

**2017 ACCESSORIES & EQUIPMENT**  
**Programming and Setup - Encore, Trax**

## 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     | <a href="#">Radio Scan Tool Information (with IO5/IO6)</a> <a href="#">Radio Scan Tool Information (with IOA/IP1)</a> | <a href="#">Radio/Navigation System Schematics (Buick)</a> <a href="#">Radio/Navigation System Schematics (Chevrolet)</a> | <a href="#">Radio Replacement (Buick)</a> <a href="#">Radio Replacement (Chevrolet with IOA)</a> <a href="#">Radio Replacement (Chevrolet with IP1)</a> | <a href="#">Radio Programming and Setup (without IOA)</a> <a href="#">Radio Programming and Setup (IOA)</a> |
| A20     | Radio/HVAC Controls                                                                                                   | <a href="#">Radio/Navigation System Schematics (Buick)</a> <a href="#">Radio/Navigation System Schematics (Chevrolet)</a> | <a href="#">Radio Control Assembly Replacement (Buick)</a>                                                                                              | <a href="#">Radio Control Programming and Setup</a>                                                         |
| B218L/R | <a href="#">Side Object Sensor Module Scan Tool Information</a>                                                       | <a href="#">Object Detection Schematics (Buick)</a> <a href="#">Object Detection Schematics (Chevrolet)</a>               | <a href="#">Side Object Sensing Alert Module Replacement</a>                                                                                            | <a href="#">Side Object Sensor Module Programming and Setup</a>                                             |
| K9      | <a href="#">Body Control Module Scan Tool Information</a>                                                             | <a href="#">Body Control System Schematics (Buick)</a> <a href="#">Body Control System Schematics (Chevrolet)</a>         | <a href="#">Body Control Module Replacement (Chevrolet)</a> <a href="#">Body Control Module Replacement (Buick)</a>                                     | <a href="#">Body Control Module Programming and Setup</a>                                                   |
| K17     | <a href="#">Electronic Brake Control Module Scan Tool Information</a>                                                 | <a href="#">Antilock Brake System Schematics (Buick)</a> <a href="#">Antilock Brake System Schematics (Chevrolet)</a>     | <a href="#">Electronic Brake Control Module Replacement</a>                                                                                             | <a href="#">Electronic Brake Control Module Programming and Setup</a>                                       |

| Code | Control Module/Scan Tool Information                                                  | Schematic                                                                                                                                                                                                                                                                                                                                          | Repair Instruction                                                                                                                                                                                                                                               | Programming and Setup                                                           |
|------|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| K20  | <u>K20 Engine Control Module: Scan Tool Information</u>                               | <ul style="list-style-type: none"> <li>• <u>Engine Controls Schematics (Buick with LE2)</u> - 1.4L (LE2) engine</li> <li>• <u>Engine Controls Schematics (Buick with LUV) Engine Controls Schematics (Chevrolet with LUV)</u> - 1.4L (LUV) engine</li> <li>• <u>Engine Controls Schematics (Chevrolet with 2H0)</u> - 1.8L (2H0) engine</li> </ul> | <ul style="list-style-type: none"> <li>• <u>Engine Control Module Replacement</u> - 1.4L (LE2) engine</li> <li>• <u>Engine Control Module Replacement</u> - 1.4L (LUV) engine</li> <li>• <u>Engine Control Module Replacement</u> - 1.8L (2H0) engine</li> </ul> | <u>K20 Engine Control Module: Programming and Setup</u>                         |
| K29  | <u>Driver Seat and Passenger Seat Heater Control Module Scan Tool Information</u>     | <u>Heated/Cooled Seat Schematics (Buick) Heated/Cooled Seat Schematics (Chevrolet)</u>                                                                                                                                                                                                                                                             | <u>Front Seat Heater Control Module Replacement</u>                                                                                                                                                                                                              | <u>Seat Heating Control Module Programming and Setup</u>                        |
| K32  | Steering Wheel Heat Control Module                                                    | <u>Steering Wheel Schematics (Buick)</u>                                                                                                                                                                                                                                                                                                           | <u>Steering Wheel Replacement (Buick) Steering Wheel Replacement (Chevrolet)</u>                                                                                                                                                                                 | <u>Steering Wheel Heat Control Module Programming and Setup</u>                 |
| K33  | <u>Heating, Ventilation and Air Conditioning Control Module Scan Tool Information</u> | <u>HVAC Schematics (Buick with C67 or C4P) HVAC Schematics (Chevrolet with C41 or C60)</u>                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li>• <u>Heater and Air Conditioning Remote Control Replacement</u> - Automatic</li> <li>• <u>Heater and Air Conditioning Remote Control Replacement (C67)</u> - Manual</li> </ul>                                            | <u>HVAC Control Module Programming and Setup</u>                                |
| K36  | <u>Inflatable Restraint Sensing and Diagnostic Module Scan Tool Information</u>       | <u>SIR Schematics (Buick) SIR Schematics (Chevrolet)</u>                                                                                                                                                                                                                                                                                           | <u>Airbag Sensing and Diagnostic Module Replacement (Buick) Airbag Sensing and Diagnostic Module Replacement (Chevrolet)</u>                                                                                                                                     | <u>Inflatable Restraint Sensing and Diagnostic Module Programming and Setup</u> |

