

Overdrive Auto Off

by Joel Justin

How many of you have overdrive on your British cars? I'm not talking about those sacrilegious modern 5-speed gearbox conversions. I'm talking about genuine Laylock de Normanville overdrive units. If you don't, you should. When driving on the highway, it not only saves wear and tear on your engine (lowers your engine speed by about 700 RPM), but it's a much more pleasurable driving experience as well.

If you do have an overdrive gearbox, how often are you cruising along in OD, come to a stop, forget to take it out of OD, then as you shift from 2nd to 3rd gear, the engine bogs down and you immediately think, "What's going on?!" before you realize your faux pas and quickly switch the OD off? If you're like me, you do it all the time!

Well, I've got a nifty solution. I had read somewhere (a forum or email post) that there was a company in the UK who had developed an overdrive logic unit that even if the OD was on, as soon as you shifted into neutral, it switched off and stayed off. I researched it and while it solved my problem of forgetting to turn off my OD, it had several drawbacks.

First, it requires you to change out your OD switch with a momentary switch. They offered one like on the TR4-6, but it wasn't cheap. I also didn't like the idea of having to tear apart my steering column to swap out the switch. Second, the logic unit itself wasn't cheap either. Together with shipping from the UK, it would cost about \$170. If I only had one car with OD, I'd consider it, but I have 3 going on 5, so no way!

Then I started researching circuit diagrams for these and found out that wasn't too complicated, didn't require changing out the OD switch, and could be installed by simply unplugging two wires and inserting this circuit, and connecting a ground wire. The only problem is that was designed about 20 years ago and one of the components wasn't available anymore and another was something that causes problems over time.

I had a good friend of mine who's an electronics whiz take a look at the circuit and recommend part replacements. He not only did that, but found a perfect small box to house the entire circuit board. I immediately ordered enough parts to build five of these.

I designed my own circuit board using Visio, then sent a JPG to Pam who, using her Silhouette, created a "sticker" of the circuit artwork. I then put it on a copper-clad circuit board and placed it in an etching solution for about an hour. The etching solution removed all the copper except that which was covered by the "sticker" leaving a perfect etched circuit board.

The copper-clad board I had was big enough to make six circuit boards, so after etching and drilling LOTS of very small holes, I used my scroll saw to cut them into individual boards.

After soldering in the components and connection wires, I mounted it in the box and crimped Lucas bullet ends on the two OD wires and a ring lug connector on the ground wire.

Installation was simple. I found the bullet connection under my dash from the OD switch to the gearbox cut-out switches. I pulled the connection apart and inserted my auto-off box in between using the bullet connectors I had just crimped on. I found a convenient nut to loosen to connect my ground wire to, and I was ready to try it out.

