

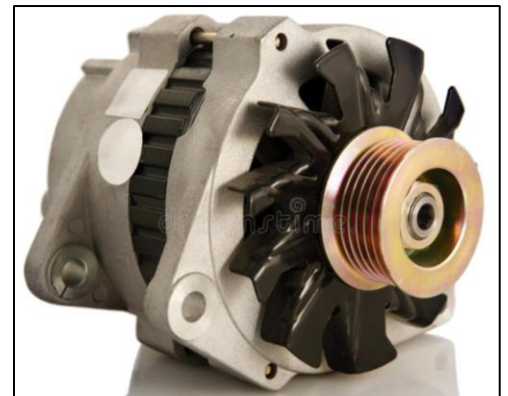
# The Alternator

by Tom Endy 2022

The automotive alternator came into being in the early 1960's, before that automobile electric power was produced by a generator. The early generators used on the Model A Ford did not have a regulator, the output was at a fixed constant rate that could be initially adjusted. In the old days people traveling across country during the day would turn on their headlights to absorb the excessive current so as not to overcharge the battery. The later generators had a regulator that mounted on the firewall and with a series of magnetic relays regulated the output of the generator so it would not overcharge the battery.

The alternator was developed after the automotive industry had changed from 6-volts to 12-volts, therefore all alternators were originally a 12-volt device and were a negative ground. Alternators produce AC power instead of DC power and require a rectifier circuit to convert the output power to DC. Along with the rectifier circuit there is a regulator circuit that is built into the alternator. Most Model A suppliers today provide alternators that are 12-volt negative ground and a 6-volt positive ground alternator to accommodate Model A's with an original 6-volt electrical system.

Many people in the Model A kingdom have an aversion to an alternator. The argument is they do not look authentic. I don't understand this thinking, the alternator on my Model A is under the hood and nobody ever sees it. An alternator was always one of the first thing I installed on any Model A I acquired.



The alternator regulator circuit is always monitoring the battery and if it requires charging it sends current to charge it. When the battery is fully charged the regulator stops sending current. The ammeter in a Model A will tell you if the battery is being charged by the alternator. When the car is started up power stored in the battery is depleted by the starter turning the engine over. For the first few miles the ammeter will show an amount of current flowing to the battery to charge it back up. When the battery reaches full charge the alternator stops sending current to the battery and the ammeter needle returns to zero and remains there. If you turn on some electrical device, such as the headlights, the regulator circuit senses it and sends additional current to the headlights. You may see an initial flicker of the ammeter needle, but it will remain on zero because the battery does not require charging.

If the ammeter needle does not return to zero after a few miles there could be several reasons. 1. The battery may be reaching the end of its serviceable life and not able to achieve a full charge. 2. The battery may be low on water. 3. There may be a corroded battery connection. The connection of the ground strap to the frame is the most notorious. It is out of sight and out of mind. It should be periodically thoroughly cleaned.

There is one negative aspect to using an alternator on a Model A. The design of Henry's electrical system is such that the alternator is always connected to the battery. The alternator contains six diodes that make up the rectifier circuit. The property of a diode allows current to flow in one direction, but not in the other. However the "other" allows a little current to sneak past and if you don't drive the car often the sneak can slowly deplete the battery. After a few weeks you could easily find the battery dead, and batteries that sit around less than fully charged don't last as long as those fully charged. It is prudent with any Model A to remove the fuse on the top of the starter when finished driving the car for the day. This way the electrical circuit, including the alternator, is disconnected from the battery. It will also prevent an electrical fire caused by a short circuit in the wiring that the fuse will not protect if the flow of current is below the rated value of the fuse.