| Code | Control Module/Scan Tool Information                    | Schematic                                                                                                                                                                                                                                                    | Repair Instruction                                                                                                                                                                         | Programming and Setup                                   |
|------|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| K38  | <u>Chassis Control Module Scan Tool Information</u>     | <ul style="list-style-type: none"> <li>• <u>Engine Controls Schematics (Buick with LE2)</u> - 1.4L (LE2) engine</li> <li>• <u>Engine Controls Schematics (Buick with LUV) Engine Controls Schematics (Chevrolet with LUV)</u> - 1.4L (LUV) engine</li> </ul> | <ul style="list-style-type: none"> <li>• <u>Chassis Control Module Replacement</u> - 1.4L (LE2) engine</li> <li>• <u>Chassis Control Module Replacement</u> - 1.4L (LUV) engine</li> </ul> | <u>Chassis Control Module Programming and Setup</u>     |
| K40  | <u>Seat Memory Control Module Scan Tool Information</u> | <u>Driver Seat Schematics (Buick)</u><br><u>Driver Seat Schematics (Chevrolet)</u><br>or<br><u>Passenger Seat Schematics (Buick)</u>                                                                                                                         | <u>Driver or Passenger Seat Adjuster Memory Module Replacement (Buick)</u>                                                                                                                 | <u>Seat Memory Control Module Programming and Setup</u> |

| Code | Control Module/Scan Tool Information                                 | Schematic                                                                                        | Repair Instruction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Programming and Setup                                                |
|------|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| K43  | <u>Power Steering Control Module Scan Tool Information</u>           | <u>Power Steering Schematics (Buick)</u><br><u>Power Steering Schematics (Chevrolet)</u>         | <u>Steering Column Replacement (Buick, Mexico, NJ1, With BTM, With N06)</u><br><u>Steering Column Replacement (Buick, Canada/United States, NJ1, With BTM, Without N06)</u><br><u>Steering Column Replacement (Chevrolet, Mexico, NJ1, With BTM, With N06)</u><br><u>Steering Column Replacement (Chevrolet, Canada/United States, NJ1, With BTM, Without N06)</u><br><u>Steering Column Replacement (Chevrolet, Canada/United States, NJ1, Without BTM, Without N06)</u><br><u>Steering Column Replacement (Chevrolet, Mexico, NJ1, Without BTM, Without N06)</u><br><u>Steering Column Replacement (Mexico, N40)</u> | <u>Power Steering Control Module Programming and Setup</u>           |
| K47  | <u>Rear Differential Clutch Control Module Scan Tool Information</u> | <u>Rear Axle Schematics (Buick with F46)</u><br><u>Rear Axle Schematics (Chevrolet with F46)</u> | <u>Rear Wheel Drive Module Differential Clutch Control Module Replacement</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <u>Rear Differential Clutch Control Module Programming and Setup</u> |
| K56  | Serial Data Gateway Module                                           | <u>Data Communication Schematics (Buick)</u><br><u>Data Communication Schematics (Chevrolet)</u> | <u>Serial Data Gateway Module Replacement (Buick)</u><br><u>Serial Data Gateway Module Replacement (Chevrolet)</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <u>Serial Data Gateway Module Programming and Setup</u>              |
| K60  | <u>Steering Column Lock Module Scan Tool Information</u>             | <u>Column Lock Schematics (Buick)</u><br><u>Column Lock Schematics (Chevrolet)</u>               | <u>Steering Column Lock Control Module Replacement (Chevrolet)</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <u>Steering Column Lock Module Programming and Setup</u>             |
| K61  | Sunroof Control Module                                               | <u>Sunroof Schematics (Buick)</u><br><u>Sunroof Schematics (Chevrolet)</u>                       | <u>Sunroof Actuator Motor Replacement</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <u>Sunroof Control Module Programming and Setup</u>                  |

| Code | Control Module/Scan Tool Information                                                                                                                       | Schematic                                                                                                                                                             | Repair Instruction                                                                                                                                                                                                              | Programming and Setup                                                                                                              |
|------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| K71  | Control Solenoid Valve and Transmission Control Module Assembly<br><a href="#">Transmission Control Module Scan Tool Information (6T30/6T40/6T45/6T50)</a> | <a href="#">Automatic Transmission Controls Schematics (Buick with MNK or MNH)</a><br><a href="#">Automatic Transmission Controls Schematics (Chevrolet with MNK)</a> | <a href="#">Control Solenoid Valve and Transmission Control Module Assembly Replacement</a>                                                                                                                                     | <a href="#">Control Solenoid Valve and Transmission Control Module Assembly Programming and Setup (6T30/6T40/6T45/6T50)</a>        |
| K73  | <a href="#">Telematics Communication Interface Control Module Scan Tool Information</a>                                                                    | <a href="#">OnStar/Telematics Schematics (Buick)</a><br><a href="#">OnStar/Telematics Schematics (Chevrolet)</a>                                                      | <a href="#">Communication Interface Module Replacement (Chevrolet)</a><br><a href="#">Communication Interface Module Replacement (Buick)</a>                                                                                    | <a href="#">Telematics Communication Interface Control Module Programming and Setup</a>                                            |
| K74  | <a href="#">Human Machine Interface Control Module Scan Tool Information</a>                                                                               | <a href="#">OnStar/Telematics Schematics (Buick)</a><br><a href="#">OnStar/Telematics Schematics (Chevrolet)</a>                                                      | <a href="#">Human Machine Interface Control Module Replacement</a>                                                                                                                                                              | <a href="#">Human Machine Interface Control Module Programming and Setup</a>                                                       |
| K89  | Immobilizer Control Module                                                                                                                                 | <a href="#">Immobilizer Schematics (Buick)</a><br><a href="#">Immobilizer Schematics (Chevrolet)</a>                                                                  | <a href="#">Theft Deterrent Module Replacement (Chevrolet, Without BTM)</a><br><a href="#">Theft Deterrent Module Replacement (Chevrolet, With BTM)</a><br><a href="#">Theft Deterrent Module Replacement (Buick, With BTM)</a> | <a href="#">Immobilizer Control Module Programming and Setup</a>                                                                   |
| K109 | <a href="#">Front View Camera Module Scan Tool Information</a>                                                                                             | <a href="#">Object Detection Schematics (Buick)</a><br><a href="#">Object Detection Schematics (Chevrolet)</a>                                                        | <a href="#">Front View Camera Replacement</a>                                                                                                                                                                                   | <a href="#">Front View Camera Module Programming and Setup</a>                                                                     |
| K182 | <a href="#">Parking Assist Control Module Scan Tool Information</a>                                                                                        | <a href="#">Object Detection Schematics (Buick)</a><br><a href="#">Object Detection Schematics (Chevrolet)</a>                                                        | <a href="#">Parking Assist Control Module Replacement</a>                                                                                                                                                                       | <a href="#">Parking Assist Control Module Programming and Setup</a>                                                                |
| P16  | <a href="#">Instrument Cluster Scan Tool Information</a>                                                                                                   | <a href="#">Instrument Cluster Schematics (Buick)</a><br><a href="#">Instrument Cluster Schematics (Chevrolet)</a>                                                    | <a href="#">Instrument Cluster Replacement (Buick)</a><br><a href="#">Instrument Cluster Replacement (Chevrolet)</a>                                                                                                            | <a href="#">Instrument Cluster Programming and Setup</a>                                                                           |
| T3   | Audio Amplifier                                                                                                                                            | <a href="#">Radio/Navigation System Schematics (Buick)</a><br><a href="#">Radio/Navigation System Schematics (Chevrolet)</a>                                          | <a href="#">Radio Speaker Amplifier Replacement</a>                                                                                                                                                                             | <a href="#">Audio Amplifier Programming and Setup (Chevrolet)</a><br><a href="#">Audio Amplifier Programming and Setup (Buick)</a> |

