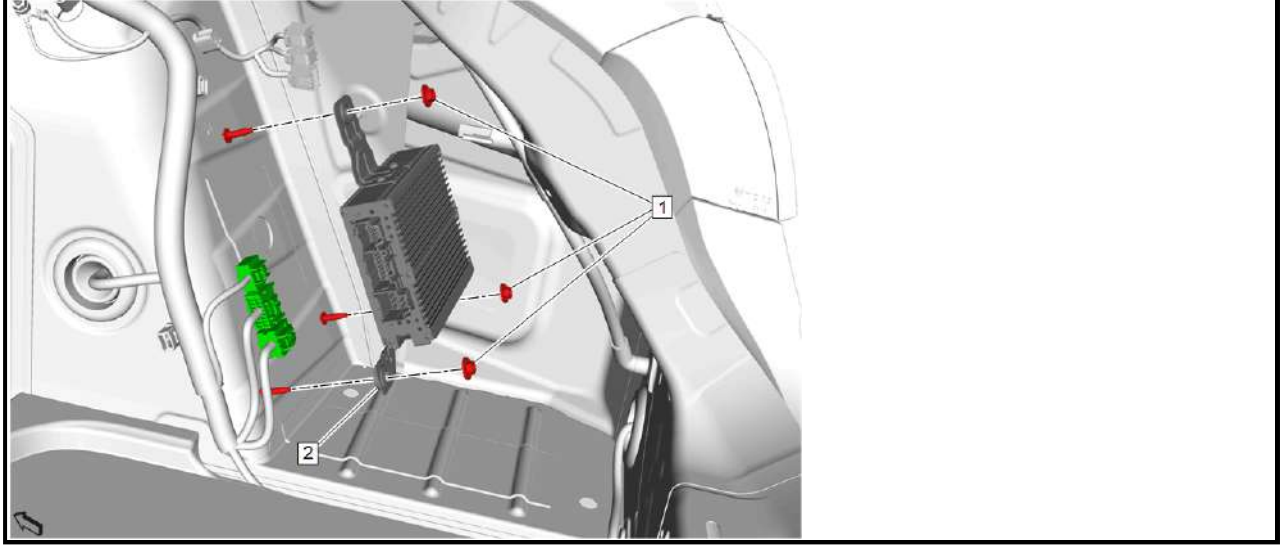
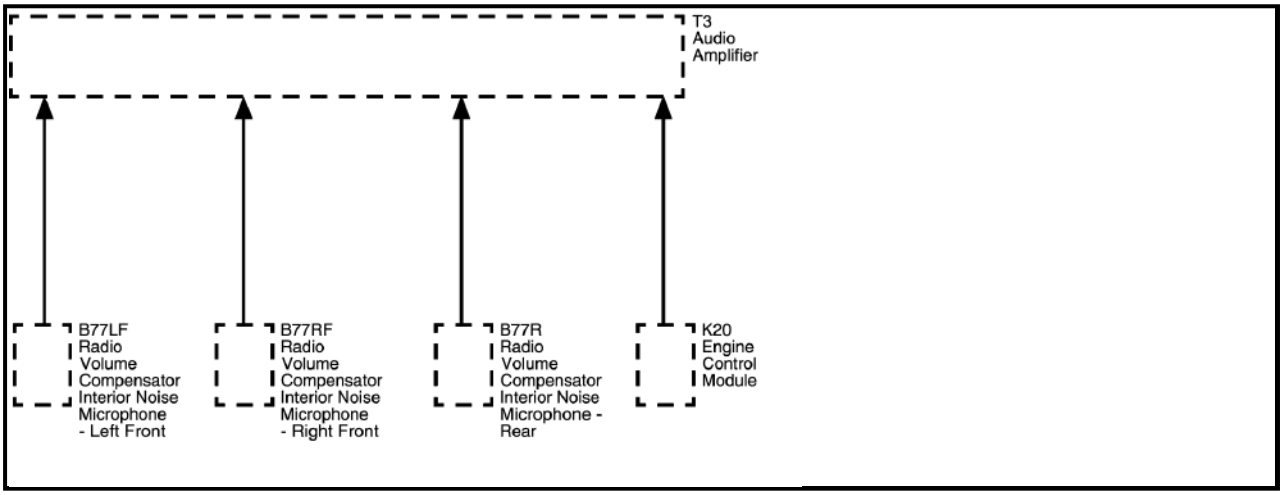


Callout	Component Name
Preliminary Procedure Rear Compartment Side Trim Replacement - Right Side (Hatchback) Rear Compartment Side Trim Replacement - Right Side (5-Door Wagon 35)	
1	Active Noise Cancellation Module Nut [3x] **CAUTION:** Fastener Caution **Tighten** 6N.m (53 lb in)
2	Active Noise Cancellation Module **Procedure** 1. Disconnect the electrical connectors. 2. Control Module References - Programming and Setup

DESCRIPTION AND OPERATION

ACTIVE NOISE CANCELLATION DESCRIPTION AND OPERATION

The entertainment system on this vehicle may have several different configurations. To determine the specific configuration of the vehicle, please see the Service Parts ID Label, and refer to RPO Code List .



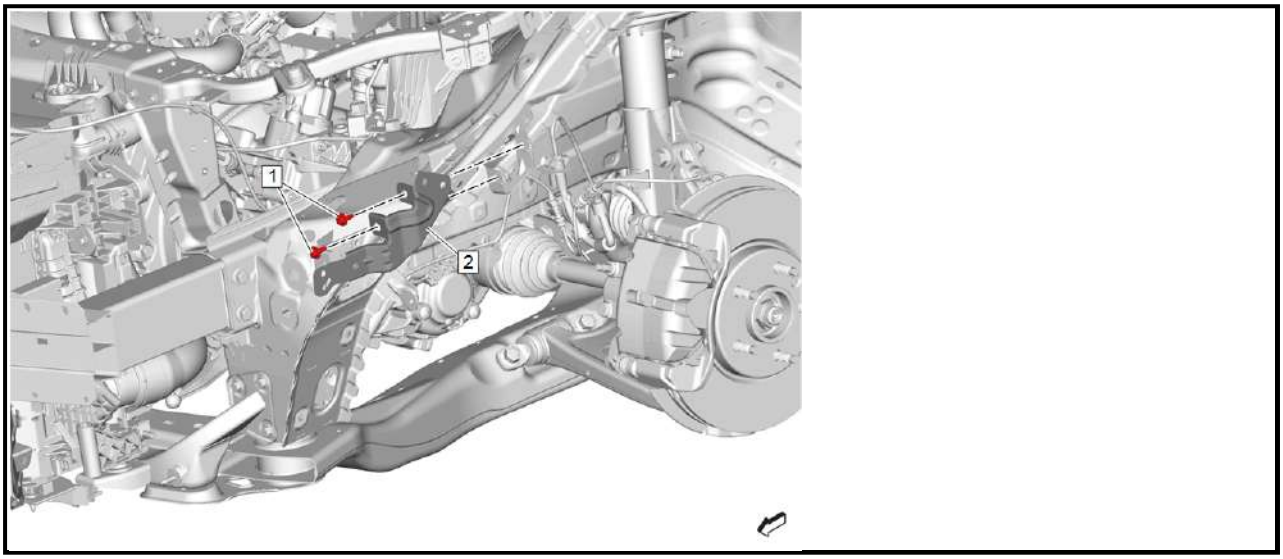
Callout	Component Name
T3	T3 Audio Amplifier

