

2017 ACCESSORIES & EQUIPMENT

Programming and Setup - CT6

DIAGNOSTIC INFORMATION AND PROCEDURES

CONTROL MODULE REFERENCES

Reference Information

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

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
A22	Radio/HVAC Controls	Radio/Navigation System Schematics	Radio Control Assembly Replacement	Radio Control Programming and Setup
A33	Media Disc Player	Radio/Navigation System Schematics	Audio Disc Player and USB Receptacle Replacement	Media Disc Player Programming and Setup If equipped with TG5, no programming required.
B218L/R	Side Object Sensor Module Scan Tool Information	Object Detection Schematics	Side Object Sensing Alert Module Replacement	Side Object Sensor Module Programming and Setup
B233B	Radar Sensor Module - Long Range Scan Tool Information	Object Detection Schematics	Forward Range Radar Sensor Replacement	Radar Sensor Module - Long Range Programming and Setup
B233LF/RF	Left Front Short Range Radar Sensor Module Right Front Short Range Radar Sensor Module	Object Detection Schematics	Forward Range Radar Sensor Replacement	Radar Sensor Module - Short Range Programming and Setup
B233R	Rear Short Range Radar Sensor Module	Object Detection Schematics	Short Range Radar Sensor Replacement (Front) Short Range Radar Sensor Replacement (Rear)	Radar Sensor Module - Short Range Programming and Setup

Code	Control Module/Scan Tool Information	Schematic	Repair Instruction	Programming and Setup
G1	Air Conditioning Compressor Control Module	<u>HVAC Schematics</u>	<u>Air Conditioning Compressor Replacement (LTG)</u> <u>Air Conditioning Compressor Replacement (LGW, LGX)</u>	<u>Air Conditioning Compressor Control Module Programming and Setup</u>
K9	<u>Body Control Module Scan Tool Information</u>	<u>Body Control System Schematics</u>	<u>Body Control Module Replacement</u>	<u>Body Control Module Programming and Setup</u>
K10	Coolant Heater Control Module	<u>HVAC Schematics</u>	<u>Heater Coolant Heater Replacement (LTG with HP9)</u>	<u>Coolant Heater Control Module Programming and Setup</u>
K16	<u>Battery Energy Control Module Scan Tool Information</u>	<u>Hybrid/EV Energy Storage Schematics</u>	<u>Battery Energy Control Module Replacement</u>	<u>Battery Energy Control Module Programming and Setup</u>
K17	<u>Electronic Brake Control Module Scan Tool Information</u>	<u>Antilock Brake System Schematics</u>	<u>Electronic Brake Control Module Replacement</u>	<u>Electronic Brake Control Module Programming and Setup (Without HP9)</u> <u>Electronic Brake Control Module Programming and Setup (With HP9)</u>
K19	<u>Electronic Suspension Control Module Scan Tool Information</u>	<u>Electronic Suspension Control Schematics (F55)</u>	<u>Electronic Suspension Control Module Replacement</u>	<u>Electronic Suspension Control Module Programming and Setup</u>
K20	<u>K20 Engine Control Module: Scan Tool Information</u>	<u>Engine Controls Schematics</u> - 2.0L (LTG) Engine <u>Engine Controls Schematics (LGW) Engine Controls Schematics (LGX)</u> - 3.0L (LGW) or 3.6L (LGX) Engine	<u>Engine Control Module Replacement</u> - 2.0L (LTG) Engine <u>Engine Control Module Replacement (LGW) Engine Control Module Replacement (LGX)</u> - 3.0L (LGW) or 3.6L (LGX)	<u>K20 Engine Control Module: Programming and Setup</u>

Code	Control Module/Scan Tool Information	Schematic	Repair Instruction	Programming and Setup
K26	Headlamp Control Module	<u>Headlights/Daytime Running Lights (DRL) Schematics</u>	<u>Headlamp Control Module Replacement</u>	<u>Headlamp Control Module Programming and Setup</u>
K27	<u>Fuel Pump Power Control Module Scan Tool Information</u>	• <u>Engine Controls Schematics</u> - 2.0L (LTG) Engine • <u>Engine Controls Schematics (LGW) Engine Controls Schematics (LGX)</u> - 3.0L (LGW) or 3.6L (LGX) Engine	• <u>Fuel Pump Power Control Module Replacement</u> - 2.0L (LTG) Engine • <u>Fuel Pump Power Control Module Replacement</u> - 3.0L (LGW) or 3.6L (LGX) Engine	<u>Fuel Pump Power Control Module Programming and Setup</u>
K29F	Front Seat Heating Control Module	<u>Heated/Cooled Seat Schematics</u>	<u>Front Seat Heater Control Module Replacement</u>	<u>Seat Heating Control Module Programming and Setup</u>
K29R	Rear Seat Heating Control Module	<u>Heated/Cooled Seat Schematics</u>	<u>Rear Seat Heater Control Module Replacement</u>	<u>Rear Seat Heater Control Module Programming and Setup</u>
K31	Navigation Control Module	<u>Radio/Navigation System Schematics</u>	<u>Peripheral Human Machine Interface Control Module Replacement</u>	<u>Navigation Control Module Programming and Setup</u>
K32	Steering Wheel Heating Control Module	<u>Steering Wheel Schematics</u>	<u>Steering Wheel Replacement</u>	<u>Steering Wheel Heat Control Module Programming and Setup</u>
K33	<u>Heating, Ventilation and Air Conditioning Control Module Scan Tool Information</u>	<u>HVAC Schematics</u>	<u>Heater and Air Conditioning Remote Control Replacement</u>	<u>HVAC 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>
K39	<u>Liftgate Control Module Scan Tool Information</u>	<u>Liftgate Schematics (TC2/TL9)</u>	<u>Accessory and Liftgate Control Module Replacement</u>	<u>Liftgate Control Module Programming and Setup</u>

Code	Control Module/Scan Tool Information	Schematic	Repair Instruction	Programming and Setup
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>Seat Memory Control Module Programming and Setup (Passenger Seat)Seat Memory Control Module Programming and Setup (Driver Seat)Seat Memory Control Module Programming and Setup (Left Rear Seat)Seat Memory Control Module Programming and Setup (Right Rear Seat)</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>
K56	Serial Data Gateway Module	<u>Data Communication Schematics</u>	<u>Body Control Module Replacement</u>	<u>Serial Data Gateway Module Programming and Setup</u>
K60	<u>Steering Column Lock Module Scan Tool Information</u>	<u>Column Lock Schematics</u>	<u>Steering Column Lock Control Module Replacement</u>	<u>Steering Column Lock Module Programming and Setup</u>
K69	<u>Transfer Case Control Module Scan Tool Information</u>	<u>Transfer Case Control Schematics</u>	<u>Transfer Case Control Module Replacement</u>	<u>Transfer Case Control Module Programming and Setup</u>
K71	<u>K71 Transmission Control Module: Scan Tool Information (8L45, 8L90) K71 Transmission Control Module: Scan Tool Information (4EL70)</u>	<u>Automatic Transmission Controls Schematics</u>	<u>Transmission Control Module Replacement</u>	<u>K71 Transmission Control Module: Programming and Setup</u>
K73	<u>Telematics Communication Interface Control Module Scan Tool Information</u>	<u>OnStar/Telematics Schematics</u>	<u>Communication Interface Module Replacement</u>	<u>Telematics Communication Interface Control Module Programming and Setup</u>

