ALTERNATOR & REGULATOR
Article Text
1993 Honda Prelude
For Cadi Centre Nsk CA 95051

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ARTICLE BEGINNING

1993 ELECTRICAL
Honda Alternators & Regulators - Nippondenso

Prelude

DESCRIPTION

The Nippondenso alternator uses 4 positive and 4 negative diodes to rectify current. A voltage regulator, which is part of the alternator, controls charging system voltage.

Charging system incorporates Electric Load Detector (ELD), which measures load on the charging system. ELD sends signal to PGM-FI ECM, which controls voltage regulator. By adjusting voltage needs, PGM-FI ECM reduces mechanical load on engine for greater fuel economy.

NOTE: For wiring circuit information, see appropriate chassis wiring diagram in WIRING DIAGRAMS.

ADJUSTMENTS

ALTERNATOR BELT ADJUSTMENT TABLE

Application	(1) Deflection - In. (mm)
Prelude	13/32-15/32 (10-12)

(1) - Deflection is with 22 lbs. (10 kg) pressure applied midway on longest belt run.

TROUBLE SHOOTING

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

ON-VEHICLE TESTING

PRELIMINARY INSPECTION

Check alternator wiring harness connections and drive belt tension. Ensure battery is fully charged and connections at battery cables, alternator and main fuses are good. Check fuse No. 23 (15A). Replace fuse as necessary.

NOTE: If any fuse is blown, charge warning light will come on even if charging system is working properly.

ALTERNATOR OUTPUT TEST

1) With engine at normal operating temperature, remove alternator harness connector. See Fig. 1. Turn ignition switch to ON position.

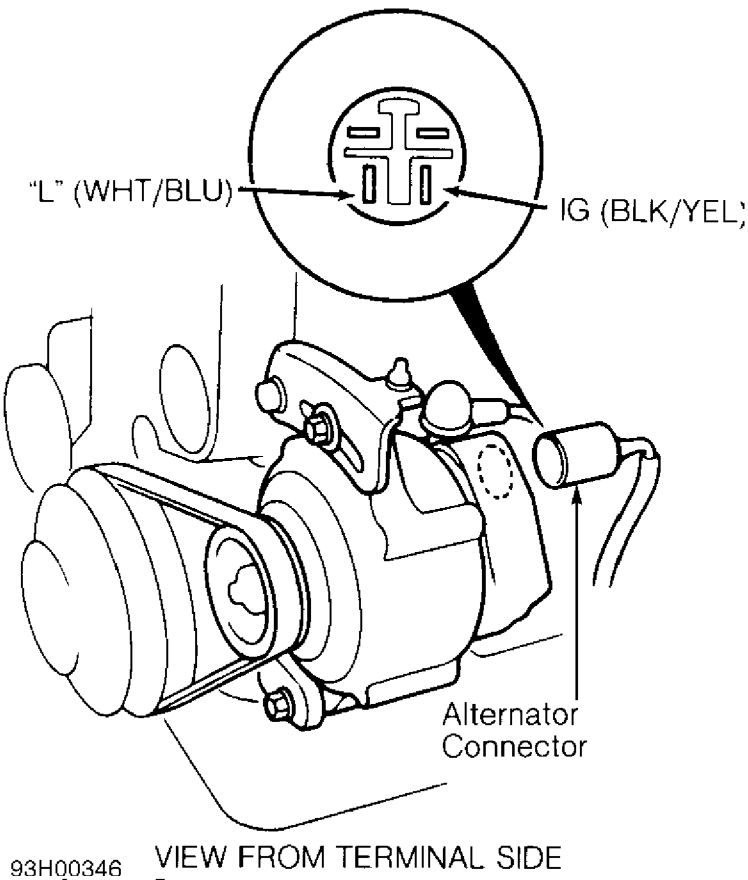

Fig. 1: Testing Alternator Output On Harness Connector Terminals
Courtesy of American Honda Motor Co., Inc.

2) Check for battery voltage between Black/Yellow wire terminal of harness connector and ground. Ensure battery voltage is also present between White/Green wire terminal and ground. If battery voltage is present, go to step 4).

3) If battery voltage is not present, check dash fuse No. 23 (15A). Check for open circuit in Black/Yellow wire between dash fuse box and alternator. Check for open circuit in White/Green wire between PGM-FI ECM and alternator.

4) Turn ignition off. Reconnect alternator harness connector. Connect alternator tester with integral carbon pile (Sun VAT-40) to ... No. 1. Ensure all accessories

are off. Start engine.

