Range Rover P38 HEVAC Pixel Fix

This document is designed as a guide for replacing the ribbon cable in the HEVAC controller with a newer style Elastomeric connector, which unlike the original connector, isn't stuck to the PCB or the LCD glass, and hopefully will give the HEVAC unit many more years of use.

This document is designed to take you through the steps of removing the old ribbon cable and replacing it with the new connector. Tools required are a small Philips head screwdriver, a Torx head screwdriver (T10 or T15 it seems, I've seen both used!), a cotton bud / 'Q tip' and some rubbing alcohol (Isopropyl alcohol, or contact cleaner), a sharp scalpel or knife blade, and other cleaning wipes as desired to clean the interior of the HEVAC unit.

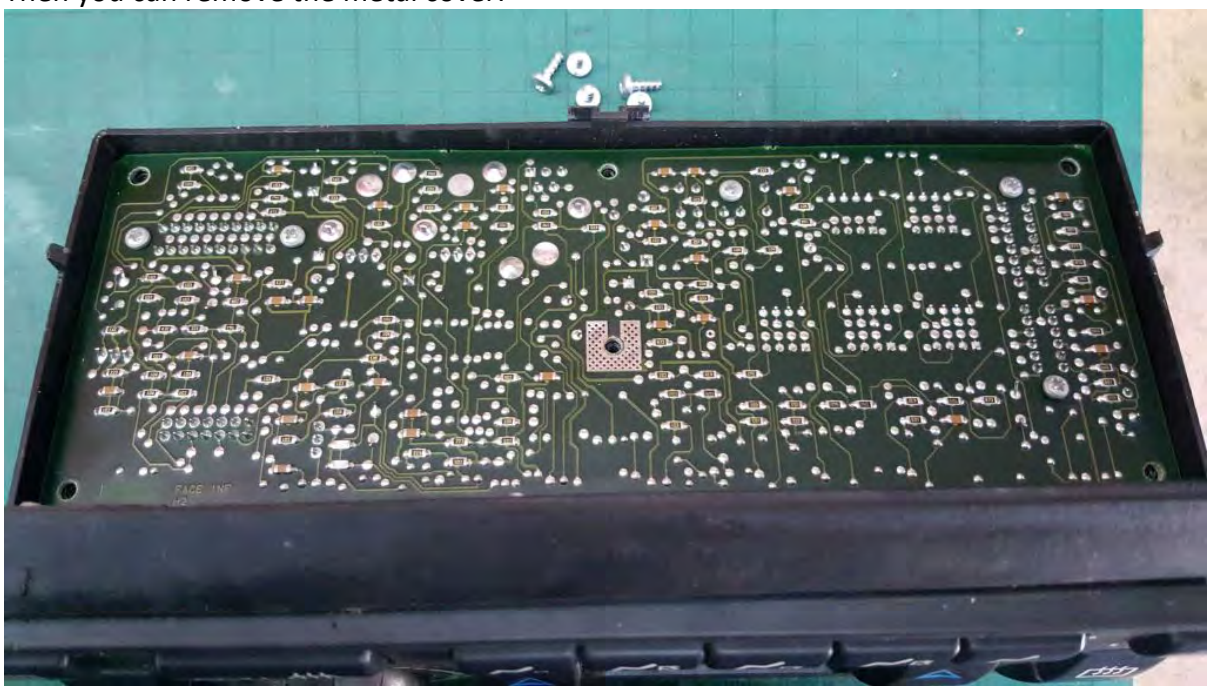
So without further ado….

I am assuming you have removed the HEVAC from the vehicle by now. If not, then have a look in 'RAVE' which is freely downloadable from the internet, and is the workshop service manual. It shows the procedure for getting the HEVAC controller out of the dash.

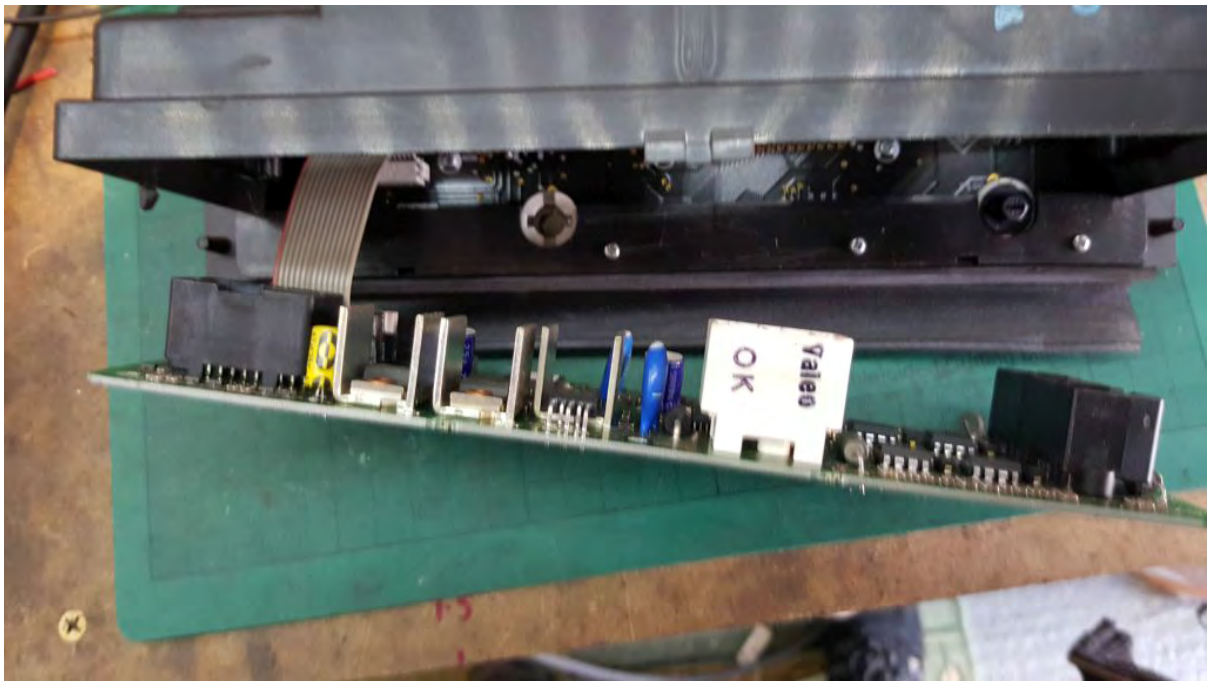
You should end up with something like this on your bench/table:

First, start by turning the unit upside down, and removing the 6x Torx head screws from the bottom panel:

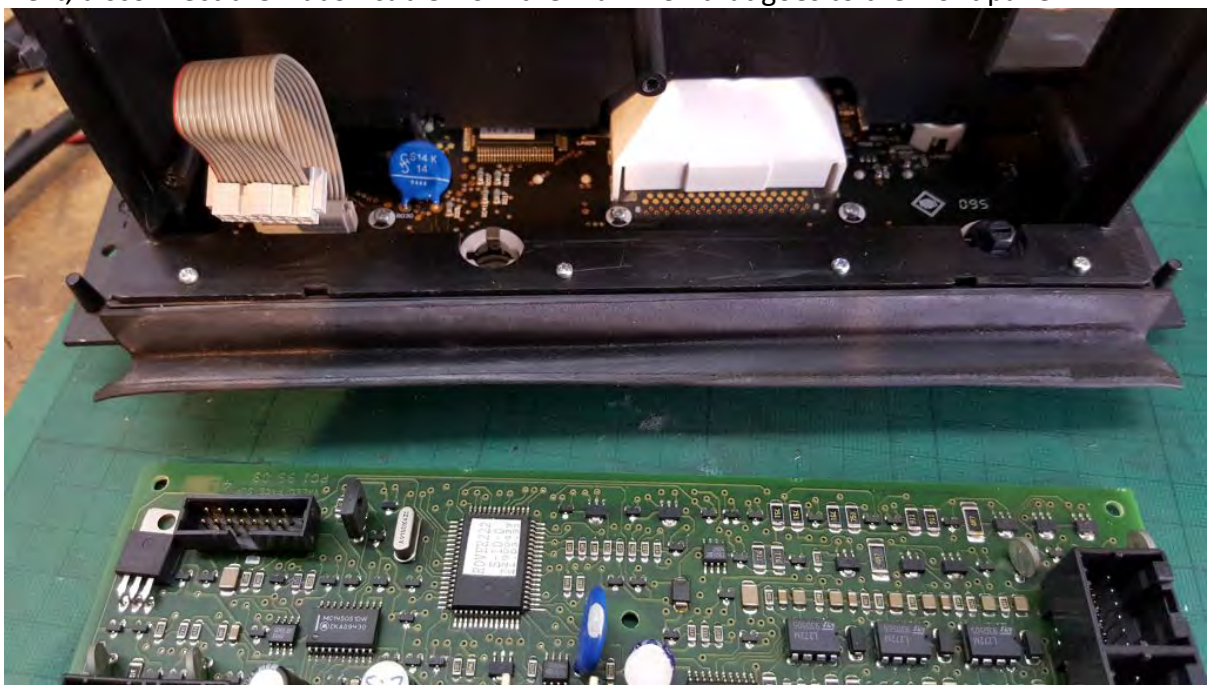
Then you can remove the metal cover:



And remove the PCB:



Next, disconnect the ribbon cable from the main PCB that goes to the front panel:

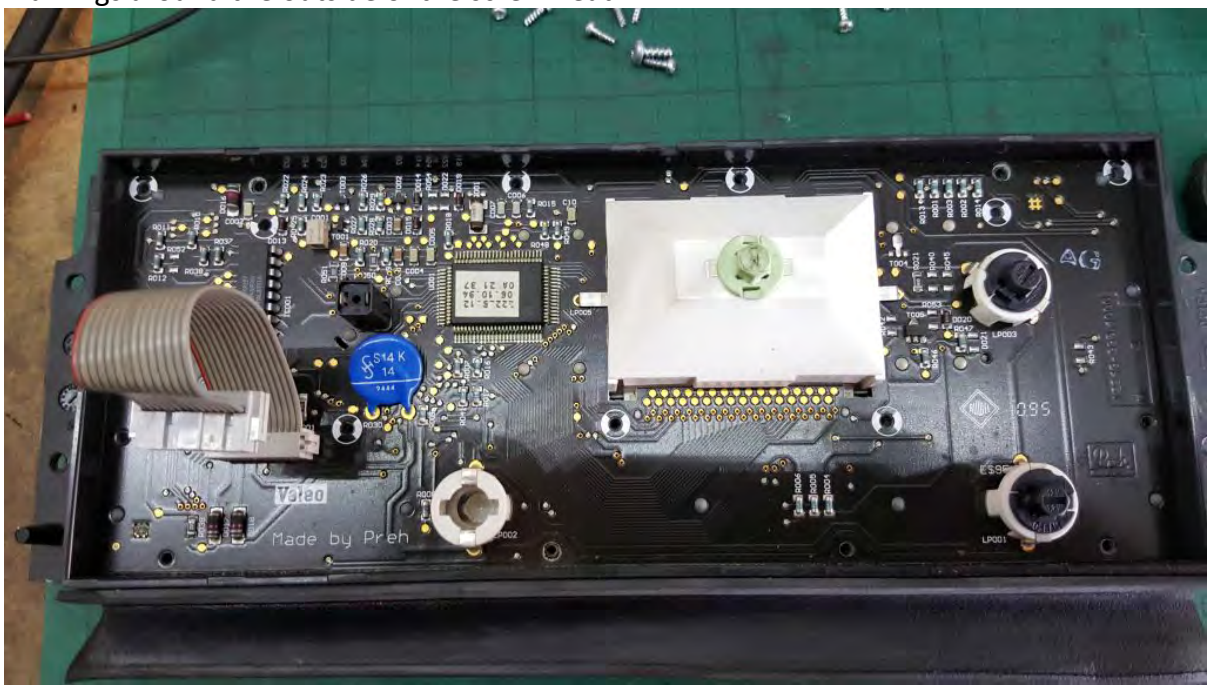


Set the main PCB aside with the bottom metal cover, and the screws in a safe place, ready for re-assembly.

Next, there are a number of small Philips head screws around the back side of the front panel, holding the plastic casing on:

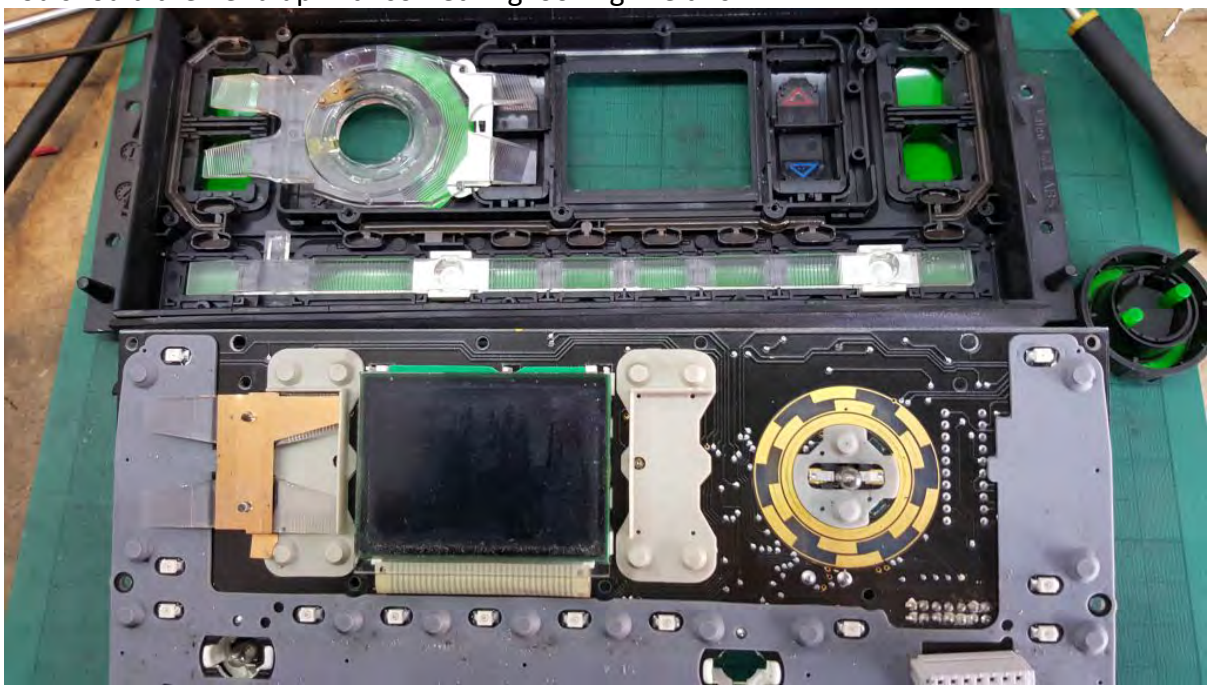
Remove all of these, set them aside with the other parts, and then remove the plastic casing:

You should then be left with just the front panel. Again, there are now 8 screws holding the PCB into the plastic panel. You can see them removed in the picture below, with the white markings around the outside of the screw head:



With these removed, you should be able to carefully remove the whole PCB from the casing. I usually put a couple of fingers on the LCD screen to gently get it started moving. If it isn't moving, then double check ALL the required screws are removed!

