

2013 ACCESSORIES & EQUIPMENT

Programming and Setup - Malibu

DIAGNOSTIC INFORMATION AND PROCEDURES

CONTROL MODULE REFERENCES

Reference Information

- [Data Link References](#)
- [Diagnostic System Check - Vehicle](#)
- [Diagnostic Trouble Code \(DTC\) List - Vehicle](#)
- [Symptoms - Vehicle](#)

Control Module References

Code	Control Module/Scan Tool Information	Schematic	Repair Instruction	Programming and Setup
A11	Radio Scan Tool Information	Radio/Navigation System Schematics	Radio Replacement	Radio Programming and Setup
A20	Radio/HVAC Controls	Radio/Navigation System Schematics	Radio Control Assembly Replacement	Radio Control Programming and Setup
K9	Body Control Module Scan Tool Information	Body Control System Schematics	Body Control Module Replacement	Body Control Module Programming and Setup
K16	Battery Energy Control Module Scan Tool Information	Hybrid/EV Energy Storage Schematics	Battery Energy Control Module Replacement	Battery Energy Control Module Programming and Setup
K17	Electronic Brake Control Module Scan Tool Information	Antilock Brake System Schematics	Electronic Brake Control Module Replacement	Electronic Brake Control Module Programming and Setup
K20	K20 Engine Control Module: Scan Tool Information (LCV or LUK) , K20 Engine Control Module: Scan Tool Information (LTG)	Engine Controls Schematics - 2.0L (LTG) or 2.5L (LCV) engine or Engine Controls Schematics - 2.2L or 2.4L engine	Engine Control Module Replacement (LCV) , Engine Control Module Replacement (LTG) - 2.0L (LTG) or 2.5L (LCV) engine or Engine Control Module Replacement - 2.2L or 2.4L engine	K20 Engine Control Module: Programming and Setup
		Engine Controls		

K27	<u>Fuel Pump Flow Control Module Scan Tool Information</u>	<u>Schematics</u> - 2.2L or 2.4L engine or <u>Active Grille Air Shutter Schematics</u> (For this vehicle with the 2.0L (LTG) or 2.5L (LCV) engine, the fuel pump flow control module controls the active grille air shutter only)	<u>Fuel Pump Flow Control Module Replacement</u> - 2.2L or 2.4L engine or <u>Fuel Pump Flow Control Module Replacement</u> - 2.0L (LTG) or 2.5L (LCV) engine	<u>Fuel Pump Control Module Programming and Setup</u>
K29	<u>Driver Seat and Passenger Seat Heater Control Module Scan Tool Information</u>	<u>Heated/Cooled Seat Schematics</u>	<u>Front Seat Heater Control Module Replacement</u>	<u>Heated Seat Control Module Programming and Setup</u>
K33	<u>Heating, Ventilation and Air Conditioning Control Module Scan Tool Information</u>	<u>HVAC Schematics</u> (with C68) or <u>HVAC Schematics</u> (with C60)	<u>Heater and Air Conditioning Remote Control Replacement</u> (with C68) or <u>Heater and Air Conditioning Remote Control Replacement (Module)</u> (with C60)	<u>HVAC System Control Module Programming and Setup</u>
K36	<u>Inflatable Restraint Sensing and Diagnostic Module Scan Tool Information</u>	<u>SIR Schematics</u>	<u>Airbag Sensing and Diagnostic Module Replacement</u>	<u>Inflatable Restraint Sensing and Diagnostic Module Programming and Setup</u>
K40	<u>Seat Memory Control Module Scan Tool Information</u>	<u>Driver Seat Schematics</u>	<u>Driver or Passenger Seat Adjuster Memory Module Replacement</u>	<u>Memory Seat Control Module Programming and Setup</u>
K41R	<u>Object Alarm Module Scan Tool Information</u>	<u>Object Detection Schematics</u>	<u>Rear Object Alarm Replacement</u>	<u>Object Alarm Module Programming and Setup</u>
K43	<u>Power Steering Control Module Scan Tool Information</u>	<u>Power Steering Schematics</u>	<u>Power Steering Assist Motor Replacement</u>	<u>Power Steering Control Module Programming and Setup</u>
K59/K107A	Generator Control Module • <u>Hybrid Powertrain Control Module Scan Tool Information</u>	<u>Hybrid/EV Controls Schematics</u>	<u>Generator Control Module Replacement</u>	<u>Generator Control Module Programming and Setup</u>

	• <u>Drive Motor Control Module Scan Tool Information</u>			
K71	Control Solenoid Valve and Transmission Control Module Assembly <u>Transmission Control Module Scan Tool Information (6T30/6T40/6T45/6T50)</u> , <u>Transmission Control Module Scan Tool Information (6T70/6T75)</u>	<u>Automatic Transmission Controls Schematics</u> - 6T30/6T40/6T45/6T50 transmission or <u>Automatic Transmission Controls Schematics</u> - 6T70/6T75 transmission	<u>Control Solenoid Valve and Transmission Control Module Assembly Replacement</u> - 6T30/6T40/6T45/6T50 transmission or <u>Control Solenoid Valve and Transmission Control Module Assembly Replacement</u> - 6T70/6T75 transmission	<u>Control Solenoid Valve and Transmission Control Module Assembly Programming and Setup (6T30/6T40/6T45/6T50)</u> <u>Control Solenoid Valve and Transmission Control Module Assembly Programming and Setup (6T70/6T75)</u>
K73	<u>Communication Interface Module Scan Tool Information</u>	<u>OnStar/Telematics Schematics</u>	<u>Communication Interface Module Replacement</u>	<u>Communication Interface Module Programming and Setup</u>
K77	Remote Control Door Lock Receiver	<u>Remote Function Schematics</u>	<u>Remote Control Door Lock Receiver Replacement (Without HP6)</u> , <u>Remote Control Door Lock Receiver Replacement (With HP6)</u>	<u>Remote Control Door Lock Receiver Programming and Setup</u>
K83	<u>Electronic Parking Brake Control Module Scan Tool Information</u>	<u>Park Brake System Schematics</u>	<u>Electronic Parking Brake Control Module Replacement</u>	<u>Electronic Parking Brake Control Module Programming and Setup</u>
K84	<u>Keyless Entry Control Module Scan Tool Information</u>	<u>Remote Function Schematics</u>	<u>Keyless Entry Control Module Replacement</u>	<u>Keyless Entry Control Module Programming and Setup</u>
K85	<u>Inflatable Restraint Passenger Presence System Scan Tool Information</u>	<u>SIR Schematics</u>	<u>Airbag Front Passenger Presence Sensor Replacement</u>	<u>Passenger Presence System Programming and Setup</u>
			<u>Theft Deterrent Module Replacement</u>	<u>Theft Deterrent Modul</u>