Code	Control Module/Scan Tool Information	Schematic	Repair Instruction	Programming and Setup
K74	<u>Human Machine Interface Control Module Scan Tool Information</u>	<u>Radio/Navigation System Schematics</u>	<u>Human Machine Interface Control Module Replacement</u>	<u>Human Machine Interface Control Module Programming and Setup</u>
K80	Sunroof Sunshade Control Module	<u>Sunroof Schematics</u>	<u>Sunroof Sunshade Motor Replacement (Rear) Sunroof Sunshade Motor Replacement (Front)</u>	<u>Sunroof Sunshade Control Module Programming and Setup</u>
K84	Keyless Entry Control Module	<u>Remote Function Schematics</u>	<u>Keyless Entry Control Module Replacement</u>	<u>Keyless Entry Control Module Programming and Setup</u>
K89	Immobilizer Control Module	<u>Immobilizer Schematics</u>	<u>Theft Deterrent Module Replacement</u>	<u>Immobilizer Control Module Programming and Setup</u>
K92	<u>Rear Wheel Steering Control Module Scan Tool Information</u>	<u>Power Steering Schematics</u>	<u>Rear Wheel Steering Actuator Replacement</u>	<u>Rear Wheel Steering Control Module Programming and Setup</u>
K99	Steering Column Position Control Module	<u>Tilt/Telescoping Steering Column Schematics</u>	<u>Steering Column Tilt Wheel and Telescope Control Module Replacement</u>	<u>Steering Column Tilt Wheel and Telescope Control Module 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>
K114B	<u>Hybrid Powertrain Control Module 2 Scan Tool Information</u>	<u>Hybrid/EV Energy Storage Schematics</u>	<u>Hybrid Powertrain Control Module 2 Replacement</u>	<u>Hybrid Powertrain Control Module 2 Programming and Setup</u>
K124	<u>Active Safety Control Module Scan Tool Information</u>	<u>Object Detection Schematics</u>	<u>Active Safety Control Module Replacement</u>	<u>Active Safety Control Module Programming and Setup</u>
K132	<u>Pedestrian Alert Sound Control Module Scan Tool Information</u>	<u>Object Detection Schematics</u>	<u>Pedestrian Sound Alert Module Replacement</u>	<u>Pedestrian Alert Sound Control Module Programming and Setup</u>
K134D/P	Seat Bolster Memory Control Module	<u>Driver Seat Schematics</u> or <u>Passenger Seat Schematics</u>	<u>Front Seat Back Lumbar Bladder Replacement</u>	<u>Seat Bolster Memory Control Module Programming and Setup</u>
K157	<u>Video Processing Control Module Scan Tool Information</u>	<u>Object Detection Schematics</u>	<u>Video Processing Module Replacement</u>	<u>Video Processing Control Module Programming and Setup</u>

Code	Control Module/Scan Tool Information	Schematic	Repair Instruction	Programming and Setup
K172	<u>Night Vision Camera Control Module Scan Tool Information</u>	<u>Object Detection Schematics</u>	<u>Night Vision Module Replacement</u>	<u>Night Vision Camera Control Module Programming and Setup</u>
K177	<u>Brake Booster Control Module Scan Tool Information</u>	<u>Hydraulic Brake Schematics</u>	<u>Electronic Brake Booster Control Module Replacement</u>	<u>Brake Booster Control Module Programming and Setup</u>
K182	<u>Parking Assist Control Module Scan Tool Information</u>	<u>Object Detection Schematics</u>	<u>Parking Assist Control Module Replacement</u>	<u>Parking Assist Control Module Programming and Setup</u>
M101L/R	<u>Seat Belt Retractor Motor Module Scan Tool Information</u>	<u>Seat Belt Schematics</u>	<u>Front Seat Belt Retractor Replacement</u>	<u>Seat Belt Retractor Motor 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>
S45A	Hands-Free Liftgate Sensor Control Module	<u>Liftgate Schematics (TC2/TL9)</u>	<u>Rear Closure Hands Free Module Replacement</u>	<u>Liftgate Handsfree Sensor Module Programming and Setup</u>
T3	<u>Audio Amplifier Scan Tool Information</u>	<u>Radio/Navigation System Schematics</u>	<u>Radio Speaker Amplifier Replacement</u>	<u>Audio Amplifier Programming and Setup</u>
T6/K114A	Drive Motor Power Inverter Module <u>Hybrid Powertrain Control Module Scan Tool Information</u>	<u>Hybrid/EV Controls Schematics</u>	<u>Drive Motor Power Inverter Module Replacement</u>	<u>Drive Motor Power Inverter Module Programming and Setup</u>

REPAIR INSTRUCTIONS

K20 ENGINE 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 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 (DLC). 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.
- **Note the engine oil life remaining percentage.**

Replace and Program Control Module

To program a replacement K20 Engine Control Module (ECM), 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. 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.

4. Replace the ECM.
5. Perform one of the following SPS Programming functions:

NOTE: If both controller options below are listed, select K20/K71 Engine and Transmission Control Modules.

- K20/K71 Engine and Transmission Control Modules and follow the on-screen instructions.
 - K20 Engine Control Module and follow on-screen instructions.
6. Clear the DTCs after completing the Programming procedure.
 7. If equipped, Perform the SPS function Immobilizer Learn and follow the on-screen instructions. Refer to [**Immobilizer System Component Programming**](#).
 8. Perform the following SPS function:
 1. Setup

NOTE: If both controller options below are listed, select K20 Engine Control Module.

- K20/K71 Engine and Transmission Control Modules and follow the on-screen instructions.
 - K20 Engine Control Module and follow on-screen instructions.
2. Configuration - If applicable
 9. Clear DTCs.

Reprogram Control Module

To reprogram an existing K20 Engine Control Module, 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. Perform one of the following SPS Programming functions:
 - K20/K71 Engine and Transmission Control Modules and follow the on-screen instructions.

NOTE: If both controller options below are listed, select K20/K71 Engine and Transmission Control Modules.

- K20 Engine Control Module and follow on-screen instructions.
4. Clear DTCs after completing the Programming procedure.
 5. Perform the following SPS function:

NOTE: If vehicle fails to start during Configuration and Setup, perform the SPS Function Immobilizer Learn and follow the on-screen instructions.

1. Setup

NOTE: If both controller options below are listed, select K20 Engine Control Module.

- K20/K71 Engine and Transmission Control Modules and follow the on-screen instructions.
- K20 Engine Control Module and follow on-screen instructions.

2. Configuration - If applicable

6. Clear DTCs.

Unsuccessful Programming Recovery

If programming a control module is not successful, perform the following procedure:

1. Verify the control module, data link connector and programming tool connections are secure and the SPS software is up to date.
2. Ignition $\hat{\wedge}$ On / Vehicle $\hat{\wedge}$ In Service Mode
3. Perform one of the following SPS Programming functions:

NOTE: If both controller options below are listed, select K20/K71 Engine and Transmission Control Modules.

- K20/K71 Engine and Transmission Control Modules and follow the on-screen instructions.
 - K20 Engine Control Module and follow on-screen instructions.
4. Verify the control module programming is successful.
 - **If the programming is not successful**
 1. Ignition/Vehicle $\hat{\wedge}$ Off - For greater than 1 min
 2. Ignition $\hat{\wedge}$ On / Vehicle $\hat{\wedge}$ In Service Mode
 3. Perform one of the following SPS Programming functions:

NOTE: If both controller options below are listed, select K20/K71 Engine and Transmission Control Modules.

- K20/K71 Engine and Transmission Control Modules and follow the on-screen instructions.
- K20 Engine Control Module and follow on-screen instructions.
- If the programming is not successful, replace the appropriate component: K20 Engine Control Module or K71 Transmission Control Module

- If the programming is successful
4. All OK.
- **If the programming is successful**
5. All OK.

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

[Control Module References](#) for ECM replacement, programming and setup.

K71 TRANSMISSION CONTROL MODULE: PROGRAMMING AND SETUP

Diagnostic Instructions

- Perform the Diagnostic System Check prior to using this diagnostic procedure: [Diagnostic System Check - Vehicle](#)
- Review the description of Strategy Based Diagnosis: [Strategy Based Diagnosis](#)

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.**
- **Verify 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 below mentioned special tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.**
- **Turn Off or disable systems that may put a load on the vehicle's battery. For example, interior lights, daytime running lights, HVAC, and radio.**
- **During the programming procedure, follow the Service Programming System (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

Equivalent regional tools: [Special Tools](#)

Programming an Existing or New Control Module

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

1. Install the special tool: **EL-49642** SPS Programming Support Tool
2. Ignition $\rightarrow$ On / Vehicle $\rightarrow$ In Service Mode
3. Access SPS and follow the on-screen instructions for the control module: K71 Transmission Control Module - Programming

4. After the programming is complete, select: Setup - If available

If Setup is not available in SPS - Perform the appropriate learn/reset procedure with the scan tool

5. Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to No.