You should then end up with something looking like this:

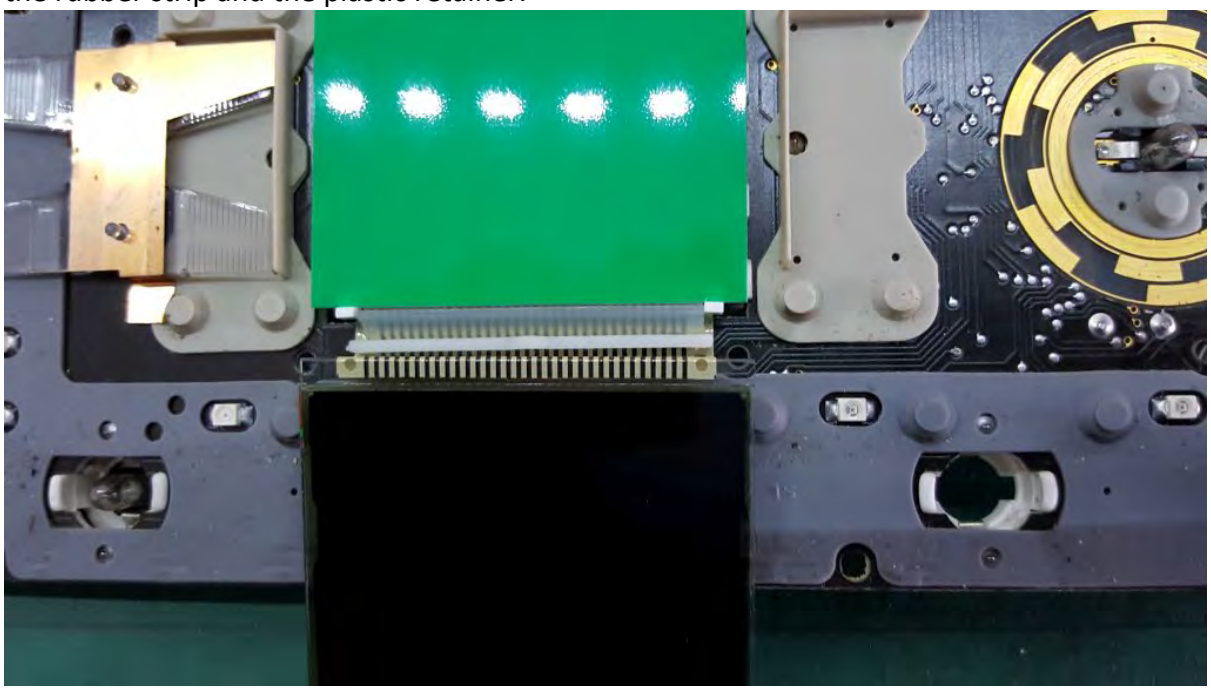


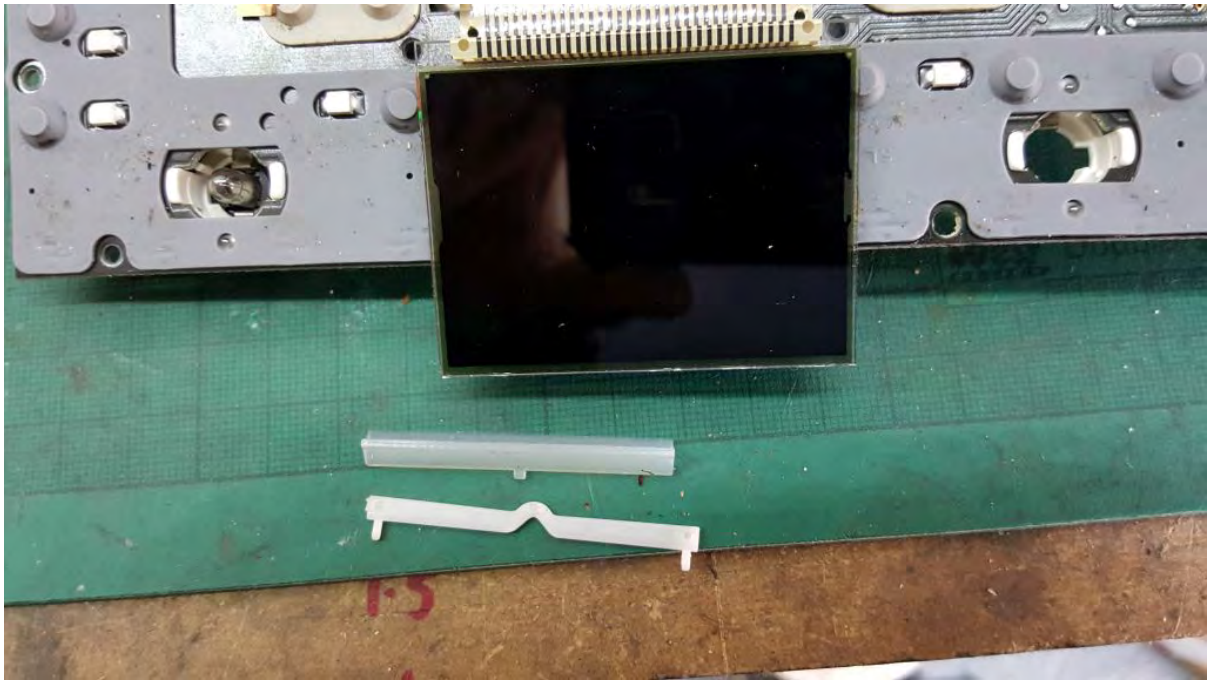
A note here… in the top/left of the picture, you can see the clear plastic light pipe, with the sliding ring in the middle. This is the bit that adjusts the fan speed. The little metal wiper can get tarnished, so if you fan speed knob has been a bit temperamental or you have to

keep turning it to get the fan speed to increase, then it is worth giving the wiper a clean with some very fine (600 or 800 grit) sandpaper, or emery cloth. Also be VERY careful with this ring, as there is a small spring and ball-bearing fitted into the plastic ring, which is the bit that makes the knob ‘click’ as it’s turned. If you aren’t careful the ball bearing can get free and ping off! I have been able to source replacement bearings and springs if this has happened to you!

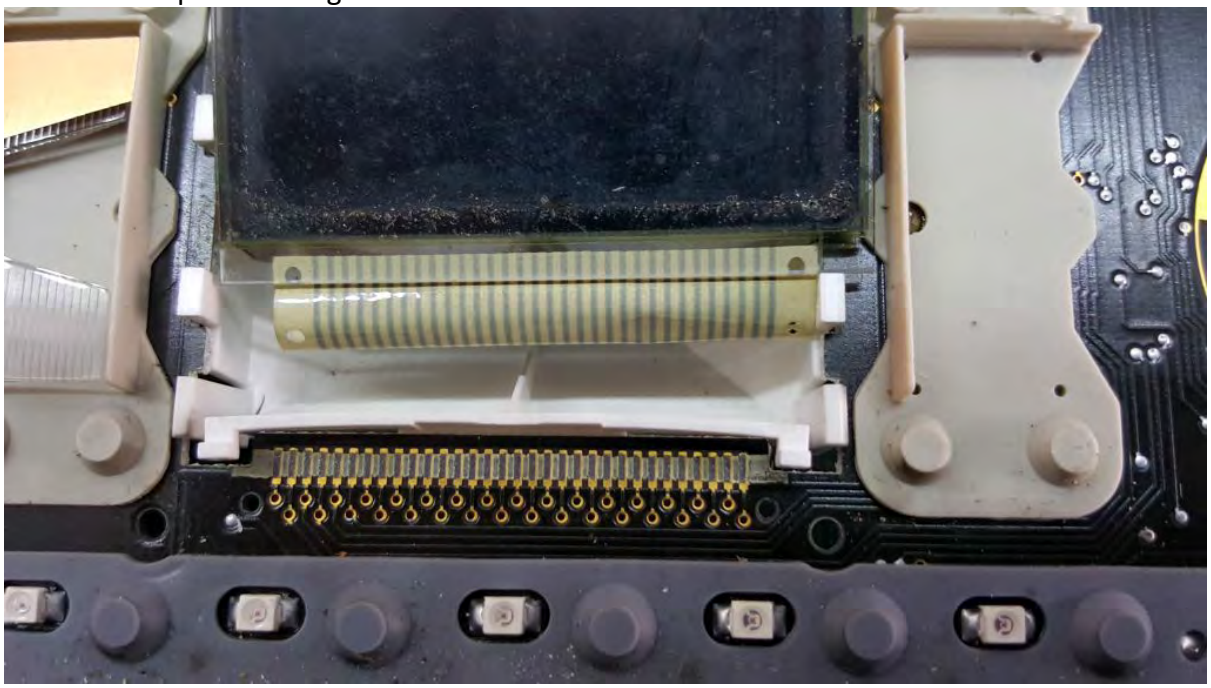
The plastic front panel and the assorted light pipes etc can be put with the other pieces, ready for reassembly.