5) Operate engine at 2000 RPM and check output voltage. If voltage is greater than 15.1 volts, replace voltage regulator. Let engine idle. Set tester switch to position No. 2. Remove tester inductive pick-up, and zero ammeter. Reconnect inductive pick-up.

6) Operate engine at 2000 RPM and check voltage. If voltage is less than 13.9 volts, test battery. Using carbon pile function of tester, apply load until voltage drops to 12.0-13.5 volts. Amperage should be 30 amps or greater. With engine still at 2000 RPM, full-field charging system. See FULL FIELD TEST. Amperage should be 40 amps or greater.

7) If amperage is not within specification, replace alternator. If voltage is not within specification, replace defective internal voltage regulator.

FULL FIELD TEST

CAUTION: When performing full field test on alternator, charging voltage will increase quickly. DO NOT allow voltage to increase above 18 volts; electrical system will be damaged.

Remove protector from full field access hole, located at rear of alternator end cover. See Fig. 2. Insert screwdriver into hole of alternator, by-passing voltage regulator. Increase engine speed to 2000 RPM and monitor voltage and amperage increase. Voltage should be more than 15.1 volts. Amperage should be more than 40 amps. If amperage or voltage is less than specification, replace or repair alternator.

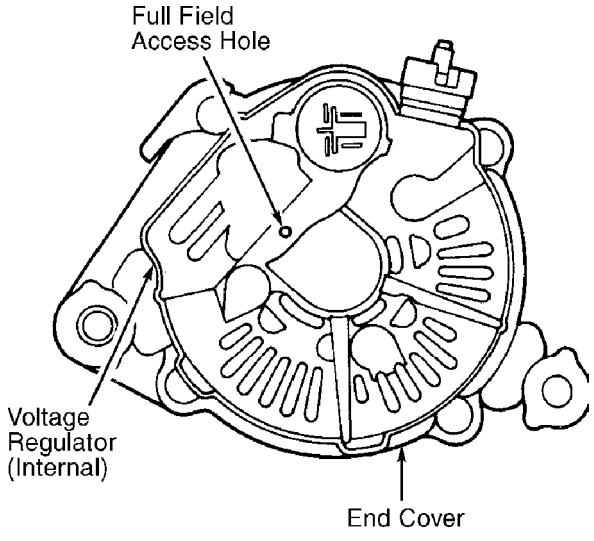

Fig. 2: Identifying Full Field Access Hole
Courtesy of American Honda Motor Co., Inc.

CHARGE WARNING LIGHT TEST

1) Perform preliminary inspection. See PRELIMINARY INSPECTION. Turn ignition on. If charge warning light comes on, go to step 3). If warning light remains off, remove alternator harness connector. See Fig. 1. Using jumper wire, momentarily connect White/Blue wire terminal to ground.

2) If warning light comes on, perform ALTERNATOR OUTPUT TEST. If warning light remains off, check for burned bulb, open circuit in White/Blue wire or open circuit in Black/Yellow wire between warning light and dash fuse box or between dash fuse box and ignition switch.

3) Start engine, and allow it to idle. If charge warning light goes out, turn off engine and go to step 4). If warning light remains on, perform ALTERNATOR OUTPUT TEST.

4) Turn ignition on. Disconnect alternator harness connector. Disconnect ABS control unit, integrated control unit and 4WS control unit. Check charge warning light after disconnecting each unit. Charge warning light should go out.

5) If warning light goes out, control unit disconnected before light going out is shorted. Replace faulty control unit. If warning light remains on, repair short circuit to ground in White/Blue wire between warning light and dash fuse box or between dash fuse box and voltage regulator.

BENCH TESTING

BRUSHES

Remove brush holder from alternator. Using vernier caliper, measure brush length. See Fig. 3. If brush length is not as specified, replace brushes. See BRUSH LENGTH SPECIFICATIONS table.

BRUSH LENGTH SPECIFICATIONS TABLE

Application	In. (mm)
Standard	.41 (10.5)
Limit	.22 (5.6)

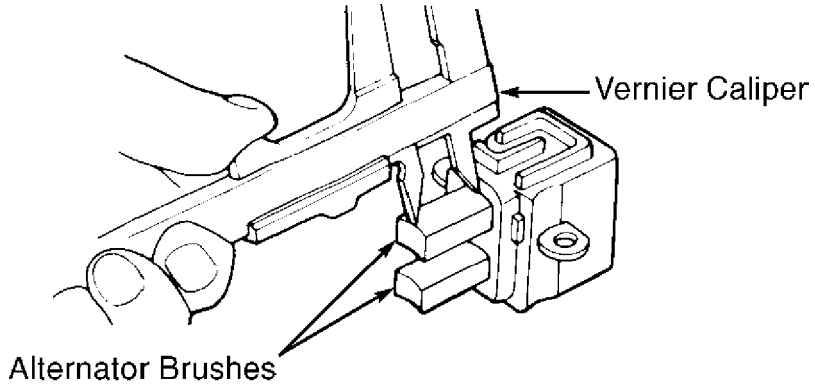

Fig. 3: Measuring Alternator Brush Length
Courtesy of American Honda Motor Co., Inc.