K89	Immobilizer Control Module	<u>Immobilizer Schematics</u>	<u>(With BTM) , Theft Deterrent Module Replacement (Without BTM)</u>	<u>Programming and Setup</u>
K109	<u>Front View Camera Module Scan Tool Information</u>	<u>Object Detection Schematics</u>	<u>Front View Camera Replacement</u>	<u>Front View Camera Module Programming and Setup</u>
K111	Fuel Pump Driver Control Module (Refer to ECM for scan tool information)	<u>Engine Controls Schematics</u>	<u>Fuel Pump Power Control Module Replacement</u> (AKA Fuel Pump Driver Control Module)	This device does not require programming and setup
M69	Sunroof Motor	<u>Sunroof Schematics</u>	<u>Sunroof Module Assembly Replacement</u>	<u>Sunroof Control Module Programming and Setup</u>
P16	<u>Instrument Cluster Scan Tool Information</u>	<u>Instrument Cluster Schematics</u>	<u>Instrument Cluster Replacement</u>	<u>Instrument Cluster Programming and Setup</u>
S25	Garage Door Opener	<u>Remote Function Schematics</u>	<u>Garage Door Opener Transmitter Replacement</u>	<u>Garage Door Opener Programming and Setup</u>
T3	Audio Amplifier	<u>Radio/Navigation System Schematics</u>	<u>Radio Speaker Amplifier Replacement</u>	<u>Audio Amplifier Programming and Setup</u>

REPAIR INSTRUCTIONS

AUDIO AMPLIFIER PROGRAMMING AND SETUP

Replace and Program ECU or Reprogram ECU

This ECU does not require SPS programming or any setup procedures.

BATTERY ENERGY CONTROL MODULE PROGRAMMING AND SETUP

NOTE:

- DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the ECU is not properly configured with the correct calibration software, the ECU will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or ECU damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. Install

the **EL-49642 SPS Programming Support Tool** to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. **DO NOT** connect a battery charger.

- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

Diagnostic Aids

Replace and Program ECU or Reprogram ECU

To program a replacement or an existing ECU, perform the following procedure:

1. Install the **EL-49642** SPS programming support tool.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select Battery Energy Control Module - Programming and follow the on-screen instructions.
4. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. **DO NOT** turn the ignition OFF. Ensure that all ECU, DLC and programming tool connections are secure and the TIS terminal operating software is up to date.
2. Attempt to reprogram the ECU.
3. If the ECU can still not be programmed, turn the ignition OFF for at least one minute.
4. Turn the ignition ON and attempt to reprogram the ECU. The ECU should program.
 - o If the ECU still cannot be programmed, replace the ECU.

BODY CONTROL MODULE PROGRAMMING AND SETUP

NOTE:

- **DO NOT** program a control module unless directed to by a service procedure or a service bulletin. If the control module is not properly configured with the correct calibration software, the control module will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may

occur.

- **Stable battery voltage is critical during programming.** Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required install the EL-49642 SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. **DO NOT** connect a battery charger.
- **Turn OFF or disable systems that may put a load on the vehicles battery** such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- **During the programming procedure, follow the SPS prompts for the correct ignition switch position.**
- **Clear DTCs after programming is complete.** Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

Reference Information

Special Tools

- **EL-49642** SPS Programming Support Tool
- **EL-46079** Tire Pressure Monitor Diagnostic Tool

For equivalent regional tools, refer to **Special Tools**.

Replace and Program Control Module

To program a replacement K9 Body Control Module (BCM), perform the following procedure:

1. Install **EL-49642** SPS programming support tool.

NOTE: **Make sure the vehicle ignition switch state is in appropriate position for the following step.**

- **For Key Ignition System, begin with the ignition in the RUN position.**
- **For Push Button Start System, begin with the vehicle in vehicle OFF power mode. The Service Programming System will power mode the vehicle.**

2. Access the Service Programming System (SPS) and follow the on-screen instructions.

NOTE: **The BCM Configuration is only required if this option is available on the SPS Supported Controllers screen. Please note that the BCM Configuration in step 3 is different from the BCM Setup in step 7.**

3. On the SPS Supported Controllers screen, select K9 Body Control Module - Configuration and follow the

on-screen instructions (if applicable).

4. On the SPS Supported Controllers screen, select K9 Body Control Module - Programming and follow the on-screen instructions.
5. Perform the following for the appropriate ignition type prior to proceeding with the next step:
 - Key Ignition System: Key in the ignition and any additional keys must be away from the vehicle at least 3 m.
 - Push Button Start System: Keyless entry transmitter must be in the programming pocket. Refer to the owner manual for the exact pocket location. All additional transmitters must be away from the vehicle at least 3 m.

NOTE: The following programming step may take between 10-12 min and progress will appear to have stopped during this process. This is a normal security timer response and a restart should not be performed. If the DTC B389A set immediately after programming a replacement BCM, the Immobilizer Learn procedure was not properly completed. The Immobilizer Learn procedure needs to be performed again.

