

Troubleshooting Basic Starting System Problems

Problem	Cause	Solution
Starter motor rotates engine slowly	• Battery charge low or battery defective • Defective circuit between battery and starter motor • Low load current • High load current	• Charge or replace battery • Clean and tighten, or replace cables • Bench-test starter motor. Inspect for worn brushes and weak brush springs. • Bench-test starter motor. Check engine for friction, drag or coolant in cylinders. Check ring gear-to-pinion gear clearance.
Starter motor will not rotate engine	• Battery charge low or battery defective • Faulty solenoid • Damaged drive pinion gear or ring gear • Starter motor engagement weak • Starter motor rotates slowly with high load current • Engine seized	• Charge or replace battery • Check solenoid ground. Repair or replace as necessary. • Replace damaged gear(s) • Bench-test starter motor • Inspect drive yoke pull-down and point gap, check for worn end bushings, check ring gear clearance • Repair engine
Starter motor drive will not engage (solenoid known to be good)	• Defective contact point assembly • Inadequate contact point assembly ground • Defective hold-in coil	• Repair or replace contact point assembly • Repair connection at ground screw • Replace field winding assembly
Starter motor drive will not disengage	• Starter motor loose on flywheel housing • Worn drive end busing • Damaged ring gear teeth • Drive yoke return spring broken or missing	• Tighten mounting bolts • Replace bushing • Replace ring gear or driveplate • Replace spring
Starter motor drive disengages prematurely	• Weak drive assembly thrust spring • Hold-in coil defective	• Replace drive mechanism • Replace field winding assembly
Low load current	• Worn brushes • Weak brush springs	• Replace brushes • Replace springs

Troubleshooting Basic Charging System Problems

Problem	Cause	Solution
Noisy alternator	• Loose mountings • Loose drive pulley • Worn bearings • Brush noise • Internal circuits shorted (High pitched whine)	• Tighten mounting bolts • Tighten pulley • Replace alternator • Replace alternator • Replace alternator
Squeal when starting engine or accelerating	• Glazed or loose belt	• Replace or adjust belt
Indicator light remains on or ammeter indicates discharge (engine running)	• Broken belt • Broken or disconnected wires • Internal alternator problems • Defective voltage regulator	• Install belt • Repair or connect wiring • Replace alternator • Replace voltage regulator/alternator
Car light bulbs continually burn out—battery needs water continually	• Alternator/regulator overcharging	• Replace voltage regulator/alternator
Car lights flare on acceleration	• Battery low • Internal alternator/regulator problems	• Charge or replace battery • Replace alternator/regulator
Low voltage output (alternator light flickers continually or ammeter needle wanders)	• Loose or worn belt • Dirty or corroded connections • Internal alternator/regulator problems	• Replace or adjust belt • Clean or replace connections • Replace alternator/regulator

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7
Fuel Delivery: FI | Fuel: GAS

The coolant temperature sender changes resistance as the coolant temperature increases and decreases.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

1. Disconnect the negative battery cable.
2. Properly drain the engine coolant into a suitable container.
3. Disconnect the sender electrical lead and unscrew it. The sender can be found on the engine block or threaded into the thermostat housing/water outlet.

To install:

4. Install the sensor and tighten until snug.
5. Connect the sensor electrical lead.
6. Connect the battery cable and fill the engine with the proper type and amount of coolant.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

1. Remove the temperature sender from the engine.
2. Position the water temperature sending unit in such a way that the metal shaft (opposite end from the electrical connectors) is situated in a pot of water. Make sure that the electrical connector is not submerged and that only the tip of the sending unit's body is in the water.
3. Heat the pot of water at a medium rate. While the water is warming, continue to measure the resistance of the terminal and the metal body of the sending unit:
 - A. As the water warms up, the resistance exhibited by the ohmmeter goes down in a steady manner: the sending unit is good.
 - B. As the water warms up, the resistance does not change or changes in erratic jumps: the sender is bad, replace it with a new one.
4. Install the good or new sending unit into the engine, then connect the negative battery cable.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7
Fuel Delivery: FI | Fuel: GAS

When the switch reaches a predetermined temperature, it closes the circuit to the relay. This energizes the relay sending 12 volts to the fan. When the temperature decreases below the set point of the sensor, the circuit opens and the voltage is no longer applied to the fan.

1.

Disconnect the negative battery cable.
2.

Disconnect the sensor electrical lead and unscrew the sensor.
- To install:
3.

Install the sensor or relay and connect the electrical lead.
4.

Connect the battery cable.

