2008 ACCESSORIES & EQUIPMENT

Lighting - Cab & Chassis Sierra, Cab & Chassis Silverado, Sierra & Silverado

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Application	Specification	
	Metric	English
Center High-Mounted Stop Cargo Lamp Mounting Screws	2.5 N.m	22 lb in
Headlamp Ballast Screws	2 N.m	18 lb in
Headlamp Mounting Screws	6 N.m	53 lb in
License Plate Lamp Screws	2 N.m	18 lb in
Rear Tail/Turn Signal Lamp Assembly Screws	2 N.m	18 lb in
Rear Side Marker Lamp Screws	2.5 N.m	22 lb in
Roof Marker Lamp Screws - Center	2 N.m	18 lb in
Roof Marker Lamp Screws - Outer	2 N.m	18 lb in
Tail Lamp Screws	2 N.m	18 lb in

SCHEMATIC AND ROUTING DIAGRAMS

HEADLIGHTS/DAYTIME RUNNING LIGHTS (DRL) SCHEMATICS

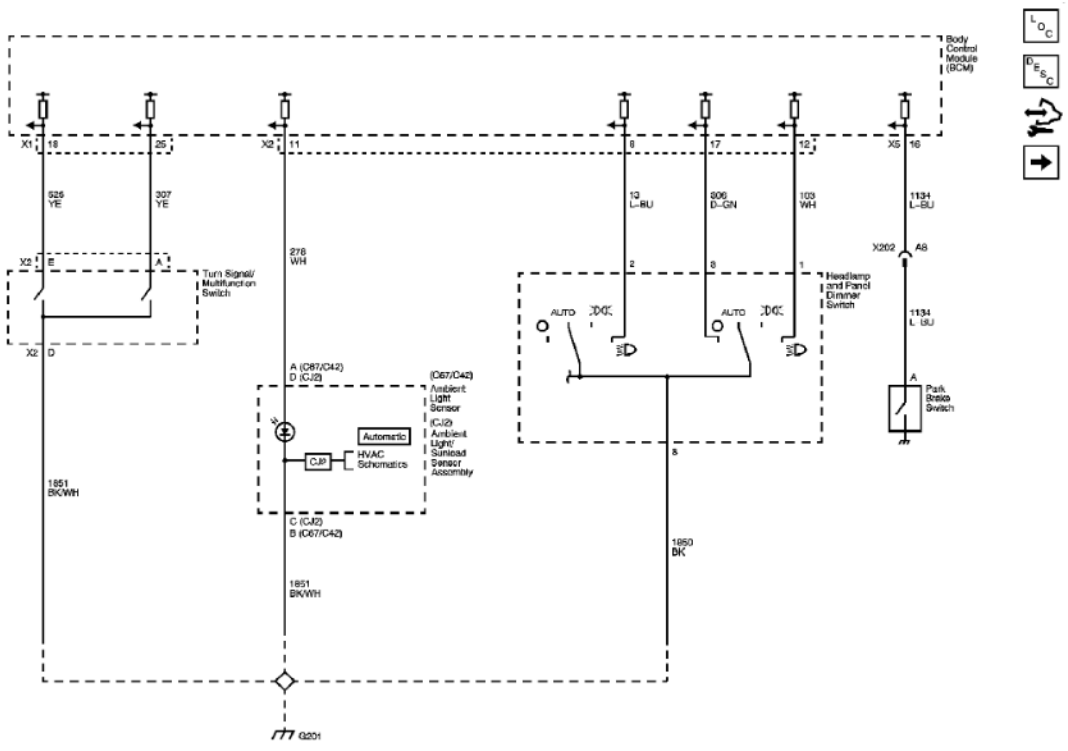


Fig. 1: Headlight and Daytime Running Light Controls
Courtesy of GENERAL MOTORS CORP.

