

GENERATOR & REGULATOR

1998 Pontiac Bonneville

1998 ELECTRICAL
General Motors Corp. - Generators & Regulators

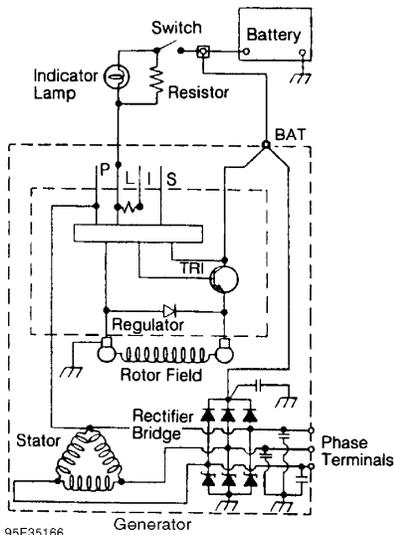
Buick; LeSabre
Oldsmobile; Eighty Eight, LSS & Regency
Pontiac; Bonneville

DESCRIPTION

The CS144 (Charging System) generators have a high amperage output. The 144 designation is the outside diameter of the stator laminations, measured in millimeters. CS series generators include a delta stator, rectifier bridge, and rotor with slip rings and brushes. A built-in regulator incorporates fault detection circuitry. See Fig. 1. A conventional pulley and external fan are used to cool slip ring end frame, rectifier bridge and regulator.

The generator operates with 4 wire connections and a ground path through the mounting bracket. The first wire connection is the BAT (output) terminal. This terminal must be connected to the battery during operation. The second wire connection is connected from generator terminal "L" internal regulator lamp driver to PCM. This circuit monitors and controls generator operation. The PCM controls indicator light function. The third wire connection is connected from generator terminal "L" to PCM. The PCM also monitors this circuit. The fourth wire is connected from generator terminal "S" to ALT SENSE fuse (10 amp) in underhood junction block. This provides internal regulator with an external voltage reading. If this circuit is interrupted, regulator will default to internal voltage reading for control.

Regulated voltage varies with temperature. System limits voltage by controlling rotor field current while field current is on. Regulator switches rotor field current on and off at a fixed frequency of 400 cycles per second to help control radio noise. By varying overall on/off time, correct average field current for proper system voltage control is obtained. At high speeds, with lower electrical loads, on-time may be 10 percent. At low speeds, with higher electrical loads, on-time may be as much as 90 percent. See GENERATOR USAGE/AMP OUTPUT RATING table.



95E35186
Fig. 1: Charging System Wiring Schematic CS144 Series
Courtesy of General Motors Corp.

GENERATOR USAGE/AMP OUTPUT RATING TABLE

Application	Generator	Rated AMP Output
3.8L & 3.8L S/C	CS144	124

ADJUSTMENTS

NOTE: No adjustment or maintenance is required on generator assembly. Regulator voltage is preset and no adjustment is possible. On all models, drive belt tension is controlled by a belt tensioner.

TROUBLE SHOOTING

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

ON-VEHICLE TESTING

* PLEASE READ THIS FIRST *

CAUTION: When battery is disconnected, vehicle computer and memory systems may lose memory data. Driveability problems may exist until computer systems have completed a relearn cycle. See COMPUTER RELEARN PROCEDURES article in GENERAL INFORMATION section before disconnecting battery.

NOTE: Before making electrical checks, visually inspect all terminals for clean, tight connections. Ensure all charging system related fuses are okay. Check generator mounting bolts and drive belt tension. Ensure battery is in good condition prior to testing charging system.

NOTE: Connector Test Adapter Kit (J 35616-A) must be used whenever a test procedure requires checking or probing terminal.

NOTE: All generators are serviced by replacement only.

CHARGING SYSTEM CHECK

1) Turn ignition to start. If engine cranks, go to next step. If starter solenoid does not click or starter solenoid clicks, but engine does not crank, diagnose starter. See STARTER article.

2) Start engine. If charging system and indicator light are operating properly, check is complete. If battery is undercharged or overcharged, go to BATTERY UNDERCHARGED OR OVERCHARGED. If charge indicator is always on, go to CHARGE INDICATOR LIGHT ALWAYS ON. If indicator is inoperative, go to CHARGE INDICATOR LIGHT NEVER ON.

