

ALTERNATOR & REGULATOR

1994 Volvo 960

1994 ELECTRICAL
Volvo Alternator & Regulator - Bosch

960

NOTE: Some models are equipped with a Nippon Denso alternator. Testing information on these alternators is not available from the manufacturer.

DESCRIPTION

Bosch alternators are a conventional 3-phase, self-rectifying type. Bosch 55-amp through 75-amp alternators have 3 positive and 3 negative diodes connected to stator windings to rectify current. Bosch 80-amp and 90-amp alternators have 14 diodes. All alternators use 3 exciter diodes connected to stator windings. These diodes turn off the alternator indicator light and supply power to voltage regulator while engine is running. Voltage regulator is transistorized.

ADJUSTMENTS

No adjustments or maintenance is required on alternator or voltage regulator. Belt is self-adjusting.

TROUBLE SHOOTING

NOTE: See TROUBLE SHOOTING - BASIC PROCEDURES article in TROUBLE SHOOTING section.

ON-VEHICLE TESTING

WIRING CONTINUITY TEST

1) Connect a voltmeter between alternator B+ terminal and ground. Voltmeter should indicate battery voltage. If battery voltage is not indicated, check wiring between alternator and battery.

2) Turn ignition on and ensure alternator indicator light comes on. If light does not come on, check wiring between alternator and warning light.

VOLTAGE DROP TEST - POSITIVE SIDE

1) Connect a voltmeter between positive battery terminal and alternator B+ terminal. Start engine and run at 2000 RPM. Turn on headlights, rear window defogger and heater blower.

2) If voltage drop is more than .2 volt, check circuit between alternator B+ terminal and starter for corroded or loose connections. Check circuit between starter and battery positive terminal.

VOLTAGE DROP TEST - GROUND SIDE

1) Connect a voltmeter between negative battery terminal and alternator housing. Start engine, and run it at 2000 RPM. Turn on headlights, rear window defogger and heater blower.

2) If voltage drop is more than .2 volt, check battery

terminals, chassis grounds and engine grounds for corroded or loose connections.

OUTPUT TEST

1) Ensure connections at battery, alternator, and starter are clean and tight. Ensure alternator, engine and body are properly grounded. Ensure alternator drive belt is tight and in good condition.

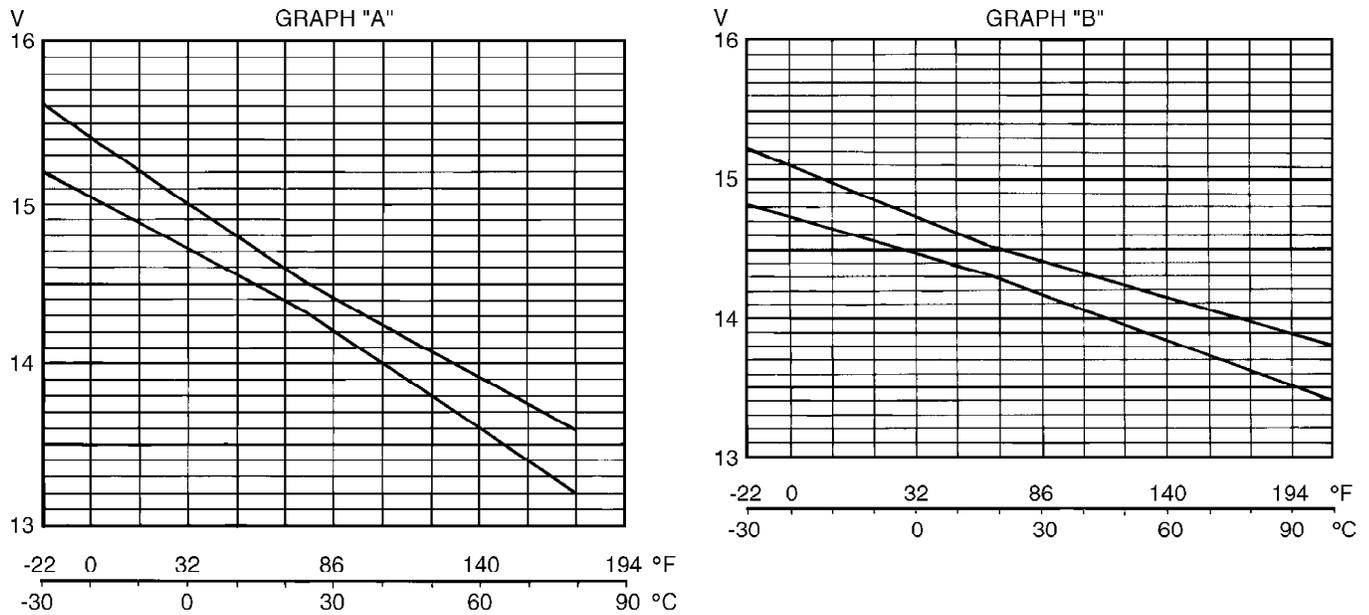
2) Connect ammeter following manufacturer's instructions. Connect voltmeter leads to battery terminals. Run engine to 2000 RPM. Adjust carbon pile on tester until voltmeter reads 12 volts. Alternator output should be 49-55 amps. (55-amp alternator), 63-70 amps (70-amp alternator), 31-80 amps (80-amp alternator), 81-90 amps (90-amp alternator). If alternator output is low, replace alternator.