Perform the Diagnostic Repair Verification after completing the repair.

- Hood Primary and Secondary Latch Replacement
- Control Module References for Body Control Module replacement, programming, and setup

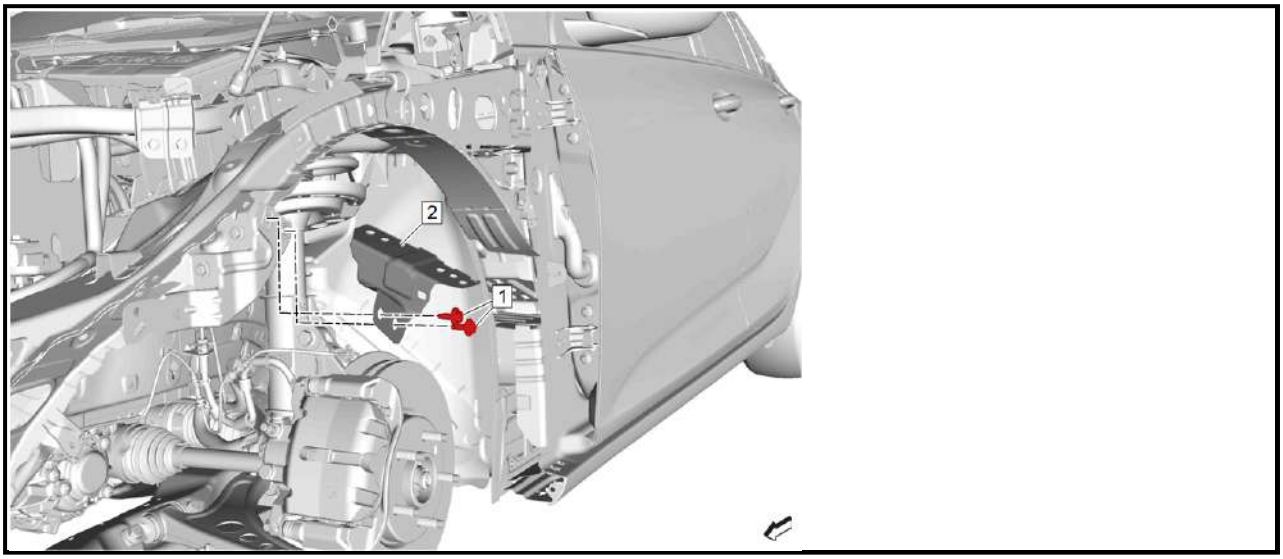
REPAIR INSTRUCTIONS

FRONT FENDER FRONT BRACKET REPLACEMENT



Callout	Component Name
Preliminary Procedure Front Fender Front Reinforcement Replacement	
1	Front Fender Front Bracket Bolt (Qty: 2) **CAUTION:** Fastener Caution **Tighten** 9 N.m (80 lb in)
2	Front Fender Front Bracket

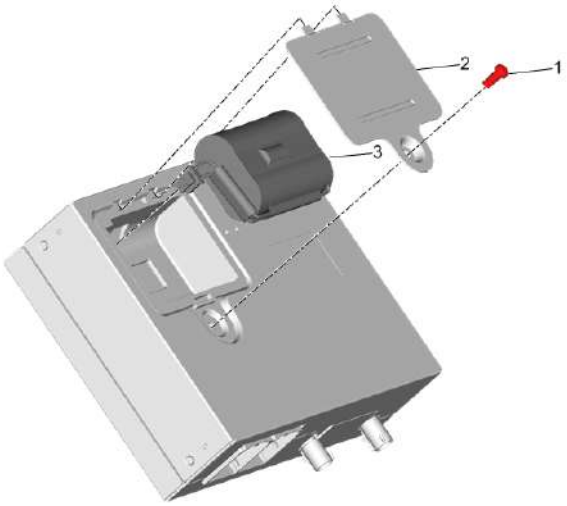
FRONT FENDER FRONT REINFORCEMENT REPLACEMENT



Callout	Component Name
Preliminary Procedure Front Fender Replacement	

Callout	Component Name
Preliminary Procedure Battery Negative Cable Disconnection and Connection (3.6L LGX) Battery Negative Cable Disconnection and Connection (2.0L LTG)	
1	Communication Interface Module Battery **Procedure** 1. Disconnect the electrical connector. 2. Unlock the retaining tabs. 3. Control Module References - Programming and Setup

COMMUNICATION INTERFACE MODULE BATTERY REPLACEMENT (IOR, IOS, IOT)



Callout	Component Name
Preliminary Procedure Communication Interface Module Replacement	
1	Communication Interface Module Battery Cover Bolt **CAUTION:** Fastener Caution **Tighten** 2.5 N.m (22 lb in)
2	Communication Interface Module Battery Cover
3	Communication Interface Module Battery

COMMUNICATION INTERFACE MODULE BRACKET REPLACEMENT

closed position, the ECM detects a low voltage on the signal circuit. With the switch in the open position, the ECM detects a high voltage on the signal circuit. When high voltage is detected on the signal circuit, the ECM will send a serial data message to the instrument panel cluster (IPC). The IPC will then display a message on the driver information center (DIC) or illuminate a low engine oil level lamp.