Unsuccessful Programming Recovery

If programming a control module is not successful, perform the following procedure:

1. Verify the control module, data link connector and programming tool connections are secure and the SPS software is up to date.
2. Ignition/Vehicle On / Vehicle In Service Mode
3. Access SPS and follow the on-screen instructions for the control module: K71 Transmission Control Module - Programming

Verify the control module programming is successful.

- **If the programming is not successful**

1. Ignition/Vehicle Off - For greater than 2 min
2. Ignition/Vehicle On / Vehicle In Service Mode
3. Perform the SPS function: K71 Transmission Control Module - Programming
 - If the programming is not successful Replace the component: K71 Transmission Control Module
1. Perform the SPS function: K71 Transmission Control Module - Programming
2. After the programming is complete, select: Setup - If available

If Setup is not available in SPS - Perform the appropriate learn/reset procedure with the scan tool

3. Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to No.

- If the programming is successful

4. Perform the following steps: Setup - If available

If Setup is not available in SPS - Perform the appropriate learn/reset procedure with the scan tool

5. Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to No.

6. All OK.

- **If the programming is successful**

4. Perform the following steps: Setup - If available

If Setup is not available in SPS - Perform the appropriate learn/reset procedure with the scan tool

5. Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to No.

6. All OK.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: [Diagnostic Repair Verification](#)

For control module replacement, programming and setup, refer to [Control Module References](#)

ACCESSORY DC POWER CONTROL MODULE PROGRAMMING AND SETUP

This device requires no programming or setup.

ACTIVE SAFETY 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 active safety control module is not properly configured with the correct calibration software, the active safety 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 or programming failure, active safety control module 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.
- 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 Active Safety Control Module or Reprogram Active Safety Control Module

To program a replacement or an existing active safety 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 Active Safety 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.

Unsuccessful Programming Recovery

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

1. Ignition ON. Ensure the active safety control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the active safety control module can be reprogrammed.
 - **If the active safety control module cannot be reprogrammed**
 1. Ignition OFF for one minute, ignition ON.
 2. Verify the active safety control module can be reprogrammed.
 - If the active safety control module cannot be reprogrammed, replace the K124 Active Safety Control Module.
 - If the active safety control module can be reprogrammed.
 3. All OK.
 - **If the active safety control module can be reprogrammed**
3. All OK.

AIR CONDITIONING COMPRESSOR 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

For equivalent regional tools, refer to [Special Tools](#).

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 Electric A/C Compressor 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.

Unsuccessful Programming Recovery

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

1. Vehicle in Service Mode. 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. Vehicle OFF for one minute, vehicle in Service Mode.
 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.

AUDIO AMPLIFIER 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.
- 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, 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 programming you may be required to select multiple calibrations dependent upon vehicle equipment. Have the vehicle build/RPO information available during the following procedure to ensure the correct calibrations are selected.

Reference Information

Special Tools

EL-49642 SPS Programming Support Tool

For equivalent regional tools, refer to [Special Tools](#).

Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, 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 T3 Audio Amplifier - Programming and follow the on-screen instructions.
4. At the end of programming, choose the "Clear DTCs" function on the SPS screen.

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.

BATTERY CHARGER PROGRAMMING AND SETUP

This device requires no programming or setup.

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.

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 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 Vehicle 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 Vehicle OFF for at least one minute.
4. Turn the Vehicle in Service Mode and attempt to reprogram the ECU. The ECU should program.
 - 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 or **EL-50448** Tire Pressure Monitor Sensor Activation 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.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.

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.

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

4. 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.
5. On the SPS Supported Controllers screen, select Z1 Immobilizer Learn. 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: 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 K9 Body Control Module - Setup (or K9 Body Control Module - Configuration & Setup) 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.

- 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. 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.
 8. At the end of programming, choose the "Clear DTCs" function on the SPS screen.
 9. 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/Vehicle 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/Vehicle In Service Mode, 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.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.

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.

3. On the SPS Supported Controllers screen, select K9 Body Control Module - Programming and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select K9 Body Control Module - Setup (or K9 Body Control Module - Configuration & Setup) 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.

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/Vehicle 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/Vehicle In Service Mode, 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/Vehicle In Service Mode. 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/Vehicle OFF for one minute, ignition ON/Vehicle In Service Mode.
 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.

BRAKE BOOSTER 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

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 Brake Booster 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. 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.

COOLANT HEATER CONTROL MODULE PROGRAMMING AND SETUP

Replace and Program Control Module or Reprogram Control Module

This control module does not require SPS programming or any setup procedures.

DRIVE MOTOR POWER INVERTER 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**NOTE:**

If the T6 Drive Motor Power Inverter Module is programmed with the hood open, the vehicle will not start until the hood is closed. Normal operation will return after the hood has been closed.

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 Power Inverter Module - Programming and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select Immobilizer Learn - Setup and follow the on-screen instructions.
5. 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 vehicle 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.

NOTE:

If the T6 Drive Motor Power Inverter Module is programmed with the hood open, the vehicle will not start until the hood is closed. Normal operation will return after the hood has been closed.

3. If the ECU can still not be programmed, turn the vehicle OFF for at least 1 minute.
4. Turn the vehicle ON and attempt to reprogram the ECU. The ECU should program.
 - If the ECU still cannot be programmed, replace the ECU.

ELECTRONIC BRAKE CONTROL MODULE PROGRAMMING AND SETUP (WITHOUT HP9)

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

Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, 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 K17 Electronic Brake Control Module - Programming and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select K17 Electronic Brake Control Module - Configuration and Setup while following the on-screen instructions.
5. 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. 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**

Repair Instructions

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

Control Module References for Control Module replacement, programming and setup.

ELECTRONIC BRAKE CONTROL MODULE PROGRAMMING AND SETUP (WITH HP9)

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

Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, 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 K17 Electronic Brake Control Module - Programming and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select K17 Electronic Brake Control Module - Setup while following the on-screen instructions.
5. 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. 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 SUSPENSION 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

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 Suspension Control Module - Programming and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select Suspension Control Module - Setup or 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 suspension system calibration procedure, if applicable.

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.

FRONT VIEW CAMERA 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.
- If the windshield was replaced, the Frontview camera module must be calibrated.
- If the Frontview camera module was removed and reinstalled, no action is necessary.

Following Replacement of Windshield

Do not reprogram the frontview camera module when only the windshield is replaced, unless directed by a service procedure or a service bulletin.

The K109 Frontview Camera Module must be calibrated, refer to [Front View Camera Module Learn \(-HP9\)](#) and/or [Front View Camera Module Learn \(HP9\)](#).

Replace and Program Control Module

Do not reprogram the frontview camera module, unless directed by a service procedure, or a service bulletin.

To program a replacement or an existing frontview camera 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 K109 Frontview Camera 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. Following K109 Frontview Camera Module programming, the module must be calibrated. Refer to [Front View Camera Module Learn \(-HP9\)](#) and/or [Front View Camera Module Learn \(HP9\)](#).

Reprogram Control Module

Do not reprogram the frontview camera module, unless directed by a service procedure or a service bulletin.

To program a replacement or an existing frontview camera 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 K109 Frontview Camera Module - Programming and follow the on-screen instructions.
3. 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. Ignition ON. Ensure the K109 Frontview Camera Module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the K109 Frontview Camera Module can be reprogrammed.
 - **If the K109 Frontview Camera Module cannot be reprogrammed**
 1. Ignition OFF for 1 min, ignition ON.
 2. Verify the K109 Frontview Camera Module can be reprogrammed.
 - If the K109 Frontview Camera Module cannot be reprogrammed, replace the B174W Frontview Camera - Windshield.
 - If the K109 Frontview Camera Module can be reprogrammed.
 3. All OK.
 - **If the K109 Frontview Camera 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.

FUEL PUMP POWER CONTROL MODULE PROGRAMMING AND SETUP

Replace and Program ECU or Reprogram ECU

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

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.

HEADLAMP 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

Replace and Program Control Module or Reprogram Control Module

To program a replacement or existing control module, 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 K26 Headlamp Control Module - Programming and follow the on-screen instructions.

