

COMPUTER RELEARN PROCEDURES

1998 Pontiac Bonneville

1998 GENERAL INFORMATION

General Motors Corp. - Computer Relearn Procedures

All Models; Cars

INTRODUCTION

Vehicles equipped with engine or transmission/transaxle computers may require a computer relearn procedure after the vehicle battery is disconnected. Vehicle computers memorize and store vehicle operation patterns for optimum driveability and performance. When the vehicle battery is disconnected, this memory is lost, resulting in a driveability problem. Depending on the vehicle and how it is equipped, the following driveability problems may exist:

- * Rough or unstable idle.
- * Hesitation or stumble.
- * Rich or lean running.
- * Poor fuel mileage.
- * Harsh or poor transmission/transaxle shift quality.

Default data is used until NEW data from each key start is stored. As the computer restores its memory from each new key start, driveability is restored.

Driveability problems may occur during the computer relearn stage. To accelerate computer relearn process after battery removal and installation, specified computer relearn procedures should be performed.

COMPUTER RELEARN PROCEDURES

* PLEASE READ THIS FIRST *

Determine model identification and then proceed to appropriate computer relearn procedures. See MODEL IDENTIFICATION - CARS table.

NOTE: Before performing Electronically Erasable Programmable Read Only Memory (EEPROM) Programming procedure, check for any applicable Technical Service Bulletins (TSBs) that may apply to vehicle application.

MODEL IDENTIFICATION TABLE - CARS

Body Code	Model
"C"	Park Avenue
"E"	Eldorado
"F"	Camaro & Firebird
"G"	Aurora & Riviera
"H"	Bonneville, Eighty Eight, LeSabre, LSS & Regency
"J"	Cavalier & Sunfire
"K"	DeVille & Seville
"M"	Metro
"N"	Achieva, Cutlass, Grand Am, Malibu & Skylark
"S"	Prizm
"V"	Catera
"W"	Century, Grand Prix, Intrigue, Lumina, Monte Carlo & Regal

"C" BODY

NOTE: Read all procedures listed to determine why and when each procedure is to be performed before proceeding.

Electronically Erasable Programmable Read Only Memory (EEPROM) Programming

1) If Powertrain Control Module (PCM) was replaced, the EEPROM in the PCM must be programmed. If EEPROM is not programmed, a Diagnostic Trouble Code (DTC) will be set in the PCM.

2) Ensure battery is fully charged. If battery is being charged, ensure battery charger is disconnected before performing EEPROM programming procedure.

3) Ensure cable is properly connected on Data Link Connector (DLC). Turn ignition on. Perform EEPROM programming using the Techline equipment manufacturer's instructions and latest software applicable for the vehicle model.

NOTE: If EEPROM programming fails, ensure all electrical connections on PCM are okay. Check Techline for latest software. If EEPROM programming still fails, replace PCM.

4) Once EEPROM is reprogrammed, perform powertrain On-Board Diagnostic (OBD) system check. See POWERTRAIN ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. Ensure engine is idling for one minute before checking for DTCs when performing powertrain OBD system check. Also after EEPROM is reprogrammed, the Crankshaft Position (CKP) sensor variation learn procedure must be performed using proper procedure.

Crankshaft Position (CKP) Sensor Variation Learn Procedure

1) Procedure must be performed if any of the following have been done or exist:

- * EEPROM was reprogrammed.
- * If Diagnostic Trouble Code (DTC) P1336 exists.
- * If crankshaft, crankshaft position sensor, engine, Powertrain Control Module (PCM) or vibration damper have been replaced.

2) CKP sensor variation compensating values are stored in Powertrain Control Module (PCM) after a learn procedure has been performed. If actual CKP sensor values are not within specification, Diagnostic Trouble Code (DTC) P0300 will be stored in the PCM.

3) Using scan tool, check for stored DTCs. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. If no DTCs exist, or if DTC P1336 exists, go to next step. If any DTCs exist except for P1336, perform test procedures for specified DTC and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. Ensure all DTCs are cleared from PCM. Go to next step.

NOTE: Ensure engine coolant temperature is at least 158°F (70°C) before performing CKP sensor variation learn procedure.

4) Ensure ignition is off. Apply parking brake. Block front wheels. Ensure hood is closed. Start engine and warm engine until engine coolant temperature is at least 158°F (70°C). Turn ignition off.

5) Using scan tool, select and enable CKP sensor variation learn procedure. Start engine. Apply service brakes. Ensure transaxle is in Park.

CAUTION: Ensure throttle is quickly released to idle position once CKP sensor variation learn procedure fuel cut off is obtained.

6) Accelerate engine until CKP sensor variation learn procedure fuel cut off is obtained at 5150 RPM. Quickly release throttle to idle position once CKP sensor variation learn procedure fuel cut off is obtained and engine starts to decelerate. Once CKP sensor variation values are learned, the PCM will return engine control to the operator and engine will respond to throttle position.

7) If CKP sensor variation learn procedure was not terminated, go to next step. If CKP sensor variation learn procedure was terminated, this may be caused by PCM detecting a problem in cam signal causing DTC P0341, 3X crank signal causing DTC P1374 3X or 18X crank signal causing DTC P0336 18X. Using scan tool, check for stored DTCs. Perform test procedures for specified DTCs and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE.

8) Check scan tool for status of DTC P1336. If scan tool indicates DTC P1336 ran and passed, CKP sensor variation learn procedure is complete. If scan tool indicates DTC P1336 failed or was not run, check for any other DTCs. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. If any other DTCs exist, perform test procedures for specified DTC and repair as necessary. If no other DTCs exist, repeat CKP sensor variation learn procedure.

Password Learn Procedure For Anti-Theft System

1) Password learn procedure must be performed if Powertrain Control Module (PCM), Pass-Key(R) III module, ignition lock cylinder, steering column assembly or ignition key are replaced. A password is communicated between Pass-Key(R) III module and PCM to provide engine operation. If PCM is replaced, the PCM must learn the password from the Pass-Key(R) III module.

2) Insert a valid mechanical coded unlearned ignition key in the ignition switch. Place ignition switch in the RUN position. The SECURITY indicator light will come on for 10 minutes for the length of the auto learn timer. SECURITY indicator light is located on instrument panel, just below the fuel gauge.

3) When auto learn timer expires and SECURITY indicator light goes off, place ignition switch in OFF position. Remove ignition key from ignition. Wait 10 seconds.

4) Repeat steps 2) and 3) two more times. Insert the newly learned ignition key in ignition switch.

5) Place ignition switch in RUN position. The SECURITY indicator light should remain off to indicate the ignition key was learned. If security indicator does not remain off, repeat procedure.

Vehicle Driveability Computer Relearn Procedure

Manufacturer does not provide a specified computer relearn procedure for obtaining proper driveability. If vehicle battery was disconnected or Powertrain Control Module (PCM) was replaced, driving the vehicle will enable the PCM to perform a computer relearn procedure for obtaining proper driveability. Inform customer that driveability may differ from what they are accustomed to until the PCM completes the computer relearn procedure.

"E" & "K" BODIES

NOTE: Read all procedures listed to determine why and when each procedure is to be performed before proceeding.

Electronically Erasable Programmable Read Only Memory

(EEPROM) Programming

1) If Powertrain Control Module (PCM) was replaced, the EEPROM in the PCM must be programmed. If EEPROM is not programmed, a Diagnostic Trouble Code (DTC) will be set in the PCM or PCM may be damaged. Perform EEPROM programming using the Techline equipment manufacturer's instructions and latest software applicable for the vehicle model.

2) To verify proper EEPROM programming, start engine. If engine starts, go to next step. If engine fails to start, ensure all electrical connections on PCM are okay and all fuses are okay. Check Techline for latest software. Once engine is repaired so it will start, go to next step.

3) Once EEPROM is programmed, use scan tool to clear DTC P0603 from PCM. Engine oil life interval and transaxle fluid life interval must now be reprogrammed using proper procedure.

Engine Oil Life Interval Programming

1) Engine oil life interval programming must be performed if any of the following have been done:

- * Battery voltage was disconnected from PCM before ignition switch was placed in LOCK position for a minimum of 30 seconds.
- * EEPROM was reprogrammed.
- * PCM was replaced.

2) Engine oil life interval is calculated by the Powertrain Control Module (PCM). The PCM uses many engine parameters to determine the percentage of engine oil life remaining before engine oil should be changed.

