22
OVERDRIVE

OVERDRIVE TYPES

There were two types of overdrive units used in the TR250/TR6 range - the earlier models had the "A" type, which was replaced at the start of the '73 model year with the "J" type. The earlier "A" type used a dual coil solenoid for engagement - a very heavy duty pull-in coil, and a smaller holding coil. The heavy duty pull-in coil was needed to pull the OD into engagement, and, at the end of it's travel, operated a cutout switch to switch itself off. The smaller coil then held the OD engaged until the OD was switched off. The later "J" types had hydraulic assist on engagement, and didn't need the heavy duty pull-in coil. Because of the heavy current draw by the pull-in coil, the "A" types required the use of a relay to handle the extra current. The relay was eliminated on the "J" types, as the solenoid on these units had a moderate current draw.

The "A" types were operable in second, third, and fourth gears, while the "J" type operated only in third and fourth. Two transmission switches were required to allow the "A" type to operate in all three gears, whereas only one was needed for the "J" type to operate in only two gears. One of the switches used with the "A"type was closed only when the transmission was in second, and the other was closed only when the transmission was in third or fourth. The last switch was carried over to the "J" type, allowing operation only in those two gears. **Figure 1**, right, shows the electrical diagrams for both units.

In order for the solenoid to engage the OD, and to keep it engaged, the manual driver's switch must be on, and one or the other of the transmission switches must be closed. None of the switches are closed in reverse, as severe damage can be done by operating the OD in reverse.

TROUBLE SHOOTING

"A" type with Relay:

Step 1). With the key on, and the transmission in one of the appropriate gears, operate the OD selector switch. Using your voltmeter or test lamp, check for the presence of voltage at the relay terminal with the yellow/purple wire on it (should be the C2 terminal, but could be the C1, or even a C4 if the relay has been swapped out some time in the past). If you have voltage here, go to step 2. If not, go to step 3.

Step 2). Crawl under the car and repeat the above test on the Y/P wire at the solenoid. If you have voltage here, either the solenoid is bad, you have a bad ground on the solenoid, or your problem is a mechanical one. If you don't have voltage here, there is a break or a bad connection in the Y/P wire from the relay.

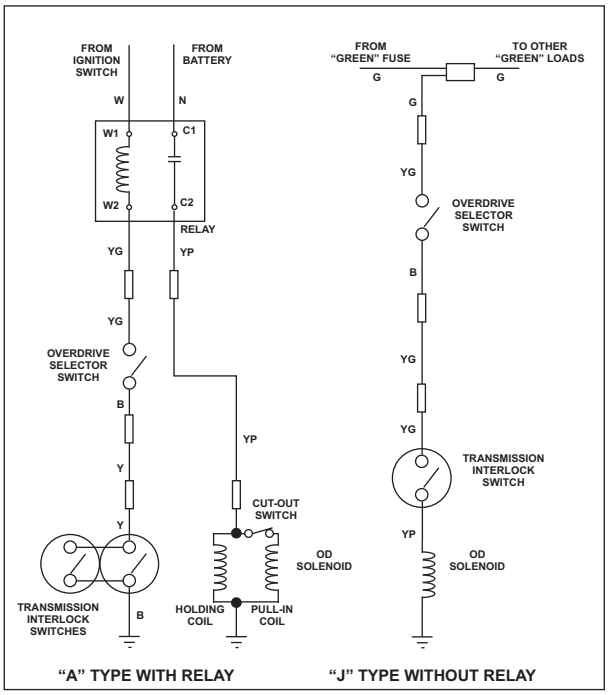


FIGURE 1

Step 3). Check for voltage on the relay terminal with the brown wire (should be C1, but could be C2) if you don't have voltage here, there is a break or a bad connection in the brown wire from the battery, which will need repair. If you do have voltage, go to step 4.

Step 4). Check for voltage on the relay terminal with the white wire (should be W1, but could be W2) if you don't have voltage here, there is a break or a bad connection in the white wire from the ignition switch. Repair as needed. If you do have voltage, go to step 5.

Step 5) Using a short test lead, connect the relay terminal with the yellow/green wire (should be W2, but may be W1) to ground, with the ignition key on. Do you have voltage now on the Y/P wire at the relay? If not, your relay is bad. If so, go step 6.

