



The majority of these tips have appeared in club newsletters over the years. Please note that you use them at your own risk as neither the Bristol Austin 7 Club nor the authors can be responsible for the results of trying to follow the instructions given.

LED rear lights on an Ulster replica - by Peter Jennings

During 2008 I decided that I would try to convert the rear lights on my Ulster Replica to work with LEDs rather than the incandescent bulbs it would have had from new. LED bulbs draw a fraction of the power that an incandescent bulb does and, as they do not have the coil wavering around, should have a longer life as well. This extra power available would reduce the battery discharge at night, and allow a bit more for the headlamps.

The plan was to change the car as little as possible – to allow the switch back for originality or in case of failure. The car runs (at the moment) with 6 volt electrics. The rear lights are a pair of replica Lucas 582 with the replacement wider lens. These are mounted either side of the number plate, which is on the rear deck of the car (behind the access hole). Each light had a single armoured cable through a hole in the rear bodywork directly to the light, earthing through the mounting. The bulbs in these lights were stop / tail bulbs (2 filaments), but with parallel pins and the brake not used.

I studied Electrical and Electronic engineering many years ago, so understand the theory a bit. The easiest thing would have been to purchase some direct replacement LED bulbs and swap them over. The only place I could find exactly what I wanted was Australia, and they were out of stock! The next step was to purchase some 12 volt LED bulbs and see if I could modify them. LEDs work on a low voltage, so need a drop down resistor to allow them to function on 12 volt (they are also put in a line to reduce the voltage across each one). I purchased some 12v units and dismantled them, but the way they were made it was not possible to drop them to 6 volt usage.

The second plan was to find some simple 6 volt LED stop / tail bulbs and modify them. On the 582 light unit the same bulb is used for side lights and number plate lights. This is OK with incandescent bulbs where a white light is given off

and a red filter in the lens converts the light to red at the rear. LEDs work better when the LED gives off the same colour light as the filter. In addition, most LED replacement bulbs do not have the side light function, or if they do it is the same colour as the end.

I purchased a pair of red 6 volt stop / tail bulbs from EBay for the sum of £5.00 plus £1.50 postage. To get them to do what I wanted then took a bit of work. I also purchased from EBay some bright white LEDs and some resistors. The first job was to drill a hole in the side of the bulb to look at the way it worked inside. The LED had 19 small LEDs in concentric circles. These were wired up with (from memory) 3 in a line (or in series), each group of 3 with a resistor in front of them. With incandescent bulbs there are two filaments, one for the stop and one for the side. These have different wire to give the different output (21 Watt stop and 5 or 6 Watt side normally). The LEDs work differently, having a single set of LEDs and a resistor in the wire from the side light to drop the amount of voltage going to each LED when in side light mode, so reducing the light output. What I needed to do was tap into the internal bulb wiring between the drop resistor for the side lights and the LEDs themselves. This would ensure I had the correct connection to join my new number plate LEDs to. As you can imagine as this was inside the metal casing for the light it was all a bit cramped....

Having found the correct wire, and soldered a short piece of wire coming out of the new hole in the side, I could connect this to my white LEDs for the number plate. These white LEDs I have glued to the side of the bulb metal case pointing towards the number plate. I have added two on each side which provide enough light for the number plate. I soldered one leg of each of these onto the metal case, outside the area that fits into the holder. The new wire connected from the inside then connects through a resistor (I just measured the spare at 460 Ohm) to each LED. The wire connection and resistor were encased in heat shrink.

The final job was to file off one of the locating pins, and solder then file a new blob on to act as the other locating pin (I could only get staggered pin bulbs, not parallel pin). After testing the job was finished by sealing the hole in the metal case with a hot glue gun.

While I was doing this I decided that adding a brake light would be a good plan, so I replaced the single core armoured cable to the rear lights with a twin core cable, and ran a wire from there to a mechanical brake light switch on the passenger side of the car connected to the rear near side brake linkage.

Please see photographs over.



Side light only, showing number plate illumination



Side light and brake light. Same as above but brighter



Brake light only – no number plate illumination



When not illuminated looks completely standard



With the lens removed



Bulb showing white LEDs added to the side and the black spot where the extra pin had been. Small resisters are inside the black heat shrink tubing.

The bulbs have been installed now for 18 months and work well.

Looking on line it is possible to get the bulb (or close to it) that I would want (red end, white side), but they are \$28 and from the US. 12v versions are more cost effective.

Peter Jennings - (Pictures by Peter Jennings)