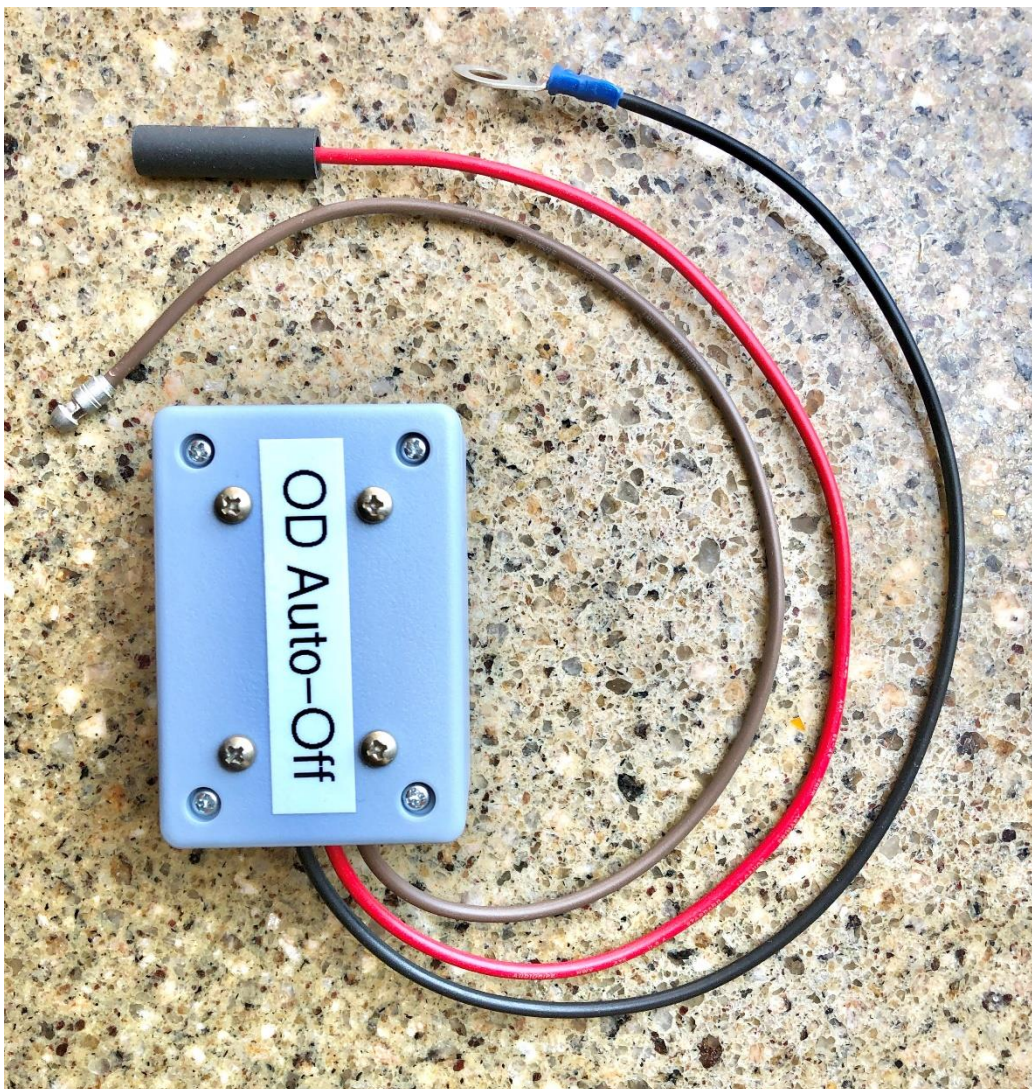
I turned on the ignition, and with the OD switch off, went thru the gears – 1st to 2nd, then 2nd to 3rd, and finally 3rd to 4th. All good – no OD engagement. Then, while in 4th, I switched the OD switch on and the OD relay engaged. So far so good. Now for the real test. With the OD on, I shifted out of 4th into neutral and the OD

went off, like it normally would. When I shifted into 3rd and... it STAYED OFF! Yea, it worked. While still in 3rd, I switched the OD switch off and back on again, and the OD relay engaged again. Perfect. Now all I needed to do was find a place to mount the box so it wasn't hanging in the driver's footwell.

There are multiple options for mounting the box. On TR2's and 3's, there's an interior sheet metal panel up high on the left-side of the driver's footwell. You can drill a 3/32" hole and attach the box with a sheet metal screw. Alternatively, you can zip-tie it to one of the dash support brackets or the steering column itself. This works well on TR4's, 250's and 6's.

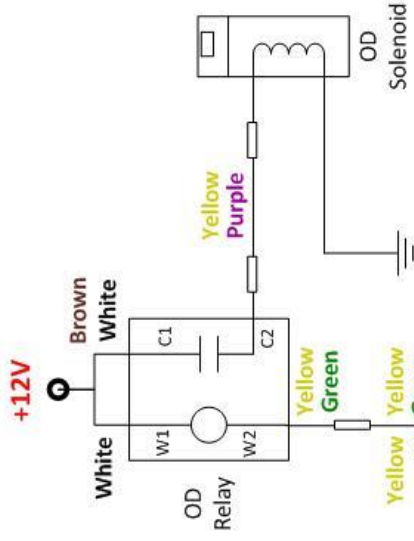
The beauty of this solution is 1) it's easy to install (and remove) without any permanent alterations to your car or wiring, 2) it's way cheaper than the UK unit (about 30% the cost), 3) a worse case failure of the unit would simply cause the OD not to work. All the failure modes I could come up with would never cause the OD to stay on all the time. And best of all, I will never shift up thru the gears with OD unknowingly on and get that dreaded bog-down going from 2nd to 3rd anymore.

I know this circuit will work on all TR's with Type A, D and J overdrives and their OD wiring circuits are basically the same. It will likely work on MG's Austin Healey's and other LBC's with Laylock de Normanville overdrives as well, but we'd need to look at the OD wiring diagram first to be sure. One thing though, electronic circuits are polarity sensitive, and as such, this will only work on negative ground cars. If you'd like to add one of these to your OD car, let me know (j_bar_j@hotmail.com). The cost complete with connectors is \$45.



