ABC123	Entire Article 2000 Chevrolet Camaro

ARTICLE BEGINNING

2000 GENERAL INFORMATION
Computer Relearn Procedures

Domestic Vehicles

INTRODUCTION

BODY CONTROLS

NOTE: The following information is for general information purposes only. For specific relearn procedures, if available, see RELEARN PROCEDURES.

Vehicles equipped with body, air conditioning, anti-lock brake or memory computers may require a computer relearn procedure after components are replaced or the vehicle battery is disconnected. Vehicle computers memorize and store vehicle information and operation selections. When the vehicle battery is disconnected, vehicle computer memory may be lost, requiring relearning or resetting. Depending on the vehicle and how it is equipped, the following secondary memories may exist:

* Air conditioning.
* Clock.
* Door key lock entry custom features.
* Mirror position.
* Power window or sun roof operation.
* Radio presets and anti-theft code.
* Remote keyless entry custom features.
* Seat position.
* Tilt/telescoping steering wheel position.

These do not affect primary vehicle systems. For secondary vehicle systems, see appropriate article for relearn procedures. Other computer relearn procedures are required for primary vehicle system operation. These may include:

* Initial control unit programming.
* Traction control yaw sensor initializing.
* Multiplex communication.
* Anti-theft system or engine immobilizer system passwords.

ENGINE CONTROLS

NOTE: The following information is for general information purposes only. For specific relearn procedures, if available, see RELEARN PROCEDURES.

Vehicles equipped with powertrain control 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, which may result 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. See appropriate procedures for specified manufacturer.

RELEARN PROCEDURES (CARS)

* PLEASE READ THIS FIRST *

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. Body Control Module (BCM) must be programmed with proper Regular Production Option (RPO) configurations. Follow instructions on Techline Terminal and scan tool to program BCM.

ALERO, GRAND AM & MALIBU

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

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.
* Diagnostic Trouble Code (DTC) P1336 exists.
* 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 PCM after a learn procedure has been performed. If actual CKP sensor values are not within specification, 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 185øF (85øC).

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

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.

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.

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 appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

Crankshaft Position (CKP) Sensor Variation Learn Procedure (Alero 3.4L & Grand Am 3.4L)

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, Powertrain Control Module (PCM) or vibration damper have been replaced.

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

3) Using scan tool, check for stored DTCs. 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 appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE. Ensure all DTCs are cleared from PCM. Go to next step.

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 158øF (70øC). Turn ignition

off.

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

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 appropriate SELF-DIAGNOSTICS 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 appropriate SELF-DIAGNOSTICS 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.

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. See CRANKSHAFT POSITION (CKP) SENSOR VARIATION LEARN PROCEDURE (2.4L).

Electronically Erasable Programmable Read Only Memory (EEPROM) Programming (3.1L & 3.4L)

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.

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.

4) Once EEPROM is reprogrammed, perform powertrain On-Board Diagnostic (OBD) system check. See POWERTRAIN ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE. Ensure engine is idling for one minute before checking for DTCs when performing powertrain OBD system check.

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.

Password Learn Procedure For Anti-Theft System (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 (DTC) P1631 and P1632 may be set in the PCM when attempting to start the engine.

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.

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.

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 appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

5) On 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 appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

NOTE: Passlock(TM) learn procedure must be performed when Passlock(TM) sensor, BCM or PCM are replaced.

Password Learn Procedure For Passlock(TM) Anti-Theft System (Alero 3.4L & Grand Am 3.4L)

Turn ignition switch to ON position. Momentarily turn ignition switch to START position and release to ON position. Do not start vehicle. Observe SECURITY indicator light for about 10 minutes. Indicator light will go off after about 10 minutes. Turn ignition off. Start vehicle. Password is now in memory. Clear DTCs using scan tool.

Vehicle Driveability Computer Relearn Procedure (A/T Models)

1) If vehicle battery was disconnected or Powertrain Control Module (PCM) was replaced, turn ignition off. Reconnect PCM battery feed. Turn A/C off. Set parking brake and block drive wheels. Start engine.

2) Idle engine until it reaches operating temperature. Shift transmission into Drive. Allow engine to idle for 5 minutes. Shift

transmission selector into Park. Allow engine to idle another 5 minutes. Turn engine off for 30 seconds. Vehicle should now be returned to learned idle.

Vehicle Driveability Computer Relearn Procedure (M/T Models)

1) If vehicle battery was disconnected or Powertrain Control Module (PCM) was replaced, turn ignition off. Reconnect PCM battery feed. Turn A/C off. Set parking brake and block drive wheels. Shift transmission into Neutral.

2) Start engine. Idle engine until it reaches operating temperature. Allow engine to idle for 5 minutes. Turn engine off for 30 seconds. Vehicle should now be returned to learned idle.

BONNEVILLE & LE SABRE

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

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 PCM after a learn procedure has been performed. If actual CKP sensor values are not within specification, DTC P0300 will be stored in the PCM.

3) Using scan tool, check for stored DTCs. 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 appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE. Ensure all DTCs are cleared from PCM. Go to next step.

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 158ØF (70ØC). Turn ignition off.

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

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

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.

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

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 appropriate SELF-DIAGNOSTICS 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 appropriate SELF-DIAGNOSTICS 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.

Dash Integration Module (DIM) Programming (Bonneville)

Prior to replacing DIM, note vehicle personalization features. To program DIM, appropriate article in BODY CONTROL MODULES.

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.

4) Once EEPROM is reprogrammed, perform powertrain On-Board Diagnostic (OBD) system check. See POWERTRAIN ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in appropriate SELF-DIAGNOSTICS 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. See CRANKSHAFT POSITION (CKP) SENSOR VARIATION LEARN PROCEDURE.

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.

NOTE: PASS-Key(R) III system auto learn procedure must be performed if Powertrain Control Module (PCM), ignition lock cylinder, reader/exciter or ignition key are replaced.

PASS-Key(R) III System Auto Learn Procedure

1) 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, the length of the auto learn timer.

2) 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.

3) Repeat steps 1) and 2) 2 more times. Insert the newly learned ignition key in ignition switch.

4) 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.

NOTE: PASS-Key(R) III system quick learn procedure is used to learn additional ignition keys (Black master or Gray valet). A learned Black master key must be used to initiate procedure. Up to 10 ignition keys can be learned.

PASS-Key(R) III System Quick Learn Procedure

1) Insert a valid Master ignition key in the ignition switch. Start engine. After 10 seconds, turn ignition off and remove key.

2) Within 10 seconds, insert new valid mechanical code unlearned key and turn ignition switch to RUN position. Security light will illuminate until key is learned. This may happen so quickly light is not observed. Turn ignition off and remove key 10 seconds after light goes out. To learn additional keys, repeat this step.

NOTE: RIM may be referred to as BCM.

Rear Integration Module (RIM) Programming (Bonneville)

Prior to replacing RIM, note vehicle personalization features. To set or change features, install scan tool. Turn ignition switch to ON position, with engine off. Under CHASSIS MAIN MENU, select Rear Integration Module (RIM). Under RIM Main Menu, select RECALIBRATION. Follow scan tool on screen instructions to recalibrate automatic level control. Perform vehicle personalization to reset owner's desired personalization settings.

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.

CAMARO & FIREBIRD

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

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 PCM after a learn procedure has been performed. If actual CKP sensor values are not within specification, DTC P0300 will be stored in the PCM.

3) Using scan tool, check for stored DTCs. 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 appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE. Ensure all DTCs are cleared from PCM. Go to next step.

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 158øF (70øC). Turn ignition off.

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

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.

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.

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

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 appropriate SELF-DIAGNOSTICS 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 appropriate SELF-DIAGNOSTICS 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 150øF (65øC). 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 appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

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.

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 appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE. Ensure engine is idling for one minute before checking for DTCs when performing powertrain OBD system check. Perform Crankshaft Position (CKP) sensor variation learn procedure. See CRANKSHAFT POSITION (CKP) SENSOR VARIATION LEARN PROCEDURE (3.8L).

