

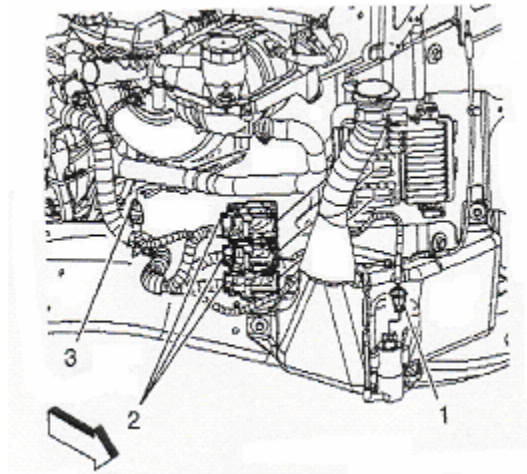
2007 Pontiac Solstice Engine Control Module Replacement

Notice:

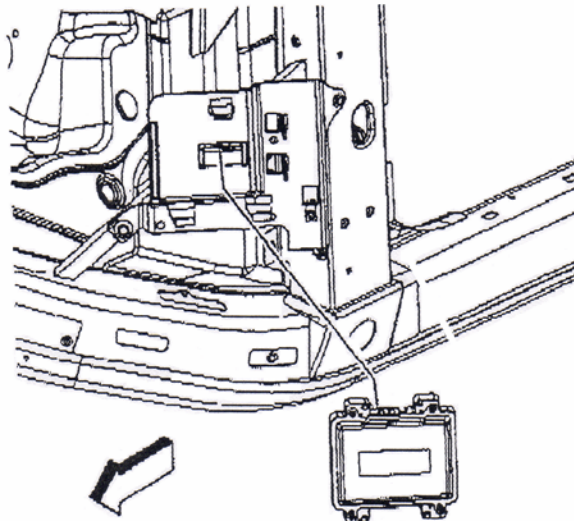
- Turn ignition OFF when installing or removing the control module connectors and disconnecting or reconnecting the power to the control module (battery cable, powertrain control module (PCM) / engine control module (ECM) / transaxle control module (TCM) pigtail, control module fuse, jumper cables, etc.) in order to prevent internal control module damage.
- Control module damage may result when the metal case contacts battery voltage. DO NOT contact the control module metal case with battery voltage when servicing a control module, using battery booster cables, or when charging the vehicle battery.
- In order to prevent any possible electrostatic discharge damage to the control module, do not touch the connector pins or the soldered components on the circuit board.
- Remove any debris from around the control module connector surfaces before servicing the control module. Inspect the control module connector gaskets when diagnosing or replacing the control module. Ensure that the gaskets are installed correctly. The gaskets prevent contaminant intrusion into the control module.
- The replacement control module must be programmed.

Important: It is necessary to record the remaining engine oil life. If the replacement module is not programmed with the remaining engine oil life, the engine oil life will default to 100 percent. If the replacement module is not programmed with the remaining engine oil life, the engine oil will need to be changed at 5,000 km (3,000 mi) from the last engine oil change.

Removal Procedure



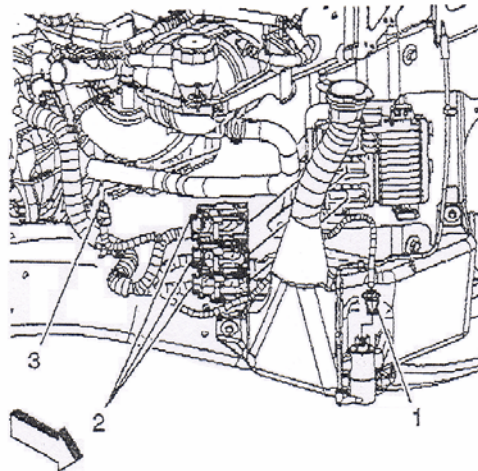
1. Using a scan tool, retrieve the percentage of remaining engine oil. Record the remaining engine oil life.
2. Record the preset radio stations.
3. Turn the ignition OFF.
4. Disconnect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.
5. Disconnect the engine harness electrical connectors (2) from engine control module (ECM).