Step 6). Find the bullet/sleeve connector from the OD selector switch with the yellow wire on one side and a black wire on the other (the switch wiring may have been reversed by a previous owner, and instead of the black wire, you may find the yellow/green wire opposite the

yellow wire). Without disconnecting the bullets, short this connection to ground. Does the solenoid now operate? If not, either your switch is bad or there is a break or bad connection between the switch and the relay. Repair as needed. If so, there is a break or bad connections between the selector switch and the transmission switches, or the transmission switches are bad or misadjusted. Go to step 7.

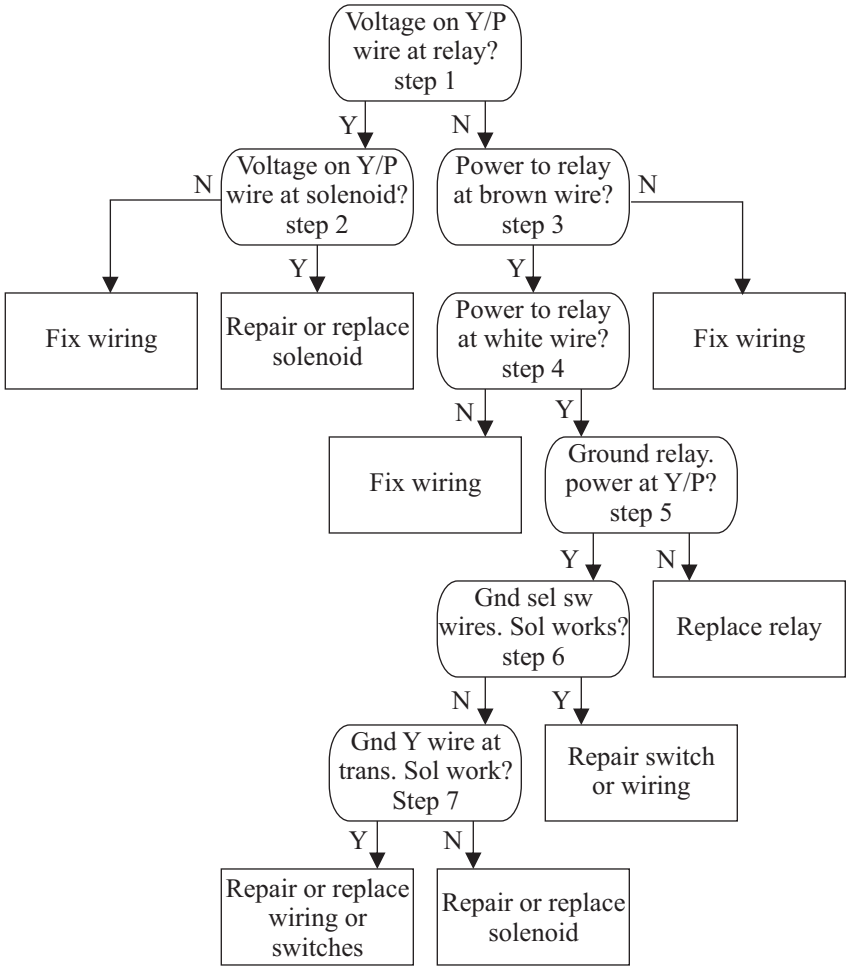
Step 7). With the key still on, and the OD selector switch still on, crawl under the car and remove the yellow wire from the transmission switches and touch it to ground. If the solenoid energizes when you do this, the switches are bad or misadjusted. If the solenoid doesn't energize, there is a break or bad connection in the wiring to the selector switch, the wiring from the selector switch to the relay, or the selector switch is bad.

"J"type without relay:

The overdrive circuit receives power from the "green" fuse, as do the windshield wipers, windshield washer, turn signals, gauges, and heater fan. If ***ANY*** of these items work, then you have power at the fuse. If ***NONE*** of these items work, then you need to go to the chapter 23, Power Distribution, and resolve the power issue before proceeding. If you have power, then you can proceed with the troubleshooting.