NOTE: On vehicles equipped with Electronic Suspension Control, it may be necessary to perform the Electronic Suspension Position Sensor Trim Height Calibration procedure before programming the K26 Headlamp Control Module.

4. On the SPS Supported Controllers screen, select K26 Headlamp Control Module - Setup while following the on-screen instructions.
5. 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. 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.

SEAT HEATING CONTROL MODULE PROGRAMMING AND SETUP

This device does not require programming or setup.

HUMAN MACHINE INTERFACE 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. 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.
- **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

- Check for Preliminary information or Technical Service bulletins before programming.
- During programming you may be required to select multiple calibrations dependent upon vehicle equipment. Have the vehicle build/RPO information available during the following procedure to ensure the correct calibrations are selected.
- Dependent upon the current software level of the module or the release of updates, USB programming may not be required when replacing/reprogramming the control module. If USB files for the application are not available via SPS or have not been received from General Motors in another manner of distribution, the USB update process will not need to be performed.

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 control module, perform the following procedure:

1. Install the **EL-49642** SPS Programming Support Tool.

NOTE: **The vehicle must remain in PARK during the programming procedure.**

2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K74 Human Machine Interface Control Module - Programming and follow the on-screen instructions.
4. Connect a USB drive to the computer.

NOTE: **If using a pre-configured USB drive supplied by General Motors, proceed to step 8.**

5. Access the Service Programming System (SPS) and follow the on-screen instructions.
6. On the SPS Supported Controllers screen, select K74 Human Machine Interface Control Module - USB Copy/ USB File Transfer.

NOTE:

- If there are no files available for USB transfer via SPS, proceed to step 12.
- Software currently loaded on the USB Drive will be verified and if files are incorrect they will be deleted and correct files will be loaded. If files residing on the USB Drive are correct for the vehicle being serviced, the Techline terminal will not delete those files and allow the drive to be re-used.

7. Upon completion of the file transfer, remove the USB drive from the computer.
8. Ignition ON, infotainment system ON.
9. Connect the USB drive to the USB port in the vehicle.

NOTE: **The HMI will not allow the installation of the same software version via USB. If the same software is detected the installation process will not start.**

10. The infotainment system will recognize that update files are available. Follow the infotainment display on-screen instructions and select Update when prompted. Programming will take several minutes.
11. Upon completion of programming, remove the USB drive. Follow the infotainment display on-screen instructions.
12. Access the Service Programming System (SPS) and follow the on-screen instructions.

NOTE: **The following step is to be performed to ensure latest calibrations are programmed.**

13. On the SPS Supported Controllers screen, select K74 Human Machine Interface Control Module - Programming and follow the on-screen instructions.
14. At the end of programming, choose the "Clear DTCs" function on the SPS screen.

15. Ignition OFF, Retained Accessory Power (RAP) OFF, remove the key fob from range of the vehicle, and let the vehicle sit for five minutes. Retest system operation to verify the repair.

Reprogram Control Module

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

1. Install the **EL-49642** SPS Programming Support Tool.

NOTE: **The vehicle must remain in PARK during the programming procedure.**

2. Connect a USB drive to the computer.

NOTE: **If using a pre-configured USB drive supplied by General Motors, proceed to step 6.**

3. Access the Service Programming System (SPS) and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select K74 Human Machine Interface Control Module - USB Copy/ USB File Transfer.

NOTE:

- **If there are no files available for USB transfer via SPS, proceed to step 10.**
- **Software currently loaded on the USB Drive will be verified and if files are incorrect they will be deleted and correct files will be loaded. If files residing on the USB Drive are correct for the vehicle being serviced, the Techline terminal will not delete those files and allow the drive to be re-used.**

5. Upon completion of the file transfer, remove the USB drive from the computer.
6. Ignition ON, infotainment system ON.
7. Connect the USB drive to the USB port in the vehicle.

NOTE: **The HMI will not allow the installation of the same software version via USB. If the same software is detected the installation process will not start.**

8. The infotainment system will recognize that update files are available. Follow the infotainment display on-screen instructions and select Update when prompted. Programming will take several minutes.
9. Upon completion of programming, remove the USB drive. Follow the infotainment display on-screen instructions.
10. Access the Service Programming System (SPS) and follow the on-screen instructions.
11. On the SPS Supported Controllers screen, select K74 Human Machine Interface Control Module - Programming and follow the on-screen instructions.
12. At the end of programming, choose the "Clear DTCs" function on the SPS screen.
13. Ignition OFF, Retained Accessory Power (RAP) OFF, remove the key fob from range of the vehicle and let the vehicle sit for five minutes. Retest system operation to verify the repair.

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.

NOTE: **If USB programming was interrupted, a 5 minute recovery time period may be necessary before the software will reinitialize. Wait 3 minutes with the ignition OFF, all access doors closed, and all**

vehicle systems OFF. Upon restarting the USB portion of the programming, the display will show a countdown timer for up to 5 minutes before proceeding with the USB File Transfer.

2. Verify the control module can be reprogrammed.

- **If the control module cannot be reprogrammed**

1. Ignition OFF, all access doors closed, all vehicle systems 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.

HVAC CONTROL MODULE PROGRAMMING AND SETUP

Diagnostic Instructions

- Perform the Diagnostic System Check prior to using this diagnostic procedure: [Diagnostic System Check - Vehicle](#)
- Review the description of Strategy Based Diagnosis: [Strategy Based Diagnosis](#)

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.**
- **Verify 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 below mentioned special tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.**
- **Turn Off or disable systems that may put a load on the vehicle's battery. For example, interior lights, daytime running lights, HVAC and radio.**
- **During the programming procedure, follow the Service Programming System (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

Equivalent regional tools: [Special Tools](#).

Programming an Existing or New Control Module

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

1. Install the special tool: **EL-49642** SPS Programming Support Tool
2. Ignition **⏻**, **⏻** On / Vehicle **⏻**, **⏻** In Service Mode
3. Access SPS and follow the on-screen instructions for the control module: K33 HVAC Control Module
4. Perform the SPS function: Programming

Unsuccessful Programming Recovery

If programming a control module is not successful, perform the following procedure:

1. Verify the control module, data link connector and programming tool connections are secure and the SPS software is up to date.
2. Ignition **⏻**, **⏻** On / Vehicle **⏻**, **⏻** In Service Mode
3. Perform the SPS function: Programming

Verify the control module programming is successful.

- **If the programming is not successful**

1. Ignition/Vehicle **⏻**, **⏻** Off - For greater than 1 min
2. Ignition **⏻**, **⏻** On / Vehicle **⏻**, **⏻** In Service Mode
3. Perform the SPS function: Programming
 - If the programming is not successful **⏻**, **⏻** Replace the component: K33 HVAC Control Module
 - If the programming is successful

4. All OK.

- **If the programming is successful**

4. All OK.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: [Diagnostic Repair Verification](#)

For control module replacement, programming, and setup refer to [Control Module References](#)

HVAC CONTROLS PROGRAMMING AND SETUP

Diagnostic Instructions

- Perform the Diagnostic System Check prior to using this diagnostic procedure: [Diagnostic System Check - Vehicle](#)
- Review the description of Strategy Based Diagnosis: [Strategy Based Diagnosis](#)

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.
- Verify 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 below mentioned special tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.
- Turn Off or disable systems that may put a load on the vehicle's battery. For example, interior lights, daytime running lights, HVAC

- and radio.
- During the programming procedure, follow the Service Programming System (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.

Programming an Existing or New Control Module

This control module does not require SPS programming or any setup procedures.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: [Diagnostic Repair Verification](#)

For control module replacement, programming and setup, refer to [Control Module References](#)

HYBRID POWERTRAIN CONTROL MODULE 2 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

For equivalent regional tools, refer to [Special Tools](#).

