Heater control bulb to LED upgrade

Hi, this DIY tutorial shows you how to replace the rather dim bulbs in the heater control switches for brighter LEDs. To carry out this procedure you do need to be a bit 'electronically' or 'electrically' minded as it involves de-soldering and re-soldering small parts. If you are at all unsure about any of the steps, then get someone who has the necessary expertise to help. Obviously, what I provide here is guidance only (it is how I did it), I cannot guarantee that you will have the same degree of success.

You will need:

Soldering iron with small tip Solder De-soldering tool Small pliers and side cutters Small screwdrivers or similar. Replacement LEDs with suitable ballast resistors (I used 3mm high brightness LEDs with 470ohm 0.25W resistors) 12V supply for testing

Firstly, you have to get the switches out of the heater control and this can be a bit of a struggle. There are two distinct variants of the heater (early and later), I am unsure about when the change took place but it must be around late '88 onwards. The early controls had the switches soldered in, the later had them mounted in sockets. To identify the two types look into the front lower slider, if you see the circuit board as shown, it is the early type, if you don't see a board but a row of solder joints, it is the later type.



If you can get hold of a later unit, do it..as it is so much easier to work on. If you can do this upgrade on a spare and not the one fitted in your car, I recommend you do that too, if possible.

Either way, proceed as follows:

- 1. Carefully unclip the heater control fascia panel.
- 2. Remove the slider knobs and both rotary switch knobs.
- 3. Remove the securing nut and washer from the RH temperature control.
- 4. Remove the insulating tape that goes around the heater control housing.



There are 8 small plastic tags that hold the housing to the front panel, treat them with care as they can break easily..they are old! Basically you have to separate the housing from the front panel, so use a variety of small screwdrivers or similar implements to push the tabs down whilst easing the housing off. I am sure you can work this bit out. Remember, slowly does it!

If working on an **early** unit, locate the back of the switches and de-solder the switch contact pins (7 apiece). You may have to remove some plastic sealer to gain access to the contacts. Ensure all the contacts are completely desoldered as you will damage the circuit board pad if you try to remove the switch with any solder still attached. Do not to apply too much heat to the pads as they will lift from the board. This is where experience with this kind of work comes in handy...you know what to do without damaging stuff.

Carefully check that the switch contacts are free and clean of solder before attempting the next step.

If working on a later unit, you join us here!

1. Carefully prise the switches from the circuit board (or sockets) to separate the plastic front panel from the unit. Take your time here and do not use excessive force. If resistance is felt it could be a bit of excess solder on a switch pin. This can be trimmed off using a sharp blade, if necessary.



2. Once the panel is free you need to remove the switches from the panel, simply push down the mounting tags and carefully extract them from the panel. Again, you can work this bit out.

Now you need to open the switch, as follows:

1. Using a fine blade or similar implement (and extreme caution so you don't injure yourself!), carefully prise the contact plate out from the switch body. Again take your time..do not use excessive force as you might break the switch body or the mounting tags. Either way, that would be a real problem when trying to get it all back together. Work on one side first, then the other until the plate pops free. There are 2 springs in the switch and they will assist in the separation, but they shouldn't have so much pressure to send the whole thing flying apart. That said, just be ready when the plate does pop.



- 2. Separate the switch, noting how the 2 springs are located.
- 3. Remove the springs (for convenience).



The bulb closest to the edge is the tally indicator that shows the switch operation, the one closer to the centre is switch illumination. I chose a blue LED for illumination and a green LED for the tally – but this choice is entirely up to you.

Preparing the LEDs

Now, it is pretty tight on space in the switch so getting the LEDs aligned right and at the correct height is important, otherwise they might foul on the switch mechanism and your switch may not work. Also, LEDs are polarised, so getting them fitted the right way round is very important as they will not work if fitted incorrectly.

The common contact between the bulbs is the ground, this is pin 31 on the switch. Pin 1 is the tally light, 58 is the illumination. Therefore, the negative leads (cathode) from both LEDs have to connect to the common, the postive leads (anode) connect via resistors to pin 1 and 58.

If you are unsure about which LED leg is which, Google will show plenty of examples, and use your 12V supply and a resistor to test..

1. Carefully remove one of the bulbs from the switch by simply heating the solder and removing the bulb wires.

- 2. Measure the length of the bulb and wires (approx 14mm)
- 3. Cut the LED anode to about 4mm see A below.
- 4. Cut one leg of the resistor to 4mm also.

5. Solder the resistor to the LED, do not apply too much heat as you could damage the LED - see **B** below.

6. Cut the remaining leg of the resistor and the cathode of the LED to match the length of the bulb - see ${f C}$ below.

7. Once the LEDs are prepared, give them a quick test with the 12V supply to ensure the leg with the resistor is positive. The LEDs should light.

Fitting the LEDs

1. Now, simply solder the LED in place, ensuring the polarity is correct - see **D** below.

- 2. Do the other LED, exactly the same, but a mirror of the first.
- 2. Once installed, connect your 12V supply negative to pin 31 and test the LEDs again by touching +12V to pin 1 and then 58. The LEDs should light in turn.
- 3. Make sure the LEDs are upright and no excessive solder is present.
- 4. Clean the switch contact pads (if necessary) using a contact cleaner.

Here are some photos of the above steps:



Reassembly

1. Replace the two springs into the switch plate and lower the switch body onto the plate. Do this very carefully to ensure the springs locate correctly (you will see how they are supposed to fit.

2. Squeeze the switch parts together until the tags locate on both sides with a 'click'.

3. Operate the switch to ensure it all works with no mechanical problems. Note, you may have to open the switch up a time or two to get it working just right if the LEDs are fouling. Be patient, it should all operate correctly when aligned, etc. Check the LEDs with 12V once again just to be sure!!

Then, do the other switch exactly as the first.

If you are also doing the other heater bulbs, use the same techniques (they are easier!).

Once everything is OK, reassemble the unit in the reverse order to the above procedure.

If you have tackled the other dash switches already, you are probably ready to take this on..

Hope this procedure helps someone with this task...take care! ${}^{5}\!\!{}^{5}\!\!{}^{5}\!\!{}^{5}$

PS. Here is what they look like when done (did all the others too):

