
- 2 Through-hulls.
- Clean transom
- Buffing Port
- Close scoop-strainer doors

Thursday, 15 March 2018, 14:57 AEST

- Disassembled temporary refrigeration cooling.
- Removed power cord.
- In water
 - Refrigeration OK
 - No leaks at rudder post.
- Polished forward solar panel stainless steel rails with 2:1 Stainless Cleaner.

Friday, 23 March 2018, 09:53 AEST

We have commenced rebuilding the cockpit lazarette and fuel tank spaces.

Kathy is starting two canvas projects: 1) a cover for the movie display monitor and 2) replacing the cockpit rain awning.

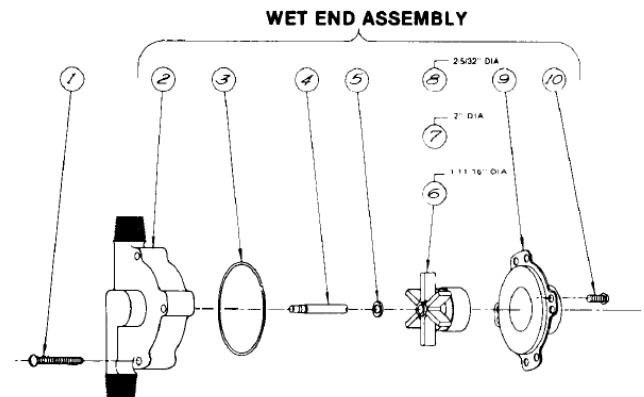
Refrigeration glitch: last night we had a “whoop” and turned it off. This morning I turned the compressor on and it ran briefly and shut down. My first thought was all the work in the lazarette has somehow disabled a connection. I could not find anything. I checked the refrigeration water pump, the SVA voltage, and the 4 fuses in their box in the laz. All good. When energized neither the Carel displays nor the refrigeration would run. Only the in-box fan in the refrigerator was running. No voltage was apparent at the refrigeration power buss behind the main panel. Nothing. Then, it started running for no reason; it is running fine on the freezer circuit with 19 amps. This is just weird. “Laying on of hands” should not be a valid repair technique, but it is sometimes the case.

Sunday, 25 March 2018, 13:49 AEST

Today we investigated the [809-BR March Pump](#) which is a 12v centrifugal pump that provides seawater coolant to the refrigerator compressor. I noticed the pump motor was running but no water was flowing. This is likely related to Friday’s refrigeration glitch.

The last time we had a problem with this pump (see Page 114) it was more serious. This time there was a rattling noise.

This pump is a magnetic drive pump; a rotating magnet drives an impeller/magnet (#6)



There is enough slack in the feed and output hoses to allow the pump to be pulled onto the floor without removing the hoses. Upon disassembly the shaft (#4) was found to be loose. It is a left-hand thread and was difficult to screw back in as some threads may have been damaged when it worked loose. The thrust washer (#5) was nowhere to be found as it probably washed away when the pump was disassembled.

The pump was re-assembled with a nylon washer which was necessary to have it run correctly. It was possible to test the pump without fully assembling the motor to the wet end; just manually hold the motor to the pump head. At first a very thin plastic washer was tried and the impeller was not rotating. With no washer it sounded like a washing machine full of gravel. With the thicker washer it seems to be working well. The water flow is measured at 1.8 gpm (7.5 lpm) which seems very low. This pump is supposed to deliver 5 gpm at this head; possibly there is some frictional loss in the heat exchanger. We are NOT having any over-heating issues.

Monday, 09 April 2018, 18:45 AEST

The work on the new fuel tank cribbing and flooring under the port cockpit locker is proceeding well.

All the activity loosened up a solder joint on the refrigeration and we lost all the refrigerant. I was able to re-solder the joint, vacuum the system, and recharge with R134a using 3 12oz cans, some of which was used in testing. This should be about the right amount of refrigeration. The red high pressure gauge on the gauge set is defunct and I have ordered a new one.

Tuesday, 24 April 2018, 03:24 AEST

Cribbing, joists and bearers, floorboards for the Port Tank Project are all finished. We are in the last stages of finishing and hooking everything up.

Kathy started the Honda generator and checked the oil. She added a few ml of gasoline fuel treatment.

She also did the same with the Honda Outboard.

Thursday, 26 April 2018, 16:15 AEST

Kathy completed a new awning. Hard work. Good job.

The port locker job is completed. Tank cribbing, level 2 and level 2 floors are all done. I still need to hook up the water heater to calorifier and electric. Water hoses need to be re-run and some kind of protective wall or internal baskets need to be made to protect the refrigeration compressor and steering cables.

Saturday, 28 April 2018, 14:11 AEST

Under way TAS to NSW. Voyage glitches:

1. Engine room bilge pump foot strainer was loose and the foot got clogged. Easily fixed with a wire tie.
2. Detached exciter wire to large alternator. Fixed under way.
3. Detached terminal on oil pressure switch shut down the Alt Regulator.
4. Optima Start Battery appears to be dying; it won't hold a charge. It was installed 24 July 2015. The previous battery lasted 3¼ years. This one is almost three years old. Surprising, really, that they last such a short time. Battery after charging is declining to 9.45vdc. Replace battery.
5. The engine appears to be using about 1 liter of oil / 24 hours. In checking the oil and adding that liter I bumped my hand on the valve cover and the oil cap went into the bilge; this fumble may be partly due to my increasingly bad eyesight. In attempting to retrieve the oil cap with my extra-strength neodymium magnet I stuck both large magnets to the bottom of the engine. In attempting to pull those off I seriously burned my arm on the hot engine. We have spare radiator caps but no spare oil cap (or spare magnets). The MacGyver solution was to fold some aluminium foil over the cap fitting and secure it with a wire tie. This seems to be working.
6. Noted water leak aft of partners in main cabin. Order new mast boot?
7. Rattling noise heard in Octopus cylinder mirroring pump.
8. Problem at gooseneck – the snap shackle on the gooseneck that hooks up the reef points is jammed into the mast. Also, there is a big crack in the gooseneck hound. The hound either needs replacing or welding. Moving the boom to port freed of the snap shackle, but it is very bent. The boom needs to come off and the repairs done.
9. At the last 2 miles into Blackwattle Bay I noticed the steering wheel was very hard to turn and impossible to move to the end stops. At anchor there is no impediment to turning the wheel; i.e. the problem occurs when there is stress on the wire. The steering system needs examination from one end to the other. I have looked at the quadrant area and noted wobbling in the sheaves, particularly the starboard side sheave which turns the steering cable 180°. It may be all the sheaves need to be re-bushed. This is not in the Maintenance Log so the last bush with Oilite™ bearings must have been pre-2004.
10. Water leaking from the rudder shaft log. Tighten the log.
11. Aft Deck Light not working. Probable cause is another failed pulse module.

Wednesday, 02 May 2018, 02:49 AEST

Topped up the ATF canister on the Octopus which was down, but not down all the way.

Wednesday, 02 May 2018, 19:07 AEST

Removed stainless rail mounts holding broken Davis Fists™ which was the hold-down for the boat hook and gaff. We need a better method of securing these things.

Power “curve” for engine.

As an engine professional for many decades I can tell you that all you need is the two

published numbers I hope are in the engine's specifications. That would be the torque peak and speed and the horsepower peak and speed. For a naturally aspirated diesel this is very close to what a dyno test would give you. Turn the HP back into torque ($rev \times tor / 5252 = hp$)_ and plot it out as two straight lines (it isn't, but it won't matter much). Ta Da - power curve

Thursday, 03 May 2018, 15:17 AEST

Purchased new Optima 34M Start Battery from Ship'n'Shore Electrical in Sydney. Price A\$282.59.

Saturday, 05 May 2018, 18:56 AEST

Still having problems with the Kubota generator slowing and sometimes stopping. This was found on the net ([here](#))

*A drop of power over a period of a few minutes is a sign of partially blocked fuel filters. While the engine may continue to run at slow speeds, eventually the filter is likely to become further clogged until the point at which complete engine failure becomes inevitable is reached. Air in the fuel also causes similar problems – this can enter the fuel system through two mechanisms, running out of fuel, **or leaks on the suction side of the fuel pump**, which will draw air into the fuel lines.*

The fuel filter is the Racor 500 that services both the main engine and the Kubota. The only difference in fuel is that the main engine has a final spin-on fuel filter. I have trouble believing that dirt particles are a problem. But, I also have trouble believing that there is air in the line. I replaced the shutoff valve, replaced all the hose, and checked all the fittings, so it's a mystery.

Saturday, 05 May 2018, 23:23 AEST

Working down the “glitch list” plus other issues from the latest passage Hobart to Sydney. A few of the items are post-arrival. In priority order they are:

VOYAGE

- 1. The stainless steel is TORN at the gooseneck hound. Remove boom and hound. Fix. Paint boom at Niall's factory (they have a “Spray'N'Bake” paint booth.**
- 2. Inspect steering system. Check all sheaves for wear. Remove and re-bush as necessary.**
- 3. Tighten rudder post log.**
- 4. Renew mast boot.**
- 5. Ask Octopus about problems of noise at the cylinder.**
- 6. Find oil cap and magnets stuck under engine.**
- 7. Replace dead start battery.**
- 8. Relocate start battery to next to the reefer compressor.**
- 9. New terminal on OP switch.**
- 10. Clean foot strainer for engine room bilge pump**

POST ARRIVAL

- 11. Install new USB serial port combiner**
- 12. Fix anchor chain controller**
- 13. Fix Aft Deck Light which is again not working.**
- 14. Honda generator to Shore Power cable – replace shore power socket.**
- 15. Wallas heater will not stay lit.**
- 16. Slight leak of rusty seawater from the stainless elbow that connects the 2- $\frac{3}{4}$ exhaust riser hose to the hose running back to the transom. Could be replaced with a fiberglass elbow.**

Today we removed the main sail (sail ties on top of boom, remove reef lines and mouse the run, remove outhaul and Cunningham, release sail slides, pull sailbag onto sail). Also removed vang. We are prepping for freeing up the broken hounds so they can be removed and rebuilt and possibly painting the boom.

Sunday, 06 May 2018, 21:34 AEST

Disassembling port locker prior to trying out the PVC mockups made at Niall's Factory. It all comes apart very nicely.

New Glitches:

Raw water input to GenSep is leaking.

Monday, 07 May 2018, 19:48 AEST

I pulled out the dead starter battery. The lifting strap (1" webbing) broke and I had to use a combo of an eye bolt, some line, and a webbing ratchet to lift it up to the point where I could tie a line onto the broken web strap. It will be good to move the box into the space below the cockpit locker. Niall came over to help drop off the old battery and collect the new one. Purchased from Ship'N'Shore Electrical in Sydney for A\$282.59.

Niall brought over the PVC mockups that Anthony made at the factory and they fit perfectly. This was very exciting.

Tuesday, 08 May 2018, 16:19 AEST

The Diesel heater is exhibiting problems. Twice it failed to ignite; then, after unlocking, it achieved ignition but went off after a few minutes. I suspect, once again, power issues. Voltage is good so it is likely a ground fault or voltage drop. We are also experiencing a lower than expected input from the solar panels. Maybe this is a connected issue.

Honda generator was not putting out power on startup. It took a long time for the inverter to "recognize" clean power. I noted warmth in the shore power connection; this needs to be replaced with the new plugs on hand. Kathy started the microwave and the generator stopped putting out power. Stopping and restarting re-initialized something in the generator and now it is producing power again.

Tested solar panels to confirm input from each of the two forward panels and, by turning off the forward panels, the aggregate input of the aft panels. All panels are generating power. There is a lot of fluctuation of insolation today because of haze and clouds. So, no real conclusion about a lessening of the solar power; it might simply be the low winter sun, clouds, and smoke.

Wednesday, 09 May 2018, 19:47 AEST

Lots of leaking oil in the bilge. It's not new, but it's worse.

Friday, 11 May 2018, 18:36 AEST

Lost yesterday's entry.

Bilge pump would not turn off; found foot misaligned.

Noticed some diesel fuel at the bottom of the Walbro pump. If the generator could run ONLY on the mechanical lift pump, then we could get rid of the Walbro and wire the "bleed" button into momentarily controlling the main engine bleed pump; i.e. use the engine bleed for both systems and remove Fuel Pump Relay and Walbro. Otherwise; fix the Walbro so it doesn't leak or replace it. To test, bypass Walbro.

We are anchored in Blackwattle Bay and winds are projected to go to 30knots (which means 40kt gusts). The MFD allows me to draw a multi-point area with an entry or exit alarm. Added extra loud alarm to the Garmin MFD so I can hear it everywhere.

Saturday, 12 May 2018, 16:27 AEST

Heater not working. It turns on and runs for a while then stops with a flashing yellow light (usually indicating undervoltage) and then is joined by a flashing red light (usually means flameout).

Sunday, 13 May 2018, 16:32 AEST

Heater working again. Yesterday I started it while the voltage was up during a charging cycle. Today it started fine and kept running.

The Honda generator stops sending 110VAC power when the microwave is engaged. It needs to be turned off and re-started to produce power. This is probably an artifact of our combining two defunct units into a single unit. We can live with this.

Tuesday, 15 May 2018, 22:59 AEST

The Honda Outboard almost did not get us home last night. It's a long story. We left the dinghy at the Pontoon in Leichardt Street. Stuart off Time Bandit had come by and borrowed the dinghy because Ann was in town and had locked the dinghy up. He needed our dinghy to get the spare key to his dinghy. When we got back we noticed the dinghy had been moved. We were about to head off for a visit on TB but the engine would keep dying. I thought it might be low on fuel so Kathy handed me the spare fuel and when I went to pour it in petrol gushed out; it was already full! Now, how did that happen, I thought? On the last pull the starter rope would not retract and I barely kept the engine sputtering along, balancing choke and throttle, until we made it back to *Beatrix*. Its behavior was consistent with past incidents when water got into the outboards' fuel tank. Today Ann and Stuart dropped by and we sorted out our stories. Stuart had also filled our fuel tank as a neighborly gesture.

"Couldn't be MY fuel" said Stuart. The problem, wherever it came from, was water in the fuel.

Fixing the starter unit was not too hard. Three nuts on top of the engine released the recoil starter assembly. I must have pulled the starter rope very hard because the retracting spring had bent and was not connected to the flywheel. There is a little plastic slot it goes in. I corrected the spring so it fit into its slot and reassembled the starter. I also replaced the big "Start-Me-Up" geriatric starter rope pull as the one on the engine would not hold anymore.

Sunday, 20 May 2018, 07:05 AEST - Blackwattle Bay Anchorage, Sydney

Changed propane tank.

Saturday, 26 May 2018, 19:32 AEST - Blackwattle Bay Anchorage, Sydney

Work still ongoing on port tank project. All designs are final and at Niall's Marrickville factory.

Installed new Startech 4-port RS232 to USB device. It is working fine but I still cannot upload routes to the Garmin MFD and the VHF is not showing any position data. Position data is good on the Nav Station Multi which is the same data feed as the VHF. Not sure what is wrong with the Garmin as COM5 appears to be offline.

Sunday, 27 May 2018, 10:02 AEST - Blackwattle Bay Anchorage, Sydney

VHF has come good; I'm not sure why.

For some time now I have been unable to upload routes and waypoints from OpenCPN to the Garmin MFD. This has to be done in proprietary GARMIN HOST mode. The fix was to change to 4800 baud on COM5. This makes absolutely no sense as I have been using 9600 baud for years. The testing procedure was to switch protocols on the Chartplotter from GARMIN HOST mode to RS-232 and see if the MFD was connected. I could see the port was working by using PuTTY, Actisense NDC, and openCPN. Finally, experimentation showed data arriving from COM5 (which is connected to Port 1 on

the MFD) while on 4800 baud. I tried an upload at this speed and it works fine. This is a total mystery. The brooms are dancing.

Monday, 28 May 2018, 18:16 AEST - Blackwattle Bay Anchorage, Sydney

I put cribbing in today and also rooted through the boat looking for some varnish we should have, but I could not find it. The boat is an awful mess and I'm having trouble working efficiently. The factory should be starting on the tanks this week so my first job is to prep for installation of the tank bases, then the tanks.

The water heater is all prepped to connect to the system. I will be able to lift up the front of the tanks and disconnect the engine water hoses ABOVE the level of the heat exchanger so the coolant won't run out of the hoses. I need to buy (in USA) appropriate compression caps and also a "connector" which is double-male so the female hose fittings can be connected together and the water heater removed without disabling the engine. Right now I have had to take the male fittings off the heater unit and connect them with a pipe ell.

The start batter is all in place. I should probably design a dust cover for it. I have drilled holes through the engine room wall to allow the starter battery cables to connect directly.

Friday, 01 June 2018, 06:14 AEST - Blackwattle Bay Anchorage, Sydney

Started engine to get some power to get the cabin heater going. It still need >12.5vdc to start. The engine started fine but there is no power to the alternator regulator. I must have a disconnected wire from when I removed the start battery. Also, engine alt. regulator is not powering up.

Also noticed cycling of water pump every minute. It might be backflushing from the pump diaphragm as I don't find any water leaking to the bilge.

Saturday, 02 June 2018, 06:53 AEST - Blackwattle Bay Anchorage, Sydney

Yep, pressure water system definitely losing pressure. I will have to find out where. I did note that both pressure pumps are functioning; I had thought that one was not working.

I found these notes on the Richie compass. For it to be more accurate we would have to change it to a Southern Hemisphere setting. We hardly ever use the compass and I don't know if it is worth it. Only in case of a total electrical failure (could happen) might it be important.

04 1812 0366

David Ross

If You already have a D-615 then you could just purchase a zoned capsule or have a zone card put into the compass.

We have an Authorize Service Station in New Zealand. They repair our compasses but also sell new.

You could talk with them about converting the current capsule to the zone you want?

Or maybe purchasing a zone capsule which you could swap out without changing the compensation.

Their contact information is:

Compass & Sextant Specialists

52A Bayswater Ave, Bayswater, New Zealand,

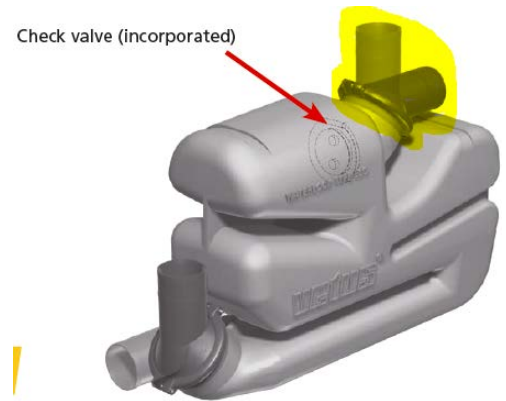
Tele: 64 (9) 445-3336

Email: dschafer@xtra.co.nz

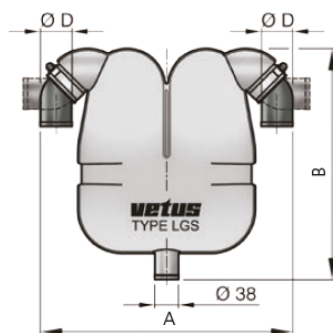
Thursday, 07 June 2018, 14:50 AEST - Blackwattle Bay Anchorage, Sydney

Big glitch day today:

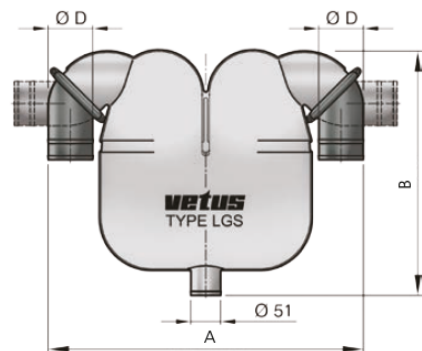
1. Honda EU2000i has an ignition problem: no spark. **FIXED ITSELF!**
2. Water in fuel of Outboard. Fixed
3. Water in jerry jug 'cause I forgot to put the cap back on and we had heavy rains over the last 2 days.
4. Electrical glitch in the Deck Lights circuit. Glitch appears to be associate with the Engine Control Panel or its wirings.
5. Alternator regulator is working because I am energizing the brown switch wire directly from the red power wire. So, still no solution. Without the Honda genset I have to charge with the engine and solar. Sun too low and too many clouds for solar to contribute much.
6. Most important. The VETUS LSG60 waterlift muffler is leaking at the swivel. A new Swivel is available at Fenquin near Sydney: 02 9605 55225. **P/N SET0002**. 60mm fitting. Check the check valve when replacing
7. Now that we have MORE ROOM and access in the engine space, I considered adding this gas/water separator, BUT it is not only very big, it is very expensive. Maybe someday but the current system is working fine so why change it.



Type	A inch (mm)	B inch (mm)	Ø D inch (mm)	Capacity (gal.)
LGS4038	16 x 5 ⁹ / ₃₂ (406 x 134)	14 ⁹ / ₁₆ (370)	1 ⁹ / ₁₉ (40)	1.8
LGS4538	16 x 5 ⁹ / ₃₂ (406 x 134)	14 ⁹ / ₁₆ (370)	1 ³ / ₄ (45)	1.8
LGS5038	16 x 5 ⁹ / ₃₂ (406 x 134)	14 ⁹ / ₁₆ (370)	2 (51)	1.8
LGS6050	21¹⁷/₆₄ x 6¹¹/₁₆ (540 x 170)	16¹⁷/₃₂ (420)	2³/₈ (60)	3
LGS7550	21 ¹⁷ / ₆₄ x 6 ¹¹ / ₁₆ (540 x 170)	16 ¹⁷ / ₃₂ (420)	3 (76)	3
LGS9075	22 ¹ / ₆₄ x 6 ¹¹ / ₁₆ (559 x 170)	21 ⁹ / ₆₄ (537)	3 ¹ / ₂ (91)	5.3



Type LGS40 - 45 - 50



Type LGS60 - 75 - 90

Saturday, 09 June 2018, 16:35 AEST - Blackwattle Bay Anchorage, Sydney

It took all of today from 0800 to now to install the new 60mm swivel fitting on the LSG60 waterlift. I replaced the hose as well. Here is the disassembly method:

1. Remove 4 bolts holding the injector to the riser
2. Remove 1" engine exhaust water hose from the injector.
3. Remove the clamp that holds the swivel fitting to the LSG60. This will take an Allen hex wrench. The socket head bolts that release the clamp were frozen so I had to use the combination tool with a saw tool to cut the plastic on either side of the bolts, being very

careful not to cut into the muffler.

4. The injector unit, swivel fitting, and 60mm connecting hose should come out as one piece. Save the gasket if possible (it wasn't).

I had a length of new Trident Marine Wet Exhaust hose to replace the old hose. It looked good but I thought new hose would be more flexible. It was necessary to cut the old hose off with a serrated knife.

A new gasket was cut from a piece of Belpagraf heavy duty gasketing material which has 316 reinforcing mesh. It is tough stuff to cut and punch holes in so it was kind of rough when finished. It worked though.



After replacing the hose I could not get the original hose clamps to slip over the hose; it seems to be slightly bigger in diameter. I had to get new T-bolt hose clamps from stores. The white rubber gasket that mates the 2 halves of the swivel was hard to keep in place. The first time I tried it water sprayed everywhere. The next time I applied some Form-A-Gasket #3 to the rubber seal and let it set a bit. This held it in place well enough to make a proper seal, but the alignment was off. I shortened the hose so the assembly would flex a little more and tried a 3rd time to get it to seal. This time it worked. Re-assembly went like this:

1. Leave the lower hose clamp loose. Tie it up out of the way.
2. Slide the assembly (injector unit, swivel fitting, and connecting hose) in place. Drop a single bolt in place to stabilize the unit while working on the special clamping ring.
3. Align the two halves of the swivel, making sure the rubber seal is in place. Tighten one side until it is impossible to rotate the clamp, and then back it off a bit. Rotate the clamp to get access to the second clamping screw and tighten until the seal is secure.
4. Remove the single bolt, slide the gasket in place, then tighten up all four bolts with the nuts on top. Nylocks had been used but it's really too hot for them so I changed the nuts out for ordinary nuts with a lock washer.
5. Put the lower hose clamp in place.
6. Connect the 1" hot water line.
7. Run engine and hope there are no leaks. Bob's yer uncle.

Niall brought by six milk crates to use in Level 2. We ended up only needing 4.

Tuesday, 12 June 2018, 07:58 AEST - Wondabyne (Mullet Creek), NSW

I found and installed a different radiator cap for the main engine heat exchanger. This has STOPPED the leaking in the cooling system. YES!

This morning noticed a long thin bolt had unscrewed itself from the small alternator. I decided to leave it alone until this afternoon as I'm in the middle of an early morning charge and I the other bolts seem to be adequate to hold the alternator together.

The galley sink has been removed. Tomorrow I take it to Croydon Industries so Niall can have it fixed so the dishwasher doesn't run onto the wooden counter. If I had time I would cover the entire galley with stainless.

Wednesday, 13 June 2018, 05:37 AEST - Wondabyne (Mullet Creek), NSW

I am using the engine for charging since the two generators are offline. It is still using water, but not so much. I added about 250 ml this morning.

I found a new oil pressure switch and installed it, replacing the old one which had broken off terminals. I also put a new terminal on the "Engine Run" oil pressure switch, the one which is NO when engine not running. This fixed the alternator regulator glitch.

I am now trying to find the glitch in the deck light circuit. When Deck Light Power (Main Panel 3-12) is switched on it enables the starter circuit; i.e. it was the same as switching on the key. This seems to not be the problem anymore, except that the aft deck light won't turn off. I cannot see where the problem could be, unless I have a diode wrong. The next step is to work in the aft lights control box

behind the transom panel at the end of the bunk.

Saturday, 16 June 2018, 15:19 AEST - Wondabyne (Mullet Creek), NSW

The final prep is done for departure to USA for 2½ months leaving tomorrow. Honda generator has fixed itself. I have no explanation. Maybe something was wet in the ignition system. I love it when things fix themselves.

Friday, 14 September 2018, 09:49 AEST - Wondabyne (Mullet Creek), NSW

Kathy is working on the bamboo countertop preparatory to installing the new sink with stainless surround.

Yesterday we did a complete 10-hour “C10” test on the battery bank. It has less than ½ the capacity it should and is therefore legally dead. I am seeking a refund or replacement of everything.

Honda gen was dead for a while but it revived itself and is running fine.

The DC lights and outlets on the port side of the dinette stopped working. I opened up and wiggled wires. It still did not work. Then it magically came back on. I hate these weird glitches.

We are still having trouble with Wallas Diesel Heater. It needs high voltage to ignite, at least 12.5 vdc.

Monday, 17 September 2018, 18:24 AEST - Wondabyne (Mullet Creek), NSW

I tracked the problem with the Port Cabin Lights and USB Sockets back to the ground connection in the main Nav Panel. I also added an additional USB socket on the opposite side of the dinette and replaced the old one with a newer, backlit model that is supposed to deliver 2.1A from each port.

I made some measurements on the Wallas heater. I doubled up some test wires in the power plug that goes into the Wallas. Under startup the voltage went from 12.57v to 11.16v. Then I tried to measure the resistance of the wires by disconnecting the leads at the panel and connecting them together. Over the approximately 20' of 10AWG wire the resistance read 1.4Ω. This is close to the resistance of the test leads. I don't think the meter is accurate at very low resistances. The correct resistance is about 0.022Ω. Next I moved the ground wire to a different bus. Now under startup the voltage went from 12.57v to 12.04v. After ignition the voltage rose to 12.33v. This might be the fix! It also identifies a problem with the ground bus on the fuse block where the lead used to be attached. This ground problem might explain some of the issues with the Port Cabin Lights.

Today we applied the 4th coat of International Perfection Varnish which we are using on the countertop. It's looking pretty good.

Tuesday, 18 September 2018, 06:25 AEST - Wondabyne (Mullet Creek), NSW

The heater started with no problems this morning. Battery voltage was 12.25 and ignition occurred normally.

Another glitch was that Navigation Electronics would not turn on. No wind or air temperature data was shown on either the repeater (which was OFF) or the Cetrek Multi, which was ON.

Friday, 21 September 2018, 15:56 AEST - Wondabyne (Mullet Creek), NSW

Noted: Refrigeration compressor using only 14 amps instead of usual 20-22 amps. Frost not found on return line as usual. Compressor on for 2:14 hours. Sight glass shows green with some flow.

We finished varnishing the aft galley countertop as preparation for installation of new sink with prep area. Coating was International Perfection which has been on board at least 10 plus years. It went well. The cracks between the bamboo were cleaned as much as possible and GluVit™ was used to penetrate and seal the cracks. Sanding was done and then the 2-part Perfection Varnish was applied. We tried freezing the leftover varnish and also freezing the brush. Both worked, sort of, but in the end I believe that freezing the varnish more than 12 hours is not a great idea (it might work better with newer varnish) but freezing the brush worked fine, HOWEVER a new brush should be used on the final application. Once we finally bought the proper thinner for the product it was more successfully applied. There are probably 7 coats of the aft galley counter area. Two of the coats were applied within three hours of each other. The forward galley counter was coated with three coats. The dry locker door probably has three coats and looks good. The refrigerator and freezer doors probably have three coats also. I also decided to sand and recoat the top trim above the forward galley counter with two coats. The starboard grab handle just inside the passageway needed coatings. So I sanded and applied three coats. It might need a few more coats at some time. This project took place over about two weeks. Leaving the boat or going to the aft cabin to be out of the way of fumes.