3) Engine oil life interval may be read by the operator by depressing INFO button on Driver Information Center (DIC). The DIC is located above the stereo. Engine oil life interval will be displayed as a percentage when DIC indicates OIL LIFE LEFT.

4) If battery voltage was disconnected from PCM before ignition switch was placed in LOCK position for a minimum of 30 seconds, or PCM was replaced, engine oil life interval must be reprogrammed or reset. Engine oil life interval may be programmed or reset by using a scan tool or the DIC.

NOTE: Scan tool may reset engine oil life interval index in 10 percent intervals. The DIC can only reprogram or reset engine oil life interval to 100 percent.

5) If using scan tool to reprogram or reset engine oil life interval, use scan tool manufacturer's instructions and reprogram or reset engine oil life interval back to the closest original interval index that was recorded on original PCM. Scan tool may reset engine oil life interval index in 10 percent intervals.

6) If using DIC to reprogram or reset engine oil life interval, depress INFO button on DIC. Depress and hold INFO RESET button on DIC until 100 percent OIL LIFE LEFT is displayed on instrument panel. Release all buttons. The DIC can only reprogram or reset engine oil life interval to 100 percent.

Transaxle Fluid Life Interval Programming

1) Transaxle fluid life interval programming must be performed if any of the following have been done:

- * Battery voltage was disconnected from PCM before ignition switch was placed in LOCK position for a minimum of 30 seconds.
- * EEPROM was reprogrammed.

* PCM was replaced.

2) Transaxle fluid life interval is calculated by the Powertrain Control Module (PCM). The PCM uses many engine parameters to determine the percentage of transaxle fluid life interval remaining before fluid should be changed.

3) When PCM determines transaxle fluid should be changed, a signal is sent to the instrument cluster and warning light is displayed. If battery voltage was disconnected from PCM before ignition switch was placed in LOCK position for a minimum of 30 seconds, or PCM was replaced, transaxle fluid life interval must be reprogrammed or reset.

4) To reprogram or reset transaxle fluid life interval to original interval set in the PCM, connect scan tool to Data Link Connector (DLC). Using scan tool manufacturer's instructions and reprogram or reset transaxle fluid life interval back to the closest original interval index that was recorded on original PCM.

Vehicle Driveability Computer Relearn Procedure (All Models)

Manufacturer does not provide a specified computer relearn procedure for obtaining proper driveability. If vehicle battery was disconnected or Powertrain Control Module (PCM) was replaced, driving the vehicle will enable the PCM to perform a computer relearn procedure for obtaining proper driveability. Inform customer that driveability may differ from what they are accustomed to until the PCM completes the computer relearn procedure.

"F" BODY

NOTE: Read all procedures listed to determine why and when each procedure is to be performed before proceeding.

Electronically Erasable Programmable Read Only Memory (EEPROM) Programming

1) If Powertrain Control Module (PCM) was replaced, the EEPROM in the PCM must be programmed. If EEPROM is not programmed, a Diagnostic Trouble Code (DTC) will be set in the PCM.

2) Ensure battery is fully charged. Ensure cable is properly connected on Data Link Connector (DLC). Turn ignition on. Perform EEPROM programming using the Techline equipment manufacturer's instructions and latest software applicable for the vehicle model.

NOTE: If EEPROM programming fails, ensure all electrical connections on PCM are okay. Check Techline for latest software. If EEPROM programming still fails, replace PCM.

3) On 3.8L, once EEPROM is reprogrammed, perform powertrain On-Board Diagnostic (OBD) system check. See POWERTRAIN ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. Ensure engine is idling for one minute before checking for DTCs when performing powertrain OBD system check. Also, after EEPROM is reprogrammed, the Crankshaft Position (CKP) sensor variation learn procedure must be performed using proper procedure.

4) On 5.7L, once EEPROM is reprogrammed, perform powertrain On-Board Diagnostic (OBD) system check. See POWERTRAIN ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. Ensure engine is idling for one minute before checking for DTCs when performing powertrain OBD system check. Also, after EEPROM is reprogrammed, the idle learn procedure and then Crankshaft Position (CKP) sensor variation learn procedure must be performed using proper procedures.

Idle Learn Procedure (5.7L)

1) Idle learn procedure must be performed to provide proper positioning of Idle Air Control (IAC) valve to obtain proper engine idle. If idle learn procedure is not performed, engine idle may become unstable. Procedure must be performed if any of the following have been done:

- * Vehicle battery was disconnected.
- * PCM was disconnected or PCM loses battery voltage.

On A/T models, go to next step. On M/T models, go to step 5).

2) On A/T models, ensure ignition is off. Restore battery voltage to PCM. Ensure A/C is turned off. Apply parking brake. Block rear wheels. Start engine.

3) Place transmission in Drive. Allow engine to idle for 10 minutes. Turn A/C on. Allow engine to idle for 10 minutes. Place transmission in Park.

4) Allow engine to idle for 10 minutes. Turn A/C off. Allow engine to idle for 10 minutes. Shut engine off for 30 seconds. Clear Diagnostic Trouble Codes (DTCs) from PCM. Perform powertrain On-Board Diagnostic (OBD) system check. See POWERTRAIN ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. Ensure engine is idling for one minute before checking for DTCs when performing powertrain OBD system check.

5) On M/T models, ensure ignition is off. Restore battery voltage to PCM. Ensure A/C is turned off. Apply parking brake. Block rear wheels. Place transmission in Neutral.

6) Start engine. Turn A/C on. Allow engine to idle for 10 minutes. Turn A/C off. Allow engine to idle for 10 minutes.

7) Shut engine off for 30 seconds. Clear Diagnostic Trouble Codes (DTCs) from PCM. Perform powertrain On-Board Diagnostic (OBD) system check. See POWERTRAIN ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. Ensure engine is idling for one minute before checking for DTCs when performing powertrain OBD system check.

Crankshaft Position (CKP) Sensor Variation Learn Procedure (3.8L)

1) Procedure must be performed if any of the following have been done or exist:

- * EEPROM was reprogrammed.
- * If Diagnostic Trouble Code (DTC) P1336 exists.
- * If crankshaft, crankshaft position sensor, engine, Powertrain Control Module (PCM) or vibration damper have been replaced.

2) CKP sensor variation compensating values are stored in Powertrain Control Module (PCM) after a learn procedure has been performed. If actual CKP sensor values are not within specification, Diagnostic Trouble Code (DTC) P0300 will be stored in the PCM.

3) Using scan tool, check for stored DTCs. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. If no DTCs exist, or if DTC P1336 exists, go to next step. If any DTCs exist except for P1336, perform test procedures for specified DTC and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. Ensure all DTCs are cleared from PCM. Go to next step.

NOTE: Ensure engine coolant temperature is at least 158°F (70°C) before performing CKP sensor variation learn procedure.

4) Ensure ignition is off. Apply parking brake. Block rear wheels. Ensure hood is closed. Start engine and warm engine until engine coolant temperature is at least 158°F (70°C). Turn ignition

off.

5) Using scan tool, select and enable CKP sensor variation learn procedure. Start engine. DO NOT start engine until instructed to do so by scan tool. Apply service brakes. Ensure transmission is in Park.

CAUTION: Ensure throttle is quickly released to idle position once CKP sensor variation learn procedure fuel cut off is obtained.

6) Accelerate engine until CKP sensor variation learn procedure fuel cut off is obtained at 5150 RPM. Quickly release throttle to idle position once CKP sensor variation learn procedure fuel cut off is obtained and engine starts to decelerate. Once CKP sensor variation values are learned, the PCM will return engine control to the operator and engine will respond to throttle position.

7) If CKP sensor variation learn procedure was not terminated, go to next step. If CKP sensor variation learn procedure was terminated, this may be caused by PCM detecting a problem in cam signal causing DTC P0341, 3X crank signal causing DTC P1374 3X or 18X crank signal causing DTC P0336 18X. Using scan tool, check for stored DTCs. Perform test procedures for specified DTCs and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE.

8) Check scan tool for status of DTC P1336. If scan tool indicates DTC P1336 ran and passed, CKP sensor variation learn procedure is complete. If scan tool indicates DTC P1336 failed or was not run, check for any other DTCs. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. If any other DTCs exist, perform test procedures for specified DTC and repair as necessary. If no other DTCs exist, repeat CKP sensor variation learn procedure.

