Charging System: Testing and Inspection
Pinpoint Tests

A1 - Preliminary Checks

^ Check fuse link.

^ Check battery terminals and cable clamps.

^ Check wiring connections at alternator, electronic voltage regulator and engine-to-body grounds.

^ Check alternator belt tension.

^ **Are the above items functioning properly?**

YES -- Go to A2. See: A: Series With External Voltage Regulator (EVR)/A2 - Base Voltage and No-Load Test

NO -- Service and/or replace as necessary.

A2 - Base Voltage and No-Load Test

^ Connect voltmeter to battery posts. Record battery voltage - this is base voltage, engine off.

^ Start engine and run at 1500 RPM with no electrical load. Voltage should increase, but no more than 2.0 volts.

Increased, but not more than 2.0 volts? -- Go to A3. See: A: Series With External Voltage Regulator (EVR)/A3 - Load Test

No increase? -- Go to A6. See: A: Series With External Voltage Regulator (EVR)/A6 - Under Voltage Test

Increases more than 2.0 volts? -- Go to A14. See: A: Series With External Voltage Regulator (EVR)/A14 - Over Voltage Test

A3 - Load Test

^ Increase engine speed to 2000 RPM.

^ Turn heater-A/C blower and headlamps on high.

^ Voltage should read a minimum of 0.5 volt over base voltage.

Increases 0.5 volt or more -- Go to A4. See: A: Series With External Voltage Regulator (EVR)/A4 - Batt Drain With Key Off

Increases 0.5 volt or more, but alternator indicator lamp stays on -- Go to A12. See: A: Series With External Voltage Regulator (EVR)/A12 - S Circuit Test

Increases less than 0.5 volt -- Go to A6. See: A: Series With External Voltage Regulator (EVR)/A6 - Under Voltage Test

A4 - Batt Drain With Key Off

^ Perform battery drain test. See: In-Vehicle Testing/Drain Testing

Battery drain -- Go to A5. See: A: Series With External Voltage Regulator (EVR)/A5 - EVR Drain Test

No battery drain -- Visually inspect battery and perform load test.

A5 - EVR Drain Test

^ Remove connector from electronic voltage regulator (EVR).

^ Perform battery drain test. See: In-Vehicle Testing/Drain Testing

Battery drain -- Check other vehicle circuits for drain.

No battery drain -- Replace EVR.

A6 - Under Voltage Test

^ Disconnect EVR.

^ Measure resistance between F terminal of EVR harness connector and ground.

^ Resistance should be more than 3.0 ohms.

Less than 3.0 ohms -- Service grounded field circuit. Check wiring and alternator. Go to A2. See: A: Series With External Voltage Regulator (EVR)/A2 - Base Voltage and No-Load Test

More than 3.0 ohms -- Go to A7. See: A: Series With External Voltage Regulator (EVR)/A7 - Jumper Terminals A to F

A7 - Jumper Terminals A to F

^ Jumper A to F terminal at EVR connector.

^ Voltage should read a minimum of 0.5 volts over base voltage, with load test conditions in effect.

Less than 0.5 volt -- Go to A8. See: A: Series With External Voltage Regulator (EVR)/A8 - Jumper Bat to Fld Terminals

0.5 volt or more on vehicles with alternator warning lamp -- Go to A10. See: A: Series With External Voltage Regulator (EVR)/A10 - Check For Power at S and I Terminals

0.5 volt or more on vehicles with ammeter -- Go to A11. See: A: Series With External Voltage Regulator (EVR)/A11 - Check For Power to S Terminal

A8 - Jumper Bat to Fld Terminals

^ Remove jumper from A to F terminals, but leave EVR disconnected.

^ Jumper BAT to FLD terminals at alternator.

^ Voltage should read a minimum of 0.5 volt over base voltage, with load test conditions in effect.

0.5 volt or more -- Service faulty or worn A or F vehicle circuits. Go to A2. See: A: Series With External Voltage Regulator (EVR)/A2 - Base Voltage and No-Load Test

Less than 0.5 volt -- Go to A9. See: A: Series With External Voltage Regulator (EVR)/A9 - Check Alternator Output

A9 - Check Alternator Output

^ Stop engine.

^ Move voltmeter positive lead to BAT terminal of alternator.

Base voltage -- Service or replace alternator. Go to A2. See: A: Series With External Voltage Regulator (EVR)/A2 - Base Voltage and No-Load Test

Zero voltage -- Service or replace circuit from alternator to battery. Go to A2. See: A: Series With External Voltage Regulator (EVR)/A2 - Base Voltage and No-Load Test

A10 - Check For Power at S and I Terminals

NOTE: This test is only for vehicles equipped with charging system warning lamps.