Sunday, 23 September 2018, 09:45 AEST - Wondabyne (Mullet Creek), NSW

Refrigeration compressor needed gas. Leak is probably in High Side because there is oil noticeable at the blue line connection. Added 340g (12 oz can). Now using 18amps at end of cycle. I think this problem may come back.

Friday, 05 October 2018, 17:01 AEST - Wondabyne (Mullet Creek), NSW

The new sink has been installed. 5mm “root nuts” are welded to the bottom of the sink and 5mm threaded rod is used to tie down the sink. Aluminium tubes act as long spacers so the compression Nyloc nuts can be reached from near the bottom of the sink. It is still a very difficult process particularly as the 5mm hardware is very small. A seal of 3M Marine Silicone was applied around the base of the sink flange edge. The counter and sink were masked with blue tape. After curing a box knife was used to trim the squeeze-out. A new faucet, new dishwashing liquid pump and a new spigot for the foot pump were installed. A new spigot for the foot pump was installed. The filter water faucet is the original and remains disconnected. It was placed with the on /off knob facing away from the front of the sink.

Sink drains are Ambassador 95° Sink drains which are quite close to the bottom of the sink. (See 1 Dec, 2016, pg 332). Marine East plastic hose barb reducer (1” to 1.5”) connects the drains to the vertical 1.5” PVC standpipes. Because of the low profile of the new drains there is a mismatch in height and the connecting tube must be an S-curve. We used clear plastic tubing which shows that water in that tube is above the waterline. This is clearly inappropriate hose as it can age and split and cause a water inrush. It needs to be replaced ASAP. We believe what needs to be done is to raise the 1.5” PVC standpipe to match the 95° down angle of the sink drains. The drains should not be stressed (i.e. bent down to meet the hose). Drains are attached to bottom of sink and I do not see how they could be lower than waterline. Installation of a cutoff valve reachable under the sink is desirable.

There are three options:

1. Replace the low-profile Sink Drains with the Forespar drains that have a larger drop before the elbow. Use 1” Shields rubber hose to connect with the drain standpipes.
2. Keep the low-profile Sink Drains. Find a rubber exhaust hose at the auto parts store with an “S” bend. The drop is 80mm and the length is 200mm. **THIS IS WHAT WE DID. Gates Heater Hose p/n 02-0802 has these dimensions.**
3. Build a sump box with a float switch, pump, and siphon break loop leading to the galley drain

Friday, 12 October 2018, 17:34 AEST - Wondabyne, NSW

Today was the finish of the new galley sink with the installation of automotive 25mm heater hose as the sink drain hose. The specific hose (Gates Heater Hose p/n 02-0802) has a mild S-curve to match the height of the drain standpipes at the back of the under-sink locker.. All items are back in place.

It's been raining a lot and the portlight and mast leaks are very noticeable.

Monday, 15 October 2018, 09:42 AEST - Wondabyne, NSW

Final reinforcing of cribbing and supports for the fuel tanks was done. Extra fiberglass tabbing was added to the outboard vertical supports. Screws and bolts were added to reinforce the 32x32mm uprights to which I will bolt the joists.

We have had about 10 days of constant rain and the boat is leaking everywhere. Kathy noted leaks in the aft head locker (known), the wire through-deck holes aft cabin starboard locker 1, around the Fusion sound system above main cabin starboard locker 3, staysail fitting in forward cabin (bad leak), the mast partners, and of course above the galley.

Wednesday, 17 October 2018, 14:12 AEST - Wondabyne, NSW

The faulty GenSep water separator for the Kubota Generator Exhaust was replaced with a used one purchased in the USA. Model number is Centek 1020150. The three round holes in the floorboards were sawed out and a single rectangular opening was left. This was done to allow proper attachment of hoses and hose clamps. The original installation was simpler and done before the main exhaust hose was replaced.

Sunday, 28 October 2018, 14:42 AEST - Wondabyne (Mullet Creek), NSW

Today I repaired the broken oil line from the oil pressure manifold block (rectangular aluminium block) to the bypass filters. It had been broken earlier during the preparation for the fuel tank replacement. I could not extract the nipple from the tee so replaced the tee and added a new nipple. The 1/4" hose was replaced.

I also noticed that the mount for the small engine alternator wobbles when testing belt tension. It feels like a worn foot. It is stable when running so I will postpone removing the alternator until we don't have to go anywhere. Tomorrow we are going on the tide to Brooklyn to load the tanks, which are finished.

We had an issue with the Honda generator. It has had some surge problems, dropping power and then coming back online. Yesterday it could not be started. We found the main air filter had partially disintegrated so that was replaced (17211-Z07-000). I'm concerned that some of the debris could have gotten inside the engine. The small pre-filter (17218-Z07-000) was missing and is also replaced. We drained the tank and carby to check for water in the fuel system; we also replaced the spark plug. We still could not get it started but by this morning it ran fine. Possibly we flooded everything. Anyway it is running now. It was time for an oil change and that was done today.

There is another bizarre issue to be addressed. At the moment the starter battery is not installed because we need to add new tanks. I'm trying to decide if the start battery will go below the hot water tank in the depth of the bilges, or get installed at Level 1 of the cockpit lazarette, inboard of the refrigeration compressor. It is out of the way at the bottom but would be both below the waterline and inaccessible without removing the hot water tank.

With the starter battery offline we start the engine by engaging the Parallel and Start Switch to bring the engine controls online and use the main battery for starting. Here's the glitch – when we turned the Parallel Switch ON the generator solenoid was enabled. I could hear the “clutch” as it engaged. When I put my finger on it I could feel that it definitely was the starter (yes, I was careful to not put my finger in danger). But why would the starter solenoid engage and not the starter motor? This mystery may be

related to the problems I'm having with the Deck Lights and the interference with the generator panel. It will have to be solved later.

Sunday, 04 November 2018, 16:38 AEDST - Wondabyne (Mullet Creek), NSW

Today we installed the forward fuel tank and this finished the tank installation. It was quite difficult to get the heavy tanks in. The aft tank was much easier as there was room to swing it. For the forward tank we thought we might have to send it back to Niall's factory for modification. Shortening the fuel fills to stay within the tank profile made it possible to squeeze the forward tank in. We had to attach multiple lifting lines to allow us to lower, then tip, then rotate the tank in place. The take-away was that when mocking up the tanks we did not include a mockup of the filler pipe. EVERYTHING that is permanent on the tank needs to be included in the mockup.

Of note is that the self-aligning drilling jig I had made of PVC plastic worked perfectly. Where I had total access to the tank bearer beam I was able to drill from the top and the bottom of the beam using the jig. The alignment was so good it was easy to use the backing plates with welded nuts. I did not trust this jig on the aft tank so the holes are a bit oversize because I tried to do it by hand. The manufacture of the tank was spot-on in all dimensions (Mick the welder is an artist in stainless steel) which made it all come together very nicely.

Wednesday, 14 November 2018, 09:42 AEDST - Wondabyne (Mullet Creek), NSW

Kathy removed and re-bedded the forestay (staysail stay) which has been leaking water into the forward cabin. The only bedding was butyl rubber and it appeared that movement of the deck when under strain from the stay had broken the seal. This time around we placed rubber O-rings all about the bolts and the large round tie-down element that projected through the deck. Butyl rubber was again used to supplement the O-rings. Over the next week, we will retighten the bolts, until no more butyl squeezes out.

We noted that the nuts were not fully tight initially so it should be "on the list" to check this from time to time. Photos were taken and noted that butyl was totally missing diagonally across the underside of the base. (starboard to port). Green and white marks could be seen on the inside plate under the base where water ingress appeared to be from two forward bolts and the large round tie-down element while underway and using the inner stay sail, Check and retighten the bolts if water begins leaking into the forward cabin!

We discussed installing a tension stay for this base for use while underway and particularly when the staysail is in use! Jeff has purchased a rigging eyebolt that will fit into the underside of the base. This should go on The List.

Power to the bookshelf area on the port side of the dinette has gone off again. It is clear that a primary lead must be led to this circuit and, hopefully, the "dead" feed wire be removed.

Thursday, 22 November 2018, 09:22 AEDST - Wondabyne (Mullet Creek), NSW

The battery system remains under discussion. Lifeline has offered a full refund or exchange, but what to put in place? The spare cell which has been not connected for some time now has self-discharged to 2.086 volts. I can charge this with my 10A power supply to full and I estimate this process will take 8 to 10 hours.

I broke my scaphoid bone in my left wrist a few weeks ago and it will be in a cast for the next 3 weeks. This will slow down our projects.

Tuesday, 27 November 2018, 20:19 AEDST - Wondabyne (Mullet Creek), NSW

In spite of wounds Kathy and I have finished the installation of the hot water heater. It was kind of difficult to get the hoses hooked up without kinking. We have to pull the heater up above the level of the engine's heat exchanger so as not to get coolant all over. 2 hoses to the engine, cold in, hot out

forward and hot out aft. We also connected the electricity using a power point and plug to make it easy to disconnect. Since I have scrapped the idea of putting the start battery below the water heater it is possible I could have made the heater's base deeper and possibly fitting under the outside bearer beam. Maybe I can fix this someday. It would make dealing with the heater a lot easier.

I installed the new engine hour meter after running it for almost 4 months. It looked fine until we started the engine, when it went to zero. Drat. It is counting, but I must have accidentally touched the hot wire to the reset wire. It will now take another 139 days if I care to bother.

Wednesday, 28 November 2018, 08:30 AEDST - Wondabyne (Mullet Creek), NSW

We have hot water again.

Friday, 30 November 2018, 18:12 AEDST - Jerusalem Bay, Kuring-Gai NP, NSW

We went to change the light tube in the Alpenglow lamp above the galley because it seemed and, typically, it looks like the ballast is bad and it won't light up at all. I probably reversed the polarity. Now I have to adapt it to retrofit a LED bank or replace it.

Saturday, 01 December 2018, 16:53 AEDST - Jerusalem Bay, Kuring-Gai NP, NSW

Well, a win for once. Kathy and I traced the wire for the Dinette Light all the way back to the main panel where it was flagged with its name. We should have started there! The culprit was a failed ground terminal, one of the shrink tube kind. It make me wonder how many other ground terminal faults we might have. I'm not sure if they can be tested.

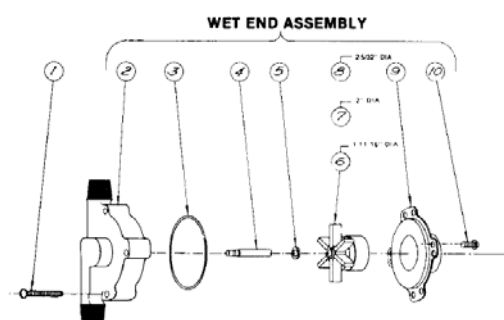
I installed a LED strip light temporarily over the galley.

Refrigeration amps went up to 35A and refrigeration compressor "whooped" and I stopped it. Kathy noted no cooling seawater was flowing; she could not hear the sound of the drainage into the cockpit drain pipe. Inspection of the March pump showed a broken wire. I also noted the reversal of the positive and negative wires to the pump. When a new push terminal was crimped onto the wire and the pump turned on it made a lot of rattling, as if it had lost prime. I also noticed that the motor polarity ws backwards. We turned off refrigeration for the night.

Monday, 03 December 2018, 11:20 AEDST - Jerusalem Bay, Kuring-Gai NP, NSW

First thing today was to fix the refrigeration. The symptoms were seen before (See entry for **Sunday, 25 March 2018, 13:49 AEST**

I had figured that losing prime was very unlikely so we needed to take apart the pump. The hose clamp worm screw on the intake side broke in place. The other three clamps came off OK. We attempted to remove the hose on the outlet side and it could not be pulled off or even rotated. Only cutting the hose would work. To remove the broken hose clamp would require cutting the hose. So we disassembled the wet end of the pump in place. One of the pump housing screws (#1) was chewed out and I had to drill off the screw head. All four pump housing screws were replaced with new SS 8-32 x 1" screws from stores.



There was a fair amount of corrosion on the back end of the impeller which was scraped off with a knife and then scrubbed clean. The O-ring appeared to be fine. We cleaned up any obvious discolorations, replaced the temporary nylon thrust bearing with the proper one (obtained from Depco pump) and put the wet end back together with the original rear housing screws. These were left loose and then, by cracking the through-hull open just a bit, the wet end could fill with water before the final tightening of the rear housing screws (#10).

The pump was then tested and we could tell that the pump was able pump water when run in either direction. It's a centrifugal pump so it makes sense. We reconnected the pump with correct polarity. I would have changed the gender of the connectors on one pair of leads except I did not have any large (yellow) crimp connectors, which is probably why the opposite gender method was not used in the first place.

We did a quick flow test on the March pump, measured at the point where it goes into the cockpit drain. Flow was 5.7 lpm which is much lower than the product specs, but more than adequate for our needs.

Amperage was down to 20 amps plus or minus 2 amps. Everything looking good.

Friday, 07 December 2018, 15:47 AEDST - Brooklyn, NSW

Underway from Brooklyn to Wondabyne we had "Lost Heading Sensor" warning more than twice. My web page which shows all devices says it was working. HDM is the sentence from the KVM but HDG is missing.

Engine hour meter has reset itself to zero. This is the second time this has happened.

Monday, 10 December 2018, 17:37 AEDST - Wondabyne (Mullet Creek), NSW

Red Letter Day today. The start battery is installed in its new location on Level 1 of the cockpit lazarette next to the refrigeration unit. I was able to re-use the hot lead from the starter fuse block to the new start battery. As usual it is an Optima 34M Spiral Wound purchased on 3rd May 2018. It has sat since then and is finally being brought back into service.

It started the engine just fine but no charge current is being directed to the battery. Voltage is 12.1. The problem is similar to [this one](#) that occurred in August 2014. This time the input fuse holder to the Digital Duo Charge has melted. I suspect now that the problem is with the particular type of inline fuse. Perhaps a MAXI fuse would be better. Another option is to not use the internal switching of the DDC and instead install a heavy duty (>30A) solenoid controlled by the "Solenoid Drive" feature.

The fuel tank project is only days from completion. Final tasks include connecting fuel hoses, fill tube and vent (day tank only for now) and electrical (level sensor and float switch) and final installation of floorboard fasteners, internal cargo baffles and hold-downs.

Tuesday, 11 December 2018, 16:02 AEDST - Wondabyne (Mullet Creek), NSW

No completion today, sad to say. Between one thing and another I only managed to fix the DDC after dropping 3 screws in the bilge.

Saturday, 15 December 2018, 17:04 AEDST - Jerusalem Bay, Kuring-Gai NP, NSW

Today saw completion of all electrical components of the new tanks: 2 level sensors and 2 float switches.

We went through an amazing lightning/hail/rainstorm/windstorm which half-filled our water tanks in 15 minutes. Then another blast filled them the rest of the way.

Leaks noted:

- Forward hatch
- Mast
- Leaks in the port gallows base.
- Blasting rain through the dodger zippers

Monday, 17 December 2018, 06:37 AEDST - Newport NSW (moored)

Start Battery was not charging on run to Newport. DDC showed green light. I checked all the fuses and the next time we started the engine it ran fine. It as a self-fixing glitch.

Tuesday, 18 December 2018, 06:09 AEDST - Newport NSW to America's Bay

Predictor line on GPSMAP is off by 25°. HDG sentence not seen, but HDM (Heading Mag) is operational. HDM comes from the KVH Autocomp 1000 heading sensor. Actisense NDC Control Center does not see data on COM4 (NDC-3). COM4 can be opened with PuTTY but without data. The Wind Data is visible on the NDC-4 so it must be being sent from NDC-3 to NDC-4.

Glitch Confirmed: DO NOT USE OFF BUTTON ON AUTOPILOT. This is now locking up the instrument.

Operations Log "Continue Route" Function has broken. Software rots.

Wednesday, 19 December 2018, 07:24 AEDST - Route: Americas Bay, Kuring-Gai NP, NSW to Brooklyn, NSW

We recalibrated the KVH according to instructions (2 lazy circles) and it seems to have fixed the problem. Possible stowage of a box with anchor chain links on the cockpit seat might have caused this???

Scrubbed boat bottom using new (to us) Hookah device attached to SCUBA bottles. A few barnacles on the prop and the rest of the boat mostly scum and some weeds. I was able to get off all the big stuff and rub down the port side. I think a mitt made of two red 3M scrubbies would work perfectly.

Wednesday, 19 December 2018, 15:19 AEDST - Route: Brooklyn, NSW to Blackwattle Bay Anchorage, Sydney

DDC not charging start battery and showing error condition "BATTERY TEMPERATURE TOO HIGH FIVE BLINKS". I found that the battery temp sensor was not connected and just hanging loose. I will need to extend wires to make it reach the Start Battery in its new location.

Saturday, 22 December 2018, 20:27 AEDST - Blackwattle Bay Anchorage, Sydney

Engine Air cleaner was very dirty. Fibers from the exhaust pipe insulation have appeared to be the culprit. The bilge foot was also cleaned.

A new radiator cap has been purchased to see if it can stop the leaking of coolant. Dimensions are 71mm dia by 23mm overall height. In USA dimensions neck height is 3/4" and overall diameters is 2.8". It is not rated for coolant reservoir systems. A compatible cap is available in USA which can handle coolant reservoirs.

I talked it over with Blair about regarding installing the header tank as a Tee or back into the circuit. It was inconclusive; but he feels 200ml of water per day is too much. We feel it isn't a constant leak because the amount of top-up liquid does not change with engine run time; i.e. 1 hour or 6 hours it is

the same 200 ml.

Monday, 24 December 2018, 08:24 AEDST - Blackwattle Bay Anchorage, Sydney

Possible deck leak was dripping water onto the Flambeau storage boxes behind the watermaker. Starboard diesel deck fill is not properly bedded and showed movement. Kathy has removed and re-bedded and re-fastened the deck fitting.

I bought the WRONG SIZE waterlift for the Kubota genset. Part on hand is 1500071. I paid \$100 for it. Centek 1500018 is required. USA Cost new is [\\$144](#). Cost here is AUD \$300. Buy in USA when Kathy goes home and sell the other.

Wednesday, 26 December 2018, 07:26 AEDST - BMDF White Bay NSW

Yesterday, tired to the bone, I finished the fuel tank project. I also replaced the semi-melted wire raceway and moved it further away from the exhaust pipe.

Today we commission the new tanks. We are filling up starboard tank at Bailey's.

Water gauges seemed to have stopped working and then, LO, they are working again.

We added 226 L to a nearly empty starboard fuel tank when we were expecting over 300L. The fuel gauge was at zero. My guess? Fuel gauge not working well. I doubt it's the level sensor.

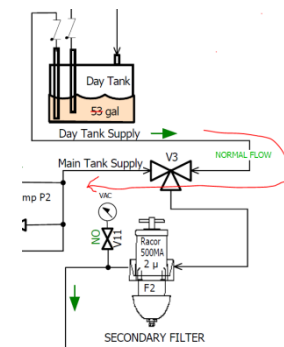
I tested the Deck Light circuit again. At the moment.. Spreader Light works fine. Transom Light works fine. Aft Deck light is permanently ON.

Wednesday, 26 December 2018, 11:00 AEDST - Blackwattle Bay Anchorage, Sydney

Fuel Tank Commissioning:

- Pumped Day Tank full from full Starboard Tank. Automatic shutdown was nominal. Any oil-canning was not heard or not there.
- Pumped Port Tank full from full Starboard Tank. **Automatic shutdown failed**; some fuel spilled on the deck from the tank vent. We back pumped the tank. Just before the spill the tank "oil-canned". I will have to remove the inspection port and replace the float valve. It was tested before installation but possibly was damaged during floorboard and hose installations. Possibly it should have a protective cap. It is possible to install two float valves in series to prevent this in the future, or return to using a pressure valve. We will not do this prior to voyaging to Tassie as this is only important if transferring or filling. The Day Tank is the critical tank for automatic pump shutoff.

The "Day Tank Supply", which is the direct fuel line from the Day Tank through the manifold to valve V3, had no way of being bled of air. I was able to "crack" V3 while transferring fuel from the Starboard Tank to Port Tank allowing some suction to be placed on the Day Tank Supply line. The action was visible in the primary filter (900) which showed bubbles in the bowl flowing through the filter. This seemed to work as the main engine has run for 15 minutes without any problem.



Monday, 31 December 2018, 13:35 AEDST - Route: Eden, NSW to Wineglass Bay

The engine had died a couple of hours earlier – air in the fuel line, clearly, but from where? It has to have something to do with the new tank installation. Tank gauges all showed lots of fuel. I swapped over to direct draw from the Starboard Tank via the Secondary Filter. It took the usual multiple tries to bleed the Perkins.

Monday, 31 December 2018, 14:13 AEDST - Route: Eden, NSW to Wineglass Bay

THIS VOYAGE'S GLITCH LIST

1. Engine abruptly stopped – air in fuel line.
2. Hasse staysail has one sheet which is too short.
3. Re-think or find out former position of reefing shackle which has a tendency (now) to bind.
4. Re-load the CQR so it doesn't interfere with the Bruce.
5. Bilge pump clogged and Rear Emergency Bilge Pump did not alarm. Problem was noticed when Jeff, in the galley, got his toes wet with oily bilge scum on a starboard tack.
 - a. Check the rear pump.
 - b. Clean the pickup foot. Done!
 - c. Find a bigger pickup foot and maybe design a strum box.
6. Flap valve on main engine exhaust has torn off.
7. Refrigeration stopped working and was noted in Wineglass Bay on Tuesday.
8. This might not be a problem but the autopilot pump is making a lot of noise at the cylinder. Check all connections and possibly re-bleed the Octopus.
9. See if the autopilot can be configured to save more energy.
10. **Noted crimped vent line in port coaming.**

Wednesday, 02 January 2019, 10:03 AEDST - Wineglass Bay, TAS

This morning I noticed refrigeration using only 3.2A and nothing happening. Recycled power and it stopped after a few minutes. Problem was no cooling water was coming from the [809-BR March Pump](#) under the passageway. The pump had lost prime (probably in the heavy seas when an air bubble passed under the boat). Re-priming was done by removing the “wet end assembly” from the motor drive assembly and backing out the screws holding the Impeller Magnet Housing until the air had bled out of the wet end. After searching the log (why don't I remember to do this) I came across this “[better way](#)” to bleed the pump.

PRIMING THE MARCH PUMP (REFRIGERTOR COMPRESSOR RAW WATER)

Suck on a length of host connected to the alternate coolant outlet in the engine room with the pump running. This will move enough water to create a prime. Try not to get salt water over everything.

Tuesday, 08 January 2019, 08:54 AEDST - Route: Franklin, Tasmania to Port Cygnet, Tasmania

The diesel engine stopped shortly after leaving the dock at Franklin. We had to drop the hook in the river and attend to the problem. Fortunately the cause was obvious – I had pumped up the Starboard Tank by emptying the Port Tank. I forgot to reset the FROM valve (V1) from Port to Starboard and since we were working off the Starboard Tank and not the DAY tank the engine just sucked air. I checked the level of fuel in both filter canisters and found the level well below the lip. I used the bleed pump to top up the level. Then I bled the tank using the [latest technique](#) and got it running on the first go. The key is to rotate the engine for 30-60 seconds. This can be hard on the starter, and I should get that easy raw water shutoff valve installed, but it does work. As oil pressure comes up the auto-shutdown wants to stop the engine. I should note which connector to pull to prevent this, OR re-design things so auto-shutdown is disabled while the starter is engaged. Anyway, it ran perfectly for the whole trip after that. Clearly the problem is in the new hoses from the Day Tank.

Friday, 11 January 2019, 10:50 AEDST - Port Cygnet, Tasmania

Yesterday we ran the engine for 18 minutes (needed the warmth to rise some bread) and the fuel system was set to “normal” with the Day Tank providing direct feed to the engine. Everything worked fine.

I was noticing that when lighting the stove “eyes” that there was a lag before the gas lit. Testing with a BBQ lighter showed that if the solenoid was ON, then turned OFF, the ring lit immediately and then petered out as the gas pressure dropped. When the solenoid was turned OFF, and after a 10 minute

wait, the eye would not light at all. This indicates a pressure drop between the solenoid and the oven.

Testing with the tank valve closed showed no pressure drop with the solenoid off. There is a pressure drop with the solenoid ON and the valve tank off. We are going to town with the valve tank closed and that will give a few hours to see if the pressure on the stove side of the solenoid will drop more.

I have tested the Fireboy Xintex S-2A fume detector this morning and it seems to be working fine. We stopped using it at one time because it was turning off the gas rings at random times. We have to watch this. If it starts up again it could be associated with the tendency for the gas solenoid to interrupt a refrigeration cycle. I already have a flyback diode across the solenoid coil but it doesn't seem to have improved this problem.

The propane box is definitely non-standard. It is no longer airtight and there are not proper seals on the gas lines where they exit the box.

Monday, 14 January 2019, 12:40 AEDST - Route: Port Cygnet, Tasmania to Franklin, Tasmania

Thursday to Monday we were at the Port Cygnet Folk Festival attending and volunteering. Fabulous as usual!

We are trying to make the high tide up to Franklin today to attend the dinner at the Wooden Boat Centre. Enroute the engine died again. I had swapped back to the Day Tank after topping up the filters but we still had the engine stop after perhaps a half hour of run time. I swapped over to Starboard Tank supply and return and bled the engine. Record bleed time was about 8 minutes. The trick of extending the start time and full throttle worked. I only bled it ONCE and we were good to go. I did forget to tighten the two loosened injector unions which meant the engine was running but didn't do too well with a load on. Easily fixed.

Sunday, 20 January 2019, 13:17 AEDST – Port Cygnet, Tasmania

In case I lost the settings, is the options page from AISDecoder which is used to connect *Beatrix* to MarineTraffic.com. The TCP Host connects to the Vesper, the FTP Server can upload to the web, and Output UDP is the Marine Traffic Base Station connection.

Options [svbeatrix.ini]

Input

UDP
[39150] Port

TCP Host
[192.168.3.189]
[39150] Port

Serial
[] Port
[] Speed

Input Log File

Source
☐ None
☐ Received
☐ Processed
☒ Filtered

Format
☐ NMEA
☒ NMEA+Time Stamp
☐ Rollover

Output Fields and Tags

Msg	DAC	FI	ID	Tag	Name
-----	-----	----	----	-----	------

Output Tags and Range

Nc	Tag	Min	Max	Name
----	-----	-----	-----	------

☒ Synchronise Input Filter to Tags

Input Filter

☒ Reject Shore Stations ☐ MyShip

☒ Received Sentences
☐ CRC Errors
☒ NMEA Sentences
☒ AIS Sentences
☐ AIS Message 1
☐ AIS Message 2
☐ AIS Message 3
☐ AIS Message 4
☐ AIS Message 5
☐ AIS Message 6

Scheduler

[5] Minutes
[15] Time to Live
☒ Output on MMSI change

Tag Template File

data.kml
[New File]

FTP server

Host: svbeatrix.com
User: beatrix
Pass: *****
Dir: ais

Filtered Output

Time Stamp: dd/mm/yyyy hh:mm:ss
Format: ☒ NMEA ☐ +Time Stamp
☐ CSV ☐ Head ☐ Delimiter
☐ Tagged ☒ GIS Filtered
☐ Scheduled
☐ Range Filtered

UDP

☒ UDP Output
☒ NMEA ☐ +Time Stamp
☐ CSV ☐ Head ☐ Delimiter
☐ Tagged ☐ GIS Filtered
☐ Scheduled
☐ Range Filtered

Output File

output.csv
[Set Output File] ☐ Rollover
[Set Shell Cmd File] ☐ Shell

Output UDP

[5.9.207.224] Client
[8235] Port

All Settings

[Open New]
[Save]
[Save As]
☒ Check for Updates
☐ Show Files
☐ Licence

Thursday, 24 January 2019, 10:30 AEDST – Port Cygnet, Tasmania

- Kathy raised the issue of not noticing that when engine room bilge was clogged on our last passage we heard no alarm from the big bilge pumps. Testing this morning revealed that the alarm was NOT operating. The alarm runs when power goes on in any of the two big pumps. Blocking diodes lead to the positive wire on the alarm. I tested the alarm. It worked. I checked that power was coming to the terminal (TB6-8) which leads to the alarm. At first it was not working. Then (laying on of hands syndrome) it started working. I hooked everything back up and tested the pumps and alarms by putting a wet paper towel across the sensor pads on the bilge controllers. Everything worked. I then tested the diodes after disconnecting the lead to the alarm. They tested GOOD in both directions. Now everything works but I DON'T KNOW WHY IT FAILED! I hate intermittent failures. It could have been a loose contact so I tightened everything and checked the ground lead to the fuse block (FB4).
- While I was doing this the S-2A LPG detector which controls the cooking gas went off, disconnecting the gas and raising the alarm. After a bit, it works again. Kathy's nose detected no leak. Could it be associated with my working on the bilge alarm near the SA-2? Well, it seems to be working again, maybe intermittently.
- Kathy has been attempting to deal with the oily mess spread up to the floorboards when the boat was heeled. This raises a number of issues regarding prevention and cleanup. While we will never have a dry bilge, somethings can be done:
 - 1) Replace leaky oil seals on main engine.
 - 2) Another high water alarm.
 - 3) Changes to the engine room bilge pump system.
 - a) A strum box.
 - b) A deeper sump.
 - c) A bigger foot.
 - d) A drain in the drip tray.
 - 4) Ability to connect a garden hose to pressure water system (including hot)
- Keith on *Dragons's Lair* was by and he is a marine engineer. His engine room is CLEAN and NEAT. I asked him about the water-using problem on the Perkins. I learned from him that the raw water pressure is less than the coolant pressure which means the coolant can exit the freshwater system to the raw water, but it is not likely that the reverse is true. Most likely there is an unknown leak (welsh plug?), that the pressure cap is leaking, or the coolant tubestack (heat exchanger insert) is leaky. We [replaced the original](#) and installed the spare; also a used item but it tested as good. Now we need to test it again and, if necessary, but a new tubestack. These are \$850, but I found one in Washington state for [\\$349](#). It is the last one they have and after that, no more.
- Important Action items are:
 - (1) Bilge
 - (a) Test the existing tubestack.
 - (b) Order new tubestack if old one faulty or as backup if not?
 - (c) Drain the drip tray.
 - (d) Get bigger pickup foot and possibly hose.
 - (e) Find and install another high water & oil alarm. Either by
 - (i) Pump overrun system.
 - (ii) Or float switch
 - (2) Gas
 - (a) Test hose behind stove.
 - (b) Check dates on hoses and regulators.
 - (c) Replace above as required.
 - (d) Fix or replace propane box.

