

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 (without IOB) Radio Scan Tool Information (with IOB)	Radio/Navigation System Schematics (IOB) Radio/Navigation System Schematics (IO5/IO6)	Radio Replacement	Radio Programming and Setup (IO5/IO6) Radio Programming and Setup (IOB)
A22	Radio Controls	Radio/Navigation System Schematics (IOB) Radio/Navigation System Schematics (IO5/IO6)	Radio Control Assembly Replacement	Radio Control Programming and Setup
A26	HVAC Controls	HVAC Schematics	Heater and Air Conditioning User Interface Control Replacement	HVAC Controls Programming and Setup
B218L/R	Side Object Sensing Alert Module Scan Tool Information	Object Detection Schematics	Side Object Sensing Alert Module Replacement	Side Object Sensor Programming and Setup (N America) Side Object Sensor Programming and Setup (except N America)
K9	Body Control Module Scan Tool Information	Body Control System Schematics	Body Control Module Replacement	Body Control Module Programming and Setup
K17	Electronic Brake Control Module Scan Tool	Antilock Brake System Schematics	Electronic Brake Control Module Replacement	Electronic Brake Control Module Programming and

	Information			Setup
K19	Electronic Suspension Control Module Scan Tool Information	Electronic Suspension Control Schematics	Electronic Suspension Control Module Replacement	Electronic Suspension Control Module Programming and Setup
K20	K20 Engine Control Module: Scan Tool Information	• Engine Controls Schematics - 2.0L (LTG) engine • Engine Controls Schematics - 3.6L (LGX) engine • Engine Controls Schematics - 6.2L (LT1) engine	• Engine Control Module Replacement - 2.0L (LTG) engine • Engine Control Module Replacement - 3.6L (LGX) engine • Engine Control Module Replacement - 6.2L (LT1) engine	K20 Engine Control Module: Programming and Setup
K22	Cooling Fan Control Module	Engine Heating/Cooling Schematics	Engine Coolant Fan Replacement (LGX Without V03) Engine Coolant Fan Replacement (LGX With V03) Engine Coolant Fan Replacement (LT1 V18) Engine Coolant Fan Replacement (LTG without V18) Engine Coolant Fan Replacement (LTG with V18)	K22 Cooling Fan Control Module Programing and Setup
K23	Folding Top Control Module Scan Tool Information	Folding Top Schematics	Folding Top Control Module Replacement	Folding Top Control Module Programming and Setup
K29F	Seat Heating Control Module - Front	Heated/Cooled Seat Schematics	Front Seat Heater Vent Control Module Replacement	Heated Seat Control Module Programming and Setup
K31	Navigation Control Module	Radio/Navigation System Schematics (IOB) Radio/Navigation	Peripheral Human Machine Interface Control Module	Navigation Control Module Programming and

		System Schematics (IO5/IO6)	Replacement	Setup
K32	Steering Wheel Heat Control Module	Steering Wheel Schematics	Steering Wheel Heat Control Module Replacement	Steering Wheel Heat Control Module Programming and Setup
K33	Heating, Ventilation and Air Conditioning Control Module Scan Tool Information	HVAC Schematics	Heater and Air Conditioning Remote Control Replacement	HVAC System Control Module Programming and Setup
K36	Inflatable Restraint Sensing and Diagnostic Module Scan Tool Information	SIR Schematics	Airbag Sensing and Diagnostic Module Replacement	Inflatable Restraint Sensing and Diagnostic Module Programming and Setup
K38	Chassis Control Module Scan Tool Information	• Engine Controls Schematics - 2.0L (LTG) engine • Engine Controls Schematics - 3.6L (LGX) engine • Engine Controls Schematics - 6.2L (LT1) engine	• Chassis Control Module Replacement - 2.0L (LTG) engine • Chassis Control Module Replacement - 3.6L (LGX) engine • Chassis Control Module Replacement - 6.2L (LT1) engine	Chassis Control Module Programming and Setup
K40	Seat Memory Control Module Scan Tool Information	Driver Seat Schematics	Driver or Passenger Seat Adjuster Memory Module Replacement	Seat Memory Control Module Programming and Setup
K43	Power Steering Control Module Scan Tool Information	Power Steering Schematics	Electric Belt Drive Rack and Pinion Steering Gear Replacement (LGX, LTG) Electric Belt Drive Rack and Pinion Steering Gear Replacement (LT1)	Power Steering Control Module Programming and Setup
K56	Serial Data Gateway Module	Data Communication Schematics	Serial Data Gateway Module Replacement	Serial Data Gateway Module Programming and

				Setup
K60	Steering Column Lock Control Module Scan Tool Information	Column Lock Schematics	Steering Column Lock Control Module Replacement	Steering Column Lock Control Module Programming and Setup
K71	K71 Transmission Control Module: Scan Tool Information	Automatic Transmission Controls Schematics	Transmission Control Module Replacement	K71 Transmission Control Module: Programming and Setup
K73	Communication Interface Module Scan Tool Information	OnStar/Telematics Schematics	Communication Interface Module Replacement	Communication Interface Module Programming and Setup
K74	Human Machine Interface Control Module Scan Tool Information	Radio/Navigation System Schematics (IOB) Radio/Navigation System Schematics (IO5/IO6)	Human Machine Interface Control Module Replacement	Human Machine Interface Control Module Programming and Setup
K83	Electronic Parking Brake Control Module Scan Tool Information	Park Brake System Schematics	Electronic Parking Brake Control Module Replacement	Electronic Parking Brake Control Module Programming and Setup
K84	Keyless Entry Control Module Scan Tool Information	Remote Function Schematics	Keyless Entry Control Module Replacement	Keyless Entry Control Module Programming and Setup
K89	Immobilizer Control Module	Immobilizer Schematics	Theft Deterrent Module Replacement	Immobilizer Control Module Programming and Setup
K111	Fuel Pump Power Control Module Scan Tool Information	Engine Controls Schematics - 3.6L (LGX) engine	Fuel Pump Power Control Module Replacement - 3.6L (LGX) engine	Fuel Pump Power Control Module Programming and Setup
K126	Accent Lamp Control Module	Interior Lights Schematics	Interior Lamp Control Module Replacement	Accent Lamp Control Module Programming and Setup
K182	Parking Assist Control Module Scan Tool Information	Object Detection Schematics	Parking Assist Control Module Replacement	Parking Assist Control Module Programming and Setup

P16	Instrument Cluster Scan Tool Information	Instrument Cluster Schematics	Instrument Cluster Replacement	Instrument Cluster Programming and Setup
T3	Audio Amplifier Scan Tool Information	Radio/Navigation System Schematics (IOB) Radio/Navigation System Schematics (IO5/IO6)	Radio Speaker Amplifier Replacement	Audio Amplifier Programming and Setup

REPAIR INSTRUCTIONS > ACCENT LAMP CONTROL MODULE PROGRAMMING AND SETUP

This device does not require programming or setup.