The following information determines the message sent from the ECM to the IPC:

- The Low Engine Oil Level message lamp is displayed only after the ECM detects a high voltage on the signal circuit for three consecutive ignition cycles, followed by an ignition OFF event from 15 minutes to greater than 50 minutes, depending on engine oil temperatures.
- The Low Engine Oil Level message is turned OFF when the ECM detects a low voltage on the signal circuit after an ignition OFF event for greater than 90 seconds, followed by an ignition ON event for less than 1 second.

Conditions for Running the DTC

Ignition ON.

Conditions for Setting the DTC

The ECM detects a high voltage on the signal circuit for three consecutive ignition cycles, followed by an ignition OFF event from 15 minutes to greater than 50 minutes, depending on engine oil temperatures.

Action Taken When the DTC Sets

Engine Oil Level Low message activated.

Conditions for Clearing the DTC

The ECM detects a low voltage on the signal circuit after an ignition OFF event for greater than 90 seconds, followed by an ignition ON event for less than 1 second.

Reference Information

Schematic Reference

- **Instrument Cluster Wiring Schematics**

Connector End View Reference

COMPONENT CONNECTOR END VIEW INDEX

Description and Operation

- **Instrument Cluster Description and Operation**
- **Indicator/Warning Message Description and Operation**

Electrical Information Reference

- **Circuit Testing**
- **Connector Repairs**
- **Testing for Intermittent Conditions and Poor Connections**
- **Wiring Repairs**

Scan Tool Reference

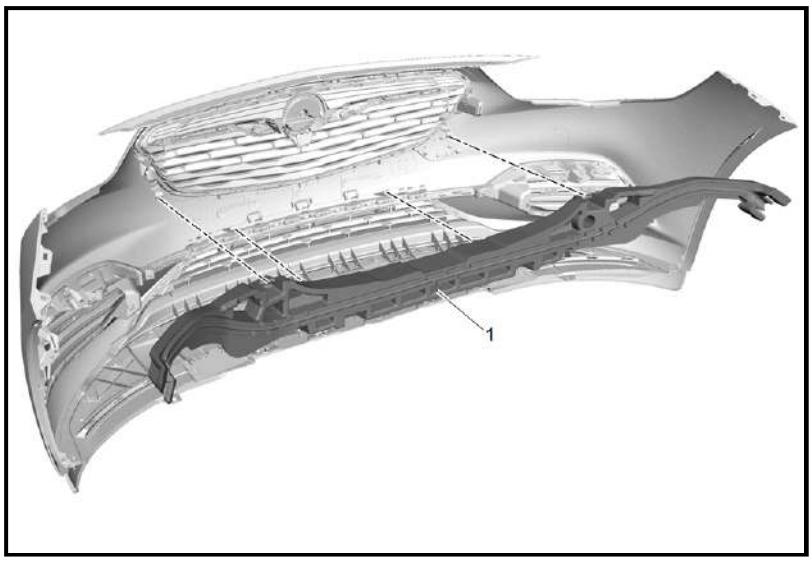
Control Module References for scan tool information.

Circuit/System Verification

1. Verify proper engine oil level.

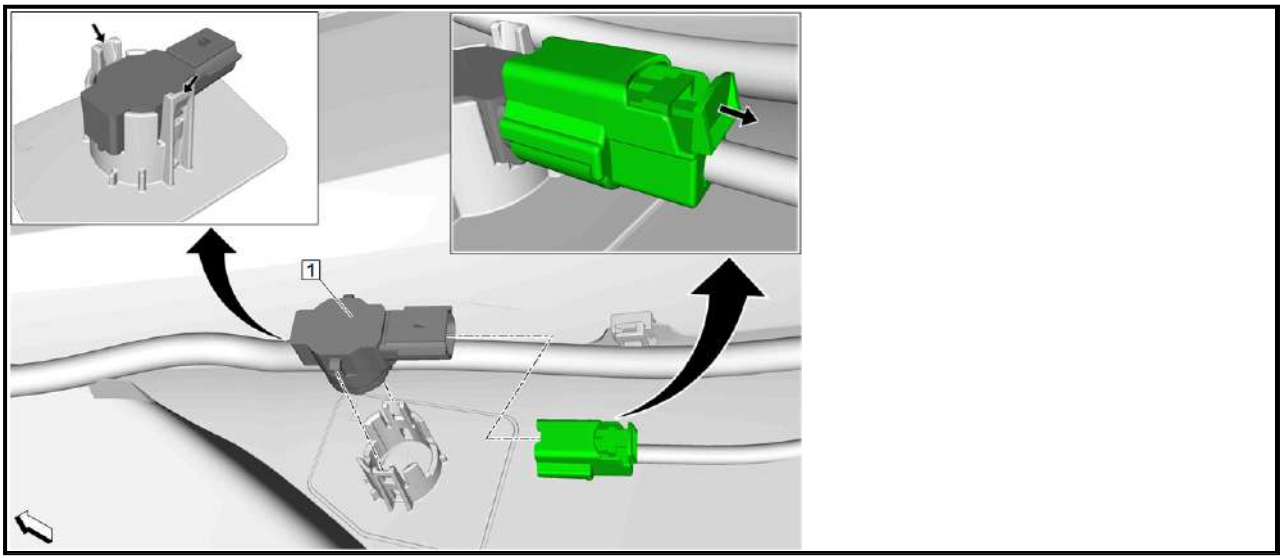
Front Parking Assist Alarm Sensor (1) - Install - **Front Parking Assist Alarm Sensor Replacement**

8.



Front Bumper Fascia Energy Absorber (1) - Install - **Front Bumper Fascia Energy Absorber Replacement - Front Bumper Fascia**

ADVANCED PARKING ASSIST ALARM SENSOR REPLACEMENT



Callout	Component Name
Preliminary Procedure **Rear Bumper Fascia Replacement (5-Door Hatchback 68) Rear Bumper Fascia Replacement (5-Door Wagon 35)**	
1	Advance Parking Assist Alarm Sensor **CAUTION:** **When painting the park assist sensors, DO NOT exceed a paint thickness of 80-120 micrometer. The overall thickness of the paint coat on the park assist sensors should be between 80-120 micrometer. If this paint thickness is exceeded, it may result in poor functioning of the parking assist sensors.** **Procedure** 1. Disconnect the electrical connector. 2. Unlock the retaining tabs.

