

Headlight Warning Buzzer

by Joel Justin

How many times have you had your headlights on, either because it was raining or you started your drive in the dark, got to your destination, turned off your ignition, got out, and forgot to turn your headlights off? Hopefully you noticed yourself, or had a kind person alert you that your headlights were on. If not, you likely came back to your car to find your battery as dead as a doornail.

Modern cars (i.e. your daily drivers) have a buzzer, chime or even a Siri-type voice to remind you your headlights are on. But our LBCs from the 50's, 60's and 70's had no such warning, at least none of mine did. So I decided to do a little research to see what it would take to install a headlight warning buzzer into my Triumphs. It turns out it's very simple and one of the easiest upgrades you can make to your car.

A piezo-electric buzzer with some wire and connectors is all you need. You connect the buzzer between your switched ignition 12V and your exterior lighting 12V. Here's how this works.

There's four conditions or states that can exist:

1. Ignition off, lights off = no buzzing
2. Ignition on, lights off = no buzzing
3. Ignition on, lights on = no buzzing
4. Ignition off, lights on = LOUD BUZZING

It's that last condition that we care about. So how do we get the buzzer to sound only in that condition? Piezo-electric buzzers only sound when current flows in the right direction. When the ignition and light switch are off (condition 1), they are both at 0V, or basically, ground. With both are at 0V, there's no current flow and no buzzing. When they're both on (condition 3), they are both at 12V and still no current flow, so no buzzing.

When the ignition is on (12V) and the lights off (0V) as in condition 2, or visa-versa (condition 4) there is a 12V potential across the buzzer. So how do we get the buzzer to sound for condition 4 only? It turns out the piezo-electric buzzer only sounds when current flows in one direction and not the other. So if we wire up the buzzer so its positive lead connects to the light circuit and its negative lead to the ignition circuit, it will only buzz under condition 4 as the current is flowing in the right direction (12V to ground).

OK, enough theory. Now how to I wire this up? All Triumphs from the 50's to 70's (and maybe earlier and later), and I'm guessing most other British cars, used standard Lucas wiring colors. The wire colors we care about are red and green. Red wires provide power to all lights except the headlights. Those lights include dash, tail, parking and side marker lights. Green wires are for anything we want on only when the ignition is switched on – things like gauges, wipers, heater motors and turn signals.

So if we connect the positive buzzer lead (red) to a red "switched light" wire and the negative lead (black) to a green "switched ignition" wire, we should have a warning buzzer that sounds only when the lights are on and the ignition is off. Here's a simple diagram showing the connections.

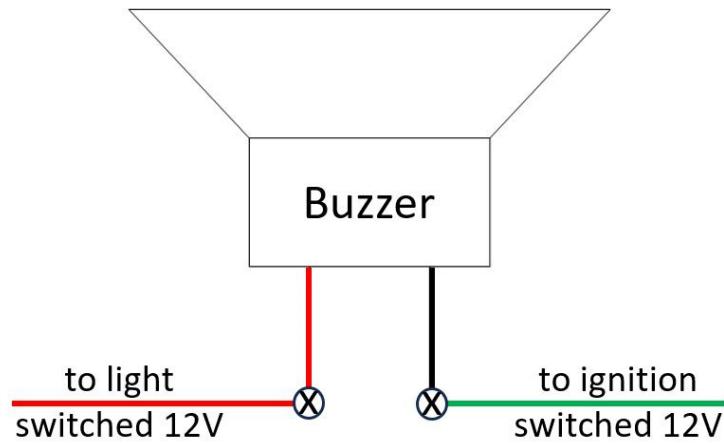


Figure 1: Buzzer wiring schematic

I found some inexpensive piezo-electric buzzers on Amazon (isn't that where we find almost everything these days!). Here's the link to them (<https://www.amazon.com/gp/product/B08SL2HH65/?th=1>) and what they look like. They came in a pack of 3, but only cost \$5, and since I have more than one Triumph, it was perfect for me!



Figure 2: 12V Piezo-Electric Buzzer

Now it's just a matter of finding the best place to tap into the green and red wires, and where to best place the buzzer. You'll need a wiring diagram for your car to find the best place to tap into the wires. On the TR4, there are two fuses – one for switched ignition items and the other for lighting. How convenient! The TR2 and TR3 only had a fuse for the switched ignition. The lights aren't fused (probably a good thing to change for safety reasons, but that's another tech article). You could also tap into the ignition switch and light switches behind the dash.

You'd like to find a spade (Lucar) or bullet connection you can tap into as no cutting into your wiring harness is required, but you could do that if you really wanted to. For the TR4 (see wiring diagram below), I used a spade terminal with crimped green and red wires, and connected them to their respective terminals on the output side of the fuse block (the bottom in the diagram below). There was a spare terminal on each side that made the connection easy.

I then ran the wires thru the dash where the main wiring harness passes thru. Once inside the car, I stripped the ends, slid some heatshrink tubing over the wire and soldered it to the buzzer wires. I then slid the heatshrink tubing over the solder joint and used a heat gun to shrink the tubing insulating and protecting the electrical connections. You could use electrical tape as well.

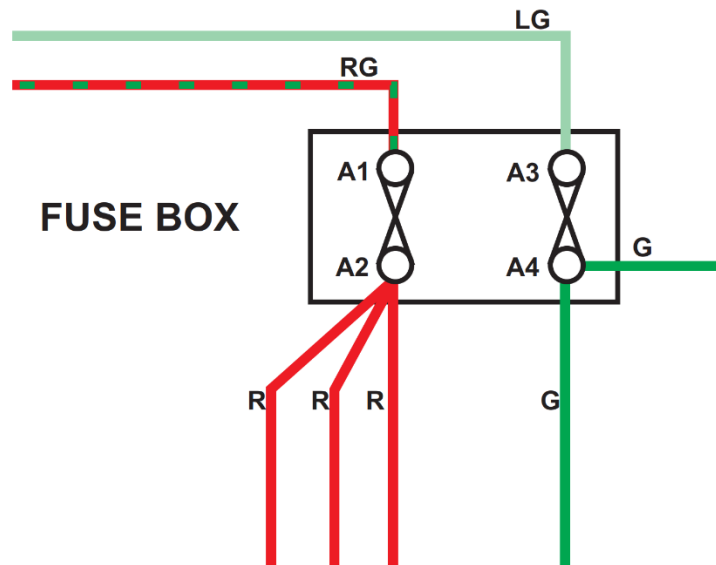


Figure 3: TR4 fuse block wiring diagram

Since there was no lighting fuse in the TR2/TR3 for me to utilize, it required me to find a location in the lighting circuit to tap into. I found a single bullet connector behind the dash that connected one half dash light wiring to the other. I replaced the single bullet connector with a dual bullet connector, crimped a bullet onto my red wire and installed it into the dual connector.

Before securing the buzzer, test it to make sure everything is working as it's supposed to be. Turn your ignition on (you don't need to start the car). No buzzing? Good. Now turn the lights on (parking lights only is fine). Still no buzzing? Good. Now turn the ignition off and try not to be too startled when you hear a loud sound coming from the buzzer. If you hear it buzz when the ignition is on and the lights are off, you have the wires backwards. You can swap them at the buzzer or at the locations you connected the wires into your car's wiring.

Once it's operating as desired, you need to secure the buzzer, which should really be somewhere under the dash. Even though it's loud enough to be heard from under the bonnet, it should be protected from the elements (heat and moisture). You can zip-tie it to a dash bracket, the wiring harness bundle that comes thru the firewall or something like a choke cable. Anything that is reasonable stable to the buzzer isn't flopping around.