# REPAIR INSTRUCTIONS

## K20 ENGINE CONTROL MODULE: PROGRAMMING AND SETUP

### Special Tools

EL-49642 SPS Programming Support Tool

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

#### NOTE:

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

### Replace and Program Control Module

To program a replacement K20 Engine Control Module (ECM), perform the following procedure:

1. Install **EL-49642** SPS programming support tool.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. Before removing the old control module, perform the SPS function Prepare Control Module for Removal, if available.

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

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

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

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

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

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

2. Configuration - If applicable

9. Clear DTCs.

### Reprogram Control Module

To reprogram an existing K20 Engine Control Module, perform the following procedure:

1. Install **EL-49642** SPS programming support tool.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. Perform one of the following SPS Programming functions:

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

- K20/K71 Engine and Transmission Control Modules and follow the on-screen instructions.
  - K20 Engine Control Module and follow on-screen instructions.
4. 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.

5. Perform the following SPS function:

1. Setup

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

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

### Unsuccessful Programming Recovery

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

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

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

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

**NOTE:** If both controller options below are listed, select K20/K71 Engine and

## Transmission Control Modules.

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

4. All OK.

- **If the programming is successful**

5. All OK.

### Repair Instructions

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

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

### AUDIO AMPLIFIER PROGRAMMING AND SETUP (CHEVROLET)

#### Replace and Program Control Module or Reprogram Control Module

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

### AUDIO AMPLIFIER PROGRAMMING AND SETUP (BUICK)

#### NOTE:

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

### Diagnostic Aids

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

### Reference Information

#### Special Tools

**EL-49642** SPS Programming Support Tool

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

#### Replace and Program Control Module or Reprogram Control Module

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

1. Install the **EL-49642** SPS Programming Support Tool.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select T3 Audio Amplifier - Programming and follow the on-screen instructions.
4. At the end of programming, choose the "Clear DTCs" function on the SPS screen.

### Unsuccessful Programming Recovery

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

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

## BODY CONTROL MODULE PROGRAMMING AND SETUP

### NOTE:

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

### Reference Information

#### Special Tools

- **EL-49642** SPS Programming Support Tool
- **EL-46079** Tire Pressure Monitor Diagnostic Tool or **EL-50448** Tire Pressure Monitor Sensor Activation Tool

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

### Replace and Program Control Module

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

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

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

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

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

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

5. On the SPS Supported Controllers screen, select 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.

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

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

### Reprogram Control Module

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

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

**NOTE:**

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

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

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

**NOTE:**

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

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

### Unsuccessful Programming Recovery

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

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

### Repair Instructions

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

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

## CHASSIS CONTROL MODULE PROGRAMMING AND SETUP

**NOTE:**

- **DO NOT** program a control module unless directed to by a service procedure or a service bulletin. If the control module is not properly configured with the correct calibration software, the control module will not control all of the vehicle features properly.

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

## Reference Information

### Special Tools

#### EL-49642 SPS Programming Support Tool

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

### Replace and Program Control Module or Reprogram Control Module

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

1. Install **EL-49642** SPS Programming Support Tool.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K38 Chassis Control Module - Programming and follow the on-screen instructions.
4. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.
5. With a scan tool, perform the Suspension Sensor Trim Height Calibration, if applicable.

### Unsuccessful Programming Recovery

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

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

### Repair Instructions

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

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

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

## Diagnostic Instructions

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

### NOTE:

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

## Reference Information

### Special Tools

EL-49642 SPS Programming Support Tool

Equivalent regional tools: [Special Tools](#)

### Programming an Existing or New Control Module

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

This control module does not require SPS programming but does require the following setup procedures after a new control module is installed:

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

1. Install the special tool: EL-49642 SPS Programming Support Tool
2. Ignition On/Vehicle In Service Mode
3. Access SPS and follow the on-screen instructions for the control module: Q8 Control Solenoid Valve Assembly or K71 Transmission Control Module
4. Perform the following learn procedure: [Transmission Adaptive Values Learn](#)

### Unsuccessful Programming Recovery

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

1. Verify the control module, data link connector and programming tool connections are secure and the tool software is up to date.
2. Ignition On/Vehicle In Service Mode
3. Access SPS and follow the on-screen instructions for the control module: Q8 Control Solenoid Valve Assembly or K71 Transmission Control Module

Verify the control module programming is successful.

