

ACCESSORIES & EQUIPMENT

Programming and Setup - Escalade, Suburban, Tahoe, Yukon

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 (IO3) Radio/Navigation System Schematics (IO5, IO6)	Radio Replacement (Chevrolet / GMC with NGI) Radio Replacement (Cadillac with NGI) Radio Replacement (Chevrolet/GMC with IOB) Radio Replacement (Cadillac with IOB)	Radio Programming and Setup
A20	Radio/HVAC Controls	Radio/Navigation System Schematics (IO3) Radio/Navigation System Schematics (IO5, IO6)	Radio Control Assembly Replacement (Chevrolet / GMC) Radio Control Assembly Replacement (Cadillac)	Radio Control Programming and Setup
A33	Media Disc Player	Radio/Navigation System Schematics (IO3) Radio/Navigation System Schematics (IO5, IO6)	Disc Player Replacement	Media Disc Player Programming and Setup If equipped with TG5, no programming required.

Code	Control Module/Scan Tool Information	Schematic	Repair Instruction	Programming and Setup
B174W	<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>
B218R	<u>Side Object Sensor Module Scan Tool Information</u>	<u>Object Detection Schematics</u>	<u>Side Object Sensing Alert Module Replacement</u>	<u>Side Object Sensor Module Programming and Setup</u>
B233B	<u>Radar Sensor Module - Long Range Scan Tool Information</u>	<u>Object Detection Schematics</u>	<u>Forward Range Radar Module Replacement (Chevrolet / GMC) Forward Range Radar Module Replacement (Cadillac without AVF) Forward Range Radar Module Replacement (Cadillac with AVF)</u>	<u>Radar Sensor Module - Long Range Programming and Setup</u>
B233R	Radar Sensor Module - Short Range	<u>Object Detection Schematics</u>	<u>Forward Range Radar Module Replacement (Chevrolet / GMC) Forward Range Radar Module Replacement (Cadillac without AVF) Forward Range Radar Module Replacement (Cadillac with AVF)</u>	<u>Radar Sensor Module - Short Range Programming and Setup</u>
K4	<u>Assist Step Control Module Scan Tool Information</u>	<u>Step/Running Board Schematics</u>	<u>Assist Step Control Module Replacement (Retractable Power Assist)</u>	<u>Assist Step 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>
K14	<u>Distance Sensing Cruise Control Module Scan Tool Information</u>	<u>Cruise Control Schematics</u>	<u>Forward Range Radar Module Replacement (Chevrolet / GMC)</u>	<u>Distance Sensing Cruise Control Module Programming and</u>

Code	Control Module/Scan Tool Information	Schematic	Repair Instruction	Programming and Setup
			<u>Forward Range Radar Module Replacement (Cadillac without AVF)</u> <u>Forward Range Radar Module Replacement (Cadillac with AVF)</u> • <u>Forward Range Radar Module Alignment (Chevrolet / GMC)</u> • <u>Forward Range Radar Module Inspection (Chevrolet / GMC)</u>	<u>Setup</u> • <u>Distance Sensing Cruise Control Module Learn Procedure</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</u>
K19	<u>Suspension Control Module Scan Tool Information</u>	<u>Electronic Suspension Control Schematics</u>	<u>Electronic Suspension Control Module Replacement</u>	<u>Suspension Control Module Programming and Setup</u>
K20	<u>K20 Engine Control Module: Scan Tool Information</u>	• <u>Engine Controls Schematics</u> - 4.8L, 5.3L, 6.0L, 6.2L, or 7.0L engine • <u>Engine Controls Schematics</u> - 5.3L (L83) or 6.2L (L86) engine	<u>Engine Control Module Replacement</u>	<u>K20 Engine Control Module: Programming and Setup</u>
K29	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	Seat Heating Control Module - Rear	<u>Heated/Cooled Seat Schematics</u>	<u>Rear Seat Heater Control Module Replacement</u>	<u>Rear Seat Heater Control Module Programming and</u>