6. Release the upper retaining tab using a small screwdriver or other suitable tool.
7. Remove the ECM by lifting upward after releasing the tab.

Installation Procedure

1. Slide the ECM into the bracket.
2. Push down on the ECM until the retaining tab snaps into place.



3. Connect the engine harness electrical connectors (2) to the ECM.
4. Connect the negative battery cable. Refer to Battery Negative Cable Disconnection and Connection.
5. Reset the clock and preset radio stations.

Engine Control Module Programming and Setup

The following service procedures require either a programming or a setup event be performed for a complete repair.

ECM Replacement

If the engine control module (ECM) is replaced, the following procedures must be performed:

1. ECM Reprogramming—Refer to Service Programming System (SPS).
2. Crankshaft Position (CKP) Variation Learn for 2.4L engine only—Refer to Crankshaft Position System Variation Learn.

Setup for Component Replacement For 2.4L Engine Only

The replacement of some components will require a setup procedure for complete repair.

If any of the following components are replaced, a CKP Variation Learn Procedure must be performed. Refer to Crankshaft Position System Variation Learn.

- Engine replacement
- Any engine repair that disturbs the CKP sensor or its relationship with the crankshaft reluctor wheel
- CKP sensor

30-MINUTE LEARN PROCEDURE

1. Turn ON the ignition, with the engine OFF.
2. Attempt to start the engine, then release the key to ON, vehicle will not start.
3. Observe the SECURITY telltale. After approximately **10 minutes**, the telltale will turn OFF.
4. Turn OFF the ignition and wait **5 seconds**
5. Repeat steps 1 through 4 two more times for a total of 3 cycles/**30 minutes**. The vehicle is now ready to relearn the Passlock™ Sensor Data Code and/or passwords on the next ignition switch transition from OFF to CRANK.
6. Start the engine. The vehicle has now learned the Passlock™ Sensor Data Code and/or password.

IMPORTANT: The vehicle learns the Passlock™ Sensor Data Code and/or password on the next ignition switch transition from OFF to CRANK. You must turn the ignition OFF before attempting to start the vehicle.

Crankshaft Position System Variation Learn

Important: The crankshaft position (CKP) system variation learn procedure is required when the following service procedures have been performed, regardless of whether DTC PO315 is set:

- Engine replacement
- Engine control module (ECM) replacement
- Crankshaft damper replacement
- Crankshaft replacement
- CKP sensor replacement
- Any engine repairs which disturb the crankshaft to CKP sensor relationship

Important: The scan tool monitors certain component signals to determine if all the conditions are met to continue with the CKP system variation learn procedure. The scan tool only displays the condition that inhibits the procedure. The scan tool monitors the following components:

- CKP sensor activity—If there is a CKP sensor condition, refer to the applicable DTC that set.
- Camshaft position (CMP) signal activity—If there is a CMP signal condition, refer to the applicable DTC that set.
- Engine coolant temperature (ECT)—If the engine coolant temperature is not warm enough, idle the engine until the engine coolant temperature reaches the correct temperature.

1. Install a scan tool.
2. Monitor the ECM for DTCs with a scan tool. If other DTCs are set, except DTC PO315, refer to Diagnostic Trouble Code (DTC) list – Vehicle for the applicable DTC that set.
3. With a scan tool, select the CKP system variation learn procedure and perform the following:
 - 3.1. Observe the fuel cut-off for the applicable engine.
 - 3.2. Block the drive wheels.
 - 3.3. Set the parking brake.
 - 3.4. Place the vehicle's transmission in Park or Neutral.
 - 3.5. Turn the air conditioning (A/C) OFF.
 - 3.6. Cycle the ignition from OFF to ON.
 - 3.7. Apply and hold the brake pedal for the duration of the procedure.
 - 3.8. Start and idle the engine.
 - 3.9. Accelerate to wide-open throttle (WOT). The engine should not accelerate beyond the calibrated fuel cut-off RPM value noted in step 3.1. Release the throttle immediately if the value is exceeded.