Crankshaft Position (CKP) Sensor Variation Learn Procedure (5.7L)

1) Procedure must be performed if any of the following have been done:

- * EEPROM was reprogrammed.
- * If crankshaft position sensor was removed or replaced.
- * Powertrain Control Module (PCM) has been replaced.

2) Install scan tool on Data Link Connector (DLC). Apply parking brake. Block rear wheels. Ensure hood is closed. Ensure transmission is in Park (A/T models) or Neutral (M/T models). Start engine and allow engine to idle until engine coolant temperature is at least 150°F (65°C). Ensure all accessories are off.

3) Apply brakes. Ensure brakes remain applied during remaining duration of this procedure. Using scan tool, select and enable CKP sensor variation learn procedure.

4) Gradually accelerate engine to 4000 RPM. Quickly release throttle to idle position once CKP sensor variation learn procedure is obtained and engine starts to decelerate. Once CKP sensor variation values are learned, the PCM will return engine control to the operator and engine will respond to throttle position.

5) If CKP sensor variation learn procedure was not terminated, turn ignition off for at least 15 seconds. CKP sensor variation learn procedure is complete. If CKP sensor variation learn procedure was terminated, turn ignition off. Refer to Diagnostic Trouble Code (DTC) P1336 for additional diagnostic information. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE.

Vehicle Driveability Computer Relearn Procedure (All Models)
Manufacturer does not provide a specified computer relearn

procedure for obtaining proper driveability. If vehicle battery was disconnected or Powertrain Control Module (PCM) was replaced, driving the vehicle will enable the PCM to perform a computer relearn procedure for obtaining proper driveability. Inform customer that driveability may differ from what they are accustomed to until the PCM completes the computer relearn procedure.

"G" BODY

NOTE: Read all procedures listed to determine why and when each procedure is to be performed before proceeding.

Electronically Erasable Programmable Read Only Memory (EEPROM) Programming (3.8L)

1) If Powertrain Control Module (PCM) was replaced, the EEPROM in the PCM must be programmed. If EEPROM is not programmed, a Diagnostic Trouble Code (DTC) will be set in the PCM.

2) Ensure battery is fully charged. Ensure cable is properly connected on Data Link Connector (DLC). Turn ignition on. Perform EEPROM programming using the Techline equipment manufacturer's instructions and latest software applicable for the vehicle model.

NOTE: If EEPROM programming fails, ensure all electrical connections on PCM are okay. Check Techline for latest software. If EEPROM programming still fails, replace PCM.

3) Once EEPROM is reprogrammed, the Crankshaft Position (CKP) sensor variation learn procedure must be performed using proper procedure.

Electronically Erasable Programmable Read Only Memory (EEPROM) Programming (4.0L)

1) If Powertrain Control Module (PCM) was replaced, the EEPROM in the PCM must be programmed. If EEPROM is not programmed, a Diagnostic Trouble Code (DTC) will be set in the PCM or PCM may be damaged. Perform EEPROM programming using the Techline equipment manufacturer's instructions and latest software applicable for the vehicle model.

2) Once EEPROM is programmed, use scan tool to clear DTC P0603 from PCM. Engine oil life interval and transaxle fluid life interval must now be reprogrammed using proper procedure. Turn ignition off. Wait 30 seconds to ensure all memory learn procedures occur.

Crankshaft Position (CKP) Sensor Variation Learn Procedure (3.8L)

1) Procedure must be performed if any of the following have been done or exist:

- * EEPROM was reprogrammed.
- * If Diagnostic Trouble Code (DTC) P1336 exists.
- * If crankshaft, crankshaft position sensor, engine, Powertrain Control Module (PCM) or vibration damper have been replaced.

2) CKP sensor variation compensating values are stored in Powertrain Control Module (PCM) after a learn procedure has been performed. If actual CKP sensor values are not within specification, Diagnostic Trouble Code (DTC) P0300 will be stored in the PCM.

3) Using scan tool, check for stored DTCs. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. If no DTCs exist, or if DTC P1336 exists, go to next step. If any DTCs exist except for P1336, perform test procedures for specified DTC and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE

PERFORMANCE. Ensure all DTCs are cleared from PCM. Go to next step.

NOTE: Ensure engine coolant temperature is at least 158°F (70°C) before performing CKP sensor variation learn procedure.

4) Ensure ignition is off. Apply parking brake. Block front wheels. Ensure hood is closed. Start engine and warm engine until engine coolant temperature is at least 158°F (70°C). Turn ignition off.

5) Using scan tool, select and enable CKP sensor variation learn procedure. Start engine. Apply service brakes. Ensure transaxle is in Park.

CAUTION: Ensure throttle is quickly released to idle position once CKP sensor variation learn procedure fuel cut off is obtained.

6) Accelerate engine until CKP sensor variation learn procedure fuel cut off is obtained at 5150 RPM. Quickly release throttle to idle position once CKP sensor variation learn procedure fuel cut off is obtained and engine starts to decelerate. Once CKP sensor variation values are learned, the PCM will return engine control to the operator and engine will respond to throttle position.

7) If CKP sensor variation learn procedure was not terminated, go to next step. If CKP sensor variation learn procedure was terminated, this may be caused by PCM detecting a problem in cam signal causing DTC P0341, 3X crank signal causing DTC P1374 3X or 18X crank signal causing DTC P0336 18X. Using scan tool, check for stored DTCs. Perform test procedures for specified DTCs and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE.

8) Check scan tool for status of DTC P1336. If scan tool indicates DTC P1336 ran and passed, CKP sensor variation learn procedure is complete. If scan tool indicates DTC P1336 failed or was not run, check for any other DTCs. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. If any other DTCs exist, perform test procedures for specified DTC and repair as necessary. If no other DTCs exist, repeat CKP sensor variation learn procedure.

Engine Oil Life Interval Programming (4.0L)

1) Engine oil life interval programming must be performed if any of the following have been done:

- * Battery voltage was disconnected from PCM before ignition switch was placed in LOCK position for a minimum of 30 seconds.
- * EEPROM was reprogrammed.
- * PCM was replaced.

2) Engine oil life interval is calculated by the Powertrain Control Module (PCM). The PCM uses many engine parameters to determine the percentage of engine oil life remaining before engine oil should be changed.

3) Engine oil life interval may be read by the operator by depressing ENG button on Driver Information Center (DIC). The DIC is located above the climate controls at center of instrument panel. Engine oil life interval will be displayed as a percentage when DIC indicates OIL LIFE.

4) If battery voltage was disconnected from PCM before ignition switch was placed in LOCK position for a minimum of 30 seconds, or PCM was replaced, engine oil life interval must be reprogrammed or reset. Engine oil life interval may be programmed or reset by using a scan tool or the DIC.

NOTE: Scan tool may reset engine oil life interval index in 10 percent intervals. The DIC can only reprogram or reset engine oil life interval to 100 percent.

5) If using scan tool to reprogram or reset engine oil life interval, use scan tool manufacturer's instructions and reprogram or reset engine oil life interval back to the closest original interval index that was recorded on original PCM. Scan tool may reset engine oil life interval index in 10 percent intervals.

6) If using DIC to reprogram or reset engine oil life interval, ensure ignition is on. Depress ENG button on DIC until displays OIL LIFE percentage. Depress and hold RESET button on DIC for 5 seconds. The word RESET will be displayed and then OIL LIFE 100 percent will be displayed. Release all buttons. The DIC can only reprogram or reset engine oil life interval to 100 percent.

Transaxle Fluid Life Interval Programming (4.0L)

1) Transaxle fluid life interval programming must be performed if any of the following have been done:

- * Battery voltage was disconnected from PCM before ignition switch was placed in LOCK position for a minimum of 30 seconds.
- * EEPROM was reprogrammed.
- * PCM was replaced.

2) Transaxle fluid life interval is calculated by the Powertrain Control Module (PCM). The PCM uses many engine parameters to determine the percentage of transaxle fluid life interval remaining before fluid should be changed.

3) When PCM determines transaxle fluid should be changed, a signal is sent to the instrument cluster and warning light is displayed. If battery voltage was disconnected from PCM before ignition switch was placed in LOCK position for a minimum of 30 seconds, or PCM was replaced, transaxle fluid life interval must be reprogrammed or reset.

4) To reprogram or reset transaxle fluid life interval to original interval set in the PCM, connect scan tool to Data Link Connector (DLC). Using scan tool manufacturer's instructions and reprogram or reset transaxle fluid life interval back to the closest original interval index that was recorded on original PCM.