Replace and Program Control Module

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

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

CAUTION: DO NOT program the hybrid powertrain control module 2 with the

**drive motor battery charger cable connected to the vehicle.
Charging while programming may result in damage to the High
Voltage Battery Disconnect Relays.**

2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select Hybrid Powertrain Control Module 2 - Programming and follow the on-screen instructions.
4. At the end of programming, choose the "Clear All DTCs"
5. With a scan tool, perform the **Hybrid/EV Battery Pack Capacity Learn** and follow the on-screen instructions.
6. With a scan tool, select the Passenger Compartment Heater Coolant Control Solenoid Valve Learn Procedure and follow the on-screen instructions.
7. With a scan tool, perform the **Clear Secured High Voltage DTCs** and follow the on-screen instructions.
8. With a scan tool, Clear All DTCs.
9. With a scan tool, select Hybrid/EV Battery Pack Charging Adaptive Learn Reset in the Hybrid Powertrain Control Module 2 Reset Functions menu and follow the on-screen instructions.

Reprogram Control Module

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

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

CAUTION: **DO NOT program the hybrid powertrain control module 2 with the drive motor battery charger cable connected to the vehicle. Charging while programming may result in damage to the High Voltage Battery Disconnect Relays.**

2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select Hybrid Powertrain Control Module 2 - Programming and follow the on-screen instructions.
4. At the end of programming, choose the "Clear All 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 hybrid/EV powertrain control module 2 replacement, programming and setup.

IMMOBILIZER CONTROL MODULE PROGRAMMING AND SETUP

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

INFLATABLE RESTRAINT SENSING AND DIAGNOSTIC 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.
- The air bag indicator light may remain ON after the body control module (BCM) or Inflatable Restraint Sensing and Diagnostic Module is replaced and during the programming procedure for the BCM until after the procedure is completed. When installing a new Inflatable Restraint Sensing and Diagnostic Module, 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 Inflatable Restraint Sensing and Diagnostic Module.

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 K36 Inflatable Restraint Sensing and Diagnostic Module - Programming and Setup and follow the on-screen instructions.
3. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

Unsuccessful Programming Recovery

NOTE:

GMNA Regions: When SPS failure message E4489 occurs during programming or calibration, do not call TCSC immediately. Record at which point the failure occurred before it displayed the E4489 message. When this occurs, proceed to GDS2. Download the appropriate vehicle configuration and select the Inflatable Restraint Sensing and Diagnostic Module. Under Identification Information, look at parameters: Software

Module 1 Identifier and Software Module 2 Identifier. If either of these are populated with a value of 1 or more, replace the Inflatable Restraint Sensing and Diagnostic Module. Record these parameter values on the back of the job card.

Non GMNA Regions: When SPS displays message indicating that programming may fail and the programming event fails at 0%, replace the Inflatable Restraint Sensing and Diagnostic Module. Verify no other DTC's or issues exist with the module prior to replacement. Record all DTCs and relevant information on the back of the job card.

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

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.
- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights) and HVAC.
- 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.
- To prevent programming failure due to unintended wireless drops, it is important that a wired MDI connection be used when reprogramming the Instrument Cluster

Diagnostic Aids

The programming steps in the Service Programming System (SPS) screens may not be in functional order. It is mandatory to follow the programming steps in the order listed below. The steps must be completed for the Instrument Cluster to be fully functional. Reversing the order or completing only one step could cause the Instrument Cluster to malfunction. If the steps are completed in an incorrect order, performing the steps in the proper order will correct the malfunctions.

Replace and Program ECU (except Cadillac)

To program a replacement or a new 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, Setup and Configuration and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select Instrument Cluster - USB File Transfer and follow the on-screen instructions. When prompted after installing files in vehicle via USB memory stick, select UPDATE on radio display. When update is complete, select DISMISS and remove the USB memory stick.

NOTE: The USB File Transfer procedure is performed after the new Instrument Cluster is installed in the vehicle. This procedure requires the use of a USB memory stick. The radio must be on during this procedure. The USB File Transfer procedure is not required for vehicles with UDC. Do not use the software on the USB memory stick in multiple vehicles. The USB memory stick must be cleared after each USB programming event.

5. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

Replace and Program ECU (Cadillac)

To program a replacement or a new 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 Configuration and follow the on-screen instructions.
5. On the SPS Supported Controllers screen, select Instrument Cluster - USB File Transfer and follow the on-screen instructions. When prompted after installing files in vehicle via USB memory stick, select UPDATE on radio display. When update is complete, select DISMISS and remove the USB memory stick.

NOTE:

- The USB File Transfer procedure is performed after the new Instrument Cluster is installed in the vehicle. This procedure requires the use of a USB memory stick. The radio must be on during this procedure. The USB File Transfer procedure is not required for vehicles with UDC.

- Software currently loaded on the USB Drive will be verified and if files are incorrect they will be deleted and correct files will be loaded. If files residing on the USB Drive are correct for the vehicle being serviced, the Techline terminal will not delete those files and allow the drive to be re-used.

6. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

Reprogram ECU (except Cadillac)

To program 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, Setup and Configuration and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select Instrument Cluster - USB File Transfer and follow the on-screen instructions. When prompted after installing files in vehicle via USB memory stick, select UPDATE on radio display. When update is complete, select DISMISS and remove the USB memory stick.

NOTE:

- The USB File Transfer procedure requires the use of a USB memory stick. The radio must be on during this procedure. The USB File Transfer procedure is not required for vehicles with UDC.
- Software currently loaded on the USB Drive will be verified and if files are incorrect they will be deleted and correct files will be loaded. If files residing on the USB Drive are correct for the vehicle being serviced, the Techline terminal will not delete those files and allow the drive to be re-used.

5. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

Reprogram ECU (Cadillac)

To program 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 Configuration and follow the on-screen instructions.
5. On the SPS Supported Controllers screen, select Instrument Cluster - USB File Transfer and follow the on-screen instructions. When prompted after installing files in vehicle via USB memory stick, select UPDATE on radio display. When update is complete, select DISMISS and remove the USB memory stick.

NOTE:

The USB File Transfer procedure is performed after the new Instrument Cluster is installed in the vehicle. This procedure requires the use of a USB memory stick. The radio must be on during this procedure. The USB File Transfer procedure is not required for vehicles with UDC. Do not use the software on the USB memory stick in multiple vehicles. The USB memory stick must be cleared after each USB programming event.

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 using the Replace and Program ECU instructions above.
3. If the ECU can still not be programmed, turn the ignition OFF, disconnect battery and wait for 15 minutes.
4. Connect battery, turn the ignition ON and attempt to reprogram the ECU using the Replace and Program ECU instructions above. 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.
 - If the ECU still cannot be programmed, replace the ECU.

LIFTGATE 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

Replace and Program ECU

NOTE: Some vehicles may be equipped with the handsfree liftgate control option (TC2), it is important to select the correct calibration software for vehicles with or without this option as programming the liftgate with the incorrect software will cause the power liftgate system to become inoperative without any DTCs indicated

NOTE: The trunk must be completely closed and latched, if the trunk is open or ajar during programming, the power trunk system may become inoperative without any DTCs indicated

To program a replacement control module, 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 K39 Liftgate Control Module - Programming and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select K39 Liftgate 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 Liftgate Relearn. Refer to [Liftgate Calibration](#)

Reprogram ECU

NOTE: Some vehicles may be equipped with the handsfree liftgate control option (TC2), it is important to select the correct calibration software for vehicles with or without this option as programming the liftgate with the incorrect software will cause the power liftgate system to become inoperative without any DTCs indicated

NOTE: The trunk must be completely closed and latched, if the trunk is open or ajar during programming, the power trunk system may become inoperative without any DTCs indicated

To reprogram an existing control module, 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 K39 Liftgate Control Module - Programming and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select K39 Liftgate 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 Liftgate Relearn. Refer to [Liftgate Calibration](#)

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

[Control Module References](#) for liftgate control module replacement, programming and setup.

LIFTGATE HANDSFREE SENSOR MODULE PROGRAMMING AND SETUP

Replace and Program The Control Module

To program a replacement hands-free liftgate sensor control module, perform the following procedure:

1. Connect the scan tool to the vehicle.
2. Select Module Diagnosis:
3. Select Liftgate Control Module:
4. Select Configuration/Reset Functions:
5. Select Remove/Reset Module:
6. Select Hands-Free Liftgate Sensor Control Module Calibration:
7. Press "Enter" and follow the on screen instructions:

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

[Control Module References](#) for the hands-free liftgate sensor control module replacement, programming and setup.

