

Tech Tip: Remy GM Regulated Voltage Control (RVC) Computer-Controlled Charging

GM RVC charging system voltage varies from approximately 11.5 to 15.5 volts. During fuel economy mode, when voltage is at the lowest, customers or technicians monitoring battery voltage may believe there is a charging system concern. Simply turning on all vehicle electrical items will cause a mode change and make the voltage rise. Conversely, when the system is in battery sulfation mode, voltage may rise as high as 15.5 volts for three to four minutes. When there is a legitimate failure in the system, the battery lamp will illuminate and/or diagnostic codes will be stored. This tech tip deals with diagnosing the two most common codes: P0621 and P0622.

DTC P0621: Alternator L Terminal Fault

The alternator L terminal is the turn on command for the charging system. The PCM sends a 5-volt variable duty cycle signal to command the alternator voltage set point between 11 and 15.5 volts.

The PCM sets code P0621 when the following conditions occur:

- The alternator L circuit has high voltage for greater than five seconds with Key On Engine Off (KOEO)
- The alternator L circuit has low voltage for greater than 15 seconds with Key On Engine Running (KOER)



1. With the key in the off position, using a pin, back probe the L circuit at the voltage regulator.



2. Ensure the KOEO measures 0 to 1.5 volts.
 - If the reading is 1.5 to 5.5 volts, check the alternator ground and have the alternator bench tested.
 - If the reading is greater than 5.5 volts, check for a short to power.



3. Ensure the KOER measures 3.5 to 5.5 volts.
 - If the reading is 0 to 1.5 volts, verify power and ground to the alternator, then have the alternator bench tested.
 - If the reading is greater than 1.5 and less than 3.5, verify PCM operation.
 - If the reading is greater than 5.5 volts, test for a short to power.

This issue of the *Remy Aftermarket Products Technical Service Bulletin* will focus on Regulated Voltage Control (RVC) charging Diagnostic Trouble Codes (DTC).

REMINDER: Fully charge and load test the battery before beginning. A partially charged battery will result in incorrect test results.

DTC P0622: Alternator F Terminal Fault

The alternator F terminal is a duty cycle signal that reflects field operation. The PCM monitors the F terminal to determine the alternator's load on the engine. The PCM uses the information to adjust engine RPM and alternator voltage set point.

The PCM sets code P0622 when the following conditions occur:

- PCM detects a duty cycle signal greater than 65% for five seconds KOEO
- PCM detects a duty cycle signal less than 5% for 15 seconds KOER

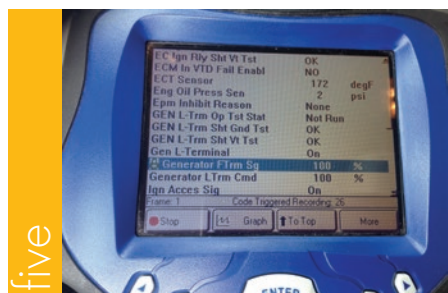
1. Verify the F terminal signal by monitoring the F terminal Parameter Identification (PID) on your scan tool. In KOER state, the GEN-F signal should be between 5 - 95% duty cycle.



2. To test the F terminal (with the ignition off) unplug the voltage regulator connector.

3. In KOEO state, monitor the GEN-F PID on the scan tool.

- The reading should be 0% duty cycle.
- If the duty cycle is higher, test for short to voltage.



4. Connect a test lamp to B+ and probe the voltage regulator harness at the F terminal.

5. Monitor the GEN-F PID on the scan tool. The scan tool reading should read 95 - 100% duty cycle.

- If the duty cycle is below 5%, test for open or short to ground in the F circuit, then have the alternator bench tested.