ALTERNATOR & REGULATOR
Article Text
1994 Suzuki Swift
For Xeon

Tuesday, December 02, 2003 06:31PM

ARTICLE BEGINNING

1994 ELECTRICAL
Suzuki of America Corp. - Alternators & Regulators

Swift

DESCRIPTION

Alternators are conventional 3-phase, utilizing 3 positive and 3 negative diodes to rectify current. Internal Integrated Circuit (IC) voltage regulator controls charging system voltage. Rated output for Swift alternators is 50 amps. A charge indicator light in instrument panel shows charging system malfunctions.

ADJUSTMENTS

BELT TENSION

BELT ADJUSTMENT TABLE (NEW BELT)

Application	(1) Deflection In. (mm)
A/C Belt	.31-.39 (8-10)
Power Steering Belt	.31-.39 (8-10)
Water Pump Belt	.24-.32 (6.1-8.1)

(1) - Deflection is checked 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

CAUTION: DO NOT confuse polarities of IG terminal and "L" terminal. DO NOT create a short circuit between IG terminal and "L" terminal. Always connect these terminals through a test light. DO NOT connect a load between "L" and "E" terminals.

Preliminary Inspection

1) If battery is overcharged go to BENCH TESTING. If battery is undercharged, check alternator wiring harness connections and drive belt tension. Ensure battery is fully charged. Connect a voltmeter to alternator "B" terminal and ground. Connect ammeter positive lead to alternator "B" terminal. Connect ammeter negative lead to positive side of battery and start engine.

2) With all accessories off, increase engine speed from idle to 2000 RPM and read meters. Voltmeter reading should be 14.2-14.8 volts at 77°F (25°C). Voltage reading will vary depending on regulator case temperature. Ammeter should read about 10 amps. Turn engine off.

3) If voltage is higher than standard value, replace IC regulator.

4) If voltage is lower than standard value, ground "F" terminal and start engine. If voltage at "B" terminal is greater than standard value, replace IC regulator. If voltage is less than standard value, go to BENCH TESTING.

5) Load test with engine running at 2000 RPM and headlights and heater blower motor on. If current is less than 20 amps, go to BENCH TESTING.

BENCH TESTING

Brushes

1) Check brushes for cracks. Measure brush length. Standard measurement is .43" (11.0 mm). Minimum length is .18" (4.5 mm). Ensure brushes slide smoothly in holders.

2) If damaged or worn, replace brushes and brush holder. Install NEW springs when replacing brushes.

Condenser

Using an ohmmeter set to read capacitance, check capacity of condenser in regulator. See Fig. 1. Condenser capacitance should be .5 microfarads. If not, replace regulator.

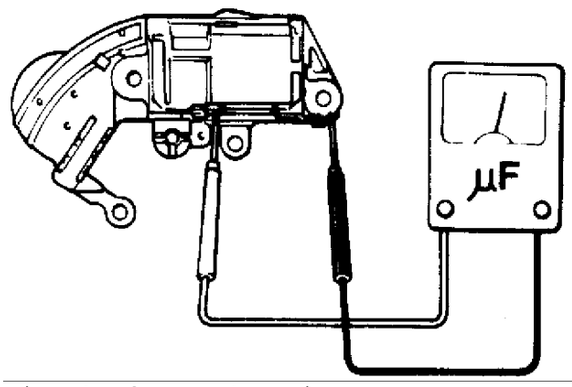


Fig. 1: Testing Condenser Capacitance
Courtesy of Suzuki of America Corp.

Rectifier

1) Using an ohmmeter, check for continuity between ground and "B" terminal. Connect one lead of ohmmeter to "B" terminal and the other to ground. Swap leads and recheck for continuity. See Fig. 2.

2) In one direction, resistance should be approximately 10 ohms. In the other direction, reading should be infinite, indicating no continuity. If readings are not as specified, replace rectifier.