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) On 5.7L, once EEPROM is reprogrammed, perform powertrain

On-Board Diagnostic (OBD) system check. See POWERTRAIN ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in appropriate SELF-DIAGNOSTICS 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. See IDLE LEARN PROCEDURE (5.7L). See CRANKSHAFT POSITION (CKP) SENSOR VARIATION LEARN PROCEDURE (5.7L).

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 looses battery voltage.

On A/T models, go to next step. On M/T models, go to step 4).

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. Place transmission in Drive. Allow engine to idle for 5 minutes. Place transmission in Park.

3) Allow engine to idle for 5 minutes. Shut engine off for 30 seconds. Clear Diagnostic Trouble Codes (DTC) from PCM. Perform powertrain On-Board Diagnostic (OBD) system check. See POWERTRAIN ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE. Ensure engine is idling for one minute before checking for DTCs when performing powertrain OBD system check.

4) 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. Start engine. Allow engine to idle for 5 minutes.

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

NOTE: New modules are unprogrammed. New module must be programmed with code that matches customer's key for PASS-Key(R) II operation. New module can only be programmed once.

Programming New Body Control Module (BCM)

1) To program a NEW Body Control Module (BCM), install new module into vehicle. Insert customer's key into ignition lock cylinder and turn to RUN position. Start engine to verify operation.

2) Observe SECURITY indicator. SECURITY indicator should illuminate for about 5 seconds and go out (BCM is programmed). If SECURITY indicator flashes one flash per second and engine starts, check wiring, contacts to key resistance pellet, and key for defects

or intermittents. Repair or replace as necessary. Repeat procedure because module did not program key code.

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.

CATERA

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

Content Theft Deterrent Systems & Immobilizer

NOTE: All theft deterrent module and Engine Control Module (ECM) functions must be programmed using GM Tech 2 scan tool.

Theft Deterrent module must be programmed after installation with (in order) security code, engine type, key cylinder number and VIN number. ECM must be programmed to learn new frequency code. To obtain security code and key cylinder number, call GM TRACS 2000 at 1-800-433-6961.

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 CONTENT THEFT DETERRENT SYSTEMS & IMMOBILIZER.

2) Once PCM is programmed, perform powertrain On-Board Diagnostic (OBD) system check. See POWERTRAIN ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in appropriate SELF-DIAGNOSTICS 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 fully 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.

CAVALIER & SUNFIRE

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

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 PCM after a learn procedure has been performed. If actual CKP sensor values are not within specification, 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 185øF (85øC).

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

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.

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.

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 appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

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. See CRANKSHAFT POSITION (CKP) SENSOR VARIATION LEARN PROCEDURE.

NOTE: Password must be learned when Passlock(TM) sensor, BCM or PCM is replaced. BCM must be programmed with proper RPO configurations before performing relearn procedures. If PCM is replaced, after programming, PCM will immediately learn the first password it receives. If password needs to be changed, learn procedure will need to be performed.

Password Learn Procedure For Anti-Theft System

1) Clear all DTCs. Turn ignition off. Replace component(s) as necessary.

2) With transmission in Park (A/T) or Neutral (M/T), turn ignition switch momentarily to START position (engine will not start). Leave ignition switch in RUN position (engine off). If Passlock(TM) sensor was replaced, SECURITY indicator light will flash for 10 minutes. If Passlock(TM) module was replaced, SECURITY indicator light will flash for a few seconds, then stay on for 10 minutes. If PCM was replaced with a new PCM, vehicle may start and procedure may not be needed. If replacement PCM was used even momentarily, SECURITY indicator light will flash for a few seconds, then stay on for 10 minutes. After 10 minutes, when light turns off, turn ignition switch to OFF position for 5 seconds.

3) Repeat step 2) twice more. Ignition switch must be turned to OFF position. Auto learn procedure will be completed during next start attempt. Clear all DTCs.

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.

CENTURY, GRAND PRIX, INTRIGUE, LUMINA, MONTE CARLO & REGAL

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

Crankshaft Position (CKP) Sensor Variation Learn Procedure (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 PCM after a learn procedure has been performed. If actual CKP sensor values are not within specification, DTC P0300 will be stored in the PCM.

3) Using scan tool, check for stored DTCs. See appropriate SELF-DIAGNOSTICS 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 appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE. Ensure all DTCs are cleared from PCM. Go to next step.

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 158øF (70øC). Turn ignition off.

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

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

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.

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

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 appropriate SELF-DIAGNOSTICS 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 appropriate SELF-DIAGNOSTICS 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 (3.5L & 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 PCM after a learn procedure has been performed. If actual CKP sensor values are not within specification, DTC P0300 will be stored in the PCM.

3) Using scan tool, check for stored DTCs. See appropriate SELF-DIAGNOSTICS 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 appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE. Ensure all DTCs are cleared from PCM. Go to next step.

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 158øF (70øC). Turn ignition off.

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

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

6) Accelerate engine until CKP sensor variation learn procedure fuel cut off is obtained at 4300 RPM (3.5L) or 5150 RPM (3.8L). 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.

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

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 appropriate SELF-DIAGNOSTICS 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 appropriate SELF-DIAGNOSTICS 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.

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.

4) Once EEPROM is reprogrammed, perform powertrain On-Board Diagnostic (OBD) system check. See POWERTRAIN ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE. Ensure engine is idling for one minute before checking for DTCs when performing powertrain OBD system check. After EEPROM is reprogrammed, the proper Crankshaft Position (CKP) sensor variation learn procedure must be performed. For 3.1L, see CRANKSHAFT POSITION (CKP) SENSOR VARIATION LEARN PROCEDURE (3.1L). For 3.5L or 3.8L, see CRANKSHAFT POSITION (CKP) SENSOR VARIATION LEARN PROCEDURE (3.5L & 3.8L).

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.

PASS-Key(R) III Module Programming (Grand Prix)

* If replacing a theft deterrent module, the new module will learn keys immediately. However, the existing Powertrain Control Module (PCM) must learn the new fuel continue password when theft deterrent module is replaced.
* If replacing a PCM, after programming, these modules

will learn incoming fuel continue password immediately upon receipt of a password message. Once a password message is received, and a password is learned, a learn procedure must be performed to change this password again. A PCM which has been previously installed in another vehicle will have learned the other vehicle's fuel continue password and will require a learn procedure after programming to learn current vehicle's password.

* When performing 30 minute relearn procedure, all previously learned keys will be erased from theft deterrent module's memory
* Additional keys may be learned immediately after 30 minute relearn procedure by inserting additional key to be learned and turning ignition switch to RUN position within 10 seconds of removing previously learned key.
* When performing 30 minute relearn procedure, be sure to use only a master key (Black) during procedure. If a valet key (Gray) is learned first, theft deterrent module will not allow additional keys to be learned.

NOTE: PASS-Key(R) III system auto learn procedure must be performed if all keys are lost, or 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.

PASS-Key(R) III System Auto Learn Procedure (Grand Prix)

1) Insert a valid mechanical coded unlearned master ignition key (Black) in the ignition switch. Place ignition switch in RUN position. The SECURITY indicator light will flash once per second for 10 minutes for the length of the auto learn timer.

2) When auto learn timer expires and SECURITY indicator light goes off, place ignition switch in LOCK position. Wait 5 seconds.

3) Repeat steps 1) and 2) 2 more times. Insert the newly learned ignition key in ignition switch.

4) Place ignition switch in RUN position. The SECURITY indicator light should remain off to indicate that ignition key was learned. This will be the only learned key. To program more keys, see PASS-KEY(R) III SYSTEM QUICK LEARN PROCEDURE (GRAND PRIX). If security indicator does not remain off, repeat procedure. Use scan tool to clear any DTCs.

NOTE: PASS-Key(R) III system quick learn procedure is used to learn additional ignition keys. A learned key must be used to initiate procedure. Up to 10 ignition keys can be learned.

PASS-Key(R) III System Quick Learn Procedure (Grand Prix)

1) Insert a valid ignition key in the ignition switch. Turn ignition on. After 2 second bulb test, turn ignition off and remove key.