- **If the programming is not successful**

1. Ignition/Vehicle Off - For greater than 1 min
2. Ignition On/Vehicle In Service Mode
3. Access SPS and follow the on-screen instructions for the control module: Q8 Control Solenoid Valve Assembly or K71 Transmission Control Module
  - If the programming is not successful, » Replace the component: Q8 Control Solenoid Valve Assembly
  - If the programming is successful
4. Perform the following learn procedure: [Transmission Adaptive Values Learn](#)
5. All OK.

- **If the programming is successful**

4. Perform the following learn procedure: [Transmission Adaptive Values Learn](#)
5. All OK.

### Repair Instructions

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

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

## ELECTRONIC BRAKE CONTROL MODULE PROGRAMMING AND SETUP

### NOTE:

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

### Reference Information

Special Tools

**EL-49642** SPS Programming Support Tool

### Replace and Program Control Module or Reprogram Control Module

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

1. Install **EL-49642** SPS Programming Support Tool.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K17 Electronic Brake Control Module - Programming and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select K17 Electronic Brake Control Module - Configuration and Setup while following the on-screen instructions.

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

### Unsuccessful Programming Recovery

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

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

### Repair Instructions

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

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

## FRONT VIEW CAMERA MODULE PROGRAMMING AND SETUP

### NOTE:

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

### Following Replacement of Windshield

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

The K109 Frontview Camera Module must be calibrated, refer to [Front View Camera Module Learn](#) .

### Front View Camera Module Replacement

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

1. Connect a scan tool to the vehicle and access Service Programming System (SPS).
2. Perform the SPS function Front View Camera Module - Programming and follow the on-screen instructions.
3. Clear DTCs after completing the programming procedure.
4. Following programming, the module will require calibration. Refer to [Front View Camera Module Learn](#).

#### Front View Camera Module Reprogramming

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

1. Connect a scan tool to the vehicle and access Service Programming System (SPS).
2. Perform the SPS function Front View Camera Module - Programming and follow the on-screen instructions.
3. Clear DTCs after completing the programming procedure.
4. Following programming, the module will require calibration. Refer to [Front View Camera Module Learn](#).

### SEAT HEATING CONTROL MODULE PROGRAMMING AND SETUP

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

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

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

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

#### Seat Heating Control Module Programming

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

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

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

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

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

### HUMAN MACHINE INTERFACE CONTROL MODULE PROGRAMMING AND SETUP

**NOTE:**

- DO NOT program a control module unless directed to by a service procedure or a service bulletin. If the control module is not properly configured with the correct calibration software, the control module will not control all of the vehicle features properly.

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

### Diagnostic Aids

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

### Reference Information

#### Special Tools

#### EL-49642 SPS Programming Support Tool

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

#### Replace and Program Control Module

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

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

1. Install the EL-49642 SPS Programming Support Tool.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K74 Human Machine Interface Control Module - Programming and follow the on-screen instructions.

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

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

**NOTE:**

- If there are no files available for USB transfer via SPS, proceed to step 12.
- Software currently loaded on the USB Drive will be verified and if files are incorrect they will be deleted and correct files will be loaded. If files residing on the USB Drive are correct for the vehicle being serviced, the

**Techline terminal will not delete those files and allow the drive to be re-used.**

7. Upon completion of the file transfer, remove the USB drive from the computer.
8. Ignition ON, infotainment system ON.

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

9. Connect the USB drive to the USB port in the vehicle.
10. The infotainment system will recognize that update files are available. Follow the infotainment display on-screen instructions and select Update when prompted. Programming will take several minutes.
11. Upon completion of programming, remove the USB drive. Follow the infotainment display on-screen instructions.

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

12. Access the Service Programming System (SPS) and follow the on-screen instructions.
13. On the SPS Supported Controllers screen, select K74 Human Machine Interface Control Module - Programming and follow the on-screen instructions.
14. At the end of programming, choose the "Clear DTCs" function on the SPS screen.
15. Ignition OFF, Retained Accessory Power (RAP) OFF, remove the key fob from range of the vehicle, and let the vehicle sit for five minutes. Retest system operation to verify the repair.

### Reprogram Control Module

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

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

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

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

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

**NOTE:**

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

5. Upon completion of the file transfer, remove the USB drive from the computer.
6. Ignition ON, infotainment system ON.

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

7. Connect the USB drive to the USB port in the vehicle.
8. The infotainment system will recognize that update files are available. Follow the infotainment display on-screen instructions and select Update when prompted. Programming will take several minutes.

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

### Unsuccessful Programming Recovery

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

**NOTE:** If USB programming was interrupted, a 5 minute recovery time period may be necessary before the software will reinitialize. Wait 3 minutes with the ignition OFF, all access doors closed, and all vehicle systems OFF. Upon restarting the USB portion of the programming, the display will show a countdown timer for up to 5 minutes before proceeding with the USB File Transfer.

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

## HVAC CONTROL MODULE PROGRAMMING AND SETUP

### Diagnostic Instructions

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

### NOTE:

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

## Special Tools

EL-49642 SPS Programming Support Tool

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

## Programming an Existing or New Control Module

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

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

## Unsuccessful Programming Recovery

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

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

Verify the control module programming is successful.