REGULATOR CONTROL VOLTAGE TEST

1) Connect voltmeter to battery. Run engine at 2000 RPM until voltage stops rising. Voltage should be 13.0-15.0 volts. If voltage is higher with integral regulator WITHOUT temperature sensor, replace regulator. If voltage is higher with integral regulator WITH temperature sensor, check sensor.

2) Temperature sensor is located under battery. Note battery temperature and charging voltage. Check Graph A to see if temperature and voltage are within center lines of graph. See Fig. 1. If so, charging voltage is okay.

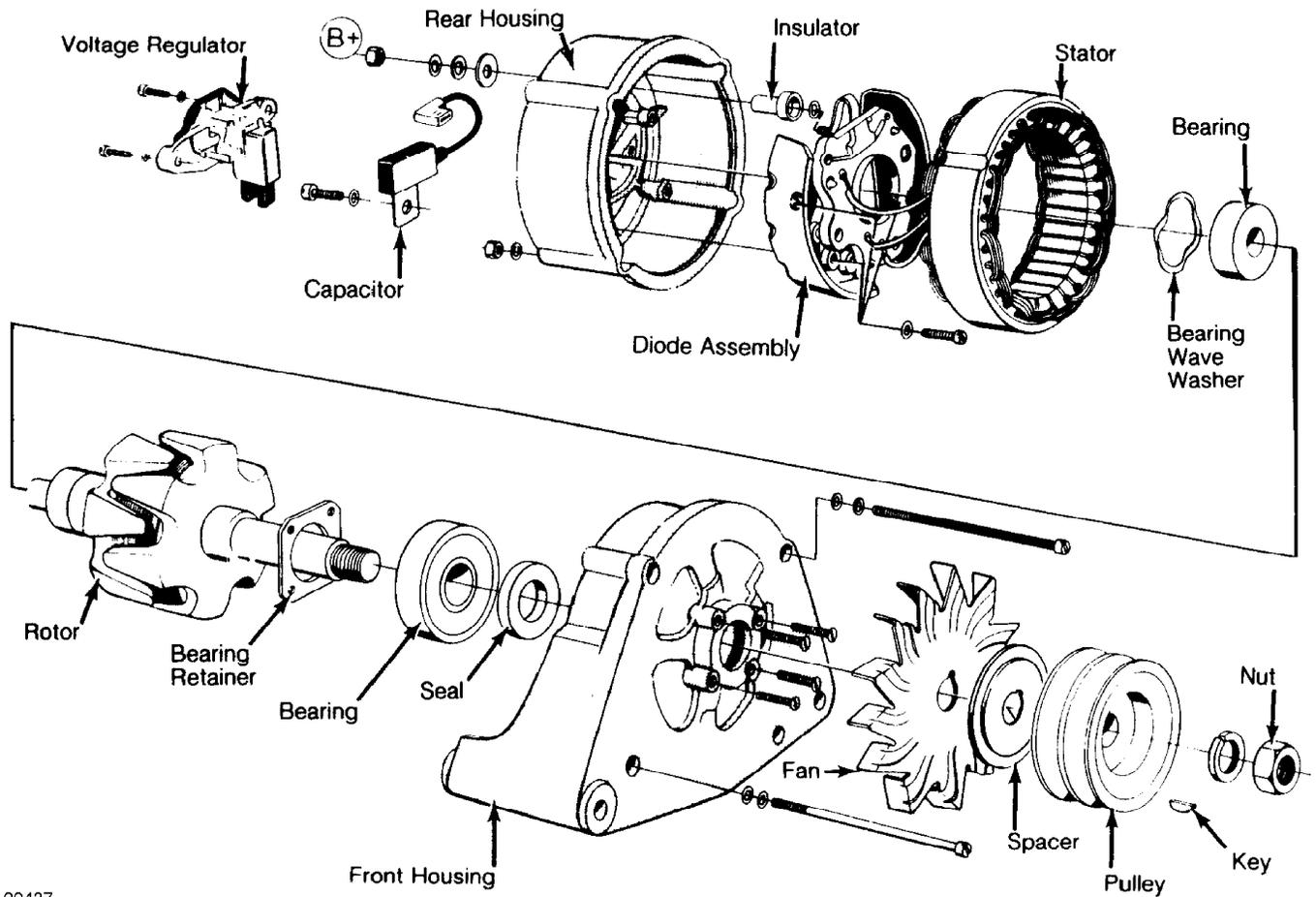
3) If voltage and temperature is not within center lines of Graph A, go to Graph B for internal temperature sensor check. See Fig. 1. Disconnect regulator temperature sensor. Locate temperature and voltage on Graph B. If within center lines, replace internal temperature sensor. If not within center lines, replace voltage regulator.