2) Within 10 seconds, insert new valid mechanical code unlearned key and turn ignition switch to RUN position. Security light

will illuminate until key is learned. This may happen so quickly security light illumination is not observed. Turn ignition off. Remove ignition key 10 seconds after light goes out.

3) To learn additional keys, repeat step 2). To exit procedure, turn ignition off for more than 10 seconds.

Passlock(TM) Theft Deterrent Relearn (Intrigue)

Password must be learned when Passlock(TM) sensor, BCM or PCM is replaced. This procedure must be performed after ignition switch replacement. If BCM is replaced, BCM must be programmed with proper RPO configurations before performing relearn procedures. If PCM is replaced, after programming, PCM will immediately learn the first password it receives. If password needs to be changed, learn procedure will need to be performed.

Turn ignition off. Turn ignition switch from OFF to START position, then leave in on position. SECURITY indicator will come on and stay on for at least 10 minutes. After SECURITY indicator goes out, turn ignition off for 5 seconds. Repeat this procedure 2 more times. After third time, turn ignition off. Turn ignition switch to START position, engine should start and run. Recheck BCM for Diagnostic Trouble Codes (DTC).

NOTE: 10 minute procedure requires special equipment to perform. If special equipment is not available, 30 minute procedure may be used. This procedure allows relearning of BCM or PCM learned data code after replacement of Passlock(TM) module, Passlock(TM) sensor or VCM. DTC B3031 will set when entering programming mode. Reprogram BCM with proper RPO configurations before performing 30 minute relearn procedure. After reprogramming a new PCM, PCM will learn incoming fuel continue password immediately. After initial password is learned, relearn procedure will have to be performed to change password.

PASSLOCK(TM) 30 Minute Relearn Procedure (Impala & Monte Carlo)

1) Clear all DTCs. See scan tool manufacturer's instructions. Turn ignition off. Replace component(s) as necessary.

2) With transmission in Park (A/T) or Neutral (M/T), turn ignition switch momentarily to START position (DO NOT start engine). Leave ignition switch in RUN position (engine off). After 10 minutes, when SECURITY light turns off, turn ignition switch to OFF position for 5 seconds.

3) Repeat step 2) twice more. Turn ignition switch to OFF position. Auto learn procedure will be completed during next start attempt. Clear all DTCs.

NOTE: New module can only be programmed once. Verify customer's code prior to programming to ensure key code is correct.

Programming New Theft Deterrent Module (Lumina)

1) With new theft deterrent module installed and connected, insert customer's key into ignition key lock cylinder and turn

ignition switch to RUN position. New modules are programmed to store first pellet resistance detected. Start engine to verify system operation. If engine starts, go to next step. If engine does not start, diagnose and repair anti-theft system. See ANTI-THEFT SYSTEMS - LUMINA article under ACCESSORIES & EQUIPMENT.

2) Observe SECURITY indicator light. Indicator light should illuminate for about 5 seconds and go out. This indicates module programming has been successfully completed. If indicator light flashes once per second and engine starts, module did not program. Check wiring, connectors, contacts to key resistance pellet, and key for defects or intermittents. Repair or replace as necessary and repeat programing 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.

CORVETTE

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

NOTE: Performing following procedure will set DTC P1630. This is normal. After procedure has been completed, turn ignition off for 30 seconds. Turn ignition on. DTC P1630 should clear. If DTC does not clear, see appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE. Battery voltage must be maintained during procedure.

BCM/PASS-KEY Relearn Procedure For Anti-Theft System

1) Connect scan tool. Turn ignition on. Select BCM RPO Programming. Program BCM with proper RPO codes. Go to next step.

2) Ensure proper communications between BCM and ECM. If communication to PCM does not exist, see appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE. If communication to BCM does not exist, see BCM DIAGNOSTIC SYSTEM CHECK in BODY CONTROL MODULES - CORVETTE article. If a Techline Terminal T50/T60(R) is available, go to step 5). If a scan tool is available, go to step 4). If a scan tool is not available, go to next step.

3) Turn ignition on (engine off) for 11 minutes. Turn ignition off for 30 seconds. Turn ignition on (engine off) for 11 minutes. Turn ignition off for 30 seconds. Turn ignition on (engine off) for 11 minutes or until DTC P1630 sets. Turn ignition off for 30 seconds. Turn ignition on for 30 seconds. Start engine. If engine starts, perform BCM diagnostic system check. See BCM DIAGNOSTIC SYSTEM CHECK in BODY CONTROL MODULES - CORVETTE article. If engine does not start, see appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

4) Connect scan tool to vehicle Diagnostic Link Connector (DLC). Turn ignition on. Using scan tool, enter SERVICE PROGRAMMING

SYSTEM (SPS). After entering vehicle information, select Request Info soft key. Select DONE and follow instructions on Vehicle Set-Up screen. Disconnect scan tool from vehicle and connect to Techline terminal.

Using Techline terminal, select SERVICE PROGRAMMING SYSTEM (SPS). Select terminal to scan tool programming method. Select DONE. Follow instructions on terminal. Select Vehicle Theft Relearn. Select Program at summary screen. Terminal will download information to scan tool. Disconnect scan tool from terminal and reconnect to vehicle DLC.

Select SERVICE PROGRAMMING SYSTEM (SPS) from main menu. Enter vehicle model year and type information. Select Theft Relearn soft key. Follow instructions on scan tool. Security timer will remain on for about 11 minutes or until DTC P1630 sets. DO NOT disconnect scan tool during this time. When system is ready, turn ignition off for 30 seconds. Start engine. If engine starts perform BCM diagnostic system check. See BCM DIAGNOSTIC SYSTEM CHECK in BODY CONTROL MODULES - CORVETTE article. If engine does not start, see appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

5) Using Techline Terminal T50/T60(R), enter SERVICE PROGRAMMING SYSTEM (SPS). Select terminal to vehicle programming. Select DONE and follow instructions on Vehicle Set-Up screen. Select Vehicle Theft Relearn. Follow instructions on terminal. Security timer will remain on for about 11 minutes or until DTC P1630 sets. DO NOT disconnect terminal during this time. When system is ready, turn ignition off for 30 seconds. Start engine. If engine starts perform BCM diagnostic system check. See BCM DIAGNOSTIC SYSTEM CHECK in BODY CONTROL MODULES - CORVETTE article. If engine does not start, see appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

Door Control Module (DCM) Programming

On hardtop models, when a Door Control Module (DCM) is replaced, the DCM must be reprogrammed. Using scan tool, select RH DCM for right DCM or LH DCM for left DCM. Select DCM REPROGRAM and follow scan tool instructions.

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.

3) Once EEPROM is reprogrammed, perform powertrain On-Board Diagnostic (OBD) system check. See POWERTRAIN ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in appropriate SELF-DIAGNOSTICS 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. See BCM/PASS-KEY RELEARN PROCEDURE FOR ANTI-THEFT SYSTEM.

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.

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.

DEVILLE, ELDORADO & SEVILLE

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. Perform Vehicle Theft Deterrent (VTD) system auto learn procedure. See VEHICLE THEFT DETERRENT SYSTEM AUTO LEARN PROCEDURE.

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. See ENGINE OIL LIFE INTERVAL PROGRAMMING. See TRANSAXLE FLUID LIFE INTERVAL PROGRAMMING.

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.
* Powertrain Control Module (PCM) was replaced.

2) Engine oil life interval is calculated by the 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.

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.

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.

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.
* Powertrain Control Module (PCM) was replaced.

2) Transaxle fluid life interval is calculated by the 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

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.

NOTE: Vehicle Theft Deterrent (VTD) system auto learn procedure must be performed if Powertrain Control Module (PCM), VTD module, ignition lock cylinder, steering column assembly or ignition key are replaced. A password is communicated between VTD module and PCM to provide engine operation. If PCM is replaced, the PCM must learn the password from the VTD module.

Vehicle Theft Deterrent System Auto Learn Procedure

1) Insert a valid mechanical coded unlearned ignition key in the ignition switch. Place ignition switch in RUN position. The SECURITY indicator light will come on for 10 minutes for the length of the auto learn timer.