Vehicle Driveability Computer Relearn Procedure (All Models)

Manufacturer does not provide a specified computer relearn procedure for obtaining proper driveability. If vehicle battery was disconnected or Powertrain Control Module (PCM) was replaced, driving the vehicle will enable the PCM to perform a computer relearn procedure for obtaining proper driveability. Inform customer that driveability may differ from what they are accustomed to until the PCM completes the computer relearn procedure.

"H" BODY

NOTE: Read all procedures listed to determine why and when each procedure is to be performed before proceeding.

Electronically Erasable Programmable Read Only Memory (EEPROM) Programming

1) If Powertrain Control Module (PCM) was replaced, the EEPROM in the PCM must be programmed. If EEPROM is not programmed, a Diagnostic Trouble Code (DTC) will be set in the PCM.

2) Ensure battery is fully charged. If battery is being

charged, ensure battery charger is disconnected before performing EEPROM programming procedure.

3) Ensure cable is properly connected on Data Link Connector (DLC). Turn ignition on. Perform EEPROM programming using the Techline equipment manufacturer's instructions and latest software applicable for the vehicle model.

NOTE: If EEPROM programming fails, ensure all electrical connections on PCM are okay. Check Techline for latest software. If EEPROM programming still fails, replace PCM.

4) Once EEPROM is reprogrammed, perform powertrain On-Board Diagnostic (OBD) system check. See POWERTRAIN ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. Ensure engine is idling for one minute before checking for DTCs when performing powertrain OBD system check. Also after EEPROM is reprogrammed, the Crankshaft Position (CKP) sensor variation learn procedure must be performed using proper procedure.

Crankshaft Position (CKP) Sensor Variation Learn Procedure

1) Procedure must be performed if any of the following have been done or exist:

- * EEPROM was reprogrammed.
- * If Diagnostic Trouble Code (DTC) P1336 exists.
- * If crankshaft, crankshaft position sensor, engine, Powertrain Control Module (PCM) or vibration damper have been replaced.

2) CKP sensor variation compensating values are stored in Powertrain Control Module (PCM) after a learn procedure has been performed. If actual CKP sensor values are not within specification, Diagnostic Trouble Code (DTC) P0300 will be stored in the PCM.

3) Using scan tool, check for stored DTCs. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. If no DTCs exist, or if DTC P1336 exists, go to next step. If any DTCs exist except for P1336, perform test procedures for specified DTC and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. Ensure all DTCs are cleared from PCM. Go to next step.

NOTE: Ensure engine coolant temperature is at least 158°F (70°C) before performing CKP sensor variation learn procedure.

4) Ensure ignition is off. Apply parking brake. Block front wheels. Ensure hood is closed. Start engine and warm engine until engine coolant temperature is at least 158°F (70°C). Turn ignition off.

5) Using scan tool, select and enable CKP sensor variation learn procedure. Start engine. Apply service brakes. Ensure transaxle is in Park.

CAUTION: Ensure throttle is quickly released to idle position once CKP sensor variation learn procedure fuel cut off is obtained.

6) Accelerate engine until CKP sensor variation learn procedure fuel cut off is obtained at 5150 RPM. Quickly release throttle to idle position once CKP sensor variation learn procedure fuel cut off is obtained and engine starts to decelerate. Once CKP sensor variation values are learned, the PCM will return engine control to the operator and engine will respond to throttle position.

7) If CKP sensor variation learn procedure was not terminated, go to next step. If CKP sensor variation learn procedure was terminated, this may be caused by PCM detecting a problem in cam

signal causing DTC P0341, 3X crank signal causing DTC P1374 3X or 18X crank signal causing DTC P0336 18X. Using scan tool, check for stored DTCs. Perform test procedures for specified DTCs and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE.

8) Check scan tool for status of DTC P1336. If scan tool indicates DTC P1336 ran and passed, CKP sensor variation learn procedure is complete. If scan tool indicates DTC P1336 failed or was not run, check for any other DTCs. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. If any other DTCs exist, perform test procedures for specified DTC and repair as necessary. If no other DTCs exist, repeat CKP sensor variation learn procedure.

Vehicle Driveability Computer Relearn Procedure

Manufacturer does not provide a specified computer relearn procedure for obtaining proper driveability. If vehicle battery was disconnected or Powertrain Control Module (PCM) was replaced, driving the vehicle will enable the PCM to perform a computer relearn procedure for obtaining proper driveability. Inform customer that driveability may differ from what they are accustomed to until the PCM completes the computer relearn procedure.

"J" BODY

NOTE: Read all procedures listed to determine why and when each procedure is to be performed before proceeding.

Electronically Erasable Programmable Read Only Memory (EEPROM) Programming

1) If Powertrain Control Module (PCM) was replaced, the EEPROM in the PCM must be programmed. If EEPROM is not programmed, a Diagnostic Trouble Code (DTC) will be set in the PCM or PCM may be damaged. Perform EEPROM programming using the Techline equipment manufacturer's instructions and latest software applicable for the vehicle model.

2) Once EEPROM is reprogrammed, the Crankshaft Position (CKP) sensor variation learn procedure must be performed using proper procedure.

Crankshaft Position (CKP) Sensor Variation Learn Procedure

1) Procedure must be performed if any of the following have been done or exist:

- * EEPROM was reprogrammed.
- * If Diagnostic Trouble Code (DTC) P1336 exists.
- * If crankshaft, crankshaft position sensor, engine or Powertrain Control Module (PCM) have been replaced.
- * Any repairs have been performed that disturbs the crankshaft or vibration damper to the crankshaft position sensor relationship.

2) CKP sensor variation compensating values are stored in Powertrain Control Module (PCM) after a learn procedure has been performed. If actual CKP sensor values are not within specification, Diagnostic Trouble Code (DTC) P0300 will be stored in the PCM.

3) Ensure battery is fully charged. Ensure cable is properly connected on Data Link Connector (DLC). Apply parking brake. Block front wheels. Ensure hood is closed.

4) Place transaxle in Park (A/T models) or Neutral (M/T models). Ensure all accessories are off. Start engine and warm engine until engine coolant temperature is at least 185°F (85°C).

5) Apply service brakes. With engine idling, use scan tool to select and enable CKP sensor variation learn procedure.

CAUTION: Ensure throttle is quickly released to idle position once CKP sensor variation learn procedure fuel cut off is obtained and engine starts to decelerate or cut out.

6) Accelerate engine until CKP sensor variation learn procedure fuel cut off is obtained and engine starts to decelerate or cut out. Quickly release throttle to idle position once CKP sensor variation learn procedure is obtained and engine decelerates or cuts out. Once CKP sensor variation values are learned, the PCM will return engine control to the operator and engine will respond to throttle position.

7) Using scan tool, verify that CKP sensor variation learn procedure was completed. If CKP sensor variation learn procedure was not completed, go to next step. If CKP sensor variation learn procedure was completed, shut engine off and remove scan tool.

8) If CKP sensor variation learn procedure was not completed, repeat entire procedure up to 10 times. If PCM will not learn the CKP sensor variation compensating values, a DTC P1336 should be stored in the PCM. Perform test procedures for DTC P1336 and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE.

Password Learn Procedure For Anti-Theft System

1) Password learn procedure must be performed if Instrument Panel Cluster (IPC) is replaced. A password is communicated between IPC and Powertrain Control Module (PCM) to provide engine operation. If IPC is replaced, the PCM must learn the password from the IPC.

NOTE: If PCM is replaced, the Electronically Erasable Programmable Read Only Memory (EEPROM) should be programmed. When EEPROM is programmed, the PCM will learn the password when ignition is initially turned on. Password learn procedure is not required when replacing the PCM and EEPROM is programmed.

2) Attempt to start engine and then leave ignition on. DO NOT turn ignition off. The THEFT SYSTEM indicator light will flash for 10 minutes.

3) On Cavalier, THEFT SYSTEM indicator light is located on IPC, just above the vehicle mileage indicator. On Sunfire, THEFT SYSTEM indicator light is located on IPC, just above the temperature gauge.

4) On all models, once THEFT SYSTEM indicator light stops flashing, attempt to start the engine. If engine starts, the password learn procedure is complete. If engine does not start, ensure procedure was properly followed. If procedure was properly followed, check for any DTCs. If any DTCs exist, perform test procedures for specified DTC and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE.