Saturday, 26 January 2019, 06:45 AEDST - Franklin, Tasmania

The Honda genset started fine this morning but the 120v Inverter/Charger would not accept the power (yellow light was flashing; could hear relays clicking in the Inverter). So there is a problem in one or the other unit and it will have to wait until later for diagnosis. Batteries are low so now we will have to use the main engine. Bushfires are blocking the sun.

Saturday, 26 January 2019, 10:23 AEDST - Franklin, Tasmania

Consulted with engineer at Outback Power. The error logs for the inverter are found by MAIN→STATUS→FX→PG2→PG3→DISCON. Look for an error with YES. The error was “ac in voltage < min”. To check this we should look at 1) voltage from the Generator and 2) possibly lower the voltage input. I have lowered the minimum input from 108vac to 106vac.

The generator's voltage was measured at the generator and at the end of the cable which connects the generator to shore power. Measurements were without a load and with the load from a heat gun. All voltages exceeded 123vac. So there is either a problem with the inverter or a voltage drop between the shore power inlet and the inverter. Meanwhile we can use the 40A ProNautic 1240p charger to charge the batteries until we get some sunlight (Tasmania is burning and the sky is obscured from smoke).

We charged to 65% using the Honda set on ECO-Power and connected to the 40A ProNautic. At this point I swapped the Honda input from AUX (ProNautic) to MAIN on starboard. The FX2012 accepted the power and the charger kicked in. Voltage was 120.8.

Then I swapped to the port shore power inlet and again things are running fine. Either lowering the minimum input to 106vac made a difference, or something in the generator is running better. Admittedly the genset had not been run in the last 4 weeks.

Nevertheless, things are working and I'm reluctant to fix something that isn't broken. If/when the FX2012 won't charge or dies I can get a second ProNautic 1240p that to run in parallel with the first on.

I'll just keep an eye on this and remember the options:

1. Try Port is Starboard inlet isn't working.
2. Use the Honda with the 40A AC charger.

This will not be a problem. You can parallel as many Charging sources as you wish. Things to note:

Check with the battery specifications for the maximum charging current that they can accept. I think with 900Ah, you should be ok.

Make sure that all charging sources have the correct charging voltages/profile set for the batteries. once again check the battery specification.

Always make sure that any temperature sensors are installed for the chargers.

Make sure that your small AC generator can handle the current demand from the AC chargers.

Tim Coates
Technical Support (APAC)
T: + 64 9 414 1365
M: +64 21 456 857

Tuesday, 12 February 2019, 19:46 AEDST - RYCT Slipyard, Hobart, Tasmania

Forward Head Leak. Replaced cracked Whale ½" one-way valve in hot water line. We could not find our spare hose so I just shortened the existing connecting hose. After this the hot water would not flow in any direction at all. It turns out the design of the one-way valve allows the valve to protrude when pressure comes on. The shortened connecting hose allowed the valve to seat against the hose barb upstream so it was acting as a no-way valve and blocking under pressure. Discovering this took all afternoon as I checked behind the manifold and inside the mixer box. Lots of work and spewing water everywhere for what should have been a simple 15 minute (or less) job. There was also many minutes wasted searching for replacement hose. Fortunately the one-way valve was on inventory.

Thursday, 14 February 2019, 19:06 AEDST - Prince of Wales Marina, Tas

Today we left the RYCT and have come to the POW Marina. The log of the haulout is [here](#).

As we approached the marina I noticed that the Engine Water Temp gauge was at 240°F. Normal temperature is 180°F. We got into the marina berth and found, after the engine cooled, that NO water was visible in the heat exchanger. It looked completely dry. So tomorrow we begin with checking the tubestack in the heat exchanger. We also, clearly, need check why the temp alarm did not go off. It could be wiring or we need a new temperature switch, as they are generally set for 200°F and no alarm was set off. Another lesson is that with the engine not run for a while we should check the water level after a couple of minutes of run time.

The obvious problem was a tubestack failure, but testing at a local radiator shop showed no problems. Consulted with marine mechanic Peterson Cutter mate Keith and he suggested reassembling the heat exchanger, filling with water, and running the engine with the Rad Cap off. If lots of bubbles are coming out we might have a head gasket failure. I also suspect the other "new" situation is the removal of the header tank and relocation of the calorifier (hot water heater). Keith has shutoff valves on his calorifier lines. I could add valves onto the engine directly.

An external by-pass arrangement allows the fresh water to circulate within the engine until the temperature allows the thermostat to open.

Sunday, 17 February 2019, 07:14 AEDST - Prince of Wales Marina, Tas

The last two days were mucking about with the engine and prepping the boat for a few days cruising with Hasse, which starts tomorrow.

Two problems which need to be fixed have surfaced: the over-temperature hot water sensor is not functioning; no alarm went off when the temperature went to 240°F. It is possible that the location of the temperature sensor is too far off the block. A 90°C thermal switch or re-designing the attachment for the calorifier line might fix things.

The **Aqualarm paddle is also not working**. The "tower" which contains the switch was leaking where it was screwed into the base. I backed it off, used Loctite 567, and screwed it down until it did not leak. However this was too tight and the paddle was stuck. I have to remove it again, clean it up, and use a thicker hardening compound or simply glue it in with PVC. This would be a "permanent" solution and worth a try. No spare is available. (This problem was fixed using glue on 26 Feb 2019)

A new rubber flap valve on the main engine transom exhaust fitting was installed. I bought it new but it turns out we do have a spare.

Today I installed a 1" bronze ball valve to shut off raw water. The valve coupled to the bronze elbow on top of the sea water strainer with a Groco 1" bronze hex close nipple. I left the hose in place on its barb and screwed the barb into the valve as cutting and re-fitting the hose looked to be a big job. I think its fine but will watch it. There was a small leak where the old barb fitted into the valve. As it was screwed right up to the hex boss I could not tighten it anymore. The hose clamps were tight. It turned

out that **backing off** the fitting about 1/8 of a turn fixed the leak (for now). It could mean the valve body has a crack.

The vented loop for the exhaust water was opened up and inspected. It was working fine until the inspection and afterwards it leaked. A new R-18 O-ring (slightly fatter than the old one) was installed and the leak went away. I removed the clear plastic line that goes from the vented loop and is plumbed into the starboard deck drain. A nice flow comes out of the vent.

It was noted that the engine's exhaust water remained cold even when the engine was warmed up to 180°F and tested under load. I went to the transom and stuck my hand in the exhaust water. It was a powerful stream and quite cold. The heat exchanger is clearly very efficient.

To fully drain the Perkins I had to remove the 1/8" elbow under the oil cooler that is normally piped to a shutoff valve. The 90° street elbow always clogs with rust and is difficult to get to flow. A 45° street elbow would work better but I doubt it can be installed unless the oil cooler brackets are loosened up. It is possible a 45° elbow would allow a cleaning wire to poke up into the coolant jacket. This would be good as it is a TOTAL PAIN to have to remove the 90° elbow every time we need to drain the coolant.

The vanishing coolant is still a mystery and I'm going to have to "divide and conquer" to trace the problem. Oil is OK. Tranny fluid is OK. Tubestack was tested and is good. Now my focus is going to shift to the header tank and calorifier relocation. I have already noted that the calorifier is working as fresh hot water is available and the calorifier hoses heat up appropriately (first the supply, then the return).

Tomorrow we are sailing for 4 days and I'll just have to watch the temperature.

Wednesday, 27 February 2019 - POW Marina, Tasmania

The mainsail head was tested using a sailmaker's needle. It did not push through, so the sail is still GOOD!

Thursday, 28 February 2019 - POW Marina, Tasmania

- Removed Schafer flip-flop blocks from cap rail.
- Installed one of the flip-flops on Furling Line Clutch to replace Ronstan.
- Sanded down cap rail.

Friday, 01 March 2019, 18:16 AEDST - POW Marina, Tasmania

Completed the installation of the preventer line turning eyes on the cap rails. Here is the method.

Saturday, 02 March 2019 – POW Marina, Tasmania

The electric hot water element isn't heating the water very much. I tested the resistance of the hot water heater at 70Ω which is normal. Maybe thermostats are bad?

Thursday, 07 March 2019, 08:15 AEDST - POW Marina, Tasmania

Fixed new preventer line fitting on cap rail forward and also inserted bungee cord inside the Dyneema preventer lines along the boom. I have tried a new method of doing both these tasks. Note: Write up hardware bedding and bungee bury using new techniques.

I had an email exchange with Colligo regarding replacing the Dyneema (Dynice) Dux backstay. It was starting to look "fuzzy" so I was concerned. John Franta at first offered a wholesale price if I returned the backstay for testing. After learning there was no chafe possible he sent along [this chart](#). It was new in January 2013 so is only six years



old. It should probably be replaced at 8 years old in 2021. John wrote “If its just UV 2 more years is easy. Chafe keeps exposing new material and that make damage penetrate. Damaged material is opaque to UV so damage is less internally.”

Sunday, 10 March 2019, 20:06 AEDST - POW Marina, Tasmania

Placed new lug on #6 yellow ground wire that goes to refrigeration system. The old one was good but not very secure as the shrink tube had pulled away.

Monday, 11 March 2019, 15:34 AEDST - POW Marina, Tasmania

Removed and tested the engine temp switch and found it faulty. A replacement here in Oz costs \$65 so I'll get it from the USA for \$7.50 when Kathy returns. I just put it back in.

Thursday, 21 March 2019 03:33 UT

By pressure testing the engine coolant circuit I found a bad welch plug at the rear of the engine which was causing our ongoing leak. I also pressure tested the hot water heater and it is fine.

I changed the piping for the calorifier to project into the engine room which allows me to connect/disconnect the engine coolant water from inside the engine room which is better than having to remove everything from the lazarette. I have ordered 2 mini-valves (suggestion by Keith on Dragon's Lair) to put directly on the engine.



Sunday, 24 March 2019 05:41 UT

Cut 33m off the chain to get rid of rusty chain. Now have approx. 45m of better chain (with some galvanizing remaining) and 52m of rusty chain. The chain all looks good with no more than 0.2mm loss of thickness. The Standard is to tolerate a 10% thickness reduction. The colored wire tie markers were all replaced. The thinking was that we haven't anchored with more than 50m of chain since we left the Marquesas in 2008. For the cruising we are doing, that much chain was simply not necessary. By trimming the rusty chain back to the chain which still had some galvanizing we still had plenty of chain and could put off replacement or galvanizing for another year or two.

After the O-ring broke yesterday I repaired the ROK espresso maker from the repair kit. I replaced everything. It works beautifully.

Tuesday, 26 March 2019 23:13 UT

I have decided to NOT reinstall a header tank just yet. If I did it would simply be an “expansion tank” open to the air and just above the level of the filler cap on the heat exchanger. It could simply be the original header tank connected to the heater line before the shut off valve, and it is possible to put a sight tube in the fittings on the tank. The pressure cap on the filler cap of the heat exchanger should be a simple blanking cap so the coolant can flow back from the header tank.

Wednesday, 27 March 2019 08:05 UT

Today I finished re-installing the hot water heater. At first I had no resistance when measured through the 220v line and then I did. Mystery. It is working now. There is still a very small leak apparently from drain hose or pressure relief valve.

The calorifier hoses were re-routed to connect directly through the engine room wall to the hot water tank. This allows a LOT more room for the fresh water hoses and is no longer crimping the black rubber calorifier hoses. These hoses were replaced with Heavy Duty 5/8" hose. I had some difficulty getting the water tank to sit on the studs which hold it in place. I suggest enlarging the holes slightly. Getting the tie-down web ratchets is also difficult and their exact spot needs to be marked. The calorifier will have isolation valves installed later.

The temporary vent line for the Port Tank was also replaced and the draw tube pickup head needed 360° of additional tightening. I replaced all bronze barbs with stainless except for the nylon barb on the Port Tank Vent.

I'm running the 230v water heater element off the 230v inverter so I can see if it is working correctly. I see 770watts of AC power being used which is close (element rated at 700watts). LBCO for the inverter was raised to 12vdc as we are in the marina and still have a problem with shore power except for the AUX connection which is running the 40A charger.

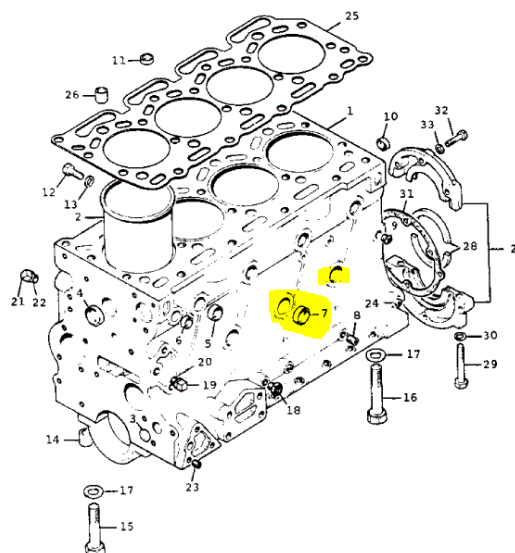
Friday, 29 March 2019 06:33 UT

Started on core plug fix. It is #10 in the diagram at right.

Removed the exhaust riser; disconnected at the engine and the waterlift swivel. The spin-on oil filter mount was also removed from the engine. Now I can reach the leaky plug without having to remove any oil lines.

I whacked on the edge of the core plug to get it to "spin" in the hole but I must have done it wrong because it just popped inside the engine and in trying to move it around it dropped down inside. According to the Internet this is not uncommon and generally doesn't cause any trouble.

The diameter is apparently 30mm and I'll install it tomorrow.



Saturday, 30 March 2019 07:01 UT



Using the Multi-Tool wire brush and scrubbing brush I cleaned out the hole. First I had to get the water out and I did this with a tube stuck wayyy down into the gallery and siphoned it out. I wish I knew where the actual bottom most drain plug was – clearly it is impossible under normal circumstances to drain everything. Using a socket and handle and hammer I was able to drive the 30mm plug into the hole. The hole and plug were coated with Loctite 243 (blue) Medium strength. Loctite 272 (high temp) might have been a better choice but I think the 243, rated at 180°C, should be fine. Everything is back in place and the engine needs to be flushed and tested. Then coolant can be added.

Sunday, 31 March 2019, 14:58 AEDST - POW Marina, Tasmania

I pressurized the empty cooling system on the main engine to 2-3 psi and, using soapy water, found a couple of loose fittings where the calorifier hoses connect to the engine. I added a clamp to one of them (they are all push-on fittings) but later realized the problem was the compression fitting was loose. I checked all the core plugs as best as I could and found no more leaks. I also greased the pressure cap as it is difficult to test with soapy water. As of now, with pressurizing to 3 psi, the pressure falls to zero in about 10 minutes. This is with just air in the system. It might behave better when the system is full of coolant. If a small leak is still present then perhaps a leak-stop additive would be beneficial.

Sunday, 31 March 2019, 15:35 AEDST - POW Marina, Tasmania

I filled the cooling system up with 11 liters of demineralized water and have run it up to operating temperature (180°F/85°C) which has oil pressure at 40psi and coolant pressure at 8½ psi. Coolant pressure after shutdown is 7psi. The following table shows slow pressure subsidence over the next hour.

TIME	PSI
15:35	7 psi
15:48	6 psi
15:57	5.4 psi
16:11	4.5psi
16:35	3.3psi

I think the coolant problem is fixed!!

The coolant now consists of demineralized water and “Tecktaloy Xtra Cool Gold” corrosion inhibitor concentrate. 1L for 15L of coolant. The demineralized water will keep down rust and scale and this is supposed to last about 3 years.

Tuesday, 02 April 2019, 16:44 AEDST - POW Marina, Tasmania

I fixed the reefing snap shackle on the gooseneck so it cannot bind when loose and the boom swings. I did this by grinding a bit of the outside and installing a clevis pin in the other (fwd) hole so it cannot rotate towards the mast.

Both Scuba tanks were filled at Eric’s AquaDive in Derwent Park. No inspection was necessary as I’m only using them for power tools and hookah.

I took the wheel off to see why it was not tight on its keyway. I flipped the key and it seem tight enough. I still should make a thicker spacer.

Thursday, 04 April 2019, 12:59 AEDST - POW Marina, Tasmania

Ran engine for charging and hot water this morning for 1:20 hours with NO LOSS OF COOLANT and NO LEAKS FROM THE HOT WATER HEATER. It appears installing the header tank again will not be needed. It was originally in place solely to raise the water level and prevent air locks when the hot water heater was installed above the engine. If anything is needed it will be either a coolant recovery tank. The new radiator cap is the recovery type and is rated at 10psi and the measured pressure in the engine was 8.5psi while running.

Wednesday, 10 April 2019, 10:32 AEDST - POW Marina, Tasmania

I bought a new computer for the boat. An Intel NUC 8i5BEH. It is loaded with 2TB of SSD space and is very, very fast. It’s tiny, and mounts on the nav station wall.

After final installation two monitors suddenly died at the same time. I think it might have been that the 2x2 Matrix switch which is a 6v powered switch may have gotten plugged into 12v. Or a power surge came along. Or something.



So... two dead monitors. I bought two new Samsungs 2 days ago but now get to return at least one because I just found out that the newer of my two old monitors is under 3-yr warranty with next-business-day advanced exchange from Dell. Wow. I also found an app that converts our ipad into a second monitor through a usb port. All very good.
I also found an app that uses the iPad as as primary or second monitor when wired up to a USB drive.

This means I can go portable with the NUC, using it like a laptop without a battery. So if I, for instance, go to the USA, I can take the NUC with me, use the iPad as the monitor, and bring travel keyboard and mouse. Not as convenient as a laptop, but do-able in case I leave the boat for an extended time.

My old laptop still functions, but is slowwwwww now that I replaced the SSD C: drive (which is now in the NUC) with a standard HD.

Saturday, 13 April 2019, 12:55 AEDST - POW Marina, Tasmania

Yesterday the teak cleat that supports the shelf in the refrigerator box pulled away from the wall. It was fastened with glue and brads. We emptied and cleaned the box. I pulled out the brads, roughed everything with 30 grit sandpaper and used JB Weld epoxy to glue it back in. The shelf, which is beveled outboard, served to hold it in place while it set overnight. The plate temp probe has pulled away from the plate and needed to be fastened down with insulation.

We bought 80L of diesel to partially fill the Day Tank so we can test the engine. Fuel was pumped into the tank directly from the EXT hose to DAY.

Kathy brought back two engine temperature switches rated at ON at 200°F OFF at 185°F. They were both tested (ON only) and one was installed and the other placed in inventory. I considered the possibility of installing two in parallel, but there's too much to do right now.

Saturday, 13 April 2019, 19:00 AEDST - POW Marina, Tasmania

Today I installed 316 SS inline valves on the engine to be able to shut off the calorifier circuit. This proved easy for the upper hose and very difficult on the lower fitting. It was not possible to put the valve directly into the engine and have clearance to attach the hose. The answer was to use 2 SS street elbows to move the attachment point for the hose compression fitting to a more accessible location. But, SS pipe fittings do not have the flexibility of bronze so one of them is looser than I like and the other much tighter.

Draining the coolant for the above job proved easier than I thought. Keeping the rad cap on blow into the upper calorifier hose until all the coolant is forced out of the small drain at the back of the engine. It amounts to about 10 liters of fluid.

Noted: the coolant system now holds pressure.

Noted: There is a very slow (1 drop/3 sec) leak in the Aqualarm flow switch that is dripping raw water about 1 drop/sec.

Tuesday, 16 April 2019, 07:10 AEDST - POW Marina, Tasmania

Attempts to fix the Aqualarm with JB Weld have failed. I plan to take it off the engine and either attempt to fix it again, or replace it temporarily with the Aqualarm on that is currently on the diesel generator.

I replaced the tiny bilge pump foot with a bigger strumbox, a Perko ¾" 29290-1020. It is just sitting in the bilge not fastened down and seems to work EXCEPT it is higher than the old foot so the pump cycles more frequently. I may need to raise the height of the sensor.



Attempts to remove the non-functioning Centek Vernalift for the Kubota generator have failed. I cannot access the bolts holding the bracket and the clearance isn't there to remove it. For now I will cut out the old one and then see how to insert the new one.

Tuesday, 16 April 2019, 13:48 AEST - POW Marina, Tasmania

Removing the old Vernalift by hacksawing the base off worked. The new Vernalift has a smaller base footprint and should fit, barely, into the space between the shaft and the stringer without having to cut the stringer.

We had an oil change glitch. While starting to pump the main engine sump the oil change pump stopped running. The fuse was OK and 12V detected at the fuse box. It is possible the switch or a connection is bad inside the switch box, or possibly it's the pump motor. **WRONG! THE PUSHBUTTON CIRCUIT BREAKER WHICH I FORGOT ABOUT HAD TRIPPED. 10A IS TOO LOW A RATING. IT HAS BEEN REPLACED WITH 15A CIRCUIT BREAKER.**

This is after changing the oil and bypass filters.

Our workaround was to unmount the pump head (an Oberdorfer bronze gear pump) and which is the same pump head on the fuel transfer pump. This pump is NOT reversible so we had to couple and uncouple the quick connectors to get the direction right. It seemed like we only could pump out about 7 liters of oil and it was thick and bloopy with air. We were concerned that there was less oil in the engine so we pumped it back in and ran the engine to warm it up again. This would have pumped dirty oil into the new filters. I hadn't thought of that. So what. We measured the old oil at MIN on the stick and then pumped it all out again. New 40W monograde was added. It took only about 9L to fill instead of the usual 10L but maybe that is because of the filters.

New A96 motor costs [\\$238.50](#), cheaper than Depco I'm sure. But first, troubleshoot the existing motor; maybe it's the switch, wiring, brushes.

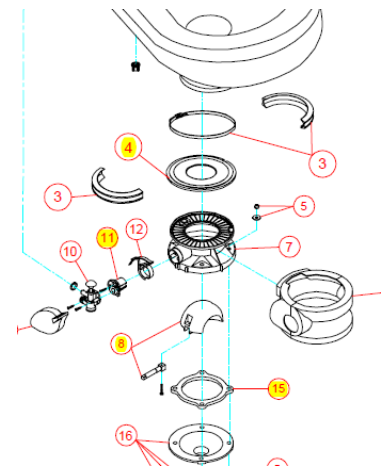
Another glitch is the failure of the cartridge return spring on the forward head vacuflush.

Thursday, 18 April 2019, 14:05 AEST - Copper Alley Bay, Tasmania

Kat & I worked together to repair the forward head Vacuflush with parts shown at right. Total cost was \$111.83

- 358311462 New Seals (4)) FISCO \$37.96)
- 358318162 Kit Ball/Shaft/Cartridge Kit (FISCO \$47.45)
 - New Spring Cartridge (11)
 - New Ball and Shaft (8)
- 358310063 Floor Flange (15) (\$26.42)

Noted for next major overhaul: disassemble all plastic toilet and vacuum pump parts and use [10% Hydrochloric acid](#) to clean.



Friday, 19 April 2019, 09:30 AEST - Copper Alley Bay, Tasmania

Oil Change Pump Motor is just fine. I had forgotten there was a push-button fuse on the side of the control box.

Saturday, 22 April 2019, 10:00 AEST – En Route Reidel Bay to Wineglass Bay, Tasmania

Lost autopilot. We used the dodge function to test the system and it would not drive the rudder to port, only to starboard.

Saturday, 23 April 2019 – Skeleton Bay, Tasmania

Lynton Blessington and Jeff repaired the Autopilot. We started by testing the motor and it seemed to work with a direct connection to 12v, but not work with the A/P on. We also checked continuity on the wires which was good. We attempted to isolate the fault by removing or swapping out components. We thought we had established the motor was OK and proceeded to swap the computer for the spare. The

computer has 3 buttons to check the computer + motor & bypass solenoid without the need for a control head or rudder feedback unit. Using the new computer we could not get any output on the motor drive wires. After establishing the backup was not functioning we re-installed the original pilot computer. We tested the manual drive function without RFU and Control Head and saw no response from the motor. At that point we re-tested the motor with a direct connection and had no response. At this point we chose to replace the motor and pump unit. The old oil in the pump head was black. The oil in the lines was the normal pinkish color. We think the oil could be burned. The next step was to install the new pump/motor unit and ran it from the test function on the Pilot Computer board.

At first it ran but would not turn the wheel. The cause of this was air in the pump head instead of ATF. I then remembered in order to get a slug of oil into the pump we turned the manually and it started to have an effect on the wheel. Then we went to the bleeding procedure to get air out of the pump and lines. The bleed mode was set with the bleed switch to manually open the bypass solenoid and the wheel turned many times to the hardover limits. Then we went back to run the system with Pilot Computer direct left-and-right buttons. At first we had to manually assist. Then we did the bleeding procedure again. Then manual on the computer. Then bleeding. Then manual ALL THE WAY TO PORT and left it. My assumption was the oil would be forced through the pump and air into the lines. Then bleed again. The bleeding was successful finally and we plugged in the Control Head and RFU and had an operational autopilot system.

The old pump/motor system needs to be sent to the Australian Octopus rep for refurbishment. THEY COULD NOT DO THIS. A NEW MOTOR WAS SOURCED FROM CANADA METALS IN BC.

Saturday, 27 April 2019, 03:19 AEST - Sellars Point, Flinders Is., Tasmania

Lynton B. and I installed the new Centek Vernalift muffler for the Kubota genset. The old one was too fat to remove without cutting it up with the Hackzall. The new one has a smaller, square base and it just managed to fit in without having to remove anything else (like the drive shaft connection). It was a fairly straightforward install. About 20mm of the input hose was soft and spongy so it was cut off.

Raw water and fuel valves were opened and the diesel started up after a few "I haven't been turned on for a year" sputters and then ran about an hour with no drama at all. Charging was perfect. The TinyTach is not working and the water temp gauge is offline. These shall be dealt with later.

Thursday, 02 May 2019, 01:38 AEST – Eden NSW

The Radar is not working.

The GPSMAP 1020xs chartplotter is not showing correct distance measurements. I will try setting the GPS source to internal instead of to the Vesper XB8000. Also note the chartplotter was rebooted a couple of times during the voyage which may have been part of the problem.

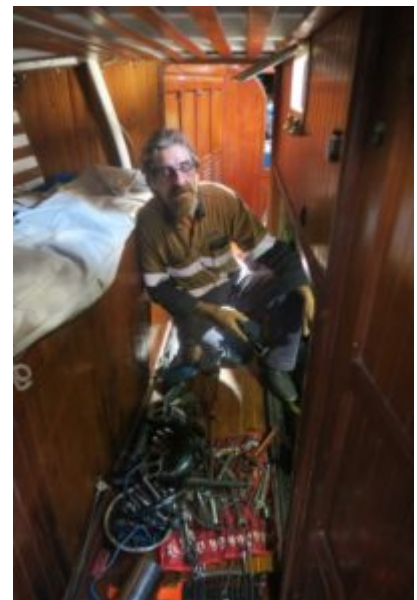
Thursday, 02 May 2019, 22:25 AEST – Eden NSW

Consultation with Phillip Mitchell, Diesel Tech, Eden (\$50)

- Pressure testing rig for coolant should be bought/built
- Suggested adding coolant recovery system.
- Noted oil usage. If > 400ml/100h then maybe consider repairs:
 - Valves (John V had this problem)
 - Rear oil seal
- Noted loose 1/8" 90° elbow was source of coolant leak.

