

# 1963 - 1967 Corvette: Chevrolet Service News: Two-Unit Voltage Regulator Diagnosis and Adjustment

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**Subject:** Two-Unit Voltage Regulator Diagnosis and Adjustment

**Model and Year:** 1963 - 1967 Corvette

**Source:** Chevrolet Service News

**Page Number:** 1

**Date:** June 1963, Volume 35, Number 6

This updated service information was issued late in 1963 Corvette production. The voltage regulation system was brand new for the 1963 Corvette and was used on all 1963 - 1967 Corvettes. 1963 Corvette Shop Manuals do not have this diagnosis and adjustment procedures.



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## TWO-UNIT VOLTAGE REGULATOR DIAGNOSIS AND ADJUSTMENT

This article presents a revised and greatly simplified procedure for diagnosing 1963 Delcotron two-unit voltage regulator problems. The checking and adjustment of voltage setting is covered in detail. To obtain satisfactory results when regulators are being adjusted, it is essential that this revised procedure be followed exactly.

This new procedure cancels and supersedes all previously published service adjustment procedures for the 1963 two-unit type voltage regulator.

Before starting any tests on the regulator, the fan belt should be checked for proper tension; also check the electrical circuit wiring for tight connections and any possible breaks in the vicinity of the terminals. The battery posts and clamps should be clean and tight.

1. Connect a voltmeter from the hot terminal on the horn relay to ground on the regulator base. (Be sure alligator clip does not touch a resistor or terminal extension under the regulator.)
2. Start engine and run at 1500 RPM or above. Turn on high beam headlights and either the high speed on the heater blower or medium speed on the air conditioner blower motor. If voltage is 12½ volts or more; turn off electrical loads and stop engine, then proceed directly to Step 5.
3. If voltage reading obtained in Step 2 was less than 12½ volts, check Delcotron output as described later in this article under the head-

ing "Delcotron Output Test Procedure—Voltmeter Method." If the results of the Delcotron test indicate that it is functioning properly, proceed with Step 4 below.

4. (a) Disengage the harness multiple connector from the regulator, then remove the regulator cover. Reinstall the multiple connector. Run engine at 1500 RPM or above,