The wiring for the "J" type overdrive is a simple series circuit - a break in the wiring or a defective component any where in the line will prevent the circuit from functioning. With the key on, the OD selector switch on, and the transmission in third or fourth gear, use your voltmeter or test lamp to check for voltage at the bullet/sleeve connection where the green wire connects to the Y/G wire from the OD switch (may be the B wire to the switch instead, as the wires may have been swapped in the past). If you don't have voltage here, there is a break or a bad connection in the green wire somewhere, which will need repaired. If you do have voltage here, proceed to the next connection. Continue in this fashion till you reach a point where you no longer have voltage. The problem will be somewhere between the point where you don't have voltage and the last point where you did. Repair as needed.

TROUBLESHOOTING FLOW DIAGRAM FOR "A" TYPE



23
POWER DISTRIBUTION

At first thought, it would seem the first place to look when a device isn't working would be the fuse. Actually, though, it is seldom necessary to check the fuse, as you can usually determine the condition of a fuse without touching a piece of test equipment, at least in a simple car such as the TR250 or TR6. There are only four fuses in one of these cars, and one of these is a spare. As only three fuses are all that are used to protect the wiring, it stands to reason that more than one device is attached to each fuse. If ***ANY*** device on a particular fuse is working, then there must be power to that fuse. For example, the "purple" fuse (so called because the wires leading from it are purple) feeds the horns, high beam flasher, hazard flasher, and, on the later models, the courtesy lamps. If the horns don't work, try your high beam flasher, check your courtesy lamps, or try your hazard flasher. Only if none of these items work do you need to check the fuse.

OK, suppose you have determined that the fuse is good, and, after trying the detailed testing described elsewhere in this manual, you find that even though the other devices are getting power, the circuit you are working on isn't. Then it's time for power distribution testing to find the reason for no power.

As presented in chapter 2, General Procedures, power distribution in a TR 250/TR6 can be divided into four major groups, identified by the main color of the wires involved. **Figure 1** below illustrates the basic division of power.

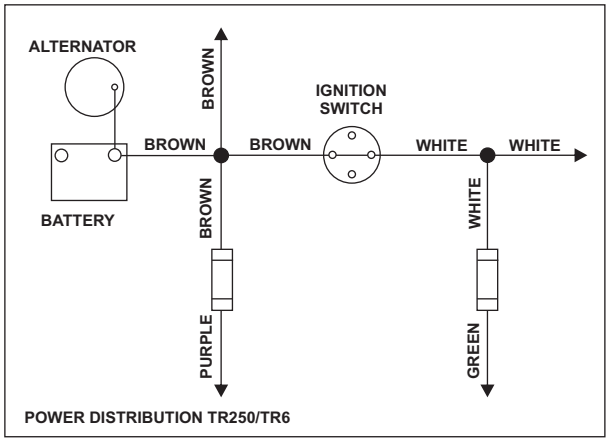


FIGURE 1

In the following figures, I have drawn the representation of the actual routing of the wiring in the cars, according to the color code described above, Brown wire, White wire, Purple wire, and Green wire circuits. If, after you've done the troubleshooting outlined in the appropriate chapter, you've determined that your circuit isn't receiving power, the diagrams can be an aid in determining where the problem might be. Using these diagrams, and the process of elimination, you can narrow down the area of search, possibly eliminating a lot of work ripping into the wiring harness. For example, suppose you find that you have no power to the headlight switch in a TR250, but you do have power to the rest of the car. Looking at Figure 2 below, you see that the power from the alternator/battery (ammeter connection), via a brown/white wire, goes to a bullet connector, where it splits into two paths: one to the headlight switch and one to the ignition switch which powers the remainder of the car.