Code	Control Module/Scan Tool Information	Schematic	Repair Instruction	Programming and Setup
				<u>Setup</u>
K32	Steering Heating Control Module	<u>Steering Wheel Schematics</u>	<u>Steering Wheel Heat Control Module 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 (Utilities) Heater and Air Conditioning Remote Control Replacement (Z75)</u>	<u>HVAC System Control Module Programming and Setup</u>
K36	<u>Inflatable Restraint Sensing and Diagnostic Module Scan Tool Information</u>	<u>SIR Schematics</u>	<u>Airbag Sensing and Diagnostic Module Replacement (Except Cadillac, without DCK) Airbag Sensing and Diagnostic Module Replacement (Cadillac without DCK) Airbag Sensing and Diagnostic Module Replacement (With DCK)</u>	<u>Inflatable Restraint Sensing and Diagnostic Module Programming and Setup</u>
K38	<u>Chassis Control Module Scan Tool Information</u>	• <u>Active Grille Air Shutter Schematics</u> • <u>Trailer Brake Control Schematics</u> • <u>Automatic Level Control Schematics</u>	<u>Chassis Control Module Replacement (With Active Air Shutter) Chassis Control Module Replacement (Without Active Air Shutter)</u>	<u>Chassis Control Module Programming and Setup</u>
K39	<u>Liftgate Control Module Scan Tool Information</u>	<u>Liftgate Schematics</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</u>
K41	<u>Front and Rear Parking Assist Control Module Scan Tool Information</u>	<u>Object Detection Schematics</u>	<u>Parking Assist Control Module Replacement</u>	<u>Front and Rear Parking Assist Control Module Programming and Setup</u>
K43	<u>Power Steering Control Module Scan Tool Information Power Steering Control Module Scan Tool Information (Heavy Duty)</u>	<u>Power Steering Schematics</u>	<u>Electric Belt Drive Rack and Pinion Steering Gear Replacement (Light Duty)</u>	<u>Power Steering Control Module Programming and Setup</u>
K60	<u>Steering Column Lock Module Scan Tool Information</u>	<u>Column Lock Schematics</u>	<u>Steering Column Electronic Lock Replacement</u>	<u>Steering Column Lock Module Programming and Setup</u>
K61	Sunroof Control Module	<u>Sunroof Schematics</u>	<u>Sunroof Actuator Motor Replacement</u>	<u>Sunroof Control Module Programming and Setup</u>
K67	<u>Trailer Brake Control Module Scan Tool Information</u>	<u>Trailer Brake Control Schematics</u>	<u>Trailer Brake Power Control Module Replacement</u>	<u>Trailer Brake Power Module Programming and Setup</u>
K69	<u>Transfer Case Control Module Scan Tool Information (NQH)</u> <u>Transfer Case Control Module Scan Tool Information (NP0)</u>	• <u>Transfer Case Control Schematics</u> - MP 3010 (NP0) • <u>Transfer Case Control Schematics</u> - MP 3023/3024 (NQH)	<u>Transfer Case Control Module Replacement</u>	<u>Transfer Case Control Module Programming and Setup (NQH)</u> <u>Transfer Case Control Module Programming and Setup (NP0)</u>
K71	<u>Transmission Control Module Scan Tool Information (6L80/90)</u> <u>Transmission Control Module Scan Tool</u>	• <u>Automatic Transmission Controls Schematics</u> - 6L45/6L50/6L80/6L90	• <u>Control Solenoid Valve and Transmission Control Module Assembly Replacement</u> - 6L45/6L50/6L80/6L90	• <u>Control Solenoid Valve and Transmission Control Module Assembly Programming and</u>

Code	Control Module/Scan Tool Information	Schematic	Repair Instruction	Programming and Setup
	<u>Information (8L90)</u>	• <u>Automatic Transmission Controls Schematics</u> - 8L45/8L90	• <u>Transmission Control Module Replacement</u> - 8L45/8L90	<u>Setup (6L80)</u> - 6L45/6L50/6L80/6L90 • <u>K71 Transmission Control Module: Programming and Setup (8L90)</u> - 8L45/8L90
K73	<u>Communication Interface Module Scan Tool Information (OnStar Gen 9) Communication Interface Module Scan Tool Information (OnStar Gen 10)</u>	<u>OnStar/Telematics Schematics</u>	<u>Communication Interface Module Replacement (Chevrolet / GMC) Communication Interface Module Replacement (Cadillac)</u>	<u>Communication Interface Module Programming and Setup</u>
K74	<u>Human Machine Interface Control Module Scan Tool Information</u>	<u>Radio/Navigation System Schematics (IO3)</u> <u>Radio/Navigation System Schematics (IO5, IO6)</u>	<u>Human Machine Interface Control Module Replacement (Chevrolet / GMC) Human Machine Interface Control Module Replacement (Cadillac)</u>	<u>Human Machine Interface Control Module Programming and Setup</u>
K77	Remote Control Door Lock Receiver	<u>Remote Function Schematics</u>	<u>Remote Control Door Lock Receiver Replacement</u>	<u>Remote Control Door Lock Receiver Programming and Setup</u>
K83	<u>Electronic Parking Brake Control Module Scan Tool Information</u>	<u>Park Brake System Schematics</u>	<u>Electronic Parking Brake Control Module Replacement</u>	<u>Electronic Parking Brake Control Module Programming and Setup</u>
K84	<u>Keyless Entry Control Module Scan Tool Information</u>	<u>Remote Function Schematics</u>	<u>Keyless Entry Control Module Replacement</u>	<u>Keyless Entry Control Module Programming and Setup</u>
K85	<u>Inflatable Restraint Passenger Presence</u>	<u>SIR Schematics</u>	<u>Airbag Front Passenger Presence Module</u>	<u>Passenger Presence System Programming and Setup</u>

Code	Control Module/Scan Tool Information	Schematic	Repair Instruction	Programming and Setup
	<u>System Scan Tool Information</u>		<u>Replacement</u>	
K89	Immobilizer Control Module	<u>Immobilizer Schematics</u>	<u>Theft Deterrent Module Replacement (Chevrolet / GMC) Theft Deterrent Module Replacement (Cadillac)</u>	<u>Immobilizer Control Module Programming and Setup</u>
K99	Steering Column Position Control Module	<u>Tilt/Telescoping Steering Column Schematics</u>	<u>Steering Column Control Module Replacement</u>	<u>Steering Column Tilt Wheel and Telescope Control Module Programming and Setup</u>
K111	<u>Fuel Pump Power Control Module Scan Tool Information</u>	<u>Engine Controls Schematics</u>	<u>Fuel Pump Power Control Module Replacement</u>	<u>Fuel Pump Power Control Module Programming and Setup</u> (AKA: Fuel Pump Driver Control Module)
K124	<u>Active Safety Control Module Scan Tool Information</u>	<u>Object Detection Schematics</u>	<u>Active Safety Control Module Replacement (Cadillac)</u>	<u>Active Safety Control Module Programming and Setup</u>
K133	Trailer Brake Power Control Module Refer to <u>Chassis Control Module Scan Tool Information</u>	<u>Trailer Brake Control Schematics</u>	<u>Trailer Brake Power Control Module Replacement</u>	<u>Trailer Brake Power Module Programming and Setup</u>
K134D	Seat Bolster Memory Control Module - Driver	<u>Driver Seat Schematics</u>	<u>Front Seat Bolster Memory Module Replacement (22-Way Power)</u>	<u>Seat Bolster Memory Control Module Programming and Setup</u>
K134P	Seat Bolster Memory Control Module - Passenger	<u>Passenger Seat Schematics</u>	<u>Front Seat Bolster Memory Module Replacement (22-Way Power)</u>	<u>Seat Bolster Memory Control Module Programming and Setup</u>
K157	<u>Video Processing Control Module Scan Tool</u>	<u>Object Detection Schematics</u>	<u>Video Processing Module Replacement</u>	<u>Video Processing Control Module Programming and</u>