REPAIR INSTRUCTIONS > ACTIVE NOISE CANCELLATION MODULE PROGRAMMING AND SETUP > REPLACE AND PROGRAM ECU OR REPROGRAM ECU

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

REPAIR INSTRUCTIONS > 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.*

REPAIR INSTRUCTIONS > AUDIO AMPLIFIER PROGRAMMING AND SETUP > 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.

REPAIR INSTRUCTIONS > AUDIO AMPLIFIER PROGRAMMING AND SETUP > REFERENCE INFORMATION

Special Tools

EL-49642 SPS Programming Support Tool

For equivalent regional tools, refer to Special Tools .

REPAIR INSTRUCTIONS > AUDIO AMPLIFIER 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. 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.

REPAIR INSTRUCTIONS > AUDIO AMPLIFIER PROGRAMMING AND SETUP > 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.
 1. **If the control module cannot be reprogrammed**
 1. Ignition OFF for one minute, ignition ON.
 2. Verify the control module can be reprogrammed.

1. If the control module cannot be reprogrammed, replace the control module.

1. If the control module can be reprogrammed.

3. All OK.

1. If the control module can be reprogrammed

3. All OK.

REPAIR INSTRUCTIONS > 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.*

REPAIR INSTRUCTIONS > BODY CONTROL MODULE PROGRAMMING AND SETUP > 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 .

REPAIR INSTRUCTIONS > BODY CONTROL MODULE PROGRAMMING AND SETUP > REPLACE AND PROGRAM CONTROL MODULE

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

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

 NOTE:

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

- 1. For Key Ignition System, begin with the ignition in the RUN position.*
- 2. 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:
 1. Key Ignition System: Key in the ignition and any additional keys must be away from the vehicle at least 3 m.
 2. 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 Z1 Immobilizer Learn. On the next screen, select Body Control Module IMMO Learn with Existing Transponder or Remote Key and follow the on-screen instructions. When Immobilizer Learn is complete, press the Unlock button on the keyless entry transmitter to allow the keyless entry transmitter to exit the Immobilizer Learn mode.

 NOTE:

*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.*

- 1. For Key Ignition System, begin with the ignition in the RUN position.*
- 2. 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.
9. If ABS, Traction Control and/or Stabilitrak indicators are ON and DTC C0161 is set in the K17 Electronic Brake Control Module after performing BCM programming and setup, do the following:
 1. Disconnect the scan tool from the X84 Data Link Connector.
 2. Ignition/Vehicle OFF, all access doors closed, all vehicle systems OFF, and all keys at least 3 m (9.8 ft) away from the vehicle. It may take up to 2 min to power down.
 3. Ignition ON/Vehicle In Service Mode, verify DTC C0161 is in history. If not, repeat the above step to make sure the vehicle is in sleep mode.
 4. Use the scan tool to clear the DTCs.

REPAIR INSTRUCTIONS > BODY CONTROL MODULE PROGRAMMING AND SETUP > REPROGRAM CONTROL MODULE

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

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

NOTE:

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

- 1. For Key Ignition System, begin with the ignition in the RUN position.*
- 2. 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.
7. If ABS, Traction Control and/or Stabilitrak indicators are ON and DTC C0161 is set in the K17 Electronic Brake Control Module after performing BCM programming and setup, do the following:
 1. Disconnect the scan tool from the X84 Data Link Connector.
 2. Ignition/Vehicle OFF, all access doors closed, all vehicle systems OFF, and all keys at least 3 m (9.8 ft) away from the vehicle. It may take up to 2 min to power down.
 3. Ignition ON/Vehicle In Service Mode, verify DTC C0161 is in history. If not, repeat the above step to make sure the vehicle is in sleep mode.
 4. Use the scan tool to clear the DTCs.

REPAIR INSTRUCTIONS > BODY CONTROL MODULE PROGRAMMING AND SETUP > 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.

1. If the control module cannot be reprogrammed

1. Ignition/Vehicle OFF for one minute, ignition ON/Vehicle In Service Mode.
2. Verify the control module can be reprogrammed.
 1. If the control module cannot be reprogrammed, replace the control module.
 1. If the control module can be reprogrammed.
3. All OK.

1. If the control module can be reprogrammed

3. All OK.

REPAIR INSTRUCTIONS > BODY CONTROL MODULE PROGRAMMING AND SETUP > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for Control Module replacement, programming and setup

REPAIR INSTRUCTIONS > 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.*

REPAIR INSTRUCTIONS > CHASSIS CONTROL MODULE PROGRAMMING AND SETUP > REFERENCE INFORMATION

Special Tools

EL-49642 SPS Programming Support Tool

For equivalent regional tools, refer to Special Tools .

REPAIR INSTRUCTIONS > CHASSIS CONTROL MODULE PROGRAMMING AND SETUP > REPLACE AND PROGRAM CONTROL MODULE OR REPROGRAM CONTROL MODULE

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

1. 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.

REPAIR INSTRUCTIONS > CHASSIS CONTROL MODULE PROGRAMMING AND SETUP > 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.
 1. **If the control module cannot be reprogrammed**
 1. Ignition OFF for one minute, ignition ON.
 2. Verify the control module can be reprogrammed.
 1. If the control module cannot be reprogrammed, replace the control module.
 1. If the control module can be reprogrammed.
 3. All OK.
 1. **If the control module can be reprogrammed**
 3. All OK.

