

## CHECKING 1965 MODEL 12-VOLT SYSTEMS

### Using The Sun Vat 26 Tester

The 1965 Electra-Glide, Sportster and Servi-Car models all have a 12-volt generator and lighting system. This means that the regulator setting specifications and test information are different from the 6-volt system, and new test procedures are necessary.

This bulletin gives testing instructions for using the Sun Vat 26 voltage-ampere tester which is a single unit incorporating all the components needed for a complete test of the 12-volt system.

To trouble-shoot the electrical system, four basic tests are required:

1. Test the generating system to determine whether the generator or regulator is at fault.
2. Test the cut-out unit closing voltage.
3. Test the voltage control unit setting.
4. Test the current control unit setting.

Use the following procedures for specific 1965 models listed.

### 1965 ELECTRA-GLIDE AND SERVI-CAR

(Delco-Remy Regulators)

#### A. TESTER CONTROLS

Turn ground polarity selector to Negative; Load Control knob to Direct; Ammeter selector 100A position; and voltage selector 16V position for 12 volt system.

#### B. TESTER CONNECTIONS (SEE FIG. 1)

1. Remove "BAT" lead from voltage regulator.
2. Connect Regulator lead "R" of tester to "BAT" terminal of regulator.
3. Connect Battery lead "B" of tester to battery wire removed from regulator.
4. Connect Ground lead "G" of tester to ground of motorcycle.
5. Connect Positive voltmeter lead to "GEN" terminal of regulator.
6. Connect Negative voltmeter lead to ground of motorcycle.

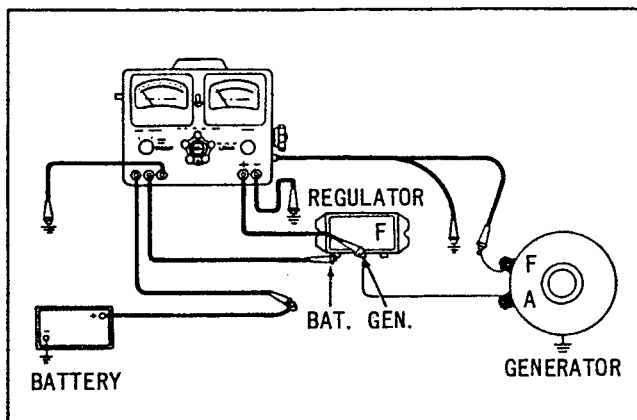


Figure 1.

7. Remove wire connected to regulator field "F" terminal and connect this wire to a lead of the field control variable resistor, the other lead of the field control resistor is connected to ground on motorcycle. Turn field control to "Open" position.

#### C. TESTING GENERATING SYSTEM

1. Operate engine at 2000 RPM (approximately 40 MPH).
2. Slowly turn field control resistor knob to "Direct" position until ammeter reads 10 amperes.

If ammeter reading is as specified, generator is not at fault and difficulty is in voltage regulator or wiring. Make regulator Tests D, E, and F.

3. If there is no ammeter reading or reading is low, observe voltmeter reading. If voltmeter reading is below 12 volts, generator requires service.
4. If voltmeter reading is over 15 volts, the cutout relay is not closing. Make following Test D.

#### D. TESTING CUTOUT RELAY UNIT CLOSING VOLTAGE

Use same tester connections as previous Test C. (Fig. 1)

1. Turn field control variable resistor to "Open" position.
2. Turn load control knob to "Direct" position.
3. Operate engine at 1500 RPM (approximately 30 MPH).

4. Slowly turn field control resistor knob toward "Direct" position observing voltmeter.

As resistance is decreased in field circuit, voltage will rise. Note highest reading before meter pointer "kicks" to read battery voltage. Repeat operation several times, each time turning field control to "Open" position. Highest reading observed is the cutout relay closing voltage.

If closing voltage is not within 11.8 to 13.0 volts, replace regulator or adjust to 12.4 volts according to Delco Remy Service Bulletin No. 1R-119A.

#### E. TESTING VOLTAGE CONTROL UNIT SETTING (FIG. 2)

Same connections are used as in previous Test D except move Positive voltmeter lead to regulator battery "BAT" terminal and remove grounded lead of the field control variable resistor and connect to regulator field "F" terminal. (See Fig. 2)

1. Turn field control knob to "Direct" position.
2. Turn load control to the 1/4 ohm position.
3. Operate engine at 2000 RPM (approximately 40 MPH).
4. Turn field control knob to "Open" position, then to "Direct" to cycle regulator.
5. Observe voltmeter reading. Reading indicated on voltmeter is the voltage regulator setting of the upper contacts (shorting contacts). Voltmeter reading should be between 13.9 and 14.5 volts.
6. Maintain engine speed, slowly rotate field control resistor toward "Open" position to increase resistance until voltmeter reading drops slightly and then remains steady. This indicates the voltage setting of the lower contacts (series contacts). The voltage reading on lower set of contacts should be 0.1 to 0.3 volts lower.