Code	Control Module/Scan Tool Information	Schematic	Repair Instruction	Programming and Setup
	<u>Information</u>			<u>Setup</u>
K171	Hand-Free Liftgate Sensor Control Module	<u>Liftgate Schematics</u>	<u>Rear Closure Hands Free Module Replacement (Cadillac) Rear Closure Hands Free Module Replacement (Chevrolet)</u>	<u>Liftgate Handsfree Sensor Module Programming and Setup</u>
M101L/R	<u>Seat Belt Retractor Motor Module Scan Tool Information</u>	<u>Seat Belt Schematics</u>	<u>Seat Belt Retractor Pretensioner Replacement - Front</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 (Chevrolet / GMC) Instrument Cluster Replacement (Cadillac)</u>	<u>Instrument Cluster Programming and Setup</u>
S25	Garage Door Opener	<u>Remote Function Schematics</u>	<u>Garage Door Opener Transmitter Replacement</u>	<u>Garage Door Opener Programming and Setup</u>
T1	Accessory AC and DC Power Control Module	<u>Cigar Lighter/Power Outlet Schematics</u>	<u>Accessory AC and DC Power Control Module Replacement</u>	<u>Accessory AC and DC Power Control Module Programming and Setup</u>
T3	<u>Audio Amplifier Scan Tool Information</u>	<u>Radio/Navigation System Schematics (IO3) Radio/Navigation System Schematics (IO5, IO6)</u>	<u>Radio Speaker Amplifier Replacement</u>	<u>Audio Amplifier Programming and Setup</u>

REPAIR INSTRUCTIONS

ACCESSORY AC AND DC POWER CONTROL MODULE PROGRAMMING AND SETUP

The T1 Accessory DC/AC Power Inverter Module does not require SPS programming or any setup procedures.

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.

ASSIST STEP 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. 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 K4 Assist Step Control Module - Programming and follow the on-screen instructions.

NOTE: If during programming a message is displayed that the same calibration is attempting to be installed, select OK to proceed - this process will also program the VIN.

4. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.
5. Open and close both the driver and passenger door to verify operation. Doors may need to be opened and closed two times for the assist step control module to learn the door home positions.

Unsuccessful Programming Recovery

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

1. Ignition ON. Ensure the K4 Assist Step Control Module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the K4 Assist Step Control Module can be reprogrammed.
 - **If the K4 Assist Step Control Module cannot be reprogrammed**
 1. Ignition OFF for one minute, ignition ON.
 2. Verify the K4 Assist Step Control Module can be reprogrammed.
 - If the K4 Assist Step Control Module cannot be reprogrammed, replace the K4 Assist Step Control Module.
 - If the K4 Assist Step Control Module can be reprogrammed.
 - 3. All OK.
3. All OK.

Repair Instructions

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

Refer to [Control Module References](#) for assist step 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.

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

NOTE: If the vehicle has keyless entry transmitters separated from the keys, all transmitters have to be present before proceeding with the following steps.

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

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

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

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

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

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.

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

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

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

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.
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.

NOTE: If the vehicle has keys with integrated transmitters, this step is not required because the integrated transmitters were already learned during the immobilizer learn process along with the keys.

9. If the vehicle has keyless entry transmitters separated from the keys, refer to [Remote Control Door Lock Transmitter Learn \(without BTM\)](#) [Remote Control Door Lock Transmitter Learn \(with BTM\)](#) to re-learn all transmitters.
10. If ABS, Traction Control and/or Stabilitrak indicators are ON and DTC C0161 is set in the K17 Electronic Brake Control Module after performing BCM programming and setup, do the following:
 1. Disconnect the scan tool from the X84 Data Link Connector.
 2. Ignition OFF, all access doors closed, all vehicle systems OFF, and all keys at least 3 m (9.8 ft) away from the vehicle. It may take up to 2 min to power down.
 3. Ignition ON, verify DTC C0161 is in history. If not, repeat the above step to make sure the vehicle is in sleep mode.
 4. Use the scan tool to clear the DTCs.

Reprogram Control Module

NOTE: If the vehicle has keyless entry transmitters separated from the keys, all transmitters have to be present before proceeding with the following steps.

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

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

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

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

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

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

4. On the SPS Supported Controllers screen, select K9 Body Control Module - Setup (or K9 Body Control Module - Configuration & Setup) and follow the on-screen instructions.
5. Check the driver information center display for additional messages regarding further calibration instructions. If there are no additional driver information center instructions present, programming is complete.
6. At the end of programming, choose the "Clear DTCs" function on the SPS screen.

NOTE: If the vehicle has keys with integrated transmitters, this step is not required because the integrated transmitters were already learned during the immobilizer learn process along with the keys.