6. On the SPS Supported Controllers screen, select IMMO Immobilizer Learn - Setup. On the next screen, select Body Control Module IMMO Learn with Existing Transponder or Remote Key and follow the on-screen instructions. When Immobilizer Learn is complete, press the Unlock button on the keyless entry transmitter to allow the keyless entry transmitter to exit the Immobilizer Learn mode.

NOTE: When performing the Tire Pressure Monitor Sensor Learn during BCM setup, the EL-46079 tire pressure monitor diagnostic tool must be used to activate each tire pressure sensor for vehicles with UJM.

- For Key Ignition System, begin with the ignition in the RUN position.
- For Push Button Start System, begin with the vehicle in vehicle ON power mode.

7. On the SPS Supported Controllers screen, select K9 Body Control Module - Setup and follow the on-screen instructions.
8. Check the driver information center display for additional messages regarding further calibration instructions. If there are no additional driver information center instructions present, programming is complete.
9. At the end of programming, choose the "Clear DTCs" function on the SPS screen.
10. If ABS, Traction Control and/or Stabilitrak indicators are ON and DTC C0161 is set in the K17 Electronic Brake Control Module after performing BCM programming and setup, do the following:
 1. Disconnect the scan tool from the X84 Data Link Connector.
 2. Ignition OFF, all access doors closed, all vehicle systems OFF, and all keys at least 3 m (9.8 ft) away from the vehicle. It may take up to 2 min to power down.
 3. Ignition ON, verify DTC C0161 is in history. If not, repeat the above step to make sure the vehicle is in sleep mode.
 4. Use the scan tool to clear the DTCs.

Reprogram Control Module

To program an existing K9 Body Control Module, perform the following procedure:

1. Install **EL-49642** SPS programming support tool.

NOTE: Make sure the vehicle ignition switch state is in appropriate position for the following step.

- For Key Ignition System, begin with the ignition in the RUN position.
- For Push Button Start System, begin with the vehicle in vehicle ON power mode.

2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K9 Body Control Module - Programming and follow the on-screen instructions.

NOTE: When performing the Tire Pressure Monitor Sensor Learn during BCM setup, the **EL-46079** tire pressure monitor diagnostic tool must be used to activate each tire pressure sensor for vehicles with UJM.

4. On the SPS Supported Controllers screen, select K9 Body Control Module - Setup and follow the on-screen instructions.
5. Check the driver information center display for additional messages regarding further calibration instructions. If there are no additional driver information center instructions present, programming is complete.
6. At the end of programming, choose the "Clear DTCs" function on the SPS screen.
7. If ABS, Traction Control and/or Stabilitrak indicators are ON and DTC C0161 is set in the K17 Electronic Brake Control Module after performing BCM programming and setup, do the following:
 1. Disconnect the scan tool from the X84 Data Link Connector.
 2. Ignition OFF, all access doors closed, all vehicle systems OFF, and all keys at least 3 m (9.8 ft) away from the vehicle. It may take up to 2 min to power down.
 3. Ignition ON, verify DTC C0161 is in history. If not, repeat the above step to make sure the vehicle is in sleep mode.
 4. Use the scan tool to clear the DTCs.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.
 - If the control module cannot be reprogrammed

1. Ignition OFF for one minute, ignition ON.
2. Verify the control module can be reprogrammed.
 - If the control module cannot be reprogrammed, replace the control module.
 - If the control module can be reprogrammed.
3. All OK.
 - **If the control module can be reprogrammed**
3. All OK.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

Control Module References for Control Module replacement, programming and setup

COMMUNICATION INTERFACE MODULE PROGRAMMING AND SETUP

Special Tools

EL-49642 SPS Programming Support Tool

For equivalent regional tools, refer to **Special Tools**.

Each of the following service procedures require programming or setup procedures to be performed on the communication interface module.

Communication Interface Module Replacement

NOTE:

- It is critical to use the service replacement Communication Interface Module only in the vehicle for which it was ordered.
- Failure to perform the following procedures will result in a red LED, DTC(s) being set, and limited or incomplete OnStar® services.
- An OnStar® button press to the OnStar® call center is not required to complete the procedure.
- It may take up to 24 hours for OnStar® service to become fully activated after performing the procedures.
- Perform the following procedure only once. Repeat attempts of the procedure may result in a delay of the activation process.
- To fully activate an OnStar® module, both the setup and activation request procedures must be completed on all vehicles with and without an active OnStar® subscription to insure the unit has been setup properly for the vehicle it has been installed into and also to update the OnStar® with the correct unit information.
- To initialize the Turn-by-Turn feature, the vehicle must first be driven in open sky condition at speeds greater than 10 mph (16 kph) or more for a

minimum of 5 miles (8 km), and perform at least 2 left and 2 right 90 degree turns coming to complete stops prior to each turn.

- On vehicles up fitted with TTY capabilities, it is necessary to perform a power cycle of the OnStar® Interface Module (OTIM), and toggle the TTY mode after completing the Communication Interface Module installation and setup procedures.

1. Install **EL-49642** SPS programming support tool.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select ONSU Onstar® Module Setup and Service Activation and follow the on-screen instructions.
4. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.
5. The default language for the new Communication Interface Module is English. To change to an alternate language, access the scan tool.
6. Inform the customer that it may take up to 24 hours for the OnStar® service to become fully activated.

CONTROL SOLENOID VALVE AND TRANSMISSION CONTROL MODULE ASSEMBLY PROGRAMMING AND SETUP (6T30/6T40/6T45/6T50)

The following service procedures require either a programming or a setup event be performed for a complete repair. The transmission control module (TCM) is part of the control solenoid valve assembly, and is not serviced separately.