2) When auto learn timer expires and SECURITY indicator light goes off, place ignition switch in OFF position. Wait 5 seconds.

3) Repeat steps 1) and 2), 2 more times. Insert the newly learned ignition key in ignition switch.

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

METRO

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.

PARK AVENUE

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

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 PCM after a learn procedure has been performed. If actual CKP sensor values are not within specification, DTC P0300 will be stored in the PCM.

3) Using scan tool, check for stored DTCs. See appropriate SELF-DIAGNOSTICS 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 appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE. Ensure all DTCs are cleared from PCM. Go to next step.

NOTE: Ensure engine coolant temperature is at least 158øF (70øC) 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 158øF (70øC). 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.

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.

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

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 appropriate SELF-DIAGNOSTICS 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 appropriate SELF-DIAGNOSTICS 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.

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. Perform password learn procedure. See PASSWORD LEARN PROCEDURE FOR PASS-KEY(R) III ANTI-THEFT SYSTEM.

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 appropriate SELF-DIAGNOSTICS 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. See CRANKSHAFT POSITION (CKP) SENSOR VARIATION LEARN PROCEDURE.

Password Learn Procedure For Pass-Key(R) III 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) 2 more times, for a total of 30 minutes. 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.

PRIZM

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.

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.

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

CAUTION: PCM may be damaged if programming procedure is interrupted during the downloading procedure. Ensure cable for scan tool is securely connected to 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. See VEHICLE DRIVEABILITY COMPUTER RELEARN PROCEDURE.

3) Perform anti-theft relearn procedure. See PASSLOCK(TM) ANTI-THEFT LEARN PROCEDURE. Once EEPROM is reprogrammed, check for any Diagnostic Trouble Codes (DTC). See appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE. Also, after EEPROM is reprogrammed, crankshaft learn procedure and vehicle driveability computer relearn

procedure must be performed. See CRANKSHAFT LEARN PROCEDURE. See VEHICLE DRIVEABILITY COMPUTER RELEARN PROCEDURE.

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. See CRANKSHAFT LEARN PROCEDURE.

Crankshaft Learn Procedure

1) The Powertrain Control Module (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 PCM, crankshaft, or crankshaft position sensor are replaced.

2) 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. If replacing PCM with a replacement PCM, procedure will be prompted automatically. Allow engine to idle until SERVICE light flashes. Hold engine speed between 3000-4000 RPM until light goes off after about 10-20 seconds.

NOTE: If any Diagnostic Trouble Codes (DTC) 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.

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. Perform 10 sets of upshifts (1-2, 2-3 and 3-4) at about 30 percent throttle.

3) 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.

4) Repeat step 3) 5 times. Vehicle driveability computer relearn procedure is now complete.

5) 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.

6) Repeat step 5) 5 times. Vehicle driveability computer

relearn procedure is now complete.

Passlock(TM) Anti-Theft Learn Procedure

Passlock(TM) learn procedure must be performed when Passlock(TM) sensor, BCM or PCM are replaced. If only Passlock sensor was replaced, Auto Learn method my be used. See PASSLOCK(TM) ANTI-THEFT AUTO LEARN METHOD. BCM or PCM replacement requires Seed And Key method. Seed And Key method require use of Tech 2 scan tool. See PASSLOCK(TM) ANTI-THEFT SEED AND KEY METHOD.

Passlock(TM) Anti-Theft Seed And Key Method

1) Check BCM and PCM for existing codes. If codes exist, repair and proceed to next step. If no codes exist, go to next step.

2) Install scan tool. Turn ignition switch to RUN position. Using Programming System, select Passlock relearn procedure. Wait for 10 minutes. When security light changes from flashing or on to off, turn ignition switch to OFF position. Vehicle should start on next ignition cycle.

NOTE: If ignition is turned off before security light changes state, relearn procedure must be restarted.

Passlock(TM) Anti-Theft Auto Learn Method

1) Check BCM and PCM for existing codes. If codes exist, repair and proceed to next step. If no codes exist, go to next step.

2) Turn ignition switch to RUN position. Momentarily rotate ignition to START position. DO NOT start vehicle. Wait for 10 minutes. When security light changes from flashing or on to off, turn ignition to OFF position. Perform this process 3 times. After the third time, vehicle should start on next ignition cycle.

NOTE: If ignition is turned off before security light changes state, relearn procedure must be restarted.

RELEARN PROCEDURES (TRUCKS & VANS)

* PLEASE READ THIS FIRST *

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. Body Control Module (BCM) must be programmed with proper Regular Production Option (RPO) configurations. Follow instructions on Techline Terminal and scan tool to program BCM.

ASTRO & SAFARI

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

Crankshaft Position (CKP) Sensor Variation Learn Procedure

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

* EEPROM was reprogrammed.
* If crankshaft position sensor was removed or replaced.
* Vehicle Control Module (VCM) was replaced.

2) Install scan tool on Data Link Connector (DLC). Apply parking brake. Block rear wheels. Ensure hood is closed.
3) Place transmission in Park (A/T models) or Neutral (M/T models). Start engine and warm engine until engine coolant temperature is at least 150øF (65øC). Ensure all accessories are off.
4) Apply service brakes. With engine idling, use scan tool to select and enable CKP sensor variation learn procedure.
5) 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 VCM will return engine control to the operator and engine will respond to throttle position.

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.

6) If CKP sensor variation learn procedure was completed, turn ignition off for at least 15 seconds and remove scan tool. If CKP sensor variation learn procedure was not completed, a DTC P1336 should be stored in the VCM. Perform test procedures for DTC P1336 and repair as necessary. See appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

Electronically Erasable Programmable Read Only Memory (EEPROM) Programming
1) If Vehicle Control Module (VCM) was replaced, the EEPROM in the VCM must be programmed. If EEPROM is not programmed, a Diagnostic Trouble Code (DTC) will be set in the VCM.
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.
3) Once EEPROM is reprogrammed, Crankshaft Position (CKP) sensor variation learn procedure and password learn procedure for anti-theft system must be performed. See CRANKSHAFT POSITION (CKP) SENSOR VARIATION LEARN PROCEDURE. See PASSWORD LEARN PROCEDURE FOR PASSLOCK(TM) ANTI-THEFT SYSTEM.

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

4) Once Crankshaft Position (CKP) sensor variation learn procedure and password learn procedure for anti-theft system are performed, perform powertrain On-Board Diagnostic (OBD) system check. See POWERTRAIN ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in appropriate

SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

NOTE: If BCM or VCM are replaced, modules must be programmed with vehicle configuration before performing Passlock(TM) reprogramming.

Password Learn Procedure For Passlock(TM) Anti-Theft System

1) Password learn procedure must be performed if Vehicle Control Module (VCM), passlock module or passlock sensor is replaced. A password is communicated between VCM and passlock module to provide engine operation. If VCM is replaced, the VCM must learn the password from the passlock module.

2) Momentarily rotate ignition switch to CRANK position, but do not start engine. Release switch to RUN position, but do not turn off. Wait 10 minutes and observe SECURITY indicator.

NOTE: Ensure battery is fully charged before proceeding. Ensure steps are followed in correct order or procedure may need to be repeated.

3) If passlock sensor was replaced, SECURITY indicator will flash for 10 minutes. If passlock module was replaced, SECURITY indicator will flash for a few seconds, then remain on for 10 minutes. If VCM was replaced with a new programmed VCM and connected to vehicle for the first time, vehicle will start and this procedure is not necessary. If replacement VCM was connected to any vehicle at any other time, SECURITY indicator will flash for a few seconds, then remain on for 10 minutes.

4) After 10 minutes, SECURITY indicator will turn off. Turn ignition off and wait 10 seconds.

5) Repeat programming procedure 2 more times. New security code is ready to be communicated. New password is learned on next ignition switch lock cylinder from OFF to CRANK to ON.

