

The Rover SD1 Interior (Courtesy) Lighting System

The interior lighting system for the Rover SD1 Efi Vitesse and all other late Series 2 cars, often referred to in workshop manuals as courtesy lights, is not a particularly reliable system.

Particularly nowadays, 25 to 30 years since the cars were manufactured problems due to wear and tear, corrosion, malfunction and uniformed abuse are a distinct probability.

Strangely though, this is less often due to faulty components as such, but more likely due to corrosion around the various switches and quite often faulty connections elsewhere in the circuit.

The lamp units, bulbs and Lamp Delay Unit rarely fail but a typical source of problems can be due to poor re-fitting technique if and when the door switches are removed for bodywork repairs.

Also the wiring to the switches and lamps are generally quite long runs of single wires, not in looms, so the unprotected cables can sometimes get trapped and/or crushed causing a short circuit to earth, resulting in all the lights staying on and draining the battery.

So what's going on here?

Well, to understand how the Rover SD1 Interior Lamps Switching Circuit works - let's examine this simplified and annotated circuit diagram, first noting the following permanent situation:

1) 12 volts is always present on Purple (P) wire via Fuse C3 and the Brown (N) feed, directly from the battery.

2) Thus 12 volts is permanently seen at these four locations:

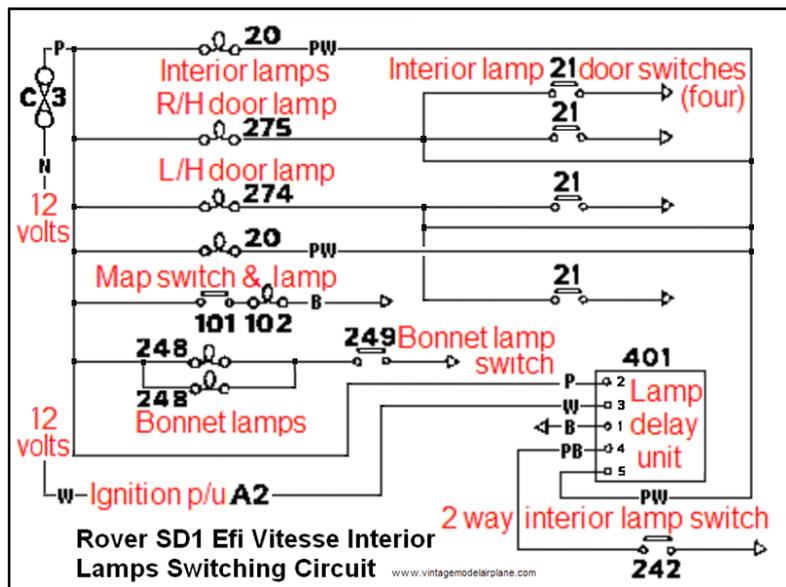
Two interior lamps (20).

Door lamps (274 & 275).

Map switch (101).

Two bonnet lamps (248).

The 'P' pin #2 to provide power to the electronic innards of the Lamp Delay Unit located with relays in the N/S foot-well.



To repeat! 1 & 2 above are a permanent state of affairs, so long as the battery remains connected. So far, so good? Now – moving on:

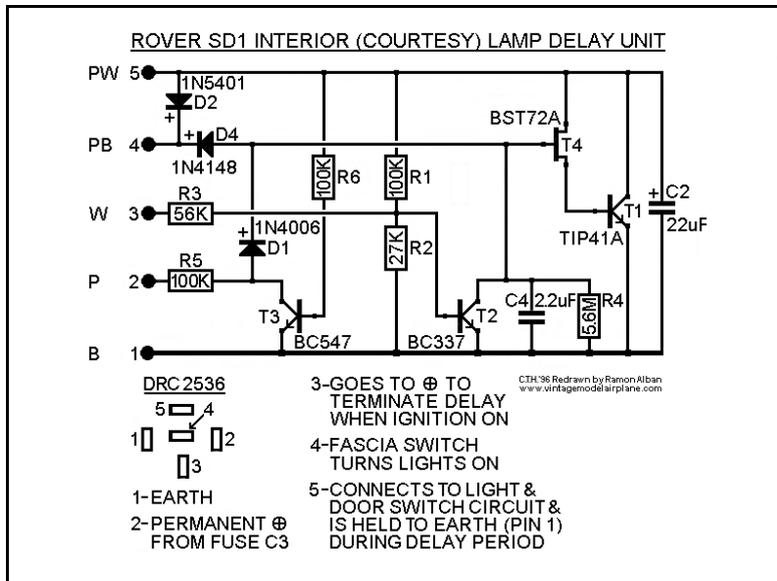
3) If any of the four doors are opened then that particular door switch (21) (one of four) is closed.