Transmission Control Module (TCM) Replacement

If the TCM is replaced, the following procedures must be performed:

1. TCM Reprogramming
2. The Transmission Adaptive Values Learn. Refer to **Transmission Adaptive Values Learn** .

TCM Reprogramming

NOTE:

- Use a scan tool to view and record the Transmission Control Module - End Model Part Number in the original TCM prior to starting the TCM reprogramming procedure.
- In some cases, the TCM and ECM may have to be reprogrammed. When a selection for TCM Transmission Control Module - Programming is not available, select SEQ Programming Sequence ECM/TCM (Automatic Transmission Only).

1. If the TCM needs to be reprogrammed. Refer to **Service Programming System (SPS)**.
2. Perform the Transmission Adaptive Values Learn. Refer to **Transmission Adaptive Values Learn** .

NOTE: After programming, perform the following to avoid future misdiagnosis:

1. Turn the ignition OFF for 30 seconds.
2. Turn the ignition ON with the engine OFF.
3. Use the scan tool in order to retrieve history DTCs from all modules.
4. Clear all history DTCs.

Setup for Component Replacement

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

If any of the following components are replaced, the **Transmission Adaptive Values Learn** procedure must be performed:

- Transmission replacement
- Any internal transmission repair
- Any speed sensor

Refer to **Transmission Adaptive Values Learn** .

CONTROL SOLENOID VALVE AND TRANSMISSION CONTROL MODULE ASSEMBLY PROGRAMMING AND SETUP (6T70/6T75)

NOTE:

- **DO NOT** program a control module unless directed to by a service procedure or a service bulletin. If the control module is not properly configured with the correct calibration software, the control module will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install the EL-49642 SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. **DO NOT** connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

Reference Information

Special Tools

EL-49642 SPS Programming Support Tool

For equivalent regional tools, refer to **Special Tools**.

Replace and Program Control Module

To program a replacement transmission control module (TCM), perform the following procedure:

1. Install **EL-49642** SPS Programming Support Tool.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select Transmission Control Module - Programming and follow the on-screen instructions.
4. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.
5. With a scan tool, perform the Reset Transmission Adapts. Refer to **Reset Transmission Adapts**.

Reprogram Control Module

To reprogram an existing TCM, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select Transmission Control Module - Programming and follow the on-screen instructions.
3. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.
4. With a scan tool, perform the Reset Transmission Adapts. Refer to **Reset Transmission Adapts**.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.
 - **If the control module cannot be reprogrammed**
 1. Ignition OFF for one minute, ignition ON.
 2. Verify the control module can be reprogrammed.
 - If the control module cannot be reprogrammed, replace the control module.
 - If the control module can be reprogrammed.
 3. All OK.
 - **If the control module can be reprogrammed**
3. All OK.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

Refer to **Control Module References** for control module replacement, programming, and setup.

ELECTRONIC BRAKE CONTROL MODULE PROGRAMMING AND SETUP

NOTE:

- **DO NOT** program a control module unless directed to by a service procedure or a service bulletin. If the control module is not properly configured with the correct calibration software, the control module will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required install the EL-49642 SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. **DO NOT** connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K17 Electronic Brake Control Module - Programming and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K17 Electronic Brake Control Module - Setup and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select K17 Electronic Brake Control Module - Configuration and follow the on-screen instructions.
5. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.
6. With a scan tool, perform the Brake Pressure Sensor Calibration. Refer to **Brake Pressure Modulator Valve Pressure Sensor Calibration** .
7. With a scan tool, perform the Steering Wheel Angle Sensor Learn. Refer to **Steering Angle Sensor Centering** .

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.
 - **If the control module cannot be reprogrammed**
 1. Ignition OFF for one minute, ignition ON.
 2. Verify the control module can be reprogrammed.
 - If the control module cannot be reprogrammed, replace the control module.
 - If the control module can be reprogrammed.
 3. All OK.
 - **If the control module can be reprogrammed**
3. All OK.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

Control Module References for Control Module replacement, programming and setup

ELECTRONIC PARKING BRAKE CONTROL MODULE PROGRAMMING AND SETUP

NOTE:

- **DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the ECU is not properly configured with the correct calibration software, the ECU will not control all of the vehicle features properly.**
- **Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or ECU damage may occur.**
- **Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. Install the EL-49642 SPS programming support tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.**
- **Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.**
- **During the programming procedure, follow the SPS prompts for the correct ignition switch position.**
- **Clear DTCs after programming is complete. Clearing powertrain DTCs will**

set the Inspection/Maintenance (I/M) system status indicators to NO.

Replace and Program ECU or Reprogram ECU

To program a replacement or an existing ECU, perform the following procedure:

1. Install **EL-49642** SPS programming support tool.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select Park Brake Control Module - Programming and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select Park Brake Control Module - Setup and follow the on-screen instructions.
5. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.
6. With a scan tool, perform the Parking Brake Cable Adjuster Enabling procedure. Refer to **Parking Brake Cable Adjuster Enabling**.

K20 ENGINE CONTROL MODULE: PROGRAMMING AND SETUP

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

Before Programming The Engine Control Module

NOTE: **DO NOT program a control module unless you are directed by a service procedure or you are directed by a service bulletin. Programming a control module at any other time will not permanently correct a customers concern.**

The following criteria must be met before performing the programming or learning procedure:

- There are no charging system concerns. All charging system concerns must be repaired before programming a control module.
- Battery voltage is between 12-16 V. The battery must be charged before programming the control module if the battery voltage is low.
- A battery charger is NOT connected to the vehicle battery. Incorrect system voltage or voltage fluctuations from a battery charger may affect programming or control module damage.
- Note the engine oil Life remaining percentage.
- Turn OFF or disable any of the following systems that may put a load on the vehicle battery:
 - Twilight sentinel
 - Interior lights
 - Daytime running lights
 - HVAC systems
 - Radio
 - Engine cooling fans, etc

- The ignition switch is in the proper position. The scan tool prompts you to turn ON the ignition, with the engine OFF. DO NOT change the position of the ignition switch during the programming procedure, unless instructed to do so.
- All of the following tool connections are secure:
 - The connection at the data link connector (DLC)
 - The voltage supply circuits

DO NOT disturb the tool harnesses while programming. If an interruption occurs during the programming procedure, the control module programming may be affected or control module damage may occur.