Vehicle Driveability Computer Relearn Procedure

Manufacturer does not provide a specified computer relearn procedure for obtaining proper driveability. If vehicle battery was disconnected or Powertrain Control Module (PCM) was replaced, driving the vehicle will enable the PCM to perform a computer relearn procedure for obtaining proper driveability. Inform customer that driveability may differ from what they are accustomed to until the PCM completes the computer relearn procedure.

"M" BODY

NOTE: Powertrain Control Module (PCM) does not have a reprogrammable EEPROM. No special procedures are required

for programming the PCM.

Vehicle Driveability Computer Relearn Procedure

Manufacturer does not provide a specified computer relearn procedure for obtaining proper driveability. If vehicle battery was disconnected or Powertrain Control Module (PCM) was replaced, driving the vehicle will enable the PCM to perform a computer relearn procedure for obtaining proper driveability. Inform customer that driveability may differ from what they are accustomed to until the PCM completes the computer relearn procedure.

"N" BODY

NOTE: Read all procedures listed to determine why and when each procedure is to be performed before proceeding.

Electronically Erasable Programmable Read Only Memory (EEPROM) Programming (2.4L)

1) If Powertrain Control Module (PCM) was replaced, the EEPROM in the PCM must be programmed. If EEPROM is not programmed, a Diagnostic Trouble Code (DTC) will be set in the PCM or PCM may be damaged. Perform EEPROM programming using the Techline equipment manufacturer's instructions and latest software applicable for the vehicle model.

2) Once EEPROM is reprogrammed, the Crankshaft Position (CKP) sensor variation learn procedure must be performed using proper procedure.

Electronically Erasable Programmable Read Only Memory (EEPROM) Programming (3.1L)

1) If Powertrain Control Module (PCM) was replaced, the EEPROM in the PCM must be programmed. If EEPROM is not programmed, a Diagnostic Trouble Code (DTC) will be set in the PCM.

2) Ensure battery is fully charged. If battery is being charged, ensure battery charger is disconnected before performing EEPROM programming procedure.

3) Ensure cable is properly connected on Data Link Connector (DLC). Turn ignition on. Perform EEPROM programming using the Techline equipment manufacturer's instructions and latest software applicable for the vehicle model.

NOTE: If EEPROM programming fails, ensure all electrical connections on PCM are okay. Check Techline for latest software. If EEPROM programming still fails, replace PCM.

4) Once EEPROM is reprogrammed, perform powertrain On-Board Diagnostic (OBD) system check. See POWERTRAIN ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. Ensure engine is idling for one minute before checking for DTCs when performing powertrain OBD system check. Also after EEPROM is reprogrammed, the Crankshaft Position (CKP) sensor variation learn procedure must be performed using proper procedure.

Crankshaft Position (CKP) Sensor Variation Learn Procedure (2.4L)

1) Procedure must be performed if any of the following have been done or exist:

- * EEPROM was reprogrammed.
- * If Diagnostic Trouble Code (DTC) P1336 exists.
- * If crankshaft, crankshaft position sensor, engine or Powertrain Control Module (PCM) have been replaced.
- * Any repairs have been performed that disturbs the crankshaft

or vibration damper to the crankshaft position sensor relationship.

2) CKP sensor variation compensating values are stored in Powertrain Control Module (PCM) after a learn procedure has been performed. If actual CKP sensor values are not within specification, Diagnostic Trouble Code (DTC) P0300 will be stored in the PCM.

3) Ensure battery is fully charged. Ensure cable is properly connected on Data Link Connector (DLC). Apply parking brake. Block front wheels. Ensure hood is closed.

4) Place transaxle in Park or Neutral. Ensure all accessories are off. Start engine and warm engine until engine coolant temperature is at least 185°F (85°C).

5) Apply service brakes. With engine idling, use scan tool to select and enable CKP sensor variation learn procedure.

CAUTION: Ensure throttle is quickly released to idle position once CKP sensor variation learn procedure fuel cut off is obtained and engine starts to decelerate or cut out.

6) Accelerate engine until CKP sensor variation learn procedure fuel cut off is obtained and engine starts to decelerate or cut out. Quickly release throttle to idle position once CKP sensor variation learn procedure is obtained and engine decelerates or cuts out. Once CKP sensor variation values are learned, the PCM will return engine control to the operator and engine will respond to throttle position.

7) Using scan tool, verify that CKP sensor variation learn procedure was completed. If CKP sensor variation learn procedure was not completed, go to next step. If CKP sensor variation learn procedure was completed, shut engine off and remove scan tool.

8) If CKP sensor variation learn procedure was not completed, repeat entire procedure up to 10 times. If PCM will not learn the CKP sensor variation compensating values, a DTC P1336 should be stored in the PCM. Perform test procedures for DTC P1336 and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE.

Crankshaft Position (CKP) Sensor Variation Learn Procedure (Cutlass 3.1L & Malibu 3.1L)

1) Procedure must be performed if any of the following have been done or exist:

- * EEPROM was reprogrammed.
- * If Diagnostic Trouble Code (DTC) P1336 exists.
- * If crankshaft, crankshaft position sensor, engine, Powertrain Control Module (PCM) or vibration damper have been replaced.

2) CKP sensor variation compensating values are stored in Powertrain Control Module (PCM) after a learn procedure has been performed. If actual CKP sensor values are not within specification, Diagnostic Trouble Code (DTC) P0300 will be stored in the PCM.

3) Using scan tool, check for stored DTCs. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. If no DTCs exist, or if DTC P1336 exists, go to next step. If any DTCs exist except for P1336, perform test procedures for specified DTC and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. Ensure all DTCs are cleared from PCM. Go to next step.

NOTE: Ensure engine coolant temperature is at least 158°F (70°C) before performing CKP sensor variation learn procedure.

4) Ensure ignition is off. Apply parking brake. Block front

wheels. Ensure hood is closed. Start engine and warm engine until engine coolant temperature is at least 158°F (70°C). Turn ignition off.

5) Using scan tool, select and enable CKP sensor variation learn procedure. Start engine. Apply service brakes. Ensure transaxle is in Park.

CAUTION: Ensure throttle is quickly released to idle position once CKP sensor variation learn procedure fuel cut off is obtained.

6) Accelerate engine until CKP sensor variation learn procedure fuel cut off is obtained at 5150 RPM. Quickly release throttle to idle position once CKP sensor variation learn procedure fuel cut off is obtained and engine starts to decelerate. Once CKP sensor variation values are learned, the PCM will return engine control to the operator and engine will respond to throttle position.

7) If CKP sensor variation learn procedure was not terminated, go to next step. If CKP sensor variation learn procedure was terminated, this may be caused by PCM detecting a problem in cam signal causing DTC P0341, 3X crank signal causing DTC P1374 3X or 24X crank signal causing DTC P0336 24X. Using scan tool, check for stored DTCs. Perform test procedures for specified DTCs and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE.

8) Check scan tool for status of DTC P1336. If scan tool indicates DTC P1336 ran and passed, CKP sensor variation learn procedure is complete. If scan tool indicates DTC P1336 failed or was not run, check for any other DTCs. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. If any other DTCs exist, perform test procedures for specified DTC and repair as necessary. If no other DTCs exist, repeat CKP sensor variation learn procedure.

Crankshaft Position (CKP) Sensor Variation Learn Procedure (Achieva 3.1L, Grand Am 3.1L & Skylark 3.1L)

1) Procedure must be performed if any of the following have been done or exist:

- * EEPROM was reprogrammed.
- * If Diagnostic Trouble Code (DTC) P1336 exists.
- * If crankshaft, crankshaft position sensor, engine, Powertrain Control Module (PCM) or vibration damper have been replaced.

2) CKP sensor variation compensating values are stored in Powertrain Control Module (PCM) after a learn procedure has been performed. If actual CKP sensor values are not within specification, Diagnostic Trouble Code (DTC) P0300 will be stored in the PCM.

3) Using scan tool, check for stored DTCs. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. If no DTCs exist, or if DTC P1336 exists, go to next step. If any DTCs exist except for P1336, perform test procedures for specified DTC and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. Ensure all DTCs are cleared from PCM. Go to next step.

NOTE: Ensure engine coolant temperature is at least 158°F (70°C) before performing CKP sensor variation learn procedure.

