

Overdrive Relay Repairs

By Alex Mendelsohn

The overdrive on my trusty BT7 decided to act up the other day, dropping the O/D in and out. After a bit of troubleshooting with a voltmeter, I determined that the O/D relay was defective. But---yuk--\$200 for a replacement! No way, Jose.

I pulled the Lucas relay from the car and opened it up on the bench. This is very easy to do; just peel back the tabs. Sure enough, the contacts were almost totally disintegrated, and the coil was open.

So, I drilled out the retaining rivet and discarded the remains of the original innards. I then cleaned up the enclosure and buffed clean the external screw contacts.

Next I located a miniature 12V 30A relay (the one I scrounged was from a BMW). These mini automotive relays are quite common.

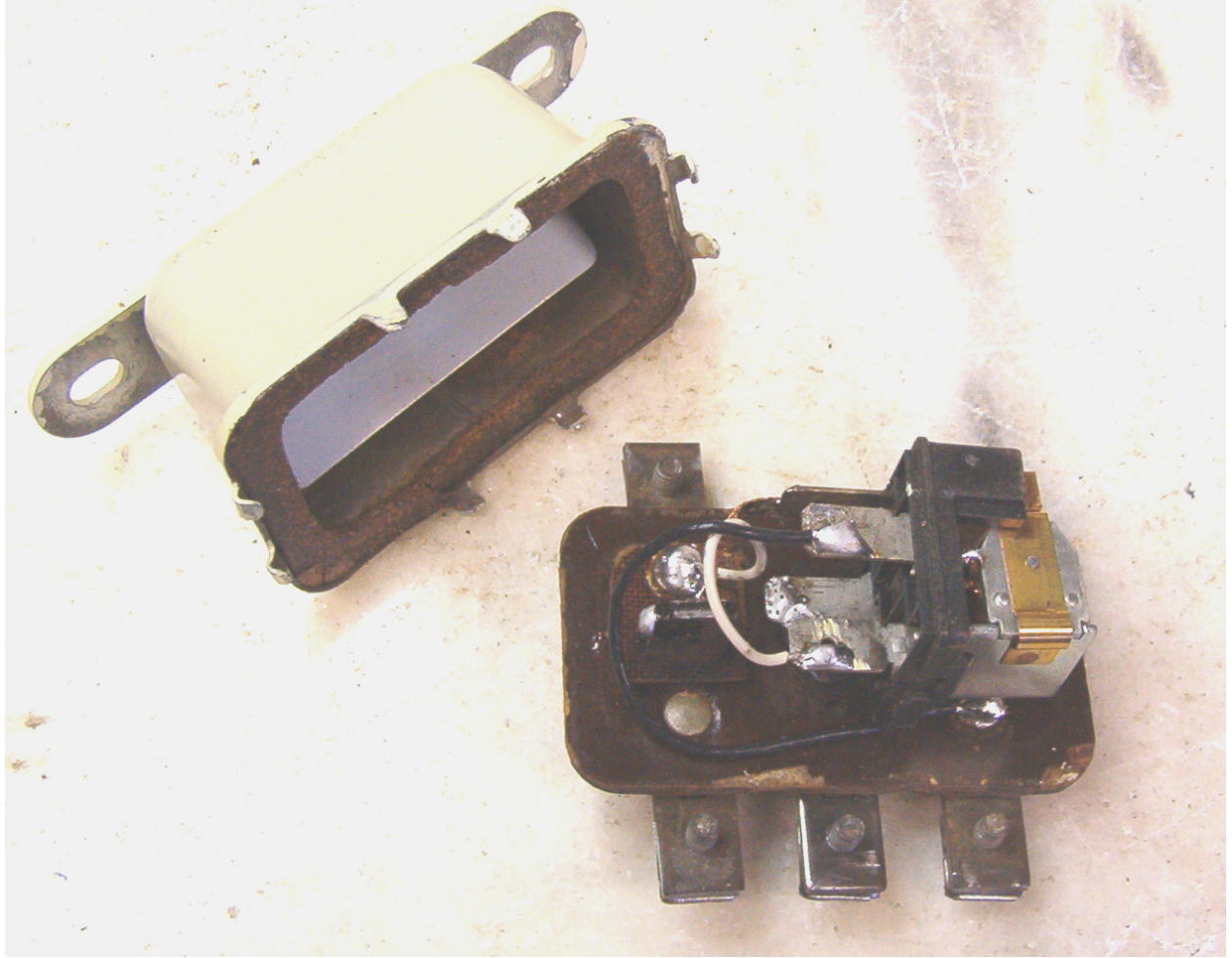
I removed the case from the mini relay, in order to make it smaller. I then lined the innards of the original enclosure with electrical insulating paper (often called fish paper), and installed the new relay inside the original Lucas enclosure, holding it in place with a large locknut-type solder terminal that's affixed to the W2 terminal.