This note from John Vallentine's website:

"I have found an excellent mechanic here on the Gold Coast – "Irish Pete", as he is known. He has taken control of our engine issues for us. He knows boats intimately and he's fast, utterly professional, inexpensive and completely at home with our Ford."



Pete's diagnosis of our engine's oil consumption problem – worn valve guides, stiff seals and poor valve seating – was made within 10 minutes of firing up the engine. Pistons, rings, liners and bottom end all OK. His diagnosis was confirmed when we got the head off.

Irish Pete has a mobile workshop and will travel all over the Gold Coast and Brisbane areas to work on board or on site. If you are in the Gold Coast area and need mechanical work of any kind, I can recommend Pete unreservedly. Indeed, I would come to him from anywhere on the east coast to get work done. His number is +61498 129 383.

And I must also make mention of The Boat Works, a shipyard on the South Coomera River near Southport. This is a wonderful place to get work done. The staff is genial, professional, cooperative and helpful and their prices are very reasonable. The yard provides a free courtesy car for you while you are there, and every yacht maintenance and repair facility is available on site. I haven't met a cruising yacht which is not fulsome in its praise for The Boat Works.

Friday, 03 May 2019, 00:13 AEST – Eden NSW

Drained coolant, removed the elbow and valve, and plugged the 1/8" NPT threaded hole in the aft end of the oil cooler. This will make it hard to drain but I've run out of easy-draining ideas for the engine coolant.

Tuesday, 07 May 2019, 00:09 AEST - Sellars Point, Flinders Is., Tasmania

Engine coolant loss is about 300 ml over the last 2 hours of engine run. This makes no sense as it had not lost much at all after replacing the plug in Eden.

Transmission fluid is also showing losses (which it almost never does) and it's way past time to change the ATF.

All other ATF problems were due to a flattened/worn O-ring in the shift lever assembly. ([See this](#))

Friday, 10 May 2019, 17:59 AEST - Quarantine bay, Sydney NSW

Yesterday I changed the start-up operation of the KubGen so the throttle advances to max when the glow plug is energized; it used to drop the throttle to idle.

Today the Kubota Genset was not producing full power. Disconnecting the alternator temperature sensor restored full power. Temp was checked with the thermal gun and temperatures are nominal. A spare alt temp sensor has been found and will be installed.

Also, after 42 minutes of run, the Kubota Genset died. Restarting was not a problem but it had a couple of "hiccups" on startup. Perhaps we are still getting some very tiny air leak.

Saturday, 11 May 2019, 20:58 AEST - Blackwattle Bay Anchorage, Sydney

Installed new aluminium 1L recovery tank. This works with a Gates 31348 Radiator Cap designed for coolant recovery and set at 7# pressure. The original cap was set at 10# pressure but the now removed header tank had a 7#



pressure cap.

Re-installed the engine room fire extinguisher. I was able to fix the auto-shutdown switch by inserting a piece of rod to replace the original.

The existing Aqualarm was fixed by loosening the hose clamps and rotating it until the leaking area was exposed. The area was sanded with rotary brush, cleaned with metho, and then JB Weld applied. Leak fixed. Spare Aqualarm ordered from USA is in stores.

I reset the SmartGauge to a status alarm ON at 70% OFF at 80%. The idea, for now, is to have the generator shut down automatically if we want to get off the boat early. Normally it drops below 70% overnight which enables the SG Alarm and sends a negative signal to the generator controller's AUTO STOP/START input. After starting it drops out at 80% which is normally about 35-40A of DC input to the batteries. This has worked.

Main Engine still has problems. Keith Ager suggests a possible head gasket leak (maybe from the overheating incident in Tasmania). Here is a list from NAPA of the most common indicators. We have none of them.

1. An external oil or coolant leak at the seam between the engine block and cylinder head is a sign that you have a head gasket failure or a cracked block. On disassembly, check for cracks and cylinder head warping.
2. Cylinder misfire is another sign of head gasket failure, especially if the breach is between two cylinders on the same head. Cylinder compression and leakdown tests can localize the leak for scrutiny on disassembly.
3. Misfire on startup, if accompanied by a puff of white exhaust, could indicate a leak from the cooling system into the cylinder.
4. Overheating is one of the less-obvious signs of a blown head gasket. Depending on the severity of the leak, you may see bubbles in the overflow tank, indicating that the cylinder is leaking into the cooling system.
5. Blue exhaust smoke could also indicate head gasket failure, but so could worn rings, valve stem seals or a faulty PCV system.
6. Discolored fluids are more subtle signs of a blown head gasket.
7. Coolant-contaminated oil takes on a frothy consistency; it's like finding a latte under your oil cap or in the valve covers.
8. Oil-contaminated coolant forms a mayonnaise-like film, which you might find on the radiator cap or in the overflow reservoir. (We noted some brown foam the other day).

Thursday, 16 May 2019, 18:54 AEST - Blackwattle Bay Anchorage, Sydney

It turns out the radiator caps we have are all for open systems. "You can use an open system cap on a closed system, but the coolant is taking a one way trip out of the radiator. A closed system cap allows the vacuum formed in the cooling radiator to draw the coolant back into the radiator. So when I ordered the "recovery system -> open system" that was wrong. The correct cap will be a Gates 31348.

Last night the steering wheel was so stiff that it felt the brake was on. We shelved the problem until this morning and, lo, the steering is almost normal. I have no idea why. We pulled the mattress out of the way so we could look at the quadrant and the autopilot hydraulic cylinder/

1. First the actuator was disconnected from the steering lever/quadrant. There was no change; the wheel was still very hard to turn.
2. The cables are in the right grooves on the quadrant.
3. Some water is leaking around the base of the steering shaft log.
4. There is a little bit of play in the cable the cable tension could fixed by tightening up the eyebolts. Only about 1cm of total thread is available for tensioning.

We had better check the whole system.

Friday, 17 May 2019, 02:43 AEST - Blackwattle Bay Anchorage, Sydney

1. Installed a new 16" monitor at the Nav station. It is an AOC I1601FWUX USB-C HD

1080x1920. It is bus-powered of the USB-C (“Thunderbolt”) port. Installation was easy once the proper drivers were installed.

2. The steering was much better this morning, but still kind of tight. After a trip to town it was tight again but loosened up right away. This is totally a mystery to me. We checked the cables in the aft head and tomorrow we will check the binnacle and cables in the cockpit lazarette. If the shaft is binding we have a very big problem.
3. In cleaning out the aft head to get to where we could see the steering cables we noted the aft head lid was up and the bowl was full of brown water. Why? It’s a mystery. We turned on the toilet fresh water and the bowl was easily pumped out and the vacuum generator seemed to be working perfectly.

Saturday, 17 May 2019, 27:38 AEST - Blackwattle Bay Anchorage, Sydney

All day was spent on fixing the steering problem. We loosened the cables and checked that the rudder seemed fine. The next thing to check was the binnacle and indeed the problem was there. The bronze shaft was binding in the D-Glide bearings that Modern Engineering had made for us in 2014. I don’t what had happened but we disassembled the entire system: chain, sprocket, throttle, shifter, and pulled out the shaft. We then polished it shoe-shine style with successively finer grits of sandpaper from 400 to 1000. We also cleaned out the two D-glide bearings. No grease was necessary so we left the shaft dry except for around the chain. The fuel lever shaft bushing was replaced from spares. All other bushings seemed fine. This seemed to fix the system and the wheel turns quite freely now.

It took several tries to get the steering wheel center to match the rudder. The chain was difficult to mark so we just had to trial-and-error the position until everything matched. The steering cable needed some slack to not bind up. The engine room steering cable sheaves seemed to have some wobble, so I took off one of them and noted that there was NO bushing in the sheave (I thought I had re-bushed them all) and that there was some oval-ling in the bracket. The sheaves are turning the clevis pin in the bracket and not rotating on their center. I think the whole system needs to be taken apart, new brackets built, and sheaves bushed. File that away for next year.

The Octopus ATF reservoir was low and Kathy topped it up.

Saturday, 18 May 2019, 10:08 AEST - Blackwattle Bay Anchorage, Sydney

Kathy re-set the fuel lever to start farther back then we had set it yesterday. After re-setting, it apparently now allows the throttle to go farther forward as we were able to rev the engine up to 2980 RPM; this is the redline for the Perkins. I’ve never seen it run that fast before.

We also re-instated the red LED strip (5 lights) that is on all the time if the fuse is in place. Power consumption across the fuse is .05A, or 1.2 AH / day. It could be wired into the NIGHT ONLY circuit.

Monday, 27 May 2019, 16:33 AEST - Wondabyne (Mullet Creek), NSW

We have arrived back in Wonderful Wondabyne.

Today we took apart the Octopus 1212 hydraulic pump/motor. The Lip Oil Seal is compromised between the pump and motor. It is wobbly (I don’t think that’s normal) and the motor was full of burned ATF. We cleaned it up and I suspect the motor will run. I have written Jonathan Ingente at Octopus to see what we can do. It is certainly feasible to replace the Oil Seal. (6/6 It is best to buy a whole new assembly @ \$552; Jonathan is sending a new lip seal so I can try to repair our defunct motor/pump.



Thursday, 06 June 2019, 17:31 AEST - Wondabyne (Mullet Creek), NSW

We received all our new Vacuflush parts and today we installed a new Dip Tube Assembly, new

bellows, new duckbills and new O-rings in the VG2 pump body. The Universal seal is also new. Note that removing the sewage intake to the vacuum chamber at the Universal seal (grommet) required looping a piece of webbing (sail tie works great) around the elbow and working the hose up and down.

While the pump seems to work OK and pumps a vacuum very quickly, the vacuum leaks out in 10-11 minutes.

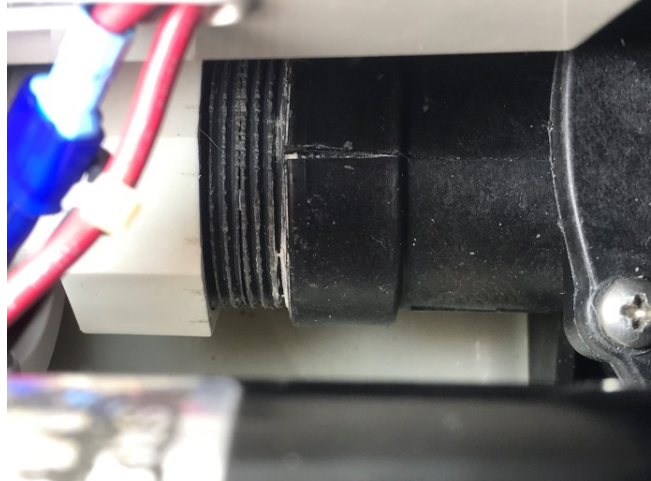
The toilet itself had a new seal installed a few weeks ago (which is when we discovered the leaking bellows) and it is holding water so the vacuum leak should not be from the toilet assembly.

There is a crack in the inlet of the pump body. I noticed this after installation.

A vacuum leak can only occur, I think, between the toilet seal and the inlet to the pump body. Leak suspects are vacuum switch (fairly new and O-rings look good), Universal Seal (new), Dip Tube (new).

I have asked [Marine Sanitation](#) if the cracked body could be the culprit.

If so, I'll need a new pump body, threaded plastic nipple and pump cover.



Another possible supplier is [Ardemco](#).

Friday, 07 June 2019, 08:37 AEST - Wondabyne (Mullet Creek), NSW

Submitted Documentation Renewal to USCG. 5-year document \$130.

Saturday, 15 June 2019, 10:55 AEST - RMYC, Newport NSW

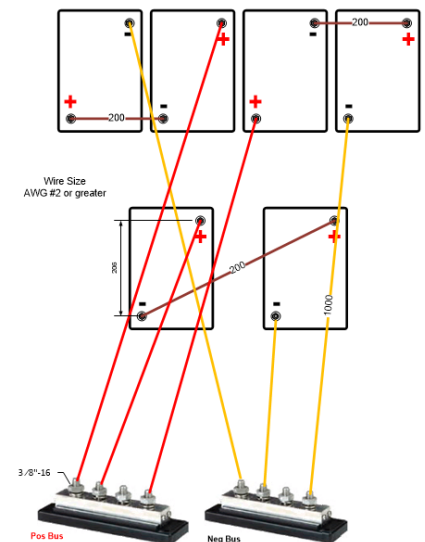
Yesterday was Installation Day for Battery Bank 6 consisting of 6 GPL-6CT-6V cells in a 3P2S configuration. Wiring was simpler because of reduced size and number of cables. We re-used some of the 2/0 connectors from the last bank as the short serial connector. We also installed new rubber beneath the batteries which was 550 x 740 x 1.5mm neoprene. Wooden blocks hold the cells in place but a positive webbing strap solution is needed for voyaging. KY-Jelly was an important part of the installation allowing the batteries to be slid into place. Work was done at the visitor dock at RMYC; we ended up spending the night there and “purloining” an empty mooring in the morning. It was quite a job moving 40kg battery cells, old and new, between Peter Blume’s truck and the boat.

The Smartgauge™ battery monitor was also reprogrammed to use Battery Type 1 (AGM/FLA). Alarm settings reset to 75 ON / 95 OFF.

Saturday, 15 June 2019, 11:15 AEST - RMYC, Newport NSW

We are still having intermittent stoppages of the Kubota Genset due to air leaks. I have no idea where they could be coming from, but there seems to be a relation with the engine. If the main engine is run first, then there are more air bubbles in the generator line.

This morning there was a funny noise (sounded like bearing or belt slippage). I have noticed the Gates cogged belts have small splits. When running, the belts look loose, but are tensioned correctly when stopped. I think what is happening is that the belts stretch out under load. I have 4 new belts on order



and should get them next week.

Tuesday, 18 June 2019, 06:15 AEST - Wondabyne (Mullet Creek), NSW

Kubota Genset not putting out any power.

This morning's readings were -306AH and 67%SOC. Charging with main engine. Found that a sense wire 1A fuse was blown. It was replaced with a 2A fuse. Everything looks OK but still no power from the Kubota Genset.

Wednesday, 19 June 2019, 09:11 AEST - Wondabyne (Mullet Creek), NSW

Refrigeration stopped working. It was drawing less than 15A while running and was not pulling down the freezer. This might explain the -306AH reading from yesterday.

I added 1 can (340g) of R134a and the system is now working better than ever. I do not know why the refrigerant has leaked out but I believe it is a VERY SMALL leak. The system was last recharged on April 8 2018 when a solder joint failed during installation of the new fuel tanks.

Wednesday, 19 June 2019, 17:03 AEST - Wondabyne (Mullet Creek), NSW

Today we organized and re-stowed the cockpit lazarette. I replaced the temporary hose from the rad cap to the recovery tank and also ran an overflow hose to the bilge.

Thursday, 20 June 2019, 19:27 AEST - Wondabyne (Mullet Creek), NSW

I fixed the problem with the Kubota Genset. After checking the regulator and alternator and all wires it turned out the push-button circuit breaker on the control box had tripped. That was all there was to it.

Kathy and Eugene checked the main sail, genoa, and both staysails and they are all good.

Saturday, 22 June 2019, 17:45 AEST - Wondabyne (Mullet Creek), NSW

The new Computer Power supply was installed today. This provides 19vdc for the computer and 12vdc for peripherals. The supply wires come from Circuit Breaker 3-13 on the main panel, now labelled "COMPUTER". The Stereo supply was moved to Fuse Block 5, terminal 9, 7.5A.

Eugene and Kathy removed the two starboard Cam Hatch frames and cleaned off all the butyl rubber and observed indications of water ingress around some fasteners. The lower right screw on the aft hatch had to receive an oversize screw. The butyl was filled in at the top of the inserts to avoid water collection.

The staysail whisker pole was put together by Eugene. There was a sleeve of Aluminium around the pole which Eugene removed with heavy instruments. It proved to be a cover for some serious gouging due to the pole against the former owner's forward shroud. Eugene cut the pole to 4m length. The end piece and adaptor (made earlier) was fitted and fastened with a single sheet metal screw.

Friday, 28 June 2019, 10:54 AEST - Wondabyne (Mullet Creek), NSW

The refrigerant leak has returned after 10 days. Again the system was NOT pulling down either box and the amps were only at 15. Bubble test was not successful. 350gm of R134a was added to get the refrigeration online again and a leak tester has been ordered.

Sunday, 30 June 2019, 17:08 AEST - Wondabyne (Mullet Creek), NSW

Eugene finished the whisker pole today. Much testing was involved with a final length of 3400mm. The best mounting solution was to have two sets of mast padeyes on each side of the mast. Another pair has to be ordered.

We also noted the port secondary winch was not working well. Checking this log revealed we are very bad and haven't serviced the winches since February 2016, nearly 3½ years ago. Kathy serviced it and she found a lot of corrosion on the bronze. It cleaned up fairly well and seems a wee bit noisier than its counterpart on the starboard coaming, but is functioning fine.

All winches will be serviced.

#	TYPE	LOC	WINCH	DATE COMPLETED
1	B32.2ST	Cockpit	Control Lines	05/07/2019
2	B40.2ST	Cockpit	Port Secondary	30/06/2019
3	B40.2ST	Cockpit	Starboard Secondary	01/07/2019
4	B40.2ST	Cockpit	Mainsheet	02/07/2019
5	B56.3ST	Cockpit	Port Primary	17/07/2019
6	B56.3ST	Cockpit	Starboard Primary	18/07/2019
7	B40.2ST	Mast S	Main Halyard	03/07/2019
8	B32.2ST	Mast P	Staysail Halyard	05/07/2019
9	B32.1ST	Mast P	Spinnaker / Genoa Halyard	06/07/2019

Jeff tackled the non-functioning Kubota Genset and has determined the alternator is defunct. He also installed a new alternator temperature sensor (the old one was dead) and replaced the old, cracked Bosch fan belts with a pair (not matched, but from the same batch) of Gates 13A0735 cogged V-belts. It's difficult to take them off and on because the generator sits so low. It is do-able. Also, the worm drive actuator to control the motor speed has stopped working. It likely needs replacing. (See Sunday below)

Monday, 01 July 2019, 10:43 AEST - Wondabyne (Mullet Creek), NSW

Problems with the Kubota Genset alternator.

Balmar Series 94 Model 94-210-12 210A s/n 11510910SS (Kubota generator)

Symptoms: No power being generated, no spark when field wire connected directly to 12V. No magnetic field detected with screwdriver.

Tested diodes: NO

Replaced Brushes: NO

Stator continuity: 3 leads tested as pairs all have continuity with resistance about ?Ω

Rotor slip ring resistance: 217Ω

Thursday, 03 July 2019 - Brooklyn, NSW

Today Kathy serviced winches, Eugene finished the staysail whisker pole project, and Jeff worked on the forward head.

The forward head job was major and messy. It is the one time I'm happy that I have lost my olfactory nerve.

The main purpose was to replace cracking white sanitation hoses running from the toilet to the Vacuum Generator and install a new pump body (the old one was cracked). The white hose seemed a bit brittle compared to the replacement hose. The interior of all hoses was completely free of scale. After around 20 years of use, this is amazing. It confirms my belief that fresh water is the key to keeping a sanitary system from having sclerotic pipes.

Rebuilding the pump was straightforward except no screws were supplied to fasten the pump top to the body. Documentation showed the use of wood screws but I chose to tap the pump body for #12-24 machine screws.

The toilet had to be totally removed to allow the floor flange to be lifted; this was necessary to extract the approximately 600mm x 1.5" hose that runs to the VG. Without the flange there is access to the short length of hose connecting the pump outlet to the PVC pipe that is the pump-out pipe that runs up to a siphon break and down to the exit through hull. There is a hose clamp that is only reachable through the hole in the floor. A small ratchet screwdriver with 7mm socket is required to release the clamp.

Hose lengths were cut slightly shorter to allow an easier removal of the pump or VG in the future. Since the pump rests between the output hose on the right and a hex collar on the left some distance needs to remain on the outlet hose barb to slide the pump forward giving clearance to remove it.

I also considered sawing through the PVC tube that runs under the floor in front of the toilet, putting a pipe-to-hose fitting on that, and using a longer hose from the VG to that fitting. It would probably be easier to remove the hose in future if that were the case, but this time I left things as they were.

Sunday, 07 July 2019, 17:26 AEST - Wondabyne (Mullet Creek), NSW

The alternator was not quite defunct. After it was totally disassembled ([see photos](#)) the stator and rotor were tested. Slip rings were not grounded (Good) and resistance was 475K Ω (Good). In this particular model 94 there are separate halves and both needed to have internal connectivity but no connectivity to the other sided. Tested Good. The brushes did not look right – one brush was shorter than other. I put everything together and tested the alternator on full field and it produced power. I then repositioned the Belt Buddy, adjuster arm, and relocated the 50mm main boss to the lower hole in the support posts. This allowed the belts to come off easily and also left room to tighten the belts properly. There was some damage to the main power cable insulation where the flywheel had momentarily touched it. All cables are now secured with wire ties.

The alternator ran well with the full field test, but then stopped working. No power was generated with full field or through the MC-614 regulator. The exciter wire tested good. My theory is that the short brush is not able to maintain its location in its slot because it is now too short. It's a mystery why it would wear out so quickly; the slip rings both look fine! New brush kits are on order (I'm surprised that I don't have one).

The throttle actuator was a simple fix. The Actuator Relay in the control box had slipped out of its socket. If it happens again I can make a wire retaining clip to hold the relay in place.

I will be slightly modifying the attachment to the actuator motor base. Look carefully at the two "ears" of the mount, I can see that it is actually well reinforced and a single 1/4-20 hex machine screw with a Nyloc can be used to fasten the motor to the mounting tab.

I believe I have found and fixed the problem with the stuttering Kubota Genset engine. A short length of 4.8mm (3/16") rubber hose runs from the injector pump to the injectors. This hose felt oily from diesel fuel. It was part of the original engine and painted blue; I thought it was a metal tube, but actually it is rubber. I did not have a length of the correct diameter hose so I temporarily sweated on some plastic hose and the engine starts immediately and appears to run without problems. I have not tested it thoroughly as I am awaiting new brushes to fix the alternator. I have also ordered the proper hose online.

Saturday, 13 July 2019, 17:50 AEST - Wondabyne (Mullet Creek), NSW

I finished the PVC mounting bracket for the AOC 15.6" USB-C monitor. It is such a terrific monitor. At 1920x1080 pixels it is the same resolution as the large 24" HP monitor. The quality of the display is superb. As it is bus-powered off of the Intel NUC USB-C port the entire computer system is running

off of 12v ship power. Amp draw is 3.5amps for the whole system. So cool.

Thursday, 18 July 2019, 17:02 AEST - Wondabyne (Mullet Creek), NSW

Kathy finished servicing all the winches today. The Winch Wench Wins!

Jeff finished the wood pieces which are part of the battery hold-down system. A 50mm ratchet strap is used to hold it all together.

The Honda generator is being fussy in charging the batteries. I checked the wiring behind the electrical panel and it is all good. It runs the heat gun just fine. Connecting to the port side shore power inlet puts NO power into the boat. Connecting to the Starboard side shore power inlet was only putting in about 50 amps and the volts were around 13.5vdc. I suspect the culprit is the FX inverter/charger. If the inverter is truly bad then the best solution (as long as the inverter works) might be to add a second 40W Sterling/ProMariner charger. This would be cheaper (as I already have one) and add redundancy.

Friday, 19 July 2019, 09:20 AEST - Wondabyne (Mullet Creek), NSW

This morning the Honda genset is working perfectly, charging with +90 amps. We'll see if the charger allows it to remain high when absorption voltage max is reached.

Friday, 19 July 2019, 11:14 AEST - Wondabyne (Mullet Creek), NSW

Nope. Honda first would not charge past 13.7vdc. It was turned off to allow Jeff to replace a battery lug on the number 1 battery. The cable had not been fully inserted. On re-starting the Honda Genset no power was coming into the boat. Testing with a heat gun plugged directly into the unit showed that this problem is in the generator.

Saturday, 20 July 2019, 10:17 AEST - Wondabyne (Mullet Creek), NSW

But wait, the Honda Generator now charging again. I spent some time check the FX status and charging configuration. It has a battery actual voltage of 14.5 while the Absorption voltage is set to 14.3. I think the sense voltage should be no greater than the Absorption limit. Could this be a problem in the FX?

Saturday, 20 July 2019, 16:24 AEST - Wondabyne (Mullet Creek), NSW

Both alternators have troubles. The white one will not create a magnetic field when energized. The grey bare aluminium one (the dual output one) has a magnetic field when energized, but is only producing about 20 amps and feels very hot when running. Possibly it needs its internal wiring checked.

Tasks

1. Disassemble the grey unit and check the interior. Check diodes, stator, and rotor.
2. Disassemble white unit and, first, look for continuity between ground and the exciter terminal.

Honda has totally stopped making power. I did hammer on it a bit, and it made power for a moment.

Sunday, 21 July 2019 - Wondabyne (Mullet Creek), NSW

Yesterday we disassembled the broken Honda and found no issues. All resistance tests were at higher ratings than in the manual by an ohm or two, but nothing really too far out. The unit we have, made from two non-working units, has slightly different wiring, notably a 5-pin plug instead of a 6-pin plug. We need to dig deeper into the unit, checking the alternator itself. It could be brushes or a loose connection to the stator or rotor.

Unexpected visitors arrived in the afternoon.

We are now down to the bottom of power generation as we only have the solar panels and the 50A small alternator on the engine. The strategy is to buy a 120A alternator for the main engine then move

on to repairing the big alternators and the Honda. If the Honda is dead it might not need replacing if we can get one of the 210A alternators working.

28 July 2019 - Wondabyne (Mullet Creek), NSW

Temporary Log 28 July 2019

I am still working on the current major glitches:

1. 210A Alternators on main engine and Kubota Genset
2. Death of my NUC computer

ALTERNATORS Series 64

I am calling the two alternators "Grey" and "white" for their case color. The rotor in the white alternator tests for open circuit across the slip rings. There is no magnetic field when energised, so the rotor is dead. When I was installing the new brush kit in the grey alternator I may have shorted something. At this point in time the alternator consisting of the grey rotor with the white stator will generate power under a full field test.

Unfortunately I believe that both the MC-614 and spare MC-612 are blown. They will NOT generate a field current. The flaw I see is that it is currently possible to run the engine and energise the regulator when the AC Generator Output Isolate Switch is open. According to the wiring diagram this should not occur as the Regulator Power should come from TB-G3 (red) and only show 12V when the Isolate Switch is on. The Regulator IGN is a red wire that runs to CON 3-1 and should probably be changed to a brown wire, or at least relabelled (when the computer is running again).

This week's tests and tasks:

1. Test and correct wiring so regulator ONLY runs when alternator is connected to the battery and only when the ignition switch is on. DONE! This is now fail-safe, But does not reset on eng. start. Correct this by connecting regulator ground to oil pressure switch NO.
2. Connect emergency regulator (Balmor ERS-P) to currently installed 210A regulator which has grey rotor/white stator. This SHOULD run. IT DOES.
3. Remove grey rotor and reinstall on grey stator. Test if this will generate magnetic field and run under ERS or full field test. DOES NOT RUN OK. MANY BAD DIODES? How did THAT happen. It was running fine on the main engine when I transferred it to the generator. The next day the diodes are testing OK, maybe I was just tired.
4. If the above runs OK I will need to order a new 64-series rotor.
5. If it does not run OK I will need a new 120A alternator
6. I will need at least one new MC-614 or MC-612 dual.

30 July 2019

What I learned today.

1. White rotor has open circuit between the two slip rings. There is no connectivity to ground on either slip ring. White rotor is apparently bad.
2. The MC-612 and MC-614 are both not working as they produce 0v on the exciter wire. The ERS emergency regulator does produce almost 12v on exciter but does NOT produce power on the grey alternator.
3. Grey alternator produces lots of amps on full field test. Grey/White alternator (white stator/grey rotor) produces power on full field test. Neither produces power on ERS.
4. The wiring to the regulator in the generator control needs modification so the IGN (brown) wire only energizes when engine starts running, the POWER wire (red) only energizes when the oil pressure rises. This could be done with either a relay or another NO oil pressure switch.
5. The grey alternator. Has now been reassembled and is back on the main engine, running fine.