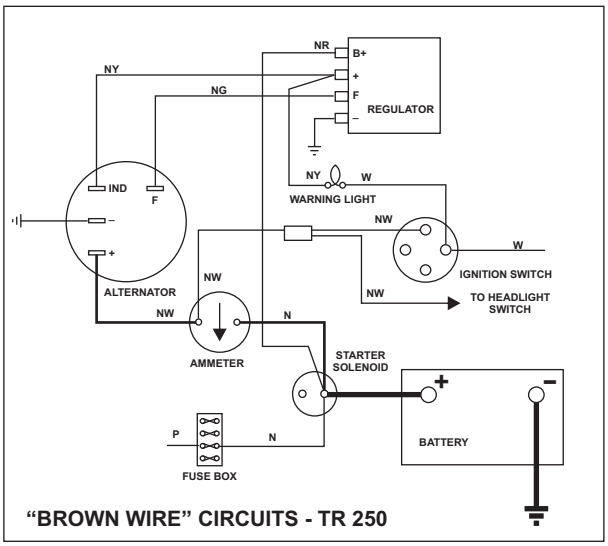


FIGURE 2

If the remainder of the car is getting power, but not the headlights, this bullet connector is the most likely place for the problem to be. It is possible, of course, that the N/W wire from this bullet connector to the headlight switch is broken somewhere, but the odds are that the connector is the problem. Using your voltmeter or test lamp, insert the tip of the test lead into the connector sleeve such that it touches only the bullet for the headlight wire, and not the sleeve itself. If you have power here, then the problem really is a broken wire. If you don't have power, then the bullet isn't making good contact with the sleeve. The bullet will need to be pulled out and both the bullet and the sleeve cleaned with steel wool or fine sandpaper. This same approach can be taken with the other power groups as well. You may find broken wires, especially if the car has been wrecked or abused, but the most common problem is bad connections. Sometimes a good cleaning is all that's required, but in severe cases, the terminals or connectors will have to be replaced.

CAVEAT:

For the most part, the wiring diagrams supplied by Triumph do a pretty good job of depicting the physical wiring connections, but not always. The diagrams may show a bullet/sleeve connection, for example, whereas the actual car may have a splice instead. The factory may have made undocumented changes, or a previous owner may have made modifications, perhaps even replaced a burned out wiring harness with a harness from a different year (or, I may have simply made an error). If your evaluation doesn't seem to make sense, based on the diagrams, you will have to do a physical examination of the wiring to clear up the discrepancy.