You can now flip the LCD display down on the ribbon cable and remove the green diffusion, the rubber strip and the plastic retainer.

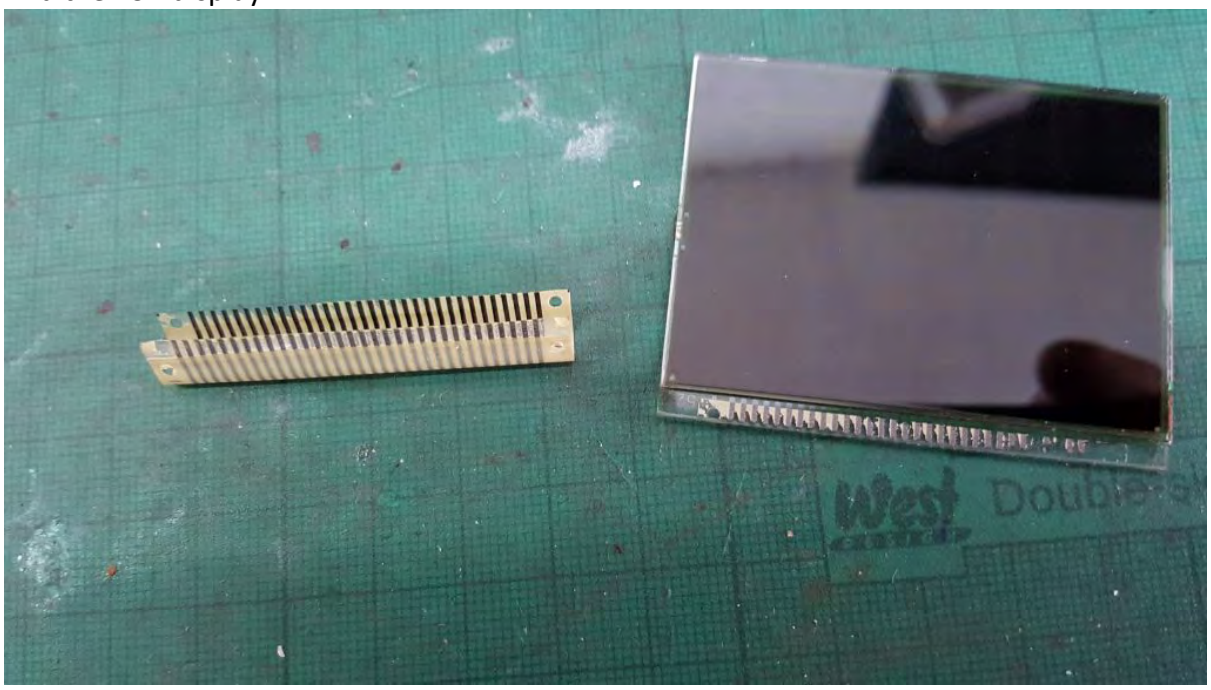




You can now peel the original connector off the PCB:



And the LCD display:



Note the remains left on the LCD glass and the PCB. This will need to be removed with a sharp blade, and some rubbing alcohol to clean the surfaces, before we install the new connector:

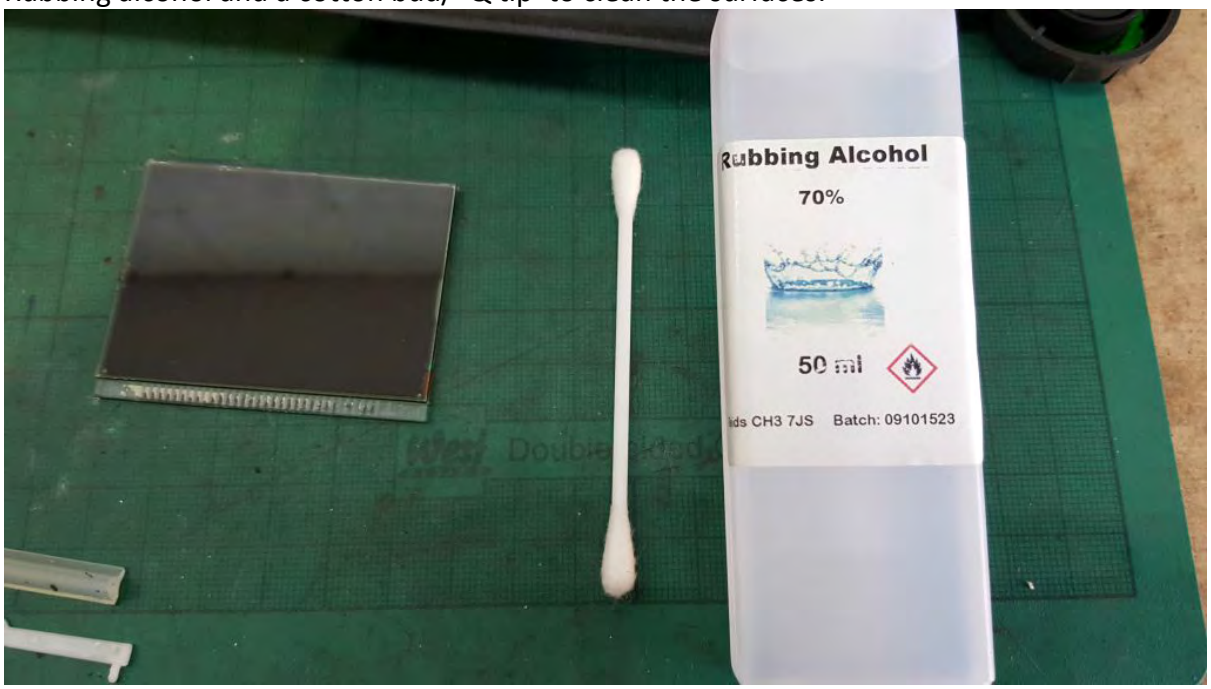
UPDATE August 2017
It is not strictly necessary to clean the remains of the connector off the board, or the LCD screen – as the bits that are left behind are conductive anyway, so the new connector will work with these still here. You can clean them off if you wish, but there will be no harm done if you don't have the tools etc to clean them – it will still all work!

If you wish to remove the remains, then follow the following steps, if not, you can bypass these up to the point of starting to refit the parts back.