REPAIR INSTRUCTIONS > CHASSIS CONTROL MODULE PROGRAMMING AND SETUP > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for Control Module replacement, programming and setup

REPAIR INSTRUCTIONS > 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.*

REPAIR INSTRUCTIONS > COMMUNICATION INTERFACE MODULE PROGRAMMING AND SETUP > 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.

REPAIR INSTRUCTIONS > COMMUNICATION INTERFACE MODULE PROGRAMMING AND SETUP > REFERENCE INFORMATION

Special Tools

EL-49642 SPS Programming Support Tool

For equivalent regional tools, refer to Special Tools .

REPAIR INSTRUCTIONS > COMMUNICATION INTERFACE MODULE PROGRAMMING AND SETUP > REPLACE AND PROGRAM CONTROL MODULE OR REPROGRAM CONTROL MODULE

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

1. Install **EL-49642** SPS programming support tool.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.



NOTE:

1. 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.
2. 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'.

- 1.
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.

REPAIR INSTRUCTIONS > COMMUNICATION INTERFACE MODULE PROGRAMMING AND SETUP > 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.
 1. **If the control module cannot be reprogrammed**
 1. Ignition OFF for one minute, ignition ON.
 2. Verify the control module can be reprogrammed.
 1. If the control module cannot be reprogrammed, replace the control module.
 1. If the control module can be reprogrammed.
 3. All OK.
 1. **If the control module can be reprogrammed**
 3. All OK.

REPAIR INSTRUCTIONS > K22 COOLING FAN CONTROL MODULE PROGRAMING AND SETUP

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

REPAIR INSTRUCTIONS > 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.*

REPAIR INSTRUCTIONS > ELECTRONIC BRAKE CONTROL MODULE PROGRAMMING AND SETUP > REFERENCE INFORMATION

Special Tools

EL-49642 SPS Programming Support Tool

REPAIR INSTRUCTIONS > ELECTRONIC BRAKE CONTROL MODULE PROGRAMMING AND SETUP > REPLACE AND PROGRAM CONTROL MODULE OR REPROGRAM CONTROL MODULE

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

1. 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.

REPAIR INSTRUCTIONS > ELECTRONIC BRAKE CONTROL MODULE PROGRAMMING AND SETUP > 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.
 1. **If the control module cannot be reprogrammed**
 1. Ignition OFF for one minute, ignition ON.
 2. Verify the control module can be reprogrammed.
 1. If the control module cannot be reprogrammed, replace the control module.
 1. If the control module can be reprogrammed.
 3. All OK.
 1. **If the control module can be reprogrammed**
 3. All OK.

REPAIR INSTRUCTIONS > ELECTRONIC BRAKE CONTROL MODULE PROGRAMMING AND SETUP > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for Control Module replacement, programming and setup

REPAIR INSTRUCTIONS > 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.*

REPAIR INSTRUCTIONS > ELECTRONIC PARKING BRAKE CONTROL MODULE PROGRAMMING AND SETUP > 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 .

REPAIR INSTRUCTIONS > ELECTRONIC PARKING BRAKE CONTROL MODULE PROGRAMMING AND SETUP > 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.

1. If the control module cannot be reprogrammed

1. Ignition OFF for one minute, ignition ON.

2. Verify the control module can be reprogrammed.

1. If the control module cannot be reprogrammed, replace the control module.

1. If the control module can be reprogrammed.

3. All OK.

1. If the control module can be reprogrammed

3. All OK.

REPAIR INSTRUCTIONS > ELECTRONIC PARKING BRAKE CONTROL MODULE PROGRAMMING AND SETUP > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for park brake control module replacement, programming and setup.

REPAIR INSTRUCTIONS > ELECTRONIC SUSPENSION CONTROL MODULE PROGRAMMING AND SETUP



NOTE:

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

programming failure or control module damage may occur.

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

REPAIR INSTRUCTIONS > ELECTRONIC SUSPENSION CONTROL MODULE PROGRAMMING AND SETUP > REPLACE AND PROGRAM CONTROL MODULE OR REPROGRAM CONTROL MODULE

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

REPAIR INSTRUCTIONS > ELECTRONIC SUSPENSION CONTROL MODULE PROGRAMMING AND SETUP > 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.
 1. **If the control module cannot be reprogrammed**
 1. Ignition OFF for one minute, ignition ON.
 2. Verify the control module can be reprogrammed.
 1. If the control module cannot be reprogrammed, replace the control module.

1. If the control module can be reprogrammed.

3. All OK.

1. If the control module can be reprogrammed

3. All OK.

REPAIR INSTRUCTIONS > ELECTRONIC SUSPENSION CONTROL MODULE PROGRAMMING AND SETUP > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for Control Module replacement, programming and setup

REPAIR INSTRUCTIONS > K20 ENGINE CONTROL MODULE: PROGRAMMING AND SETUP

Special Tools

EL-49642 SPS Programming Support Tool

For equivalent regional tools, refer to Special Tools .



NOTE:

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

- Note the engine oil life remaining percentage.

REPAIR INSTRUCTIONS > K20 ENGINE CONTROL MODULE: PROGRAMMING AND SETUP > 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 .
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.

REPAIR INSTRUCTIONS > K20 ENGINE CONTROL MODULE: PROGRAMMING AND SETUP > 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.

REPAIR INSTRUCTIONS > K20 ENGINE CONTROL MODULE: PROGRAMMING AND SETUP > 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.

1. 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.

1. 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.

1. If the control module cannot be reprogrammed

3. Replace the K20 Engine Control Module.

1. If the control module can be reprogrammed

4. All OK.

REPAIR INSTRUCTIONS > K20 ENGINE CONTROL MODULE: PROGRAMMING AND SETUP > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for ECM replacement, programming and setup.

REPAIR INSTRUCTIONS > FOLDING TOP 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.*

REPAIR INSTRUCTIONS > FOLDING TOP CONTROL MODULE PROGRAMMING AND SETUP > REFERENCE INFORMATION

Special Tools

EL-49642 SPS Programming Support Tool

For equivalent regional tools, refer to Special Tools .

