

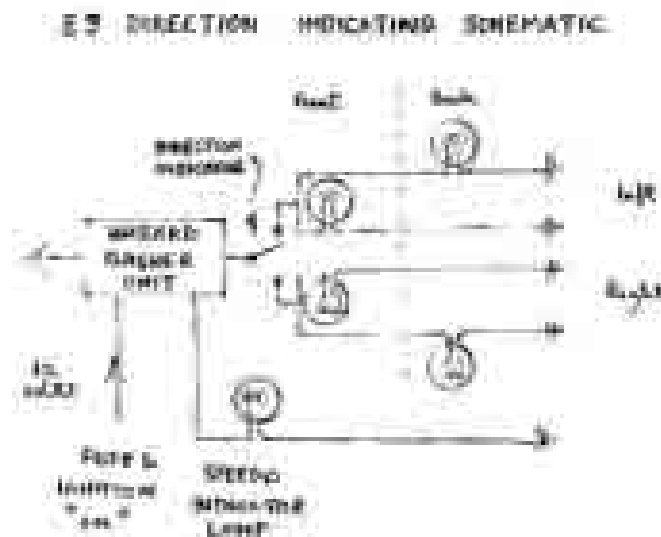
Difficult Fixing. Perhaps it would be better to say “Difficulty”

This month’s difficulty can result in an MoT failure. On several occasions my E9 has failed its MoT first time around because the indicators work, but the indicator “indicating light” at the bottom of the speedometer, which should flash when the indicators are working, doesn’t. My usual solution is to charge up the battery overnight and return for a retest the next day. The indicators usually work for a few days after that before returning to “no indication”.

The turn indicators use the hazard warning flasher unit to produce the flashing voltage for either right or left as directed by the indicator stalk. The unit has been designed to use the current drawn by two working 21 watt indicator lamps, one on the front wing, the other in the rear light cluster. If either lamp fails, then the current drawn through the flasher unit is reduced by half and the dashboard indication stops working (and you get out to fit a spare lamp from the tool kit).

The drawback of this fail safe system is caused when an increase in resistance which occurs as the connections in the wiring loom oxidise over time causes the current through the flasher unit to reduce when the indicators are used. The speedo indicator lamp works for a couple of flashes as the lamps are cold (low resistance) but stops once they are hot because the current reduces below the level needed to get the speedo warning light relay to operate. The unit has two internal relays, one for the indicators, the other for the warning light. The low current is still fortunately sufficient to make the indicator lamps flash weakly.

When I reported this problem in the last news-letter I had an immediate feedback message from Pat Gill of Cooks Ferry in London, who has fixed more E9s than I have hot dinners. He has come across this problem and has solved it by fitting an additional 21 watt lamp in parallel with each indicator circuit in the boot space i.e. one for each side. This increases the current drawn through the hazard warning flasher just enough to get the direction indicator lamp on the speedo to work again. The downside is that other motorists will stop you to say that there is someone in your boot flashing a torch.



For you (fellow) electricians out there, the simplified circuit is as shown.

Doing the maths, I calculated that a 6.8 ohm resistor wired in parallel with each of the rear lamps would increase the operating current through the flasher by about $\frac{1}{3}$ which would solve the problem.

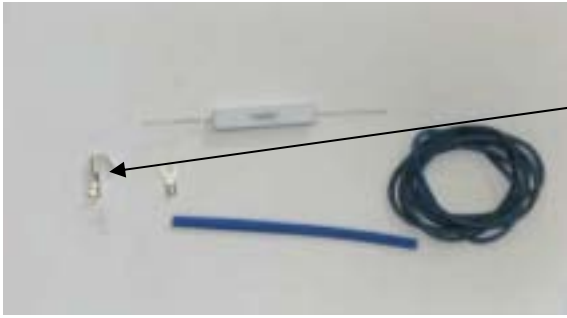
I then had to find a way of fitting the resistors.

The rear light cluster has a metal earthing strip inset into its outer cover. When checking out my own car I found that this strip was one of the sources of the increased resistance because the alloy rivets connecting the brass strip to the lamp fittings inside the cluster had corroded (white grunge) and needed to be replaced. However the strip provided the ideal solution for attaching the extra resistor.



Corroded rivet. The other has been drilled out for replacement.

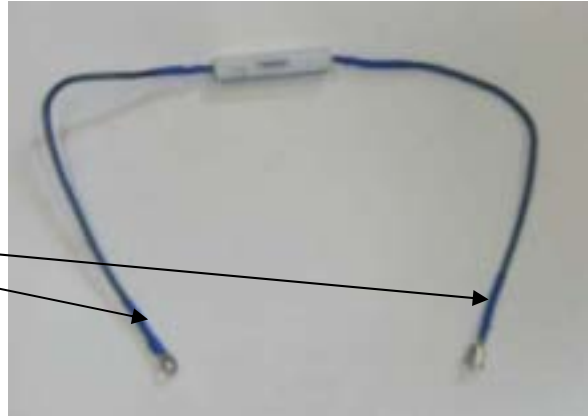
I ordered some resistors from Maplin on line (part number H6R8 - 6.8 ohms, 10 watt wire wound) and used a "doubler", a terminal eye and some wire to make up a resistor circuit.



The circuit components.

Doubler

The completed circuit.



Thermofit sleeves

I then drilled a 3 mm hole into the rear light cluster plastic housing through a very useful hole already punched in the brass strip, and attached the terminal eye to the strip with a self tapping screw.



Self tapping screw to earthing strip



I then used the doubler to attach the resistor to the connection for loom cable which feeds the indicator.

Doubler connection for the wiring loom and the resistor circuit.

I then tucked the resistors away beneath the boot floor covering. By chance I tested the first installation. The side fitted with the resistor worked perfectly while the un-modified side flashed a couple of times and then the indication on the speedo stopped. So I modified the other side too! Now both work even with the engine not running when there is just the lower battery voltage. This should crack the MoT in future.

Indicator Circuit Checks.

If you have this problem of “no speedo tell back”

1. Operate the hazard warning system to check that all 4 indicator lamps are working and that the speedo lamp is OK. Because all 4 indicating lamps are flashing, the circuit is drawing twice the normal indicator flashing current and will show up any fused lamps or circuit breaks.
2. Replace any failed lamps.
3. Try improving (lowering) the circuit resistance by cleaning up all the lamp sockets.
4. Check the earths for the rear lights – both the brass strip on the light cluster (replace the rivets?) and also the earth connection on the central horizontal web which divides the boot space into half below the boot floor, as this corrodes. The latter is a self tapping screw with a number of brown wires connected to it.
5. If the hazard warning does not flash at all, then it is probably the flasher unit. If all else fails, and the flasher unit is OK, fit the resistor modification (and relax).