

## Battery Voltage/Oil Pressure Monitor

### Introduction

The Greg Marsh Enterprises (GME) system uses a single tri-color light emitting diode (LED) to provide information on the state of the electrical system and the oil pressure of a running vintage British motorcycle.

This was originally designed for Norton Commandos but is useful on many other vintage British bikes.

### Triumph/BSA

In the late 1960s, Triumph and BSA added an oil pressure switch to their engines. This unit is appropriate for those bikes because there is nothing to monitor the charging system and the unit's oil pressure monitoring is compatible with the bike's oil pressure switch. The older Triumphs could have a newer timing cover installed to provide an oil pressure switch. The unit does not require the oil pressure switch for voltage monitoring so if just voltage monitoring is desired, that is possible.

The type of headlight shell and available indicators will determine how easy/hard it is to install. It's best to tell us what you have so we can tell you what you'll need to do.

### Norton Commando

These bikes don't come with an oil pressure switch, but we sell one that can be added.

The control box is intended to be installed in the headlight shell and I normally cut the red, white, and white/brown wires to connect to existing wires in the headlight. The wires are provided long enough to reach other areas of the bike in case you don't want to do the wiring inside the headlight.

Remove the red (charge indicator) socket from its holder. Unplug and discard the assistor. On some harnesses, the socket is hardwired to a white/brown and a white wire. The white brown goes to the assistor and the white wire is hot when the ignition is on. If the socket cannot be unplugged then it must be isolated from the headlight shell. When I do the installation, I cut those wires and connect them to the wires of my control box. This can be done with bullet connectors or hard wired.

Move the socket from the amber holder to the red holder. This will make your turn signal indicator be red. If you don't like that, you can instead replace the red holder with an amber one and use that for this system. That leaves the bike looking almost stock except that there will be two amber indicators in the headlight. It should not be an issue and the turn signals flash the indicator and this unit will only cause the other one to be amber if the battery voltage is too high (unlikely).

Install the Voltage/Oil Pressure LED in the amber holder.

Connect the red wire from the control box to ground (positive).

Connect the white wire from the control box to the ignition circuit - normally to a white wire.

Connect the white/brown wire to the oil pressure switch. If you connect to the white/brown wire from the old indicator, then you'll need a wire from the other end of the white/brown wire (went to the assistor before) to the oil pressure switch.

## Operation

The following lists the states with ignition on and the bikes battery have at least 3 volts available.

Engine off:	Red	
Engine running with low/no oil pressure:	Red	
Engine running with good oil pressure and good battery voltage:		Green
Engine running with good oil pressure and high battery voltage:		Amber
Engine running with good oil pressure and low battery voltage:		Off

So, in normal operation, the indicator should show green all the time.

When you turn the key on, you should see the red indicator. Within seconds of starting the indicator should switch to green. If it switches to off wait a few seconds for it to switch to green. If it doesn't switch to green, don't ride without investigating! Either there is something wrong with the charging circuit, battery, or wiring. It is possible that there's something wrong with the unit, but that is highly doubtful if the red indicator worked.

## Flickering Red

There are many things that can cause the low oil pressure (red) LED to flicker and it does not always mean you need to worry. The oil pressure switch opens at 4-5 psi which shuts the light off so flickering means that the oil pressure is in that range. It is possible, but unlikely that the switch is causing the flickering.

- Only happens when the engine is hot at idle. A little flickering is probably not a problem. If it is more pronounced, your engine is getting oil, but has low pressure. Before checking anything else, make sure oil is returning to the tank! Then, in no particular order:
  - Need an oil change
  - Need heavier oil
  - Oil pump not 100%
  - Idle too low
  - Seals in timing cover going bad
  - Big end bearings getting worn
- Happens while riding. In general, this should not happen. The bike should get you home, but it's time to investigate (in order):
  - Make sure the wiring to the unit and oil pressure switch is good.
  - Change the oil if old and see if it goes away
  - Check the oil pump, seals, and galley ways in the timing cover. Norton oil pumps have a conical seal that can go bad, and all bikes have a crankshaft seal in the timing cover that can start leaking and lower the pressure.
  - Check the oil pressure relief valve – if stuck open the pressure will be low.
  - If none of the above then the big ends but you probably would have already heard them knocking.