REAR PARKING ASSIST ALARM SENSOR REPLACEMENT

- B5RR Wheel Speed Sensor - Right Rear - terminal 29 and terminal 17
- **If less than infinite resistance**

  Repair the short to ground on the circuit.

- **Go to next step: If infinite resistance**

6. Test for less than 2 Ω between the B5 Wheel Speed Sensor harness connector terminal 1 and the K17 Electronic Brake Control Module harness connector terminal listed below:
   - B5LF Wheel Speed Sensor - Left Front - terminal 19
   - B5LR Wheel Speed Sensor - Left Rear - terminal 31
   - B5RF Wheel Speed Sensor - Right Front - terminal 16
   - B5RR Wheel Speed Sensor - Right Rear - terminal 17
   - **If 2 Ω or greater**

     Repair the open/high resistance in the circuit.

   - **Go to next step: If less than 2 Ω**
7. Test for less than 2 Ω between the B5 Wheel Speed Sensor harness connector terminal 2 and the K17 Electronic Brake Control Module harness connector terminal listed below:
   - B5LF Wheel Speed Sensor - Left Front - terminal 8
   - B5LR Wheel Speed Sensor - Left Rear - terminal 18
   - B5RF Wheel Speed Sensor - Right Front - terminal 4
   - B5RR Wheel Speed Sensor - Right Rear - terminal 29
   - **If 2 Ω or greater**

     Repair the open/high resistance in the circuit.

   - **Go to next step: If less than 2 Ω**
8. Replace the B5 Wheel Speed Sensor.
9. Verify the DTC does not set while operating the vehicle within Conditions for Running the DTC.
   - **If the DTC sets**

     Replace the K17 Electronic Brake Control Module.

   - **Go to next step: If the DTC does not set**
10. All OK.

Repair Instructions

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

- **Front Wheel Speed Sensor Replacement**
- **Rear Wheel Speed Sensor Replacement (Front Wheel Drive)** or **Rear Wheel Speed Sensor Replacement (All Wheel Drive)**
- **Control Module References** for electronic brake control module replacement, programming and setup

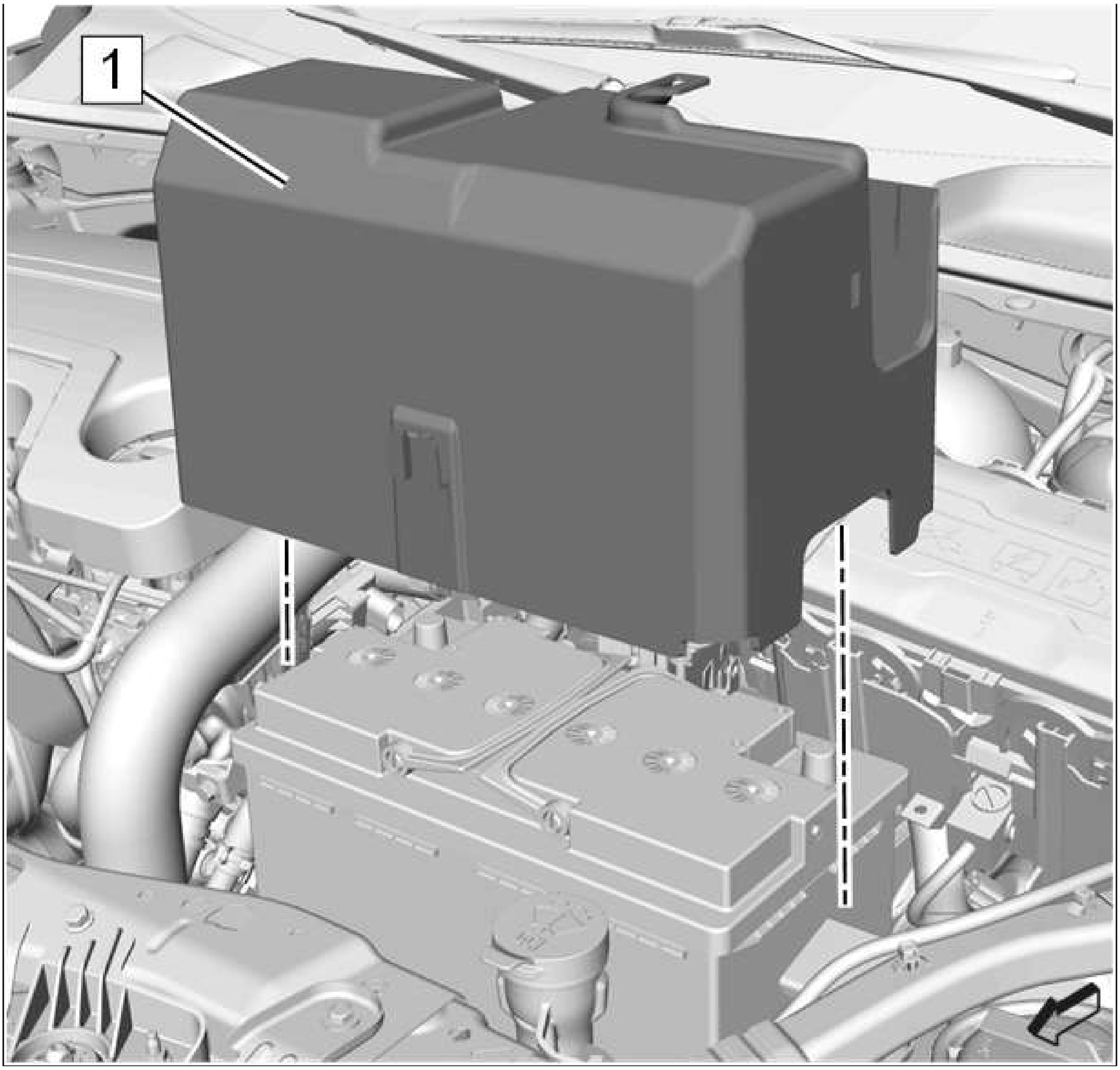
DTC C0035-C0051 (RPO J71)

Diagnostic Instructions

- Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.
- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