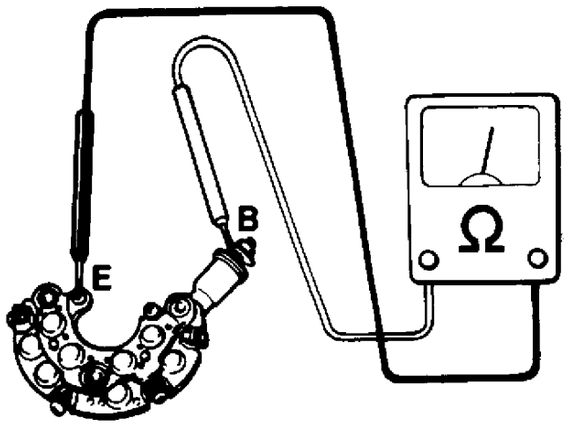


Fig. 2: Testing Rectifier Diode Continuity
Courtesy of Suzuki of America Corp.

Rotor

1) Check rotor for open field windings by using an ohmmeter across slip rings. See Fig. 3. Resistance should be 2.8-3.0.

2) Check rotor for shorts to ground by connecting ohmmeter between slip ring and rotor shaft. Ohmmeter should show no continuity. Check slip rings for wear or pitting. Check bearing and replace (if necessary).

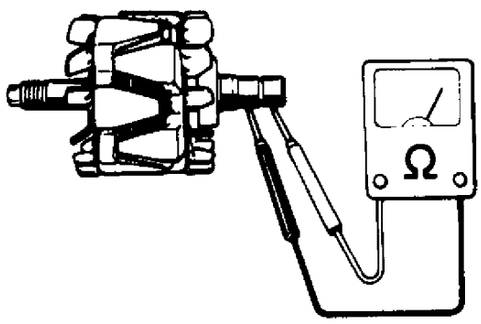


Fig. 3: Testing Rotor Continuity
Courtesy of Suzuki of America Corp.

Stator

Check continuity between stator core leads. If continuity is NOT present between leads, replace stator. Check continuity between stator core and each stator lead. If continuity is NOT present, stator is good. If continuity exists, stator is grounded. Replace stator. See Fig. 4.

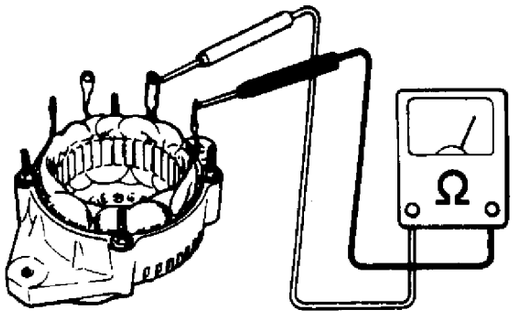


Fig. 4: Testing Stator Continuity
Courtesy of Suzuki of America Corp.

REMOVAL & INSTALLATION

Removal & Installation

Disconnect negative battery cable. Remove air cleaner assembly including airflow meter and airflow meter outlet hose. Disconnect alternator lead wires and cover bolt. Remove alternator drive belt adjusting bolt and alternator cover. Remove mounting bolts and drive belt and remove alternator downward. To install, reverse removal procedure. Adjust belt. See BELT ADJUSTMENT table under ADJUSTMENTS.

OVERHAUL

Disassembly

1) Remove "B" terminal retaining nut. Remove "B" terminal insulator. Remove 3 rear cover retaining nuts. Remove rear cover. Loosen and remove 2 regulator mounting screws and 3 brush holder screws. Remove regulator and brush holder. See Figs. 5 and 6.

2) Remove 4 stator coil terminal retaining screws. Remove rectifier holder with IC regulator. Loosen and remove 4 rear housing retaining nuts. Loosen alternator pulley retaining nut.

3) Remove alternator pulley nut and pulley. Using plastic mallet, lightly tap rotor from front housing. Remove 4 front bearing retaining screws and front bearing (if necessary). Using bearing puller, pull rear bearing from rotor (if necessary).

Inspection

See BRUSHES under BENCH TESTING.

Reassembly

1) To reassemble, reverse disassembly procedure. Install NEW bearings on rotor and front housing using a hydraulic press.