7. If the vehicle has keyless entry transmitters separated from the keys, refer to [Remote Control Door Lock Transmitter Learn \(without BTM\)](#) [Remote Control Door Lock Transmitter Learn \(with BTM\)](#) to re-learn all transmitters.
8. If ABS, Traction Control and/or Stabilitrak indicators are ON and DTC C0161 is set in the K17 Electronic Brake Control Module after performing BCM programming and setup, do the following:
 1. Disconnect the scan tool from the X84 Data Link Connector.
 2. Ignition OFF, all access doors closed, all vehicle systems OFF, and all keys at least 3 m (9.8 ft) away from the vehicle. It may take up to 2 min to power down.

3. Ignition ON, verify DTC C0161 is in history. If not, repeat the above step to make sure the vehicle is in sleep mode.
4. Use the scan tool to clear the DTCs.

Unsuccessful Programming Recovery

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

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

Repair Instructions

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

Refer to [Control Module References](#) for Control Module replacement, programming and setup

CHASSIS 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. 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 K38 Chassis Control Module - Programming and follow the on-screen instructions.
4. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.
5. With a scan tool, perform the Suspension Sensor Trim Height Calibration, 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.

Refer to [Control Module References](#) for Control Module replacement, programming and setup

COOLER BOX PROGRAMMING AND SETUP

This device does not require programming or setup.

COMMUNICATION INTERFACE 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 WiFi 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 WiFi 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 WiFi Enable (Gen 10 only) Programming and follow the on-screen instructions.

NOTE:

The WiFi Enable step must be performed AFTER the Programming and Service Activation step, or WiFi will not function. If Programming and Service Activation step is performed after the WiFi Enable step, WiFi will be disabled.

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 WiFi 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.

CONTROL SOLENOID VALVE AND TRANSMISSION CONTROL MODULE ASSEMBLY PROGRAMMING AND SETUP (6L80)

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

Transmission Control Module (TCM) Replacement

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

1. TCM Reprogramming
2. The Reset Transmission Adapts - Refer to [Reset Transmission Adapts](#)

TCM Reprogramming

1. If the TCM needs to be reprogrammed, refer to [Service Programming System \(SPS\)](#).
2. Perform the Reset Transmission Adapts - Refer to [Reset Transmission Adapts](#).

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

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

Setup for Component Replacement

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

If any of the following components are replaced, the [Reset Transmission Adapts](#) procedure must be performed:

- Transmission replacement
- Any internal transmission repair

- Any speed sensor

Refer to [Reset Transmission Adapts](#) .

DISTANCE SENSING CRUISE 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](#).

Distance Sensing Cruise Control Module Replacement

If the cruise control vehicle distance sensor module needs to be replaced, the following procedures must be performed:

1. Replace the K14 Distance Sensing Cruise Control Module. Refer to [Forward Range Radar Module Replacement \(Chevrolet / GMC\)](#)
[Forward Range Radar Module Replacement \(Cadillac without AVF\)](#) [Forward Range Radar Module Replacement \(Cadillac with AVF\)](#)

2. Align the K14 Distance Sensing Cruise Control Module. Refer to [Forward Range Radar Module Alignment \(Chevrolet / GMC\)](#)
3. Install **EL-49642** SPS Programming Support Tool.
4. Access the Service Programming System (SPS) and follow the on-screen instructions.
5. On the SPS Supported Controllers screen, select K14 Distance Sensing Cruise Control Module.
6. Perform the SPS function Distance Sensing Cruise Control Module - Programming and follow the on-screen instructions.
7. Perform the SPS function Distance Sensing Cruise Control Module - Configuration and follow the on-screen instructions.
8. DTC C056E with failure type byte 4B will set as a result of the programming event.
9. Perform the Distance Sensing Cruise Control Module learn procedure. Refer to [Distance Sensing Cruise Control Module Learn Procedure](#)
10. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

Cruise Control Vehicle Distance Sensor Module Reprogramming

Do not reprogram the cruise control vehicle distance sensor module, unless directed by a service procedure, or a service bulletin.

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 K14 Distance Sensing Cruise Control Module.
4. Perform the SPS function Distance Sensing Cruise Control Module - Programming and follow the on-screen instructions.
5. Perform the SPS function Distance Sensing Cruise Control Module - Configuration and follow the on-screen instructions.
6. DTC C056E with failure type byte 4B will set as a result of the programming event.
7. Perform the Distance Sensing Cruise Control Module learn procedure. Refer to [Distance Sensing Cruise Control Module Learn Procedure](#)
8. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

Setup for Bracket Replacement

1. Align the K14 Distance Sensing Cruise Control Module. Refer to [Forward Range Radar Module Alignment \(Chevrolet / GMC\)](#) .
2. Perform the Distance Sensing Cruise Control Module learn procedure. Refer to [Distance Sensing Cruise Control Module Learn Procedure](#) .

Unsuccessful Programming Recovery

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

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.

2. Verify the control module can be reprogrammed.

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

1. Ignition OFF for one minute, ignition ON.

2. Verify the control module can be reprogrammed.

- If the control module cannot be reprogrammed, replace the control module.
- If the control module can be reprogrammed.

3. All OK.

- **If the control module can be reprogrammed**

3. All OK.

Repair Instructions

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

Refer to [Control Module References](#) for Control Module replacement, programming and setup

ELECTRONIC BRAKE CONTROL MODULE PROGRAMMING AND SETUP

NOTE:

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

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**
3. All OK.

Repair Instructions

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

Refer to [Control Module References](#) for Control Module replacement, programming and setup

ELECTRONIC PARKING BRAKE 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 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 K83 Park Brake Control Module - Programming and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select K83 Park Brake Control Module - Setup (OR K83 Park Brake Control Module - Configuration and Setup) and follow the on-screen instructions.

5. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.
6. With a scan tool, perform the Parking Brake Cable Adjuster Enabling procedure. Refer to [Parking Brake Cable Adjuster Enabling \(Without J71\) Parking Brake Cable Adjuster Enabling \(With J71\)](#) .

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.

Refer to [Control Module References](#) for park brake control module replacement, programming and setup.

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 the SPS function K20 Engine Control Module - Programming and follow the 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 \(without BTM\) Immobilizer System Component Programming \(with BTM\)](#) .
8. Perform the SPS function K20 Engine Control Module - Configuration & Setup and follow the on-screen instructions.
9. Clear DTCs after completing the Configuration & Setup procedure.

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. Clear DTCs after completing the Programming procedure.

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

4. Perform the SPS function Engine Control Module - Configuration & Setup and follow the on-screen instructions, if available.
5. Clear DTCs after completing the Configuration & Setup procedure.

Unsuccessful Programming Recovery

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

1. Ignition ON. Ensure the control module, DLC, and programming tool connections are secure and the SPS software is up to date.
2. Reprogram the control module following the on-screen instructions.

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

1. Ignition OFF, disconnect the MDI, and exit SPS.
2. Ignition ON, reconnect the MDI, and access SPS.
3. Reprogram the control module following the on-screen instructions.

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

1. Ignition OFF, disconnect the MDI, and exit SPS.
2. Disconnect vehicle battery for 2 minutes. Reconnect battery.
3. Ignition ON, reconnect the MDI, and access SPS.
4. Reprogram the control module following the on-screen instructions.

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

Replace the K20 Engine Control Module.

- **If the control module can be reprogrammed**

3. All OK.

Repair Instructions

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

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

FRONT AND REAR 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.

Reference Information

Special Tools

EL-49642 SPS Programming Support Tool

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

Replace and Program the Front and Rear Parking Assist Control Module

If the K41 Front and Rear Parking Assist Control Module needs to be replaced, the following procedures must be performed:

1. Connect a scan tool to the vehicle and access SPS. Refer to [Service Programming System \(SPS\)](#)
2. Perform the SPS function K41 Front and Rear Parking Assist Control Module Programming and follow the on-screen instructions.
3. Perform the SPS function K41 Front and Rear Parking Assist Control Module Configuration and follow the on-screen instructions.
4. Clear DTCs after completing the programming procedure.

Reprogram Front and Rear Parking Assist Control Module

Do not reprogram the K41 Front and Rear Parking Assist Control Module, unless directed by a service procedure, or a service bulletin.

1. Connect a scan tool to the vehicle and access SPS. Refer to [Service Programming System \(SPS\)](#)
2. Perform the SPS function K41 Front and Rear Parking Assist Control Module Programming and follow the on-screen instructions.
3. Clear DTCs after completing the programming procedure.

Unsuccessful Programming Recovery

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

1. Ignition ON. Ensure the K41 Front and Rear Parking Assist Control Module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the K41 Front and Rear Parking Assist Control Module can be reprogrammed.
 - **If the K41 Front and Rear Parking Assist Control Module cannot be reprogrammed**
 1. Ignition OFF for one minute, ignition ON.
 2. Verify the K41 Front and Rear Parking Assist Control Module can be reprogrammed.
 - If the K41 Front and Rear Parking Assist Control Module cannot be reprogrammed, replace the K41 Front and Rear Parking Assist Control Module.
 - If the K41 Front and Rear Parking Assist Control Module can be reprogrammed.
3. All OK.

Repair Instructions

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

Refer to [Control Module References](#) for front and rear parking assist 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.

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 Calibration](#)

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.

Refer to [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.

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.

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:

NOTE: The vehicle must remain in PARK during the programming 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 K74 Human Machine Interface Control Module - Programming and follow the on-screen instructions.

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

4. Connect a USB drive to the computer.
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.

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.**

9. Connect the USB drive to the USB port in the vehicle.
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.
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:

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

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

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

2. Connect a USB drive to the computer.
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.

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.

7. Connect the USB drive to the 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. 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:

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.

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, 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 SYSTEM 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

Use the scan tool to determine the status of the afterblow feature prior to programming. When the module is programmed, the afterblow feature is set to disabled by default.

If the afterblow feature was previously enabled, or is desired, use the scan tool HVAC Control Module Configuration Functions to enable the afterblow feature.

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 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 K33 HVAC Control Module - Programming - 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/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 OFF/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.

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

IMMOBILIZER CONTROL MODULE PROGRAMMING AND SETUP

Replace and Program ECU or Reprogram ECU

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: When programming the Inflatable Restraint Sensing and Diagnostic Module there is a possibility that the programming will fail in SPS. You may get a E4489 message. Do Not Call TCSC immediately. Record at which point the failure occurred before it displayed the E4489 message. If this occurs, you must 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 module. Be sure to record these parameter values 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.

Refer to [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.

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.

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.
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.

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.

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.

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.

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.**

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.
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.

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. 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.
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 Control Module

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 liftgate must be completely closed and latched, if the liftgate is open or ajar during programming, the power liftgate 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 Liftgate Control Module - Programming and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select 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 Control Module

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 liftgate must be completely closed and latched, if the liftgate is open or ajar during programming, the power liftgate 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 Liftgate Control Module - Programming and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select 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.

Refer to [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.

Refer to [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 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.

Repair Instructions

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

Refer to [**Control Module References**](#) for radar sensor module - long range 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.

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

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

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

4. On the SPS Supported Controllers screen, select Media Disc Player - USB File Transfer and follow the on-screen instructions.

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.**

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 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.

PASSENGER PRESENCE SYSTEM PROGRAMMING AND SETUP

When the passenger presence system is replaced or serviced, perform the rezeroing procedure for the passenger presence system. Refer to [Passenger Presence System Rezeroing](#) for the rezeroing procedure.