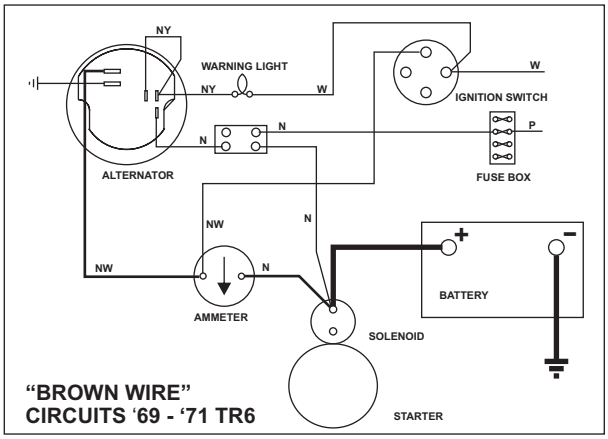


FIGURE 3

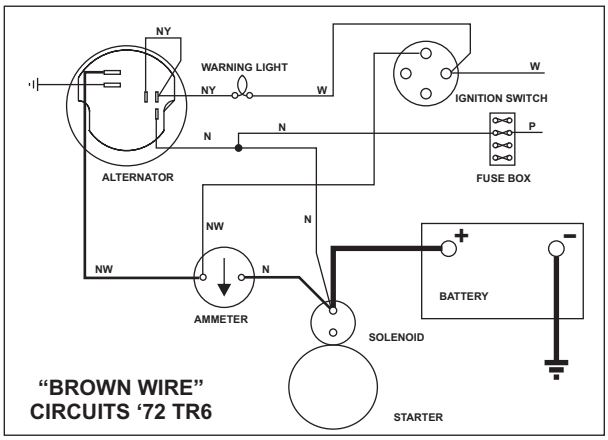


FIGURE 4

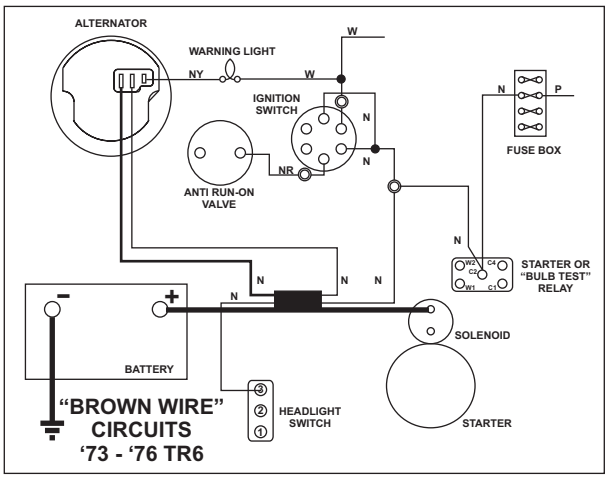


FIGURE 5

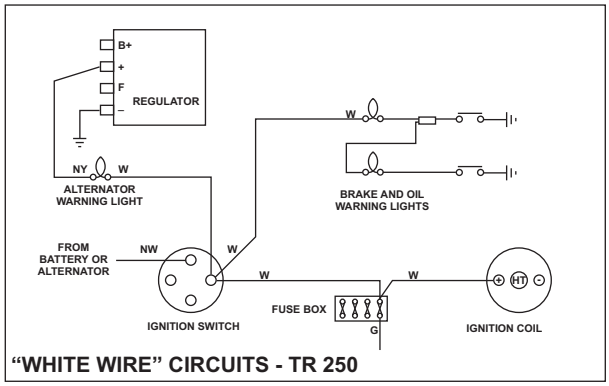


FIGURE 6

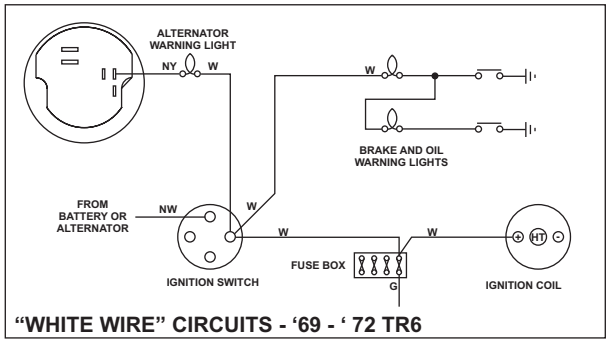


FIGURE 7

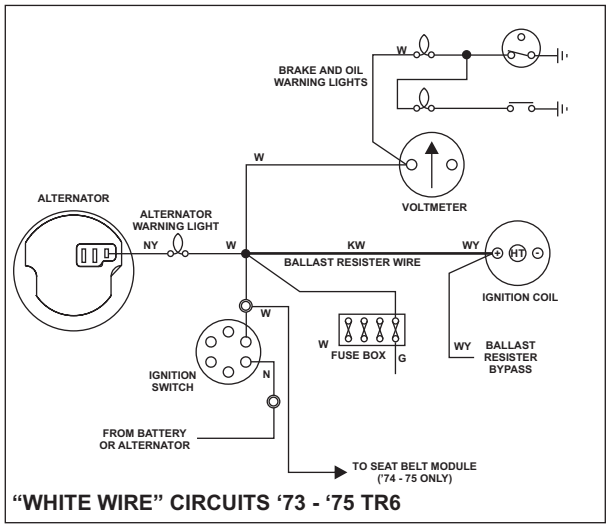


FIGURE 8