RADAR SENSOR MODULE - LONG RANGE PROGRAMMING AND SETUP

NOTE:

- **DO NOT** program a control module unless directed to by a service procedure or a service bulletin. If the Long Range Radar Sensor Module is not properly configured with the correct calibration

software, the Long Range Radar Sensor 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 or programming failure, Long Range Radar Sensor 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 Radar Sensor Module - Long Range or Reprogram Radar Sensor Module - Long Range

To program a replacement or an existing Long Range Radar Sensor 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 B233B Radar Sensor Module - Long Range - Programming and follow the on-screen instructions.
3. Ignition OFF and all vehicle systems OFF. It may take up to 2 minutes for all vehicle systems to power down.
4. Following programming, the module alignment must be calibrated.

Refer to [Radar Sensor Module - Long Range Learn](#) .

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 radar sensor module - long range replacement, 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.
- 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, 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 programming you may be required to select multiple calibrations dependent upon vehicle equipment. Have the vehicle build/RPO information available during the following procedure to ensure the correct calibrations are selected.

Reference Information

Special Tools

EL-49642 SPS Programming Support Tool

For equivalent regional tools, refer to [Special Tools](#).

Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, 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 K31 Navigation Control Module - Programming (Korea only) and follow the on-screen instructions.
4. At the end of programming, choose the "Clear DTCs" function on the SPS screen.

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.

NIGHT VISION CAMERA 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.
- 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

Replace and Program Control Module or Reprogram Control Module - Without Night Vision Camera Replacement

To program a replacement or an existing control module, 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 K172 Night Vision Camera 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.

Replace and Program Control Module or Reprogram Control Module - With Night Vision Camera Replacement

NOTE:

Reprogram the Night Vision Camera Control Module when the Night Vision Camera is replaced. If the same camera has been removed and installed, perform Night Vision Camera Control Module Learn .

To program a replacement or an existing control module, 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 K172 Night Vision Camera Control Module - Programming and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select K172 Night Vision Camera Control Module - Setup to enable Night Vision Calibration. Refer to [Night Vision Camera Control Module Learn](#).
5. 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. 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.

MEDIA DISC PLAYER 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

- During programming you may be required to select multiple calibrations dependent upon vehicle equipment. Have the vehicle build/RPO information available during the following procedure to ensure the correct calibrations are selected.

Reference Information

Special Tools

EL-49642 SPS Programming Support Tool

For equivalent regional tools, refer to [Special Tools](#).

Replace and Program Control Module or Reprogram Control Module

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

Without Rear Seat Video Entertainment System

This control module does not require SPS programming or any setup procedures.

With Rear Seat Video Entertainment System

1. Install the **EL-49642** SPS Programming Support Tool.
2. Connect a USB drive to the computer.
3. Access the Service Programming System (SPS) and follow the on-screen instructions.

NOTE: If using a pre-configured USB drive supplied by General Motors, proceed to step 8.

4. On the SPS Supported Controllers screen, select Media Disc Player - USB File Transfer and follow the on-screen instructions. If no data has been released for this application this option will not be displayed, proceed to step 10.

NOTE: Warehoused parts may not have current software on them. The following step will verify the module has the latest software version.

5. Upon completion of the file transfer, remove the USB drive from the computer.

NOTE:

- If there are no updates available for USB transfer via SPS, proceed to step 10.
- All existing files on the USB drive will be erased when the new files are copied.

6. Ignition ON, infotainment system ON.
7. Connect the USB drive to the rear seat USB port in the vehicle.
8. The infotainment system will recognize that update files are available. Follow the infotainment display on-screen instructions and select Update when prompted. Programming will take several minutes.
9. Upon completion of programming, remove the USB drive. Follow the infotainment display on-screen instructions.
10. On the SPS Supported Controllers screen, select Media Disc Player - Programming and follow the on-screen instructions.
11. 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. 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.

PARKING ASSIST 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

To program a replacement 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 K182 Parking Assist Control Module - Programming and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K182 Parking Assist Control Module - Configuration and follow the on-screen instructions.
4. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

Reprogram Control Module

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

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 K182 Parking Assist 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.

Unsuccessful Programming Recovery

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

1. Ignition ON. Ensure the K182 Parking Assist Control Module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the parking assist control module can be reprogrammed.
 - **If the K182 Parking Assist Control Module cannot be reprogrammed**
 1. Ignition OFF for one minute, ignition ON.
 2. Verify the parking assist control module can be reprogrammed.
 - If the K182 Parking Assist Control Module cannot be reprogrammed, replace the parking assist control module.
 - If the K182 Parking Assist Control Module can be reprogrammed.
 3. All OK.
 - **If the K182 Parking Assist 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.

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.

PEDESTRIAN ALERT SOUND 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

Reference Information

Special Tools

EL-49642 SPS Programming Support Tool

Replace and Program ECU

To program a replacement control module, 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 K132 Pedestrian Alert Sound Control Module - Configuration and follow the on-screen instructions.
4. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

Reprogram ECU

To reprogram an existing control module, 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 K132 Pedestrian Alert Sound Control Module - Configuration and follow the on-screen instructions.
4. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

Repair Instructions

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

Control Module References for pedestrian alert sound control module replacement, programming and setup.

POWER STEERING CONTROL MODULE PROGRAMMING AND SETUP

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

The electronic power steering control module is part of the power steering assist motor assembly and is electronically paired with the steering gear's sensors.

- If the complete steering gear INCLUDING the assist motor assembly was replaced or for reprogramming of an existing power steering system WITHOUT replacement, refer to the POWER STEERING CONTROL MODULE REPROGRAMMING instructions in this article.
- If ONLY the Power Steering Assist Motor assembly is replaced, follow the POWER STEERING CONTROL MODULE REPLACEMENT instructions.

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.

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. Replace the Power Steering Assist Motor containing the Power Steering Control Module. Refer to **Electric Belt Drive Rack and Pinion Steering Gear Replacement**.

3. With the Power Steering Assist Motor replaced and reconnected, on the SPS Supported Controllers screen, select Electronic Power Steering - Programming and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select Electronic Power Steering - Configuration & Setup and follow the on-screen instructions.
5. Ignition OFF and all vehicle systems OFF. It may take up to 2 minutes for all vehicle systems to power down.
6. Ignition ON.
7. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

Power Steering Control Module Reprogramming

Do not program or reprogram the electronic power steering control module unless directed by a service procedure or a service bulletin.

NOTE: This procedure applies to reprogramming of the existing steering gear or the initial programming if the complete steering gear assembly including the assist motor was replaced. If only the power steering control module is replaced, follow the Power Steering Control Module Replacement instructions above.

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select Electronic Power Steering - Programming and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select Electronic Power Steering - Configuration & Setup and follow the on-screen instructions.
4. Ignition OFF and all vehicle systems OFF. It may take up to 2 minutes for all vehicle systems to power down.
5. Ignition ON.
6. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

Steering Angle Sensor Centering and Software Endstop Learning

For the steering angle sensor centering and software endstop learning, refer to [Power Steering Control Module Calibration](#).

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.

RADAR SENSOR MODULE - SHORT RANGE 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

NOTE: This programming document applies to the B233 Radar Sensor Module - Short Range. For B218 Side Object Sensor Module (if equipped) refer to Side Object Sensor Module Programming and Setup.

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 B233 Radar Sensor Module - Short Range - Programming and follow the on-screen instructions.
3. 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. 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.

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

During programming you may be required to select multiple calibrations dependent upon vehicle equipment. Have the vehicle build/RPO information available during the following procedure to ensure the correct calibrations are selected.

Reference Information

Special Tools

EL-49642 SPS Programming Support Tool

For equivalent regional tools, refer to [Special Tools](#).

Replace Control Module

The replacement control module is fully programmed by the supplier and does not require SPS programming or any setup procedures.