REPAIR INSTRUCTIONS > FOLDING TOP CONTROL MODULE PROGRAMMING AND SETUP > REPLACE AND PROGRAM CONTROL MODULE OR REPROGRAM CONTROL MODULE

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

1. 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 K23 Folding Top 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.

REPAIR INSTRUCTIONS > FOLDING TOP CONTROL MODULE PROGRAMMING AND SETUP > 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.
 1. **If the control module cannot be reprogrammed**
 1. Ignition OFF for one minute, ignition ON.
 2. Verify the control module can be reprogrammed.
 1. If the control module cannot be reprogrammed, replace the control module.
 1. If the control module can be reprogrammed.
 3. All OK.
 1. **If the control module can be reprogrammed**
 3. All OK.

REPAIR INSTRUCTIONS > FOLDING TOP CONTROL MODULE PROGRAMMING AND SETUP > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for folding top control module replacement, programming and setup.

REPAIR INSTRUCTIONS > 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.

REPAIR INSTRUCTIONS > 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.

REPAIR INSTRUCTIONS > HEATED SEAT CONTROL MODULE PROGRAMMING AND SETUP

This device does not require programming or setup.

REPAIR INSTRUCTIONS > 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.*

REPAIR INSTRUCTIONS > HUMAN MACHINE INTERFACE CONTROL MODULE PROGRAMMING AND SETUP > 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.

REPAIR INSTRUCTIONS > HUMAN MACHINE INTERFACE CONTROL MODULE PROGRAMMING AND SETUP > REFERENCE INFORMATION

Special Tools

EL-49642 SPS Programming Support Tool

For equivalent regional tools, refer to Special Tools .

REPAIR INSTRUCTIONS > HUMAN MACHINE INTERFACE CONTROL MODULE PROGRAMMING AND SETUP > 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:

1. If there are no files available for USB transfer via SPS, proceed to step 12.
2. 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. 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.

REPAIR INSTRUCTIONS > HUMAN MACHINE INTERFACE CONTROL MODULE PROGRAMMING AND SETUP > 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:

1. *If there are no files available for USB transfer via SPS, proceed to step 10.*
2. *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.

REPAIR INSTRUCTIONS > HUMAN MACHINE INTERFACE CONTROL MODULE PROGRAMMING AND SETUP > 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.

1. 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.

1. If the control module cannot be reprogrammed, replace the control module.

1. If the control module can be reprogrammed.

3. All OK.

1. If the control module can be reprogrammed

3. All OK.

REPAIR INSTRUCTIONS > HVAC CONTROLS PROGRAMMING AND SETUP > REPLACE AND PROGRAM CONTROL MODULE OR REPROGRAM CONTROL MODULE

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

REPAIR INSTRUCTIONS > 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.*

REPAIR INSTRUCTIONS > HVAC SYSTEM CONTROL MODULE PROGRAMMING AND SETUP > 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.

REPAIR INSTRUCTIONS > HVAC SYSTEM CONTROL MODULE PROGRAMMING AND SETUP > REFERENCE INFORMATION

Special Tools

EL-49642 SPS Programming Support Tool

For equivalent regional tools, refer to Special Tools .

REPAIR INSTRUCTIONS > HVAC SYSTEM CONTROL MODULE PROGRAMMING AND SETUP > REPLACE AND PROGRAM 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. On the SPS Supported Controllers screen, select K33 HVAC Control Module - Programming - Setup and follow the on-screen instructions.
5. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

REPAIR INSTRUCTIONS > HVAC SYSTEM CONTROL MODULE PROGRAMMING AND SETUP > REPROGRAM CONTROL MODULE

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

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K33 HVAC Control Module - Programming and follow the on-screen instructions.
3. At the end of programming, select the "Clear All DTCs" function on the SPS screen.

REPAIR INSTRUCTIONS > HVAC SYSTEM CONTROL MODULE PROGRAMMING AND SETUP > 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.
 1. **If the control module cannot be reprogrammed**
 1. Ignition OFF for one minute, ignition ON.
 2. Verify the control module can be reprogrammed.
 1. If the control module cannot be reprogrammed, replace the control module.
 1. If the control module can be reprogrammed.
 3. All OK.
 1. **If the control module can be reprogrammed**
 3. All OK.

REPAIR INSTRUCTIONS > HVAC SYSTEM CONTROL MODULE PROGRAMMING AND SETUP > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

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

REPAIR INSTRUCTIONS > IMMOBILIZER CONTROL MODULE PROGRAMMING AND SETUP > REPLACE AND PROGRAM ECU OR REPROGRAM ECU

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

REPAIR INSTRUCTIONS > 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.*

REPAIR INSTRUCTIONS > INFLATABLE RESTRAINT SENSING AND DIAGNOSTIC MODULE PROGRAMMING AND SETUP > REPLACE AND PROGRAM CONTROL MODULE OR REPROGRAM CONTROL MODULE

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

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select 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.

REPAIR INSTRUCTIONS > INFLATABLE RESTRAINT SENSING AND DIAGNOSTIC MODULE PROGRAMMING AND SETUP > 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.
 1. **If the control module cannot be reprogrammed**
 1. Ignition OFF for one minute, ignition ON.
 2. Verify the control module can be reprogrammed.
 1. If the control module cannot be reprogrammed, replace the control module.
 1. If the control module can be reprogrammed.
 3. All OK.
 1. **If the control module can be reprogrammed**
 3. All OK.

REPAIR INSTRUCTIONS > INFLATABLE RESTRAINT SENSING AND DIAGNOSTIC MODULE PROGRAMMING AND SETUP > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for Control Module replacement, programming and setup

REPAIR INSTRUCTIONS > INSIDE REARVIEW MIRROR PROGRAMMING AND SETUP

The inside rearview mirror comes with pre-loaded software. No programming is required unless directed by engineering due to a software update.

REPAIR INSTRUCTIONS > 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 recommended that a wired MDI connection be used when reprogramming the Instrument Cluster*

REPAIR INSTRUCTIONS > INSTRUMENT CLUSTER PROGRAMMING AND SETUP > DIAGNOSTIC AIDS

The programming steps in the Service Programming System (SPS) screens may not be in functional order. Be sure to follow the programming steps in the order listed below.