- **If the programming is not successful**

1. Ignition/Vehicle Off - For greater than 1 min
2. Ignition On/Vehicle In Service Mode
3. Perform the SPS function: Programming

- If the programming is not successful, replace the component: K33 HVAC Control Module
- If the programming is successful

4. All OK.

- **If the programming is successful**

4. All OK.

## Repair Instructions

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

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

## IMMOBILIZER CONTROL MODULE PROGRAMMING AND SETUP

### Replace and Program ECU or Reprogram ECU

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

## INFLATABLE RESTRAINT SENSING AND DIAGNOSTIC MODULE PROGRAMMING AND SETUP

### NOTE:

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

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

- Turn OFF or disable systems that may put a load on the vehicles battery such as; interior lights, exterior lights (including daytime running lights), HVAC, radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.
- The air bag indicator light may remain ON after the body control module (BCM), or Inflatable Restraint Sensing and Diagnostic Module is replaced, and during the programming procedure for the BCM until after the procedure is completed. When installing a new Inflatable Restraint Sensing and Diagnostic Module, there may be several DTCs set prior to programming. Once programmed, these DTCs should be in history and can be cleared.
- Failure to complete the following Setup procedure may cause DTC B1001 to be set in the Inflatable Restraint Sensing and Diagnostic Module.

### Replace and Program Control Module or Reprogram Control Module

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

1. Access the Service Programming System (SPS) and follow the on-screen instructions.
2. On the SPS Supported Controllers screen, select K36 Inflatable Restraint Sensing and Diagnostic Module - Programming and Setup and follow the on-screen instructions.
3. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

### Unsuccessful Programming Recovery

#### NOTE:

**GMNA Regions:** When SPS failure message E4489 occurs during programming or calibration, do not call TCSC immediately. Record at which point the failure occurred before it displayed the E4489 message. When this occurs, proceed to GDS2. Download the appropriate vehicle configuration and select the Inflatable Restraint Sensing and Diagnostic Module. Under Identification Information, look at parameters: Software Module 1 Identifier and Software Module 2 Identifier. If either of these are populated with a value of 1 or more, replace the Inflatable Restraint Sensing and Diagnostic Module. Record these parameter values on the back of the job card.

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

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

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

3. All OK.

### Repair Instructions

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

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

## INSTRUMENT CLUSTER PROGRAMMING AND SETUP

### Special Tools

**EL-49642** SPS Programming Support Tool

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

#### NOTE:

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

### Diagnostic Aids

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

### 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:

- The USB File Transfer procedure is performed after the new Instrument Cluster is installed in the vehicle. This procedure requires the use of a USB memory stick. The radio must be on during this procedure. The USB File Transfer procedure is not required for vehicles with UDC.
- Software currently loaded on the USB Drive will be verified and if files are incorrect they will be deleted and correct files will be loaded. If files

**residing on the USB Drive are correct for the vehicle being serviced, the Techline terminal will not delete those files and allow the drive to be re-used.**

5. On the SPS Supported Controllers screen, select Instrument Cluster - USB File Transfer and follow the on-screen instructions.
6. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

### 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:

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

5. On the SPS Supported Controllers screen, select Instrument Cluster - USB File Transfer and follow the on-screen instructions.
6. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

### Unsuccessful Programming Recovery

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

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

### PARKING ASSIST CONTROL MODULE PROGRAMMING AND SETUP

#### NOTE:

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

- radio, etc.
- During the programming procedure, follow the SPS prompts for the correct ignition switch position.
- Clear DTCs after programming is complete. Clearing powertrain DTCs will set the Inspection/Maintenance (I/M) system status indicators to NO.

### Replace and Program Control Module

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

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

### Reprogram Control Module

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

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

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

### Unsuccessful Programming Recovery

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

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

### Repair Instructions

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

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

## PASSENGER PRESENCE SYSTEM PROGRAMMING AND SETUP

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

## POWER STEERING CONTROL MODULE PROGRAMMING AND SETUP

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

## Power Steering Control Module Replacement

If the steering column power steering control module needs to be replaced, the power steering control module needs to be programmed with the following procedures:

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

## Power Steering Control Module Reprogramming

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

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

## RADIO CONTROL PROGRAMMING AND SETUP

### NOTE:

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

## Reference Information

### Special Tools

**EL-49642** SPS Programming Support Tool

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

### Replace Control Module

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

### Reprogram Control Module

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

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

3. On the SPS Supported Controllers screen, if available select A22 Radio Controls - Programming and follow the on-screen instructions.
4. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

### Unsuccessful Programming Recovery

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

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

### Repair Instructions

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

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

## RADIO PROGRAMMING AND SETUP (WITHOUT IOA)

### NOTE:

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

### Diagnostic Aids

- During programming you may be required to select multiple calibrations dependent upon vehicle equipment. Have the vehicle build/RPO information available during the following procedure to ensure the correct calibrations are selected.
- The XM satellite radio (if equipped) is integrated into the radio. If XM was activated in the previous radio, the replacement radio will require additional activation steps after programming to transfer customer subscription information.

### Reference Information

## EL-49642 SPS Programming Support Tool

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

### Replace and Program Control Module or Reprogram Control Module

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

1. Install **EL-49642** SPS Programming Support Tool.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select A11 Radio - Programming and follow the on-screen instructions.
4. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

### XM Activation (If Equipped)

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

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

### Unsuccessful Programming Recovery

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

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

### Valet Mode Reset

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

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

## RADIO PROGRAMMING AND SETUP (IOA)

### NOTE:

- **DO NOT** program a control module unless directed to by a service procedure

or a service bulletin. If the control module is not properly configured with the correct calibration software, the control module will not control all of the vehicle features properly.

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

### Diagnostic Aids

- If programming of the control module is being performed at the direction of a bulletin or PI, follow the instructions provided in that document.
- During audio system programming you may be required to select multiple calibrations dependent upon vehicle equipment. Have the vehicle build/RPO information available during the following procedure to ensure the correct calibrations are selected.
- Dependant upon vehicle equipment, the current software level of the module, or the release of updates, USB programming may not be required when replacing/reprogramming the control module. If USB files for the application are not available via SPS, or if the files already in the radio are the same or newer than what is 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.

