

Engine Driven Fridge – Freezer maintenance part 2

In part one of the this series, I talked about the components of the engine driven fridge system, what they do, how they work, and basic top up or recharge instructions.

In this part, I'm going to cover oil changes, and flushing of the fridge or freezer system. I had to do this recently on my own boat, so I thought now is a good time.

There are several reasons why you may want to change the oil, or flush the system. A burned out compressor will contaminate the system, and require this. A change of refrigerant types can require a change of oil, as can a replacement compressor. In my case, due to the rubber hoses beginning to break up, the oil was contaminated, and you could no longer see through the sight glass. The hoses also became permeable, allowing the gas to escape. As far as I am aware, the system has been basically untouched since 1988 when Island Time was launched, except for a compressor replacement (and refrigerant change from R12 to R134A) about 10 years ago.

If you need to remove the refrigerant from your boat, get a fridge tech with recovery equipment if at all possible. It is illegal to vent the gas to the atmosphere. Refrigerant recovery equipment is expensive – too much so for the average DIY boatie.

OK, onto the job. You can buy a “flush kit” for this task from amazon, if you like. It consists basically of a flush gun and some tubing. The solvent can be purpose made, but is basically white spirits. The flush gun is compressed air driven, and blows solvent through the system, sucking it into the air stream by way of a venturi system. Being on a strict budget, I elected not to do this, but to improvise. Here is how – beginning with an EMPTY system!!!

Remove the compressor and drain the oil. On the sanden SD508 that I have there is a filler/drain plug on the top. Invert the compressor and drain for at least 30 mins,

turning over the compressor at least every 5 mins or so, to enable the oil in the cylinder to drain out.

Remove the drier/filter, sight glass, expansion valve, and accumulator (if fitted). You may also like to remove the condenser, but I did not. Now the system is separated into parts, 3 in my case. I used some plastic tubing to connect to the hoses, and poured a known quantity of white spirits into each part. I then used compressed air to blow the white spirits through the part I was cleaning, and collected the expelled material. I made sure I got all the white spirits out, which is why it was measured to begin with! In pic 1 you can see the tubes used to flush the holding tanks / evaporators; Pic 2 shows the colour of the white spirits that came out of the holding tanks / evaporators. White spirits is completely clear normally, so you can see it needed doing!



Pic 1



Pic 2

Once the system was clean (the white spirits comes out clean) I moved on to the next part. I flushed the compressor as well, then refilled it with 300mls of ester refrigeration oil. The exact amount of oil required depends on your system, but mine is quite big – 250mls is common.

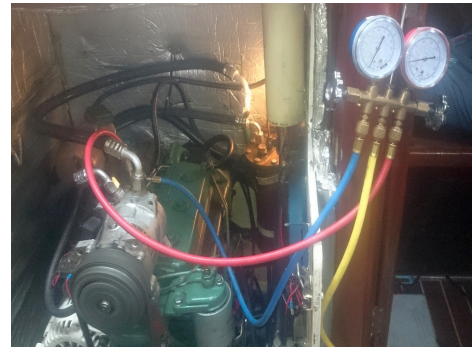
When the whole system is clean, re-install all the parts, including a new filter/drier. The, using a vacuum pump, sucked the system down to -30 psi, and left it on overnight. Then refill as per instructions in part 1.

The end result is a system that runs well, has a clean, clear sight glass, and interestingly now runs at a lower pressure on the high side than it used to, and with the expansion valve closed quite a bit more. In pic 3, you can see the frosting on the return pipe showing the system is working correctly – the frosting is not reaching the compressor!

If you have any questions about this, just post a question on www.crew.org.nz, and I'll do my best to answer it.

Cheers

Matt



Pic 3