Remains on the LCD screen:

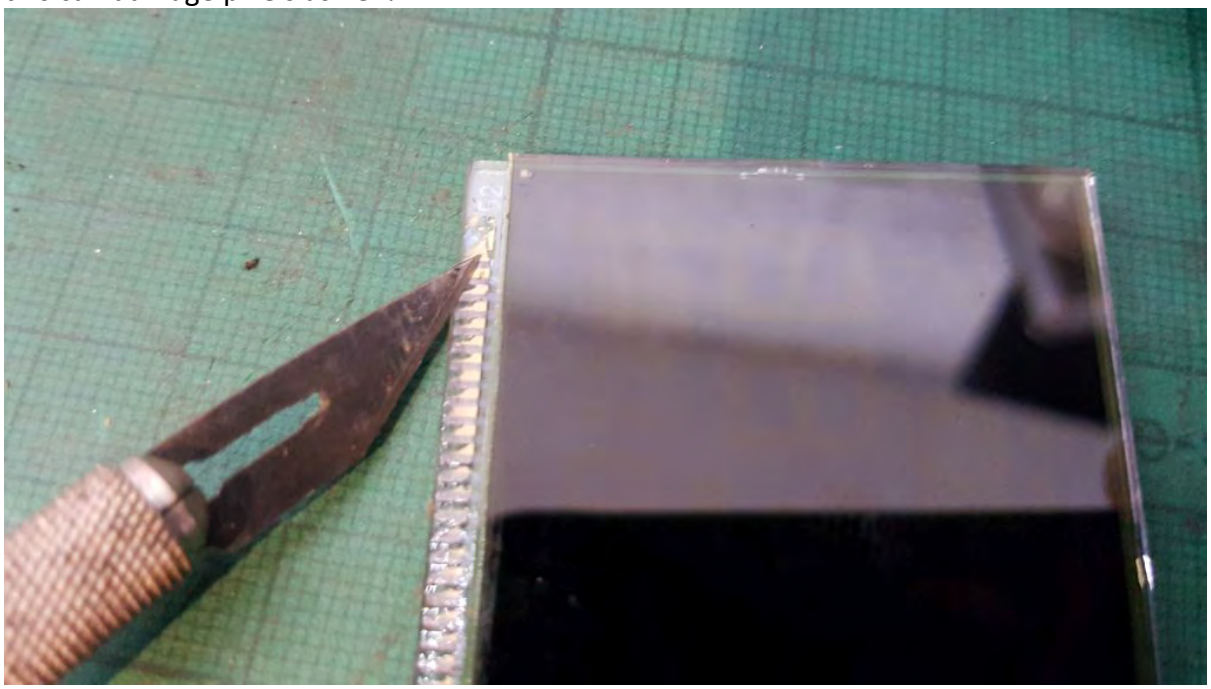
And on the PCB:

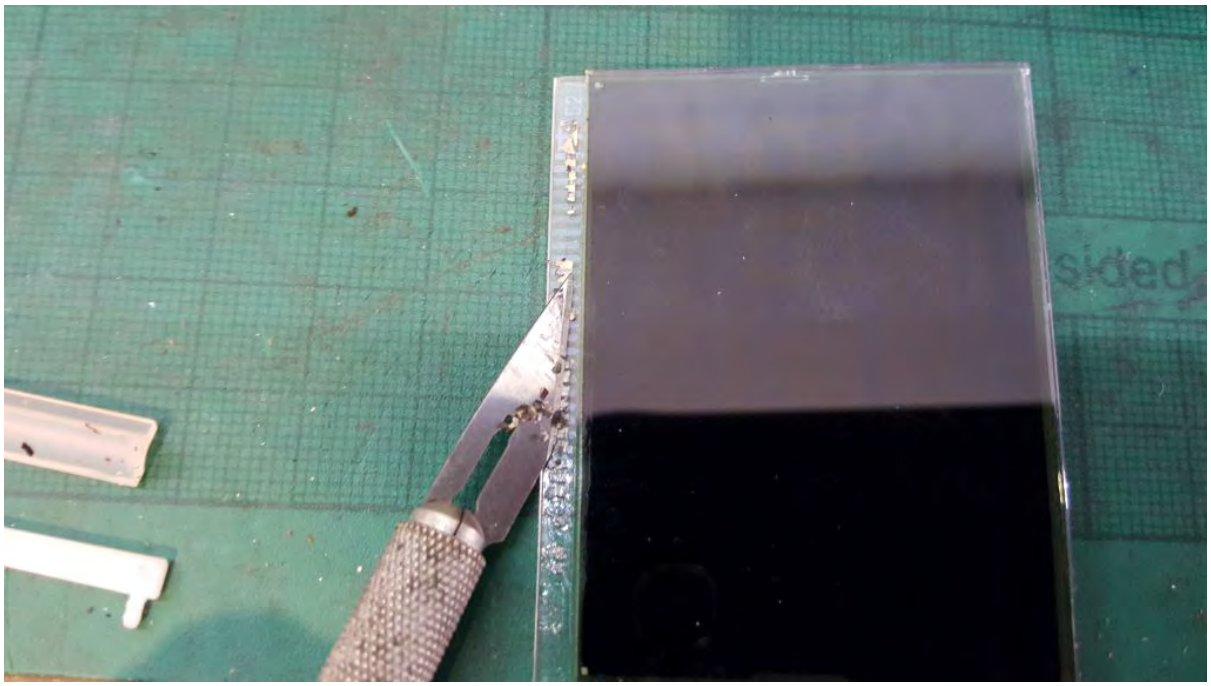
Rubbing alcohol and a cotton bud/ ‘Q tip’ to clean the surfaces:



Scalpel or sharp blade to scrape off the remains from the ribbon connector:

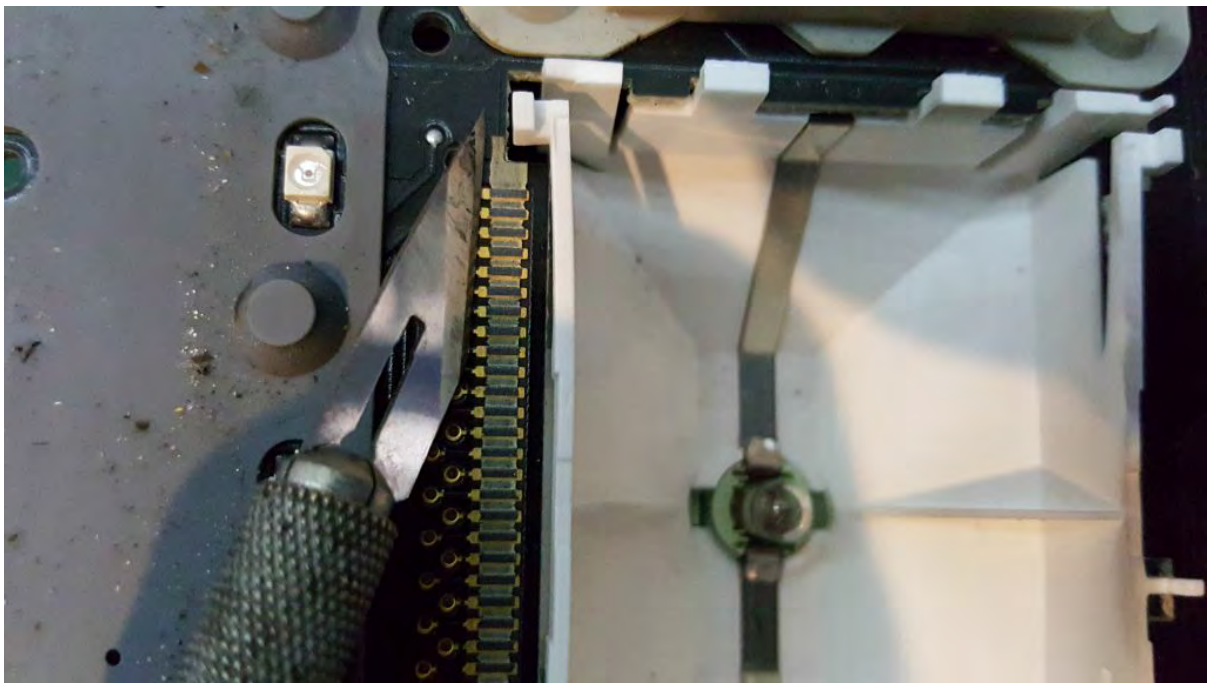
Very carefully scrape the remains from the LCD screen, and then wipe clean with the cotton bud/rubbing alcohol. Be careful not to scratch the conductive etching on the LCD glass, as this can damage pixels aswell!