DIODE ASSEMBLY

1) Remove diode (rectifier) assembly from alternator. Check for continuity in both directions by reversing test probes between terminal "B" and terminals P(1), P(2), P(3) and P(4). Check for continuity in both directions between terminal "E" (ground) and terminals P(1), P(2), P(3) and P(4). SeeFig. 4.

2) All diodes should show a low continuity reading in one direction and no continuity in opposite direction. If any diode does not test as specified, replace entire diode (rectifier) assembly.

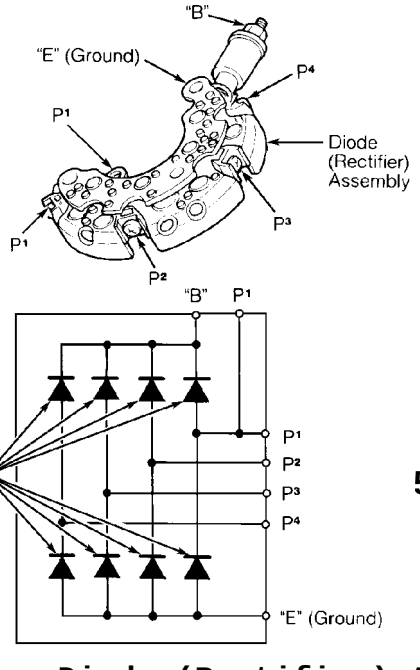

Fig. 4: Testing Diode (Rectifier) Assembly
Courtesy of American Honda Motor Co., Inc.

ROTOR

Using an ohmmeter, ensure continuity exists between rotor slip rings. See Fig. 5. If continuity does not exist, replace rotor assembly. Ensure continuity does not exist between slip rings and rotor or between slip rings and rotor shaft. If continuity exists, replace rotor.

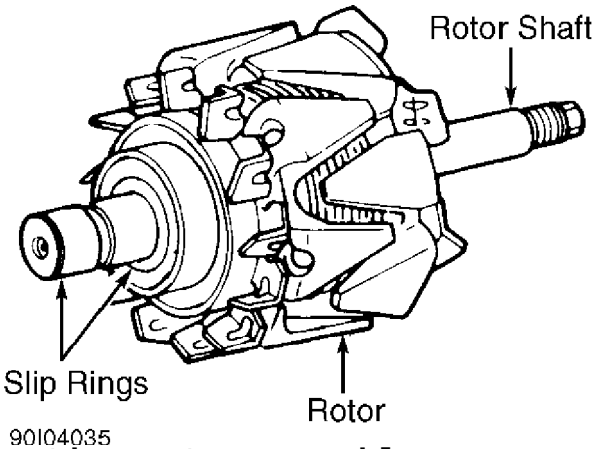

Fig. 5: Testing Rotor Assembly
Courtesy of American Honda Motor Co., Inc.

STATOR

Ensure continuity exists between each pair of leads on stator winding. See Fig. 6. If continuity does not exist, replace stator assembly. Ensure continuity does not exist between any stator winding lead and coil core. If continuity exists, replace stator assembly.

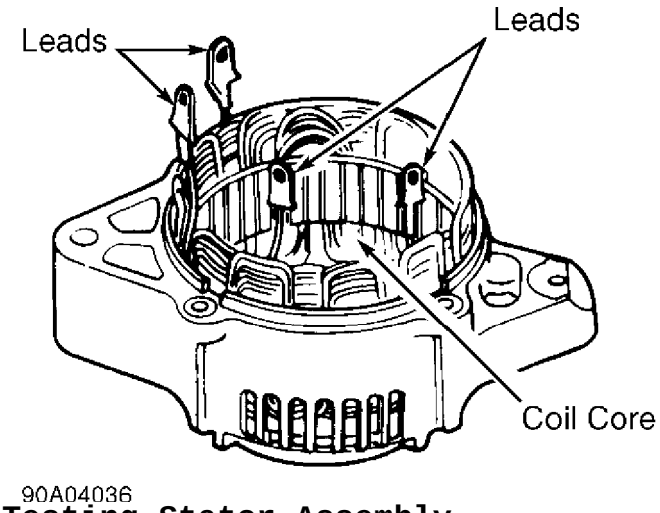

Fig. 6: Testing Stator Assembly
Courtesy of American Honda Motor Co., Inc.