4) Ensure ignition is off. Apply parking brake. Block front wheels. Ensure hood is closed. Start engine and warm engine until engine coolant temperature is at least 158°F (70°C). Turn ignition off.

5) Apply service brakes. Using scan tool, select and enable CKP sensor variation learn procedure. Follow instructions displayed on

scan tool.

6) If CKP sensor variation learn procedure was not terminated, go to next step. If CKP sensor variation learn procedure was terminated, this may be caused by PCM detecting a problem in cam signal causing DTC P0341, 3X crank signal causing DTC P1374 3X or 24X crank signal causing DTC P0336 24X. Using scan tool, check for stored DTCs. Perform test procedures for specified DTCs and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE.

7) Check scan tool for status of DTC P1336. If scan tool indicates DTC P1336 ran and passed, CKP sensor variation learn procedure is complete. If scan tool indicates DTC P1336 failed or was not run, check for any other DTCs. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. If any other DTCs exist, perform test procedures for specified DTC and repair as necessary. If no other DTCs exist, repeat CKP sensor variation learn procedure.

Password Learn Procedure For Anti-Theft System (Cutlass & Malibu)

1) Password learn procedure must be performed if Body Function Controller (BFC) is replaced. A password is communicated between BFC and Powertrain Control Module (PCM) to provide engine operation. If BFC is replaced, the PCM must learn the password from the BFC. If password learn procedure is not performed, Diagnostic Trouble Codes (DTCs) P1631 and P1632 may be set in the PCM when attempting to start the engine.

NOTE: If PCM is replaced, the Electronically Erasable Programmable Read Only Memory (EEPROM) should be programmed. When EEPROM is programmed, the PCM will learn the password when ignition is initially turned on. Password learn procedure is not required when replacing the PCM and EEPROM is programmed.

2) Attempt to start engine and then leave ignition on. DO NOT turn ignition off. The THEFT SYSTEM indicator light will flash for about 10 minutes and then turn off. THEFT SYSTEM indicator light is located on instrument panel, just to the left of tachometer.

3) Once THEFT SYSTEM indicator light stops flashing, turn ignition off. Attempt to start the engine. If engine starts, the password learn procedure is complete.

4) On Malibu 2.4L, if password is not learned, a Diagnostic Trouble Code (DTC) P1626, P1632 and U1064 may be set in PCM. Perform test procedures for specified DTC and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE.

5) On Cutlass 3.1L and Malibu 3.1L, if password is not learned, a Diagnostic Trouble Code (DTC) P1610, P1626 and P1632 may be set in PCM. Perform test procedures for specified DTC and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE.

Password Learn Procedure For Anti-Theft System (Achieva, Grand Am & Skylark)

1) Password learn procedure must be performed if Instrument Panel Cluster (IPC) is replaced. A password is communicated between IPC and Powertrain Control Module (PCM) to provide engine operation. If IPC is replaced, the PCM must learn the password from the IPC.

NOTE: If PCM is replaced, the Electronically Erasable Programmable Read Only Memory (EEPROM) should be programmed. When EEPROM is programmed, the PCM will learn the password when ignition is initially turned on. Password learn procedure is not required when replacing the PCM and EEPROM is programmed.

2) Attempt to start engine and then leave ignition on. DO NOT turn ignition off. The THEFT SYSTEM indicator light will flash for 10 minutes.

3) On Achieva, THEFT SYSTEM indicator light is located on IPC, just to the right of the coolant temperature gauge and may also be displayed as SECURITY indicator light. On Grand Am, THEFT SYSTEM indicator light is located on IPC, just to the right of the fuel gauge. On Skylark, THEFT SYSTEM indicator light is located on IPC, just above fuel gauge.

4) On all models, once THEFT SYSTEM indicator light stops flashing, attempt to start the engine. If engine starts, the password learn procedure is complete. If engine does not start, ensure procedure was properly followed. If procedure was properly followed, check for any DTCs. If any DTCs exist, perform test procedures for specified DTC and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE.

Vehicle Driveability Computer Relearn Procedure (All Models)

Manufacturer does not provide a specified computer relearn procedure for obtaining proper driveability. If vehicle battery was disconnected or Powertrain Control Module (PCM) was replaced, driving the vehicle will enable the PCM to perform a computer relearn procedure for obtaining proper driveability. Inform customer that driveability may differ from what they are accustomed to until the PCM completes the computer relearn procedure.

"S" BODY

NOTE: Powertrain Control Module (PCM) does not have an reprogrammable EEPROM. No special procedures are required for programming the PCM.

Vehicle Driveability Computer Relearn Procedure

Manufacturer does not provide a specified computer relearn procedure for obtaining proper driveability. If vehicle battery was disconnected or Powertrain Control Module (PCM) was replaced, driving the vehicle will enable the PCM to perform a computer relearn procedure for obtaining proper driveability. Inform customer that driveability may differ from what they are accustomed to until the PCM completes the computer relearn procedure.

"V" BODY

NOTE: Read all procedures listed to determine why and when each procedure is to be performed before proceeding.

Electronically Erasable Programmable Read Only Memory (EEPROM) Programming

1) The replacement Powertrain Control Module (PCM) comes with the EEPROM already programmed. However, the PCM must be programmed, with proper immobilizer signal for anti-theft system before the vehicle will start. See appropriate ANTI-THEFT SYSTEM article in ACCESSORIES & EQUIPMENT for programming immobilizer signal.

2) Once PCM is programmed, perform powertrain On-Board Diagnostic (OBD) system check. See POWERTRAIN ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE.

Sun Roof Actuator Programming

1) Procedure must be performed when vehicle battery is disconnected. Turn ignition on.

2) Rotate knob on sun roof control switch to CLOSED position. Sun roof control switch is located on the overhead console near the

windshield. After sun roof is fully closed, press and hold knob on sun roof control switch inward for 3 seconds.

3) Rotate knob on sun roof control switch to the VENT position. After sun roof moves to the vent position, press and hold knob on sun roof control switch inward for 3 seconds.

4) Rotate knob on sun roof control switch to the OPEN position. After sun roof full opens, press and hold knob on sun roof control switch inward for 3 seconds.

5) Rotate knob on sun roof control switch to CLOSED position. After sun roof is fully closed, press and hold knob on sun roof control switch inward for 3 seconds.

6) Sun roof actuator is now programmed. If after programming the sun roof actuator, the sun roof opens after being closed, it may be necessary to reprogram actuator up to 3 more times.

Vehicle Driveability Computer Relearn Procedure

Manufacturer does not provide a specified computer relearn procedure for obtaining proper driveability. If vehicle battery was disconnected or Powertrain Control Module (PCM) was replaced, driving the vehicle will enable the PCM to perform a computer relearn procedure for obtaining proper driveability. Inform customer that driveability may differ from what they are accustomed to until the PCM completes the computer relearn procedure.

"W" BODY

NOTE: Read all procedures listed to determine why and when each procedure is to be performed before proceeding.

Electronically Erasable Programmable Read Only Memory (EEPROM) Programming (All Models)

1) If Powertrain Control Module (PCM) was replaced, the EEPROM in the PCM must be programmed. If EEPROM is not programmed, a Diagnostic Trouble Code (DTC) will be set in the PCM.

2) Ensure battery is fully charged. If battery is being charged, ensure battery charger is disconnected before performing EEPROM programming procedure.

3) Ensure cable is properly connected on Data Link Connector (DLC). Turn ignition on. Perform EEPROM programming using the Techline equipment manufacturer's instructions and latest software applicable for the vehicle model.

NOTE: If EEPROM programming fails, ensure all electrical connections on PCM are okay. Check Techline for latest software. If EEPROM programming still fails, replace PCM.

4) Once EEPROM is reprogrammed, perform powertrain On-Board Diagnostic (OBD) system check. See POWERTRAIN ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. Ensure engine is idling for one minute before checking for DTCs when performing powertrain OBD system check. Also after EEPROM is reprogrammed, the Crankshaft Position (CKP) sensor variation learn procedure must be performed using proper procedure.

Crankshaft Position (CKP) Sensor Variation Learn Procedure (Century 3.1L & Grand Prix 3.1L)

1) Procedure must be performed if any of the following have been done or exist:

- * EEPROM was reprogrammed.
- * If Diagnostic Trouble Code (DTC) P1336 exists.
- * If crankshaft, crankshaft position sensor, engine, Powertrain Control Module (PCM) or vibration damper have been replaced.