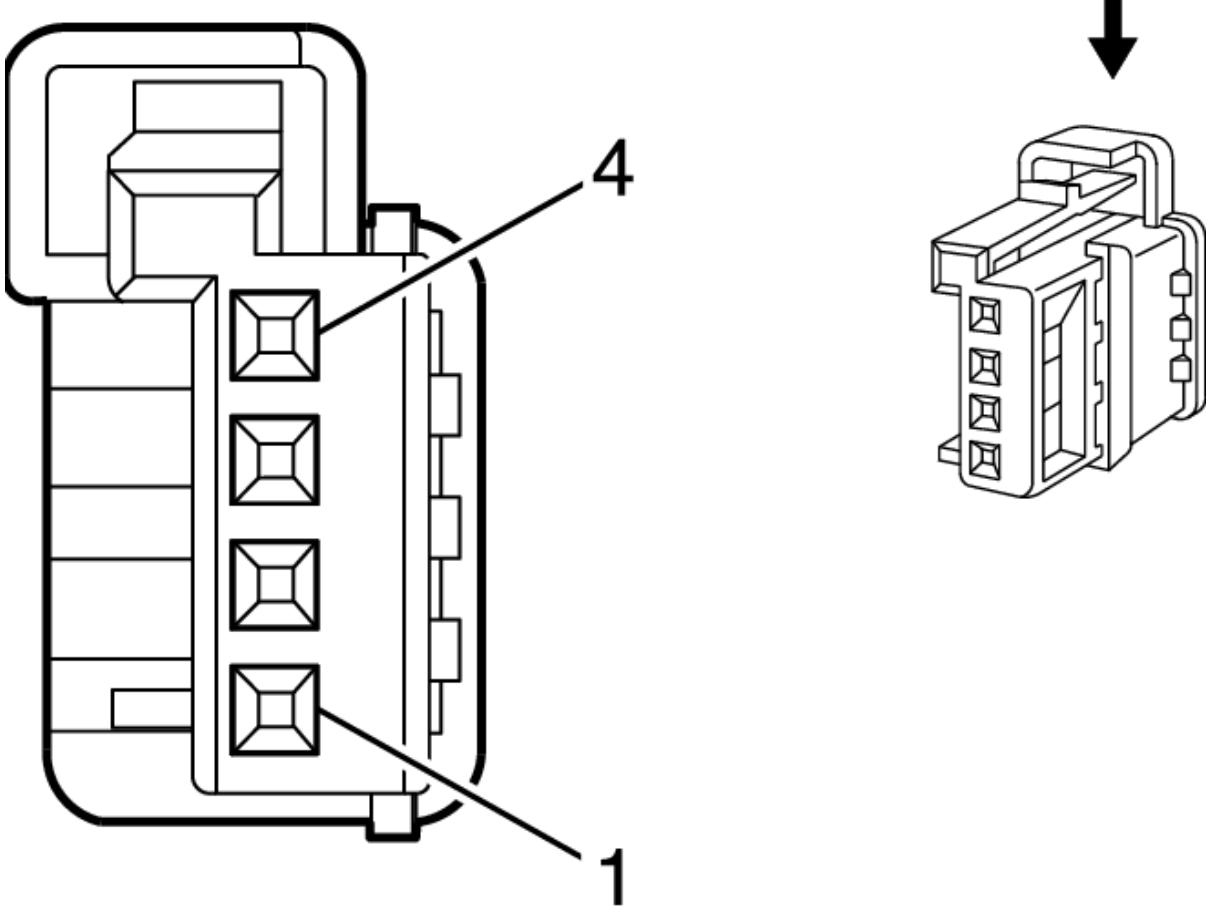
DTC Descriptors

DTC C0035



Battery Cover (1) - Install

2.



Connector Part Information

- Harness Type: Body
- OEM Connector: 13216377
- Service Connector: 13584096
- Description: 4-Way F 0.64 Micro-Quadlock Series (BK)

Terminal Part Information

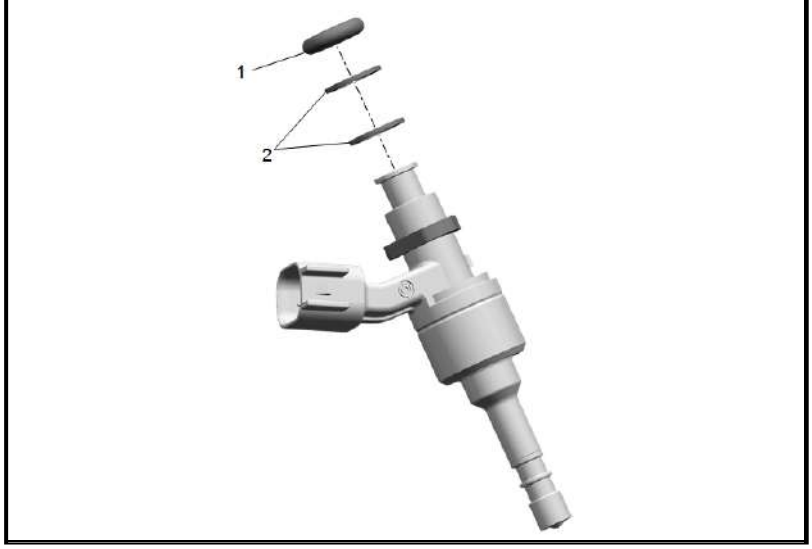
Terminal Type ID	Terminated Lead	Diagnostic Test Probe	Terminal Removal Tool	Service Terminal	Tray Name	Core Crimp	Insulation Crimp
I	Not Required	J-35616-64B (LT BU)	No Tool Required	Not Required	Not Required	Not Required	Not Required

Pin	Size	Color	Circuit	Function	Terminal Type ID	Option
1	0.5	GY/VT	755	RAP Relay Coil Control	I	-
2	0.35	GN/BU	6133	Local Interconnect Network Serial Data Bus 2	I	-
3	0.75	BK	2150	Ground	I	MM1
4	-	-	-	Not Occupied	-	-

