

Discovery II Self-Levelling Suspension Height Adjuster Kit

Author: David Pye (davidmpye@gmail.com)

Kit description

This kit is designed for people who wish to be able to adjust the height of the rear self-levelling suspension as fitted as an option to Land Rover Discovery Series II models. It mimics the function of the 'SLS height adjusting remote' available from Land Rover, but is much cheaper, does not require programming to the vehicle, and gives a fixed mounted switch. It is designed for use when hitching trailers or putting heavy objects into the vehicle as it allows the vehicle rear height (and therefore tow bar height) to be adjusted for easier hitching. It does NOT control vehicle height while on the move.

Limitations

The kit limitations are the same as the original Land Rover OEM suspension remote:

- The suspension can be lowered onto the bump stops and back to normal ride height (or any point in between), but it cannot be raised ABOVE standard ride height.
- It will only operate with all doors and tailgate closed, and the ignition switch in position 2, and with the vehicle stationary.
- The vehicle height will return to standard ride height when it is driven.

These limitations are imposed by the ECU and are an important safety feature.

Disclaimer

This circuit design has been built after consulting the Land Rover electrical manuals, and has been tested working prior to shipping. It generates signals that are used by the ECUs to signal the SLS remote up/down signals. However, it is not an approved Land Rover modification, which could potentially have warranty implications. In addition, due to the complexity of vehicle electronic systems, it is not possible to guarantee the circuit will function correctly on your vehicle or that it might cause unintended consequences. The designer's liability in the event of problems will be limited to replacing or refunding the kit.

It should be considered as an experimental modification to be performed at the owners' risk.

It is assumed that the installer is familiar with vehicle electrical systems, and how to use Scotchlock connectors, although a brief summary is included.

Contents

- Circuit board with 3 individual wires attached (Green = signal, red = positive supply, black = Ground)
- Section of ribbon cable with pre-soldered switch
- 3 blue scotchlok solderless splice connectors
- Cable ties

The kit as supplied has enough cable to allow you to route the height control switch to a blank space on the instrument cluster binnacle. If you want to route the switch elsewhere, you will need to extend the cable yourself as required.

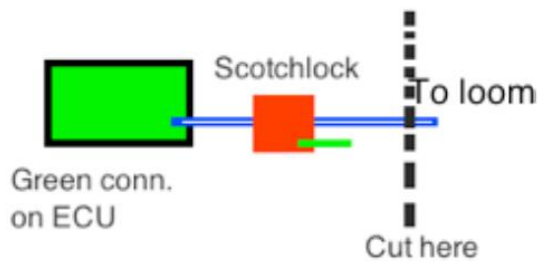
Required tools

- Pliers/wire cutters
- Insulation tape
- Drill and 7mm drill bit
- Suggested: Wire coat hanger or similar device to help route the switch cabling around to the instrument cluster.

Installation instructions

NB: If you find that the wire colours/connectors on your vehicle *DO NOT* match those described below, do not proceed with installation, and instead contact the author for advice.

1. **For safety**, it is advisable to disconnect the vehicle battery while installing this kit. (Make sure you have radio cassette player security codes etc. if required).
2. Starting in the front passenger footwell, prise out the press-studs securing the lower black cardboard-type cover.
Looking up into the space under the glovebox, you will see several metal control units, with different coloured connectors.
The ECU we are connecting to, the 'SLABS' ECU, is responsible for the self-levelling suspension and the ABS anti-lock brakes. This is the one with the row of connectors coloured (from front to back): Blue, Green, Pink, Grey and Yellow.
3. **Black ground wire**
Locate the **GREY** connector on the SLABS ECU (C0504). Splice the **BLACK** wire from the kit circuit board in to the thick **BLACK** wire (pin 12) on this connector using the **BLUE** scotchlock. This is done by routing the thick black wire from the grey connector through the outer groove in the scotchlock (the open-ended groove). Insert the wire from the kit into the blind ended hole, so both wires pass underneath the metal clip. Using pliers, push the metal clip down firmly so it is fully flush with the body of the plastic connector. Then, close the plastic cover over the top until it clicks into place.
4. **Red power supply wire**
On the same **GREY** connector (C0504), locate the **LIGHT GREEN** wire (pin 2). Splice the **RED** wire from the kit circuit board into this wire using one of the **RED** scotchlocks.
5. **Green signal wire**
On the **GREEN** connector (C0655), locate the **WHITE** wire with a thin **BLUE** stripe (it is pin 12). Using the supplied **RED** 'scotchlock' connector, splice the **GREEN** wire from the kit's circuit board into this.
Once you have done this, cut the **WHITE** wire with a thin **BLUE** stripe wire after the 25scotchlock, so you are left with this arrangement:



Using insulation tape or similar, insulate the cut ends of this wire to prevent short circuits.

6. Once the three individual wire connectors are in place, you can secure the circuit board to a convenient point to stop it rattling/chafing. Carefully wrap the board in insulation tape, and using a cable tie, gently secure it around a convenient part of the wiring loom cabling.

At this point, if you wish, you can test the kit is working correctly after reconnecting the battery, before you fit the control switch into position. This will also enable you to discover which switch position is UP, and which is DOWN.

Fitting the controller switch

These instructions assume you want to route the switch to the instrument cluster binnacle. If you want to route the switch elsewhere, these instructions do not apply.

1. Remove the glovebox by removing the four bolts securing its' hinges, and remove it from the dashboard.
2. Moving to the driver's seat, twist the two locking screws that secure the panel under the steering wheel, and hinge the panel down. It is possible to route the switch and its wiring through behind the clock and heater control panel to get it across to the driver's side of the car. The author accomplished this by taping the wire to an unfolded wire coat hanger, and with the aid of an assistant, CAREFULLY sliding it through from the passenger side behind the clock/heater controls to the drivers' side of the car, so it then came out through the opened panel under the steering wheel.
3. If this proves difficult, it may be necessary to remove the heater control panel (see Haynes manual or RAVE) to enable the wire and switch to be routed.
4. Remove the switch blank you wish to fit the switch to by pulling it out gently.
5. Using the wire coat hanger or similar, route the switch and its wiring up so it comes out of this hole.



6. Next, separate the switch blank carefully into two parts by **CAREFULLY** releasing the clips arrowed below. (There are 2 clips each side)
7. Drill a 7mm hole into the centre of face of the switch blank.



8. Using a small pair of pliers/cutters, snap off the thin plastic ridge just behind the hole, so the switch will fit squarely. (As shown below in pink)
9. Route the switch and wires through the rear half of the switch blank, and using the locking washer, plain washer and nuts, secure the switch into the drilled hole in the front of the blank, and clip the two halves back together. Due to lack of space inside the switch blank, the switch will need to go side-to-side rather than up-to-down. It is worth testing the system before finally setting the switch into place to confirm which way is 'up' and 'down' on the switch.
10. Refit the switch blank with the switch.

Finally, secure the panel under the steering wheel back into place.

Refit the glove box.

Refit the panel under the passenger seat using the push-studs.

Reconnect the battery.

Operating the SLS height controller

As with the Land Rover original suspension remote, the controller will only operate with the vehicle stationary, the ignition switch in position 2, and the doors and tailgate shut. With these conditions met, pressing the switch to DOWN will gradually lower the suspension onto the bump stops, accompanied by chimes from the instrument panel. Pressing UP again will allow you to raise the vehicle back to the standard ride height. You cannot lift the suspension higher than the original ride height. Once the vehicle begins to move, the automatic height control will take over and the rear suspension will return to standard ride height.