Vehicle Driveability Computer Relearn Procedure

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

BLAZER, BRAVADA, ENVOY, JIMMY, PICKUP & SONOMA

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

BCM Programming

This procedure requires Techline terminal and equipment. Ensure battery is fully charged. Ensure battery and lighter connectors are secure. Ensure DLC is accessible. Turn ignition on. Refer to Techline terminal and equipment user's instructions.

If BCM fails to program, check all BCM connections, check Techline terminal and equipment for latest software version. Retry programming. If BCM fails to program again, replace BCM. See BODY CONTROL MODULES - BLAZER, BRAVADA, ENVOY, JIMMY, SONOMA & S10 PICKUP article in ACCESSORIES & EQUIPMENT. Clear DTCs after programming.

Crankshaft Position (CKP) Sensor Variation Learn Procedure (2.2L & 4.3L)

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

* EEPROM was reprogrammed.
* If crankshaft position sensor was removed or replaced.
* Vehicle Control Module (VCM) was replaced.

2) Install scan tool on Data Link Connector (DLC). Apply parking brake. Block rear wheels. Ensure hood is closed.

3) Place transmission in Park (A/T models) or Neutral (M/T models). Start engine and warm engine until engine coolant temperature is at least 150øF (65øC). Ensure all accessories are off.

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

5) 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 VCM will return engine control to the operator and engine will respond to throttle position.

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.

6) If CKP sensor variation learn procedure was completed, turn ignition off for at least 15 seconds and remove scan tool. If CKP sensor variation learn procedure was not completed, a DTC P1336 should be stored in the VCM. Perform test procedures for DTC P1336 and repair as necessary. See appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

Electronically Erasable Programmable Read Only Memory (EEPROM) Programming (2.2L)

1) If Powertrain Control Module (PCM) was replaced, the EPROM in the PCM must be programmed. If EEPROM is not programmed, a Diagnostic Trouble Code (DTC) will be set in the PCM. 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. See CRANKSHAFT POSITION (CKP) SENSOR VARIATION LEARN PROCEDURE (2.2L & 4.3L).

Electronically Erasable Programmable Read Only Memory (EEPROM) Programming (4.3L)

1) If Vehicle Control Module (VCM) was replaced, the EEPROM in the VCM must be programmed. If EEPROM is not programmed, a

Diagnostic Trouble Code (DTC) will be set in the VCM.

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.

3) Once EEPROM has been reprogrammed, Crankshaft Position (CKP) sensor variation learn procedure and password learn procedure must be performed. See CRANKSHAFT POSITION (CKP) SENSOR VARIATION LEARN PROCEDURE (2.2L & 4.3L). See PASSLOCK(TM) ANTI-THEFT LEARN PROCEDURE. Once Crankshaft Position (CKP) sensor variation learn procedure and password learn procedure are performed, perform powertrain On-Board Diagnostic (OBD) system check. See POWERTRAIN ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE. If EEPROM programming fails, ensure all electrical connections on VCM are okay. Check Techline for latest software. If EEPROM programming still fails, replace VCM.

NOTE: This procedure allows relearning of BCM module or VCM/PCM learned data code after replacement of BCM module, Passlock(TM) sensor or VCM/PCM. DTC B3031 will set when entering programming mode.

Passlock(TM) Anti-Theft Learn Procedure

1) Turn ignition off. Replace failed component.

2) With transmission in Park (A/T) or Neutral (M/T), turn ignition switch momentarily to START position (engine will not start), then leave in RUN position. SECURITY indicator will stay on for 10 minutes. After 10 minutes, when light turns off, turn ignition switch to OFF position for 5 seconds.

3) Repeat step 2) twice more. Auto learn procedure will be completed during next start attempt. If VCM/PCM was replaced, reprogram VCM/PCM. See appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

4) Check for DTCs. If Passlock(TM) codes exist, go to ANTI-THEFT SYSTEMS - BLAZER, BRAVADA, ENVOY, JIMMY, SONOMA & S10 PICKUP article in ACCESSORIES & EQUIPMENT. If powertrain codes exist, go to applicable test. See appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

Vehicle Driveability Computer Relearn Procedure (2.2L)

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.

Vehicle Driveability Computer Relearn Procedure (4.3L)

Manufacturer does not provide a specified computer relearn procedure for obtaining proper driveability. If vehicle battery was disconnected or Vehicle Control Module (VCM) was replaced, driving the vehicle will enable the VCM to perform a computer relearn procedure for obtaining proper driveability. Inform customer that driveability

may differ from what they are accustomed to until the VCM completes the computer relearn procedure.

CUTAWAY, EXPRESS, RV CUTAWAY & SAVANA

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

NOTE: References to California models apply to California emission vehicles, which may be verified by underhood Emission Control label. California emissions may be available in other states.

Electronically Erasable Programmable Read Only Memory (EEPROM) Programming (4.3L, 4.8L, 5.0L, 5.3L, 5.7L & 6.0L)

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

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.

3) Once EEPROM is reprogrammed, Crankshaft Position (CKP) sensor variation learn procedure and password learn procedure for anti-theft system must be performed using proper procedure.

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

4) Once Crankshaft Position (CKP) sensor variation learn procedure and password learn procedure for anti-theft system are performed, perform powertrain On-Board Diagnostic (OBD) system check. See POWERTRAIN ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

Electronically Erasable Programmable Read Only Memory (EEPROM) Programming (7.4L)

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

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.

3) Once EEPROM is reprogrammed, use scan tool to reset Idle Air Control (IAC) valve. On Calif. models, go to next step. On Except Calif. models, go to step 5).

4) Once EEPROM is reprogrammed, password learn procedure for anti-theft system must be performed. See PASSWORD LEARN PROCEDURE FOR ANTI-THEFT SYSTEM (7.4L). Once password learn procedure for anti-theft system has been performed, perform powertrain On-Board Diagnostic (OBD) system check. See POWERTRAIN ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

NOTE: Crankshaft Position (CKP) sensor variation learn procedure should ONLY be performed on Except Calif. models. DO NOT perform CKP sensor variation learn procedure on Calif. models. Verify vehicle application by using underhood Emission Control label. If EEPROM programming fails, ensure all electrical connections on VCM are okay. Check Techline for latest software. If EEPROM programming still fails, replace VCM.

5) Once EEPROM is reprogrammed, Crankshaft Position (CKP) sensor variation learn procedure and password learn procedure for anti-theft system must be performed using proper procedure. Once Crankshaft Position (CKP) sensor variation learn procedure and password learn procedure for anti-theft system are performed, perform powertrain On-Board Diagnostic (OBD) system check. See POWERTRAIN ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

Powertrain Control Module (PCM) Programming (6.5L Diesel)

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

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

3) Perform password learn procedure for anti-theft system. See PASSWORD LEARN PROCEDURE FOR ANTI-THEFT SYSTEM (6.5L DIESEL). Once PCM is programmed, if only the PCM was replaced, go to next step. If the crankshaft position sensor, engine or PCM with fuel injection pump were replaced, perform TDC offset learn procedure. See TDC OFFSET LEARN PROCEDURE (6.5L DIESEL).

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

4) Start engine and warm engine until engine coolant temperature is at least 170øF (77øC). This will allow TDC offset to be programmed into the PCM if necessary. The PCM has the ability to determine the amount of offset required to bring the engine to TDC. PCM uses the TDC to determine proper fuel injection pump timing. If TDC offset is not programmed, a Diagnostic Trouble Code (DTC) P1214 will be set in the PCM.

TDC Offset Learn Procedure (6.5L Diesel)

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

* If sent here from Diagnostic Trouble Code (DTC) P1214.
* Engine has been replaced.
* Crankshaft position sensor or engine front cover has

been replaced.
* Powertrain Control Module (PCM) and fuel injection pump have been replaced.

NOTE: DO NOT perform procedure unless sent here from DTC P1214 or one of the components listed above have been replaced.