OD Auto-Off Wiring Diagram

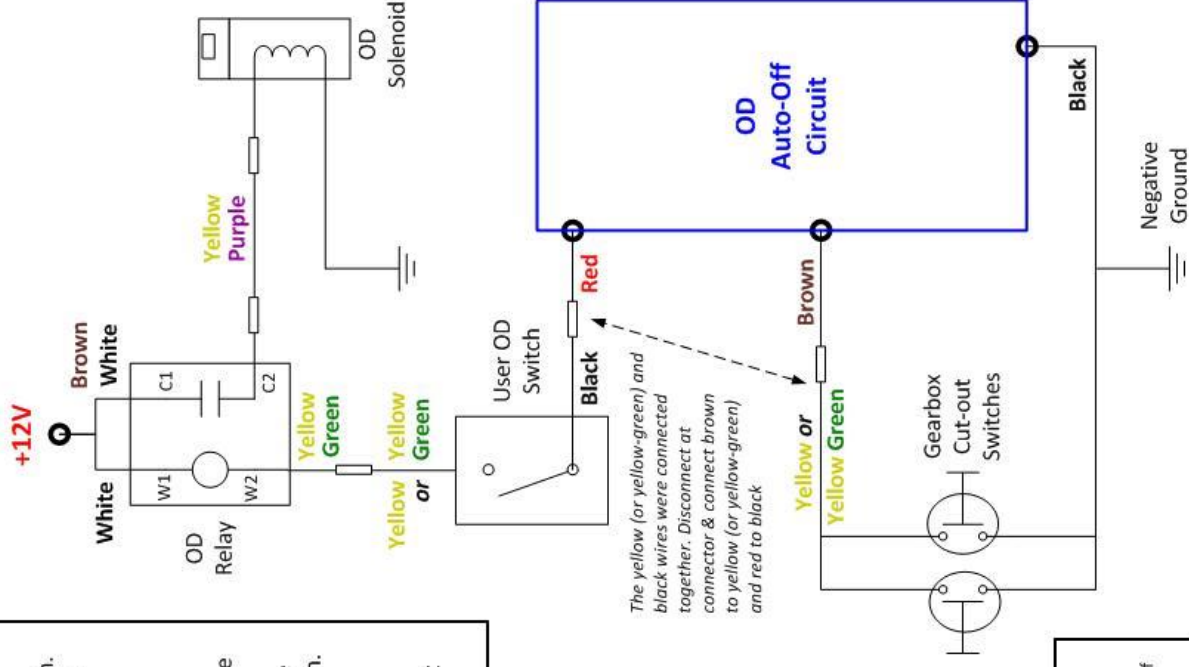
Before (Original)



Installation Instructions:

- Find a suitable mounting location under the dash for the OD Auto-Off unit. It should not be located in the engine bay. The best spot is near where the user OD switch is located.
- Locate the black wire coming from the user OD switch. That switch may be on the dash (i.e. TR2-3) or on the steering column (i.e. TR4-6).
- Verify it connects to the yellow or yellow green wire that goes to the gearbox cut-out switches.
- Disconnect one wire from the bullet connector.
- Connect the red wire from the OD Auto-Off unit to the black wire from the user OD switch
- Connect brown wire from the OD Auto-Off unit to the yellow (or yellow-green) wire from the user OD switch.
- Connect the black wire to a suitable ground point.
- Using a zip-tie, secure the OD Auto-Off unit to the steering column or a dash support underneath the dash. Dress the wires so they're hidden and won't get snagged.

After Installation



Testing Instructions:

- In a quiet location, turn on your ignition but don't start the car.
- Put the gearbox in 1st gear and check that the user OD switch is in the off position.
- Turn the user OD switch on. You shouldn't hear a relay sound (click).
- Turn the user OD switch off again.
- Put the gearbox in 4th gear.
- Turn the user OD switch on. You should now hear a relay sound (click).
- Leave the user OD switch on and shift into neutral. You should hear the relay click again.
- Put the gearbox back into 4th gear. You shouldn't hear a relay click.
- Turn the user OD switch off, then back on. When turned on, you should hear the relay click again.

If this is too confusing, or you can't clearly hear the relay clicking, just go out for a drive it. When you're in an OD gear (i.e. 4th) with OD on, shift into neutral, then back into that same OD gear. Even though the user OD switch is still on, you shouldn't be in OD. To verify, switch the user OD switch off, then back on again, and the gearbox should shift into OD.

Note: I've seen where the black and yellow (or yellow-green) wires from the user OD switch are reversed. For a mechanical switch, this doesn't matter, but it does matter which side of the user OD switch the OD Auto-Off unit is. It must be between the user OD switch and the gearbox cut-out switches to work. If it's wired into the other side of the user OD switch, it won't harm the OD Auto-Off unit, but it will not work, nor will your overdrive. Move it to the other side of the user OD switch.