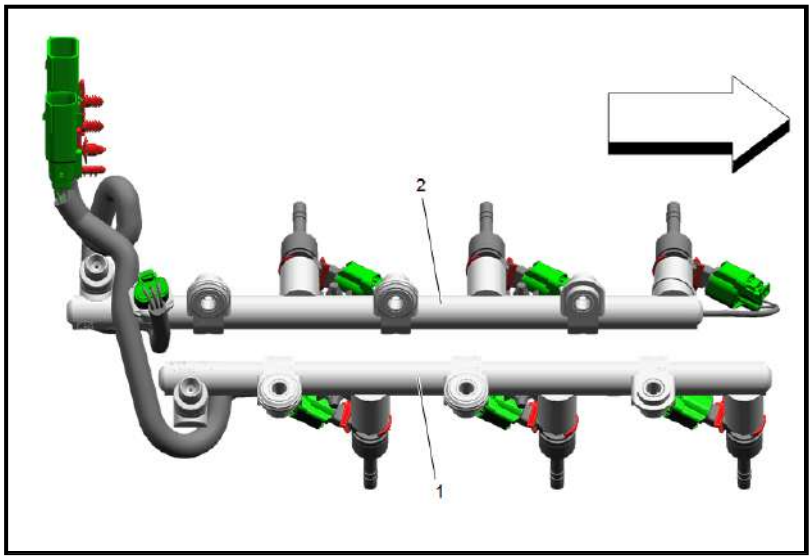
P12L HORN - LEFT

Callout	Component Name
IO6	RADIO-INFOTAINMENT SYSTEM - UPLEVEL HMI, ENHANCED CONNECTIVITY, EMBEDDED NAVIGATION
UV6	HEAD UP DISPLAY-WINDSHIELD
UV6	HEAD UP DISPLAY-WINDSHIELD
IOB	RADIO-INFOTAINMENT SYSTEM - MIDLEVEL HMI, MIDLEVEL CONNECTIVITY
IO5	RADIO-INFOTAINMENT SYSTEM - UPLEVEL HMI, ENHANCED CONNECTIVITY
IO6	RADIO-INFOTAINMENT SYSTEM - UPLEVEL HMI, ENHANCED CONNECTIVITY, EMBEDDED NAVIGATION
C93	LAMP-INTR, AMBIENT
2440_RD/GN	2440 RD/GN
CAV_1	1
2440_RD/GN	2440 RD/GN
IO5	RADIO-INFOTAINMENT SYSTEM - UPLEVEL HMI, ENHANCED CONNECTIVITY
IO6	RADIO-INFOTAINMENT SYSTEM - UPLEVEL HMI, ENHANCED CONNECTIVITY, EMBEDDED NAVIGATION
IO5	RADIO-INFOTAINMENT SYSTEM - UPLEVEL HMI, ENHANCED CONNECTIVITY
IO6	RADIO-INFOTAINMENT SYSTEM - UPLEVEL HMI, ENHANCED CONNECTIVITY, EMBEDDED NAVIGATION
U65	SPEAKER SYSTEM-7, PREMIUM
CONN_X1	X1
CONN_X1	X1
X210	X210
CAV_44	44
CAV_43	43
X115	X115
X210	X210
X210	X210
X404	X404
J417	J417
X400	X400
F41DA	F41DA 15A
F42DA	F42DA 20A
F38DA	F38DA 5A
F39DA	F39DA 7.5A
F40DA	F40DA 10A
F10DA	F10DA 10A
F15DA	F15DA 20A
X210	X210
J216	J216
J217	J217
J323	J323
J410	J410
J218	J218
X210	X210
T19	T19 Power Supply Transformer
P16	P16 Instrument Cluster
P17	P17 Info Display Module
A26	A26 HVAC Controls
K71	K71 Transmission Control Module

Application	Specification	
	Metric	English
• Piston Ring to Groove Clearance - Top	0.04 - 0.08 mm	0.0015 - 0.0031 in
• Piston Ring to Groove Clearance - Second	0.030 - 0.070 mm	0.0012 - 0.0030 in
• Piston Ring to Groove Clearance - Oil Control	0.024 - 0.176 mm	0.0009 - 0.0069 in
• Piston Ring Thickness - Top	1.170 - 1.190 mm	0.0461 - 0.0469 in
• Piston Ring Thickness - Second	1.470 - 1.490 mm	0.0579 - 0.0587 in
• Piston Ring Thickness - Oil Control - Rail	0.447 - 0.473 mm	0.0176 - 0.0186 in
• Piston Ring Thickness - Oil Control - Spacer	0.960 - 1.040 mm	0.0378 - 0.0409 in
Pistons and Pins		
• Pin - Piston Pin Clearance to Connecting Rod Bore	0.007 - 0.020 mm	0.0003 - 0.0008 in
• Pin - Piston Pin Clearance to Piston Pin Bore	0.005 - 0.013 mm	0.0002 - 0.0005 in
• Pin - Piston Pin Diameter	23.997 - 24.000 mm	0.9448 - 0.9449 in
• Pin - Piston Pin End Play	0.263 - 1.164 mm	0.0104 - 0.0458 in
• Piston - Piston Diameter - @ 14.8 mm up	85.968 - 85.982 mm	3.3846 - 3.3851 in
• Piston - Piston Pin Bore Diameter	24.005 - 24.010 mm	0.9451 - 0.9453 in
• Piston - Piston Ring Groove Width - Top	1.23 - 1.25 mm	0.0484 - 0.0492 in
• Piston - Piston Ring Groove Width - Second	1.52 - 1.54 mm	0.0598 - 0.0606 in
• Piston - Piston Ring Groove Width - Oil Control	2.01 - 2.03 mm	0.0791 - 0.0799 in
• Piston - Piston to Bore Clearance - w/o polymer	0.010 - 0.041 mm	0.0004 - 0.0016 in
Valve System		
• Valves - Valve Face Angle	45 Degrees	
• Valves - Valve Face Runout - Maximum	0.040 mm	0.0016 in
• Valves - Valve Seat Runout - Maximum	0.080 mm	0.0031 in

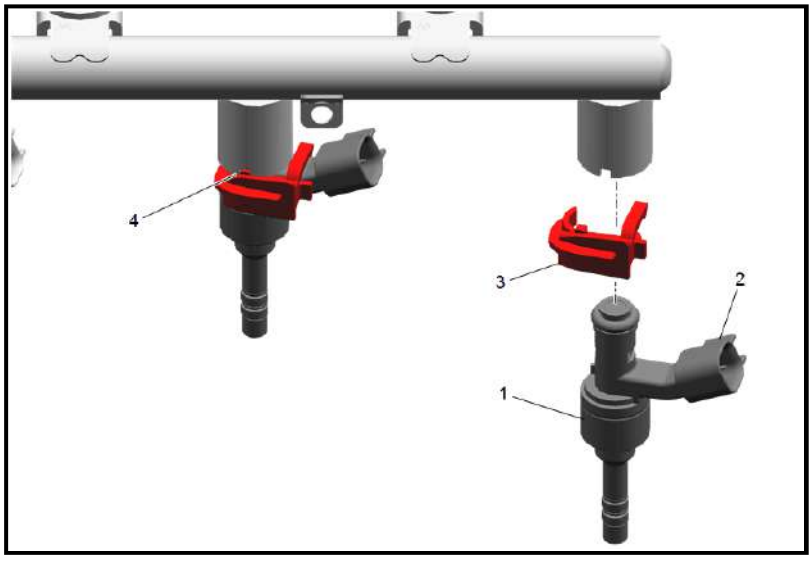


Install the NEW white plastic spacer (3) on the fuel injector first.