REPAIR INSTRUCTIONS > INSTRUMENT CLUSTER PROGRAMMING AND SETUP > REPLACE AND PROGRAM ECU

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

1. Install **EL-49642** SPS programming support tool.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select Instrument Cluster - Programming and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select Instrument Cluster - Setup and Configuration and follow the on-screen instructions.

 NOTE:

1. *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.*
2. *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.*
3. *Vehicles with UDD: the USB Receptacle used for programming is under the dash, to the left of the steering column*
4. *Vehicles without UDD: the USB Receptacle used for programming is in the center console.*

5. On the SPS Supported Controllers screen, select Instrument Cluster - USB File Transfer and follow the on-screen instructions.
6. With UDD only: If Instrument Cluster fails to read file from USB memory stick, refer to Instrument Cluster Programming Malfunction (with UDD only)
7. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

REPAIR INSTRUCTIONS > INSTRUMENT CLUSTER PROGRAMMING AND SETUP > REPROGRAM ECU

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

1. Install **EL-49642** SPS programming support tool.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select Instrument Cluster - Programming and follow the on-screen instructions.

4. On the SPS Supported Controllers screen, select Instrument Cluster - Setup and Configuration and follow the on-screen instructions.

 NOTE:

1. *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.*
2. *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.*
3. *Vehicles with UDD: the USB Receptacle used for programming is under the dash, to the left of the steering column*
4. *Vehicles without UDD: the USB Receptacle used for programming is in the center console.*

5. On the SPS Supported Controllers screen, select Instrument Cluster - USB File Transfer and follow the on-screen instructions.
6. With UDD only: If Instrument Cluster fails to read file from USB memory stick, refer to Instrument Cluster Programming Malfunction (with UDD only)
7. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

REPAIR INSTRUCTIONS > INSTRUMENT CLUSTER PROGRAMMING AND SETUP > 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.
 1. If the ECU still cannot be programmed, replace the ECU.

REPAIR INSTRUCTIONS > 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.*

REPAIR INSTRUCTIONS > KEYLESS ENTRY CONTROL MODULE PROGRAMMING AND SETUP > 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.

REPAIR INSTRUCTIONS > KEYLESS ENTRY CONTROL MODULE PROGRAMMING AND SETUP > 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.
1. If the ECU still cannot be programmed, replace the ECU.

REPAIR INSTRUCTIONS > NAVIGATION CONTROL MODULE PROGRAMMING AND SETUP



NOTE:

- *DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the ECU is not properly configured with the correct calibration software, the ECU will not control all of the vehicle features properly.*
- *Ensure the programming tool is equipped with the latest software and is securely connected to the data link connector. If there is an interruption during programming, programming failure or ECU damage may occur.*
- *Stable battery voltage is critical during programming. Any fluctuation, spiking, over voltage or loss of voltage will interrupt programming. Install the **EL-49642** SPS Programming Support Tool to maintain system voltage. If not available, connect a fully charged 12 V jumper or booster pack disconnected from the AC voltage supply.*
- *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.*

REPAIR INSTRUCTIONS > NAVIGATION CONTROL MODULE PROGRAMMING AND SETUP > 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.

REPAIR INSTRUCTIONS > NAVIGATION CONTROL MODULE PROGRAMMING AND SETUP > REFERENCE INFORMATION

Special Tools

EL-49642 SPS Programming Support Tool

For equivalent regional tools, refer to Special Tools .

REPAIR INSTRUCTIONS > NAVIGATION CONTROL MODULE PROGRAMMING AND SETUP > REPLACE AND PROGRAM CONTROL MODULE OR REPROGRAM CONTROL MODULE

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

1. Install the **EL-49642** SPS Programming Support Tool.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K31 Navigation Control Module-Programming (Korea only) and follow the on-screen instructions.
4. At the end of programming, choose the "Clear DTCs" function on the SPS screen.

REPAIR INSTRUCTIONS > NAVIGATION CONTROL MODULE PROGRAMMING AND SETUP > 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.
 1. **If the control module cannot be reprogrammed**
 1. Ignition OFF for one minute, ignition ON.
 2. Verify the control module can be reprogrammed.
 1. If the control module cannot be reprogrammed, replace the control module.
 1. If the control module can be reprogrammed.
 3. All OK.
 1. **If the control module can be reprogrammed**
 3. All OK.

REPAIR INSTRUCTIONS > 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.*

REPAIR INSTRUCTIONS > MEDIA DISC PLAYER PROGRAMMING AND SETUP > 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.

REPAIR INSTRUCTIONS > MEDIA DISC PLAYER PROGRAMMING AND SETUP > REFERENCE INFORMATION

Special Tools

EL-49642 SPS Programming Support Tool

For equivalent regional tools, refer to Special Tools .

REPAIR INSTRUCTIONS > MEDIA DISC PLAYER 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:

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:

1. *If there are no updates available for USB transfer via SPS, proceed to step 10.*
2. *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.

REPAIR INSTRUCTIONS > MEDIA DISC PLAYER PROGRAMMING AND SETUP > 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.

1. If the control module cannot be reprogrammed

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

1. If the control module can be reprogrammed

3. All OK.

REPAIR INSTRUCTIONS > 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.*

REPAIR INSTRUCTIONS > PARKING ASSIST CONTROL MODULE PROGRAMMING AND SETUP > REPLACE AND PROGRAM CONTROL MODULE

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

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K182 Parking Assist Control Module - Programming and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K182 Parking Assist Control Module - Configuration and follow the on-screen instructions.
4. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

REPAIR INSTRUCTIONS > PARKING ASSIST CONTROL MODULE PROGRAMMING AND SETUP > REPROGRAM CONTROL MODULE

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

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

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K182 Parking Assist Control Module - Programming and follow the on-screen instructions.
3. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

REPAIR INSTRUCTIONS > PARKING ASSIST CONTROL MODULE PROGRAMMING AND SETUP > UNSUCCESSFUL PROGRAMMING RECOVERY

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

1. Ignition ON. Ensure the K182 Parking Assist Control Module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the parking assist control module can be reprogrammed.