If voltage readings are not within specifications, replace regulator or service and adjust voltage unit setting to 14.3 volts according to Delco Remy Service Bulletin No. 1R-119A.

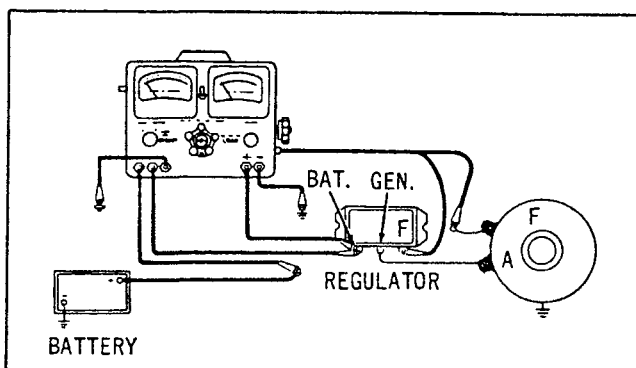


Figure 2.

**IMPORTANT:** All final readings must be taken after regulator has reached operating temperature and with regulator cover in place.

### CAUTION

Never ground the 12 volt generator or regulator field terminal while these two units are connected and operating. This will burn up the upper set (shorting set) of contacts of the voltage control unit.

#### F. TESTING CURRENT CONTROL UNIT SETTING ON 3 UNIT REGULATORS

Use same connections as previous Test E, Voltage Control Test. (See Fig. 2).

1. Turn field control to "Direct" position.
2. Operate engine at 2000 RPM.
3. Turn load control clockwise until maximum reading is obtained on ammeter.

This reading will be equal to the current limiter setting. If not within 9.0 to 11.0 amperes, replace or adjust to 10.0 amperes according to Delco Remy Service Bulletin No. 1R-119A and retest. Take final reading with regulator cover in place.

### 1965 SPORTSTERS

(Bosch Regulator)

#### A. TESTER CONTROLS

Turn ground polarity selector to Negative; load control knob to Direct; ammeter selector to 100A position; and voltage selector to 12 volt position.

#### B. TESTER CONNECTIONS (SEE FIG. 3)

1. Remove wires from regulator "B+" terminal. On XLH models, connect these wires together.
2. Connect Regulator lead "R" of tester to regulator terminal "B+".
3. Connect Ground lead "G" of tester to ground on motorcycle.
4. Connect Positive voltmeter lead to regulator terminal "D+" and connect Negative lead to ground on motorcycle.
5. Remove wire from regulator terminal "DF" and connect this wire to a lead of the field control variable resistor. Connect the other lead of the field control to ground on motorcycle. Turn field control to "Direct" position.

Battery lead "B" of tester is not connected for this test.

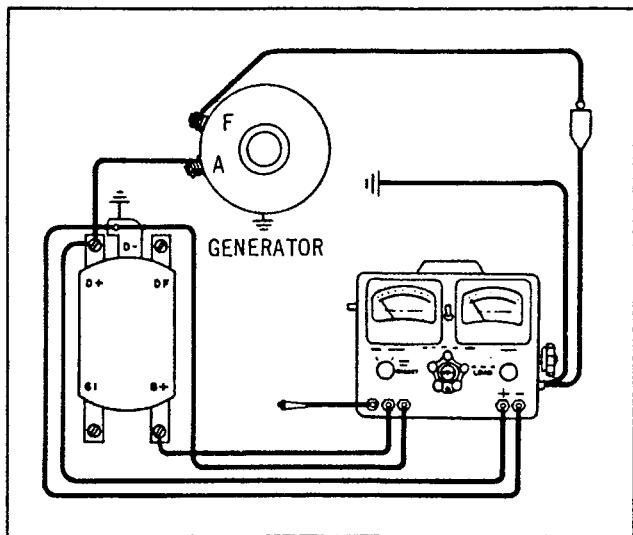


Figure 3.

### C. TESTING GENERATING SYSTEM

1. Operate engine at 2700 RPM (approximately 45 MPH).
2. Slowly rotate load control clockwise until a reading of 10 amperes is observed.
3. If a reading of 10 amperes is obtained, generator is not at fault and difficulty is due to a faulty regulator or defective wiring. Inspect wiring and make Tests D and E.
4. If a reading of 10 amperes cannot be obtained and voltmeter reading is below 12 volts, generator is defective.
5. If no reading is obtained on ammeter but voltmeter reading is 15 volts or higher, cutout relay is defective. Regulator should be replaced and circuit retested.