Replace and Program Control Module

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

1. Connect a scan tool to the vehicle and access SPS. Refer to **Service Programming System (SPS)**.
2. Before removing the old control module, perform the SPS function Prepare Control Module for Removal, if available.

NOTE: **The Prepare Control Module for Removal function can only be performed when communication with the old control module is still possible.**

3. Replace the ECM.
4. Perform the SPS function Engine Control Module - Programming and follow the on-screen instructions.
5. Clear the DTCs after completing the Programming procedure.
6. Perform the SPS function Immobilizer Learn and follow the on-screen instructions. Refer to **Immobilizer System Component Programming (with BTM)** , **Immobilizer System Component Programming (without BTM)** .
7. Perform the SPS function Engine Control Module - Configuration & Setup and follow the on-screen instructions.
8. Clear DTCs after completing the Configuration & Setup procedure.

Reprogram Control Module

To reprogram an existing ECM, perform the following procedure:

1. Connect a scan tool to the vehicle and access SPS. Refer to **Service Programming System (SPS)**.
2. Perform the SPS function Engine Control Module - Programming and follow the on-screen instructions.
3. Clear DTCs after completing the Programming procedure.
4. Perform the SPS Function Immobilizer Learn and follow the on-screen instructions. Refer to **Immobilizer System Component Programming (with BTM)** , **Immobilizer System Component Programming (without BTM)** .
5. Perform the SPS function Engine Control Module - Configuration & Setup and follow the on-screen instructions, if available.

6. Clear DTCs after completing the Configuration & Setup procedure.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following:

1. Ignition ON. Ensure the control module, DLC, and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.
 - o If the control module cannot be reprogrammed
 1. Ignition OFF for one minute, ignition ON.
 2. Verify the control module can be reprogrammed.
 - o If the control module cannot be reprogrammed, replace the K20 Engine Control Module.
 - o If the control module can be reprogrammed
 - 3. All OK.
 - o If the control module can be reprogrammed
3. All OK.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

Control Module References for ECM replacement, programming and setup.

FRONT VIEW CAMERA MODULE PROGRAMMING AND SETUP

Front View Camera Module Replacement

If the Front View Camera Module needs to be replaced, the following procedures must be performed:

1. Connect a scan tool to the vehicle and access SPS. Refer to **Service Programming System (SPS)**.
2. Perform the SPS function Front View Camera Module - Programming and follow the on-screen instructions.
3. Calibrate the module. Refer to **Front View Camera Module Calibration**.
4. Clear DTCs after completing the programming procedure.

Front View Camera Module Reprogramming

Do not reprogram the Front View Camera Module, unless directed by a service procedure, or a service bulletin.

1. Connect a scan tool to the vehicle and access SPS. Refer to **Service Programming System (SPS)**.
2. Perform the SPS function Front View Camera Module - Programming and follow the on-screen instructions.
3. Calibrate the module. Refer to **Front View Camera Module Calibration**.

4. Clear DTCs after completing the programming procedure.

FUEL PUMP CONTROL MODULE PROGRAMMING AND SETUP

The fuel pump control module must be programmed with the proper calibration software. The module stores and utilizes this information however if it is not properly configured with the correct calibration software, the fuel pump control module will not control all of the vehicle features properly.

Ensure that the following conditions exist in order to prepare for fuel pump control module programming:

1. The battery is fully charged.
2. The MDI data link connectors are secure.
3. The scan tool is loaded with the most current software version.
4. All disconnected modules and devices are reconnected securely.
5. This entire procedure has been reviewed before proceeding.

Do not reprogram the fuel pump control module unless directed by a service procedure or a service bulletin.

Fuel Pump Control Module Programming

To program and setup an existing or new replacement fuel pump control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions. Refer to **Service Programming System (SPS)**.
2. On the SPS Supported Controllers screen, select K27 Fuel Pump Control Module - Programming and follow the on-screen instructions.

If the fuel pump control module fails to accept the program, verify all scan tool and fuel pump control module connections are secure.

NOTE: After programming is completed, perform the following to avoid future misdiagnosis:

1. Turn the ignition OFF for 10 seconds.
2. Open and close the door.
3. Connect the scan tool to the data link connector.
4. Ignition ON, engine OFF.
5. Clear all DTC's from all modules.

GARAGE DOOR OPENER PROGRAMMING AND SETUP

Replace and Program ECU or Reprogram ECU

This ECU does not require SPS programming but does require the following setup procedures after a new ECU

is installed:

The customer must learn the device they wish to control. This must be done at the device (garage door opener, electric gate, etc.) and cannot be performed at a dealership. Refer to the vehicle owner's manual for programming instructions.

GENERATOR CONTROL MODULE PROGRAMMING AND SETUP

Special Tools

EL-49642 SPS Programming Support Tool

For equivalent regional tools, refer to Special Tools.

NOTE:

- **DO NOT** program a control module unless directed to by a service procedure or a service bulletin. If the ECU is not properly configured with the correct calibration software, the ECU will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or ECU damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. Install the EL-49642 SPS programming support tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. **DO NOT** connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

Replace and Program ECU or Reprogram ECU

To program a replacement or an existing ECU, perform the following procedure:

1. Install the **EL-49642** SPS programming support tool.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select Generator Control Module - Programming and follow the on-screen instructions.
4. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. DO NOT turn the ignition OFF. Ensure that all ECU, DLC and programming tool connections are secure and the TIS terminal operating software is up to date.
2. Attempt to reprogram the ECU.
3. If the ECU can still not be programmed, turn the ignition OFF for at least 1 minute.
4. Turn the ignition ON and attempt to reprogram the ECU. The ECU should program.
 - o If the ECU still cannot be programmed, replace the ECU.