(31 Aug) The final result of the alternator debacle is:

- Original “grey” 210A alternator is reassembled with new brushes and is working fine.
- “White” alternator has a dead stator which is awaiting installation.
- MC-614 regulator is dead and so is the ERS. **This** might have been caused by the wiring circuit which allowed the alternator to be excited when the GEN OUTPUT ISOLATE SW was open. The circuit has been redesigned so the POWER and IGN wires to the MC-614 are only energized when the power is on and the GEN OUTPUT ISOLATE SW is closed.
- To setup the regulator the BLEED momentary switch must be held down or the power bypassed to the regulator.

Intel NUC Repair

1. The NUC is going to be returned to Intel in Malaysia for warranty replacement because of the faulty audio jack. This could take a couple of weeks.
2. One last effort to rewrite the EFI partition. I need to definitively set the BIOS Recovery Jumper correctly and then load a new BIOS. I also want to get that EasyRE USB stick running and, if not, get a return. Their tech support insists that it be booted in Legacy mode, which doesn't seem to work with the Intel BIOS
3. In the meantime, until the new NUC and SSD enclosure arrives next week, I can use the Win10 installed on the 250TB SSD and get it up and running on the Dell XPS. Then I could at least have access to Visio, Office 2010 and my logs and data. Probably just insert the 1TB EVO SSD into the laptop (or NUC's backup drive). Perhaps a total export of the NUC C Drive is in order first.

Saturday, 31 August 2019, 16:38 AEDST - Wondabyne (Mullet Creek), NSW

It's been a month since I entered a log entry. Much has happened. Outside of the boat issues are medical issues; I have developed a “disorder” called PMR (*polymyelitis rheumatica*) which means all my muscles hurt to the point of near incapacity. Strong drugs (NSAIDS and PREDNISONE) are being taken to keep the skipper maintained.

The boat maintenance and repair issues addressed in the last month are:

- NUC computer had bad Audio Output and was replaced under warranty.
- I had to reinstall everything from the ground up. I did have an image of the C drive, but was not able to re-install that in the system drive (which is the M2.2 Crucial SSD). This took almost a week of re-installing Windows 10, tracking down configurations, reinstalling essential software (MS Office 2010, MS Visio, Adobe CS6, PhpEd, and many utilities). Also beating Windows 10 into shape with OpenShell and other internal setting.
- Sourced repair parts for “white” 210A Alternator (see above)
- Watermaker
 - Cleaned primary and plankton filter
 - Primed using pressure water from washdown pump. Connected hose to the input near the refrigeration water through hull.
 - Both pressure pumps are primed and do not leak. Clark pump shifts but no noticeable product water.
 - There is a small leak in the hoses downstream of the pressure pumps.
- Redesign of the AOC Monitor display rack. This is version 3 and will be totally fabbed at Croydon Industries.
- Stove Problems
 - Oven door spring broke.
 - Stove was removed and totally cleaned. Spring hook broken off completely. Repaired by bending a new hook. Note that the spring arms have a hole for a rod to be inserted so they don't retract and can be re-attached later. Oven door is then easy to remove. Note: The hinge arms (not retracting arms) MUST be inserted in an internal slot in the oven which is not very noticeable.
 - Noted new rubber gaskets are needed. Oven will not heat up with leaking gaskets.

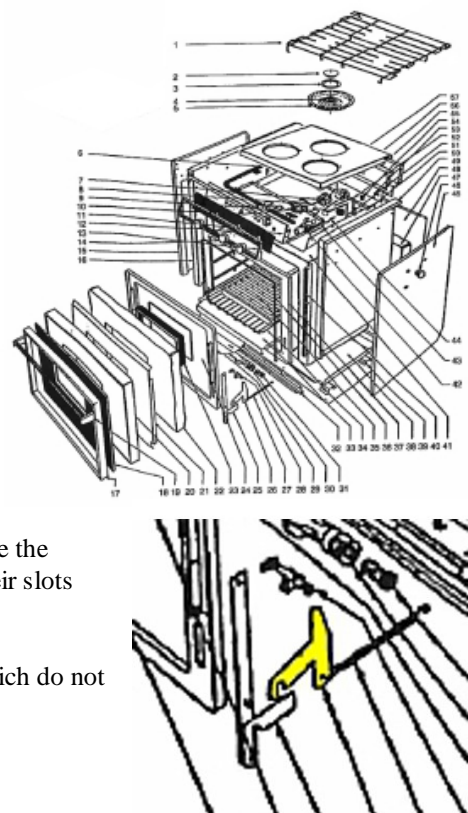
- Reinstalled stove after cleaning the location.
- The other spring broke after a week.
- Called SureMarine to get parts.
 - New gaskets (2 vertical gaskets, 1 top gasket).
 - Two new springs.
 - Todd advised that 99% probability that non-working gas ring is simply blocked at the exit.

Wednesday, 04 September 2019, 18:39 AEST - Wondabyne (Mullet Creek), NSW

Yesterday I took the white alternator to Niall's Factory and used his arbor press to remove the bearing, sourced a new bearing (62 OD x 25 ID x 17mm W), and then pressed it back in. Internally there are keeper bolts with fender washers. I replaced the washers as they were damaged removing the bearing. No Medium Strength Loctite was available so the keeper screws were re-installed without threadlocker.

The new oven parts arrived and Kathy and I removed the oven. The tricky part was getting the gimbals past the safety clips. I had to bend them in with a screwdriver, and bend them out again after re-installation. We used the 2" webbing ratchet attached to the overhead grab handle to lift the oven up and hold it in place while detaching the gas hose.

Of course we had to remove the grab bar and all hooks which were in the way. The oven was emptied of all racks and stowed cooking utensils. The knives were removed from the knife rack. The grating, the stainless surface, the burner caps rings were all removed. The companionway steps were removed. The oven door was removed. This is quite easy if procedure is followed: open the oven, put keeper pins in the holes in the spring arm, release the spring arm from the oven door, and slide out the door. The lower hinge arms fit into built-in slots inside the oven. When re-installing the door these arms **MUST** fit in their slots or the door does not hinge properly. See image at right.



All the panels come off with sheet-metal screws (some of which do not tighten very well).

Both springs were replaced with new springs.

New gaskets were installed on the oven door; they were needed. Perhaps the oven will get hot.

On the advice of Todd from Sure Marine Services I attempted to remove the gas pipe supply to the 3rd gas ring. This is totally frozen in place. I was able to use a socket driver to remove the orifice. I cleaned this with a wire. On re-installation the long-time-dead burner is now working.

Saturday, 07 September 2019, 17:29 AEST - Jerusalem Bay, Kuring-Gai NP, NSW

Radar glitch. I thought it might be in the Cat 5 cabling so I bypassed the RJ45 pigtail connector in Stbd Lkr 5. The Radar is now being seen on the GPSMPA but the display is weird, as if it was only receiving part of the signal, i.e. the Scanning display shows radial lines.

The Garmin GMI-10 display (at the Nav station) has been having data dropouts. The simplest solution was to connect it to the N2K Network which was done by replacing the 3 Garmin Tee Connectors behind the back wall of Stbd Lkr 4 with a single Ancor 4-way NMEA 2000 connector.

Unfortunately I discovered that the Vesper XB8000 AIS does not convert NMEA0183 wind data into the PGN required for display on the N2K network. I either have to directly wire the output from the wind sensor into the NMEA 0183 input for the GMI-10, or get the Actisense Gateway to convert the wind data to N2K.

Monday, 09 September 2019, 15:22 AEST - Jerusalem Bay, Kuring-Gai NP, NSW

Wiring done; Wind Data is going into the GMI-10. Since the Heading and Position Data is broadcast on the NMEA 0183 wind speed and direction, position, COG and SOG are all available without the chartplotter being on. The inclusion lists for the NDC-4-A were heavily modified to restrict the amount of circular data in the system. The wind speed on the NMEA 2000 network were jumping about as compared to the wind display on the GMI-10. Deselecting the wind PGN with the Vesper AIS Configuration tool seemed to fix that.

There is an odd glitch where the Data- from the wind sensor is not acting as a negative. The wind speed is now connected to the network via Data+ and common ground.

Saturday, 14 September 2019, 22:39 AEST - Wondabyne (Mullet Creek), NSW

The last mystery glitch is that the CruzPro RP30 NMEA 0183 repeater will no longer display the sentences. If it is, indeed, fried. These two sentences are on the system and detectable in the NDC-3-A output on COM4:

\$IIMWV,049.0,R,004.70,N,A*03
\$WIXDR,C,018.0,C,,*5B

I am not able to display wind speed or (what I normally display) the XDR wind speed output.

Today we also installed the final foot on the Honda EU2000.

The suggestion from CruzPro is that I have to be able to program a special custom sentence into the display. There is software from CruzPro to do this.

Saturday, 21 September 2019, 22:11 AEST - Wondabyne (Mullet Creek), NSW

We are looking at what mobile signals are available here in Mullet Creek. We put the broadband modem in a bag and hoisted it to the masthead. Here are our findings:

1. Normal connection to the transom-mounted 9db cellular antenna:
 - a. Boost/Telstra 2-3 bars
 - b. Optus No bars
2. On deck clear to sky, no antenna:
 - a. Boost/Telstra 2 bars
 - b. Optus No bars
3. Masthead, no antenna:
 - a. Boost/Telstra 2-3 bars
 - b. Optus 1-2 bars. 3 bars for a second.
 - c.

The next experiment would be to connect the modem to the antenna directly and see what the signal is on deck and up the mast.

The engine room Water Witch which controls the bilge pump was raised 6mm. This seems to have controlled the pump cycling, although it does raise the level of the standing bilge water.

Kathy started working on repairing the main sail cover and at the same time moving the patched INSIDE the cover and replacing the white thread which outlined the patches. A small thing, but appreciated.

Tuesday, 24 September 2019, 17:40 AEST - Wondabyne (Mullet Creek), NSW

Finally the new alternator is installed in the generator and produces power. The two older regulators are definitely bad and probably not worth sending them in to Balmar as they are not repairable.

The re-wiring has been done so that the regulator will turn on only when the battery is connected to the alternator and when the engine is running.

I disabled the automatic glow function on the Generator Controller; I don't see that the engine needs it at the temperatures we operate at.

A few things are left to be done:

1. The temperature gauge is not working
2. The Tiny Tach needs a cable hooked up and I need to find the connector wire that fits on the engine.
3. The Dattel Panel Meter for amps is not working. The meter is hooked up OK and both feeds from the shunt are both continuous with ground. The schematic shows 50mv shunt but that might need to be checked. **The problem is that the alternator ground is not isolated so a low-side shunt is not possible. I will remove the shunt, if possible. It requires a high-side shunt and I'm all out of Dattel high-side (DC4) ammeters. However, the existing alternator output display on the main Nav Panel should work, provided I fix the next item.**
4. **The GenRun TB7 6-7 terminals are not registering 12v when the generator is running. This means no alternator output is showing on the main panel. FIXED**
5. Once this is done, check that the refrigeration short-cycle relay is operating correctly. I might think about replacing the programmable relay with a voltage-sensitive relay to cut in at > 14v.
6. I think the 4 leads to the alternator regulator should be on a Ford-style plug to 1) avoid mixups when disconnecting them and 2) to increase their physical stability when connected.
7. The fan switch should be set to maybe 60° or 70°C instead of 50°.
8. An inline fuse of 20A needs to be inserted in the large red wire that comes from the starter lead to power the start circuit. I shorted this when last working on the generator and it is enough power to melt the ring terminal. On the other hand, I don't like inline fuses, especially over 20A.
9. Regulator Settings:
 - a. Cut back on startup delay to 5 seconds
 - b. Increase acceptance level by 0.1v or 0.2v

Kathy noted wear on the aftward 8mm Wichard D-shackle on top of the Harken block which services the mainsheet at the boom. Amazingly, we have no replacements.

Friday, 27 September 2019, 16:27 AEST - Wondabyne (Mullet Creek), NSW

Yesterday I determined it was not possible to use a low-side shunt with the Kubota generator. The alternator does not have an isolated ground and neither does the frame. When the ground cable to the engine is disconnected the alternator still has continuity to ground. I think the solution is to remove the shunt from the generator and the other ammeter running which has a high-side shunt on the total amps entering the system.

The Wallas diesel heater had an overheat alarm this morning. This also happened about 2 weeks ago.

Sunday, 29 September 2019, 16:59 AEST - Newport, NSW

This morning we left our anchorage to head to Newport. The BOAT check showed a dipstick with high oil level. When we have checked the dipstick over the past few months we have noticed slowly increasing oil levels. We have also started using coolant again, but can see no obvious leaks.

Today we motored in zero wind about 2.5 hours down to Pittwater.

We ran the engine for a few minutes at 2350RPM, as fast as it could go, to check the exhaust and noted NO smoke, a little carbon is all. 2350 is kind of a low redline but we might need to clean the air intake again as it clogs regularly.

At Pittwater we slowed down to pick up a mooring and the OP alarm went off; the OP gauge was also low; down around 20 PSI. The alarm went off at higher revs, but not at idle. This is, of course, a new thing as we use the engine every few days to make hot water and charge batteries.

We pumped out a litre of oil, very black and so sludgy that the oil change pump kept tripping its breaker. This happened briefly on our last oil change.

My troubleshooting book (Nigel Calder) suggests a number of possibilities; none of which sound good. The problem could be in the oil cooler, oil pressure relief valve, broken head gasket.

However:

If coolant were diluting the oil I would expect to see the dreaded “Chocolate Mousse”. We smell no coolant in the oil. It just is dead black.

Heating the oil with a torch produces no “popping” sounds from water being vaporized, so a head gasket leak is probably not the problem. The sludge is the key factor. So we have decided on doing a serious engine oil flush. The process is as follows:

FLUSHING

- a) Purchase 2 [Diesel Flush Kits](#) \$219.92 DONE
- b) Get empty jugs for used oil
- c) Buy 20 L (5 jugs) of cheap Woolworths Oil (\$85)
- d) Send a sample of the old oil to the oil tester to see if contains any coolant or contaminants.
- e) Drain nasty oil.
- f) Add new cheap oil with one flush kit.
- g) Perform engine flushing run
- h) See if that improves things.
- i) Drain oil
- j) Add second lot of new cheap oil with second flush kit
- k) Perform engine flushing run
- l) Drain oil
- m) Add new oil. 30W or 40W oil
- n) Total COST \$304.92.

Wednesday, 02 October 2019, 03:06 AEST - Pittwater, NSW

Running engine flush. It was a Mystery that no matter how hard we pumped the oil level did not decrease. Answer? I was pumping oil from the Kubota and not the main engine. It looked astonishingly black; which is amazing as the dipstick was honey colored. It was time for an oil/filter change anyway.

Glitches today:

- Oil change pump kept tripping but motor not warm. May need new or higher rated circuit breaker. FIXED. Upped breaker from 10A to 15A. The motor/pump is rated for that. The fuse protecting the line was upped to 20A.
- DECR function not working on Kubota Generator

- Accidentally emptied the Kubota diesel oil sump with 6 liters of fairly glunky black oil. It might be sludging up too. It hasn't run many hours but it has been sitting there a long time and any moisture in the sump could have caused sludge to form. It is only about 67 hours since the last oil change.
- Refrigerator short-cycle seems to have problems. Sometimes it works, sometimes not.
- Intermittent clanging side in engine. Suspect loose alternator fans.

Wednesday, 02 October 2019, 19:29 AEST - Newport, NSW

<http://www.cruisersforum.com/forums/f54/perkins-4-108-now-its-an-oil-pressure-problem-40423.html>

- Running first flush again. Oil pressure is 35 when idling and 40 when not idling. Running for 30 minutes to reach operating temperature and to re-flush the engine after an overnight soaking,
- Starting Flush Procedure. Bring engine to operating temperature of 180F
- First Flush. Cheap 15-40W fill with 8 litres + 1 litre Flush 30 min
- First Flush, repeat scrubbing run, another 30 min.
- First Flush, run to operating temperature before oil change 15 min
- Second Flush, 8L cheap oil
- 750ml Flush. Oil Press Alarm is going off at idle. Idle is 20psi, revs is 40psi. Trip to marina for water.
- 60 minute runtime from mooring to marina, get water, return. Boat power seems weak, hard to get the mooring rope in wind and close quarters. Oil alarm at low idle (750rpm) shows 20psi. Goes to 40psi with increased rpm beyond 1350.
- Immediately Drained second flush oil. Very hot (eng at 180F) and oil smokes when pumped into the jug. Smells of oil and Flushing Liquid. Doesn't appear to have any water.
- New Oil Bypass Filters Installed. These use 2L of additional oil
- New Baldwin BT216 Engine Oil Filter Installed
- Added what appeared to be approximately 14-15 liters of 40W oil from the yellow Oil Jug. If the capacity is usually 10L and we add an additional 4 to 4.5 liters for the filters, makes sense. Of course, we did not actually MEASURE what went into the engine. what went into the engine.
- The oil on the dipstick is now CLEAR! This is amazing. The Liquid Intelligence Sludge Remover actually has worked.
- Has it fixed the low pressure problem? This is not entirely clear.

Friday, 04 October 2019, 01:42 AEST - Pittwater NSW

Performed oil flush on Kubota Diesel with cheap oil and Liquid Intelligence flush. It looks very clean. We won't swap out the oil for new oil until we can get a new stock of diesel oil.

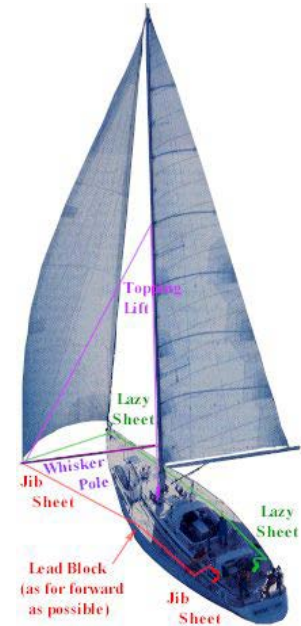
We have decided to drop back to 30W oil and have ordered 40 liters of [Fleetmaster SAE-30W Monograde](#) from Hi-Tec at \$100/20L can.

The transmission needs an oil change and a new O-ring. O-rings have been ordered from [Hale Marine](#) in USA.

Saturday, 05 October 2019, 17:34 AEST - Pittwater NSW

Up and down with the staysails. We do not have the proper sheet lengths now that we have a proper whisker pole for staysails. Trying to raise and deploy the Hasse Staysail (as opposed to the Pineapple Staysail) showed that we need a topping lift and foreguy (see below on using the lazy sheet as a townhaul/foreguy) for the whisker pole deployment. When using the big spinnaker pole we use the staysail halyard as a topping lift. When flying a staysail we do not have a good topping lift rigged up; we have to use a spinnaker halyard. To rig a dedicated staysail pole topping lift could be expensive.

1. Duplicate the system that the staysail halyard uses. Run the line up to a turning block attached to an eye above the existing staysail halyard; then through an exit plate on the mast; then internally to an exit plate above the winches on the port side of the mast. A line clutch would be nice at that point. Cost: \$130 for line clutch, plus custom padeye. Also have to work up the mast to install and cut exit hole.
2. This uses more line but is easier and cheaper: use the existing spare halyard sheave, run the line down to a heavy halyard restrainer about ½ meter below the exit to get it below the furler, then exit the mast on the port (or starboard) side. Cost: US\$75 for the restrainer plus 35m of line. The line can be 8-10mm.



This from [Forespar](#)

Rigging the Whisker Pole

Whisker poles do need a topping lift to support their weight, especially in light air. Gravity will pull them down and aft on the jib sheet if not supported. The topping lift keeps the pole level and allows for better sail shape. If you do not have a specific pole topping lift available, use a staysail halyard or second jib halyard. Spinnaker halyards can be used briefly, but as they exit above the headstay and outside the fore-triangle, they may chafe on the headstay if used for long periods of time.

Usually, you do not need a specific fore-guy or after-guy. By moving your jib leads as far forward as possible (even athwart ships of the mast) this will give the jib sheet a sharp angle up to the pole and help keep it from "skying" or wanting to rise or lift in the puffs. By taking the "lazy" sheet and turning it on a forward deck cleat-don't cleat it off, just use the cleat as a turning block-you can then take up load from the cockpit. This will help keep the pole down and forward without the need of rigging another line.

If the pole is to be flown for long periods, then a pole after-guy and fore-guy should be rigged separate from the sheet. There are very good reasons to do this. First, if the pole is being used in trade-wind conditions, squalls are likely, usually at night! Second, if the pole is set with the sheet allowed to run freely through the outboard end, the after-guy is holding the pole back, the fore-guy is holding the pole down and forward and the topping lift is holding the pole up, you can furl up the jib at will without ever touching the pole or having to go forward. The pole is secured so you can concentrate on the main, the mizzen or any other gear flying about until the squall passes. Then simply unfurl the jib and you never have to touch the pole. This system worked well on a 2300-mile passage to Hawaii.

Whisker poles should be flown with the jaws facing down. When taking down a whisker pole, the jib sheet usually wants to drop down-and-out of the end fitting. Spinnaker poles are flown jaws facing up, as the spinnaker sheets usually want to lift up-and-out of the end fitting. The pole won't know the difference but you may find it easier to set and take down with the ends in the proper orientation.

Monday, 07 October 2019, 21:38 AEST - Pittwater NSW

Discussion about Diesel Engines with Frank Tull(0458264303) regarding our diesel:

- 1) Oil pressure loss is due to high resistance in oil filter.
 - a) Replace or disable filter with high micron / lower efficiency filter, e.g. Fleetguard.
 - b) Check that oil is actively splashing on top of the valves (remove oil cap while running)

- c) Add small pressure valve to accurately read direct pressure.
- 2) Last resort on old engines is “Lucas” product. I don’t have the exact name. He called it “The Last Hope”. He stocks it. Also see Lucas [HEAVY DUTY OIL STABILIZER](#)
- 3) Testing the injectors the easy way:
 - a) Put a spanner on the engine and crank with 2 fingers. If it will crank, then there is no compression.
 - b) If there is no smoke and no rattle then the compression is probably OK.
 - c) Compression test by professional costs \$500.

Thursday, 10 October 2019, 01:38 AEST - Pittwater NSW

Oil analysis of the main engine oil came back with 8.6% diesel dilution. Greame Vivian from Oil Test asked if the engine was “making oil”. Indeed it has been as the oil was a good 1L above the dipstick.

This is very bad. Diesel gets into the oil in one or more ways.

What can cause fuel dilution?

1. Dirty or leaking **fuel** injectors.
2. Excessive idle time.
3. Incomplete combustion.
4. Low **engine** temperatures.
5. Frequent short-trip driving.
6. Worn piston rings/excessive blow-by.
7. Leaking seal in CAV injector pump
8. Leaking diaphragm in lift pump.

This dilution problem could have occurred anytime between our departure from Hobart in April to now. Total engine hours in which this problem could have been happening is **78.2**.

Diluted oil doesn’t properly lubricate and this increases the possibility of damage to the bearings.

This from AmsOil:

Acceptable fuel dilution limits

- Up to 2.4 percent in gas engines
- Up to 3.4 percent in diesel engines

Why is fuel dilution a problem?

- **Reduced oil viscosity interferes with formation of a durable lubricating film**, inviting wear. It also negatively affects the oil’s ability to function as a hydraulic fluid, which is critical in engines with variable valve timing
- **Fuel can wash oil from the cylinder wall**, causing higher rates of ring, piston and cylinder wear
- **Reduced effectiveness of detergency additives** limits the oil’s ability to guard against deposits
- **Increased oil volatility** results in higher oil consumption, requiring more frequent top-offs
- **Accelerated oxidation** reduces the oil’s service life and requires more frequent oil changes

Thursday, 10 October 2019, 22:14 AEST - Wondabyne (Mullet Creek) NSW

Oil change day: complete oil change for Kubota Generator (including new oil filter), Honda outboard, and Honda EU2000i generator. Minor servicing on outboard (grease, Inox of bolt heads, check gear oil). Oil looked good in all engines.

Attempted to install new filter on main engine on advice from Frank Tull in Newport. He thinks low oil pressure due to Baldwin BT216 filter is too fine. We purchased a new Silverline OF35SL which supposedly will be better.

Friday, 11 October 2019, 22:14 AEST - Wondabyne (Mullet Creek) NSW

Replaced Baldwin Filter with Silverline. Oil pressure is more stable, but still less than 40PSI on gauge. According the gauge o.p. is around 30PSI but does not drop when warm and idling. Certainly it is possible that the gauge is inaccurate. A screw-in oil pressure gauge has been purchased which will definitely be more accurate and will be installed in the aluminium oil manifold on the starboard side of the engine room.

Tuesday, 15 October 2019, 21:21 AEST - Wondabyne (Mullet Creek), NSW

Monday and Tuesday much of the day spent on the Kubota Generator trying to fix the malfunction where the DECR button is not functional. I traced every wire and connection that was relevant:

- Actuator motor OK; runs in both directions. Swapping leads proved that.
- Voltage appears correct at connector to the Actuator motor.
- Rewired the GC-4 connector. All seems OK.
- Replaced dead BLEED switch.
- Tested the HI and LOW limit switches. All good.
- Bought new MOTOR and ACTUATOR relays. This did not solve the problem.

At the end of the second day it started working. Adjusting the DECR did not work at the remote panel, however. In the morning the DECR was not working again. I disconnected the remote connectors but the problem remains. I think it is a grounding problem.

These problems remain:

1. DECR still not working.
2. Temp gauge not working; suspect sender or possible bad wiring on the remote panel.
3. Need to remove superfluous shunt.
4. Tachometer not connected.

Sunday, 19 October 2019, 20:44 AEST - Newport, NSW

Added 1L *Liquid Intelligence 218 Injector and Valve Purge* to try to solve the diesel fuel dilution problem. The mix is 1L of this product to 100L of diesel. We pumped enough diesel out of the day tank to allow the proper mix. Engine hours were 4479.5

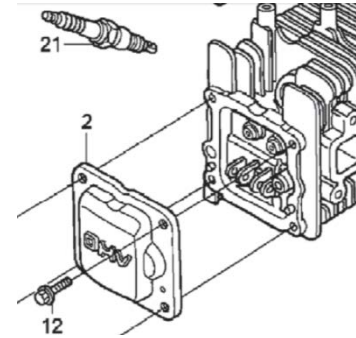
Tuesday, 21 October 2019, 20:44 AEST - Newport, NSW

We installed a proper 0-60 psi pressure gauge to monitor the main engine. Observations are that under normal operating RPM the oil pressure is at 36psi. At idle it can (not every time) drop down to 22psi, where the alarm switch goes off. We are now running with a fairly new oil change of 40W oil.

Monday, 21 October 2019, 20:46 AEST - Newport, NSW

We repaired the main sail and added telltales made of black yarn. Double telltales did not work so we snipped off the second arm of yarn. The stickyback repair was on the third batten from the top where some wear had appeared on a previous application of stickyback. No wear was visible on the sail itself, just a dirty rub mark. We suspect the cause is when the sail lays down on the upper spreader, unless it's reefed. We should watch this on the next voyage and make sure it doesn't happen.

The Honda outboard is leaking oil excessively and it drips down the ventilator grille at the aft of the engine. Both Kathy and I remember this being a problem on a former Honda BF2D outboard, probably the third one. Servicing on the current outboard in May 2017 shows a diagnosis of leaking rocker cover (head cover). The Head Cover is steel and had rusted out. He almost convinced us to buy a new outboard as the cost of disassembly just to get to the Head Cover was as much as a new engine. The part, [12311-ZW6-010ZA Cover, Head *NH105*](#) (#2 at right) cost only \$12. Since I was willing to deface the motor cover and CUT OUT the grille, it became easy to install a new valve cover. Oddly this event is NOT recorded in this log as I must have forgotten to write it down.



Loctite SI-587 Blue Maxx gasket maker was used to seal the cover in place. I could not find a valve cover gasket

Installation of the support and sailbag for the ready-to-deploy mounting of the trysail is going forward. The webbing that supports the sail and sheets is done. Keddar track has been installed on both sides of the mast which involved relocating the lower cleat on the port side of the mast below both winches. I kept all the screws installed for the backing plate so the strenght remains. The relocated cleat does not have any backing plates, but it should be plenty strong for now.

Saturday, 26 October 2019, 22:15 AEST - Salt Pan Bay Mooring, NSW

Thursday & Friday were occupied travelling to RNS Hospital for vitrectomy on left eyeball. There remains a gas bubble that is very annoying as it looks like it's on the BOTTOM of my field of vision because of the image inversion of the eye. It should be absorbed in a few more days.

Saturday, 26 October 2019, 22:15 AEST - Salt Pan Bay Mooring, NSW

I have installed and configured a [GL-MT300N-V2 "Mango" Mini Router](#). This device can serve a number of purposes; including being in a hotel room or visiting someone and needing only to connect the Mini Router to the LAN and having all other devices connecting via the Mini Router.



I primarily bought it to have a connection to USA servers using a VPN while keeping the VPN invisible from our iPhones and iPads; that way we can access USA (or other) region-locked content without location-based restrictions.