1. If the K182 Parking Assist Control Module cannot be reprogrammed

1. Ignition OFF for one minute, ignition ON.
2. Verify the parking assist control module can be reprogrammed.
 1. If the K182 Parking Assist Control Module cannot be reprogrammed, replace the parking assist control module.
 1. If the K182 Parking Assist Control Module can be reprogrammed.
3. All OK.

1. If the K182 Parking Assist Control Module can be reprogrammed

3. All OK.

**REPAIR INSTRUCTIONS > PARKING ASSIST CONTROL MODULE PROGRAMMING
AND SETUP > REPAIR INSTRUCTIONS**

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for control module replacement, programming and setup

**REPAIR INSTRUCTIONS > 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.*

REPAIR INSTRUCTIONS > POWER STEERING CONTROL MODULE PROGRAMMING AND SETUP > REPLACE OR REPROGRAM CONTROL MODULE

To program an existing or 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 K43 Power Steering Control Module - Programming and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select K43 Power Steering Control Module - Configuration and follow the on-screen instructions.
5. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

REPAIR INSTRUCTIONS > POWER STEERING CONTROL MODULE PROGRAMMING AND SETUP > 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.

1. If the control module cannot be reprogrammed

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

1. If the control module can be reprogrammed

3. All OK.

REPAIR INSTRUCTIONS > POWER STEERING CONTROL MODULE PROGRAMMING AND SETUP > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for control module replacement, programming and setup

REPAIR INSTRUCTIONS > 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.

REPAIR INSTRUCTIONS > RADAR SENSOR MODULE - SHORT RANGE PROGRAMMING AND SETUP > 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.

REPAIR INSTRUCTIONS > RADAR SENSOR MODULE - SHORT RANGE 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.
5. Following programming, the module ID must be programmed. With a scan tool, perform the Radar Sensor Module - Short Range learn procedure.

REPAIR INSTRUCTIONS > RADAR SENSOR MODULE - SHORT RANGE PROGRAMMING AND SETUP > 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.

1. If the control module cannot be reprogrammed

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

1. If the control module can be reprogrammed

3. All OK.

**REPAIR INSTRUCTIONS > RADAR SENSOR MODULE - SHORT RANGE
PROGRAMMING AND SETUP > REPAIR INSTRUCTIONS**

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for Control Module replacement, programming and setup

REPAIR INSTRUCTIONS > 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.*

REPAIR INSTRUCTIONS > RADIO CONTROL PROGRAMMING AND SETUP > 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.

REPAIR INSTRUCTIONS > RADIO CONTROL PROGRAMMING AND SETUP > REFERENCE INFORMATION

Special Tools

EL-49642 SPS Programming Support Tool

For equivalent regional tools, refer to Special Tools .

REPAIR INSTRUCTIONS > RADIO CONTROL PROGRAMMING AND SETUP > REPLACE CONTROL MODULE

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

REPAIR INSTRUCTIONS > RADIO CONTROL PROGRAMMING AND SETUP > REPROGRAM CONTROL MODULE

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

1. Install **EL-49642** SPS Programming Support Tool.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select A20 Radio/HVAC Controls - Programming and follow the on-screen instructions.
4. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

REPAIR INSTRUCTIONS > RADIO CONTROL PROGRAMMING AND SETUP > 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.
 1. **If the control module cannot be reprogrammed**
 1. Ignition OFF for one minute, ignition ON.
 2. Verify the control module can be reprogrammed.
 1. If the control module cannot be reprogrammed, replace the control module.
 1. If the control module can be reprogrammed.
 3. All OK.
 1. **If the control module can be reprogrammed**
 3. All OK.

REPAIR INSTRUCTIONS > RADIO CONTROL PROGRAMMING AND SETUP > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for control module replacement, programming and setup

REPAIR INSTRUCTIONS > RADIO PROGRAMMING AND SETUP (I05/I06)



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.*

REPAIR INSTRUCTIONS > RADIO PROGRAMMING AND SETUP (I05/I06) > 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.

REPAIR INSTRUCTIONS > RADIO PROGRAMMING AND SETUP (I05/I06) > REFERENCE INFORMATION

Special Tools

EL-49642 SPS Programming Support Tool

For equivalent regional tools, refer to Special Tools .

REPAIR INSTRUCTIONS > RADIO PROGRAMMING AND SETUP (I05/I06) > 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.

REPAIR INSTRUCTIONS > RADIO PROGRAMMING AND SETUP (I05/I06) > 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.

REPAIR INSTRUCTIONS > RADIO PROGRAMMING AND SETUP (I05/I06) > 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.

1. If the control module cannot be reprogrammed

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

1. If the control module can be reprogrammed

3. All OK.

REPAIR INSTRUCTIONS > RADIO PROGRAMMING AND SETUP (I05/I06) > VALET MODE RESET

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

Refer to Diagnostic Trouble Code (DTC) List - Vehicle .
 - 1. 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.

REPAIR INSTRUCTIONS > RADIO PROGRAMMING AND SETUP (I0B)



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.*

REPAIR INSTRUCTIONS > RADIO PROGRAMMING AND SETUP (IOB) > DIAGNOSTIC AIDS

- If programming of the control module is being performed at the direction of a bulletin or PI, follow the instructions provided in that document.
- During audio system programming you may be required to select multiple calibrations dependent upon vehicle equipment. Have the vehicle build/RPO information available during the following procedure to ensure the correct calibrations are selected.
- Dependant upon vehicle equipment, the current software level of the module, or the release of updates, USB programming may not be required when replacing/reprogramming the control module. If USB files for the application are not available via SPS, or have not been received in another manner of distribution, the USB update process will not need to be performed.
- All data will be erased from the USB device BEFORE the calibration is downloaded onto the device. To ensure important information is NOT erased, always verify that NO information is stored on the device BEFORE beginning the calibration download. If required, transfer important files to another storage device BEFORE beginning the calibration download.
- The length of time for the USB programming to complete will vary depending on the number and size of the files in the update.
- The USB programming will not allow the installation of the same software. If the same software is detected on the USB stick, Radio will display "Invalid Update" message.
- Make sure USB stick is removed after update is complete. If the USB stick is left connected an "Invalid Update" message will be displayed when the radio is powered on.