If you hold the LCD display up to the light at the right angle, you can see the embedded electrical contacts in the glass (the lines in the bottom of the glass in the above picture)

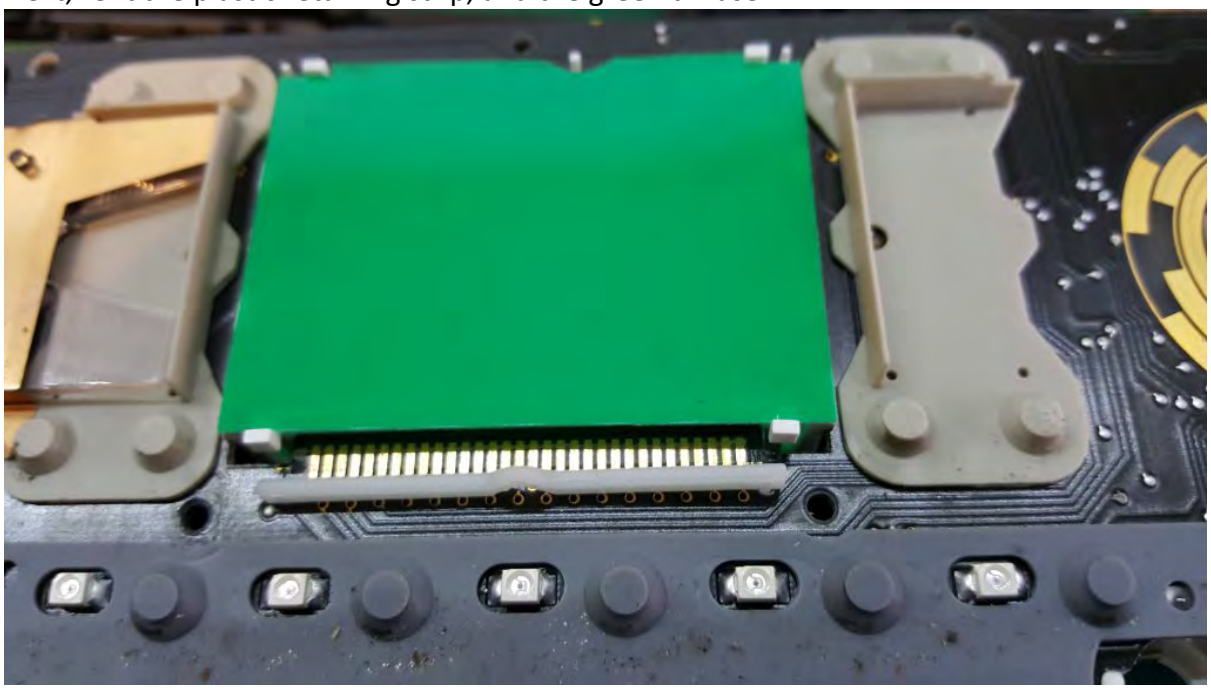
Do the same for the PCB:



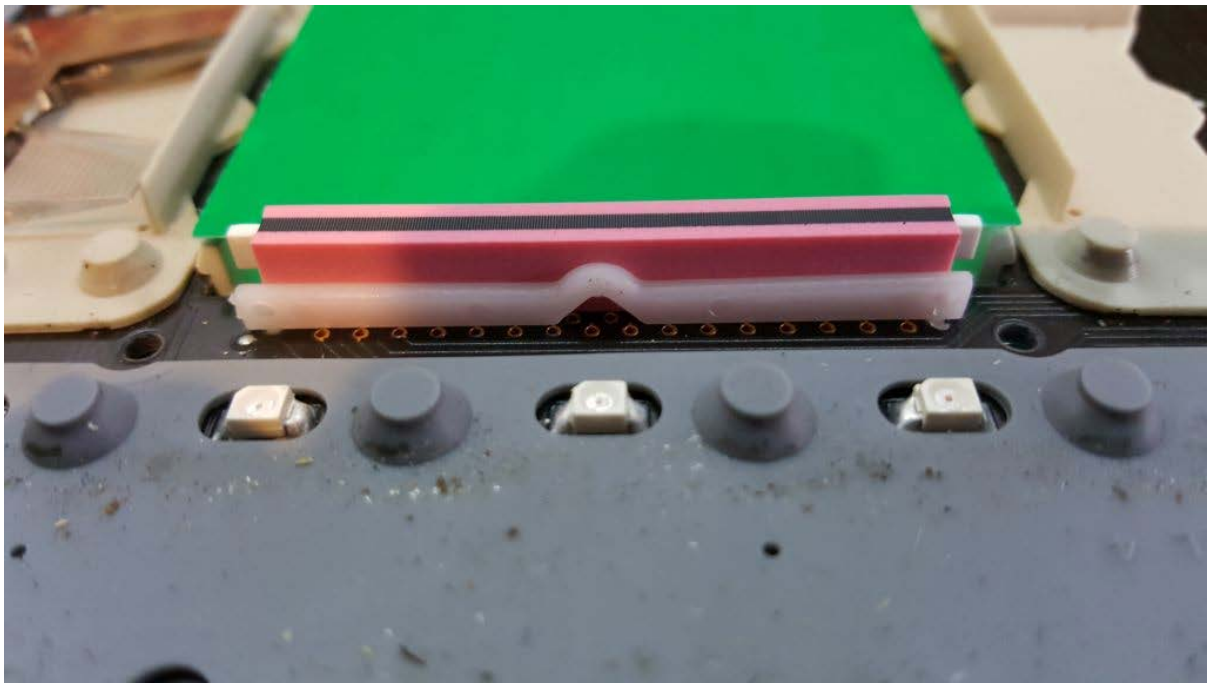
Being careful not to damage the contacts on the board itself. Again give it a clean after removing the remains of the connector:

Now is a good time to give the rest of the front panel a clean. The rubber button pads do come off, so you can clean these, and underneath them. They are then fitted back to the board, and there are little rubber ‘studs’ that push into holes in the PCB to hold it in place.

