ARTICLE BEGINNING

2000 STARTING & CHARGING SYSTEMS
General Motors Generators & Regulators

Camaro & Firebird

DESCRIPTION & OPERATION

The CS130D (Charging System) generator has a high amperage output. The "130" 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. Dual Internal Fan (DIF) design is indicated by the "D".

The generator operates with 2 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" to instrument panel. This circuit monitors generator operation.

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.

ADJUSTMENTS

BELT TENSION

NOTE: Drive belt tension is controlled by a belt tensioner. No adjustment is possible.

TROUBLE SHOOTING

NOTE: For additional information, see TROUBLE SHOOTING article in GENERAL INFORMATION.

GENERATOR NOISE DIAGNOSIS

Generator noise may be caused by a loose drive pulley, loose mounting bolts, worn or dirty bearings, defective diode, or defective stator. It is normal to hear a high frequency whine or magnetic noise at full output. An output test should be performed to distinguish bearing noise from a magnetic noise. See CHARGING SYSTEM TEST.

A shorted bridge diode will reduce output by 1/3 of the rating and will have a growling noise when at high load. Listening to generator with a moderate load (engine cooling fans or headlights on) can also assist in determining if a bearing or magnetic noise is present.

ON-VEHICLE TESTING

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 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. Manufacturer recommends using CS Generator Electronic Tester (J41450-B) for testing charging system. Follow instructions provided with tester.

CHARGING SYSTEM TEST

1) Start engine and observe charge indicator on Instrument Panel Cluster (IPC). If charge indicator light illuminates, go to next step. If charge indicator light does not illuminate, problem is probably intermittent.

NOTE: Green POWER lamp of tester should remain illuminated while tester is being used.

2) Turn ignition off. Using CS Electronic Generator Tester (J41450-B), connect Red lead to generator output terminal and Black lead to metal generator housing. If Green POWER lamp is not on, go to next step. If Green power lamp is on, go to step 4).

3) Using a DVOM, measure voltage between output terminal of generator and battery negative terminal. If battery voltage exists, go to step 10). If battery voltage does not exist, go to step 9).

CAUTION: Make sure load is completely turned off before connecting or disconnecting carbon pile load tester to battery.

4) Connect carbon pile tester to battery. Connect inductive ammeter to output circuit of generator. Disconnect generator harness connector. Locate matching harness connector on CS Electronic Generator Tester (J41450-B) and connect it to generator. If Red DIAGNOSTIC lamp is on, go to next step. If Red DIAGNOSTIC lamp is off, go to step 11).

5) Start engine and allow to idle for 30 seconds. Increase

engine speed to 2500 RPM. If Red DIAGNOSTIC lamp is off, go to next step. If Red DIAGNOSTIC lamp is on, go to step 11).

6) Maintain engine speed at 2500 RPM. Turn on load of carbon pile tester and increase load until load is equal to test value of generator (73 amps). If Red DIAGNOSTIC lamp is not on, go to next step. If Red DIAGNOSTIC lamp is on, go to step 11).

7) Maintain engine speed at 2500 RPM and continue to operate generator at load test value. Using a DVOM, measure voltage drop between generator output terminal and positive battery terminal. If voltage drop is less than 0.5 volt, go to next step. If voltage drop is more than 0.5 volt, go to step 9).

8) Maintain engine speed at 2500 RPM and continue to operate generator at load test value. Using a DVOM, measure voltage drop between generator metal housing and negative battery terminal. If voltage drop is less than 0.5 volt, go to step 12). If voltage drop is more than 0.5 volt, go to step 10).

9) Repair high resistance or open in Red wire (Black wire on 5.7L engine) between generator output terminal and positive battery terminal. See WIRING DIAGRAMS. Go to step 12).

10) Repair high resistance or open in ground circuit of generator. See WIRING DIAGRAMS. Go to step 12).

11) Check generator connector for poor connections. If connector is good, replace generator. See GENERATOR under REMOVAL & INSTALLATION. Go to next step.

12) Retest system to verify repair.

BENCH TESTING

NOTE: Bench testing procedures are not available from manufacturer.

REMOVAL & INSTALLATION

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 before disconnecting battery.

GENERATOR

3.8L Engine

Disconnect negative battery cable. Remove drive belt. Disconnect generator electrical connector. Remove positive battery cable from generator BAT terminal. Remove canister purge solenoid. Remove generator rear brace mounting bolt. Remove generator mounting bolts. Remove generator. To install, reverse removal procedure.