REPAIR INSTRUCTIONS > RADIO PROGRAMMING AND SETUP (IOB) > REFERENCE INFORMATION

Special Tools

- **EL-49642** SPS Programming Support Tool
- USB 2.0 flash drive with a minimum capacity of 4 GB.

For equivalent regional tools, refer to Special Tools .

REPAIR INSTRUCTIONS > RADIO PROGRAMMING AND SETUP (IOB) > REPLACE AND PROGRAM CONTROL MODULE OR REPROGRAM CONTROL MODULE

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



NOTE:

The vehicle must remain in PARK during the programming procedure.

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



NOTE:

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

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



NOTE:

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

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

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.

REPAIR INSTRUCTIONS > RADIO PROGRAMMING AND SETUP (IOB) > 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.
 1. **If the control module cannot be reprogrammed**
 1. Ignition OFF for one minute, ignition ON.
 2. Verify the control module can be reprogrammed.
 1. If the control module cannot be reprogrammed, replace the control module.
 1. If the control module can be reprogrammed.
 3. All OK.
 1. **If the control module can be reprogrammed**
 3. All OK.

REPAIR INSTRUCTIONS > RADIO PROGRAMMING AND SETUP (IOB) > VALET MODE RESET

1. Verify no DTCs are set.

1. If any DTCs are set

Refer to Diagnostic Trouble Code (DTC) List - Vehicle .

1. If no DTCs are set

2. Select the Radio control function Erase Valet Mode Code with the scan tool.

3. Select Clear and confirm the selection to erase the code.

REPAIR INSTRUCTIONS > 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.

REPAIR INSTRUCTIONS > REMOTE CONTROL DOOR LOCK RECEIVER

PROGRAMMING AND SETUP > REPLACE AND PROGRAM ECU OR REPROGRAM ECU

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

REPAIR INSTRUCTIONS > 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.*

REPAIR INSTRUCTIONS > SEAT MEMORY CONTROL MODULE PROGRAMMING AND SETUP > REFERENCE INFORMATION

Special Tools

EL-49642 SPS Programming Support Tool

For equivalent regional tools, refer to Special Tools .

REPAIR INSTRUCTIONS > SEAT MEMORY CONTROL MODULE PROGRAMMING AND SETUP > REPLACE AND PROGRAM CONTROL MODULE OR REPROGRAM CONTROL MODULE

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

1. 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.

REPAIR INSTRUCTIONS > SEAT MEMORY CONTROL MODULE PROGRAMMING AND SETUP > 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.
 1. **If the control module cannot be reprogrammed**
 1. Ignition OFF for one minute, ignition ON.
 2. Verify the control module can be reprogrammed.
 1. If the control module cannot be reprogrammed, replace the control module.

1. If the control module can be reprogrammed.

3. All OK.

1. If the control module can be reprogrammed

3. All OK.

REPAIR INSTRUCTIONS > SEAT MEMORY CONTROL MODULE PROGRAMMING AND SETUP > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for Control Module replacement, programming and setup

REPAIR INSTRUCTIONS > SERIAL DATA GATEWAY MODULE PROGRAMMING AND SETUP



NOTE:

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

REPAIR INSTRUCTIONS > SERIAL DATA GATEWAY MODULE PROGRAMMING AND

SETUP > REFERENCE INFORMATION

Special Tools

EL-49642 SPS Programming Support Tool

REPAIR INSTRUCTIONS > SERIAL DATA GATEWAY MODULE PROGRAMMING AND SETUP > REPLACE AND PROGRAM CONTROL MODULE OR REPROGRAM CONTROL MODULE

To program a replacement or an existing K56 Serial Data Gateway Module, perform the following procedure:

1. Install **EL-49642** SPS programming support tool.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K56 Serial Data Gateway Module - Programming and follow the on-screen instructions.
4. At the end of programming, choose the "Clear DTCs" function on the SPS screen.

REPAIR INSTRUCTIONS > SERIAL DATA GATEWAY MODULE PROGRAMMING AND SETUP > 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.
 1. **If the control module cannot be reprogrammed**
 1. Ignition OFF for one minute, ignition ON.
 2. Verify the control module can be reprogrammed.
 1. If the control module cannot be reprogrammed, replace the control module.
 1. If the control module can be reprogrammed.
 3. All OK.
 1. **If the control module can be reprogrammed**
 3. All OK.

REPAIR INSTRUCTIONS > SERIAL DATA GATEWAY MODULE PROGRAMMING AND

SETUP > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for Control Module replacement, programming and setup

REPAIR INSTRUCTIONS > 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.
 1. 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.

REPAIR INSTRUCTIONS > SIDE OBJECT SENSOR PROGRAMMING AND SETUP (N AMERICA)



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.*

REPAIR INSTRUCTIONS > SIDE OBJECT SENSOR PROGRAMMING AND SETUP (N AMERICA) > REPLACE AND PROGRAM ECU OR REPROGRAM ECU

To program a replacement or an existing ECU, 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 B218R Right Side Object Sensor Module or B218L Left Side Object Detection - Programming and follow the on-screen instructions.
3. At the end of programming, choose the "Clear DTCs" function on the SPS screen.

REPAIR INSTRUCTIONS > SIDE OBJECT SENSOR PROGRAMMING AND SETUP (N AMERICA) > 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.
1. If the ECU still cannot be programmed, replace the ECU.

REPAIR INSTRUCTIONS > SIDE OBJECT SENSOR PROGRAMMING AND SETUP (EXCEPT N AMERICA)



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.*

REPAIR INSTRUCTIONS > SIDE OBJECT SENSOR PROGRAMMING AND SETUP (EXCEPT N AMERICA) > 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.

REPAIR INSTRUCTIONS > SIDE OBJECT SENSOR PROGRAMMING AND SETUP (EXCEPT N AMERICA) > 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.

REPAIR INSTRUCTIONS > SIDE OBJECT SENSOR PROGRAMMING AND SETUP (EXCEPT N AMERICA) > 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.