OVERHAUL

NOTE: Use illustration for exploded view of alternator. See Fig. 7.

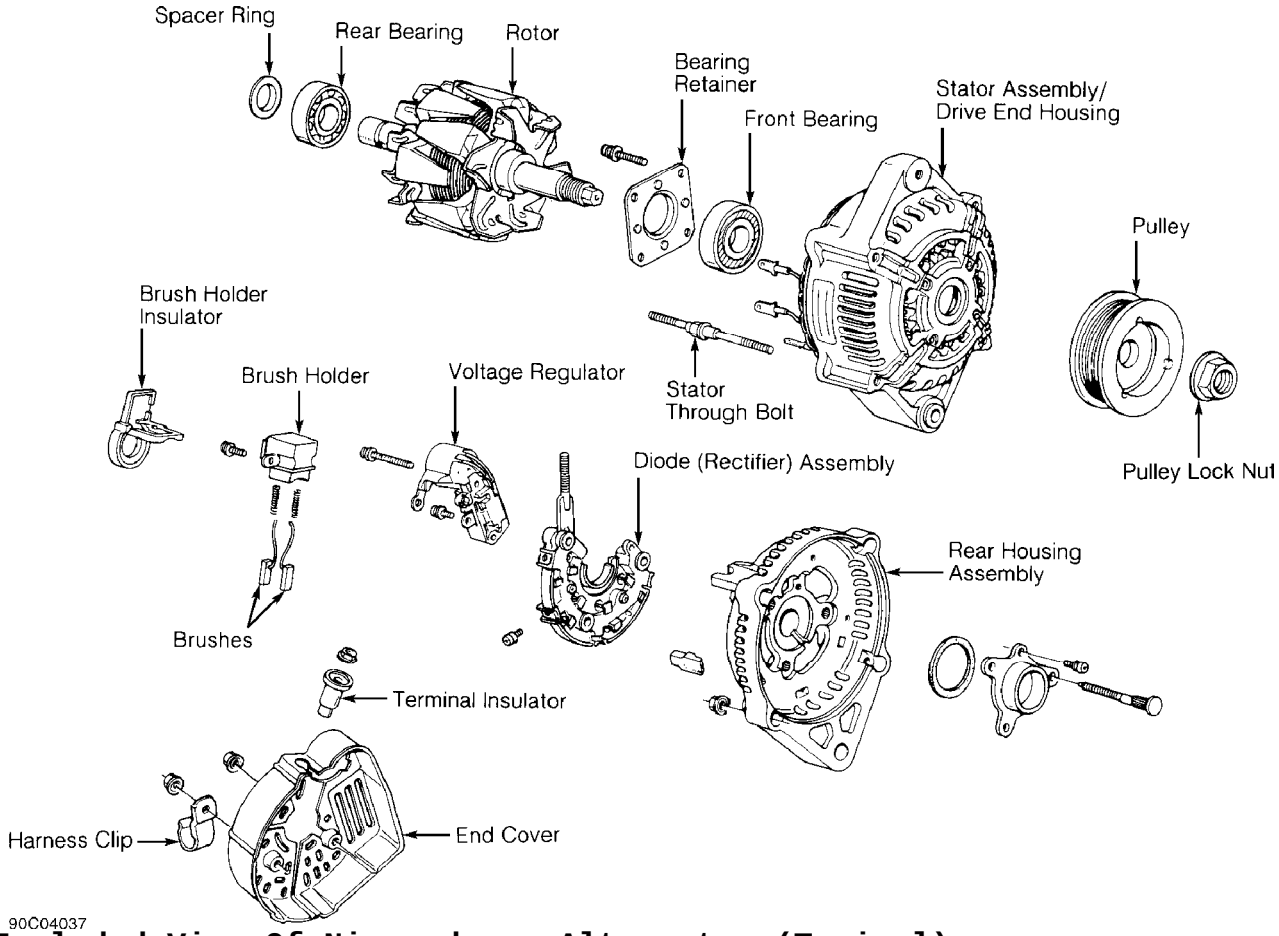

Fig. 7: Exploded View Of Nippondenso Alternator (Typical)
Courtesy of American Honda Motor Co., Inc.

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