Important: While the learn procedure is in process, release the throttle immediately when the engine starts to decelerate. The engine control is returned to the operator and the engine responds to throttle position after the learn procedure is complete.

- 3.10. Release the throttle when fuel cut-off occurs.
4. The scan tool displays Learn Status: Learned this Ignition. If the scan tool indicates that DTC PO315 ran and passed, the CKP variation learn procedure is complete. If the scan tool indicates DTC PO315 failed or did not run, refer to DTC PO315. If any other DTCs set, refer to Diagnostic Trouble Code (DTC) List – Vehicle for the applicable DTC that set.
5. Turn OFF the ignition for 30 seconds after the learn process is completed successfully.

TECHNICAL

SUBJECT:

- Engine Will Not Crank After A Battery Disconnect, Dead Battery Condition Or After A Reprogramming Event, Theft Deterrent Light Illuminated, DTC B3060 Stored, One Key Starts Vehicle But Second One Does Not (Reprogram Keys Into Theft Deterrent Module).

MODELS:

- 2006 Chevrolet Cobalt
- 2006 Pontiac Pursuit (Canada Only), Solstice
- 2007 Saturn SKY Built prior to June 30, 2006

CONDITION:

- Some customers may comment on the following conditions after experiencing a loss of battery power in their vehicle. Technicians may encounter a vehicle with the following conditions after disconnecting a battery during a service procedure or after reprogramming any module on the vehicle.
- The engine will not crank using the key the customer currently has in their possession.
- If the customer has both keys, one key starts the vehicle but the vehicle will not crank using the second key. The Theft Deterrent Light may be illuminated during the no crank condition.
- Technicians may find Diagnostic Trouble Code (DTC) B3060 (Unprogrammed Transponder Identification Code Received) stored as a current or a history code.

CAUSE:

- This condition may be caused by the failure of the key programming information for both keys to be permanently stored in the Theft Deterrent Module (TDM) during the vehicle assembly process. The information for one key is stored permanently while the information for the other key will be lost if the vehicle's battery voltage drops below 7.8 volts.
- The failure condition will also occur when the key programming information for one of the vehicle's keys is lost after a battery disconnect during a service procedure, a dead battery condition or after a reprogramming event for any module and the key that has lost its programming is used to start the vehicle. The vehicle's other key programming

information will not be lost due to the loss of battery voltage or a reprogramming event and that key will still start the vehicle. It may also be possible to unknowingly render the customer's second key inoperative after a battery disconnect or a reprogramming event performed during other service procedures on the vehicle.

- It is recommended that the customer be asked for both keys to their vehicle when their vehicle is brought in for any service requests in which a battery disconnect or reprogramming event will occur. Technicians should verify that both keys work before returning the vehicle to the customer.

Replacing Keys Procedure 30 minute Relearn

Important:

Use this procedure when replacing vehicle keys. If a working master key is available, use the Adding Keys. This procedure is not available on vehicles equipped with export or Canadian configured TDMs.

When performing the 30-minute relearn procedure, all previously learned keys will be erased from the TDM memory. Additional keys may be learned after performing the relearn procedure.

1. With a master vehicle key, turn ON the ignition, with the engine OFF>
2. Observe the security indicator. After **approximately 10 minutes**, the telltale will turn OFF.
3. Turn OFF the ignition, and wait **5 seconds**.
4. Repeat steps 1-3 two more times for a total of 3 cycles or **30 minutes**
5. Turn key to the OFF position.
6. With a master vehicle key, start the vehicle. The vehicle has not learned the key transponder information and/or the ECM has now learned the fuel continue password.
7. If additional keys are required to be learned, refer to Adding Keys.
8. With a scan tool, clear any DTCs.