POWER STEERING CONTROL MODULE PROGRAMMING AND SETUP

NOTE:

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

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 power steering control module, perform the following procedure:

cardiagn.com

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 Power 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.
6. On the SPS Supported Controllers screen, select Power Steering Control Module - Setup and follow the on-screen instructions.
7. With a scan tool, Clear All DTCs.

Reprogram Control Module

To program an existing power 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 Power 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.
6. With a scan tool, 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.

Refer to [Control Module References](#) for power steering control module replacement, programming and setup.

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 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. On the SPS Supported Controllers screen, select B233 Radar Sensor Module - Short Range - Setup 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.

Refer to [Control Module References](#) for Control Module replacement, programming and setup

RADIO CONTROL 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 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, if available select A22 Radio 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.

Refer to [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 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, 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.
- The XM satellite radio (if equipped) is integrated into the radio. If XM was activated in the previous radio, the replacement radio will require additional activation steps after programming to transfer customer subscription information.

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 A11 Radio - Programming and follow the on-screen instructions.
4. At the end of programming, choose the "Clear All 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:

cardiagn.com

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 Configuration/Reset 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.

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

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 K40 Seat Memory 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.

Refer to **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.

Refer to [Control Module References](#) for Control Module replacement, programming and setup

SERVICE PROGRAMMING SYSTEM (SPS)

Special Tools

EL-49642 SPS Programming Support Tool

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

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

Review the information below to ensure proper programming protocol.

NOTE:

- **DO NOT** program a control module unless you are directed by a service procedure or you are directed by a General Motors service bulletin. Programming a control module at any other time will not permanently correct a customers concern.
- It is essential that the TIS terminal, MDI, and/or Scan Tool, is equipped with the latest software before performing service programming.
- Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. When required, install the EL-49642 SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12V jumper or booster pack disconnected from the AC voltage supply.
- 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.

Refer to [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 or 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 program a replacement steering column lock control module or 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.

Refer to [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 CONTROL MODULE PROGRAMMING AND SETUP

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

Existing or New Motor

For the sunroof motor/actuator initialization/teach procedure refer to [Sunroof Motor/Actuator Initialization/Teach Process](#) .

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.

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 Suspension Control Module - Programming and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select Suspension 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 Suspension Sensor Trim Height Calibration, 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.

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

TRAILER BRAKE POWER MODULE PROGRAMMING AND SETUP

Replace and Program ECU or Reprogram ECU

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

TRAILER LAMP CONTROL MODULE PROGRAMMING AND SETUP

Ensure that the following conditions exist in order to prepare for trailer lighting control module programming or configuration:

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

The following service instructions reflect either a re-programming or configuration event performed to complete a repair procedure.

Trailer Lighting Control Module Programming

Do not re-program the trailer lighting control module unless directed by a service procedure or a service bulletin.

1. Access the Service Programming System (SPS) and follow the on-screen instructions. Refer to [Service Programming System \(SPS\)](#).
2. On the SPS Supported Controllers screen, select Trailer Interface (Control) Module - Programming and follow the on-screen instructions.
3. Clear DTCs after completing the programming procedure.

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

Trailer Lighting Control Module Configuration/Reconfiguration and Setup

If the trailer lighting control module is replaced or installed as an after sales accessory, both the configuration/reconfiguration and setup procedures must be performed.

1. Access the Service Programming System (SPS) and follow the on-screen instructions. Refer to [Service Programming System \(SPS\)](#).
2. On the SPS Supported Controllers screen, select Trailer Interface (Control) Module - Configuration and Setup.
3. On the Control Module - Configuration and Setup Function(s) screen, select both ECU Configuration/Reconfiguration and ECU Setup menu options and follow the on-screen instructions.
4. Clear DTCs after completing the configuration/reconfiguration and setup procedures.

If the trailer lighting control module fails to accept the configuration/reconfiguration and setup procedures, verify all scan tool and trailer lighting control module connections are secure.

TRANSFER CASE CONTROL MODULE PROGRAMMING AND SETUP (NQH)

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

Transfer Case Shift Control Module Replacement

If the transfer case shift control module is replaced, the transfer case shift control module reprogramming procedure and the Transfer Case High/Low Clutch Reset procedures must be performed. Refer to [Service Programming System \(SPS\)](#).

Transfer Case Shift Control Module Reprogramming

If the transfer case shift control module needs to be reprogrammed, refer to [Service Programming System \(SPS\)](#).

Ensure that the following conditions exist in order to prepare for transfer case shift control module programming or reprogramming:

- The battery is fully charged.

- The ignition switch is in the RUN position.
- The Techline equipment cable connection at the data link connector (DLC) is secure.

Program the transfer case shift control module using the latest software matching the vehicle. Refer to up-to-date Techline equipment user instructions.

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

- Ensure that the transfer case shift control module connection is OK.
- Inspect the Techline equipment for the latest software version.
- Attempt to program the transfer case shift control module. If the transfer case shift control module still cannot be programmed properly, replace the transfer case shift control module.

Transfer Case Shift Control Module Setup

Perform the Transfer Case High/Low Clutch Retest (Motor Learn Procedure). Refer to [Transfer Case High/Low Clutch Reset](#) for NQH.

TRANSFER CASE CONTROL MODULE PROGRAMMING AND SETUP (NP0)

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

Transfer Case Shift Control Module Replacement

If the transfer case shift control module is replaced, the transfer case shift control module reprogramming procedure and the Transfer Case High/Low Clutch Reset procedures must be performed. Refer to [Service Programming System \(SPS\)](#) Service Programming System (SPS).

