

# WHY WON'T IT RUN?

## PART IV

By Dick Ray, Western Maryland M9, #67

One reason is bad wiring practices, which lead to bad electrical connections. These are very hard to find during your allotted five-minute repair time at a meet. Electrical troubleshooting has been discussed in previous articles, and we have discussed ways of finding and correcting obvious problems so you can get moving again. This installment is intended to help you prevent these wiring troubles.

Modern crimp-on terminals are the best way of making reliable electrical connections because the insulation fits inside the terminal sleeve, thereby absorbing vibration and preventing breakage. Blue-colored terminals are for 14- and 16-gauge wire, which is all that is needed for most cars. Yellow terminals are for 10- and 12-gauge wire, needed only for wires carrying more than 15 amps. Heavy battery cables are needed only for starter motor circuits. Good wire is available in several colors from your local auto parts store.

Fuses were not used by motorcar manufacturers, so there is no reason to add them during a restoration. Vibration has been found to open a fuse. Ask yourself: Why add something whose sole function is to cause a failure? It's better to replace bad wiring and to keep it simple.

If you fasten electrical accessories to the aluminum roof or body and use the metal for the electrical ground return, notice that there are lots of bolted-together connections in the path back to the battery. A headlight mounted on a Fairmont bracket attached to the front bar can have nine bolted-together connections in the ground side! Also notice that the roof is insulated by the rubber isolators on many cars. A strap will have to be added in this case to connect the roof to the rest of the car electrically. In general, you will have to pay attention to the ground return path as well as to the power path for every electrical item. The reliable connection problem is further compounded by the inevitable electrolyte corrosion which occurs between copper wiring lugs and aluminum panels.

One solution to the ground return problem is to bond each current-carrying body panel to the frame at one point, and from there to the engine. Your generator or alternator is grounded to the engine and ultimately all electricity must return to this point. A #10 or 1/4-inch stud added to the steel generator mounting angles makes an excellent single point for the return wires. Of course, the battery ground should go to the same point. Some Onan-engined cars attach the battery ground cable to a bolt on the transmission cover.

If you have carefully painted your generator and its mounting bracket, there are now two more uncertain connections in the ground path. Add a wire under the

regulator mounting screw and run it also to your single point ground terminal.

Symptoms of bad connections are:

- Dim front or rear light.
- Low battery voltage and charging current.
- Erratic lights and accessories.
- Weak ignition.

Obviously, ignition, headlight, and battery charging are the most important to get you back to your trailer.

Question: How can you identify a car with good wiring?

Answer: The owner never gets out to see if his headlight is on!