2) The PCM has the ability to determine amount of offset required to bring the engine to TDC when TDC offset is not present or has been cleared. This procedure must be performed to allow PCM to be updated with the correct TDC offset for vehicle application.
3) Install scan tool on Data Link Connector (DLC). Start engine and warm engine until engine coolant temperature is at least 170øF (77øC). Using scan tool, clear DTCs from PCM. Turn ignition on with engine off. Fully depress and hold throttle at full throttle for at least 45 seconds.
4) Turn ignition off for 30 seconds. Start engine. Verify scan tool indicates TDC offset has been cleared to zero. If TDC offset has been cleared to zero, go to next step. If TDC offset has not been cleared to zero, repeat step 3) until TDC offset has been cleared to zero.
5) With engine running, use scan tool to verify engine coolant temperature is greater than 170øF (77øC). It may be necessary to drive vehicle to obtain correct engine coolant temperature if engine coolant temperature is less than specified.
6) As soon at engine coolant temperature is greater than 170øF (77øC) and engine speed is less than 1500 RPM, the PCM automatically learns a NEW TDC offset. The NEW TDC offset will overwrite the previous TDC offset. Using scan tool, note NEW TDC offset. TDC offset should be -.25 to -.75.
7) Shut engine off. If TDC offset is not within specification, go to next step. If TDC offset is within specification, TDC offset learn procedure is complete.
8) Using Flange Nut Wrench (J41089), loosen fuel injection pump retaining nuts. Fuel injection pump must be rotated to change TDC offset. Rotating fuel injection pump .039" (1.00 mm) will change TDC offset about 2 degrees. Rotating fuel injection pump toward driver's side of vehicle will produce a positive (+) number and rotating fuel injection pump toward passenger's side of vehicle will produce a negative (-) number.
9) Using Fuel Injection Pump Wrench (J 29872-A), slightly rotate fuel injection pump. Tighten fuel injection pump retaining nuts.
10) Repeat step 3) through 9) until TDC offset is within specification. If proper TDC offset cannot be obtained, check the following:

* Ensure engine coolant temperature is greater than 170øF (77øC).
* Electric connectors at PCM are properly installed.
* Electric connectors at injection timing stepper motor on side of fuel injection pump is correctly installed.
* Ensure latest Techline software was used.
* Check for proper base installation of fuel injection

pump. The electric engine shutoff solenoid on top of fuel injection pump should be approximately straight up and down.

* Fuel injection pump may be defective, although manufacturer states this is highly unlikely.

Crankshaft Position (CKP) Sensor Variation Learn Procedure (4.3L, 5.0L, 5.7L & 7.4L Except Calif.)

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

* EEPROM was reprogrammed.
* If crankshaft position sensor was removed or replaced.
* Vehicle Control Module (VCM) was replaced.

2) Install scan tool on Data Link Connector (DLC). Apply parking brake. Block rear wheels. Ensure hood is closed.

3) Place transmission in Park (A/T models) or Neutral (M/T models). Start engine and warm engine until engine coolant temperature is at least 150øF (65øC). Ensure all accessories are off.

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

5) 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 VCM will return engine control to the operator and engine will respond to throttle position.

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.

6) If CKP sensor variation learn procedure was completed, turn ignition off for at least 15 seconds and remove scan tool. If CKP sensor variation learn procedure was not completed, a DTC P1336 should be stored in the VCM. Perform test procedures for DTC P1336 and repair as necessary. See appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

Password Learn Procedure For Anti-Theft System (4.3L, 5.0L & 5.7L)

1) Password learn procedure must be performed if Vehicle Control Module (VCM), passlock module or passlock sensor is replaced. A password is communicated between VCM and passlock module to provide engine operation. If VCM is replaced, the VCM must learn the password from the passlock module.

2) Attempt to start engine. Engine will start and then stall. After engine stalls, leave ignition on for 10 minutes. After engine stalls the SECURITY indicator light will come on for 10 minutes and then go off. The SECURITY indicator light is located on right corner of instrument panel, just to the right of battery charge indicator.

NOTE: Ensure battery is fully charged before proceeding. Ensure steps are followed in correct order or procedure may need to

be repeated.

3) After SECURITY indicator light goes off, turn ignition off for 30 seconds. Attempt to start engine and then leave ignition on. After engine has stalled, leave ignition on for 10 minutes. SECURITY indicator light will come on for 10 minutes and then go off. After SECURITY indicator light goes off, turn ignition off for 30 seconds.

4) Attempt to start engine and then leave ignition on. After engine has stalled, leave ignition on for 10 minutes. SECURITY indicator light will come on for 10 minutes and then go off.

5) Turn ignition off for 30 seconds. Turn ignition on and wait 30 seconds. Attempt to start engine. If engine starts, 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 appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

Password Learn Procedure For Anti-Theft System (6.5L Diesel)

1) Password learn procedure must be performed if Powertrain Control Module (PCM), passlock module or passlock sensor is replaced. A password is communicated between PCM and passlock module to provide engine operation. If PCM is replaced, the PCM must learn the password from the passlock module.

2) Attempt to start engine. Engine will start and then stall. After engine stalls, leave ignition on for 10 minutes. After engine stalls the SECURITY indicator light will come on for 10 minutes and then go off. SECURITY indicator light is located on right corner of instrument panel, just to the right of battery charge indicator.

NOTE: Ensure battery is fully charged before proceeding. Performing this procedure will cause a Diagnostic Trouble Code (DTC) P1630 to be set in the VCM. It will be necessary to use scan tool to check for DTC P1630 when performing this procedure. Ensure steps are followed in correct order or procedure may need to be repeated.

3) After SECURITY indicator light goes off, turn ignition off for 30 seconds. Attempt to start engine and then leave ignition on. After engine has stalled, leave ignition on for 10 minutes. SECURITY indicator light will come on for 10 minutes and then go off. After SECURITY indicator light goes off, turn ignition off for 30 seconds.

4) Attempt to start engine and then leave ignition on. After engine has stalled, leave ignition on for 10 minutes. SECURITY indicator light will come on for 10 minutes and then go off or until DTC 1630 is set in PCM.

5) Turn ignition off for 30 seconds. Turn ignition on and wait 30 seconds. Attempt to start engine. If engine starts, password learn procedure is complete. Ensure DTC 1630 is cleared from PCM by turning ignition off for 30 seconds and then turning ignition on again. If DTC 1630 is not cleared from PCM, perform test procedures for DTC 1630 and repair as necessary. See appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

NOTE: DTC 1630 will be set in PCM as result of this procedure. DTC P1630 may be cleared from PCM by turning ignition off for 30 seconds and then turning ignition on again.

6) 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 appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

Password Learn Procedure For Anti-Theft System (7.4L)

1) Password learn procedure must be performed if Vehicle Control Module (VCM), passlock module or passlock sensor is replaced. A password is communicated between VCM and passlock module to provide engine operation. If VCM is replaced, the VCM must learn the password from the passlock module.

2) Attempt to start engine. Engine will start and then stall. After engine stalls, leave ignition on for 10 minutes. After engine stalls the SECURITY indicator light will come on for 10 minutes and then go off. SECURITY indicator light is located on right corner of instrument panel, just to the right of battery charge indicator.

NOTE: Ensure battery is fully charged before proceeding. Performing this procedure will cause a Diagnostic Trouble Code (DTC) P1630 to be set in the VCM. It will be necessary to use scan tool to check for DTC P1630 when performing this procedure. Ensure steps are followed in correct order or procedure may need to be repeated.

3) After SECURITY indicator light goes off, turn ignition off for 30 seconds. Attempt to start engine and then leave ignition on. After engine has stalled, leave ignition on for 10 minutes. SECURITY indicator light will come on for 10 minutes and then go off. After SECURITY indicator light goes off, turn ignition off for 30 seconds.

4) Attempt to start engine and then leave ignition on. After engine has stalled, leave ignition on for 10 minutes. SECURITY indicator light will come on for 10 minutes and then go off or until DTC 1630 is set in VCM.