HEATED SEAT CONTROL MODULE PROGRAMMING AND SETUP

The seat heating control module must be programmed with the proper calibration software. The module stores and utilizes this information however if it is not properly configured with the correct calibration software, the seat heating control module will not control all of the vehicle features properly.

Ensure that the following conditions exist in order to prepare for seat heating control module programming:

1. The battery is fully charged.
2. The MDI data link connectors are secure.
3. The scan tool is loaded with the most current software version.
4. All disconnected modules and devices are reconnected securely.
5. This entire procedure has been reviewed before proceeding.

Do not reprogram the seat heating control module unless directed by a service procedure or a service bulletin.

Seat Heating Control Module Programming

To program and setup an existing or new replacement seat heating control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions. Refer to **Service Programming System (SPS)**.
2. On the SPS Supported Controllers screen, select HVSMF Front Seat Heating Control Module - Programming and follow the on-screen instructions.

If the HVSMF Front Seat Heating Control Module fails to accept the program, verify all scan tool and seat heating control module connections are secure.

NOTE: After programming is completed, perform the following to avoid future misdiagnosis:

1. Turn the ignition OFF for 10 seconds.
2. Open and close the door.

3. **Connect the scan tool to the data link connector.**
4. **Ignition ON, engine OFF.**
5. **Clear all DTCs from all modules.**

HVAC SYSTEM CONTROL MODULE PROGRAMMING AND SETUP

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

HVAC Control Module Replacement

If the HVAC control module needs to be replaced, the following procedures must be performed:

1. Connect a scan tool to the vehicle and access SPS. Refer to **Service Programming System (SPS)**.
2. Perform the SPS function Remote Heater and Air Conditioning Control Module - Programming and follow the on-screen instructions.
3. Perform the SPS function Remote Heater and Air Conditioning Control Module - Configuration & Setup and follow the on-screen instructions.
4. Clear DTCs after completing the programming procedure.

HVAC Control Module Reprogramming

Do not reprogram the HVAC control module unless directed by a service procedure or a service bulletin.

1. Connect a scan tool to the vehicle and access SPS.
2. Perform the SPS function Remote Heater and Air Conditioning Control Module - Programming and follow the on-screen instructions.
3. Clear DTCs after completing the programming procedure.

Setup for Component Replacement

If an actuator is replaced, the following procedure must be performed:

Recalibrating actuators for the HVAC system. Refer to **Actuator Recalibration** .

INFLATABLE RESTRAINT SENSING AND DIAGNOSTIC MODULE PROGRAMMING AND SETUP

The inflatable restraint sensing and diagnostic module (SDM) must be programmed with the proper calibration software. The module stores and utilizes this information however if it is not properly configured with the correct calibration software, the SDM will not control all of the vehicle features properly.

Ensure that the following conditions exist in order to prepare for SDM programming:

1. The battery is fully charged.

2. The MDI data link connectors are secure.
3. The scan tool is loaded with the most current software version.
4. All disconnected modules and devices are reconnected securely.
5. This entire procedure has been reviewed before proceeding.

Do not reprogram the SDM unless directed by a service procedure or a service bulletin.

NOTE:

- The air bag indicator light may remain ON after the body control module (BCM), or SDM is replaced, and during the programming procedure for the BCM until after the procedure is completed. When installing a new SDM, there may be several DTCs set prior to programming. Once programmed, these DTCs should be in history and can be cleared.
- Failure to complete the following Setup procedure may cause DTC B1001 to be set in the SDM.

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

Sensing and Diagnostic Module Replacement and/or Programming

If the inflatable restraint sensing and diagnostic module needs to be replaced and/or reprogrammed, the following procedures must be performed:

1. Access SPS. Refer to **Service Programming System (SPS)**.
2. Perform the SPS function Inflatable Restraint Sensing and Diagnostic Module Programming and follow the on-screen instructions.
3. Perform the SPS function Inflatable Restraint Sensing and Diagnostic Module Setup and follow the on-screen instructions.
4. Clear DTCs after completing the programming procedure.

If the control module fails to program, proceed as follows:

1. Ensure the DLC and Accessory Power Module connections are good.
2. Inspect the Techline equipment for the latest software version.
3. Ignition OFF, remove the SDM power fuse. Wait 2 min, install fuse, Ignition ON.
4. Attempt to program the SDM. If the SDM still cannot be programmed properly, replace the SDM.

INSTRUMENT CLUSTER PROGRAMMING AND SETUP

Special Tools

EL-49642 SPS Programming Support Tool

For equivalent regional tools, refer to **Special Tools**.

NOTE:

- **DO NOT** program a control module unless directed to by a service procedure or a service bulletin. If the ECU is not properly configured with the correct calibration software, the ECU will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or ECU damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. Install the EL-49642 SPS programming support tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. **DO NOT** connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

Replace and Program ECU or Reprogram ECU

To program a replacement or an existing ECU, perform the following procedure:

1. Install **EL-49642** SPS programming support tool.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select Instrument Cluster - Programming and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select Instrument Cluster - Setup and follow the on-screen instructions.
5. On the SPS Supported Controllers screen, select Instrument Cluster - Configuration and follow the on-screen instructions.
6. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. **DO NOT** turn the ignition OFF. Ensure that all ECU, DLC and programming tool connections are secure and the TIS terminal operating software is up to date.
2. Attempt to reprogram the ECU.
3. If the ECU can still not be programmed, turn the ignition OFF for at least one minute.
4. Turn the ignition ON and attempt to reprogram the ECU. The ECU should program.

- If the ECU still cannot be programmed, replace the ECU.

KEYLESS ENTRY CONTROL MODULE PROGRAMMING AND SETUP

Special Tools

EL-49642 SPS Programming Support Tool

For equivalent regional tools, refer to Special Tools.