2) CKP sensor variation compensating values are stored in Powertrain Control Module (PCM) after a learn procedure has been performed. If actual CKP sensor values are not within specification, Diagnostic Trouble Code (DTC) P0300 will be stored in the PCM.

3) Using scan tool, check for stored DTCs. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. If no DTCs exist, or if DTC P1336 exists, go to next step. If any DTCs exist except for P1336, perform test procedures for specified DTC and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. Ensure all DTCs are cleared from PCM. Go to next step.

NOTE: Ensure engine coolant temperature is at least 158°F (70°C) before performing CKP sensor variation learn procedure.

4) Ensure ignition is off. Apply parking brake. Block front wheels. Ensure hood is closed. Start engine and warm engine until engine coolant temperature is at least 158°F (70°C). Turn ignition off.

5) Using scan tool, select and enable CKP sensor variation learn procedure. Start engine. Apply service brakes. Ensure transaxle is in Park.

CAUTION: Ensure throttle is quickly released to idle position once CKP sensor variation learn procedure fuel cut off is obtained.

6) Accelerate engine until CKP sensor variation learn procedure fuel cut off is obtained at 5150 RPM. Quickly release throttle to idle position once CKP sensor variation learn procedure fuel cut off is obtained and engine starts to decelerate. Once CKP sensor variation values are learned, the PCM will return engine control to the operator and engine will respond to throttle position.

7) If CKP sensor variation learn procedure was not terminated, go to next step. If CKP sensor variation learn procedure was terminated, this may be caused by PCM detecting a problem in cam signal causing DTC P0341, 3X crank signal causing DTC P1374 3X or 24X crank signal causing DTC P0336 24X. Using scan tool, check for stored DTCs. Perform test procedures for specified DTCs and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE.

8) Check scan tool for status of DTC P1336. If scan tool indicates DTC P1336 ran and passed, CKP sensor variation learn procedure is complete. If scan tool indicates DTC P1336 failed or was not run, check for any other DTCs. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. If any other DTCs exist, perform test procedures for specified DTC and repair as necessary. If no other DTCs exist, repeat CKP sensor variation learn procedure.

Crankshaft Position (CKP) Sensor Variation Learn Procedure (Lumina 3.1L & Monte Carlo 3.1L)

1) Procedure must be performed if any of the following have been done or exist:

- * EEPROM was reprogrammed.
- * If Diagnostic Trouble Code (DTC) P1336 exists.
- * If crankshaft, crankshaft position sensor, engine, Powertrain Control Module (PCM) or vibration damper have been replaced.

2) CKP sensor variation compensating values are stored in Powertrain Control Module (PCM) after a learn procedure has been performed. If actual CKP sensor values are not within specification, Diagnostic Trouble Code (DTC) P0300 will be stored in the PCM.

3) Using scan tool, check for stored DTCs. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. If no DTCs exist, or if DTC P1336 exists, go to next step. If any DTCs exist except for P1336, perform test procedures for specified DTC and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. Ensure all DTCs are cleared from PCM. Go to next step.

NOTE: Ensure engine coolant temperature is at least 158°F (70°C) before performing CKP sensor variation learn procedure.

4) Ensure ignition is off. Apply parking brake. Block front wheels. Start engine and warm engine until engine coolant temperature is at least 158°F (70°C). Turn ignition off.

5) Using scan tool, select and enable CKP sensor variation learn procedure. Follow instructions displayed on scan tool.

6) If CKP sensor variation learn procedure was not terminated, go to next step. If CKP sensor variation learn procedure was terminated, this may be caused by PCM detecting a problem in cam signal causing DTC P0341, 3X crank signal causing DTC P1374 3X or 24X crank signal causing DTC P0336 24X. Using scan tool, check for stored DTCs. Perform test procedures for specified DTCs and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE.

7) Check scan tool for status of DTC P1336. If scan tool indicates DTC P1336 ran and passed, CKP sensor variation learn procedure is complete. If scan tool indicates DTC P1336 failed or was not run, check for any other DTCs. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. If any other DTCs exist, perform test procedures for specified DTC and repair as necessary. If no other DTCs exist, repeat CKP sensor variation learn procedure.

Crankshaft Position (CKP) Sensor Variation Learn Procedure (3.8L)

1) Procedure must be performed if any of the following have been done or exist:

- * EEPROM was reprogrammed.
- * If Diagnostic Trouble Code (DTC) P1336 exists.
- * If crankshaft, crankshaft position sensor, engine, Powertrain Control Module (PCM) or vibration damper have been replaced.

2) CKP sensor variation compensating values are stored in Powertrain Control Module (PCM) after a learn procedure has been performed. If actual CKP sensor values are not within specification, Diagnostic Trouble Code (DTC) P0300 will be stored in the PCM.

3) Using scan tool, check for stored DTCs. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. If no DTCs exist, or if DTC P1336 exists, go to next step. If any DTCs exist except for P1336, perform test procedures for specified DTC and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. Ensure all DTCs are cleared from PCM. Go to next step.

NOTE: Ensure engine coolant temperature is at least 158°F (70°C) before performing CKP sensor variation learn procedure.

4) Ensure ignition is off. Apply parking brake. Block front wheels. Ensure hood is closed. Start engine and warm engine until engine coolant temperature is at least 158°F (70°C). Turn ignition off.

5) Using scan tool, select and enable CKP sensor variation learn procedure. Start engine. Apply service brakes. Ensure transaxle is in Park.

CAUTION: Ensure throttle is quickly released to idle position once CKP sensor variation learn procedure fuel cut off is obtained.

6) Accelerate engine until CKP sensor variation learn procedure fuel cut off is obtained at 5150 RPM. Quickly release throttle to idle position once CKP sensor variation learn procedure fuel cut off is obtained and engine starts to decelerate. Once CKP sensor variation values are learned, the PCM will return engine control to the operator and engine will respond to throttle position.

7) If CKP sensor variation learn procedure was not terminated, go to next step. If CKP sensor variation learn procedure was terminated, this may be caused by PCM detecting a problem in cam signal causing DTC P0341, 3X crank signal causing DTC P1374 3X or 18X crank signal causing DTC P0336 18X. Using scan tool, check for stored DTCs. Perform test procedures for specified DTCs and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE.

8) Check scan tool for status of DTC P1336. If scan tool indicates DTC P1336 ran and passed, CKP sensor variation learn procedure is complete. If scan tool indicates DTC P1336 failed or was not run, check for any other DTCs. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. If any other DTCs exist, perform test procedures for specified DTC and repair as necessary. If no other DTCs exist, repeat CKP sensor variation learn procedure.

Password Learn Procedure For Anti-Theft System (Century & Regal)

1) Password learn procedure must be performed if Body Control Module (BCM) is replaced. A password is communicated between BCM and Powertrain Control Module (PCM) to provide engine operation. If BCM is replaced, the PCM must learn the new password from the BCM. If password learn procedure is not performed a Diagnostic Trouble Code (DTC) may be set in the PCM when attempting to start engine.

NOTE: Ensure battery is fully charged before proceeding.

2) Password learn procedure will take approximately 30 minutes. Ensure ignition switch is in LOCK position.

3) Turn ignition switch to RUN position. The SECURITY indicator light will come on and remain on for about 10 minutes. SECURITY indicator light is located on instrument panel, just to the left of engine coolant temperature gauge on the outside of the round indicator light assembly. Turn ignition switch to LOCK position for 5 seconds.

4) Repeat all procedures in step 3) two more times. Ensure ignition switch is in LOCK position. Turn ignition switch to START position. The engine should start. If engine does not start, ensure procedure was properly followed. If procedure was properly followed, check for any DTCs. If any DTCs exist, perform test procedures for specified DTC and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE.

Vehicle Driveability Computer Relearn Procedure (All Models)

Manufacturer does not provide a specified computer relearn procedure for obtaining proper driveability. If vehicle battery was disconnected or Powertrain Control Module (PCM) was replaced, driving the vehicle will enable the PCM to perform a computer relearn procedure for obtaining proper driveability. Inform customer that driveability may differ from what they are accustomed to until the PCM completes the computer relearn procedure.

"Y" BODY

NOTE: Read all procedures listed to determine why and when each procedure is to be performed before proceeding.