### 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](#).

### Replace and Program Control Module or Reprogram Control Module

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

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

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

**NOTE:**

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

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

**NOTE:**

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

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

**XM Activation (If Equipped)**

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

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

**Unsuccessful Programming Recovery**

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

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

**Valet Mode Reset**

1. Verify no DTCs are set.

- If any DTCs are set

Refer to [Diagnostic Trouble Code \(DTC\) List - Vehicle](#) .

- If no DTCs are set

2. Select the Radio control function Erase Valet Mode Code with the scan tool.
3. Select Clear and confirm the selection to erase the code.

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

### Diagnostic Aids

- If replacing the Rear Differential Clutch Control Module, the module needs to be programmed with a rear differential clutch service calibration value. The clutch calibration service value is a number that is stored in the RDCM memory and stamped on the rear differential housing. The number must be programmed into the new Rear Differential Clutch Control Module using SPS. If communication to the RDCM cannot be established, the number stamped on the rear differential housing can be manually programmed into the new RDCM.
- If replacing the rear differential clutch assembly and keeping the old RDCM, the RDCM will only need to be configured with the number stamped on the housing using a scan tool.

### 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.

### NOTE:

**The next step will copy the 1 digit rear differential clutch service calibration value from the old module and store it in the computer's hard drive. After completing the step, the Rear Differential Clutch Control Module can now be removed and replaced.**

3. On the SPS Supported Controllers screen, select RDCM Rear Differential Clutch Control Module- Prepare the Control Module for Removal and follow the on-screen instructions.

**NOTE:**        **The Rear Differential Clutch Control Module can now be removed and replaced.**

4. On the SPS Supported Controllers screen, select RDCM Rear Differential Clutch Control Module- Programming and follow the on-screen instructions.
5. On the SPS Supported Controllers screen, select RDCM Rear Differential Clutch Control Module- Setup and Configuration and follow the on-screen instructions.
6. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.
7. Perform the Rear Differential Clutch Classification Calibration Procedure. Refer to [Rear Differential Clutch Control Module Calibration](#) .

### **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 RDCM Rear Differential Clutch Control Module - Programming and follow the on-screen instructions.
4. On the SPS Supported Controllers screen, select RDCM Rear Differential Clutch Control Module - Setup and Configuration and follow the on-screen instructions.
5. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.
6. Perform the Rear Differential Clutch Classification Calibration Procedure. Refer to [Rear Differential Clutch Control Module Calibration](#) .

### **Unsuccessful Programming Recovery**

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

1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the K47 Rear Differential Clutch Control Module can be reprogrammed.
  - **If the K47 Rear Differential Clutch Control Module cannot be reprogrammed**
    1. Ignition OFF for 1 min, ignition ON.
    2. Verify the K47 Rear Differential Clutch Control Module can be reprogrammed.
      - If the control module cannot be reprogrammed, replace the K47 Rear Differential Clutch Control Module.
      - If the control module can be reprogrammed.
  - 3. All OK.
  - **If the K47 Rear Differential Clutch Control Module can be reprogrammed**
3. All OK.

## **REMOTE CONTROL DOOR LOCK RECEIVER PROGRAMMING AND SETUP**

### **Diagnostic Aids**

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

### **Replace and Program ECU or Reprogram ECU**

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

## **SEAT MEMORY CONTROL MODULE PROGRAMMING AND SETUP**

**NOTE:**

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

## Reference Information

### Special Tools

#### EL-49642 SPS Programming Support Tool

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

## Replace and Program Control Module or Reprogram Control Module

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

1. Install **EL-49642** SPS Programming Support Tool.
2. Access the Service Programming System (SPS) and follow the on-screen instructions.
3. On the SPS Supported Controllers screen, select K40 Seat Memory Control Module - Programming and follow the on-screen instructions.
4. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.
5. Move the seat to a central, middle range position, then perform the memory store operation for memory "1", "2", and "Exit" or "3" if equipped. Refer to the Owner Manual for storing memory seat positions.

## Unsuccessful Programming Recovery

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

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

## Repair Instructions

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

## SERIAL DATA GATEWAY MODULE PROGRAMMING AND SETUP

### NOTE:

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

### Reference Information

#### Special Tools

**EL-49642** SPS Programming Support Tool

### Replace and Program Control Module or Reprogram Control Module

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

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

### Unsuccessful Programming Recovery

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

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

### Repair Instructions

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

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

## **SERVICE PROGRAMMING SYSTEM (SPS)**

### **Special Tools**

**EL-49642** SPS Programming Support Tool

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

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

Review the information below to ensure proper programming protocol.

#### **NOTE:**

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

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

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

- Scan Tool
  - The RS-232 communication cable port
  - The connection at the data link connector (DLC)
  - The voltage supply circuits
- MDI
  - The USB, Ethernet or Wireless communication port
  - The connection at the data link connector (DLC)
- DO NOT disturb the tool harnesses while programming. If an interruption occurs during the programming procedure, programming failure or control module damage may occur.

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

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

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

## **SIDE OBJECT SENSOR MODULE PROGRAMMING AND SETUP**

### **NOTE:**

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

### **Diagnostic Aids**

The B218R Side Object Sensor Module - Right is not programmable separately. This module is programmed by B218L Side Object Sensor Module - Left after it has been programmed. If a right side module is replaced, follow this procedure to update the module.

### **Replace and Program Control Module or Reprogram Control Module**

To program a replacement or an existing B218L Side Object Sensor Module - Left, perform the following procedure:

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

2. On the SPS Supported Controllers screen, select B218L Side Object Sensor Module - Left - Programming and follow the on-screen instructions.
3. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.