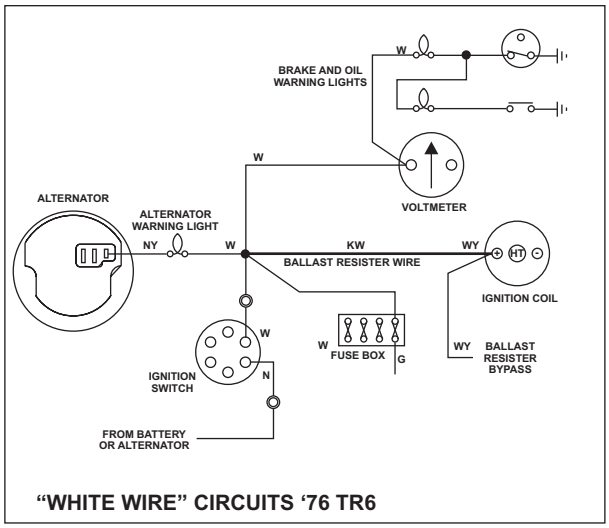


FIGURE 9

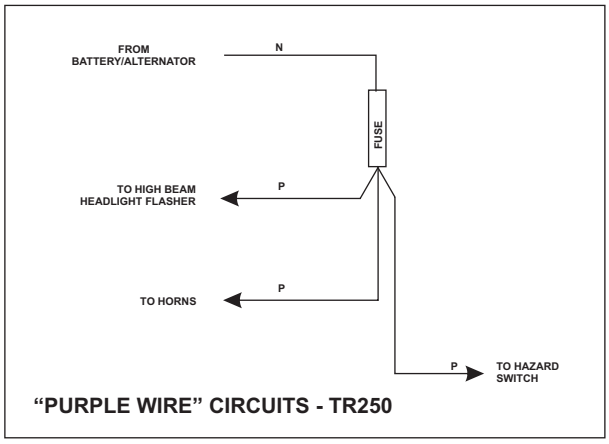


FIGURE 10

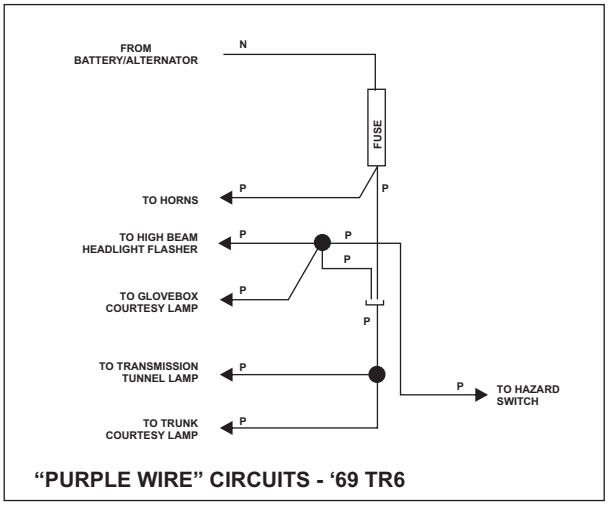


FIGURE 11

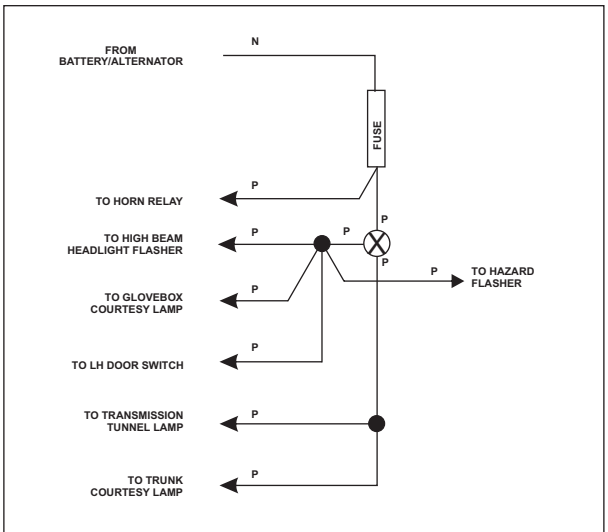


FIGURE 12

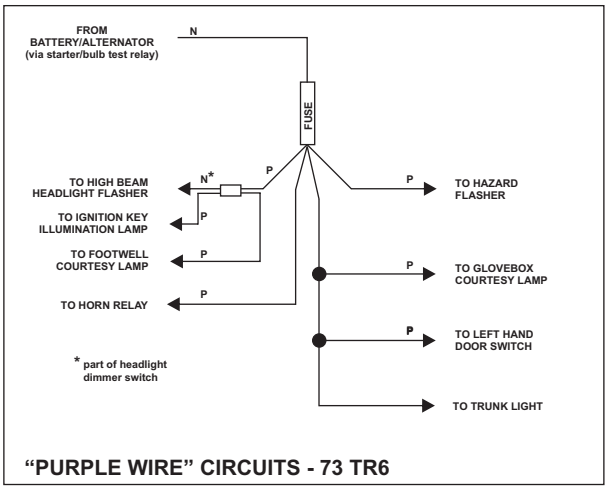


FIGURE 13

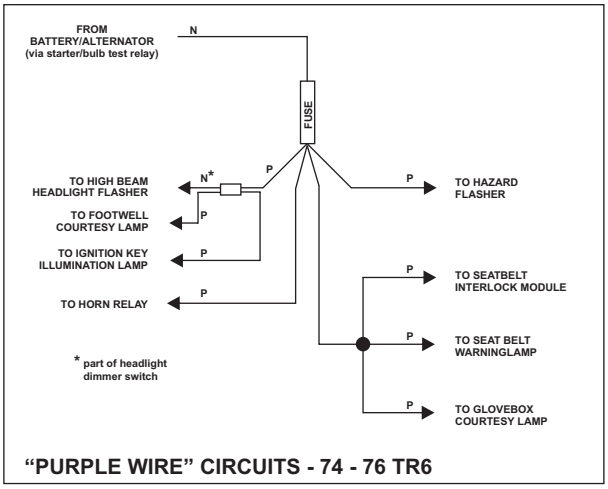
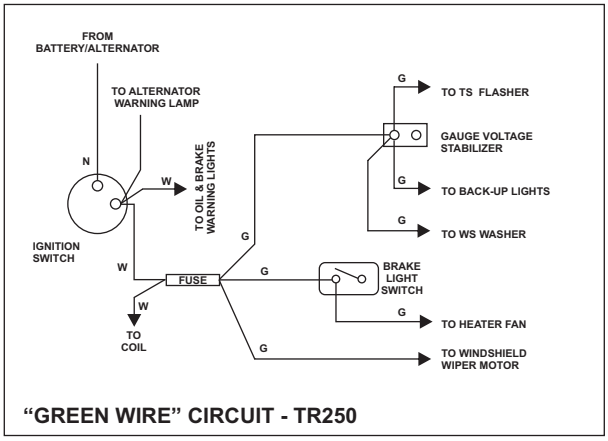