NOTE:

- **DO NOT** program a control module unless directed to by a service procedure or a service bulletin. If the ECU is not properly configured with the correct calibration software, the ECU will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or ECU damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. Install the EL-49642 SPS programming support tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. **DO NOT** connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

Replace and Program ECU or Reprogram ECU

To program a replacement or an existing ECU, perform the following procedure:

1. Install **EL-49642** SPS programming support tool.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select Keyless Entry Control Module - Programming and follow the on-screen instructions.
4. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. DO NOT turn the ignition OFF. Ensure that all ECU, DLC and programming tool connections are secure and the TIS terminal operating software is up to date.
2. Attempt to reprogram the ECU.
3. If the ECU can still not be programmed, turn the ignition OFF for at least one minute.
4. Turn the ignition ON and attempt to reprogram the ECU. The ECU should program.
 - o If the ECU still cannot be programmed, replace the ECU.

MEMORY SEAT CONTROL MODULE PROGRAMMING AND SETUP

The seat memory control module must be programmed with the proper calibration software. The module stores and utilizes this information however if it is not properly configured with the correct calibration software, the seat memory control module will not control all of the vehicle features properly.

Ensure that the following conditions exist in order to prepare for seat memory control module programming:

1. The battery is fully charged.
2. The MDI data link connectors are secure.
3. The scan tool is loaded with the most current software version.
4. All disconnected modules and devices are reconnected securely.
5. This entire procedure has been reviewed before proceeding.

Do not reprogram the seat memory control module unless directed by a service procedure or a service bulletin.

Seat Memory Control Module Programming

To program and setup an existing or new replacement seat memory control module, perform the following procedure:

1. With a scan tool, access the Service Programming System (SPS) and follow the on-screen instructions. Refer to **Service Programming System (SPS)**.
2. On the SPS Supported Controllers screen, select MSM Memory Seat Control Module - Programming and follow the on-screen instructions.

If the MSM Memory Seat Module fails to accept the program, verify all scan tool and seat memory control module connections are secure.

NOTE: After programming is completed, perform the following to avoid future misdiagnosis:

1. Turn the ignition OFF for 10 seconds.
2. Open and close the door.
3. Connect the scan tool to the data link connector.
4. Ignition ON, engine OFF.

5. With a scan tool, clear all DTC's from all modules.

OBJECT ALARM MODULE PROGRAMMING AND SETUP

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

Parking Assist Control Module Replacement

If the parking assist control module needs to be replaced, the following procedures must be performed:

1. Connect a scan tool to the vehicle and access SPS. Refer to **Service Programming System (SPS)**
2. Perform the SPS function Parking Assist Control Module Programming and follow the on-screen instructions.
3. Perform the SPS function Parking Assist Control Module Configuration & Setup and follow the on-screen instructions.
4. Clear DTCs after completing the programming procedure.

Parking Assist Control Module Reprogramming

Do not reprogram the parking assist control module, unless directed by a service procedure, or a service bulletin.

1. Connect a scan tool to the vehicle and access SPS. Refer to **Service Programming System (SPS)**
2. Perform the SPS function Parking Assist Control Module Programming and follow the on-screen instructions.
3. Clear DTCs after completing the programming procedure.

PASSENGER PRESENCE SYSTEM PROGRAMMING AND SETUP

When the passenger presence system is replaced or serviced, perform the rezeroing procedure for the passenger presence system. Refer to **Passenger Presence System Rezeroing** for the rezeroing procedure.

POWER STEERING CONTROL MODULE PROGRAMMING AND SETUP

NOTE:

- **DO NOT** program a control module unless directed to by a service procedure or a service bulletin. If the control module is not properly configured with the correct calibration software, the control module will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or control module damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When

required install the EL-49642 SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.

- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

Diagnostic Aids

The Electric Power Steering Control Module is part of the power steering assist motor assembly and is electronically paired with the steering gear's sensors.

Replace and Program Control Module

NOTE: During the procedures listed below, critical data is retrieved from vehicle components and stored in the scan tool computer's hard drive. This data is needed during the programming and setup sequences.

Ensure the same scan tool is used and capable of reading, storing, and writing the vehicle's system data.

To program a replacement control module, perform the following procedure:

NOTE: Step 1 copies the worm gear wear counter data from the power steering control module PRIOR to the module's removal and stores it on the scan tool computer's hard drive.

AFTER completing step 1, the power steering control module can now be removed and replaced.

1. On the SPS Supported Controllers screen, select K34 Power Steering Control Module - Prepare Control Module for Removal and follow the on-screen instructions.
2. Replace the Power Steering Assist Motor containing the Power Steering Control Module. Refer to **Power Steering Assist Motor Replacement**.

NOTE: The next two steps will transfer the vehicle's critical data, including the worm gear wear counter data saved in step 1, back to the vehicle components.

3. On the SPS Supported Controllers screen, select K34 Power Steering Control Module - Programming and

follow the on-screen instructions.

4. On the SPS Supported Controllers screen, select K34 Power Steering Control Module - Setup and follow the on-screen instructions.
5. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.
6. With a scan tool, perform the Steering Angle Sensor Centering and Software Endstop Learning procedure. Refer to **Power Steering Control Module Calibration**.
7. With a scan tool, Clear all DTCs after completing the calibration procedure.

Reprogram Control Module

To reprogram an existing control module, perform the following procedure:

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K34 Power Steering Control Module - Programming and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K34 Power Steering Control Module - Setup and follow the on-screen instructions.
4. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.
5. With a scan tool, perform the Steering Angle Sensor Centering and Software Endstop Learning procedure. Refer to **Power Steering Control Module Calibration**.
6. With a scan tool, Clear all DTCs after completing the calibration procedure.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.
 - **If the control module cannot be reprogrammed**
 1. Ignition OFF for one minute, ignition ON.
 2. Verify the control module can be reprogrammed.
 - If the control module cannot be reprogrammed, replace the control module.
 - If the control module can be reprogrammed.
 3. All OK.
 - **If the control module can be reprogrammed**
3. All OK.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

Control Module References for Control Module replacement, programming and setup

RADIO CONTROL PROGRAMMING AND SETUP

Replace and Program ECU or Reprogram ECU

This ECU does not require SPS programming or any setup procedures.