Transfer Case Shift Control Module Reprogramming

If the transfer case shift control module needs to be reprogrammed, refer to [Service Programming System \(SPS\)](#).

Ensure that the following conditions exist in order to prepare for transfer case shift control module programming or reprogramming:

- The battery is fully charged.
- The ignition switch is in the RUN position.
- The Techline equipment cable connection at the data link connector (DLC) is secure.

Program the transfer case shift control module using the latest software matching the vehicle. Refer to up-to-date Techline equipment user instructions.

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

- Ensure that the transfer case shift control module connection is OK.
- Inspect the Techline equipment for the latest software version.
- Attempt to program the transfer case shift control module. If the transfer case shift control module still cannot be programmed properly, replace the transfer case shift control module.

Transfer Case Shift Control Module Setup

Perform the Transfer Case High/Low Clutch Reset (Motor Learn Procedure). Refer to [Transfer Case High/Low Clutch Reset](#) for NP0.

K71 TRANSMISSION CONTROL MODULE: PROGRAMMING AND SETUP (8L90)

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 do by a service procedure or 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 (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.

Replace and Program Control Module

To program a replacement K71 Transmission Control Module (TCM), perform the following procedure:

1. Replace the K71 Transmission Control Module.
2. Install **EL-49642** SPS programming support tool
3. Access the Service Programming System (SPS) and follow the on-screen instructions.
4. Perform the K20 Engine Control Module and K71 Transmission Control Module Sequential Programming and follow the on-screen instructions.
5. Perform the Refresh Characterization Data at the MCVM Characterization procedure, follow the on-screen instructions.
6. Perform the **Transmission Service Fast Learn Procedure** .
7. With a scan tool, clear DTCs from the K71 Transmission Control Module.
8. Ignition OFF for 2 minutes.

Reprogram Control Module

To program an existing K71 Transmission 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 the K20 Engine Control Module and K71 Transmission Control Module Sequential Programming and follow the on-screen instructions.
4. Perform the Refresh Characterization Data at the MCVM Characterization procedure, follow the on-screen instructions.
5. Perform the **Transmission Service Fast Learn Procedure** .
6. With a scan tool, clear DTCs from the K71 Transmission Control Module.
7. Ignition OFF for 2 minutes.

Reprogram Control Module after Transmission Repair/Replacement

To program an existing K71 Transmission Control Module, after a transmission repair/replacement, 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 the SPS Transmission Control Module programming event. Choose one of the following screen prompts:
 - Select Transmission Control Module - MCVM Operations, and follow the on-screen instructions. This will update the Solenoid Characterization data only.
 - Select Transmission Control Module - Programming and follow the on-screen instructions. This will update the TCM calibration and the

Solenoid Valve Characterization data.

4. Perform the [Transmission Service Fast Learn Procedure](#) .
5. With a scan tool, clear DTCs from the K71 Transmission Control Module.
6. Ignition OFF for 2 minutes.

Unsuccessful Programming Recovery

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

1. Ignition ON. Ensure the control module, DLC, and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.
 - **If the control module cannot be programmed**
 1. Ignition OFF for 2 minutes, ignition ON.
 2. Verify the control module can be reprogrammed.
 - If the control module cannot be programmed, replace the K71 Transmission Control Module.
 - **If the control module can be reprogrammed**
3. All OK.

Repair Instructions

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

Refer to [Control Module References](#) for TCM replacement, programming and setup.

VIDEO PROCESSING 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 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.

Refer to [Control Module References](#) for Control Module replacement, programming and setup

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

Illustration	Tool Number/Description
--------------	-------------------------

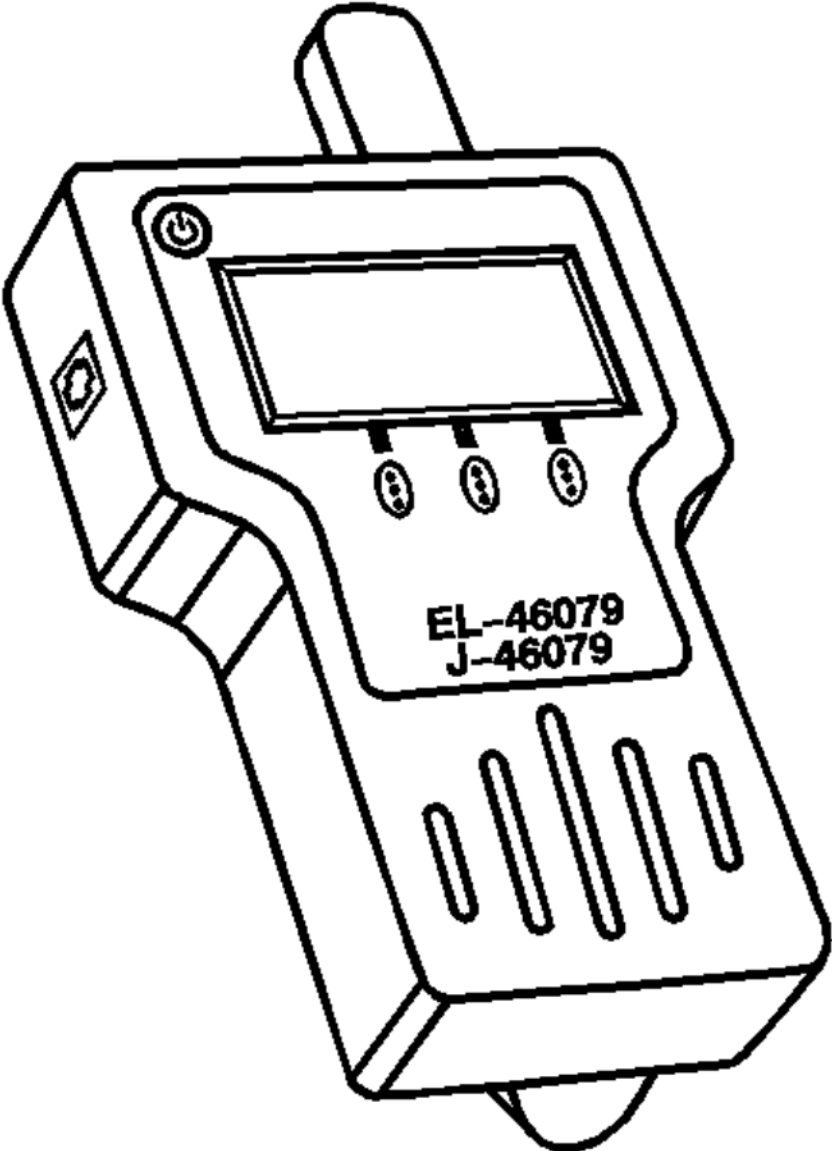
Illustration	Tool Number/Description
	EL 46079 J 46079 Tire Pressure Monitor Diagnostic Tool