^ Turn Off all load.

^ With engine at idle and jumper on terminals A and F, check for power at the S and I terminals at the EVR connector.

^ **Is voltage at the S terminal approximately 1/2 of voltage at the I terminal?**

YES -- Replace EVR. Go to A2. See: A: Series With External Voltage Regulator (EVR)/A2 - Base Voltage and No-Load Test

NO -- Service faulty vehicle S and/or I circuits as necessary. Go to A2. See: A: Series With External Voltage Regulator (EVR)/A2 - Base Voltage and No-Load Test

A11 - Check For Power to S Terminal

NOTE: This test is only for vehicles equipped with ammeters.

^ Turn Off all load.

^ Engine Off.

^ Ignition switch on.

^ **Is there power to S terminal at EVR harness connector?**

YES -- Replace EVR. Go to A2. See: A: Series With External Voltage Regulator (EVR)/A2 - Base Voltage and No-Load Test

NO -- Service faulty vehicle S circuit as necessary. Go to A2. See: A: Series With External Voltage Regulator (EVR)/A2 - Base Voltage and No-Load Test

A12 - S Circuit Test

^ Engine at idle.

^ Check for power at S terminal on EVR connector.

^ **Is voltage approximately 1/2 of base voltage at BAT terminal?**

YES -- Replace EVR. Repeat test step A12.

NO -- Go to A13. See: A: Series With External Voltage Regulator (EVR)/A13 - Alternator Stator Voltage Test

A13 - Alternator Stator Voltage Test

^ Engine at idle.

^ Check voltage at alternator S terminal.

^ **Is voltage approximately 1/2 of base voltage at BAT terminal?**

YES -- Service S circuit between alternator and EVR.

NO -- Service or replace alternator. Go to A12. See: A: Series With External Voltage Regulator (EVR)/A12 - S Circuit Test

A14 - Over Voltage Test

^ Connect jumper between EVR and ground.

^ **Does over voltage go away?**

YES -- Service EVR ground. Go to A2. See: A: Series With External Voltage Regulator (EVR)/A2 - Base Voltage and No-Load Test

NO -- Go to A15. See: A: Series With External Voltage Regulator (EVR)/A15 - Disconnect EVR

A15 - Disconnect EVR

^ Disconnect EVR.

^ **Does over voltage go away?**

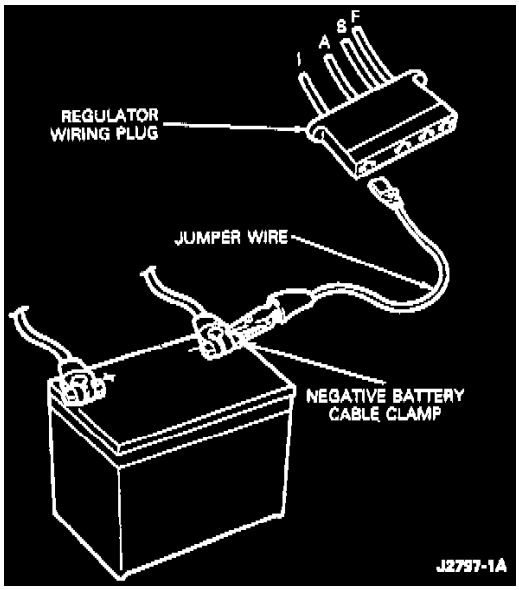
YES -- Replace EVR. Go to A2. See: A: Series With External Voltage Regulator (EVR)/A2 - Base Voltage and No-Load Test

NO -- Service shorted harness between EVR and alternator. Go to A2. See: A: Series With External Voltage Regulator (EVR)/A2 - Base Voltage and No-Load Test

Charge Lamp System Test

NOTE: This test applies only to models equipped with a charge indicator lamp.

1. If the charge indicator lamp does not come on with the ignition switch in the run position (engine not running), check the I circuit (ignition switch to regulator I terminal) for an open circuit or burned out charge indicator lamp.



Jumper Wire

2. If the charge indicator lamp does not come on, disconnect the wiring plug connector from the regulator.
3. Connect a jumper wire from the I terminal of the regulator wiring plug to the negative battery post cable clamp.
4. The charge indicator lamp should go on with the ignition key turned to the run position (engine not running).
5. If the indicator lamp does light, remove jumper wire.
6. Connect voltmeter negative lead to battery negative post and connect voltmeter positive lead to connector A terminal. Battery voltage should be indicated.
7. If battery voltage is not indicated, service the A circuit wiring.
8. If the charge indicator lamp does not go on, check the bulb for continuity and replace if necessary.
9. If the bulb is not burned out, an open circuit exists between the ignition switch and the regulator. Check the 500 ohm resistor across the indicator lamp.