BATTERY UNDERCHARGED OR OVERCHARGED

1) Start engine. Check voltage at generator connector terminal L. If voltage is more than 8 volts, go to next step. If voltage is 8 volts or less, go to step 5).

2) Check voltage at BAT terminal of generator (if accessible). If voltage is more than 8 volts, go to next step. If

voltage is 8 volts or less, go to step 6).

3) Start engine and run at fast idle. Ensure all accessories are off. Check battery voltage. If voltage is 13.3-15.5 volts, go to next step. If voltage is not 13.3-15.5 volts, go to step 7).

4) Load check generator. Load test battery. Repair as needed. Recheck charging system. See CHARGING SYSTEM CHECK under TROUBLE SHOOTING.

5) Check for open or poor connections at generator connector terminal "L" and PCM connector C2 terminal No. 35 (Red wire). Repair as needed. Recheck charging system.

6) Repair open circuit between battery and generator terminal BATT. Recheck charging system.

7) Repair or replace generator. Recheck charging system.

CHARGE INDICATOR LIGHT ALWAYS ON

1) Connect scan tool. Start engine. Using scan tool, check system voltage. If voltage is more than 10.6 volts, go to next step. If voltage is 10.6 volts or less, go to step 4).

2) Turn ignition off. Disconnect PCM connector C2. Turn ignition on. If charge indicator is still on, go to next step. If charge indicator is off, go to step 5).

3) Check circuit between PCM and instrument panel for short to ground. See WIRING DIAGRAMS.

4) Load check generator. Replace as needed. Recheck system.

5) Repair open or poor PCM connection at connector C2. Recheck system.

CHARGE INDICATOR LIGHT NEVER ON

1) Check indicator light bulb. If bulb is okay, go to next step. If bulb is faulty, go to step 3).

2) Using unpowered test light connected to battery voltage, backprobe PCM Clear 80-pin connector C2, terminal No. 35. If test light illuminates, go to step 4). If test light does not illuminate, go to step 5).

3) Replace indicator light bulb. Recheck system.

4) Check for open circuit between PCM connector C2, terminal No. 35 and generator terminal "L". Repair as needed. Recheck system.

5) Turn ignition on. Connect test light between PCM Blue 80-pin connector C1, terminal No. 16 and ground. If test light illuminates, go to next step. If test light does not illuminate, go to step 7).

6) Replace PCM. See N - REMOVE/INSTALL/OVERHAUL article in ENGINE PERFORMANCE. Recheck system.

7) On Bonneville and LeSabre, check for open in Brown wire between PCM Blue 80-pin connector C1, terminal No. 36 and appropriate instrument cluster terminal (circuit No. 25). See INSTRUMENT CLUSTER CIRCUIT NO. 25 TERMINAL IDENTIFICATION table. On all other models, check for open in Tan wire(s) between PCM Blue 80-pin connector C1, terminal No. 15 and instrument cluster connector C2, terminals E5 and E6. On all models, repair as necessary. If circuit is okay, go to next step.

8) Check Pink wire(s) between PCM fuse (10-amp) in junction block and instrument cluster. See appropriate INSTRUMENT PANEL article in ACCESSORIES & EQUIPMENT section:

- * INSTRUMENT PANEL - LeSabre
- * INSTRUMENT PANEL - Eighty Eight, LSS & Regency
- * INSTRUMENT PANEL - Bonneville

Repair as necessary. Recheck system.

INSTRUMENT CLUSTER CIRCUIT NO. 25 TERMINAL IDENTIFICATION TABLE

Application (1)	Connector/Terminal No.
Bonneville	
UB3	A13
U2F & U50	C1/B13
LeSabre	
Base Cluster (U23)	A9
Gauges Cluster (UB3) (2)	16

- (1) - To identify instrument clusters and connectors, see appropriate INSTRUMENT PANEL article in ACCESSORIES & EQUIPMENT section.
- (2) - Check at remote indicator bank connector.
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REMOVAL & INSTALLATION

*** PLEASE READ THIS FIRST ***

WARNING: When battery is disconnected, vehicle computer and memory systems may lose memory data. Driveability problems may exist until computer systems have completed a relearn cycle. See COMPUTER RELEARN PROCEDURES article in GENERAL INFORMATION section before disconnecting battery.