Sure, you can use a VPN on iPads and iPhones, but the streaming content providers can see that and restrict the content anyway. I pay for my subscriptions so I find it frustrating to not be able to use them outside of specific regions, e.g. the upcoming Season 4 of "The Expanse" on Amazon. I also sometimes have issues with shopping sites (Apple, Amazon, and eBay), banks and other financial institutions when trying to use my USA accounts; in addition there is the general privacy issue. I wanted a VPN solution which was invisible while still using the cheaper VPN services.

As shown in this diagram, the Mini Router connects to the SVBEATRIX3 Mobile Broadband Router (which is the primary connection to the Internet via the mobile network) and the WLAN Clients (PC, iPads, iPhones, etc.). The OpenVPN Client is established on the Mini Router and can be turned on or off with a sliding switch. The Mini Router has a very good interface and good documentation for setting up the unit.



The Mini Router costs about US\$20, weighs only 39g and uses < 2.75W of 5vdc power (less than ¼

amp @ 12v). As it will probably be powered up all the time, along with the Mobile Broadband Router, (which is the primary connection to the Internet via the mobile network), low power consumption is important. The mobile broadband router has a battery so consumption is hard to determine, but it appears to be ½ amp or less. I generally leave that on all the time as well.

Power to both the Mobile Broadband Router and the Min Router are supplied by a 12vdc to 5vdc 15watt power supply, available online. These can be bought with dual USB outlets to power both units at once. (On order)

Meanwhile, I have discovered that GL-Inet makes a Mobile Broadband Router; the [Spitz \(GL-X750\) 4G Router](#) (buy with the EP06-E module for Australia). It costs [A\\$212 in Australia](#) which is comparable to the USA price. This router will connect using an internal SIM and replace both the existing Huwaei router and the “Mango” Mini Router. If I also get a MIMO dual-antenna setup this could increase both speed and range in marginal service areas.

Tuesday, 29 October 2019, 17:02 AEST - Salt Pan Bay Mooring, NSW

Preparation for trip to Sydney from Dal’s mooring in Salt Pan Bay, Pittwater. Noted new oil level just at MAX mark which is slightly (3mm) below what’s it been showing, encroaching on the spring.

During the Pittwater to Sydney trip the Autopilot locked up twice and needed the power cycled in order to operate. The control head would not shut down, but the AUTO mode was not engaged, even though AUTO was visible on the display; i.e. we could hand steer until the power could be switched off and on. In one case I was trying to adjust the rudder response without consulting the manual and the second time I was trying to shift to WIND mode. Each of these incidents involved me fiddling with the setup. I have no idea why these glitches occurred or whether the problem is in the control head or in the A/P computer.

Wednesday, 30 October 2019

Jeff completed construction of the sun cover for the trysail. Kedder tape is sewed on each side and the tape slides easily into an aluminium [sail track](#) (annex track) on the mast.

Thursday, 07 November 2019, 03:20 AEST - Manly Beach, Sydney NSW

Last week: spent a whole day trying to install new parts in the computer to no avail. The daughter board I bought for the NUC is for SATA SSD hard drives and the new Intel 2 660P 2TB drive is a PCIe drive. The NUC itself can take either style of SSD. I might be able to install the 2TB drive in the NUC and partition it into 1TB drives. Right now, though, there is something going on in the BIOS. To reset the UEFI boot I had to reset the BIOS to factory settings. This is also a possible solution to getting the NUC to recognize the new drive. **INTEL IS REPLACING THE SSD**

I also installed a new 12-to5 vdc power supply with two USB sockets. This is in the network panel and powers both the Mini Broadband Router and the Mobile Broadband Router. It is wired into 12v on the panel.

Much tidying and cleanup are being done.

Today I thought out the plan for testing the Lift Pump and tried it on the spare pump, which tested OK. With the Lift Pump removed gently tap a couple of threads ¼” NPT tap; just enough to screw in a 0-60PSI pressure gauge using lots of Teflon. Operate the lift pump to get 4-6 PSI and hold thumb over the inlet to keep the pressure in. Use some soapy water to check for leaks. The pressure should hold if the diaphragm is sealed.

Saturday, 09 November 2019, 23:11 AEST – Onions Point, Sydney

Removed lift pump as set out in [this entry](#). Testing both lift pumps. The one OFF the engine is failing its test as it shows some leakage of air over 10 minutes. It is totally unpressurized over 20 minutes. It

might be a problem with the test rig. It is possible my re-threading wasn't good enough on this particular pump. There is NO air leaking on the pump that was already on the engine. This suggests that the lift pump is NOT the source of diesel dilution.

Thursday, 14 November 2019, 17:42 AEST - Onions Point, Sydney

While the oil cooler was loose I was able to install a 90° street ell in the drain plug at the bottom of the oil cooler. A 45° ell would have been better as the 90° elbow tends to accumulate a fallout of rust from the cooling system, but there is no way to put this in without also removing the lower oil line. The coolant, however, seemed pretty good. We lost a couple of liters of coolant mix when draining with just a plug so I hope this will work in the future.

The original lift pump was fine. The "replacement" lift pump was not. I will need to order a new one from <http://parts4engines.com>. Meanwhile it took a few days and lots of diesel in the bilge to get the [lift pump re-installed](#). This included having to buy a copper washer for the banjo fitting; this took several hours from where we are now located. I have ordered a box of assorted copper washers so there are spares onboard in the future. The old gasket was broken and the new gasket went missing so I used Loctite 587 "Blue Maxx" gasket maker to make a silicon seal which seems to work fine. The new gasket turned up the next day, of course. I used a 1" webbing ratchet to help lift and hold the oil cooler while aligning the 1¼" hose connecting the heat exchanger to the oil cooler.

Once everything was fitted back together I cracked the banjo fitting to let air bleed out of the line. The engine started right up; no bleeding was required!

After discussion with Peter Mahew of Liquid Intelligence we ordered 1L of [LI 229 Injector Pump and Seal Fix](#) at A\$107. This product is a bit messy to use but requires 48 or more hours to soften and rejuvenate the seals. It expensive but definitely worth a try as the next step would be to rebuild the CAV pump. There is a [repair kit](#) available for A\$33.21 which is cheap but removing and disassembling the pump would be a nightmare. This is a job best done with the engine out of the boat.

Thursday, 14 November 2019, 20:26 AEST - Blackwattle Bay Anchorage, Sydney

Replaced broken dinghy clip from spares. Clip was broken by accidentally dropping one end of the dinghy which twisted the clip.

Friday, 22 November 2019, 04:12 AEST - Blackwattle Bay Anchorage, Sydney

Engine Maintenance continues. We have 15 hours on the engine since starting the Injector and Valve Purge. Our new trial is to use the above *Injector Pump and Seal Fix* which must be mixed 10:1 with fresh diesel. We should separate the day tank diesel with the Injector and Valve Purge in it and use the clean diesel currently offloaded into a bucket. I think we can use the fuel system External supply/return hose to do this job.

Saturday, 23 November 2019 – Onions Point, Sydney

Using the fuel system External supply/return feature to inject the Seal Fix worked brilliantly. I used clear water hose on a Quick Connect fitting to plug directly into the External port. The clear hose let me see any bubbles (there never were any). Not only did we not have to bleed the engine, we did not have a huge mess from trying to get the Seal Fix into the injector pump. The precise method is on the next page.

This would also be the a way to measure the fuel consumption at varying RPMs since the level in the bucket represents NET fuel burned because the bucket is both the fuel supply and return.

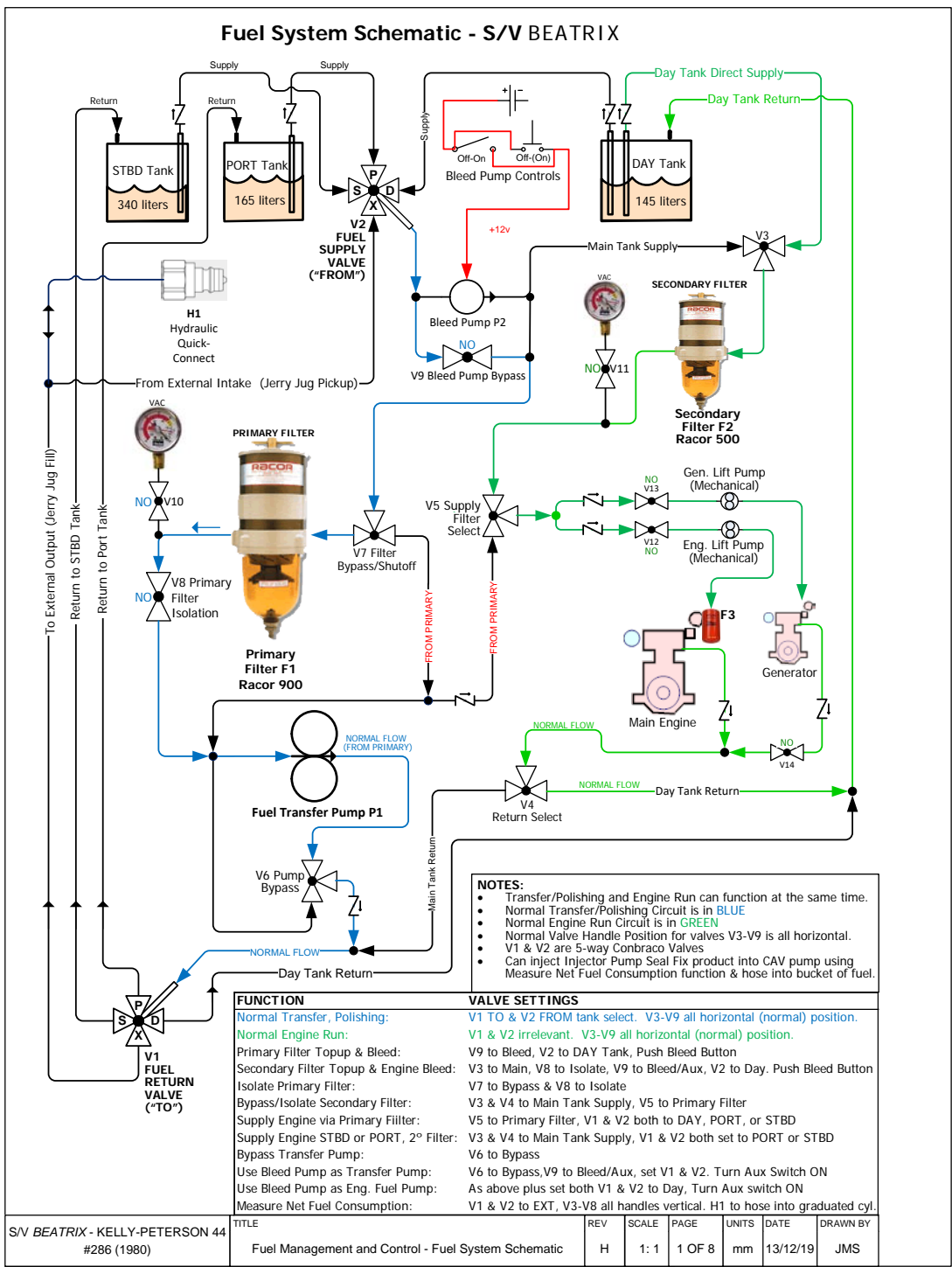
INJECTOR PUMP SEAL RESTORATION METHOD

[LI 229 Injector Pump and Seal Fix](#)

1. Rig the external supply/return Quick-Connect connector with a short hose into a bucket.
2. Set fuel system valves V1 (TO) to EXT and V2 (FROM) to STBD.
3. Use transfer pump to fill bucket with 6L of diesel.
4. LEAVE HOSE IN CONTAINER BELOW FUEL LEVEL.
5. Mix the 600ml of Seal Fix with the 6 liters of diesel fuel in the container. Hold back 400 ml in case there is a need later.
6. Set V2 to EXT, V2 to STBD, V3-V5 All to vertical (off or bypass). V9 normal. Run 15 minutes to charge the injector pump with Seal Fix by allowing fuel to run from the bucket through the engine to the STBD tank.
7. Set fuel system valves V1 & V2 both to EXT.
8. Start engine (should run without bleeding).
9. Run for 15 minutes.
10. Wait ½ hr.
11. Run for 1 Minute
12. Repeat Steps 10 & 11 for 48 or more hours. Take time off for sleeping. If the bucket gets too low add more 10:1 mix.
13. If hose breaks prime (e.g. due to slosh or misadventure) then do these steps:
 - a. Set valves for bleeding: V9 to Bleed, V2 to DAY, all others normal.
 - b. Bleed engine and get it running again.
 - c. V2 to STBD, V1 to EXT. V9 normal.
 - d. Use transfer pump to bleed air out of hose and pipes. Run until no bubbles appear in bucket. This will dilute the mix. Add additional Seal Fix to bring the strength back to 10:1.
 - e. Set V2 to EXT, V2 to STBD, V3-V5 All to vertical (off or bypass). V9 normal. Run 15 minutes to charge the injector pump with Seal Fix by allowing fuel to run from the bucket through the engine to the STBD tank.
 - f. As above, but set V1 and V2 both to EXT.
 - g. Return to normal procedure repeating steps 11 & 12.
14. When the fuel mix in the container is almost used up pump it back into the starboard tank.
 - a. Set V1-TO to STBD, leave V2-FROM set to EXT
 - b. Set all other valves to normal (horizontal) positions
 - c. Use transfer pump to empty the bucket into the STBD tanks via the Primary Filter.
15. Set all fuel system valves to normal.
16. Follow-up. We still have Injector Treatment in the Day Tank
 - a. Keep using the fuel with Injector treatment in the Day Tank.
 - b. When the Day Tank is near empty pump it up from the Port Tank

Thursday, 28 November 2019, 01:03 AEST - Onions Point Mooring, Sydney

The [Fuel System Schematic](#) was updated to Visio from SmartDraw. I downloaded a trial version of SmartDraw and was able to extract pertinent images and data and recreate it in Visio. This diagram and a new diagram showing the visual positions of all valves for specific functions has been laminated and is stored on the back of the passageway door next to the engine room.



Thursday, 28 November 2019, 01:08 AEST - Onions Point Mooring, Sydney

We are finished with Seal Leak Fix application. Next we will flush the oil, change the oil, and send off a baseline sample to see if it has dilution (it should not?) and then a second sample after 10-20 hours to see if the problem persists.

Saturday, 30 November 2019, 21:24 AEST - Onions Point Mooring, Sydney

We are finished with installation of hardware for jackstays. The Annex Track for the Kedder tape on the trysail cover was raised off the mast with 10mm PVC plastic pieces to allow the forward jackstay tape to pass around the mast unimpeded. This double jackstay which goes on both sides of the staysail stay will allow travelling to the mast on either tack without unclipping.

Today we flushed the engine with Coles cheap 10W-40 oil. The intention is to flush all diesel-contaminated oil so we have a base line to see if the Seal Leak worked. Pumped out the sump & refilled with 8L of Coles 10-40W. After filling the dipstick was at MIN. Running the engine for 3 minutes and the mark was halfway between MIN & MAX. This might be “normal” or it could indicate a massive leak in the injector pump.

Friday, 13 December 2019, 16:36 AEST - Brooklyn, NSW

Over the last couple of weeks we continued our diesel investigation. The latest report after 11½ hours of engine time since baseline shows 1% dilution. It's time to discuss options for rebuilding the injector pump.

I've continued working on the new jackstay and tether system with upgraded harness tethers, fixed tethers onto hard points (boom, cockpit) and “travelling” tethers on the forward jackstay. It is almost done.

I've gotten pretty good at the bar tacks. It's time consuming. It takes me 15 minutes to sew a single eye. To make it easier I start by sewing a single longitudinal straight stitch to hold the eye together. I then tack down the end of the tape with large zigzag. This keeps the tape end flat. I then straight-stitch to my starting point (2-3 stitches). I set zigzag to 3.5mm and set stitch length to 4mm; I start the first bar tack, do 3 complete passes over the tape and back (6 stitches total at any one point) and end in the middle. I then turn off zigzag and sew along the tape exactly 3 stitches, rotate the tape 90°, then do the next bar tack. 8 tacks are enough. Except for the initial long stitching all stitching is done with the hand crank; I don't have enough control with the motor.

The exit block on the starboard dinghy davit was frozen and the sheave damaged from dragging the rope over it. We replaced it with an onboard spare (Harken 089 29mm exit block). The threaded holes needed upsizing on the two holes for the new exit block, both screws for the starboard cleat, one screw on the port cleat, and both screws on the port exit block. If this fails sometime in the future installing threaded aluminium backing plates should not be difficult. Use one backing plate for the outboard screw on the exit block. Use another backing plate for the inboard screw and both cleat screws.

The overhead Alpenglow cabin light for the galley was rebuilt to include 8 rows of extra bright white LEDs which is what Kathy wants in the galley. The BRIGHT/DIM switch now enables either 8 or 4 rows. We love the super light we get. A single row of red LEDs is enough for night lighting and is also switched with a BRIGHT/DIM switch.

Warm LEDs are fine in the main cabin but over the galley workspace we want lots of light. I think I should do the same with the Alpenglow over the dining table, only make the second bank of LEDs warm so we can choose. Soldering the LEDs in a single parallel string helped keep the wiring down, only it is, of course, now more vulnerable to a single failure. The LEDs are not waterproof and are fastened directly to the metal base plate with strips of VHF bond. Another method would be to use hot glue. This would be a good method; if removal was required a heat gun easily warms the glue to where the strip could be removed.



Saturday, 14 December 2019, 05:03 AEST Wondabyne (Mullet Creek), NSW

Kathy finished repairs of the Jordan Series Drogue bag. The JSD was inspected and some very rusty shackles securing the lead weights to the drogue end were replaced with stainless steel D shackles. There is very little stress on the weights at the end of the JSD so it was not a big deal. The original heavy galvanized shackles were overkill.

Kathy used Jackstay Tape in a criss-cross pattern with SS grommets on the ends to beef up the bag's tie-downs. A new floor of Cordura "Rhino" material was sewn on the bottom.

We re-packed the JSD so the bridle and mooring swivel are deployed first, then the leader and drogues and lastly the trailing weights. I was afraid if the weighted bitter end went out first the cones would snatch the drogue out of its bag without control and if there was a snag it would be both dangerous and hard to deal with. If the JSD is paid out from the bridle then there is no pressure on the cones which are facing away from the boat.

Kathy has also undertaken repairs of the staysail bag which has torn at the floor. Another grommited piece of jackstay tape is being used to supply a sturdy tie-down.

Saturday, 21 December 2019, 05:03 AEST - Blackwattle Bay Anchorage, Sydney

The jackstay system is 98% complete. I have the final Wichard U-Bolt 65352 with rubber seal to mount on the aft deckhouse and I should seal the wood core first with epoxy.

Yesterday we received the oil test on our 20 hour mark since the baseline oil change and it is already at 5% diesel dilution. This is way too much to risk sailing across Bass Strait, particularly in a year where the weather is very unsettled with many fronts moving through. Usually we can expect a 3 day window from Eden south to Tasmania at least once in 2 weeks but all the "windows" are about 24 hours. In these situations a "dicky" engine creates a risk. We will have to stay here and have the

injection pump removed, tested, and repaired. This is not a big deal except at Xmas time when all of Australia shuts down for two to three weeks.

Other tasks completed this week:

- We fabricated a snap-on canvas cover for the washboard in the aft companionway. The new anvil and setting tool we purchased from Bainbridge works perfectly to set the snaps. We should have done this long ago.
- Cockpit locker was re-organized. We need at least one (two preferable) American sized milk crates to complete the stowage properly. Maybe we can bring them back next time one of us is in the USA.

Wednesday, 24 December 2019, 20:02 AEST – Onions Point Mooring

We have purchased a new shaft seal for the CAV pump and have moved to a mooring in order to repair the pump. Christmas Day will be the best day to do this. The oil was changed using Cole's \$18/4L cheap 5W-40 diesel. The oil on the dipstick was past MAX prior to the change; we pumped out the old oil, which was black, and pumped in 8L of new oil which brought the dipstick to ½ way between MIN and MAX.

Thursday, 26 December 2019, 13:18 AEDT - Onions Point Mooring, Sydney

The CAV Pump has been removed without too much drama but lots of hard work and some blood in the bilge.

In order to reach the CAV pump fasteners it was necessary to remove the air intake manifold, the small alternator, the stop solenoid and bracket, and all drive belts for pumps and alternators. A great set of videos by [Bundy Bears Shed](#) told us what to do to remove the pump, preserve the timing of the injection pump and finally remove the drive hub to allow the seal to be replaced. It is possible to remove the pump without disturbing the timing. With some exceptions noted below this [Bundy Bear Video](#) was our guide.



Order of Removal of Fuel Pipes:

1. #1 Filter out
2. Cylinders 1 & 2
3. Cylinder 4
4. Cylinder 3

The pipe fittings were plugged or covered with “red hats” as much as possible as we did not have the dedicated plugs for closing off the fittings.

The worst part of the job was removing and replacing the triangular base which is the forward part of the pump (see image; not our pump). The three fasteners are easy, annoying, and impossible. The impossible one is at the bottom of the pump. It has a BOLT while the others have STUDS and all screw into the back of the timing case. Remove the bottom bolt first using the magnet trick below. Then remove the two top nuts. Make sure to mark the rotational setting of the pump prior to removing any nuts. At the moment there is a chisel score on the pump and a “dimple” on the time cover to which the pump bolts. These must match up. I hope they are accurate enough as the markings were slightly dubious when removed.

A new “trick” I invented is making it a lot easier to deal with nuts and bolts being extracted. I have a small 10mm neodymium disc magnet which fits into a socket and retains the bolt or nut. It also works when trying to fit a nut or insert a bolt in difficult places. When refitting a nut there is the possibility of the magnet pulling the socket off the



wrench extension. To fix this, tape the socket to the shaft. When the bolt head or nut is fastened down fully the magnet stays inside the socket and there is a gap between the magnet and the bolt head (or nut). This makes it easy to twist off the socket, but it can still detach so be careful.

Sunday, 29 December 2019, 07:03 AEDT - Onions Point Mooring, Sydney

NOTE: EPIRB Beacon 2DD6F1BABF81FE0 has been renewed for two years

After CAV Pump Hub was successfully removed we found the hub to be scored under the seal. The seal was also very hard. This is definitively the cause of the dilution. Unfortunately the scoring makes the hub unusable.

Asking the Peterson Group got a response from Ken Barnes who has KP44 *Notre Amour* up in Yamba, NSW. He had an old Perkins 4.154 sitting in a shed which was not worth anything to him. A quick ROAD TRIP to Yamba was in order and we removed the injector pump, raw water pump with pulley (Jabsco 11850-0711 needing refurbishing), fuel lines to the injectors, the heat exchanger tubestack (recently tested according to Ken) and the oil pressure switch. Meeting Ken was lots of fun; he has endless sea stories. He put us up for the night in his place in Coffs Harbour.

Back on *Beatrix* we removed the drive hub from Ken's CAV pump. It was much dirtier on the side that was in the timing case due to exposure to sea water which had messed up the engine in the first place. The interior is in better shape than our original drive hub but has some minor pitting. Cleaning it up should do the job. We polished the hub by hand using strips of we-and-dry sandpaper in order of 1000, 1500, and 2000 grit. The pitting could not be removed because it would take off too much metal and also would have to be done on a lathe. A new hub would have to come from the UK and be very costly. We have proceeded to install the replacement hub. I am sure it will reduce the diesel dilution enough to run the engine. If the dilution is still serious (> 1% per 30 hours) then we can replace the hub or buy a new or refurbished injector pump or simply get a new engine.

Monday, 30 December 2019, 18:23 AEDT - Onions Point Mooring, Sydney

The engine is now all put back together. It was not easy as the fuel lines had to be wrestled in place and controls, springs, and stop solenoid all screwed back in. A combination of tools of all kinds, wrenches, sockets, 1/4" ratchet wrenches are all needed to reach behind, over, around and in with multiple elbows required. Bolting on the air intake manifold was not as easy as it looked. First of all the gaskets needed to be inserted and aligned. The easy way was to loosely fasten in the upper bolt and then position the gasket and install the lower bolt. The magnet trick was essential to keep from losing the bolts during insertion. The two hardest bolts to install were the one that captures the support for the long fuel line and the dip stick carrier and the final aft-most lower bolt which just would not bite in it's threaded hole. I needed to find a 5/16-24 tap and "chase" the threads. This worked.

A new BF988 fuel filter (10µ) was installed, just for fun. It was last replaced in January 2018.

There are a few more wires to re-connect but the engine is ready to be tested.

Tuesday, 31 December 2019, 09:41 AEDT - Onions Point Mooring, Sydney

Engine is running!!! Bleeding went easily except for one injector pipe fitting not tight on the pump. The upper bleed vent shows NO fuel coming out, but engine runs fine anyway. There is a glitch with the stop solenoid not drawing quite enough; it needs 1 or 2 mm more pull. Engine sounds normal so I assume (hope) the timing is the same.

Posted to the Peterson Cutter Group:

The old Perkins is running again!

Actually, it was always running fine, but diesel fuel was diluting the lubricating oil. Logic dictated there were only three places where the fuel system contacted the lubricating system: the injectors, the lift pump, and the injection pump. I ruled out the injectors because there were no symptoms; no smoke, no knocking, smooth running. I ruled out the lift pump by removing it, inspecting it, and pressure testing it. This left the injector pump shaft seal on the drive hub. It HAD to be the injector pump seal; but how to fix that?

Most of the marine mechanics I talked to said "40 years old, mate? Get a new engine". But it runs so well, I said, it's only a pump seal, I think.

All the diesel books say "Don't mess with the injector pump. Not user serviceable". But there are a lot of YouTube videos out there showing how to disassemble the injector pump. The best I found was from "Bundy Bears" in Queensland where Lance, the long--bearded tractor guru, shows in detail the issues involved. The first thing I learned was that the timing was critical; the pump had to be perfectly timed to the engine's valves. The second thing I learned was that, if you don't rotate the engine, you can remove the injector pump, replace the bad seal and drive hub (if necessary), and reinstall it without changing the timing at all. Once you get the injector pump out of the engine it's about 10 minutes to put in a new seal and replace the drive hub. I have long known to trust tractor diesel mechanics over marine diesel mechanics. They don't mind old engines, they don't charge multiple arms and legs, and they know what they are doing.

Niall, our friend and skipper of KP44 Ubuntu (currently in Mexico), was aboard for a few days. He was in Sydney and had a car. So we raced off to the Diesel Repair Centre to buy a new seal. They were about to close for the year-end holidays. In Australia, most service businesses are closed from before Xmas to early January.

The hard part is removing the injection pump, which I would have had to do anyway even if I was taking it to a repair shop, which would have been closed. This pump is on the other side of the engine. To reach it I had to remove the alternator, the raw water drive belt, the air intake manifold which sits over the pump, all the fuel lines running to the pump, and the stop solenoid. Then you take off a panel in the timing gear case to disconnect the pump's hub from the timing gear. Lastly there are 3 nuts on studs holding the injector pump to the engine. The first is easy, the second is annoying, the third is almost impossible to reach. All this took a day.

This is when we found out the hub was deeply scored and the seal was hard and old and had not internal spring. There was no replacement to be had before mid-January. So I went to this great Peterson Cutter group and found that Ken Barnard had an old Perkins in a shed only 700km north. So it was ROAD TRIP time to play Jawas with Ken's old motor. It was great to meet Ken and to receive bountiful hospitality and a place to spend the night. Thanks, Ken. Good to meet another new friend! Great to have Niall around, and exactly at the right time.

Back on Beatrix we disassembled our booty and found that Ken's injection pump drive hub was only slightly pitted where it contacted the shaft, but there was no deep scoring. I expect there to be no unmanageable diesel dilution. I can get a new hub and seal kit and keep it

handy if the problem returns. I'll also do regular oil tests, starting with a baseline now, to monitor any future diesel dilution of the oil.

Once the pump was fixed it took all 12 fingers and 4 elbows to get it back in place. A variety of sockets and wrenches was needed.

A new "trick" I invented is made it a lot easier to deal with nuts and bolts being extracted. I have a small 10mm neodymium disc magnet which will fit into a socket and retain the bolt or nut. It also works when trying to fit a nut or insert a bolt in difficult places. When refitting a nut there is the possibility of the magnet pulling the socket off the wrench extension. To fix this, tape the socket to the shaft. When the bolt head or nut is fastened down fully the magnet stays inside the socket and there is a gap between the magnet and the bolt head (or nut). This makes it easy to twist off the socket, but it can still detach, so be careful.

Once everything was back in place and the injection pump primed and the engine bled, I rotated the engine as per the recommended procedure (full throttle, 60 seconds) and LO it started running again. What a rush. Beatrix is has mobile power once again.

So, we are off to Tasmania tomorrow, may the Weather Gods be kind.

Thursday, 02 January 2020, 08:48 AEDT - Blackwattle Bay Anchorage, Sydney

Off to Tasmania. Weather forecast is not unreasonable. First stop will be Eden.