The new relay works like a champ, pulling in my solenoid nicely. Back in business for less than \$5.

A test procedure and schematic is at the end.



Discarded relay case



View showing new relay installed in old OD relay case

Set your voltmeter to read for -12V. Put the common lead of your meter on the chassis. Put the other lead on terminal C2.

Turn on the ignition switch (don't start the motor). Turn on the O/D switch (A on diagram).

You should read about -12V on your meter. That shows that the relay coil is energized and the internal relay contacts (at C1 and C2) have closed.

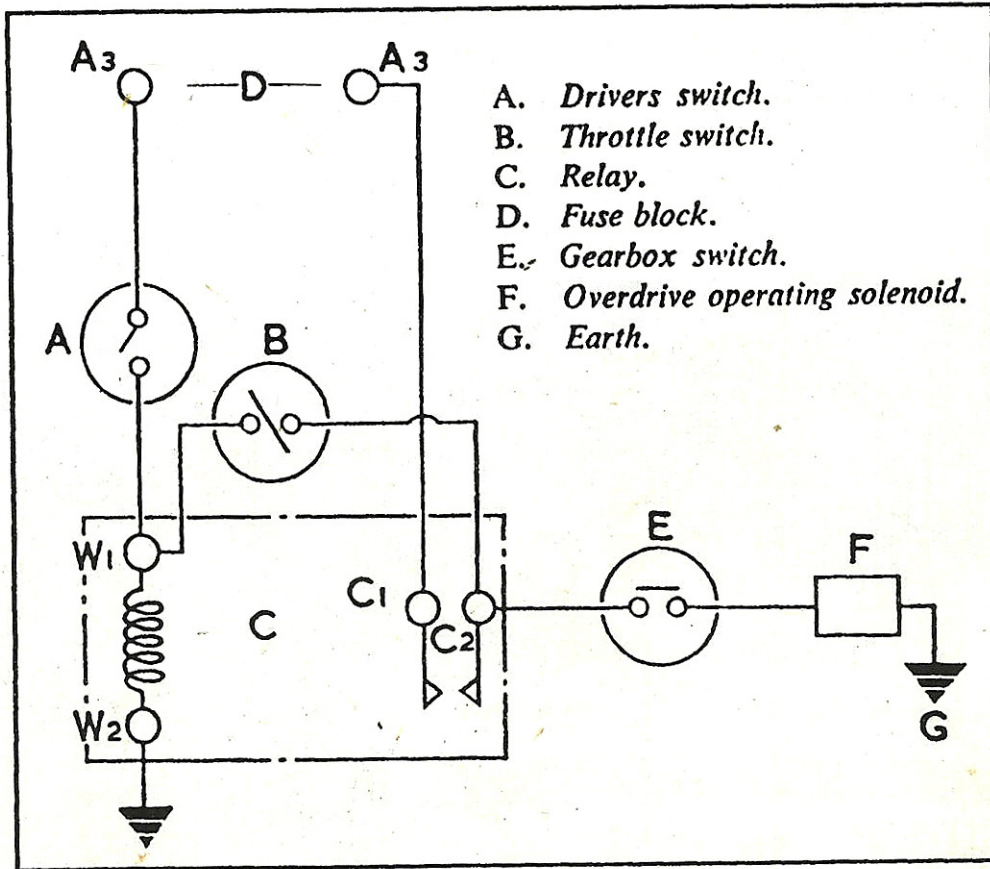
Put the gear lever in 3rd or 4th gear. If you move the gear lever into first or second you should hear the big solenoid (F) drop out with a click. I also hear the solenoid click in when I move the gear lever in 3rd and 4th. With the engine off you can hear this distinctly.

Now turn off the O/D switch. Keep your foot off the throttle. There should still be -12V on C2. That shows that the kickdown switch is good. Its contacts feed -12V to the relay coil (from C2 to W1), keeping the relay coil energized even though the panel switch (A) is now off. With the relay contacts held closed, -12V is still feeding current to the solenoid too, through the shift switch (E).

Now press on the throttle. The -12V at C2 should drop to zero as the kickdown switch opens. The solenoid should drop out with a click (if you're in 3rd or 4th).

Hold the throttle down to keep the throttle switch open. Throw the O/D switch on the dash/fascia. You should see -12V. That proves the relay contacts have closed again, being fed via the panel switch (A).

Schematic follows on the next page.



Overdrive circuit in all other Big Healeys is shown above. Circuit is unfused. All Big Healey overdrive circuits should incorporate 50-amp fuses to prevent electrical fires.