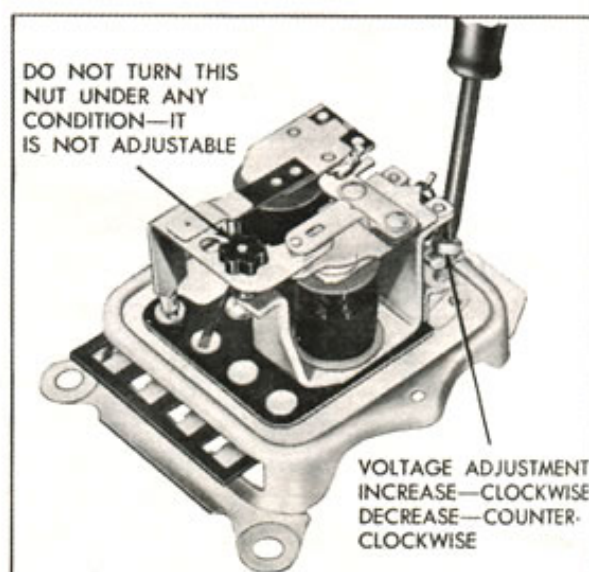


Fig. 1—Adjusting Regulator Voltage Setting



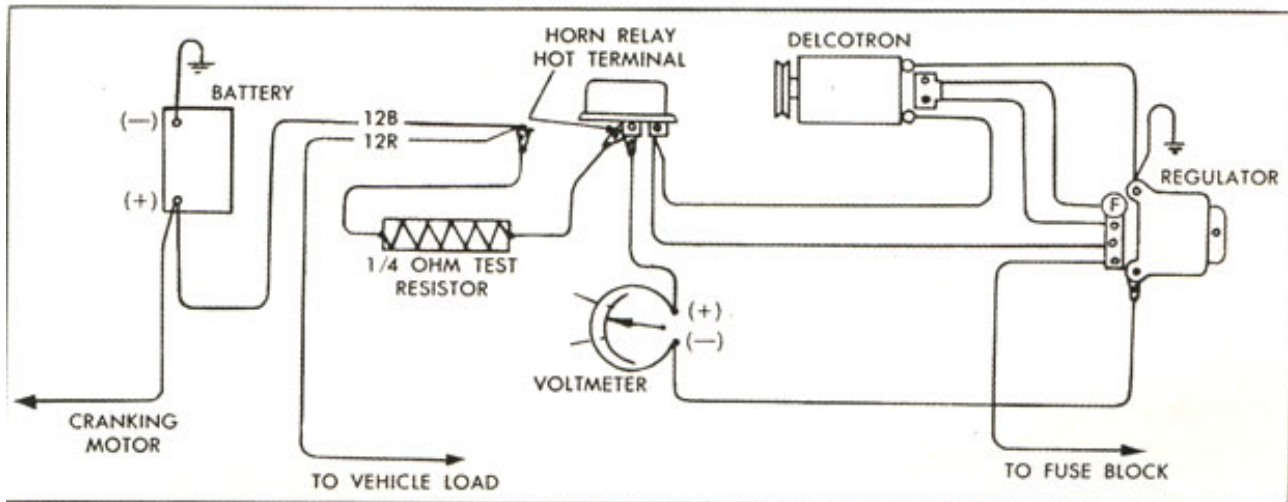


Fig. 2—Voltmeter and Resistor in Circuit for Regulator Voltage Adjustment

and turn on high beam headlights and either the high speed on the heater blower or medium speed on the air conditioner blower motor. Turn voltage adjusting screw clockwise (See Figure 1) to obtain a setting of  $12\frac{1}{2}$  volts, or slightly higher. If the regulator accepts this adjustment; turn off loads, stop engine, reinstall cover and proceed to Step 5.

(b) If  $12\frac{1}{2}$  volts cannot be obtained during Step 4 (a), install a new regulator assembly. Repeat Step 2, and if necessary Step 4 (a), before proceeding to Step 5.

5. Connect a  $\frac{1}{4}$  ohm (25 watt) fixed resistor into the charging circuit at the hot terminal of the horn relay (Figure 2).

NOTE: If the desired  $\frac{1}{4}$  ohm (25 watt) resistance cannot be induced with test equipment on hand, a resistor of suitable value can be made by using two 1.8 ohm ignition circuit resistance wires obtained from scrap wiring harnesses. (This is the 55 inch resistance wire that normally connects to the coil positive terminal on Chevrolet vehicles.) Cut each of the two wires in half and strip  $\frac{1}{2}$  inch of insulation from the wire ends. Parallel the four wires and gather in single terminal at each end, as shown in Figure 3.

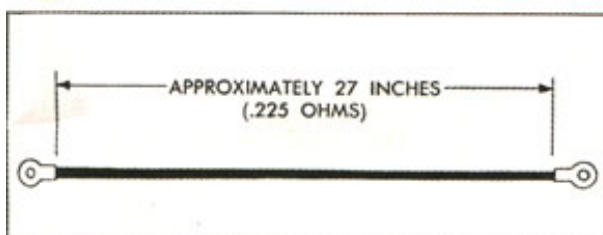


Fig. 3—Resistance Wire for Regulator Check

6. Run engine at 1500 RPM or above for at least 15 minutes of warm-up, then cycle regulator voltage control by stopping engine. Restart engine and bring speed to 1500 RPM and read voltage. If voltage is between 13.5 and 15.2, the regulator is functioning properly and the voltage setting is within specifications, therefore regulator adjustment has been completed. If voltage is not within 13.5 to 15.2 volts, keep engine running at 1500 RPM and perform step 7.

NOTE: The voltage adjustment procedure detailed in Step 7 may also be utilized to finely tailor a voltage setting to meet known special requirements.

7.
  - a. Remove four-terminal regulator connector, then remove the regulator cover.
  - b. Re-connect four-terminal connector and adjust voltage to within 14.2 to 14.6.
  - c. Remove four-terminal connector and re-install regulator cover; re-install connector.
  - d. Continue running engine at 1500 RPM for 5-10 minutes to re-establish regulator internal temperature.
  - e. Cycle regulator voltage control by stopping and re-starting engine and bringing engine speed back to 1500 RPM. Read voltage. A reading between 13.5 and 15.2 indicates a proper regulator operation and adjustment.

CAUTION: Be sure that either the regulator four-terminal connector is disconnected or the engine is stopped before removing or installing cover. This is necessary to prevent regulator damage by short circuits.

### **Delcotron Output Test Procedure—Voltmeter Method**

1. Disconnect the four-terminal connector from the regulator.
2. Disconnect the two-terminal connector from the Delcotron "F" and "R" terminals.
3. Connect a jumper wire from the Delcotron "BAT" terminal to the Delcotron "F" terminal. This provides full field excitation.
4. Connect a voltmeter from the Delcotron "BAT" terminal to the Delcotron "GRD" terminal.
5. Start engine and turn on high beam headlights and either the high speed on the heater blower or medium speed on the air conditioner blower motor. Slowly increase engine speed to 1500 RPM or slightly above and note voltage reading obtained. A voltage of 12.5 volts or more within a few minutes indicates Delcotron output is satisfactory. Stop engine and reconnect wiring.

*CAUTION: When performing step 5, engine speed should be increased slowly and controlled to prevent the unregulated voltage from exceeding 16 volts during test. If battery is in a normal state of charge, voltage will exceed 12.5 volts as soon as engine speed is increased.*

6. If voltage is less than 12.5 volts, refer to the appropriate shop manual for Delcotron trouble diagnosis aids (Diodes, field circuit checks, etc.).

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