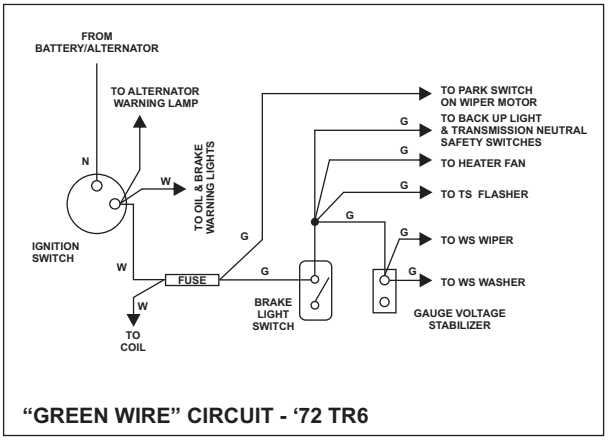


FIGURE 14



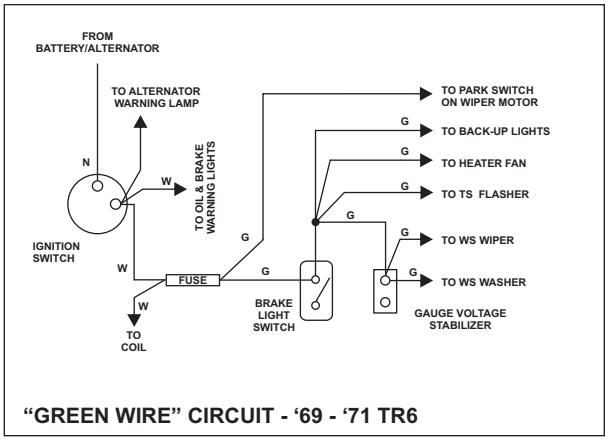
"GREEN WIRE" CIRCUIT - TR250

FIGURE 15



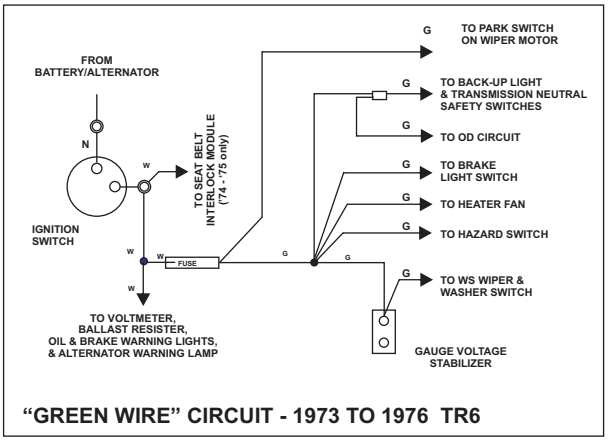
"GREEN WIRE" CIRCUIT - '72 TR6

FIGURE 17



"GREEN WIRE" CIRCUIT - '69 - '71 TR6

FIGURE 16



"GREEN WIRE" CIRCUIT - 1973 TO 1976 TR6

FIGURE 18