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CHARGING CIRCUIT

GENERAL DESCRIPTION

Under normal operating conditions, all of the current used by your car is supplied solely by the alternator. Once the car is started and the alternator is up to speed, the battery isn't really needed. In fact, with the older model Triumphs with generators and a crank handle, you could do away with the battery all together. The generators had permanent magnets to provide the initial magnetic field, so the battery wasn't needed. In addition to the current required to operate your car and any electrical accessories you may have, the alternator also supplies the current needed to replenish the battery charge that was depleted by the starter when the engine was cranked. For more information on alternators and generators, refer to chapter 4, Alternator Operation.

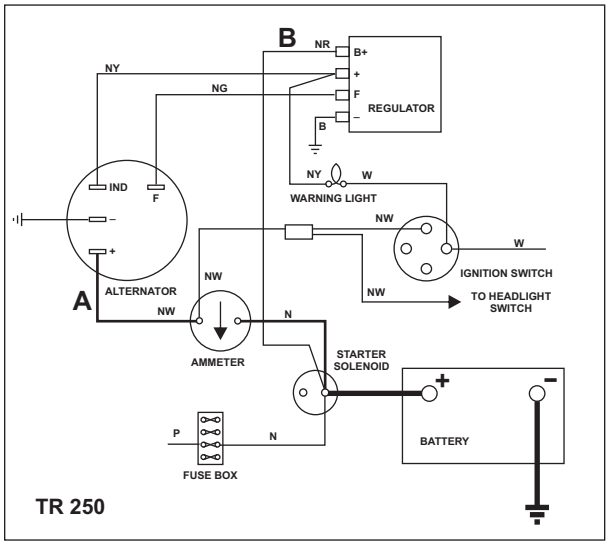

FIGURE 1

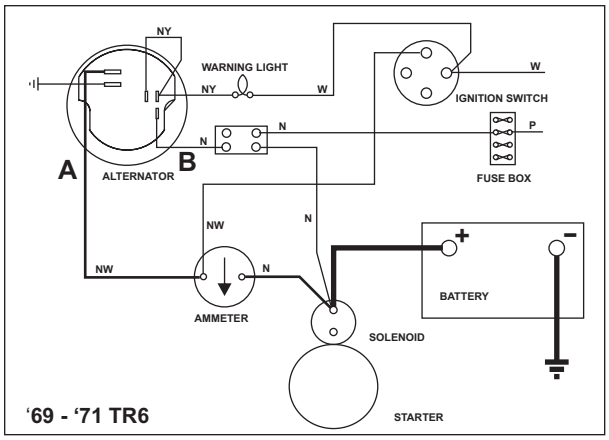

FIGURE 2

For the TR250 and the TR6 series, Triumph used three basic charging circuit configurations:

1) An externally regulated alternator with an ammeter was used on the TR250 only.
2) an internally regulated alternator with an ammeter was used on the '69 - '72 TR6 models.
3) An internally regulated alternator with a voltmeter was used for the '73 - '76 TR6 model.

Circuit diagrams for these three configurations are depicted in **figures 1, 2, 3,** and **4**, below. These diagrams do not depict all of the connections used by Triumph - only those for which documentation has been provided by official Triumph or Triumph approved publications, or for which I am personally acquainted. These cars have also appeared with other configurations at various times. I did not attempt to include every configuration, because of the uncertainty involved. I have no way of knowing if the different wiring schemes are original factory installations