GENERATOR

Removal & Installation

Disconnect negative battery cable. Remove drive belt. Remove components as needed for access. Remove nut retaining positive battery cable to generator BAT terminal. Disconnect generator electrical connector. Remove mounting bolts, nuts, braces and brackets. Remove generator. To install, reverse removal procedure.

OVERHAUL

NOTE: All generators are serviced by replacement only.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS TABLE

Application	Ft. Lbs. (N.m)
Mounting Bolt	37 (50)
Pencil Brace Bolt	22 (30)

WIRING DIAGRAMS

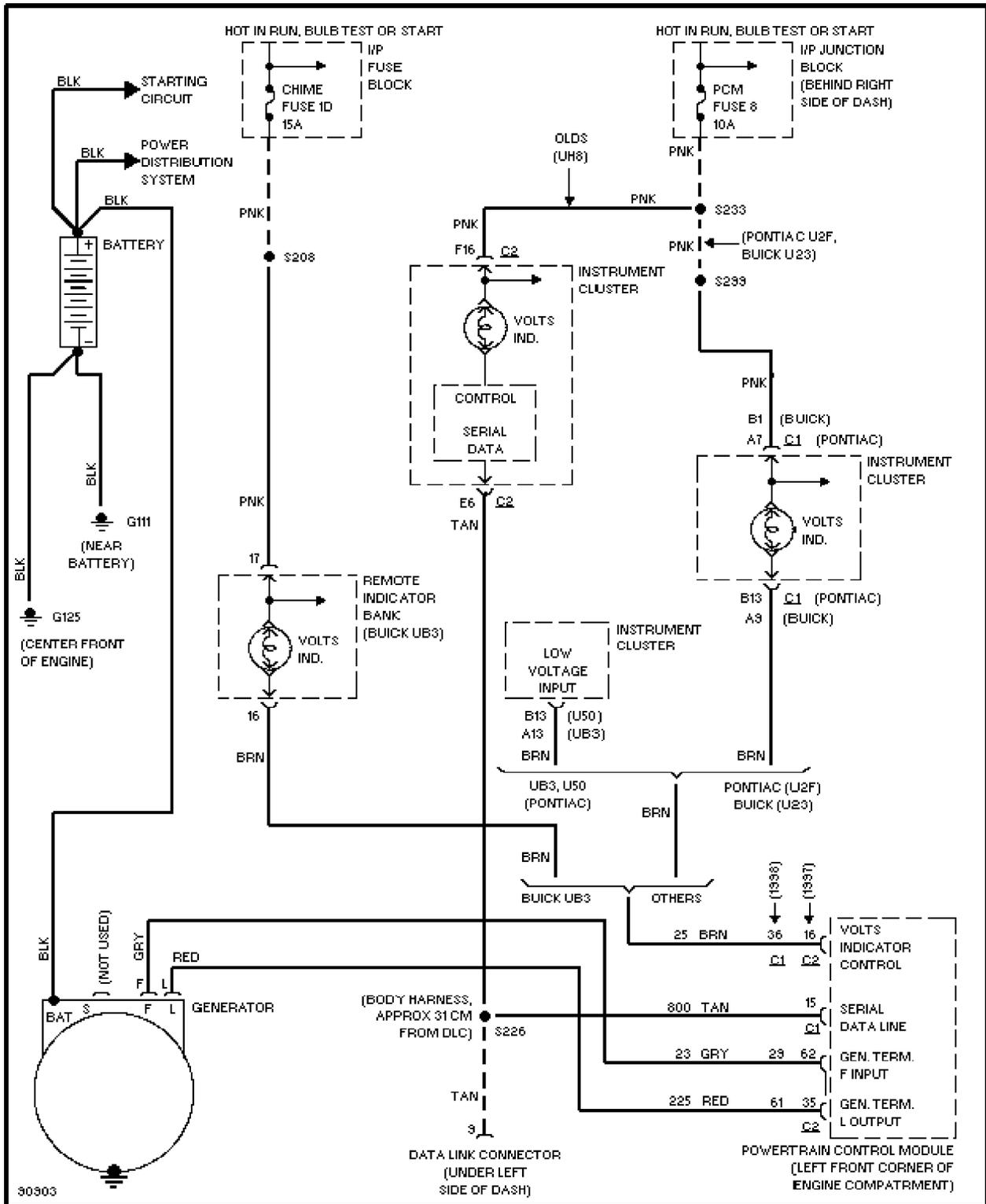


Fig. 2: Charging System Wiring Diagram