Reprogram Control Module

To reprogram an existing control module, 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/HVAC Controls - 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. 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 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. 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.
- 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

- If programming of the control module is being performed at the direction of a bulletin or PI, follow the instructions provided in that document.
- During audio system programming you may be required to select multiple calibrations dependent upon vehicle equipment. Have the vehicle build/RPO information available during the following procedure to ensure the correct calibrations are selected.
- Dependant upon vehicle equipment, the current software level of the module or the release of updates, USB programming may not be required when replacing/reprogramming the control module. If USB files for the application are not available via SPS, or have not been received in another manner of distribution, the USB update process will not need to be performed.
- All data will be erased from the USB device BEFORE the calibration is downloaded onto the device. To ensure important information is NOT erased, always verify that NO information is

stored on the device BEFORE beginning the calibration download. If required, transfer important files to another storage device BEFORE beginning the calibration download.

- The length of time for the USB programming to complete will vary depending on the number and size of the files in the update.
- The USB programming will not allow the installation of the same software. If the same software is detected on the USB stick, Radio will display "Invalid Update" message.
- Make sure USB stick is removed after update is complete. If the USB stick is left connected an "Invalid Update" message will be displayed when the radio is powered on.
- Use a USB 2.0 Flash Drive with 4GB - 8GB memory (not to exceed 8GB). Using a USB 3.0 Flash Drive has been known to cause programming issues. A USB 2.0 will have a black 4 pin connector vs. a USB 3.0 which will have a 5 - 6 pin blue connector.

Reference Information

Special Tools

- **EL-49642** SPS Programming Support Tool
- USB 2.0 flash drive with 4GB - 8GB memory (not to exceed 8GB).

For equivalent regional tools, refer to [Special Tools](#).

Replace and Program Control Module or Reprogram Control Module

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

NOTE: The vehicle must remain in PARK during the programming procedure.

1. Install the **EL-49642** SPS Programming Support Tool.
2. Connect a USB drive to the computer.

NOTE: If using a pre-configured USB drive supplied by General Motors, proceed to step 6.

3. Access the Service Programming System (SPS) and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select A11 Radio - USB Copy/ USB File Transfer, and follow the on-screen instructions.

NOTE:

- If there are no files available for USB transfer via SPS, proceed to step 10.
- Software currently loaded on the USB Drive will be verified and if files are incorrect they will be deleted and correct files will be loaded. If files residing on the USB Drive are correct for the vehicle being serviced, the Techline terminal will not delete those files and allow the drive to be re-used.

5. Upon completion of the file transfer, remove the USB drive from the computer.
6. Ignition ON, radio ON.
7. Connect the USB drive to the USB port in the vehicle and follow the instructions.
8. When programming is complete, remove the USB device from the vehicle USB port.
9. Access the Service Programming System (SPS) and follow the on-screen instructions.
10. On the SPS Supported Controllers screen, select A11 Radio - Programming, and follow the on-screen instructions.
11. On the SPS Supported Controllers screen, (if available) select A11 Radio - Setup and Configuration, and follow the on-screen instructions.
12. At the end of programming, choose the "Clear DTCs" function on the SPS screen.

XM Activation (If Equipped)

IMPORTANT: After replacement of an XM receiver, call XM radio to deactivate the receiver that has been removed from the vehicle.

1. Turn the radio ON, tune to the XM channel 0, and record the radio ID. The radio ID will be needed for activation of the receiver.
2. From the USA, Call XM radio at 1-800-556-3600 to activate the receiver. From Canada, call 1-877-438-9677.
3. Park the vehicle outside in an area with an unobstructed view of the southern sky.
4. Leave the vehicle outside with the ignition switch in the ACC position and the radio on for 30 minutes to activate XM service.
5. Once activated, the radio will receive the remaining XM channels.

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.

Valet Mode Reset

1. Verify no DTCs are set.
 - **If any DTCs are set**

Refer to [Diagnostic Trouble Code \(DTC\) List - Vehicle](#) .
 - **If no DTCs are set**
2. Select the Radio control function Erase Valet Mode Code with the scan tool.
3. Select Clear and confirm the selection to erase the code.

REAR SEAT HEATER CONTROL MODULE PROGRAMMING AND SETUP

This device does not require programming or setup.

REAR WHEEL STEERING 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 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 ECU

To program a replacement rear steering control module or reprogram a rear steering control module, perform the following procedure:

1. Install **EL-49642** SPS programming support tool.
2. Ignition ON.
3. Access the Service Programming System (SPS) and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select Rear Steering Control Module - Programming and follow the on-screen instructions.
5. 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. 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.

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.

SEAT BOLSTER MEMORY CONTROL MODULE PROGRAMMING AND SETUP

This device does not require programming or setup.

SEAT MEMORY CONTROL MODULE PROGRAMMING AND SETUP (PASSENGER SEAT)

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 or Reprogram Control Module

To program a replacement or an existing control module, 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 K40P Seat Memory Control Module - Passenger - Programming and follow the on-screen instructions.
4. At the end of programming, choose the Clear All DTCs function on the SPS screen.
5. Move the seat to a central, middle range position, then perform the memory store operation for memory "1", "2" and "Exit" or "3" if equipped. Refer to the Owner Manual for storing memory seat positions.

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.

SEAT MEMORY CONTROL MODULE PROGRAMMING AND SETUP (DRIVER SEAT)

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 or Reprogram Control Module

To program a replacement or an existing control module, 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 K40D Seat Memory Control Module - Driver - Programming and follow the on-screen instructions.
4. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.
5. Move the seat to a central, middle range position, then perform the memory store operation for memory "1", "2" and "Exit" or "3" if equipped. Refer to the Owner Manual for storing memory seat positions.

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.

SEAT MEMORY CONTROL MODULE PROGRAMMING AND SETUP (LEFT REAR SEAT)

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.

Special Tools

EL-49642 SPS Programming Support Tool

For equivalent regional tools, refer to [Special Tools](#).

Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, 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 K40LR Seat Memory Control Module - Left Rear - 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. 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.

SEAT MEMORY CONTROL MODULE PROGRAMMING AND SETUP (RIGHT REAR SEAT)

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 or Reprogram Control Module

To program a replacement or an existing control module, 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 K40RR Seat Memory Control Module - Right Rear - 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. 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.

SEAT BELT RETRACTOR MOTOR 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.

- 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.
- 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.
- 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 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 SEQ Programming Sequence Seat Belt Retractor Motor Module - Left/Right (M101L/M101R) and follow the on-screen instructions.
3. 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. 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.

SERIAL DATA GATEWAY 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

Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing K56 Serial Data Gateway Module, 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 K56 Serial Data Gateway Module - Programming and follow the on-screen instructions.
4. At the end of programming, choose the "Clear DTCs" function on the SPS screen.

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.

SERVICE PROGRAMMING SYSTEM (SPS)

Special Tools

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.**
- **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.

SIDE OBJECT SENSOR MODULE PROGRAMMING AND SETUP

NOTE:

- **DO NOT program a side object sensor - left unless directed to by a service procedure or a service bulletin. If the side object sensor - left is not properly configured with the correct calibration software, the side object sensor - left 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 side object sensor - left 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 B218R Side Object Sensor Module - Right is not programmable separately. This module is programmed by B218L Side Object Sensor Module - Left after it has been programmed. If a right side module is replaced, follow this procedure to update the module.

Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing B218L Side Object Sensor Module - Left, 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 B218L Side Object Sensor Module - Left - Programming and follow the on-screen instructions.
3. 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. Ignition ON. Ensure the B218L Side Object Sensor Module - Left, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the B218L Side Object Sensor Module - Left can be reprogrammed.
 - **If the B218L Side Object Sensor Module - Left cannot be reprogrammed**
 1. Ignition OFF for one minute, ignition ON.
 2. Verify the B218L Side Object Sensor Module - Left can be reprogrammed.
 - If the B218L Side Object Sensor Module - Left cannot be reprogrammed, replace the B218L Side Object Sensor Module - Left.
 - If the B218L Side Object Sensor Module - Left can be reprogrammed.
 3. All OK.
 - **If the B218L Side Object Sensor Module - Left can be reprogrammed**
3. All OK.

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

[Control Module References](#) for side object sensor module - left replacement, programming and setup.