Saturday, 04 January 2020, 09:54 AEDT - Eden, NSW

Took latest oil sample to mail to Oil Test P/L at engine hours 4,545.3

Sydney to Tasmania Glitch List

1. Depth was not displayed when starting Nav Instruments. Cycling the GPSMAP did not help. Nothing obvious in the crawl space where the transponder lives. Kathy suggested cycling the entire NAV INSTRUMENTS at the panel and that did the trick. Go figure.
2. Cotter (split) pin went missing from the rigging pin that attaches the gooseneck to the mast hounds. The rigging pin was just below the level of the upper hole. I had heard a sharp crack (different from the woodwork shifting cracks we are now used to), twice. The cotter pin was found, straight, on the deck.
3. Gas fume detector turned off the gas twice. The ON light went out and the gas was shut off without tripping an alarm. Later that night the alarm did trip. I suspect the problem is in the Fireboy S-2A, not in the gas system. We'll check that this morning.
4. GPSMAP Trip Miles are off by about 17%. This has happened before. The recommendation from Jon Josephson at Garmin was to set the GPS source to "BUILT-IN". I've done this and we'll see how the EDEN to TAS passage stacks up.
5. The whiteboard marker holder fell off. Heated the glue with the heat gun and stuck it back on. Maybe it's time to use screws.
6. Batt 2 voltage not showing on the Smartgauge
7. Sunday, 05 January 2020, 16:56 Noted freezer compressor start took 3 tries. 25A start current quick down to 22A; it looks nominal.
8. Jackstay System in Practice
 - a. Noted that small travelling tethers are needed on forward & aft jackstays to ease transition past the coaming.
 - b. The raising of a staysail may be complicated by having to thread between the two jackstays.
 - c. Need to ensure the washdown fitting will be accessible.
 - d. Perhaps the forward jackstay should terminate elsewhere than at the anchor roller to solve b) and c) problems.

- e. Now that we are using SHACKLES at the jackstay ends perhaps the double chafe tape isn't needed.
 - f. Hard to stand up with cockpit tether. Maybe make longer?
- 9. Washboard trim is cracking. Needs repair.
- 10. AUTOPILOT & STEERING
 - a. Failure 224 reported when ship was thrown off course by wave and A/P could not return it on course fast enough. Power cycling was required to re-enable the A/P.
 - b. OFF button (red, upper left) not functioning. It does not turn off the power but it does disconnect the AUTO function so steering is disabled. The only way to fix this is to recycle the power at the DC panel
- 11. Water leaks overhead noted:
 - a. Usual leak at the partners. -
 - b. Water dripping out of aft outboard corner of forward starboard Alpenglow lamp. Possible deck leak through staysail track?

Tuesday, 07 January 2020, 23:07 AEDT - Route: Eden, NSW to Port Cygnet TAS

RUDDER FEED BACK UNIT REPLACEMENT

Last night the steering glitch required us to remove the mattress and items to get to the quadrant and cable. The boat was in the middle of Bass Strait in heavy weather and we had to heave to so I could work. The cable was fairly slack, so I tightened it as far as I could. This did not seem excessive but later I found the hand steering is now difficult. I think the sheaves need re-bushed to solve this problem properly. *Note: We have checked the bushes and talked to engineers who say not to worry about a little wobble in the steering sheaves; however we need to keep the sheaves running on their bearings and not allow the clevis pins to rotate in the bracket.*

While doing this job I leaned on the RFU (rudder feedback unit) and broke the arm. Fortunately a spare was located and a brand new unit installed. I tried to just use the arm but it would not fit the old unit and meanwhile I lost the registration for the internal potentiometer. Fortunately I had noted in the manual (years ago; thank you former Jeff) the midpoint resistance on the black and white wire was 1.12 kΩ so I could reset everything. Finally it was all back together and a quick "DOCKSIDE" rudder setting was done on the A/P. The A/P is now working fine.

Tonight we noticed the excessive friction when hand steering. This is hard on everything, particularly the A/P. We emptied the cockpit lazarette down to Level 2 to determine if anything fixable was fouling the steering cable. All was nominal. So now I have inspected all sheaves except the diverting sheaves in the aft head. These are unreachable at the moment and likely to be a cause of the problem as the pair of sheaves only diverts the steering wire; there is not much force on them so they are unlikely to be an issue.

My theory is that tightening the wire fixed the A/P fault but added friction. Clearly we need to get to Derwent Park to properly fix the system with re-bushed sheaves (or bearings of possible) and maybe a new steering wire if the cables are damaged. Meanwhile we will push on to Port Cygnet.

Monday, 13 January 2020, 22:58 AEDT - Port Cygnet, Tasmania

Oil Test Results were received from OilTest P/L showing oil contamination of zero dilution by fuel after 23 hours of engine run post oil change. A baseline sample also showed zero.

Thursday, 23 January 2020, 18:56 AEDT - POW Marina, Tasmania

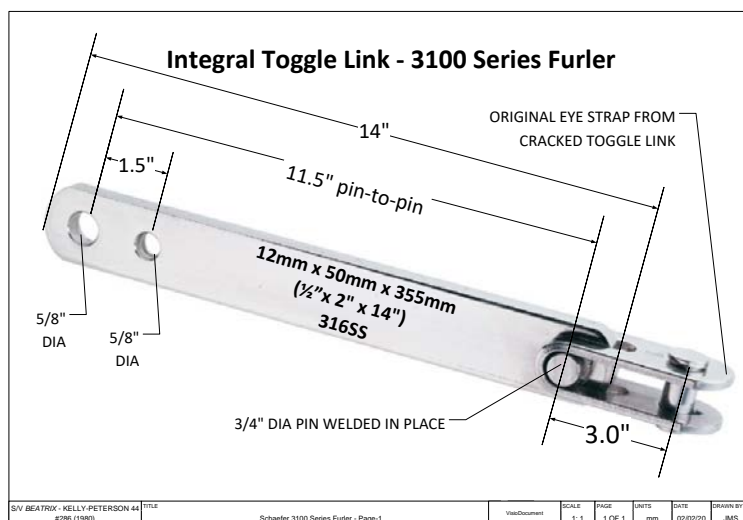
Last Saturday we arrived at the marina and on Monday started in on boat work. So far we have removed the anchor roller in preparation for repair. The aft-most stud on the starboard side is exposed to air somehow and there is a lot of rust under the stud. It must not have been fully encapsulated. Ideally it should be removed and re-bedded.

In removing and inspecting the Schafer 3100 roller furling we noticed hairline cracks in the toggle link at the pin; some of them are all the way through the metal. I cannot believe this is due entirely to stress; this steel link is $\frac{1}{2}$ " x 2"! Further inspection showed that the welding process left deep grooves in the both the link and the pin. Possibly overheating of the unit caused it to be more brittle through "heat affected zone failure".



A new toggle link is US\$400. Ouch! And this on top of \$400 excess I owe to the Marina for damaging their Courtesy Car. We can have a custom toggle link fabricated here in Hobart for about AUD350. Below is the design drawing for the fabricator. The 14.5" (11.5"+3") pin-to-pin measurement is the same as the former string of toggles.

I have been looking into getting roller reefing on the staysail; but it is very likely going to be too costly. What we need to do is practice getting the sails up. We're just getting older and less keen about working on the foredeck in strong winds.



Tuesday, 04 February 2020, 18:46 AEDT - POW Marina, Tasmania

Work on the steering system has been completed except for checking the chain and sprocket in the binnacle. We inspected and lubricated all wire. Clevis pins in the engine room (and maybe elsewhere) rotate in the bracket holes instead of the sheave rotating on clevis pin. I also found that clevis pins are both expensive and vary widely in diameter. Note that two marine engineers say that mild wobble is fine. No need to re-bush. Both did NOT recommend using Dyneema for steering cable. However, clevis pins rotating in the bracket holes are not good. My solution is to use a stainless welding rod or bronze brazing rod in place of the split (cotter) pin. A sharp bend in one end fits into a notch ground into the bracket; the other end is bent over to hold it in place. We lubricated all sheaves and pins with light oil and sized the pins to individual sheaves. The steering tension was tuned as per Edson instructions.



Added proper electrical connectors to RFU.

Inspected & adjusted Shaft Log Packing. Took 1/2 turn on the log. Might be too tight and maybe needs repacking. Topped-up the ATF reservoir

Performed Autopilot Compass Settings

Wednesday, 05 February 2020, 18:49 AEDT - POW Marina, Tasmania

I finally figured out our AIS signal was never silent when switched into Silent Mode. After much testing and inspection it turned out to be a faulty wire in the data/power cable. I needed to get the pinout diagram from Vesper, disconnect the cable, and test the continuity in the brown wire. There was none. Just for interest I tested the red wire. It has continuity. I can cut off excess cable in case the broken brown wire happens to be in the bitter end; otherwise I will need [a new cable at AU\\$42.90 + AU\\$25.00 shipping](#). Meanwhile I will have to use the PC Configuration app if I want to turn off the signal. Another option is to remove the insulation close to the connector; unless the fault is in the pin then I may be able to connect the brown wire to an external wire (or connect all the wires to an 8/20 control cable) and access that.

Friday, 07 February 2020, 08:28 AEDT - POW Marina, Tasmania

The new toggle link and anchor roller repair has been retrieved from the fabricator ([Prince of Wales Marine Pty Ltd](#), John Dare). The work included lathing a new spacer from Delrin to replace cracked and worn nylon spacer, straightening the bent anchor roller, adding to the anchor roller smooth stainless exits to allow a mooring line or snubber to be used on the centerline.

Kathy has cleaned and polished the chainplate fitting at the bow and has painted the deck. It looks good.

Sunday, 09 February 2020, 08:26 AEDT - POW Marina, Tasmania

In attempting to replace the nut on the stem rod (my term for the embedded rod that supports the jibstay) I cracked the gel coat on the leading edge of the bow. This was a good time, therefore, replace the rod with the one I have been carrying aboard for over a decade. I used the Hackzall to saw out a notch in the bow and free the nut on the bottom of the stem rod. Extracting the rod wasn't too hard. But it turns out the rod is slightly bent to allow a misalignment of the internal holes from the deck to the stem. I had to use a reamer and oversize bits to skew the bottom hole to allow the new, straight stem rod to be installed. Using an oversized washer at the bottom we inserted a thick paste of West System Epoxy with a mixture of 313 and 306 fillers. A thinner mixture, one that would self-sag, was inserted with a syringe at the top to hopefully fill all voids.

Another glitch noted is that the ammeter on the main switchboard is not accurate. Solution: check the connection behind Nav Station locker.

Thursday, 20 February 2020, 17:19 AEDT - POW Marina, Tasmania

Catching up on the tasks performed recently:

1. We found dirt and ash in the secondary winches from our trip through the fires. Kathy has cleaned the port secondary and is inspecting the rest of the winches.
2. Cleaned and treated dinghy tubes.
3. Fixed loose connection so Smartgauge can now display voltage on Start Battery.
4. We installed the repaired and improved bow roller.
5. We installed the new toggle link we had made at Prince of Wales Marine Pty Ltd. It is fabulous; immensely strong and fit perfectly. No clevis in 3/4" was available so we made one from a bolt I had.

Friday, 21 February 2020, 16:12 AEDT - POW Marina, Tasmania

I finished the new and improved and more complicated [Automatic Anchor Light and AUTONAV module](#). I thought it would take two or three days and it took six days. Two days were spent because I couldn't solder properly. My good station is not working and the interim "iron" I bought from Jaycar is very clumsy and blunt. I finally took care in the making of the 1A voltage regulator that senses the raw solar input and regulates it down to 12v. It is a LM7812 with a 0.22µf bypass capacitor. The new system includes all the functions of the previous Automatic Anchor Light module plus all navigation lights are now fully automatic. The manual system looks the same and functions the same, but has

been totally redesigned and rewired. All decks of the 8-deck 6-position rotary context switch had to be used: three stacks for the normal manual system and three stacks to handle the AUTONAV inputs. I LOVE this rotary switch and the concept of the context switch. I noticed that this idea has been patented, but I thought of it long before. Once past the voltage regulator problem there were some design flaws to work out; I needed an extra relays and the final deck to localize the AUTONAV signals from the manual signals. As far as I can tell the system is now working as intended. The former “off” position (which was position “C”) is now the “AUTONAV” system. The new module is located behind the hinged Nav Panel at the Nav Station.

These are the design specifications (more in the wiring schematic)

<u>DESIGN SPECIFICATIONS</u>
BEHAVIOUR WHEN ROTARY CONTEXT SWITCH SET TO “AUTONAV” <ul style="list-style-type: none"> • ALL RUNNING LIGHTS only ON at night. • If motorsailing or motoring DECK LIGHTS plus STEAMING LIGHT are lit. • If sailing either TRICOLOR or DECK (SIDE/STERN) LIGHTS are lit. <i>Use SAILING LIGHT PREFERENCE SWITCH to set above options.</i>
BEHAVIOUR WHEN ROTARY CONTEXT SWITCH TO ANCHOR AUTO <ul style="list-style-type: none"> • ANCHOR LIGHT ON only at night
OUTPUTS (10A max): <ul style="list-style-type: none"> • +12v to TRICOLOR (ENG NOT RUNNING @ NIGHT, preference TRICOLOR) • +12v to DECK LTS (ENG RUNNING @ NIGHT, preference DECK LIGHTS) • +12v to STEAMING LIGHT (ENG RUNNING @ NIGHT) • NEG output when ENG NOT RUNNING DAY or NIGHT • NEG output DAY (regardless of ENGINE state) • NEG output NIGHT (regardless of ENGINE state) • +12v LOAD output DAY (regardless of ENGINE state) • +12v LOAD output NIGHT (regardless of ENGINE state) • +12v Regulated Solar Output (< 1.0A limit set by voltage regulator)
INPUTS: <ul style="list-style-type: none"> • +12v AUTONAV LINE IN from Rotary Nav Switch Deck 3 Position “C” • +12v on ENG. RUN (control signal only) from Oil Pressure Switch • +12v LINE IN from RUNNING LIGHTS circuit (Main Panel, breaker 3-9) • RAW SOLAR INPUT (direct from panels, not from regulator, <30vdc)
NOTES: If AUTONAV off, only one relay operates without engine running & only during the day. So quiescent system contributes <100ma to vampire loads & only in daytime. If AUTONAV on, two relays operate without engine running & only in daytime.

Sunday, 23 February 2020, 10:12 AEDT - POW Marina, Tasmania

The Honda 2.3 outboard was stripped apart today to fix the horrible leak of oil out the back and down onto the aft caprail where it has liberally oiled the teak. Realizing we had a [repeat of the leaking tappet cover](#) (valve cover) we disassembled the outboard as follows:

Engine Cover → Fuel Tank → Throttle Cable/Choke Rod → Fan Cover → Carb → Tappet Cover

Some of the fasteners were very hard to remove and two of four of the fasteners holding the lower cover in place stripped off the heads. I left the remaining two in place because if they too had broken I would be committed to drilling out the bolts. Since the lower cover wasn't coming off I cut out some more of the plastic around the valve cover to allow it to be removed and refitted with ease. The Loctite SI-587 silicone gasket maker was not evenly coating the mating surfaces. I have a new valve cover (12311-ZVA-0110) and will make a better job of it. I did finally discover there is an official valve cover gaskets as part of a set but it is in the UK and I cannot find it in the parts directories in the USA or Australia. I think the gasket maker will work fine now as I can drop the cover directly onto the engine.

I checked valve clearances at 0.005" and 0.003" which are within tolerances for the BF2 engine. I could not find any settings online for the BF2.3 outboard. I made a gasket from stock hi-temp material, dressed it with Hylomar, and installed the cover with new fasteners.

17920-ZW6-020 Cable, Throttle BF2D
90042-ZM7-000 Bolt, Stud (A) (2)
90043-ZM7-000 Bolt, Stud (B) (1)

Kathy installed a new black outboard transom mounting pad.

Tuesday, 25 February 2020, 19:53 AEDT - POW Marina, Tasmania

Last valve adjustment was in December 2012 at 3031 engine hours. That was 1569 hours ago. [Valve clearance adjustments](#) should be made at least every 2000 hours and possibly checked over 1000 hours, so this is not overdue.

Today the two scuba tanks were pressure tested and filled. Cost was \$75.00.

Saturday, 29 February 2020, 15:24 AEDT - POW Marina, Tasmania

Had the bottom scrubbed by SCUBA Diver Scott at POW Marina. Scott discovered damage on the trailing end of the keel. Either from grounding or delamination of our repairs (or both). No zincs were replaced. The only seriously degraded zinc was the center zinc in the lightning ground plate.

I extended the anchor chain forerunner to 8 links to allow the swivel to pass through the chain stopper. Note on swivel: the shallow depth jaw attaches to the chain and the long depth jaw attaches to the anchor.

Monday, 02 March 2020, 16:02 AEDT - POW Marina, Tasmania

New webbing on the anchor webbing ratchets with additional bar tacks. Figured out a better way to lash the CQR spare anchor with webbing ratchet hook to crown hole. It tilts on its side and wedges down the channel. I think some custom wedges could be better. If we ever hit another pile bow on it could bend not only the rollers but the pulpit.

Replaced rusty pin on port 2" webbing ratchet. The pin only serves to keep the axle in place and does not absorb any real force.

Tuesday, 03 March 2020, 14:53 AEDT - POW Marina, Tasmania

At 87% SOC on the Smartgauge on a nice sunny afternoon I only see 8.9A amps from the aft bank of cells and 12.5 amps overall. This implies around 4 amps input from the larger solar bank. Voltage is 13.2vdc.

Thursday, 05 March 2020, 16:32 AEDT – from Hobart Public Dock, Tasmania

Hobart to Murbanna to Hobart to Sydney Voyage Glitch List

1. MC614 regulator is dropping into float mode (13.3v) before charge cycle is finished. Cycling power resets it. Reprogram the regulator to 14.4 instead of 14.2 charge volts and fix bulk charging.
2. However, Digital Duo Charge is not charging the Starter Battery; it is showing 5 blinks which indicate battery temperature too high, but I don't think we are sensing start battery temperature. Note that early in trip back to Hobart the voltage is 13.6 on SB and 14.2 on main.
3. Continuous problem with Trip mileage being incorrectly calculated. I started to uninclude data running to the GPSMAP from Vesper and from Ports 2 & 3 inputs to the NDC-4. This

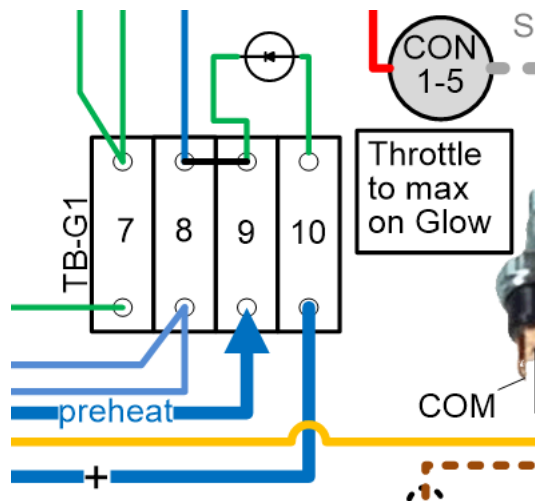
has worked but now I have to fix it so we can have position, wind speed & direction without turning on the GPSMAP. I might have to use my NMEA relay to turn off Vesper input when the GPSMAP is on. OR connect the NMEA 0183 to the GMI 10.

4. Pilot LED is not working on the windlass switch.
5. Crew has a nasty abscess so had to return to Hobart.

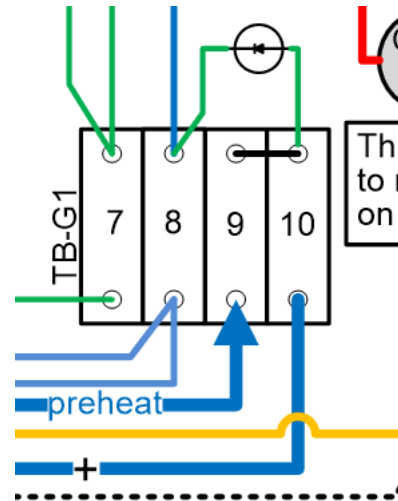
Wednesday, 11 March 2020, 07:52 AEDT - POW Marina, Tasmania

Discovered possible error in Generator wiring, but it doesn't seem explain inability to DECR the engine speed. It does appear that the preheat function would not have worked.

EXISTING



CORRECTED



Testing EXISTING shows that aft control GLOW switch does increase rpm to max. INCR/DECR on aft control box is working (at least at first). On Control Panel, DECR is now working, but INCR does not and GLOW may not be working.

Other issues with the generator are:

1. Gauges work only with remote Control Panel. They SHOULD work when engine is controlled from the control box.
2. Temp gauge does not work at all.
- 3.

Thursday, 12 March 2020, 15:07 AEDT – South Arm, Tasmania

Practice deployment of poled out storm staysail

Methodology is:

- 1) Connect foreguy, afterguy and topping lift and then raise the whisker pole to connect to mast.
- 2) Connect to loose staysail sheet and raise outward pole end to horizontal.
- 3) Hoist sail and adjust sheets & guys

Glitches and noted improvements:

- 1) Tried sheet on car. No good. Needs snatch block or standup block. **SNATCH BLOCK ON SLIDING PADEYE IS BEING USED.**
- 2) Watch genoa sheet. Needs be outside of all staysail lines.
- 3) Need to re-organize sliding padeyes.
- 4) Add center-of-pole lifting eye / strop.
- 5) **Fix two release lines to release ends independently and have drop lines and pull-balls.**
- 6) **Make sure release line is not fouled by topping lift.**

Friday, 13 March 2020, 06:25 AEDT – Primrose Beach, South Arm, Tasmania

Internal 2TB “M” Drive has failed on the NUC. Fortunately the “C” & “D” drives are on an external disk, but a new backup MUST be made very soon. We are leaving today to transit Denison Canal and head north.

New backup made, but “differential backup” keeps re-making a full backup and the drive runs out of space. AEOMI blah! They make things TOO simple.

Encountered [Tregoning](#) (Alison and Randall) who followed us through Marion Narrows. We seemed to be weaving a lot. I’m glad we all made it.

Saturday, 14 March 2020, 12:49 AEDT - Triabunna Marina, Tasmania

The problem with the NUC was I had plugged in a 12vdc power cord and not the 19vdc power that is appropriate for the NUC. With having to drive two external disks and one internal HDD I expect the voltage drop was too much for the HDD.

Saturday, 14 March 2020, 12:50 AEDT - Triabunna Marina, Tasmania

Today we checked the dimensions of the new roller furler toggle link and found the new link is, as intended the same length. Some time in the future we should consider tightening the forestay by about 12mm

Wednesday, 18 March 2020, 07:55 AEDT - Triabunna Marina, Tasmania

Sheets are installed on the trysail. One sheet is new (13m) with a newly fabricated eye and the other might be a former reefing line 2 (15m) from way back. We might have to trim the longer one. I made a soft shackle (8mm Dyneema) for attaching the sheets.

Kathy removed, inspected, and replaced lanyards on the air valves for the dinghy tubes. We learned that the tubes MUST BE INFLATED to remove the air valves.

We topped up the ready engine oil containers (2 x 1L) and put about 3.5L in another container. Approximately 5L is remaining in the deck storage jug.

Jeff finalized the construction of the whisker pole. It now has a lifting sling and two micro-blocks with parrell balls to separately release each end. This took almost two days. Installation of one of the micro-blocks required inserting two rivnuts. It is clear that the rivnut tool is inadequate. Two sliding padeyes that fit on the genoa track were positioned to allow snatch blocks to act as staysail sheet turning blocks.

After a while the main engine alternator was not charging batteries at full 14.3v. Cycling power to the MC-612 regulator would reset the charging profile and it would start a new bulk/absorb cycle. I lowered the FBA and FFL settings to 72% and decreased the Float Time Period (F1c) to 30 minutes instead of 2 hrs. If the regulator enters float mode it will wait 30 minutes and revert to absorption mode.

Friday, 20 March 2020, 07:46 AEDT - Route: Shelly Beach, Prossers Bay, Tas to Wineglass Bay, TAS

Starting voyage Tasmania to NSW.

Had “Arrival” error so re-set the Vesper XB-8000 to not output any GPS data to the NMEA0183 network. This fixes the problem but also disconnects the GMI-10 from receiving GPS info. Perhaps it needs rewiring to allow NMEA0183 Position Data from AIS only when GPSMAP is off! I have a GPS Bypass switch and an Actisense Autoswitch that would solve that problem.

Glitch list:

- 1) Whisker Pole
 - a) Fix or replace bent spinnaker ring on mast.
 - b) Build stanchion or deck chocks for stowage.
- 2) Automatic short cycle appears to be not working on freezer. Manual short cycle not working on fridge.
- 3) Snap shackle on gooseneck jams when main halyard is tight.
 - a) Grind slot a bit to allow more rotation of the snap shackle, or
 - b) Use a slightly bigger D-shackle from gooseneck to mainsail tack.
- 4) **Raise absorbion and bulk voltage by 0.1V on MC-612 for main engine. DONE 22/03/2020. See [Battery Configuration Log](#).**

Sunday, 22 March 2020, 12:38 AEDT - Shelly Beach, Prossers Bay, Tas

We have turned back from our Bass Strait crossing as it is likely safer to stay here in Tasmania in spite of the cold. Friends watching us on [MarineTraffic](#) saw us heading up the East Coast from Triabunna (Spring Bay) to Wineglass Bay, and then instead of continuing north, watched us turn around and return to Shelly Beach just south of Spring Bay.

The news is full of COVID-19 articles. Since we are older we are more vulnerable to the SARS-CoV-2 virus; thus we are paying special attention to the news. At this time Tasmania is way ahead of the rest of Australia in putting a hard border in place; being on an island state off of an island country makes it easier to manage exogenous sources of infection (e.g. people off boats and planes). If the state keeps its strategy of preventing the disease from spreading everything should be shut down until the infection has been controlled. This could be two or three months (far less than in other parts of Australia or the USA) but will be very hard on people. No travel, no groups, no sundowners, no restaurants, no close contact with others.

We have two or three weeks to make a final decision on whether to stay in Tasmania. After that it gets too difficult to make a passage north to the Big Island. Tassie is a wonderful place, except for the cold in the winter. We do have a heater (working at the moment). Food, diesel and water should not be a problem although we have to be very careful when provisioning. This is going to be very difficult; although I count us among the lucky ones who can easily self-quarantine. I thought about what it would be like to “just get it over with” and try to contract the disease sooner. It’s only a 2-5% chance of dying, right? That’s a great strategy except I might actually die. Better to put off the unknown for a while as the situation might get better (e.g. a vaccine in less than 18 months, the virus just dies out, they find a cure, etc. We’ll be looking for more strategies on how to survive the isolation over the coming months.

I feel very bad for those cruisers in French Polynesia who either have to sail back to Mexico, abandon their boat in Papeete, or sail onwards to an uncertain welcome west of Tahiti. Many island nations are closed to cruisers. Air travel is being blocked everywhere.

I also feel bad for EVERYBODY, not just us cruisers. Life is difficult enough without a global pandemic. We all knew this was going to happen; Hollywood knew it. Didn’t any politicians watch *Contagion*? Yet, most countries were unprepared. I think this is a wake-up call to change the way things are done.

Good luck, everybody. May we stay healthy and keep sailing through this disaster. Fair winds to all.

Jeff

Sunday, 22 March 2020, 13:42 AEDT - Shelly Beach, Prossers Bay, Tas

Reconfigured the MC-614 regulator on the Kubota Diesel Generator. See [Battery Configuration Log](#). This should raise the bulk/absorption voltages to 14.4 and reduce the float time before the alternator resets. In the case of the generator (where we don't need to "float" as the generator should be turned off at that point, perhaps to absorption time should be made a very large number, effectively removing the float stage. Also noted the exhaust fans are not working on the generator.

NON-WORKING FAN REPLACED WITH TWO SMALLER FANS:
0.16 Fan, 120mm 25mm 12V 0.18A 90CFMm Globe Fan Ball Bearing B1202512L

Monday, 23 March 2020, 10:28 AEDT - Shelly Beach, Prossers Bay, Tas

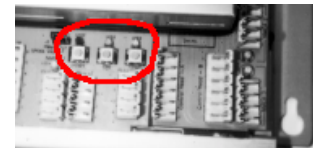
Note that Smartgauge voltage and Link10 Voltage is about 0.10 less than the BSS meter on the main panel.

Start battery shows voltage at 13.8vdc compared to 15.3vdc on the main engine. Should the Digital Duo Charge be current limiting??

Friday, 27 March 2020, 11:24 AEDT - Triabunna Marina, Tasmania

The Autopilot stopped working Wednesday and would not power up. Yesterday I identified there was power at the A/P Computer and attempted to activate the motor with the internal test buttons. I used CRC cleaner on the control head. Nothing worked; the A/P control was blank and powerless and dead.

