Overdrive Controller ODC1448

Introduction

The overdrive can only be engaged in 3rd and 4th gear (in some cars only in 4th gear). This is to prevent damage by high moments in lower gears. This is achieved by a switch on the gear box.

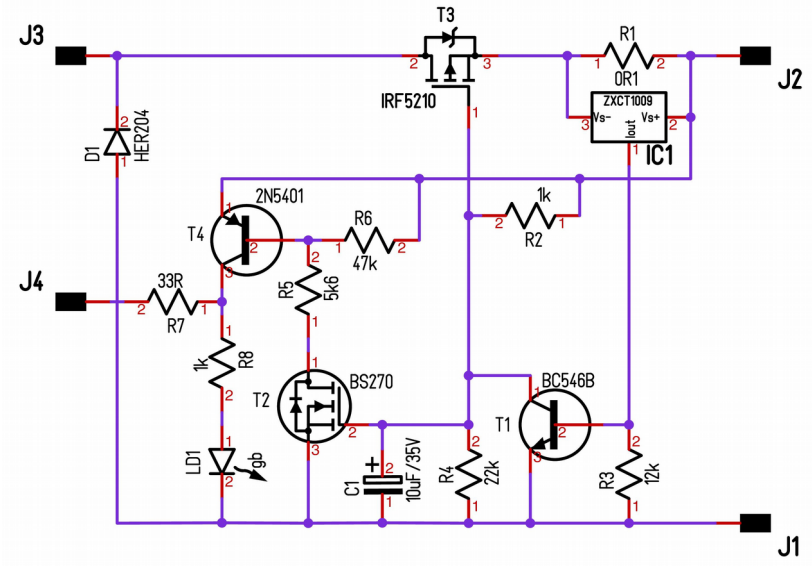
To engage the overdrive one has to operate a switch on the dashboard, the steering column or a switch built into the gear lever.

Forgetting to switch it OFF when changing to 2nd gear and back to 3rd will engage the overdrive again and therefore reducing the acceleration. To prevent this, a little circuit can help. The overdrive will not switch ON until the switch is opened and closed again.

In mgb-stuff.org.uk I found a solution (Overdrive Sequencer Relay) which could not satisfy me as electronic engineer.

Therefore I decided to present here a full solid state solution. TARGET CAD has been used to draw the schematic and layout of the PCB (printed circuit board). A detailled bill of material (BOM) as well as the PCB and all other stuff can be provided on request. Populated PCB and/or fully assembled controller can be ordered upon request.

Circuit



J2 comes from the Overdrive switch and supplies +12V. J3 goes to the protection switch on the gear box and finally to the solenoid. J4 can be used to connect a warning LED lamp (Imax. 50mA) , preferable a blinking LED, "switch off overdrive". The other lamp pin has to be ground. The yellow LED (LD1) and the corresponding resistor R8 can be omitted.

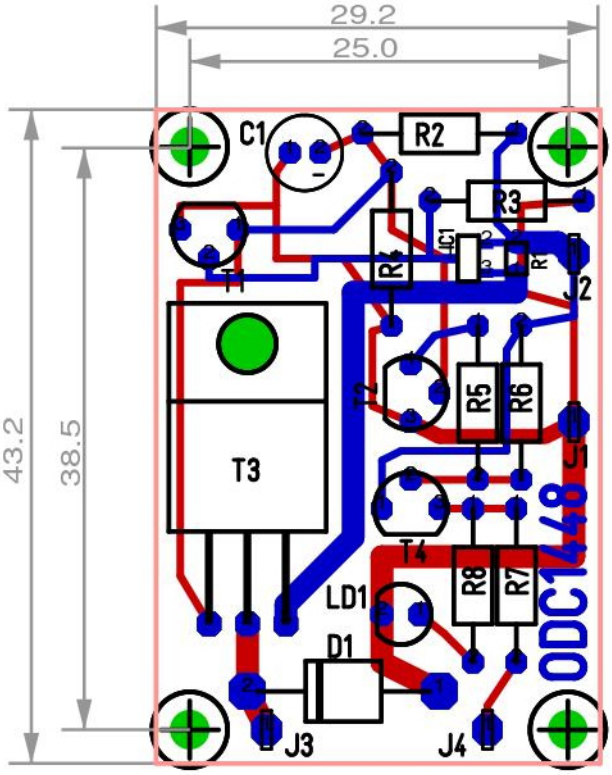
Function is simply: The overdrive switch will supply +12v to J2 and the overdrive solenoid will be engaged if in 3rd or 4th gear. Current flows through R1 and T3. This current is sensed by IC1 which will switch T1 ON, T2 and T4 OFF. Hence LD1 will be OFF. Changing gear into 2nd will open the gear box switch and therefore current through R1 ceases. This in turn will switch T1 OFF. This will block T3 and T2 and T4 will conduct. Even changing back to 3rd gear (closing gear box switch) no current will flow until switching OFF the overdrive switch, which in turn will switch T2 and T4 OFF and release T3. Switching now the OD switch ON again will allow current to flow and the sequence will be as described above.

This circuit can be used with (later) LH Type (Laycock) Overdrives. The older D-Type OD do have high inrush currents (~17A). This controller is able to carry these currents, also it never had been tested with old D Type Overdrives.

Used Components: Other equivalent, compatibel devices may be used.

Layout

This PCB can be used with a plastic case, HAMMOND 1551 RFL (50x50x20 mm) [CONRAD 534305]. Mounting holes match this case.



Stranded wires can be soldered to the J1 ... J4 solder lugs and a single hole in the case may bring them to the outside of the case.

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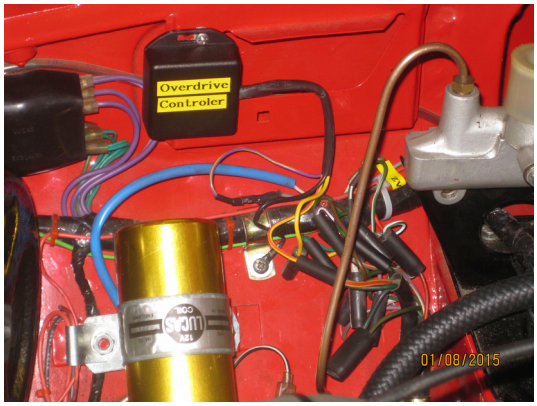
Installation

As the yellow wire from the OD switch is routet into the engine compartement and there connected by a bullet connector to the yellow/red wire going to the gear box switch, the ODC can be installed nearby and wired without changing the original connectors. Therefore it is a matter of seconds to change back.

Original wiring: Yellow wire connected to yellow/red wire



ODC wired in series.

Warning light

This is not mandatory but a great help.

For the warning light I decided to use a blinking 5 mm LED in the dash board using a small transparent calotte, that is hardly seen when not active, but quite agressive when ON!
Any other 12V LED may be used as long as the current is less than 50 mA.