4) The whole of the Purple/White (PW) circuit is now effectively grounded (follow the connections on the diagram, and see that it is so).

5) Interior Lamps (20) are immediately lit by the 12 volts from fuse C3.

6) L/H & R/H Door lamps (274 & 275) (with red warning lens) are also lit from the same source.

7) The (PW) wire also goes to the Lamp Delay Unit where the (PW) circuits are also grounded via the Black (B) wire on pin #1, by the clever electronics shown in this circuit:



8) When/if the open door is closed, the door switch opens but the lamps must remain lit because the Lamp Delay Unit magically holds the (PW) circuits grounded to pin #1 for about 10 to 15 seconds.

9) After the said delay (by the Lamp Delay Unit), the (PW) circuits are no longer grounded and the lamps are extinguished.

10) If, in the meantime, the ignition is switched 'ON', 12 volts appears on the White (W) wire and the (W) pin #3 of the Lamp Delay Unit which now

terminates the delay function so it will NOT ground the (PW) circuits via the (B) wire on pin #1.

11) Now, when the open door is closed (with ignition 'ON' and the delay function terminated) the lit lamps extinguish immediately because the (PW) circuit is no longer grounded, anywhere.

12) There is another wire connected to the Lamp Delay Unit being Purple/Black (PB) on pin #4, routed from the 2-way Interior Lamp Switch located on the fascia.

13) When the Interior Lamp switch is operated, the (PB) wire on pin #4 is permanently grounded and the electronic innards of the Lamp Delay Unit cause the (PW) circuits to be permanently grounded to the (B) wire, pin #1, overriding the electronic delay function and all the door switches, so all the lamps remain permanently lit - no matter what else happens.

14) When the Interior Lamp switch is turned off, all the lamps will immediately extinguish UNLESS a door is open.

15) Contrary to 10 above, when the ignition is switched 'OFF', the 12 volts signal from the White (W) wire is withdrawn and the delay function is re-established as described in 7, 8, & 9, above.

The two remaining functions are not subject to any delay or control by the ignition circuit.

16) When the Map Switch (101) is operated, the Map Lamp (102) is lit with the 12 volt input on the Purple (P) wire.

17) When the bonnet is opened, the Bonnet Switch (249) closes and illuminates the Bonnet Lamps (248) with the same 12 volt input on the Purple (P) wire.

For the record, that completes the functional description of the Interior Lamp Switching Circuit, but unsurprisingly, the above is not a fault finding treatise.

For those with problems on the Interior Lamp Switching Circuit, studying the functions described and understanding what happens then allows the suffering party to work out what

might be wrong depending upon the fault signs and symptoms - knowing - as it were, how the circuit is supposed to operate. So for example:

A) If the all the doors are shut but all the lamps are permanently lit and will not extinguish, logically, it points to any one of the following four conditions and their probable solutions:

Any door switch contact shorted permanently to ground:

- Inspect each switch for malfunction.

A (PW) wire crushed and shorted to earth somewhere en-route to a lamp or door switch:

- Test for short circuits by sequentially disconnecting all the loom connectors on the Interior Lamp Switching Circuit until the shorted circuit/wire can be isolated.

- Use a multi-meter to find wires shorted to ground.

A faulty Lamp Delay Unit:

- Temporarily replace with a known good unit.

The 2-way Interior Lamp Switch is stuck in the 'ON' position:

- Remove and clean the innards with switch cleaner and lubricate with fresh Vaseline.

B) Although a small change in brightness is normal when a door closes due to a small voltage loss in the electronics of the Delay Unit, if the brightness of Interior Lamps changes significantly when a door opens/closes or when the 2-way Interior Lamp Switch is operated, it points to these three possibilities with solutions:

A changed route for the electrical current to the lamps and switches has less/more residual resistance and the voltage drop in the associated wiring/contacts en-route is reduced/increased and the lamps are brighter/dimmer:

- Look for dirty/corroded connections anywhere in the looms and loom connectors serving the Interior Lamp Switching Circuit.

- Clean all connectors and pack with fresh Vaseline.

The bulbs in their bulb holder may have corroded contacts and the instantaneous voltage changes caused by a switch-over agitates the bulb contacts and the local contact resistance changes:

- Remove all the bulbs from their holders and clean the bulb and bulb-holder contacts with a fine emery board.

A faulty Lamp Delay Unit or the contacts on its base or local connector are dirty/corroded:

- Temporarily replace with a known good unit.

- Clean all local contacts and lubricate with fresh Vaseline.

One can now probably see that understanding the workings of the Interior Lamp Switching Circuit leads inexorably to a logical diagnosis of any local or general fault conditions.

So there you have it - Chapter and Verse - the Gospel according to St. Alban for the Rover SD1 Interior Lamps Switching Circuit.

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