

Stopping Engine Run-On

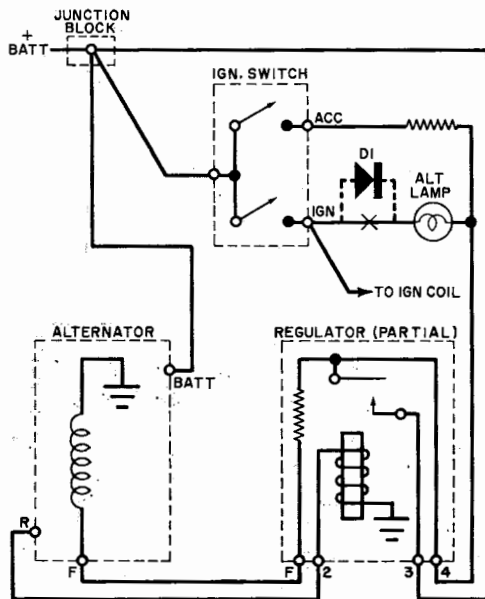
DOES YOUR CAR ENGINE KEEP RUNNING AFTER YOU TURN THE IGNITION OFF?

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ONE cause of run-on, or what is sometimes called "dieseling," in many modern cars may be the feeding of electrical power from the voltage regulator to the ignition coil after the ignition switch is turned off.

A portion of the charging circuit for many recent General Motors cars is shown in the diagram. When the ignition switch is turned on, 12 volts from the battery is applied to the ignition coil as well as to the alternator field through the alternator lamp (mounted on the dashboard) and a resistor located in the voltage regulator housing. This energizes the alternator field winding just enough for the alternator to start generating power when the engine runs. This initial flow of current also turns on the alternator lamp to provide a check on the lamp's condition and to indicate that the alternator is not producing power.

Addition of silicon diode to basic circuit (GM shown here) prevents the engine from running when key is off.



When the engine starts, the alternator produces enough power to energize the field relay in the voltage regulator to apply battery voltage directly to the field coil. With 12 volts on both sides of the lamp, it goes out, indicating that the alternator is operating.

When the ignition switch is turned off, inertia keeps the engine turning over for a couple of revolutions so that the alternator is still generating enough power to keep the field relay closed. Now, current (conventional) can flow from the battery through the closed field relay contacts and through the alternator lamp to the ignition coil. This current is limited by the resistance of the lamp (about ¼ ampere), and while it is not enough to produce a good spark from the coil, it may be sufficient to cause the engine to run roughly for some time after the ignition switch is off. With a transistor type of ignition system, this small current may be enough to keep the engine running for a considerable time.

One indication of this type of power feed-through is that the alternator lamp glows during the run-on. A simple way to determine if this is your problem is to remove the lamp from its socket. If the engine stops normally, with no run-on, then the cure is simple.

Locate the wire from the alternator lamp to the ignition switch and connect a 3-ampere, 50-PIV silicon rectifier diode (HEP-161 or similar) as shown in the diagram. Of course, you can connect the diode on the other side of the lamp if that lead is easier to get to.

Since you want current (conventional) to flow from the ignition switch to the regulator, but not backwards, the cathode end of the diode should be toward the voltage regulator. After cutting the correct wire, solder the diode in series and tape all exposed leads. This installation does not affect the normal operation of the ignition system, or the alternator lamp. ♦