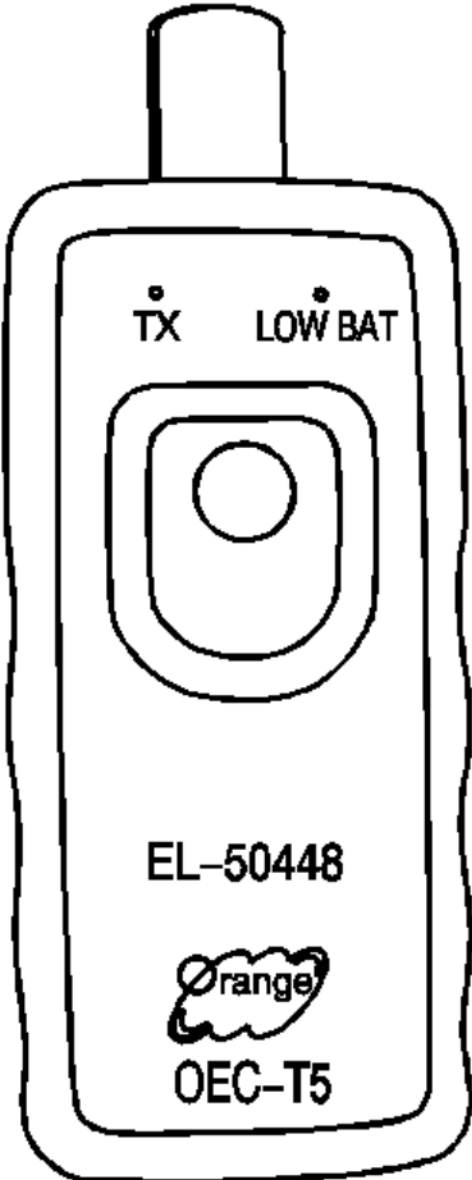
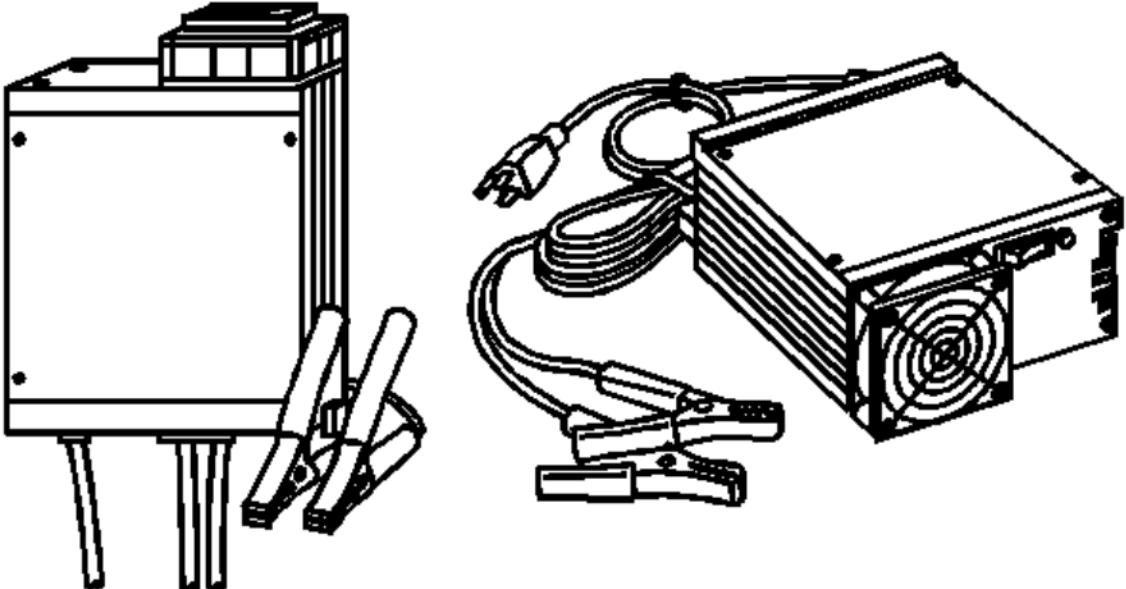
Illustration	Tool Number/Description
	EL 50448 Tire Pressure Monitor Sensor Activation Tool

Illustration	Tool Number/Description
	EL 49642 EL 50113 Europe - Use recommended equivalent workshop equipment SPS Programming Support Tool