Electronically Erasable Programmable Read Only Memory (EEPROM) Programming

1) If Powertrain Control Module (PCM) was replaced, the EEPROM in the PCM must be programmed. If EEPROM is not programmed, a Diagnostic Trouble Code (DTC) will be set in the PCM.

2) Ensure battery is fully charged. Ensure cable is properly connected on Data Link Connector (DLC). Turn ignition on. Perform EEPROM programming using the Techline equipment manufacturer's instructions and latest software applicable for the vehicle model.

NOTE: If EEPROM programming fails, ensure all electrical connections on PCM are okay. Check Techline for latest software. If EEPROM programming still fails, replace PCM.

3) Once EEPROM is reprogrammed, perform powertrain On-Board Diagnostic (OBD) system check. See POWERTRAIN ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. Ensure engine is idling for one minute before checking for DTCs when performing powertrain OBD system check. Also after EEPROM is reprogrammed, the password learn procedure for the anti-theft system must be performed.

Password Learn Procedure For Anti-Theft System

1) Password learn procedure must be performed if Powertrain Control Module (PCM) is replaced. A password is communicated between Body Control Module (BCM) and PCM to provide engine operation. If PCM is replaced, the PCM must learn the password from the BCM. If password learn procedure is not performed a Diagnostic Trouble Code (DTC) may be set in the PCM when attempting to start engine.

NOTE: Ensure battery is fully charged before proceeding. Performing this procedure will cause a DTC P1630 to be set in the PCM. It will be necessary to use scan tool to check for DTC P1630 when performing this procedure.

2) Turn ignition switch to ON position with engine off for 11 minutes. Turn ignition switch to OFF position for 30 seconds.

3) Turn ignition switch to ON position with engine off for 11 minutes. Turn ignition switch to OFF position for 30 seconds.

4) Turn ignition switch to ON position with engine off for 11 minutes or until DTC P1630 is set. Turn ignition switch to OFF position for 30 seconds.

5) Turn ignition switch to ON position with engine off for 30 seconds.

Attempt to start engine.

6) If engine starts, go to next step. If engine does not start, check for any other DTCs. If any DTCs exist, perform test procedures for specified DTC and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE.

7) Clear DTCs from PCM. Turn ignition switch to OFF position for 30 seconds. Attempt to start engine.

8) If engine does not start, ensure procedure was properly followed. If procedure was properly followed, check for any DTCs. If any DTCs exist, perform test procedures for specified DTC and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE.

Vehicle Driveability Computer Relearn Procedure (All Models)

Manufacturer does not provide a specified computer relearn procedure for obtaining proper driveability. If vehicle battery was disconnected or Powertrain Control Module (PCM) was replaced, driving the vehicle will enable the PCM to perform a computer relearn procedure for obtaining proper driveability. Inform customer that driveability may differ from what they are accustomed to until the PCM completes the computer relearn procedure.

SATURN

NOTE: Read all procedures listed to determine why and when each procedure is to be performed before proceeding.

Electronically Erasable Programmable Read Only Memory (EEPROM) Programming

1) EEPROM must also be programmed if replacing Powertrain Control Module (PCM) or changing Transaxle Control (TC) calibrations. If EEPROM is not programmed, a Diagnostic Trouble Code (DTC) will be set in the PCM.

CAUTION: PCM may be damaged if programming procedure is interrupted during the downloading procedure. Ensure cable for scan tool is securely connected to Service Stall System (SSS) equipment and power supply for SSS is securely connected to power supply before proceeding.

NOTE: Ensure original PCM has the correct Vehicle Identification Number (VIN), vehicle tire size and vehicle options prior to programming the EEPROM. If original PCM is not available or incapable of communicating, the VIN, vehicle tire size and vehicle options must be manually entered into the replacement PCM.

NOTE: On A/T models, when replacing PCM for an engine related problem, the transaxle adaptives should be transferred from original PCM to replacement PCM. Transaxle adaptives should be reset if replacing PCM for transaxle related failure, transaxle, transaxle line pressure actuator, transaxle valve body or transaxle is overhauled. Transaxle adaptives may be reset using Service Stall System (SSS) equipment or a scan tool.

2) Ensure battery is fully charged. Ensure cable is properly connected on Data Link Connector (DLC). Perform EEPROM programming using the SSS equipment manufacturer's instructions and latest software applicable for the vehicle model.

NOTE: Once EEPROM is reprogrammed, the SERVICE indicator light on instrument panel will flash. This is a normal function, as the PCM must learn the crankshaft notches for engine misfire diagnosis. SERVICE indicator light is located on instrument panel, just to the left of the speedometer.

3) Once EEPROM is reprogrammed, check for any Diagnostic Trouble Codes (DTCs). See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. Also, after EEPROM is reprogrammed, crankshaft learn procedure and vehicle driveability computer relearn procedure must be performed.

Crankshaft Learn Procedure

1) The PCM uses crankshaft velocity calculations to determine engine misfire and to operate engine misfire self-diagnostics. PCM must know precisely the variation between notches on the crankshaft.

PCM contains crankshaft learn procedure which learns the variation between notches on crankshaft. The crankshaft learn procedure must be reset if any of the following have been performed:

- * EEPROM was reprogrammed.
- * If crankshaft, crankshaft position sensor, engine or Powertrain Control Module (PCM) have been replaced.

NOTE: If any Diagnostic Trouble Codes (DTCs) exist that relate to an engine misfire, crankshaft learn procedure will not be initiated. Any DTCs for engine misfire must be corrected before performing crankshaft learn procedure.

2) Using scan tool, check for stored DTCs that relate to an engine misfire. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. If no DTCs exist for engine misfire, go to next step. If any DTCs exist for engine misfire, perform test procedures for specified DTC and repair as necessary. See the appropriate G - TESTS W/CODES article in ENGINE PERFORMANCE. Ensure no engine misfire DTCs exist. Go to next step.

3) If crankshaft learn procedure is being performed as a result of replacing the crankshaft, reset crankshaft learn procedure using Service Stall System (SSS) equipment and manufacturer's instructions. Ignition will have to be cycled off for 10 seconds to correctly perform crankshaft learn procedure when using SSS equipment. Go to step 5).

4) If crankshaft learn procedure is being performed as a result of replacing PCM, crankshaft learn procedure will be automatically started. Go to next step.

5) Start engine and allow engine to idle until SERVICE indicator light on instrument panel starts to flash. SERVICE indicator light is located on instrument panel, just to the left of the speedometer.

6) Increase and hold engine RPM at 3000-4000 RPM until SERVICE indicator light goes off. SERVICE INDICATOR light should go off in about 10-20 seconds. Crankshaft learn procedure is complete.

Vehicle Driveability Computer Relearn Procedure

1) If vehicle battery was disconnected or Powertrain Control Module (PCM) was replaced, driving the vehicle will enable the PCM to perform a computer relearn procedure for obtaining proper driveability and engine idle. Until PCM has completed computer relearn procedure, driveability or idle may differ from standard vehicle operation. On A/T models, transaxle shift qualities must be relearned.

2) On all models, start engine and warm engine to normal operating temperature. Drive vehicle at part throttle with moderate acceleration and with throttle at idle position.

3) Repeat step 2) until normal driveability exists. Stop vehicle with engine idling. Apply parking brake. Place transaxle in Drive (A/T models) or Neutral (M/T models). Allow engine to idle for about 2 minutes until engine idle stabilizes.

4) On A/T models, vehicle must be driven to relearn transaxle shift qualities. Operate vehicle so transaxle fluid temperature is at least 113°F (45°C). Drive vehicle at 1/3 throttle so transaxle performs a 1-2, 2-3 and 3-4 upshift. Repeat procedure so transaxle upshifts through all gears at least 10 times. On DOHC engine, go to next step. On SOHC engine, go to step 7).

5) On DOHC engine, while coasting at 35 MPH, slowly accelerate to 1/2 throttle to achieve a 4-3 downshift. Place gearshift in "D3" while coasting at 20 MPH, slowly accelerate at 3/4 throttle to achieve a 3-2 downshift.

6) Repeat step 5) for 5 times. Vehicle driveability computer relearn procedure is now complete.

7) On SOHC engine, while coasting at 40 MPH, slowly accelerate to 1/2 throttle to achieve a 4-3 downshift. Place gearshift in "D3" while coasting at 30 MPH, slowly accelerate at 1/2 throttle to achieve a 3-2 downshift.

8) Repeat step 7) for 5 times. Vehicle driveability computer relearn procedure is now complete.