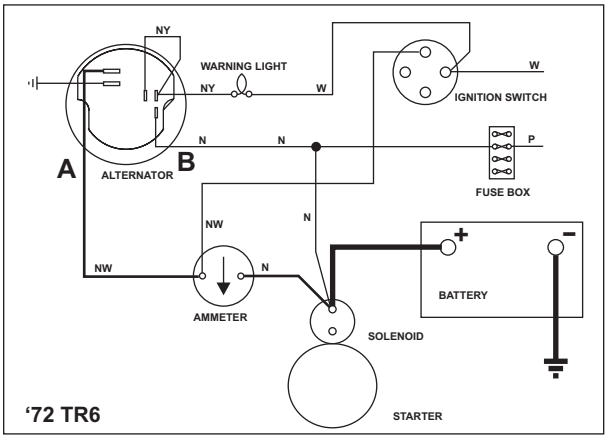

FIGURE 3

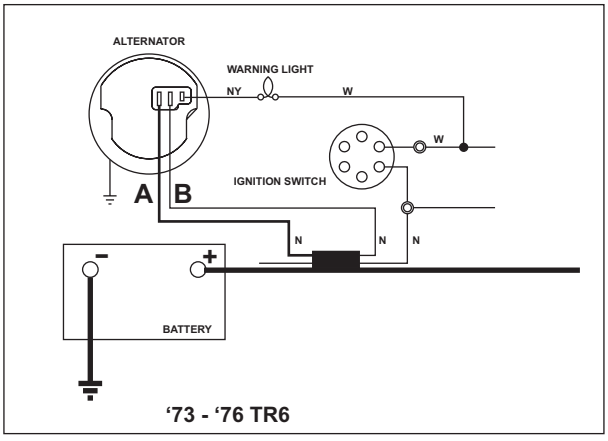

FIGURE 4

or modifications made by previous owners, and, in many cases, it is not possible to determine the exact wiring scheme without tearing up the wiring harness. As you can imagine, not many owners are willing to let me do that! In most cases, if not all, the differences between what is shown here and what may actually be installed are minor, and the following material is applicable to them as well.

TROUBLE SHOOTING

As a general rule, I recommend that you take your car to a battery or alternator dealer for testing, as they have the requisite equipment to do a proper and thorough test. There are, however, simple tests you can perform yourself, which may be sufficient to determine the fault.

The first test you can perform is one you should be performing on a regular basis anyway, every time you start your car: does the alternator warning lamp come on when you turn the key to the on position? If not, it is almost certain that your alternator won't work (in theory, it won't, but in practice it might - see chapter 4, Alternator Operation, for details). In this case, either the battery is dead, the warning lamp is bad, or the alternator is bad. If the battery will turn the engine over, then it is ok, so that only leaves the other two options.

TESTING PROCEDURES

Step 1). With the engine running at a high idle - 1500 rpm or more, and a moderate load (headlights, for example) on the electrical system, measure the voltage at the battery positive terminal. It should be around 14 - 14.6 volts. Increase the electrical load to the maximum by turning on all electrical items, and re-measure the voltage. Voltage should not drop by more than one volt. If the voltage measurements are satisfactory, your alternator is OK; if not, proceed to step 2.

Step 2). Measure the voltage on the brown, or the brown/white wire, identified as "A" in the diagrams in **figures 1, 2, 3,** and **4**, at the alternator. The voltage here should be 14 - 14.6 volts for a moderate load, and 13 - 13.6 volts for a full load. If you have the correct voltage here, but not at the battery terminals, you have a high resistance in the wiring/connectors leading from the alternator to the battery, which will have to be fixed. If you don't have the correct voltage, proceed to step 3.

Step 3.) With the engine off, measure the voltage at the battery, and then measure the voltage at the small brown wire where it enters the alternator (TR6), or at the brown/red wire where it connects to the regulator (TR250). These wires are the voltage sensing lines, and are identified as "B" in the diagrams. The two voltage readings should differ by no more than 0.2 volts. If you find a voltage difference of more than that, you have a high resistance in the wiring/connections which will need to be repaired. If you have the same voltage, go to step 4.

Step 4). with the engine off and the key in the "RUN" position, remove the wiring plug from the alternator and short the brown/yellow wire to ground (if you have a five wire connector, either of the N/Y wires will do). The alternator warning lamp should glow brightly. If not, either the bulb is bad or there is a high resistance in the circuit. Repair or replace as required. If the bulb does light up properly, your alternator is defective.

TROUBLESHOOTING FLOW DIAGRAM