1. 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.
 1. If the B218L Side Object Sensor Module - Left cannot be reprogrammed, replace the B218L Side Object Sensor Module - Left.
 1. If the B218L Side Object Sensor Module - Left can be reprogrammed.
3. All OK.

1. If the B218L Side Object Sensor Module - Left can be reprogrammed

3. All OK.

REPAIR INSTRUCTIONS > SIDE OBJECT SENSOR PROGRAMMING AND SETUP (EXCEPT N AMERICA) > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for side object sensor module - left replacement, programming and setup.

REPAIR INSTRUCTIONS > STEERING COLUMN LOCK 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.*

REPAIR INSTRUCTIONS > STEERING COLUMN LOCK CONTROL MODULE PROGRAMMING AND SETUP > 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.

REPAIR INSTRUCTIONS > STEERING COLUMN LOCK CONTROL MODULE PROGRAMMING AND SETUP > 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.
 1. **If the control module cannot be reprogrammed**
 1. Ignition OFF for one minute, ignition ON.
 2. Verify the control module can be reprogrammed.
 1. If the control module cannot be reprogrammed, replace the control module.
 1. If the control module can be reprogrammed.
 3. All OK.
 1. **If the control module can be reprogrammed**
 3. All OK.

REPAIR INSTRUCTIONS > STEERING COLUMN LOCK CONTROL MODULE PROGRAMMING AND SETUP > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for control module replacement, programming and setup

REPAIR INSTRUCTIONS > STEERING WHEEL HEAT CONTROL MODULE PROGRAMMING AND SETUP

This device requires no programming or setup.

REPAIR INSTRUCTIONS > SUNROOF CONTROL MODULE PROGRAMMING AND SETUP

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

REPAIR INSTRUCTIONS > SUNROOF CONTROL MODULE PROGRAMMING AND SETUP > INITIALIZATION AND LEARN PROCEDURES

In order for the sunroof system to perform correctly it needs to establish its position and the force profile it will encounter under normal closing conditions. These two procedures need to be run when a new controller is placed on a vehicle, when a service procedure is performed on any mechanical component, or if the system seems to lose track of its known position.

REPAIR INSTRUCTIONS > SUNROOF CONTROL MODULE PROGRAMMING AND SETUP > INITIALIZATION AND REINITIALIZATION

When the sunroof controller is not initialized it will perform all OPEN requests, but no LIN-Bus communicated close commands. It will only perform a CLOSE operation requested by the switch with obstacle detection disabled. If an initialization procedure is interrupted the controllers will return to the not initialized state. Which procedure is run depends on the state of the controller.

For a module which is not initialized begin the process by holding the sunroof switch in the CLOSE position. The sunroof will move to the end of physical travel in the closed direction and store that position. During this time it is necessary to keep the switch active until the process completes. At the completion of the procedure the sunroof should back off slightly to its soft stops. The rest of the defined positions are determined by offsets from this home position.

For a module which has been previously initialized release the switch after the sunroof is considered fully closed by the software. Then hold the sunroof switch in the closed position for 10 s. The sunroof shall resume motion in the CLOSE direction until the end of travel is detected. During this time it is necessary to keep the switch active until the process completes. At the completion of the procedure the sunroof should back off slightly to its soft stops.

REPAIR INSTRUCTIONS > K71 TRANSMISSION 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 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.*

REPAIR INSTRUCTIONS > K71 TRANSMISSION CONTROL MODULE: PROGRAMMING AND SETUP > 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 MCVN 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.

REPAIR INSTRUCTIONS > K71 TRANSMISSION CONTROL MODULE: PROGRAMMING AND SETUP > 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.

REPAIR INSTRUCTIONS > K71 TRANSMISSION CONTROL MODULE: PROGRAMMING AND SETUP > 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:
 1. Select Transmission Control Module - MCVM Operations, and follow the on-screen instructions. This will update the Solenoid Characterization data only.
 2. 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.

REPAIR INSTRUCTIONS > K71 TRANSMISSION CONTROL MODULE: PROGRAMMING AND SETUP > 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.

1. If the control module cannot be programmed

1. Ignition OFF for 2 minutes, ignition ON.

2. Verify the control module can be reprogrammed.

1. If the control module cannot be programmed, replace the K71 Transmission Control Module.

1. If the control module can be reprogrammed

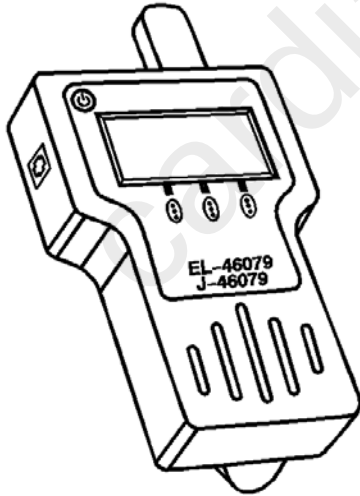
3. All OK.

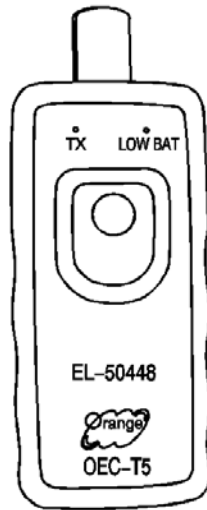
**REPAIR INSTRUCTIONS > K71 TRANSMISSION CONTROL MODULE:
PROGRAMMING AND SETUP > REPAIR INSTRUCTIONS**

Perform the Diagnostic Repair Verification after completing the repair.

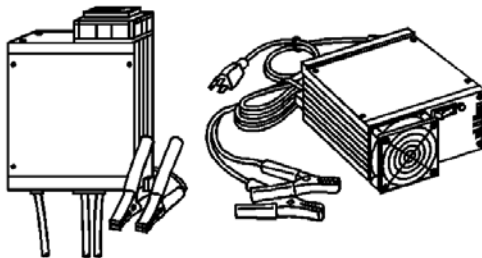
Control Module References for TCM replacement, programming and setup.

SPECIAL TOOLS AND EQUIPMENT > SPECIAL TOOLS

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



EL 50448
Tire Pressure Monitor Sensor Activation
Tool



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