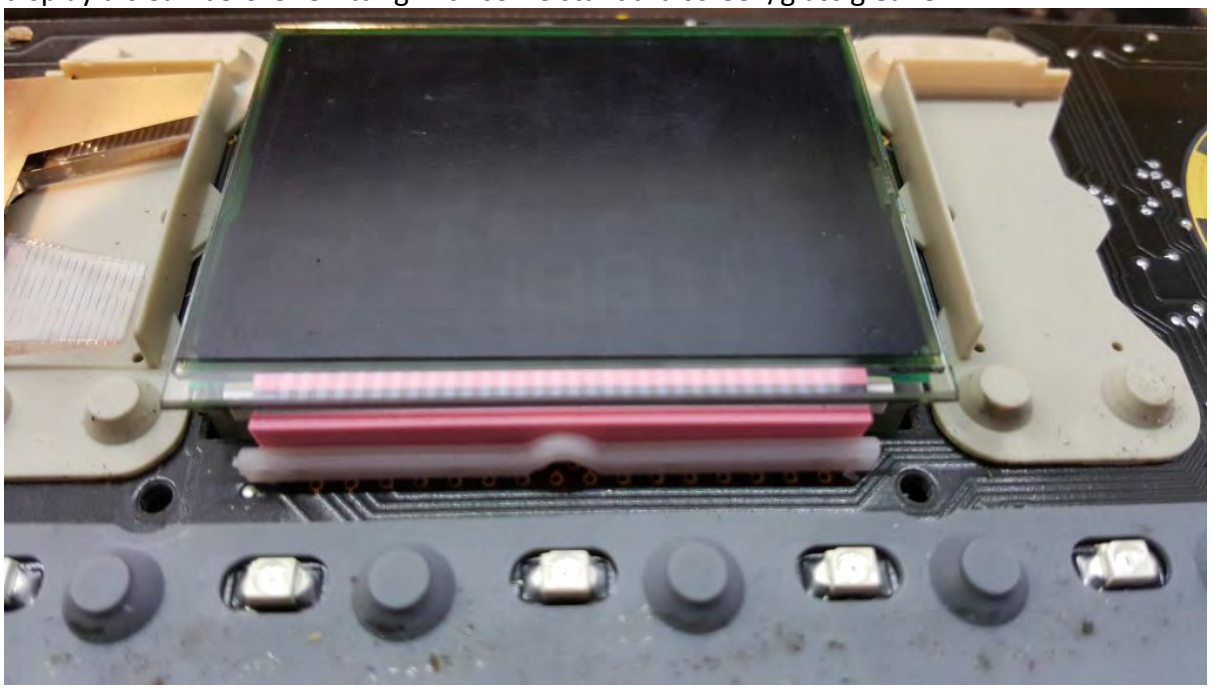
Next, refit the plastic retaining strip, and the green diffuser:



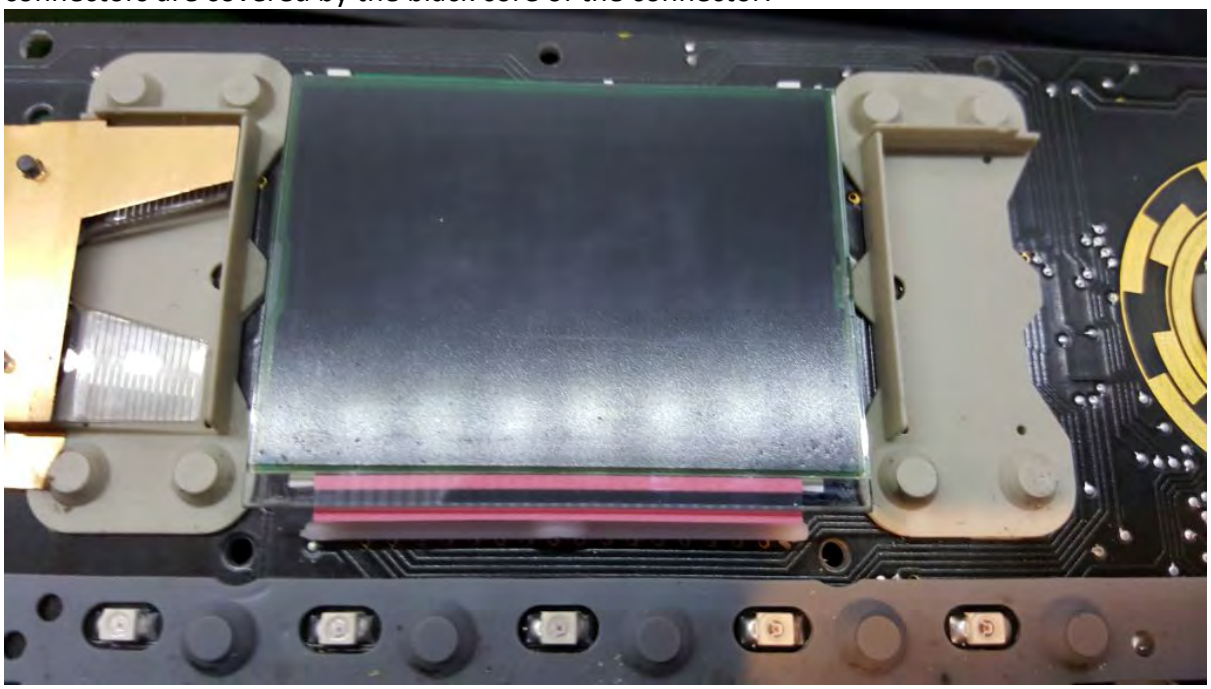
Then fit the new LCD screen connector:



Then the LCD Display on top – making sure you have it up the right way. I give the LCD display a clean before re-fitting with some standard screen/glass gleaner:



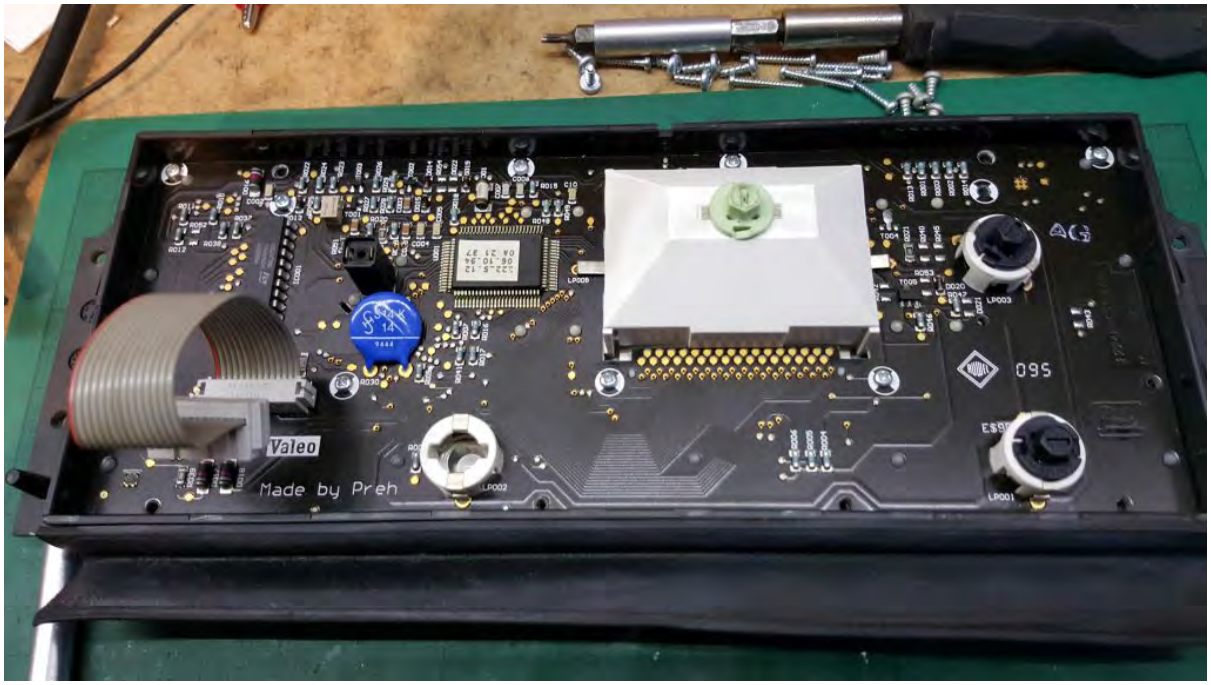
Make sure the connector is centered along the display, so that all of the electrical connectors are covered by the black core of the connector:



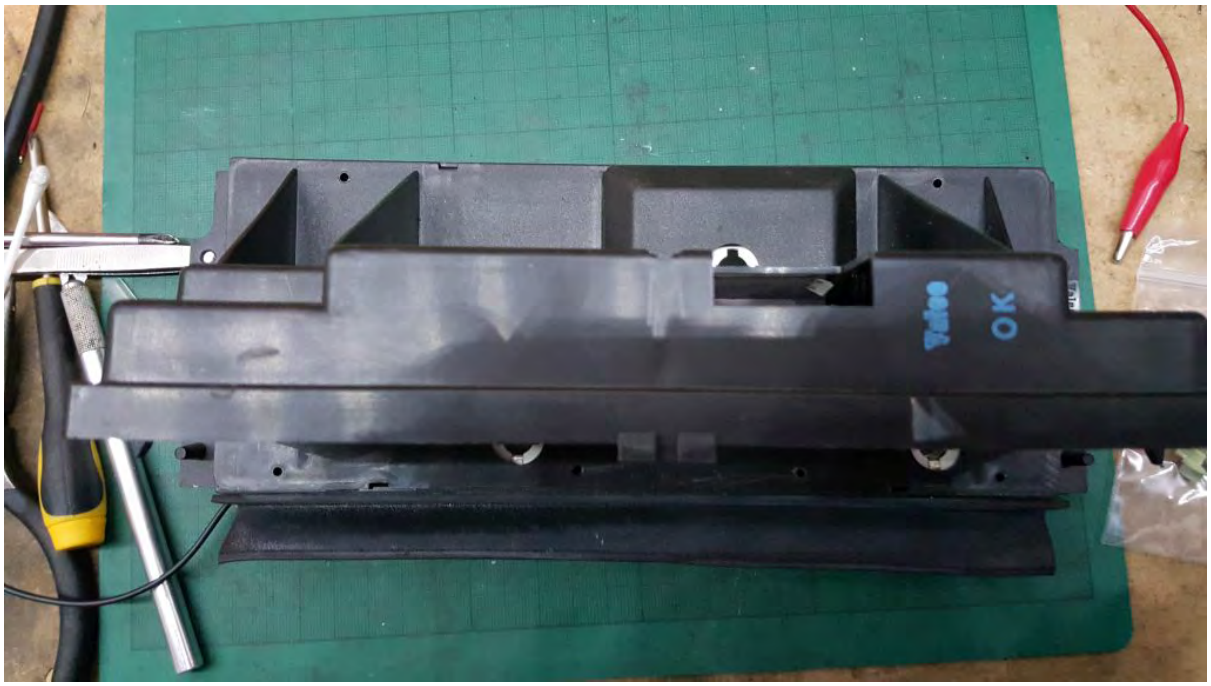
I then re-fit the plastic light pipes and fan knob surround carefully placing them on the PCB, and then refitting the centre section of the front panel over the screen, to make sure everything is aligned properly. It can be a bit fiddly, but most of the plastic light pipes etc all have some form of locating tab(s) so you can't really get them in the wrong place, or assemble it all without them being located correctly:

Then carefully overlay the outer part of the front panel. I usually at this point hold the whole thing from the back with one hand, and then fit the front piece with the other, keeping it all flat to avoid everything moving around!

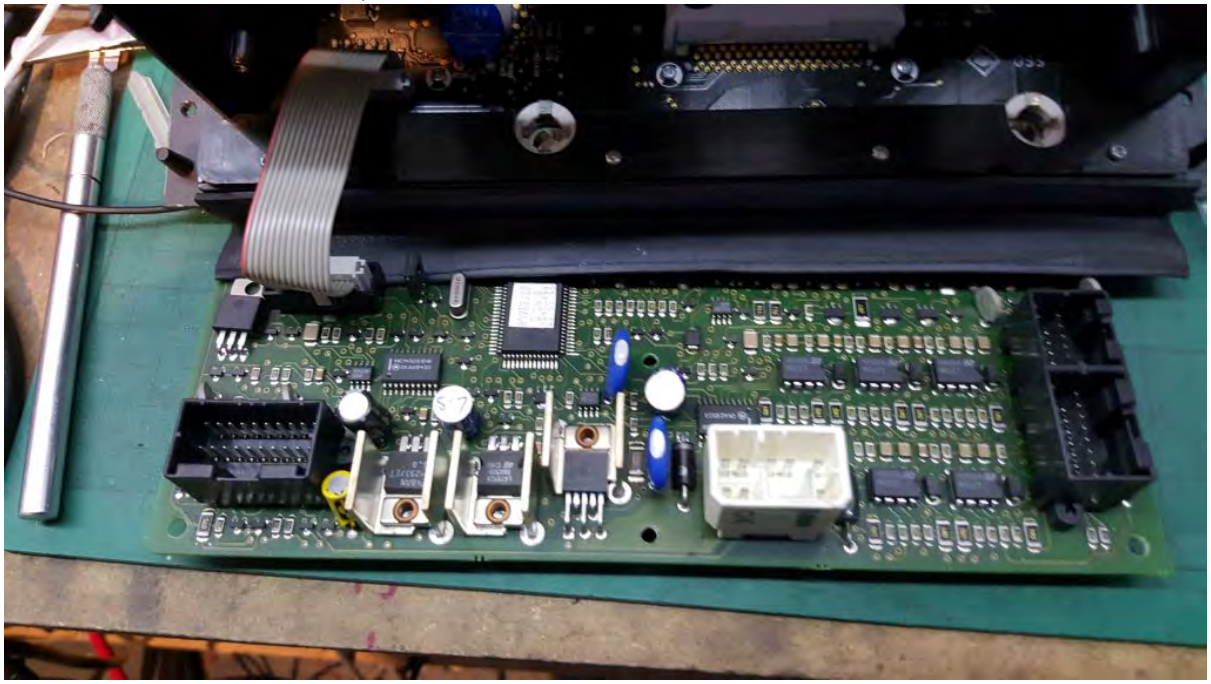
Once it's located and pressed down, you can then flip the whole front panel back over and re-fit the small screws. I start with the 2 either side of the bottom of the LCD Display (basically either end of the new connector) and the ones at the top of the display. Don't do them all up tight just yet – get them all located, and screwed down a few turns, and then go back and nip them up. They don't need to be stupidly tight, but they do need to be done all the way up, as the new connector for the LCD Display works on the pressure of the board being screwed in to make a solid connection:



This is also a good time to replace any faulty backlight lamps, before you get the rest of the unit reassembled. Once you are happy everything is aligned, and tight, then you can replace the back plastic cover, and do up the Philips screws around the outside again:



Reconnect the ribbon cable, to the main PCB:



And sit this back in the casing, refit the metal bottom plate, and do the screws up. You should then have a fully rebuilt HEVAC controller… Take it back to the RR and do a 'test fit' before putting the controller back in the dash and putting all the trim back. If everything has gone to plan, then you should have something like this:

But hopefully without the 'book' symbol and the '-40'. These were showing up in this picture as I was testing this one on the bench, so none of the blend motors/sensors were hooked up! (the other random light bleed in this picture is from the temporary light source I was using, as the backlight lamp had blown in this particular unit, and it became my guinea pig for LED backlighting the display)

If you aren't happy pulling the unit apart, or want to look into other 'upgrade' options/service repairs, then get in touch as I do a HEVAC controller overhaul service, which includes the screen connector being replaced. I am looking at offering other options too, such as replacing the driver chips for the blend motors, and LED backlighting the display, and buttons.

I am also working on having a white backlight option for the LCD display as an optional extra. Unfortunately the buttons can't be upgraded to white backlights, as they have the green colouring moulded into the plastic, which makes them near on impossible to light white, but I am looking at ways of replacing the incandescent lamps with LEDs to hopefully make them a bit brighter, and also less likely to require swapping in the future!

I have sourced replacement ball bearings and springs for the fan speed knob, these are available if you need them – contact me on the email address below for prices.

I hope this has been useful, and feel free to contact me with any questions, comments, or feedback on my email address below. Check out my website for the HEVAC LCD connectors, and other reconditioned/repaired P38 parts!

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