### Unsuccessful Programming Recovery

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

1. Ignition ON. Ensure the B218L Side Object Sensor Module - Left, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the B218L Side Object Sensor Module - Left can be reprogrammed.
  - **If the B218L Side Object Sensor Module - Left cannot be reprogrammed**
    1. Ignition OFF for one minute, ignition ON.
    2. Verify the B218L Side Object Sensor Module - Left can be reprogrammed.
      - If the B218L Side Object Sensor Module - Left cannot be reprogrammed, replace the B218L Side Object Sensor Module - Left.
      - If the B218L Side Object Sensor Module - Left can be reprogrammed.
    3. All OK.
  - **If the B218L Side Object Sensor Module - Left can be reprogrammed**
3. All OK.

### Repair Instructions

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

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

## STEERING COLUMN LOCK MODULE PROGRAMMING AND SETUP

### Special Tools

**EL-49642** SPS Programming Support Tool

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

### NOTE:

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

### Replace and Program Steering Column Lock Control Module

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

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

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

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

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

### Reprogram Steering Column Lock Control Module

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

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

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

### Unsuccessful Programming Recovery

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

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

### Repair Instructions

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

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

## STEERING WHEEL HEAT CONTROL MODULE PROGRAMMING AND SETUP

This device requires no programming or setup.

## SUNROOF CONTROL MODULE PROGRAMMING AND SETUP

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

### Existing or New Motor

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

## TELEMATICS COMMUNICATION INTERFACE CONTROL MODULE PROGRAMMING AND SETUP

### NOTE:

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

### Diagnostic Aids

- Before beginning any programming first determine which Generation of the Telematics Communication Interface Control Module you are working with. One way to accomplish this is by using a scan tool. The Telematics Communication Interface Control Module Generation will be listed under the Selected Vehicle Configuration section, in addition the Generation (9 or 10) can be determined from the Module ID data table. Additional programming steps may be necessary depending on the generation of the module.
- It is critical to use the service replacement Communication Interface Module only in the vehicle for which it was ordered.
- Failure to perform the following procedures will result in a red LED, DTC(s) being set, and limited or incomplete OnStar<sup>®</sup> services.
- An OnStar<sup>®</sup> button press to the OnStar<sup>®</sup> call center is required to complete the procedure.
- To fully activate an OnStar<sup>®</sup> module, both the setup and activation request procedures must be completed on all vehicles with and without an active OnStar<sup>®</sup> subscription to insure the unit has been setup properly for the vehicle it has been installed into and also to update the OnStar<sup>®</sup> 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<sup>®</sup> Interface Module (OTIM), and toggle the TTY mode after completing the Communication Interface Module

## Reference Information

### Special Tools

#### EL-49642 SPS Programming Support Tool

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

### Replace and Program Control Module or Reprogram Control Module

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

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

#### NOTE:

- **Due to a change in SPS you must select 'Reprogram ECU', for Telematics Communication Interface Control Module Programming from the Selected Programming Process even if the unit is being replaced.**
- **If 'Replace and Program ECU' is selected the Telematics Communication Interface Control Module will not be listed in the Supported Controllers screen. You must go back and select 'Reprogram ECU'.**

3. In the SPS Supported Controllers screen, select Telematics Communication Interface Control Module Programming and Service Activation and follow the on-screen instructions.
4. At the end of programming, choose the "Clear All DTCs" function on the SPS screen.
5. After Telematics Communication Interface Control Module Programming and Service Activation, if the vehicle is equipped with RPO VV4, on the Supported Controllers screen select Telematics Communication Interface Control Module WiFi Enable (Gen 10 only) Programming and follow the on-screen instructions.

#### NOTE:

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

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

### Unsuccessful Programming Recovery

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

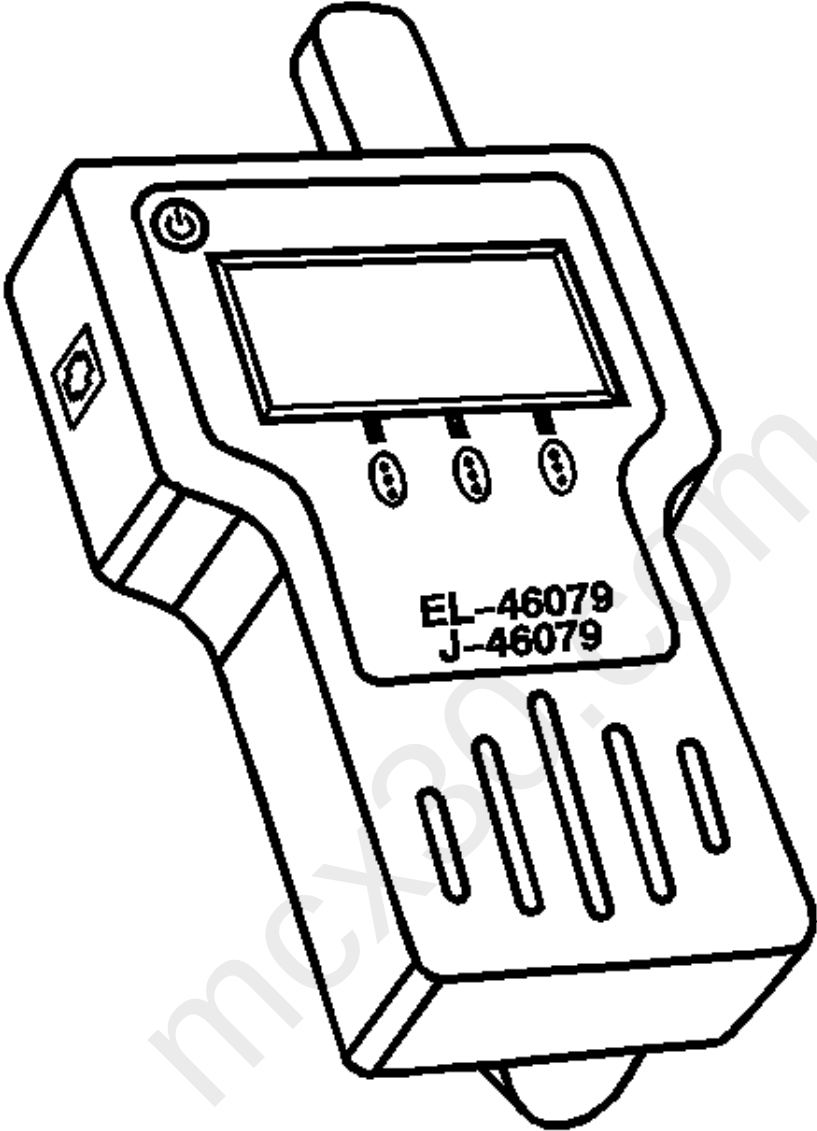
1. Ignition ON. Ensure the control module, DLC and programming tool connections are secure and the SPS software is up to date.
2. Verify the control module can be reprogrammed.
  - **If the control module cannot be reprogrammed**
    1. Ignition OFF for one minute, ignition ON.
    2. Verify the control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