TROUBLESHOOTING BASIC STARTING SYSTEM PROBLEMS

Troubleshooting Basic Starting System Problems		
Problem	Cause	Solution
Starter motor rotates engine slowly	• Battery charge low or battery defective	• Charge or replace battery
	• Defective circuit between battery and starter motor	• Clean and tighten, or replace cables
	• Low load current	• Bench-test starter motor. Inspect for worn brushes and weak brush springs
	• High load current	• Bench-test starter motor. Check engine for friction, drag or coolant in cylinders. Check ring gear-to-pinion gear clearance
Starter motor will not rotate engine	• Battery charge low or battery defective	• Charge or replace battery
	• Faulty solenoid	• Check solenoid ground. Repair or replace as necessary
	• Damaged drive pinion gear or ring gear	• Replace (damaged gears)
	• Starter motor engagement weak	• Bench-test starter motor
	• Starter motor rotates slowly with high load current	• Inspect drive yoke pull-down and point gap; check for worn end bushings; check ring gear clearance
	• Engine locked	• Repair engine
Starter motor drive will not engage (solenoid known to be good)	• Defective contact point assembly	• Repair or replace contact point assembly
	• Inadequate contact point assembly ground	• Repair connection at ground screw
	• Defective hold-in coil	• Replace field winding assembly
	• Starter motor loose on flywheel housing	• Tighten mounting bolts
Starter motor drive will not disengage	• Worn drive end bushing	• Replace bushing
	• Damaged ring gear teeth	• Replace ring gear or driveplate
	• Drive yoke return spring broken or missing	• Replace spring
Starter motor drive disengages prematurely	• Weak drive assembly thrust spring	• Replace drive mechanism
	• Hold-in coil defective	• Replace field winding assembly
Low load current	• Worn brushes	• Replace brushes
	• Weak brush springs	• Replace springs

TROUBLESHOOTING BASIC CHARGING SYSTEM PROBLEMS

Troubleshooting Basic Charging System Problems		
Problem	Cause	Solution
Noisy alternator	• Loose mountings	• Tighten mounting bolts
	• Loose drive pulley	• Tighten pulley
	• Worn bearings	• Replace alternator
	• Brush noise	• Replace alternator
	• Internal circuit shorted (high pitched whine)	• Replace alternator
Squeal when starting engine or accelerating	• Gazed or loose belt	• Replace or adjust belt
Indicator light remains on or ammeter indicates discharge (engine running)	• Broken belt	• Install belt
	• Broken or disconnected wires	• Repair or connect wiring
	• Internal alternator problems	• Replace alternator
	• Defective voltage regulator	• Replace voltage regulator/alternator
Car light bulbs continually burn out; battery needs water continually	• Alternator regulator overcharging	• Replace voltage regulator/alternator
Car lights flare on acceleration	• Battery low	• Charge or replace battery
	• Internal alternator/regulator problems	• Replace alternator/regulator
Low voltage output (alternator light flickers continually or ammeter needle wanders)	• Loose or worn belt	• Replace or adjust belt
	• Dirty or corroded connections	• Clean or replace connections
	• Internal alternator/regulator problems	• Replace alternator/regulator

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7
Fuel Delivery: FI | Fuel: GAS

The oil pressure sender relays to the dash gauge the oil pressure in the engine.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

1. Disconnect the negative battery cable.
2. If necessary for access, raise and safely support the vehicle.
3. Detach the sensor electrical connector.
4. Remove the sensor.

To install:

5. Coat the first two or three threads with sealer. Install the sensor and tighten until snug. Engage the electrical lead.
6. Carefully lower the vehicle.
7. Connect the negative battery cable and fill the engine with oil.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

1. To test the normally closed oil lamp circuit, disengage the locking connector and measure the resistance between the switch terminal (terminal for the wire to the warning lamp) and the metal housing. The ohmmeter should read 0 ohms.
2. To test the sending unit, measure the resistance between the sending unit terminal and the metal housing. The ohmmeter should read an open circuit (infinite resistance).
3. Start the engine.
4. Once again, test each terminal against the metal housing:
 - A. The oil switch terminal-to-housing circuit should read an open circuit if there is oil pressure present.
 - B. The sending unit-to-housing circuit should read between 15–80 ohms, depending on the engine speed, oil temperature and oil viscosity.
5. To test the oil pressure sender only, rev the engine and watch the ohms reading, which should fluctuate slightly (within the range of 15–80 ohms) as rpm increases.
6. If the above results were not obtained, replace the sending unit/switch with a new one.

1990 Chevrolet CORVETTE

Submodel: | Engine Type: V8 | Liters: 5.7

Fuel Delivery: FI | Fuel: GAS

NOTE: This section describes the operating principles of sending units, warning lights and gauges. Sensors which provide information to the Electronic Control Module (ECM) are covered in Section 4 of this manual.

Instrument panels contain a number of indicating devices (gauges and warning lights). These devices are composed of two separate components. One is the sending unit, mounted on the engine or other remote part of the vehicle, and the other is the actual gauge or light in the instrument panel.

Several types of sending units exist, however most can be characterized as being either a pressure type or a resistance type. Pressure type sending units convert liquid pressure into an electrical signal which is sent to the gauge. Resistance type sending units are most often used to measure temperature and use variable resistance to control the current flow back to the indicating device. Both types of sending units are connected in series by a wire to the battery (through the ignition switch). When the ignition is turned **ON**, current flows from the battery through the indicating device and on to the sending unit.