



THE CHARGING SYSTEM

The automotive storage battery is not capable of supplying the demands of the electrical systems for an extended period of time. Every vehicle must be equipped with a means of replacing the energy that is being drawn from the battery. A charging system is used to restore to the battery the electrical power that was used during engine starting. In addition, the charging system must be able to react quickly to high load demands required of the electrical system. It is the vehicle's charging system that generates the current to operate all of the electrical accessories while the engine is running.

The purpose of the charging system is to convert the mechanical energy of the engine into electrical energy to recharge the battery and run the electrical accessories. When the engine is first started, the battery supplies all the current required by the starting and ignition systems.

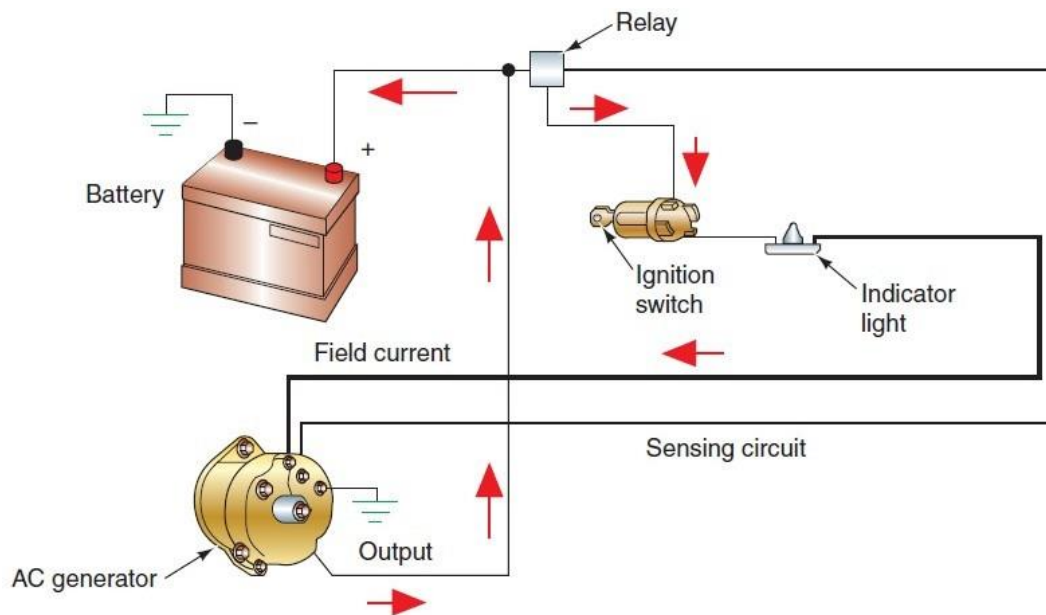


Figure 1 Components of the charging system.

As illustrated in Figure 1, the entire charging system consists of the following components:

1. Battery.
2. AC generator or DC generator.
3. Drive belt.
4. Voltage regulator.
5. Charge indicator (lamp or gauge).
6. Ignition switch.
7. Cables and wiring harness.
8. Starter relay (some systems).
9. Fusible link (some systems).

All charging systems use the principle of electromagnetic induction to generate the electrical power. A voltage regulator controls the output voltage of the AC generator, based on charging system demands, by controlling field current. The battery, and the rest of the electrical system, must be protected from excessive voltages. To prevent early battery and electrical system failure, regulation of the charging system is very important. Also, the charging system must supply enough current to run the vehicle's electrical accessories when the engine is running.