14. Install the brown plastic spacer (2) second.
15. Lubricate the NEW O-ring (1) with one drop of clean engine oil.
16. 

CAUTION: **Ensure the fuel injectors are installed in the correct orientation. Improper orientation of the fuel injectors may result in engine misfire and possible engine damage.**

The right side (bank 1) fuel injector wiring harness connectors (1) should point to the rear of the engine. The left side (bank 2) fuel injector wiring harness connectors (2) should point to the front of the engine.

17. 

Cylinder 1 Injector High Control Circuit Shorted to Control Circuit

DTC P1249

Cylinder 2 Injector High Control Circuit Shorted to Control Circuit

DTC P124A

Cylinder 3 Injector High Control Circuit Shorted to Control Circuit

DTC P124B

Cylinder 4 Injector High Control Circuit Shorted to Control Circuit

DTC P124C

Cylinder 5 Injector High Control Circuit Shorted to Control Circuit

DTC P124D

Cylinder 6 Injector High Control Circuit Shorted to Control Circuit

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Short Between Circuits
Control circuit terminal 2 @ Q17A Fuel Injector 1	P2147	P0201	P2148	P1248
Control circuit terminal 1 @ Q17A Fuel Injector 1	P0261	P0201	P0262	P1248
Control circuit terminal 2 @ Q17B Fuel Injector 2	P2150	P0202	P2151	P1249
Control circuit terminal 1 @ Q17B Fuel Injector 2	P0264	P0202	P0265	P1249
Control circuit terminal 2 @ Q17C Fuel Injector 3	P2153	P0203	P2154	P124A
Control circuit terminal 1 @ Q17C Fuel Injector 3	P0267	P0203	P0268	P124A
Control circuit terminal 2 @ Q17D Fuel Injector 4	P2156	P0204	P0270, P2157	P124B
Control circuit terminal 1 @ Q17D Fuel Injector 4	P0270, P2156	P0204	P0271, P2157	P124B
Control circuit terminal 2 @ Q17E Fuel Injector 5	P216B	P0205	P216C	P124C
Control circuit terminal 1 @ Q17E Fuel Injector 5	P0273	P0205	P0274	P124C
Control circuit terminal 2 @ Q17F Fuel Injector 6	P216E	P0206	P216F	P124D
Control circuit terminal 1 @ Q17F Fuel Injector 6	P0276	P0206	P0277	P124D

Typical Scan Tool Data

Fuel Injector Control Circuit Test Status

Circuit	Short to Ground	Open	Short to Voltage	Short between the circuits
Operating Conditions: Engine at Idle **Parameter Normal Range:** OK or Not Run				

Application	HC ppm (CO %)
Light Duty Vehicles (9000 GVWR Or Less)	
1971 & Older	900 (8.9)
1972-74	700 (8.2)
1975-79	600 (7.5)
1980	400 (4.7)
1981 & Newer	220 (1.2)
Heavy Duty Trucks (9001-25,999 GVWR)	
1971 & Older	1000 (8.9)
1972-74	1000 (8.2)
1975-79	1000 (8.0)
1980	800 (6.0)
1981 & Newer	400 (4.0)

TENNESSEE EMISSION STANDARDS - DAVIDSON & NASHVILLE COUNTIES - IDLE TEST

Application	HC ppm (CO %)
Light Duty Vehicles (6000 GVWR Or Less)	
1975-77	500 (5.0)
1978-79	400 (4.0)
1980	300 (3.0)
1981 & Newer	220 (1.2)
Medium Duty Trucks (6001-8500 GVWR)	
1975-77	750 (6.5)
1978-79	600 (6.0)
1980	400 (4.5)
1981 & Newer	400 (4.0)

TENNESSEE EMISSION STANDARDS - FOUR COUNTY AREA SURROUNDING NASHVILLE - IDLE TEST

Application	HC ppm (CO %)
Light Duty Vehicles (6000 GVWR Or Less)	
1975-77	500 (5.0)
1978-79	400 (4.0)
1980	300 (3.0)
1981 & Newer	220 (1.2)
Medium Duty Trucks (6001-8500 GVWR)	
1975-77	750 (6.5)
1978-79	600 (6.0)
1980	400 (4.5)
1981 & Newer	400 (4.0)

TEXAS

NOTE: **The Texas program incorporates original U.S. EPA recommended start-up ASM2525 and ASM5015 standards for 1995 and newer model year vehicles. Refer to appropriate model year range in appropriate table. See U. S. EPA ASM2525 & ASM5015 START-UP EMISSION STANDARDS.**

TEXAS EMISSION STANDARDS - 2-SPEED IDLE TEST

Application	HC ppm (CO %)
Light Duty Vehicles (8500 GVWR Or Less)	
1979	600 (6.0)
1980	400 (4.0)
1981 & Newer	220 (1.2)

1. Verify the scan tool Deployment Loop Resistance parameters stay consistently between 2.1 - 4.0 Ω without any spikes or dropouts while moving the harness near each connector listed below:
    - F101 Passenger Instrument Panel Air Bag
    - Inline harness connector X207
    - K36 Inflatable Restraint Sensing and Diagnostic Module
    - **If less than 2.1 Ω or greater than 4.0 Ω**

      Refer to **Circuit/System Testing**.

    - **If there are spikes or dropouts, perform the following:**
    - Inspect each connector terminal and harness for damage or corrosion and repair as necessary
    - Apply dielectric grease / lubricant (Nyogel 760G or equivalent, meeting GM specification 9986087) to each connector terminal
    - Insure each connector and CPA is correctly seated.
    - **Go to next step: If between 2.1 - 4.0 Ω without any spikes or dropouts**
2. All OK.