5) Turn ignition off for 30 seconds. Turn ignition on and wait 30 seconds. Attempt to start engine. If engine starts, password learn procedure is complete. Ensure DTC 1630 is cleared from VCM by turning ignition off for 30 seconds and then turning ignition on again. If DTC 1630 is not cleared from VCM, perform test procedures for DTC 1630 and repair as necessary. See appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

NOTE: DTC 1630 will be set in VCM as result of this procedure. DTC P1630 may be cleared from VCM by turning ignition off for 30 seconds and then turning ignition on again.

6) 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 appropriate SELF-DIAGNOSTICS article in ENGINE

PERFORMANCE.

Vehicle Driveability Computer Relearn Procedure (4.3L, 5.0L, 5.7L & 7.4L)

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

Vehicle Driveability Computer Relearn Procedure (6.5L Diesel)

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.

ESCALADE, PICKUP, SIERRA, SILVERADO, TAHOE, YUKON & YUKON XL

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

NOTE: References to California models apply to California emission vehicles, which may be verified by underhood Emission Control label. California emissions may be available in other states.

Crankshaft Position (CKP) Sensor Variation Learn Procedure (4.3L, 4.8L, 5.0L, 5.3L, 5.7L, 6.0L & 7.4L)

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

* EEPROM was reprogrammed.
* If crankshaft position sensor was removed or replaced.
* Vehicle Control Module (VCM) was replaced.

2) Install scan tool on Data Link Connector (DLC). Apply parking brake. Block rear wheels. Ensure hood is closed.

3) Place transmission in Park (A/T models) or Neutral (M/T models). Start engine and warm engine until engine coolant temperature is at least 150øF (65øC). Ensure all accessories are off.

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

5) 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 VCM will return engine control to the operator and engine will respond to throttle position.

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.

6) If CKP sensor variation learn procedure was completed, turn ignition off for at least 15 seconds and remove scan tool. If CKP sensor variation learn procedure was not completed, a DTC P1336 should be stored in the VCM. Perform test procedures for DTC P1336 and repair as necessary. See appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

Electronically Erasable Programmable Read Only Memory (EEPROM) Programming (4.3L, 5.0L & 5.7L)

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

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.

3) Once EEPROM is reprogrammed, Crankshaft Position (CKP) sensor variation learn procedure and password learn procedure for anti-theft system must be performed using proper procedure.

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

4) Once Crankshaft Position (CKP) sensor variation learn procedure and password learn procedure for anti-theft system are performed, perform powertrain On-Board Diagnostic (OBD) system check. See POWERTRAIN ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

Electronically Erasable Programmable Read Only Memory (EEPROM) Programming (7.4L)

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

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.

3) Crankshaft Position (CKP) sensor variation learn procedure should ONLY be performed on Except Calif. models. DO NOT perform CKP sensor variation learn procedure on Calif. models. Verify vehicle application by using underhood Emission Control label. If EEPROM programming fails, ensure all electrical connections on VCM are okay. Check Techline for latest software. If EEPROM programming still fails, replace VCM. Once EEPROM is reprogrammed, use scan tool to reset Idle Air Control (IAC) valve. On Calif. models, go to next step. On Except Calif. models, go to step 5).

4) Once EEPROM is reprogrammed, password learn procedure for anti-theft system must be performed using proper procedure. Once password learn procedure for anti-theft system has been performed, perform powertrain On-Board Diagnostic (OBD) system check. See

POWERTRAIN ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

5) Once EEPROM is reprogrammed, Crankshaft Position (CKP) sensor variation learn procedure and password learn procedure for anti-theft system must be performed using proper procedure. Once Crankshaft Position (CKP) sensor variation learn procedure and password learn procedure for anti-theft system are performed, perform powertrain On-Board Diagnostic (OBD) system check. See POWERTRAIN ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

Powertrain Control Module (PCM) Programming (4.8L, 5.3L & 6.0L)

1) Ensure battery is fully charged. Turn ignition on. Program PCM using the Techline equipment manufacturer's instructions and latest software applicable for the vehicle model.

2) Once PCM is reprogrammed, Crankshaft Position (CKP) sensor variation learn procedure, password learn procedure for anti-theft system, and PCM idle learn procedure must be performed.

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

Powertrain Control Module (PCM) Programming (6.5L Diesel)

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

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

3) Perform password learn procedure for anti-theft system using proper procedure. Once PCM is programmed, if only the PCM was replaced, go to next step. If the crankshaft position sensor, engine or PCM with fuel injection pump were replaced, perform TDC offset learn procedure. See TDC OFFSET LEARN PROCEDURE (6.5L DIESEL).

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

4) Start engine and warm engine until engine coolant temperature is at least 170øF (77øC). This will allow TDC offset to be programmed into the PCM if necessary. The PCM has the ability to determine the amount of offset required to bring the engine to TDC. PCM uses the TDC offset to determine proper fuel injection pump timing. If TDC offset is not programmed, a Diagnostic Trouble Code (DTC) P1214 will be set in the PCM.

Password Learn Procedure For Anti-Theft System (4.3L, 4.8L, 5.3L & 6.0L)

1) Password relearn procedure must be performed if passlock sensor, Body Control Module (BCM), PCM or Vehicle Control Module (VCM) are replaced. Ensure battery is fully charged.

2) Using scan tool, erase Diagnostic Trouble Codes (DTC). Turn ignition switch from OFF to CRANK position, allowing vehicle to try and start. Vehicle will start and then stall. Leave ignition on while observing SECURITY indicator on instrument panel. When security indicator turns off (after about 10 minutes), turn ignition off. Wait 10 seconds. Repeat this step 3 more times. New password will be learned on next start attempt.

Password Learn Procedure For Anti-Theft System (5.0L, 5.7L & 7.4L)

1) Password learn procedure must be performed if Vehicle Control Module (VCM), passlock module or passlock sensor is replaced. A password is communicated between VCM and passlock module to provide engine operation. If VCM is replaced, the VCM must learn the password from the passlock module.

2) Attempt to start engine. Engine will start and then stall. After engine stalls, leave ignition on for 10 minutes. After engine stalls, the SECURITY indicator light will come on for 10 minutes and then go off. The SECURITY indicator light is located on upper right corner of instrument panel, just above battery charge indicator.

NOTE: Ensure battery is fully charged before proceeding. Performing this procedure will cause a Diagnostic Trouble Code (DTC) P1630 to be set in the VCM. It will be necessary to use scan tool to check for DTC P1630 when performing this procedure. Ensure steps are followed in correct order or procedure may need to be repeated.

3) After SECURITY indicator light goes off, turn ignition off for 30 seconds. Attempt to start engine and then leave ignition on. After engine has stalled, leave ignition on for 10 minutes. SECURITY indicator light will come on for 10 minutes and then go off. After SECURITY indicator light goes off, turn ignition off for 30 seconds.

4) Attempt to start engine and then leave ignition on. After engine has stalled, leave ignition on for 10 minutes. SECURITY indicator light will come on for 10 minutes and then go off or until DTC 1630 is set in VCM.

5) Turn ignition off for 30 seconds. Turn ignition on and wait 30 seconds. Attempt to start engine. If engine starts, password learn procedure is complete. Ensure DTC 1630 is cleared from VCM by turning ignition off for 30 seconds and then turning ignition on again. If DTC 1630 is not cleared from VCM, perform test procedures for DTC 1630 and repair as necessary. See appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

NOTE: DTC 1630 will be set in VCM as result of this procedure. DTC P1630 may be cleared from VCM by turning ignition off for 30 seconds and then turning ignition on again.

6) 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 appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

Password Learn Procedure For Anti-Theft System (6.5L Diesel)

1) Password learn procedure must be performed if Powertrain Control Module (PCM), passlock module or passlock sensor is replaced. A password is communicated between PCM and passlock module to provide engine operation. If PCM is replaced, the PCM must learn the password from the passlock module.

2) Attempt to start engine. Engine will start and then stall. After engine stalls, leave ignition on for 10 minutes. After engine stalls, the SECURITY indicator light will come on for 10 minutes and then go off. SECURITY indicator light is located on upper right corner of instrument panel, just above battery charge indicator. After SECURITY indicator light goes off, turn ignition off for 30 seconds.