2) Ensure stator terminal insulation is properly installed. Install alternator pulley. Tighten pulley nut to 69-94 ft. lbs. (95-130). After assembling alternator, ensure rotor turns freely.

CAUTION: Before reconnecting negative battery cable, ensure wire retaining brushes is removed.

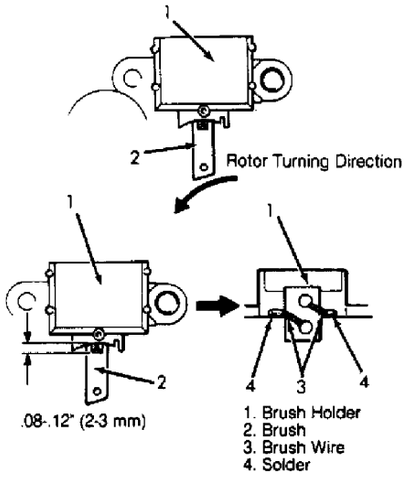
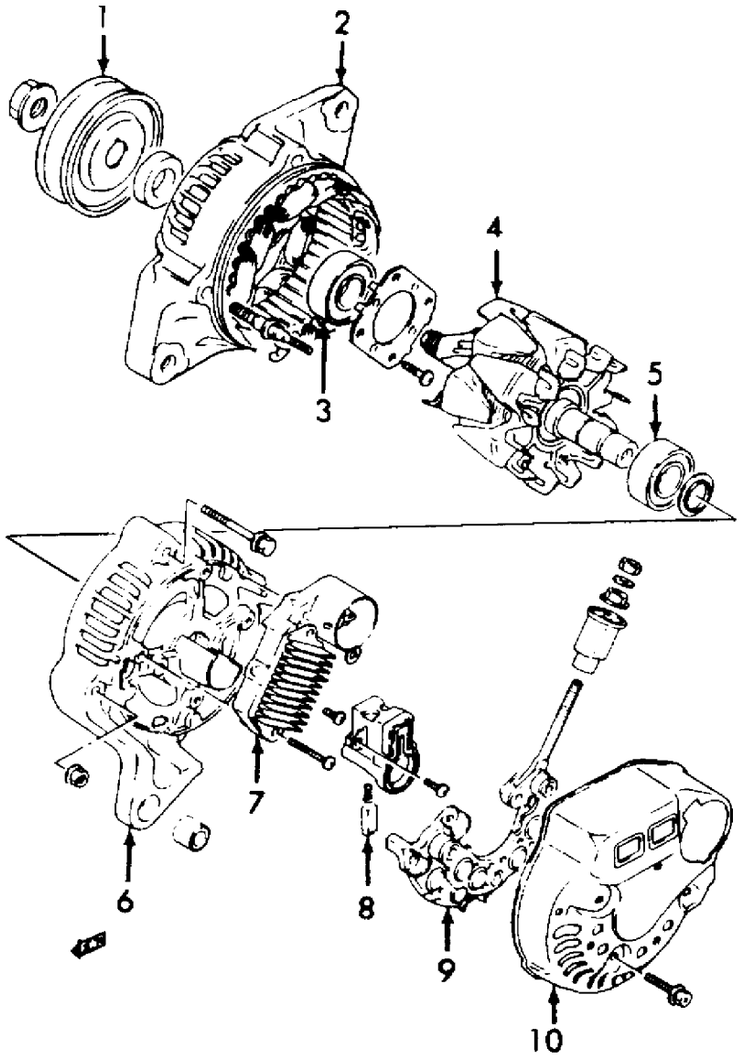


Fig. 5: Identifying Alternator Brushes (Typical)
Courtesy of Suzuki of America Corp.



1. Pulley
2. Drive End Frame
3. Drive End Bearing
4. Rotor
5. Rear End Bearing
6. Rear End Frame
7. Regulator Assembly
8. Brush
9. Rectifier
10. Rear End Cover

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Fig. 6: Exploded View Of Alternator (Typical)
Courtesy of Suzuki of America Corp.