Circuit/System Testing

1. Ignition OFF, scan tool disconnected, disconnect the X207 inline harness connector for the F101 Passenger Instrument Panel Air Bag. It may take up to 2 min for all vehicle systems to power down.
2. Test for greater than 25 Ω between the appropriate control circuit terminals listed below on the K36 Inflatable Restraint Sensing and Diagnostic Module side of the connector:
    - F101 Passenger Instrument Panel Air Bag stage 1 X207 terminal 1 and 2
    - F101 Passenger Instrument Panel Air Bag stage 2 X207 terminal 3 and 4
    - **If 25 Ω or less**
    1. Disconnect the X1 harness connector at the K36 inflatable restraint sensing and diagnostic module.

       NOTE: **Some connectors may be equipped with shorting bars as a safety component to prevent accidental deployment. When testing on a connector with shorting bars, the shorting bars must be disabled to ensure accurate test results. Insert an appropriate pick from EL-38125-580 and depress the shorting bars above the appropriate terminals. This will lift the shorting bar from the terminal and allow accurate test results. Take care not to damage the connector, shorting bar, or terminal when depressing the shorting bar.**

    2. Test for infinite resistance between the two control circuits.
        - If less than infinite resistance, repair the short between the two circuits.
        - If infinite resistance, replace the K36 Inflatable Restraint Sensing and Diagnostic Module.
    - **Go to next step: If greater than 25 Ω**
3. Ignition ON.
4. Test for less than 11 V between each control circuit terminal listed below on the instrument panel harness side of the connector and ground:
    - X207 control circuit terminal 1
    - X207 control circuit terminal 2
    - X207 control circuit terminal 3
    - X207 control circuit terminal 4
    - **If 11 V or greater**
    1. Ignition OFF, disconnect the X1 harness connector at the K36 Inflatable Restraint Sensing and Diagnostic Module, ignition ON.
    2. Test for less than 1 V between each control circuit and ground.
        - If 1 V or greater, repair the short to voltage on the circuit.

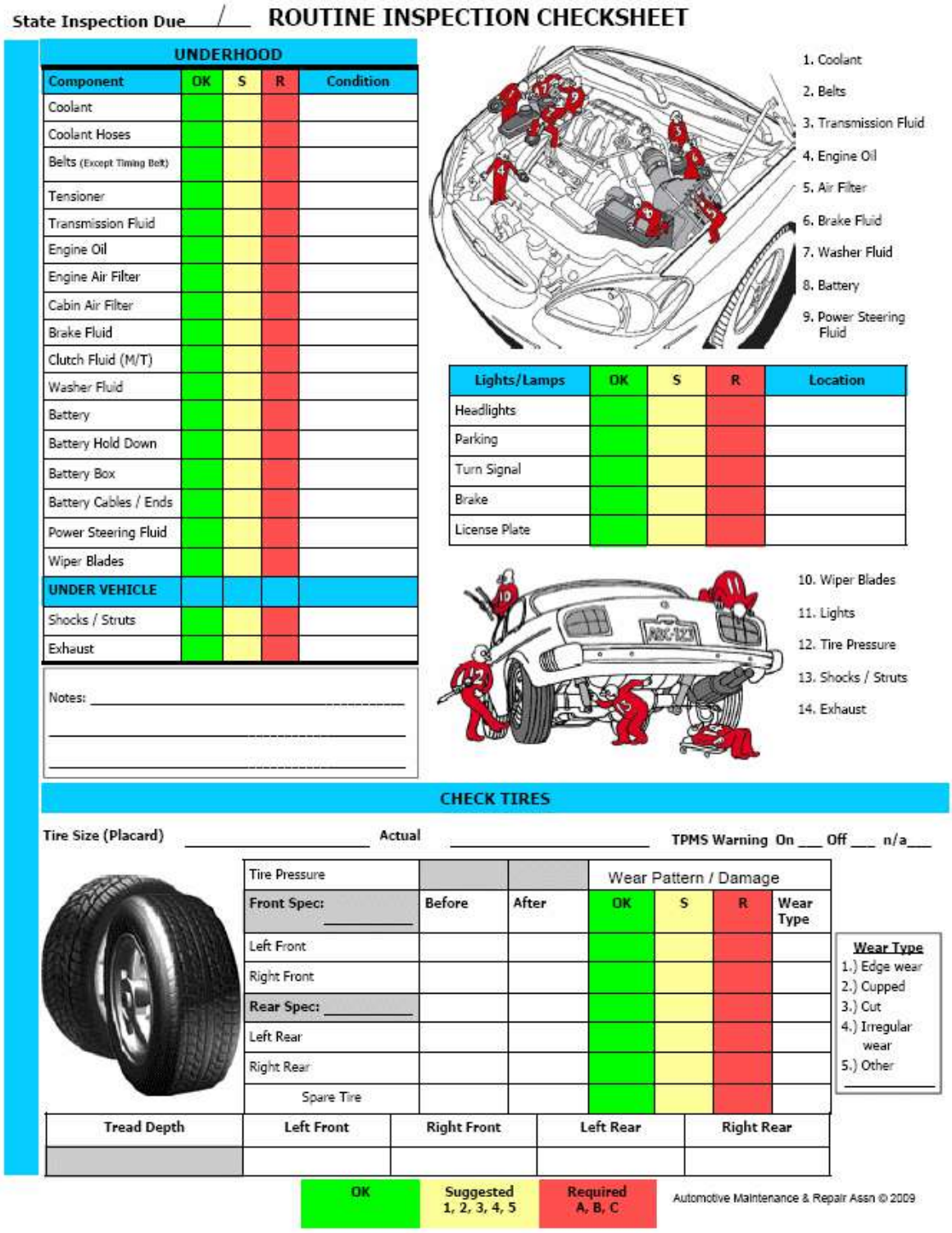


Fig. 11: Routine Inspection Checksheet (2 Of 2)

ROUTINE INSPECTION - UICS

BRAKE SYSTEMS

NOTE: **Some states may have specifications that differ from OEM. Check your local/state regulations. Where state or local laws are stricter, they take precedence over these guidelines.**

BRAKE FLUID

NOTE: **Most manufacturers prohibit the use of DOT 5 brake fluid in a system equipped with ABS. DOT 3, DOT 4, and DOT 5.1 brake fluids are clear or light amber in color. DOT 5 brake fluid is violet in color. Correct fluid type is normally stamped on the master cylinder cover.**

NOTE: **Fluid Flush - a process using a sufficient volume of fluid to help remove**