NOTE: Ensure battery is fully charged before proceeding. Performing this procedure will cause a Diagnostic Trouble Code (DTC) P1630 to be set in the VCM. It will be necessary to use scan tool to check for DTC P1630 when performing this procedure. Ensure steps are followed in correct order or procedure may need to be repeated.

3) Attempt to start engine and then leave ignition on. After engine has stalled, leave ignition on for 10 minutes. SECURITY indicator light will come on for 10 minutes and then go off. After SECURITY indicator light goes off, turn ignition off for 30 seconds.

4) Attempt to start engine and then leave ignition on. After engine has stalled, leave ignition on for 10 minutes. SECURITY indicator light will come on for 10 minutes and then go off or until DTC 1630 is set in PCM.

5) Turn ignition off for 30 seconds. Turn ignition on and wait 30 seconds. Attempt to start engine. If engine starts, password learn procedure is complete. Ensure DTC 1630 is cleared from PCM by turning ignition off for 30 seconds and then turning ignition on again. If DTC 1630 is not cleared from PCM, perform test procedures for DTC 1630 and repair as necessary. See appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

NOTE: DTC 1630 will be set in PCM as result of this procedure. DTC P1630 may be cleared from PCM by turning ignition off for 30 seconds and then turning ignition on again.

6) 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 appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE.

TDC Offset Learn Procedure (6.5L Diesel)

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

* If sent here from Diagnostic Trouble Code (DTC) P1214.
* Engine has been replaced.
* Crankshaft position sensor or engine front cover has been replaced.
* Powertrain Control Module (PCM) and fuel injection pump have been replaced.

NOTE: DO NOT perform procedure unless sent here from DTC P1214 or one of the components listed above has been replaced.

2) The PCM has the ability to determine amount of offset required to bring the engine to TDC when TDC offset is not present or has been cleared. This procedure must be performed to allow PCM to be updated with the correct TDC offset for vehicle application.

3) Install scan tool on Data Link Connector (DLC). Start engine and warm engine until engine coolant temperature is at least 170øF (77øC). Using scan tool, clear DTCs from PCM. Turn ignition on with engine off. Fully depress and hold throttle at full throttle for at least 45 seconds.

4) Turn ignition off for 30 seconds. Start engine. Verify scan tool indicates TDC offset has been cleared to zero. If TDC offset has been cleared to zero, go to next step. If TDC offset has not been cleared to zero, repeat step 3) until TDC offset has been cleared to zero.

5) With engine running, use scan tool to verify engine coolant temperature is greater than 170øF (77øC). It may be necessary to drive vehicle to obtain correct engine coolant temperature if engine coolant temperature is less than specified.

6) As soon at engine coolant temperature is greater than 170øF (77øC) and engine speed is less than 1500 RPM, the PCM automatically learns a NEW TDC offset. The NEW TDC offset will overwrite the previous TDC offset. Using scan tool, note NEW TDC offset. TDC offset should be -.25 to -.75.

7) Shut engine off. If TDC offset is not within specification, go to next step. If TDC offset is within specification, TDC offset learn procedure is complete.

8) Using Flange Nut Wrench (J41089), loosen fuel injection pump retaining nuts. Fuel injection pump must be rotated to change TDC offset. Rotating fuel injection pump .039" (1.00 mm) will change TDC offset about 2 degrees. Rotating fuel injection pump toward driver's side of vehicle will produce a positive (+) number and rotating fuel injection pump toward passenger's side of vehicle will produce a negative (-) number.

9) Using Fuel Injection Pump Wrench (J 29872), slightly rotate fuel injection pump. Tighten fuel injection pump retaining nuts.

10) Repeat steps 3) through 9) until TDC offset is within specification. If proper TDC offset cannot be obtained, check the following:

* Ensure engine coolant temperature is greater than 170øF (77øC).
* Electric connectors at PCM are properly installed.
* Electric connectors at injection timing stepper motor

on side of fuel injection pump is correctly installed.
* Ensure latest Techline software was used.
* Check for proper base installation of fuel injection pump. The electric engine shutoff solenoid on top of fuel injection pump should be approximately straight up and down.
* Fuel injection pump may be defective, although manufacturer states this is highly unlikely.

Vehicle Driveability Computer Relearn Procedure (4.8L, 5.3L & 6.0L)

1) On manual transmission vehicles, go to next step. On automatic transmission vehicles, turn ignition off. Reconnect PCM battery connection. Turn A/C off. Set parking brake and block drive wheels. Start and run engine so coolant reaches 176øF (80øC). Shift transmission into Drive. Idle engine for 5 minutes. Shift transmission into Park. Idle engine another 5 minutes. Turn engine off for 30 seconds. PCM relearn procedure is completed.

2) On manual transmission vehicles, turn ignition off. Reconnect PCM battery connection. Turn A/C off. Set parking brake and block drive wheels. Shift transmission into Neutral. Start and run engine so coolant reaches 176øF (80øC). Idle engine for 5 minutes. Turn engine off for 30 seconds. PCM relearn procedure is completed.

Vehicle Driveability Computer Relearn Procedure (4.3L, 5.0L, 5.7L & 7.4L)

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

Vehicle Driveability Computer Relearn Procedure (6.5L Diesel)

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.

MONTANA, SILHOUETTE & VENTURE

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

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 PCM after a learn procedure has been performed. If actual CKP sensor values are not within specification, DTC P0300 will be stored in the PCM.

3) Using scan tool, check for stored DTCs. See appropriate SELF-DIAGNOSTICS 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 appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE. Ensure all DTCs are learned from PCM. Go to next step.

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 158øF (70øC). Turn ignition off.

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

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

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.

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

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 appropriate SELF-DIAGNOSTICS 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 appropriate SELF-DIAGNOSTICS 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.

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. New PCM must learn Pass Key(R) password. See PASS-KEY(R) III MODULE PROGRAMMING.

4) Once EEPROM has been reprogrammed, perform powertrain On-Board Diagnostic (OBD) system check. See POWERTRAIN ON-BOARD DIAGNOSTIC (OBD) SYSTEM CHECK in appropriate SELF-DIAGNOSTICS article in ENGINE PERFORMANCE. Ensure engine is idling for one minute before checking for DTCs when performing powertrain OBD system check. Also, after EEPROM has been reprogrammed, the Crankshaft Position (CKP) sensor variation learn procedure must be performed. See CRANKSHAFT POSITION (CKP) SENSOR VARIATION LEARN PROCEDURE.

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.

PASS-Key(R) III Module Programming

NOTE: New modules are unprogrammed. New module automatically learns first key used to start engine. New module can only be programmed once.

NOTE: PASS-Key(R) III system auto learn procedure must be performed if all keys are lost, or 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.

PASS-Key(R) III System Auto Learn Procedure

1) Insert a valid mechanical coded unlearned ignition key in the ignition switch. Place ignition switch in RUN position. The SECURITY indicator light will flash once per second for 10 minutes for the length of the auto learn timer.

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

3) Repeat steps 1) and 2) 2 more times. Insert the newly learned ignition key in ignition switch.

4) Place ignition switch in RUN position. The SECURITY indicator light should remain off to indicate that ignition key was learned. This will be the only learned key. To program more keys, see PASS-KEY(R) III SYSTEM QUICK LEARN PROCEDURE. If security indicator does not remain off, repeat procedure.

NOTE: PASS-Key(R) III system quick learn procedure is used to learn additional ignition keys. A learned key must be used to initiate procedure. Up to 10 ignition keys can be learned.

PASS-Key(R) III System Quick Learn Procedure

1) Insert a valid ignition key in the ignition switch. Turn ignition on. After 2 second bulb test, turn ignition off and remove key.

2) Within 10 seconds, insert new valid mechanical code unlearned key and turn ignition switch to RUN position. Security light will illuminate until key is learned. This may happen so quickly light illumination is not observed. Turn ignition off. Remove ignition key 10 seconds after light goes out.

3) To learn additional keys, repeat step 2). To exit procedure, turn ignition off for more than 10 seconds.

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.

TRACKER

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.

END OF ARTICLE