Today the A/P is miraculously working. The autopilot is fully functional. Just to test it, I powered off, went to the A/P computer and powered up using the middle test switch. The other two switches (Port and Stbd) are supposed to activate the motor output; but they don't. The motor activation (JOG mode) does not work on the control head either. Recycling the power and rebooting the system enables JOG mode to work. We'll stay with "working" for now, but I'm worried about a failure when we most need the pilot to work. The problem seems to be associated with the OFF button (upper left) so we won't use that for now.



Tuesday, 31 March 2020, 10:33 AEDT - Ladies Bay, Port Arthur, Tas

We had another dropout on the A/P. It seems possible that the OFF button is responsible. Pushing that button always predates the dropout.

Also noted is a discrepancy in the ampere and volt readings on the BSS display vs the Link10 and BlueSky Displays. Testing with Fluke meter shows that the BSS is reading volts accurately. Perhaps I should investigate the connections to the other devices.

Wednesday, 01 April 2020, 12:12 AEDT - Ladies Bay, Port Arthur, Tas

We replaced the 12V/25W anchor light bulb in Aqua Signal Series 40 navigation light module at masthead. Anchor light was last replaced 18 June 2012. We decided to go ahead and replace the incandescent bulb with a LED bulb that had been purchased some time ago.

The replacement bulb is a 12/24VDC 1W Dr. Led 90005 White Polar Star 40 PN: 8001757-02 s/n ML 201430 1420802.

Bulbs were tested and contacts cleaned before re-installation.



Thursday, 02 April 2020, 11:20 AEDT - Stewart's Bay, Port Arthur, Tas

Kubota Diesel Generator failed three times to start. The last try it started but sounded like it was running on only one cylinder. Then high load circuit breaker was open on the control box. No start at

all. Relays clicked, but nothing happened. After about two minutes it started up and is running fine.

Thursday, 02 April 2020, 11:45 AEDT - Stewart's Bay, Port Arthur, Tas

Kubota Diesel Generator stopped again after 30 minutes of running. It HAS to be air in the fuel but I've been through that so often. It's a mystery.

Saturday, 11 April 2020, 11:22 AEDT – Ladie's Bay, Port Arthur, Tas

Kubota Diesel Generator every day has problems starting. Air is in the fuel lines. Once it gets going all is OK.

Two days ago I called Todd at SureMarine to talk about why the oven was not heating up. He referred me to the oven repair instructions from his website with the implication I should have just RTFM. In all fairness the problem turned out to be the main gas fitting which comes through the oven wall and is shown sitting on the oven floor in the image at right. The instructions do not even mention that fitting. I could see some obstruction in the tiny hole and after cleaning simply reassembled the whole thing. It did not appear there was any problem with the pilot. After reassembly it lit up with a good flame and the oven reached over 450°F so a great pizza and bread were made that night.



It's amazing that I can keep this oven running long after they stopped manufacturing it. A lot of thanks to Todd for making parts and information available. I keep thinking about a new one, but they aren't that good either. Might as well keep fixing it.



Todd did mention that the insulation is less about keeping the heat in the oven then not letting it get dangerously hot on the outside. He said "in 30 years of doing this I have never found the insulation to be a problem".

Monday, 13 April 2020, 18:18 AEDT - Stingaree Bay, Port Arthur, Tas

The automatic anchor light wasn't working. It was a blown fuse on the module which was rated at 5A and should have been 10A. I also discovered the lead from the Autonav module to the foghorn was mis-wired. Another issue is there is a 1.0vdc voltage drop between the house voltage ("RUNNING LIGHTS") and the rotarty switch. The supply wire runs into the Network Panel behind the printer locker (Starboard Locker 3). I don't actually know where it goes. I need check on it's current connection and possibly re-wire that.

I still have not been able to get the short cycle function working on the refrigerator. The wiring is correct, but it just won't enter the short cycle. It could be a need to re-set the Carel controller or it's just plain broken. The "digital input" signal comes from the common wire on the plate and box probes which appears to be about 8vdc. I cannot find any specific data on what constitutes a "digital input" but it probably is between 1.5vdc and 10vdc.

Tuesday, 14 April 2020, 18:21 AEDT - Stingaree Bay, Port Arthur, Tas

The solution to the short cycle problem was likely an insulator preventing contact on a terminal screw. The Short Cycle Relay base was also faulty, preventing the automatic short-cycling on ENG or GEN run. Future improvements include relocation of the SCR to be accessible from the outside. A spot next to the Smartgauge is available.

Monday, 20 April 2020, 12:25 AEDT - Stingaree Bay, Port Arthur, Tas

The oven stopped getting hot enough yesterday just when I wanted to put a loaf in the oven. Today I took the main gas jet out like before. It had dirt in it again, but no obvious blockage. I cleaned it with a pipe cleaner and put it back. I also closed the air intake collar a bit to broaden the flame. I took about 15 minutes to get up to 450°F.

Thursday, 23 April 2020, 13:00 AEDT - Stingaree Bay, Port Arthur, Tas

LED LPG solenoid warning light over sink burned out and was replaced.

A problem with Dreamweaver was solved. This problem was a pop-up warning box that said "Parameter is Incorrect" every time I typed or change a source code file. I tried uninstall CS6 and then could not get it to reinstall. So I dropped back to CS5.5, which is basically the same as far as I'm concerned, and for which I have a license. It installed fine but the problem persisted. By working with fragments of the "bad" files I found that it was the "include_once(FILENAME)" statements that causes the problem. I then wrote a batch file to read from the "bad" file to a temporary file and then rename the temporary file with the original file name (replacing the original file). I have no idea what caused the behavior, but the brooms are dancing.

Kathy fell in the water at the public jetty and drowned her iPhone 5s. I've sourced a new one on Gumtree and it was delivered the next day.

Saturday, 25 April 2020, 10:09 AEDT - Stingaree Bay, Port Arthur, Tas

Today we went to the Public Jetty at the Port Arthur Historic Site to fill the water tank. The DEPTH was missing for the entire trip – both ways. So this is now added to the "Glitch List".

Sunday, 26 April 2020, 11:53 AEDT - Stingaree Bay, Port Arthur, Tas

All lifelines were tightened up today. Port upper line was especially loose. Another chartplotter glitch is it loses the Heading Sensor connection and goes BEEP-BEEP every couple of hours.

Monday, 27 April 2020, 17:37 AEDT - Stingaree Bay, Port Arthur, Tas

A little misadventure occurred early in the dark and windy morning (0420) when the anchor drag alarm went off. We had dropped the hook Sunday afternoon close to our previous spot, after going to Port Arthur fill the water tanks. Returning to our spot we found a fisherman had dropped cray pots all over so we anchored a little bit closer the shore and I FORGOT TO SET THE ANCHOR. Since the ground is sand and weed the anchor needs to be dug in.

So, we arose from our very warm bunk in the cold pitch black night, without stars or moonlight to see by, and prepared to leave if necessary. After getting hit with a few 25-30kt gusts the anchor dragged again. We were hoping to wait for first light at 0530 but we felt the keel strike the bottom after yet another small drag. We were instantly on deck, all deck lights on, and Kathy at the windlass winding in 30m of chain while I powered up the diesel to get off. I could feel the boat rocking so figured we were not hard aground; yet the full power with hard right rudder was not getting us off. I did not want the boat to go left into the shallows. Yet, in rethinking this, it might have been better to power straight off and be prepared to swing right. There were lulls in the wind and then gusts and the last thing I wanted was to be pushed into the shallow or backwards onto the rock shelf.

Meanwhile Kathy was getting the anchor up and this was also helping to kedge the boat into clear water. As she reached the limit of the chain it sucked off the bottom the moment the boat jumped off the shelf. It might have helped that the tide was rising. In that situation even a tenth of a meter more water would have helped. Once the boat was under control and we had left the anchoring spot I had to navigate entirely by chartplotter. As the primary depth sounder was not functioning I had to rely on the Interphase sonar and the charts. The safest and easiest plan was to just drive around Port Arthur until dawn and then re-anchor somewhere else, which is what we did.

What did we learn?

1. If an anchor drags once it will do so again.
2. Remember “no wishful thinking” on a boat. We should have up-anchored and left as soon as possible.
3. On sandy bottoms, make sure the anchor has set properly. I now remember how in the South Pacific Islands we would drop the anchor and see it nicely lying on its side.

DEPTH was permanently missing from the GPSMAP display this morning. First I hooked up the P79 spare transducer. It didn't work either, so I ruled out a transducer fault. Then I checked the wires in the Garmin GSD 24 Transducer Adapter with the socket because that was the only device between the transducers and the GPSMAP. That checked out OK. I even tested it with the SPARE GSD24. Then I remembered that Garmin support suggested a full factory reset. I backed up all the routes, waypoints and tracks to the SD card and then did the factory reset. Voila we had a depth display. I then tried the P79 and it worked too. Then I tried the B744VL Insert and we also had Speed Through Water being displayed. Tomorrow I will test that the B744VL is not working, and then we will install the insert if necessary and wire up the P79.

Tuesday, 28 April 2020, 10:49 AEDT - Stingaree Bay, Port Arthur, Tas

We up-anchored and ran the STW test. The paddlewheel plug from the original B744VL did not send any signals. Using the B744VL-INS sent valid STW to the GPSMAP. We calibrated the Speed Through Water on the chartplotter and all logs good.

Wednesday, 29 April 2020, 12:01 AEDT - Stingaree Bay, Port Arthur, Tas

The B744VL-INS paddlewheel insert has been permanently wired into a junction box under the forward floorboard. The P79 (backup transducer) is ready to go if needed.

The AWG 1/0 lightning ground cable from the mast was found to be severely corroded as the lugs were assembled WITHOUT SHRINK TUBING. It has been replaced with a length of new black 1/0 cable with shrink tubing on the lugs. Lugs were crimped with my beautiful hydraulic crimping tool.

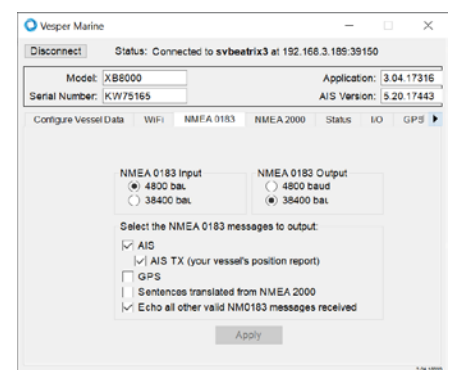
In looking for parts for repair we searched behind the Main Cabin Port Lockers (1&2) and discovered much ingress of water. I strongly suspect the stanchion bases as they are bent and warped. Replacing the old bases with new stainless cast bases on Trespa™ footings is the way to go.

Tuesday, 05 May 2020, 12:29 AEDT - Stingaree Bay, Port Arthur, Tas

GPSMAP glitches have returned.

1. Left the anchorage and found the TRIP distance had reset its units to KM instead of NM.
2. DEPTH dropped out and came back after a while.
3. FLASHING “Time to Next” field. Fixed by resetting XB8000 as at right.

Disconnecting SONAR and rebooting had no effect on fixing the missing DEPTH. The change in UNITS configuration for the GPSMAP is suspicious.



Consider using old CETREK box to convert P79 signals to NMEA0183

Wednesday, 06 May 2020, 10:44 AEDT - Parsons Bay, Tas

Charge Voltage Glitch. Noted FX charging with Honda 110v shows 14.55 charging voltage at end of charge period. This is verified with the Fluke at the battery posts. I lowered the absorption setpoint on the FX from 14.3 to 14.2 and this was reflected with a 0.1vdc drop to 14.45. So, something is wrong with the FX voltage sense. I need to test the voltage at the inverter to see if the problem is in the cabling (unlikely, how much voltage drop could you have with the massive cables used). I suppose if there was a high-resistance connection it could be not noticeable when over 30amps are coming in but more noticeable when it's down to 10amps. So two things to test are a) cable resistance between inverter and battery bus and b) voltage under various load (i.e. note the voltage at 60amps, 50amps, etc.). Also noted: "Battery Actual" reading on the FX/BATT at 66Amps shows 14.5vdc when other measurement devices show 14.2 (LINK10) to 14.4(BSS). SG reports 14.25.

AMPS DC	FX "battery actual"	LINK10 VDC	BSS VDC	SG VDC
60	14.5	14.20	14.44	14.25
40	14.5	14.30	14.46	14.35
20	14.5	14.25	14.42	14.35

Wednesday, 06 May 2020, 13:50 AEDT - Route: Port Arthur Historic Site Jetty, Tas to Parsons Bay, Tas

Need to make 3" [shaft packing wrenches](#) (4) for *Beatrix* and *Ubuntu*. (Design sent to Niall Clifford at Croydon Industries)

Thursday, 07 May 2020, 13:42 AEDT – Quarantine Bay, Tas

Note: Using new mooring rope fairlead in between anchor rollers. Mooring line is attached to a Schaefer 70-77 removable cleat which has a 4200 lb SWL. Rubber accumulator is part of the snubber.



Saturday, 09 May 2020, 14:45 AEDT – Missionary Bay, Bruny Is. Tasmania

Enroute to Copper Alley Bay Kathy noted some diesel exiting the tank vent. Both port tanks have P-traps and the vent is a LONG way above the float switch. This means that the float switch did NOT float to the top right away; it needed more pressure to engage. Solutions? More than one float switch or at least replace the Port tank float switch. Another option is to add a new Splash-Stop FS3816. Truly, both port and starboard could use one. They are for sale at a [low price](#) of A\$197.

Sunday, 17 May 2020, 11:00 AEDT - Missionary Bay, Bruny Is. Tasmania

FX is charging main batteries at 14.4vdc when finishing a charging run with the Honda Generator. I dropped Absorb Setpoint to 14.1 vdc which translates to 14.3vdc on the voltmeters. This is because the temperature compensated voltage is 14.2vdc which means that the batteries are cold. Colder batteries can be charged at a higher temperature but I need to check this for the AGMs.

AGM Bank seems to be losing a lot of capacity in spite of being charged to 100% most days. It's been more difficult here in Tasmania in the short and often cloudy daylight. We've been using the Honda to add power and get 100% at least 3X per week. However the charge percentage on the Smartgauge keeps dropping more than expected even allowing for the short days and increased nighttime usage

(computers, heater, lights). I need to graph the difference and certainly do a capacity test and an equalization run. Jim Godber says this:

I would equalize once a year if you are getting them back to full that often. If you find yourself getting them back to full a lot less often, say 5 out of 10 days then I would equalize once every 90 days. You want to use constant voltage when equalizing. 15.5 volts for 8 hours. You want to perform this after you charge them up normally.

Monday, 18 May 2020, 18:41 AEDT – Port Cygnet Tasmania

Changed out the light bulb in the forward pantry. The bulb had burned out and then the wire came loose from the switch. Wires were cleaned up and bootlaces fastened on the ends. The tab connectors were replaced with Euro connectors. The non-working forward cabin fan was fixed by re-attaching a wire. “How long does it take to change a light bulb on *Beatrix*”? Anywhere from 4 hours to two days.

We purchased a piece of treated pine 45mm x 150mm x 3m for a barge board. We can go to the town dock now for battery equalization.

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Tuesday, 20 May 2020, 15:57 AEDT – Port Cygnet Tasmania

We moved to the Public Jetty, which has power and water, and did our equalization charge. Since the mains power socket was old-fashioned and did not have an RCD I was able to connect our FX inverter/charger for the first time in years. This is the best charger I have and the most amenable to a decent equalization. After the battery was fully charged (OK, OK, 97% charged) I engaged the FX to deliver 15.5vdc for 8 hours while we slept. Voltage at the meter read 15.4 vdc. We refrained from using any bright LEDs during the over-voltage event. Everything has appeared to go well but we won't know for sure until we are off of shore power again.

Kathy applied oxalic acid solution to the foredeck, the wood trim on the hatches and coachhouse all the way to the top of the coamings in the cockpit. This lightened the wood and the deck; it is all much brighter and cleaner.

Saturday, 30 May 2020, 07:49 AEDT – Port Cygnet Tasmania

This week we are working on fixing the oars for the dinghy which have cracked blades and all the varnish worn off:

1. Worked white waterproof wood glue into the cracks after spreading and sanding as best we could. It was easier to work with than epoxy and should be plenty strong once the blades are fibreglassed.
2. Sand
3. Apply 4oz fiberglass matt (cloth) to one side of blade.
 - a. Mask off handle
 - b. Mask off opposite side of blade
 - c. Use flexible applicator to wet out the cloth with West System Epoxy
 - d. Let harden and trim off excess.
 - e. Remove blue masking tape using razor blade from box cutter as necessary.
4. Apply matt to opposite side of blade.
 - a. Mask off the side already covered with fiberglass
 - b. Snip cuts in the matt to allow it to fold over the end of the blade
 - c. Use flexible applicator to wet out the cloth with West System Epoxy
 - d. Remove blue masking tape using razor blade from box cutter as necessary.

- e. Sand smooth.
5. Final coat of clear epoxy.
6. Final coat of clear UV resistant varnish or epoxy

Saturday, 30 May 2020, 07:57 AEDT - – Port Cygnet Tasmania

Ginny Gerlach gave me a Netgear Nighthawk M1 router. This is a much better mobile broadband router than the Huawei E5372T which is starting to feel old and has a bulging bad battery. This router supports Wi-Fi speeds of 2.4Ghz and 5ghz.

“The primary differences between the two frequencies are the range (coverage) and bandwidth (speed) that the bands provide. The 2.4 GHz band provides coverage at a longer range but transmits data at slower speeds. The 5 GHz band provides less coverage but transmits data at faster speeds.”

DEVICES	Max WiFi Speed
Ipads	5G
Iphones	5G
Travel Router	2.4G
Vesper 8000	2.4G
Intel NUC	5G

Configuration:

Travel Router	192.168.8.1
NightHawk	192.168.3.1

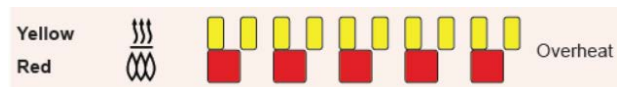
- Nighthawk has TS9 antenna connections which will not work with the existing antenna splitter.
- Nighthawk has external power connection with a charging cable: USB A (male) to USB-C (male)
- The web reports battery life problems when the router is plugged into power continually.

Higher speeds might be achievable with a higher-end Travel Router like the [GL.INET GL-AR750S](#) (US\$69)

Noted: The old Huawei has a bulging HB5F3H battery. Is it possible that this is from age only or that plugging it in ALL the time is bad for it? It would be easy to set up the power feed so that it only charges during daylight. This might take a small bit off the vampire loads, too. A backup battery is on order.

Thursday, 04 June 2020, 06:27 AEDT - – Port Cygnet Tasmania

The Wallas diesel heater turned itself off with an overheat fault (at right). I checked the intake vents and the warm air grilles, confirmed main blower operation, All good. Restarted OK.



Monday, 08 June 2020, 17:11 AEDT – Port Cygnet Tasmania

Diesel heater is still faulting. It went into lock mode just now.

Oars are being painted with Wattyl “KillRust” single part epoxy paint. This paint was recommended by Mark who we met in Kettering. He says it was tested against a number of deck coatings and was the best. One coat is on but with single-digit temperatures it might take longer to dry.

Tuesday, 09 June 2020, 17:33 AEDT – Port Cygnet Tasmania

Last night the Wallas 40DT diesel heater failed to ignite. We tried, and tried until there was unburned fuel puddling beneath the heater. We discovered this today. The manual SAYS don’t remove the operation lock until repairs are done!

We used hot water bottles and bodies to keep warm. Outside air was down to 0° and the boat temperature was 10° in the morning. Shiver

Today we totally dismantled the unit and cleaned the dust, scale, and carbon out of everything. The mat was replaced with a new one from spares. The burner mat was definitely no good as it was mostly burned up. The glow plug was tested (1.2Ω) and not replaced. The squirrel cage fan was taken apart and cleaned thoroughly. The fan blades were seriously blocked with lots of dust. I think the worn out mat and the blades restricting the air made a big difference.

It was very difficult to reassemble the heater as there are 6 sheet metal edges to fit into the side plates. If one piece is not in its groove it throws off the rest of the edges. They all have to go into the grooves at the same time! It took two men and a webbing ratchet and a few hours to get it done. The strap was a stroke of genius as we could get everything aligned, cinch the pieces with the ratchet, and then screw down the end plates. Note that if things don't fit right DON'T FORCE IT. Once everything is aligned and in the grooves the end pieces just slide in place.

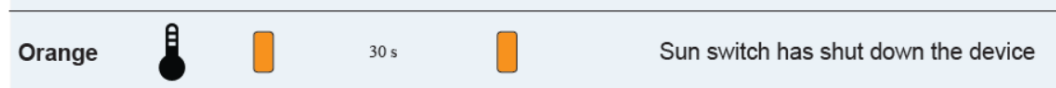
We have powered up the heater and have a comfy boat again. I'm of the opinion that we are heating faster with more air and a cleaner burn. YES! Warm is good.

The oar project did not end well. Either it was too cold, we needed a primer, or the paint is not good. Kathy got the coats of white on over the wood and fiberglass but you can scratch it off with a fingernail.

Monday, 22 June 2020, 07:36 AEDT – Copper Alley Bay, TAS

Yesterday the oars were put back together. I was hoping to be able to make the 2-part connection functional but in the end we hammered them together and that's where they will stay – long oars. I need to fasten screws into the collars to fix them in place.

Just now the [Wallas](#) 40DT diesel heater has again failed – this time with an overheat fault signal like on the 4th of June. I'll restart. It has also been occasionally shutting down with a “sun switch” fault which occurs when the room temperature exceeds the thermostat temperature by 3°. (At least I think so, if it's a red light blinking every 30s it is a more serious fault)



Wednesday, 24 June 2020, 16:08 AEDT - Port Cygnet Public Jetty, Tasmania

For the last several days the DEPTH has not been available on the chartplotter. Like [last time](#) a Factory Reset cleaned up the problem. Strangely, the Interphase Sonar appears to be somehow linked to this. It is now working too, even though it is a completely different unit. I truly have no idea why this is so.

Note the method for GPSMAP Factory Reset:

1. Save all data to a memory card.
2. Do the reset
3. Restore all data from the saved file on the memory card.
4. Reconfigure the units, layout, etc. It helps to refer to a screenshot of the layout.
5. Change Serial Port 2 to NMEA HS
6. Set up WiFi
7. Set Keel Offset to +2.0m
8. Enable auto power on.

Saturday, 04 July 2020, 17:27 AEDT – Franklin, TAS

Kubota Diesel Generator

There has been a long-running issue where the DECR function was not working. After much isolation and testing of the entire circuit I removed the low-limit microswitch and inspected and tested it. It works now. Apparently the connectors (CON4) were loose.

I also set the slide switch on the back of the remote control to enable the GLOW function. In the cold Tasmanian winter it is important to have the glow plugs running. This wasn't necessary in the summertime.

The diesel engine still has issues with dying when first started. This would interfere with using the AUTO function if the delay is long enough that the 3-try sequence isn't in effect.

The Kubota Diesel Generator also had a faulty temperature sensor, which has been replaced. Finally, the temp gauge on the control panel is working!

I also added a second bi-metallic thermostat switch which is NO and closes at 50°C. It is mounted on the DIN rail in the generator box to keep the exhaust fan running if the box temperature is over 50°. I also replaced the thermostat switch on the raw water exhaust with a 70°C NO sensor, but that is too high. The proper temperature should be 60°C.

Tuesday, 07 July 2020, 08:52 AEDT -

The Vesper XB8000 (AIS) was not connecting to the WiFi network this morning. Use the PC Vesper to connect through the Serial Port and bringing up the WiFi tab showed that the connection to the network was missing. SCAN does not bring up the SVBEATRIX_24 network either. The solution was to reboot the Netgear Nighthawk mobile router. Then SCAN again and connect. Note that the Vesper can only connect at 2.4 GHz. If this happens again just reboot the Nighthawk before having to connect the USB port.

Monday, 13 July 2020, 13:37 AEDT - Copper Alley Bay, Tasmania

Found water inside the main cabin Port Locker 2. The suspicion is that there is a leak in the filling tube or fittings near the deck. The hose is the original 1.5" green hose, 40 years old. Emptying the locker and the storage area below the settee seat had quite a lot of moisture. There was clear evidence of bilge water intruding below the seat. Our stainless steel fish poacher has many holes in it's bottom where it rusted through. Maybe we can get it spot welded; or just get a new one if and when we need a fish poacher. We really don't ever use it. The back panels were left off to facilitate drying, if at all possible.

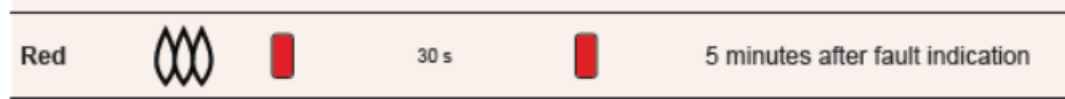
Wednesday, 15 July 2020, 11:29 AEDT – en route to Quarantine Bay, Tasmania

Yesterday I did some rewiring to allow the new broadband modem, a Netgear Nighthawk, to only be connected to charging power during the night. I used the output from the Autonav/Autoanchor module to run a 12v daytime only feed to the Navigation Panel. It is supposed to run 24hr on a full charge, so we will see how it goes tonight.

The Port Tank fuel fill sensor is not working properly and needs to be inspected/replaced. I think I should put in double float switches, but there is no way to accurately test them if one fails other than removing the plate!

Tuesday, 21 July 2020, 13:14 AEDT - Prince of Wales Marina, Tas

We are seeing occasional auto-shutoff of the [Wallas](#) heater. By the time we notice it we are seeing this pattern:



I think we have to look for the other fault signal before it enters this signal. In all cases, a restart works just fine.

Tuesday, 21 July 2020, 17:25 AEDT - Prince of Wales Marina, Tas

Ongoing consumption of ATF by the Velvet Drive transmission (unusual) suggested replacing the O-ring on the “forward/reverse gear transmission valve. This was not a difficult job and took less than 2 hours. I did not dis-assemble the valve. After removing the valve “flat” on the rim was visible. We had 2 in spares so there is one more O-ring left. See the [previous repair](#) eight years ago. Note that parts for the Velvet Drive are available at [Hale Marine](#)

Wednesday, 22 July 2020, 15:06 AEDT - Prince of Wales Marina, Tas

Forward head Vacuflush seal kit installed by Kathy. Works great.

Thursday, 23 July 2020, 11:17 AEDT - Prince of Wales Marina, Tas

Changed ATF in Velvet Drive Transmission. It was a wee bit dirty.

Saturday, 25 July 2020, 19:21 AEDT - Prince of Wales Marina, Tas

Today I “fixed” the dead autopilot:

1. Tested the motor: OK
2. Checked all fuses: OK
3. Removed a/p computer and replaced with spare (labeled #2)
4. Spare is NOT OK
5. Took another look at the original a/p computer
 - a. Noted the 30A high power ATO fuse seemed “loose”.
 - b. Used pliers to squeeze the fuse socket.
6. Ran the autopilot: OK

It was either the “laying on of hands effect” or the loose fuse was the problem (which seems unlikely)

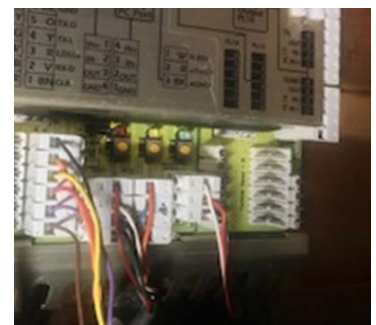
It’s all in making the brooms dance; it doesn’t matter if you have no idea why they are doing

Sunday, 02 August 2020, 07:56 AEDT - Kangaroo Bay, Tasmania

[Wallas](#) heater fault. Heater shut down unexpectedly but with no fault signal, just the cool-down signal.

Tuesday, 04 August 2020, 17:32 AEDT – New Town Bay, Tasmania

The Cetrek Autopilot stopped working, again. The control head would not turn on the system. I opened the a/p computer and pressed the middle button (at right) which is the ON button. A green lamp lit up. The left button turned the wheel to port; the right button turned it to starboard. The control head started working with the press of the ON button. Installing the lid caused the system to fail. Removing the lid and carefully replacing it caused the system to work again. Possibly there is a loose connection or a split trace? I don’t know.



Saturday, 08 August 2020, 07:31 AEDT - Public Dock, Hobart Tasmania

I finally fixed the throttle control issue with the Kubota Diesel Generator. I removed the motor but left it connected. Turning the motor one way – it would work; turning it the other way it would not run. It turns out there was a loose wire inside the actuator motor which had come loose from the circuit board. I still replaced the motor with a spare on and will keep the broken one if I need it later as it is possibly repairable. I suspect the heavy vibration from the diesel engine contributed to the problem. If I find the time I could “pot” the circuit board to strengthen and stabilize the board and connections.