5.7L Engine

Disconnect negative battery cable. Remove drive belt. Raise and support vehicle. Remove nut and positive battery cable from generator BAT terminal. Remove generator rear bracket mounting bolt. Unclip oil cooler lines. Remove generator front mounting bolts and clip. Disconnect generator electrical connector. Remove generator. To

install, reverse removal procedure.

OVERHAUL

NOTE: All generators are serviced by replacement only.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Battery Cable Mounting Nut	16 (22)
Generator Mounting Bolt	
3.8L Engine	
Inner	22 (30)
Outer	37 (50)
5.7L Engine	37 (50)
Rear Bracket Bolt	18 (25)

WIRING DIAGRAMS

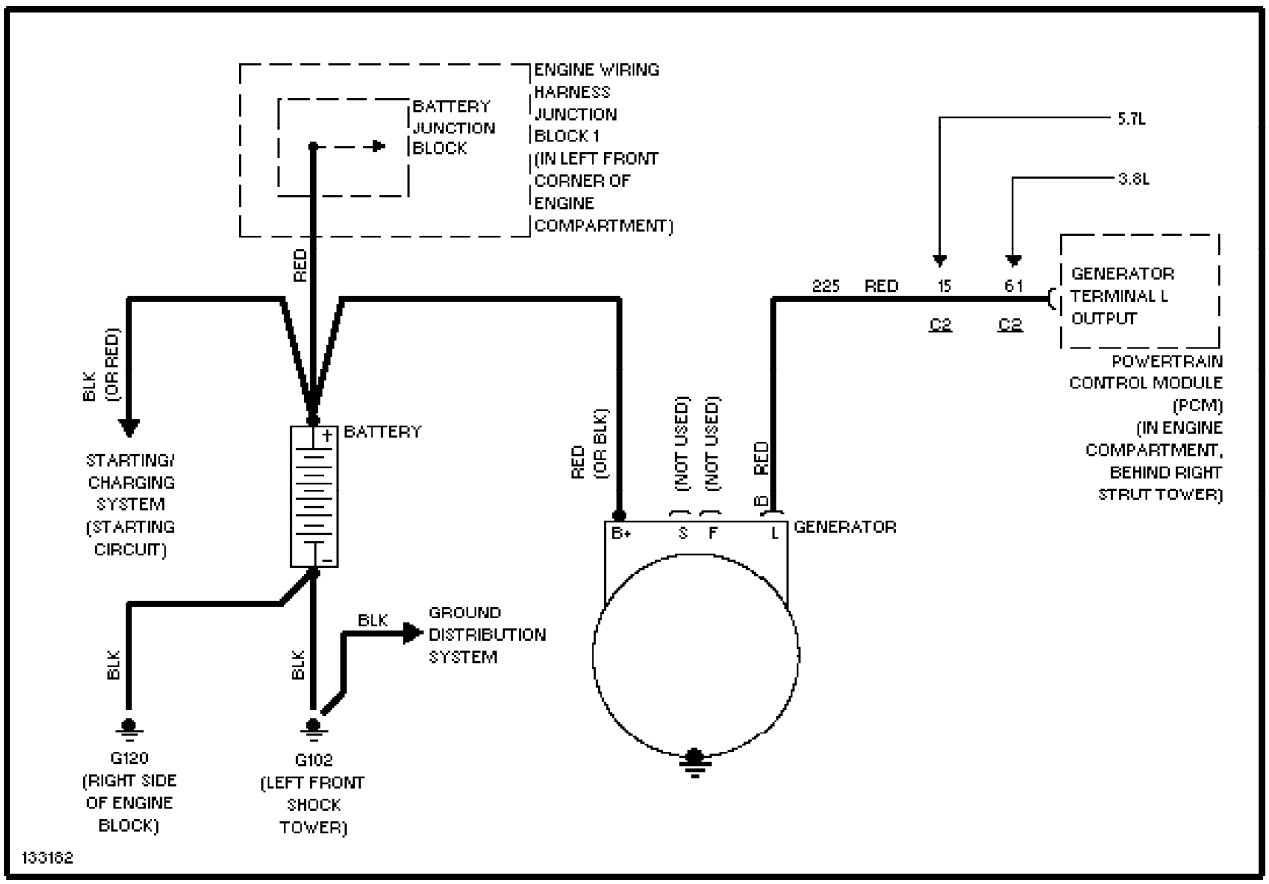

Fig. 1: Charging System Wiring Diagram (Camaro & Firebird)

ABC123	Entire Article 2000 Chevrolet Camaro

END OF ARTICLE