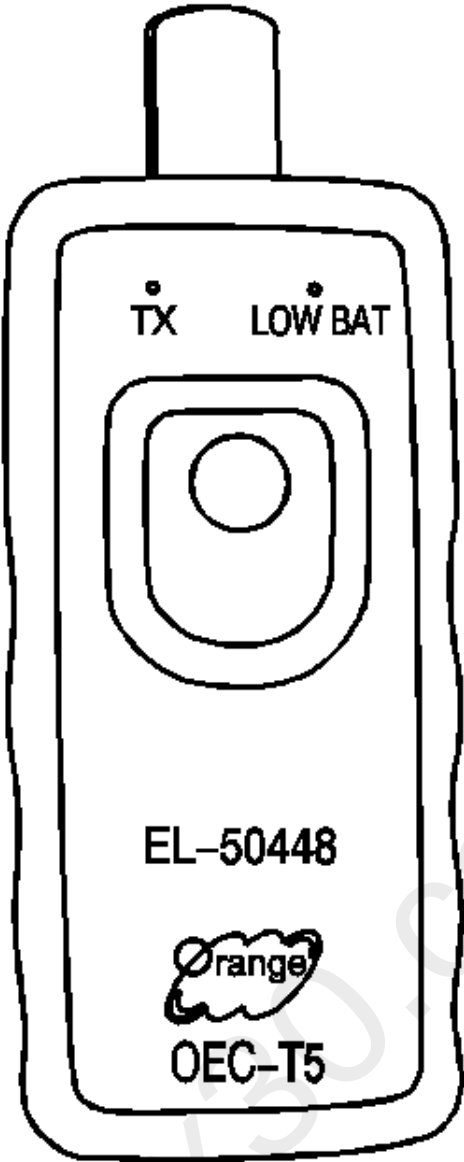
## THEFT DETERRENT MODULE PROGRAMMING AND SETUP

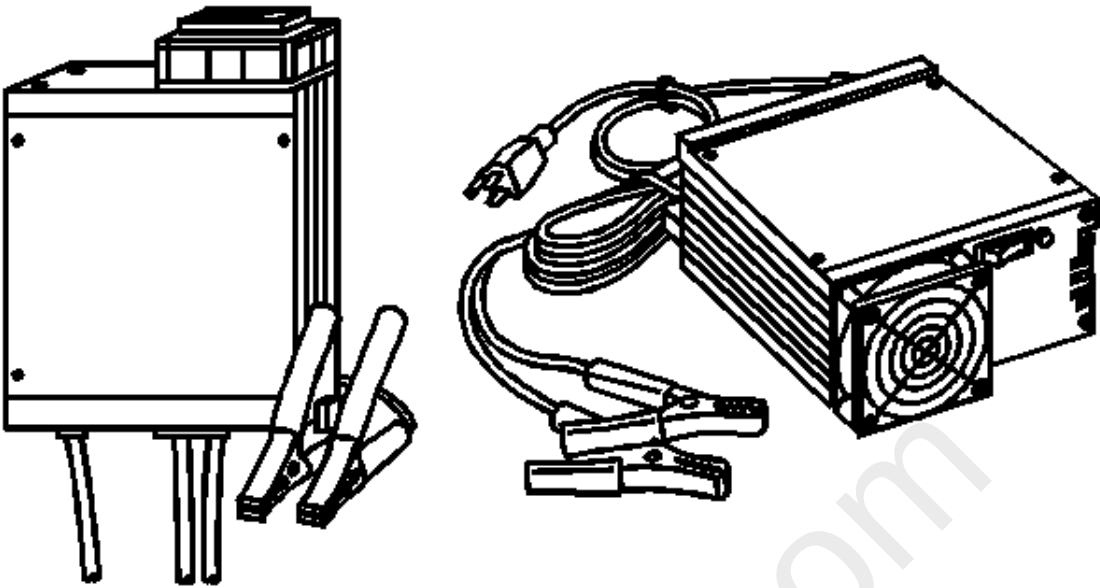
This ECU does not require SPS programming or any setup procedures.

SPECIAL TOOLS AND EQUIPMENT

SPECIAL TOOLS

| Illustration                                                                        | Tool Number/Description                                         |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------|
|  | EL 46079<br>J 46079<br>Tire Pressure Monitor<br>Diagnostic Tool |

| Illustration                                                                      | Tool<br>Number/Description                                               |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------|
|  | <p>EL 50448<br/>Tire Pressure Monitor<br/>Sensor Activation<br/>Tool</p> |

| Illustration                                                                       | Tool<br>Number/Description                                                                                                               |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>EL 49642<br/>EL 50113<br/>Europe - Use<br/>recommended<br/>equivalent workshop<br/>equipment<br/>SPS Programming<br/>Support Tool</p> |