RADIO PROGRAMMING AND SETUP

Special Tools

EL-49642 SPS Programming Support Tool

NOTE:

- **DO NOT** program a control module unless directed to by a service procedure or a service bulletin. If the ECU is not properly configured with the correct calibration software, the ECU will not control all of the vehicle features properly.
- Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or ECU damage may occur.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. Install the EL-49642 SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply. **DO NOT** connect a battery charger.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

Diagnostic Aids

- During radio programming you may be required to select multiple calibrations dependant upon vehicle equipment. Have the vehicle build/RPO information available during the following procedure to ensure the correct calibrations are selected.
- The XM satellite radio (if equipped) is integrated into the radio. If XM was activated in the previous radio, the replacement radio will require no additional activation steps. Customer subscription information is transferred to the replacement radio when a replacement radio is ordered.

Replace and Program ECU or Reprogram ECU

To program a replacement or an existing ECU, perform the following procedure:

1. Install **EL-49642** SPS Programming Support Tool.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select Radio - Programming and follow the on-screen instructions.
4. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

Unsuccessful Programming Recovery

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. DO NOT turn the ignition OFF. Ensure that all ECU, DLC and programming tool connections are secure and the TIS terminal operating software is up to date.
2. Attempt to reprogram the ECU.
3. If the ECU can still not be programmed, turn the ignition OFF for at least one minute.
4. Turn the ignition ON and attempt to reprogram the ECU. The ECU should program.
 - o If the ECU still cannot be programmed, replace the ECU.

REMOTE CONTROL DOOR LOCK RECEIVER PROGRAMMING AND SETUP

Diagnostic Aids

The remote control door lock receiver only functions as an antenna, receiving the signals sent by the keyless entry transmitter and forwarding them to the body control module (BCM). The keyless entry software is contained wholly within the BCM.

Replace and Program ECU or Reprogram ECU

This ECU does not require SPS programming or any setup procedures.

SERVICE PROGRAMMING SYSTEM (SPS)

Special Tools

EL-49642 SPS Programming Support Tool

For equivalent regional tools, refer to **Special Tools**.

For step-by-step control module programming instructions, please refer to the techline information system (TIS) terminal.

Review the information below to ensure proper programming protocol.

NOTE:

- **DO NOT program a control module unless you are directed by a service procedure or you are directed by a General Motors service bulletin. Programming a control module at any other time will not permanently**

correct a customers concern.

- **It is essential that the TIS terminal, MDI, and/or Scan Tool, is equipped with the latest software before performing service programming.**
- **Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install the EL-49642 SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12V jumper or booster pack disconnected from the AC voltage supply. DO NOT connect a battery charger.**
- **Some modules will require additional programming/setup events to be performed before or after programming.**
- **Some vehicles may require the use of a CANDi or MDI module for programming.**
- **Review the appropriate service information for these procedures.**
- **DTCs may set during programming. Clear DTCs after programming is complete.**
- **Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.**

Ensure the following conditions are met before programming a control module:

- Vehicle system voltage:
 - There is not a charging system concern. All charging system concerns must be repaired before programming a control module.
 - Battery voltage is greater than 12 volts but less than 16 volts. The battery must be fully charged before programming the control module.
 - Turn OFF or disable any system that may put a load on the vehicles battery, such as the following components:
 - Interior lights
 - Exterior lights including daytime running lights (DRL)-Applying the parking brake, on most vehicles, disables the DRL system
 - Heating, ventilation, and air conditioning (HVAC) systems
 - Engine cooling fans
 - Radio, etc.
- The ignition switch must be in the proper position. SPS prompts you to turn ON the ignition, with the engine OFF. DO NOT change the position of the ignition switch during the programming procedure, unless instructed to do so.
- Make certain all tool connections are secure, including the following components and circuits:
 - Scan Tool
 - The RS-232 communication cable port
 - The connection at the data link connector (DLC)
 - The voltage supply circuits

- MDI
 - The USB, Ethernet or Wireless communication port
 - The connection at the data link connector (DLC)
- DO NOT disturb the tool harnesses while programming. If an interruption occurs during the programming procedure, programming failure or control module damage may occur.

In the event of an interrupted or unsuccessful programming event, perform the following steps:

1. DO NOT turn the ignition OFF. Ensure that all control module and DLC connections are secure and the TIS terminal operating software is up to date.
2. Attempt to reprogram the control module.
3. If the control module can still not be programmed, turn the ignition OFF for at least one minute.
4. Turn the ignition ON and attempt to reprogram the control module. The control module should program.
 - If the control module still cannot be programmed, replace the control module.

After successfully programming the control module, ensure that all post programming procedures are performed; refer to **Control Module References** for the appropriate control module Programming and Setup document for any required procedures.

SUNROOF CONTROL MODULE PROGRAMMING AND SETUP

When replacing the sunroof motor/control module, the sunroof motor/actuator initialization/teach procedure must be followed.

Existing or New Motor

For the sunroof motor/actuator initialization/teach procedure refer to **Sunroof Motor/Actuator Initialization/Teach Process** .

THEFT DETERRENT MODULE PROGRAMMING AND SETUP

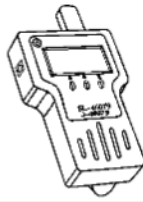
Replace and Program ECU or Reprogram ECU

This ECU does not require SPS programming or any setup procedures.

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

Illustration	Tool Number/ Description
	EL 46079 J 46079 Tire Pressure Monitor Diagnostic Tool



EL 49642
EL 50113
Europe- Use recommended equivalent workshop
equipment
SPS Programming Support Tool