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Fig. 1: Graphing Temperature Sensor & Charging Voltage
Courtesy of Volvo Cars of North America

OVERHAUL

NOTE: Use illustration for exploded view of Bosch alternator.
See Fig. 2.



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Fig. 2: Exploded View Of Bosch Alternator (960)
Courtesy of Volvo Cars of North America

WIRING DIAGRAMS

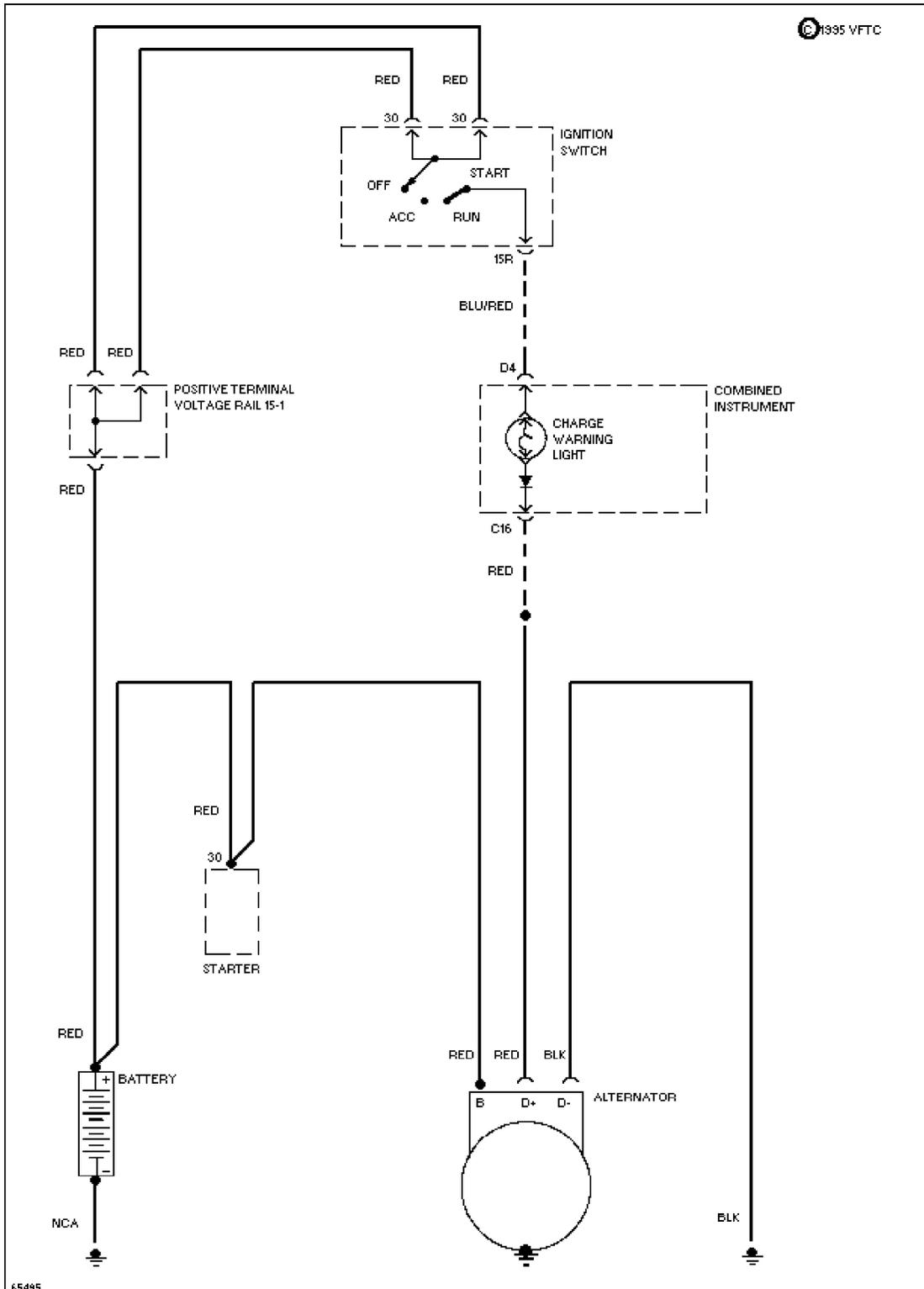


Fig. 3: Charging System Wiring Diagram (960)