WIRING DIAGRAM

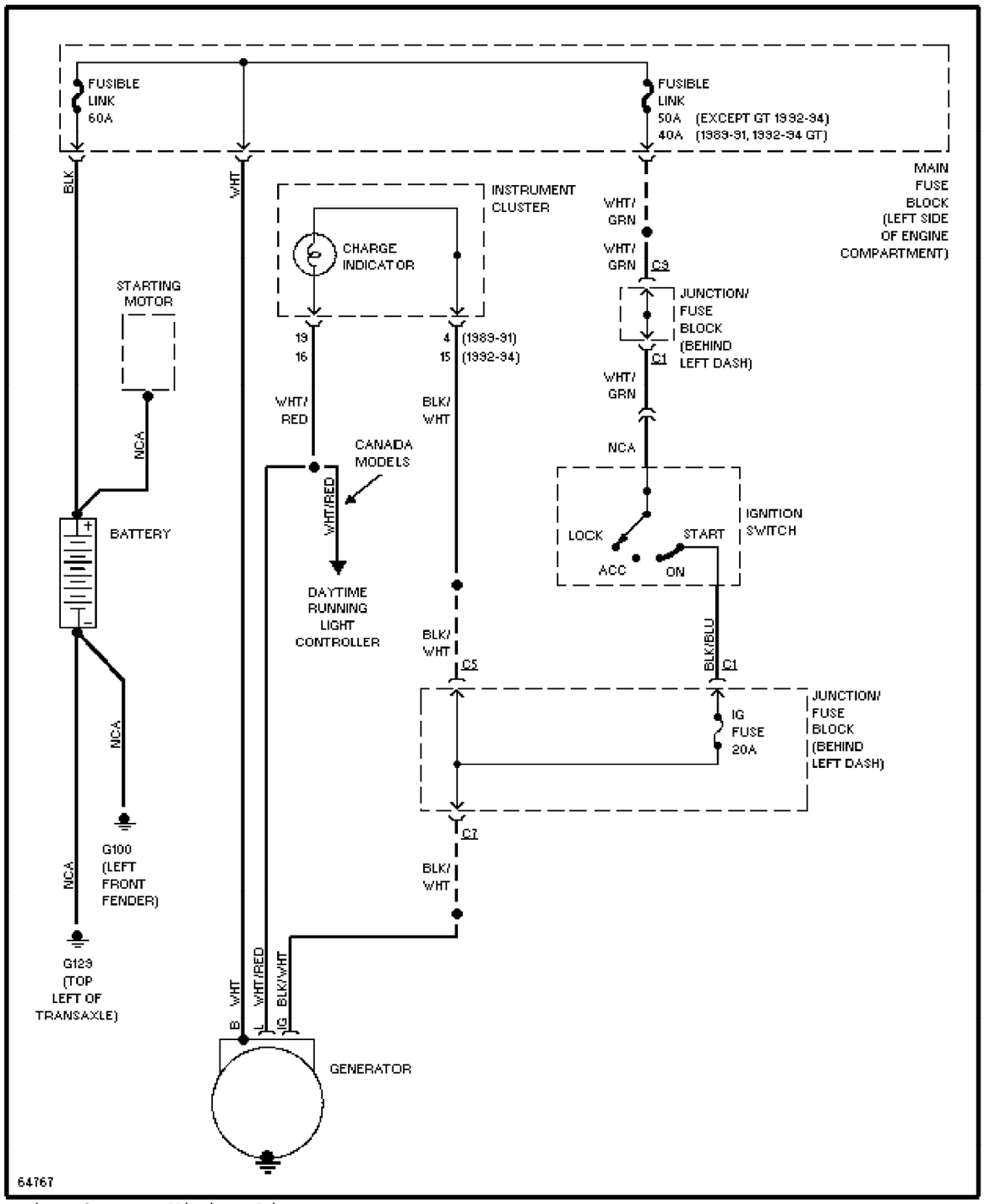

Fig. 5: Charging System Wiring Diagram

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