### D. TESTING CUTOUT RELAY UNIT CLOSING VOLTAGE

Make same connections as in previous Test C, except connect battery lead "B" of tester to 1-1/2 ohm connection on side of tester.

1. Turn load control to "Direct" position.
2. Turn field control variable resistor to "Open" position.
3. Operate engine at 2000 RPM. (Approximately 35 MPH)
4. Slowly turn field control variable resistor toward "Direct" position while observing the voltmeter. As resistance is decreased in field circuit, voltage will rise.

Observe highest voltmeter reading before voltmeter pointer kicks back. Repeat operation several times, each time returning field control to "Open" position. Highest reading observed is the cutout relay closing voltage.

If closing voltage is not within 12.4 to 13.1 volts, replace regulator.

### E. TESTING VOLTAGE CONTROL UNIT SETTING (FIG. 4)

Two tests are required:

1. Testing regulator voltage setting under load.
2. Testing regulator voltage setting under no load.

#### Testing Voltage Setting Under Load

1. Make connections as in previous Test D, except switch positive voltmeter lead to regulator "B+" terminal, disconnect tester battery lead "B" from 1-1/2 ohm connector on tester, disconnect field control lead from ground connection on motorcycle and connect this lead to regulator "DF" terminal.

2. Turn field control resistor to "Direct" position (no resistance in field circuit).

3. Operate engine at 2700 RPM (approximately 45 MPH).

4. Turn load control knob clockwise to load circuit until ammeter reads 10 amperes.

5. Voltmeter reading will be voltage setting under load and should be from 12.7 to 14.5 volts at 10 amperes load.

#### Testing Voltage Setting Under No Load

1. Return load control knob to "Direct" position.
2. Turn field control resistor to "Direct" position.
3. Operate engine at 2700 RPM.

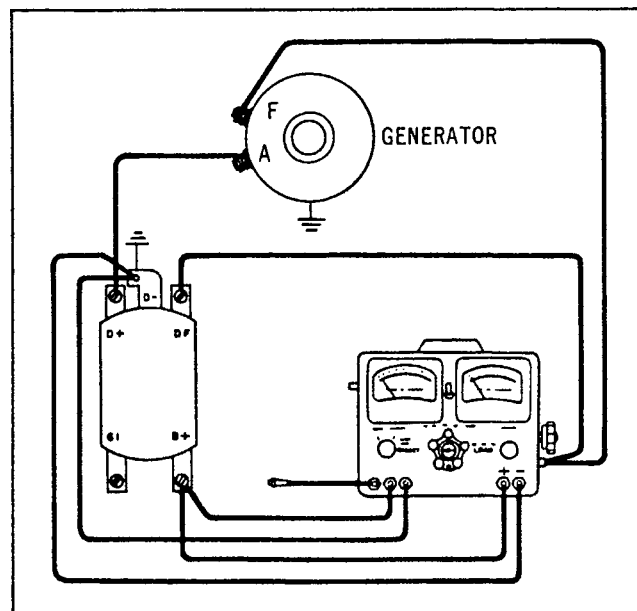


Figure 4.

4. Voltmeter reading will be voltage setting at no load and should be from 13.8 to 15.4 volts.

Both load and no-load voltage readings must be within specifications or regulator should be replaced.

### **CAUTION**

It is advisable to "flash" field coils whenever wires have been removed from generator regulator; or after generator or battery has been removed and is reinstalled. This is done to make sure generator has correct polarity. If polarity of generator is reversed, relay points will vibrate and burn.

On battery systems, "flash" field coils by momentarily touching a jumper wire between "BAT" terminal and "GEN" terminal on regulator, after all wires have been properly connected and before starting engine.

On systems without battery, connect negative lead of outside battery to generator frame and flash positive lead to generator "A" terminal. The momentary surge of current from battery to generator will correctly polarize generator.

### SERVICING REGULATORS

#### Delco Remy Regulator

Faulty operation of Delco Remy regulators may be due to one or more of the following conditions:

1. Contact points dirty, oxidized or pitted.

After cleaning contacts, the air gaps and contact spacing must be adjusted. Information on the voltage regulator and cutout relay air gap and contact opening setting is contained in the Service Manual.

2. Ground wire broken (short braided wire between regulator base and mounting bracket).

3. Defective fuse (in holder near regulator).

4. Corrosion contamination on regulator internal parts.

After any faults have been corrected, regulating units must be adjusted according to Delco Remy Service Bulletin No. 1R-119A.

### BOSCH REGULATOR

Service or adjustment to internal parts of Bosch regulators is not recommended since contact spacing and air gaps are factory set. If tests indicate that the regulator is defective, it should be replaced and checked out in operation on the motorcycle.

### NOTE:

Testing and service information on 6-volt electrical systems using the SUN VAT 26 tester can be found in 1965 Service Manuals.