STEERING COLUMN TILT WHEEL AND TELESCOPE CONTROL MODULE PROGRAMMING AND SETUP

When replacing the steering column tilt wheel and telescope control module, steering column tilt motor or steering column telescope motor, the steering column tilt wheel and telescope control module learn procedure must be followed. Refer to [Steering Column Tilt Wheel and Telescope Control Module Learn](#) steering column tilt wheel and telescope control module learn procedure.

STEERING COLUMN LOCK 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 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 Steering Column Lock Control Module

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

NOTE: Before reprogramming, to ensure that the steering column lock password from the BCM is learned: turn ignition ON and then OFF, close all doors and wait 5 minutes.

1. Install **EL-49642** SPS programming support tool.
2. Ignition ON.
3. Access the Service Programming System (SPS) and follow the on-screen instructions.
4. If available, on the SPS Supported Controllers screen, select Steering Column Lock Control Module - Prepare Control Module For Removal and follow the on-screen instructions.

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

5. Replace the Steering Column Lock Module. Refer to [Control Module References](#)
6. Ignition ON for one minute, ignition OFF.
7. Close all doors and wait 5 minutes.
8. Ignition ON.
9. On the SPS Supported Controllers screen, select Steering Column Lock Control Module - Programming and follow the on-screen instructions.
10. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

Reprogram Steering Column Lock Control Module

NOTE: Before reprogramming, to ensure that the steering column lock password from the BCM is learned: turn ignition ON and then OFF, close all doors and wait 5 minutes.

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

1. Ignition ON for one minute, ignition OFF.
2. Close all doors and wait 5 minutes.
3. Install **EL-49642** SPS programming support tool.
4. Ignition ON.
5. Access the Service Programming System (SPS) and follow the on-screen instructions.
6. On the SPS Supported Controllers screen, select Steering Column Lock Control Module - Programming and follow the on-screen instructions.
7. 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. 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.

STEERING WHEEL HEAT CONTROL MODULE PROGRAMMING AND SETUP

This device requires no programming or setup.

SUNROOF SUNSHADE CONTROL MODULE PROGRAMMING AND SETUP

This device requires no programming or setup.

TELEMATICS COMMUNICATION INTERFACE 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

- Before beginning any programming first determine which Generation of the Telematics Communication Interface Control Module you are working with. One way to accomplish this is

by using a scan tool. The Telematics Communication Interface Control Module Generation will be listed under the Selected Vehicle Configuration section, in addition the Generation (9 or 10) can be determined from the Module ID data table. Additional programming steps may be necessary depending on the generation of the module.

- 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 required to complete the procedure.
- 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.
- If the vehicle is equipped with RPO VV4 the Telematics Communication Interface Control Module Wi-Fi Enable (Gen 10 only) Programming step must be performed AFTER the Programming and Service Activation step. Failure to complete this step in the proper sequence will result in Wi-Fi being disabled.
- 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.

Reference Information

Special Tools

EL-49642 SPS Programming Support Tool

For equivalent regional tools, refer to [Special Tools](#).

Replace and Program Control Module or Reprogram Control Module

To program a replacement or an existing control module, 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.

NOTE:

- **Due to a change in SPS you must select 'Reprogram ECU', for Telematics Communication Interface Control Module Programming from the Selected Programming Process even if the unit is being replaced.**
 - **If 'Replace and Program ECU' is selected the Telematics Communication Interface Control Module will not be listed in the Supported Controllers screen. You must go back and select 'Reprogram ECU'.**
3. In the SPS Supported Controllers screen, select Telematics Communication Interface Control Module Programming 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. After Telematics Communication Interface Control Module Programming and Service Activation, if the vehicle is equipped with RPO VV4, on the Supported Controllers screen select Telematics Communication Interface Control Module Wi-Fi Enable (Gen 10 only) Programming and follow the on-screen instructions.

NOTE:

The Wi-Fi Enable step must be performed AFTER the Programming and Service Activation step or Wi-Fi will not function. If

6. Press the OnStar[®] Blue Button to call OnStar[®] and have the system activated. If the customer refused OnStar[®] services (terms and conditions) and the vehicle is equipped with RPO VV4 have the OnStar[®] consultant turn off the Wi-Fi demo message that occurs after every ignition on event.

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.

TRANSFER CASE CONTROL MODULE PROGRAMMING AND SETUP

Diagnostic Instructions

- Perform the Diagnostic System Check prior to using this diagnostic procedure: [Diagnostic System Check - Vehicle](#)
- Review the description of Strategy Based Diagnosis: [Strategy Based Diagnosis](#)

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.**
- **Verify 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 below mentioned special tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.**
- **Turn Off or disable systems that may put a load on the vehicle's battery. For example, interior lights, daytime running lights, HVAC and radio.**
- **During the programming procedure, follow the Service Programming System (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.**

EL-49642 SPS Programming Support Tool

Equivalent regional tools: [Special Tools](#)

Programming an Existing or New Control Module

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

1. Install the special tool: **EL-49642 SPS Programming Support Tool**
2. Ignition/ Vehicle On / Vehicle In Service Mode
3. Access SPS and follow the on-screen instructions for the control module: K69 Transfer Case Control Module
4. Perform the SPS function: K69 Transfer Case Control Module - Programming
5. Perform the SPS function: K69 Transfer Case Control Module - Setup
6. Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to No.

Unsuccessful Programming Recovery

If programming a control module is not successful, perform the following procedure:

1. Verify the control module, data link connector and programming tool connections are secure and the SPS software is up to date.
2. Ignition/ Vehicle On / Vehicle In Service Mode
3. Perform the SPS function: K69 Transfer Case Control Module - Programming

Verify the control module programming is successful.

- **If the programming is not successful**

1. Ignition/ Vehicle Off - For greater than 1 min
2. Ignition/ Vehicle On / Vehicle In Service Mode
3. Perform the SPS function: K69 Transfer Case Control Module - Programming
 - If the programming is not successful Replace the component: K69 Transfer Case Control Module
 1. Replace the component: K69 Transfer Case Control Module
 2. Perform the SPS function: K69 Transfer Case Control Module - Setup
 - If the programming is successful
4. Perform the SPS function: K69 Transfer Case Control Module - Setup
 - If the procedure was not successful
 1. Replace the component: A16 Transfer Case Motor
 2. Perform the SPS function: K69 Transfer Case Control Module - Setup
 - If the procedure was successful
5. All OK.

- **If the programming is successful**

4. Perform the SPS function: K69 Transfer Case Control Module - Setup
5. Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to No.
6. All OK.

Repair Instructions

Perform the Diagnostic Repair Verification after completing the repair: [Diagnostic Repair Verification](#)

For control module replacement, programming, and setup refer to: [Control Module References](#)

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

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 K157 Video Processing 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 K157 Video Processing Control Module calibration. Refer to [Video Processing Control Module Calibration](#)

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 K157 Video Processing 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.

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.

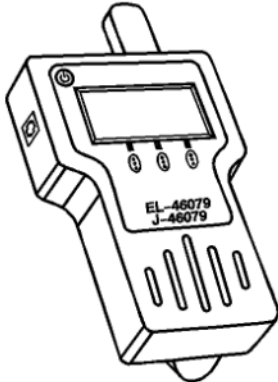
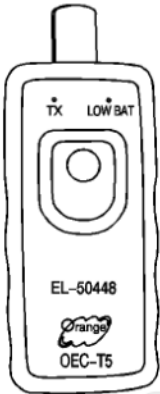
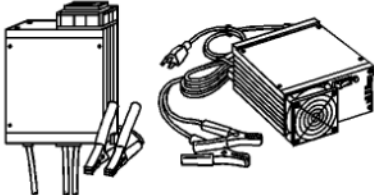
Repair Instructions

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

Control Module References for Control Module replacement, programming and setup.

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

Illustration	Tool Number/Description
	EL 46079 J 46079 Tire Pressure Monitor Diagnostic Tool
	EL 50448 Tire Pressure Monitor Sensor Activation Tool
	EL 49642 EL 50113 Europe - Use recommended equivalent workshop equipment SPS Programming Support Tool