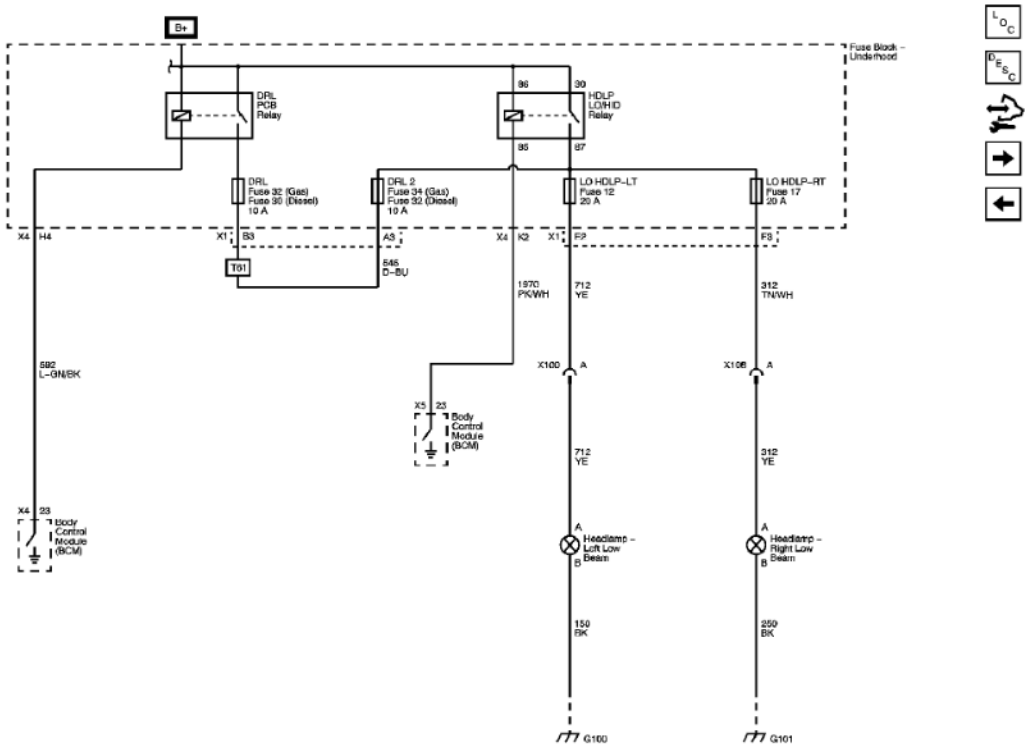


Fig. 2: Low Beam and Daytime Running Lights
Courtesy of GENERAL MOTORS CORP.

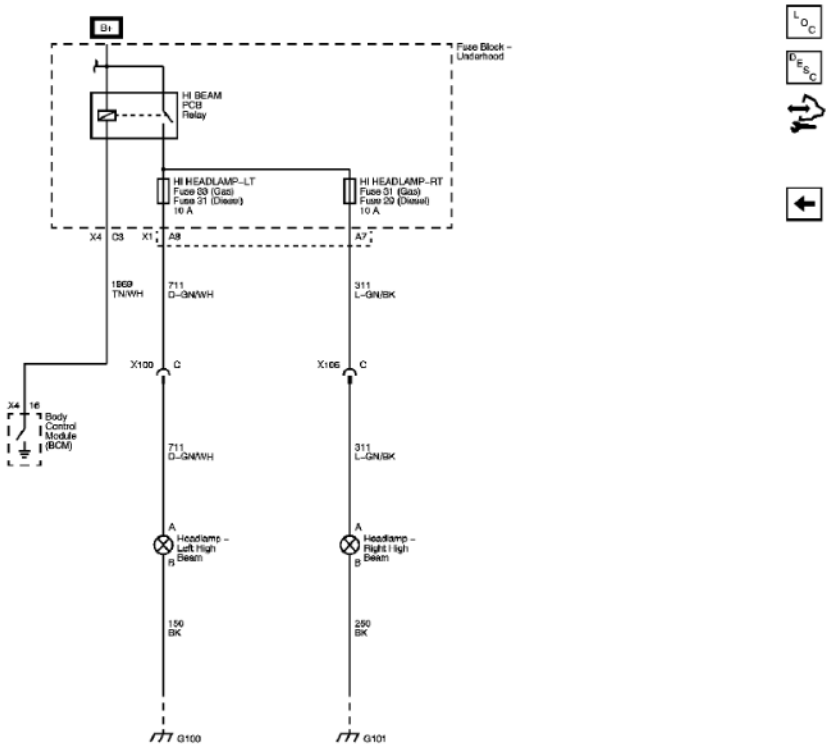


Fig. 3: High Beams
Courtesy of GENERAL MOTORS CORP.

FOG LIGHTS SCHEMATICS

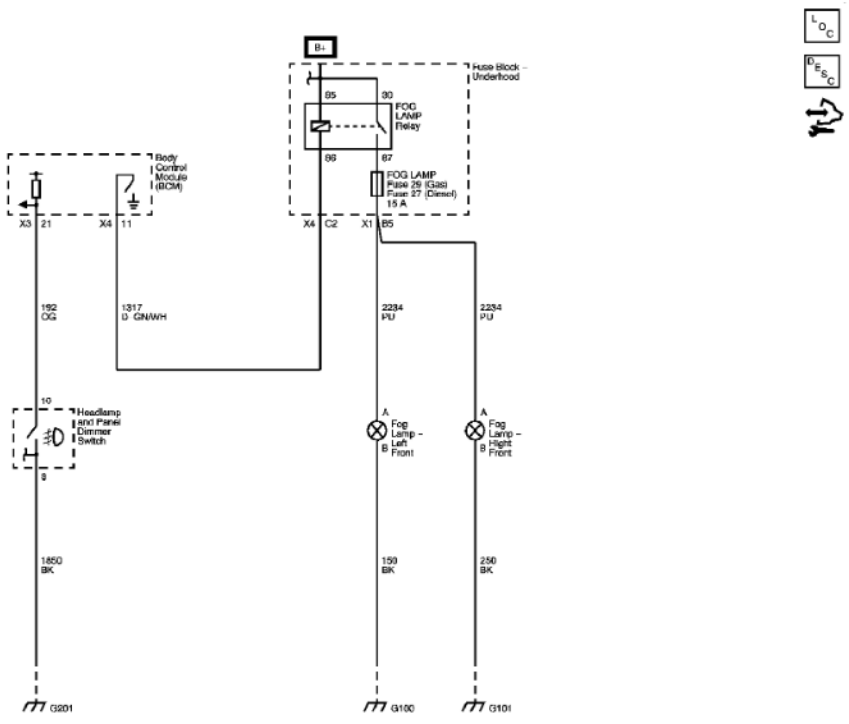


Fig. 4: Fog Lights Schematic
Courtesy of GENERAL MOTORS CORP.

EXTERIOR LIGHTS SCHEMATICS

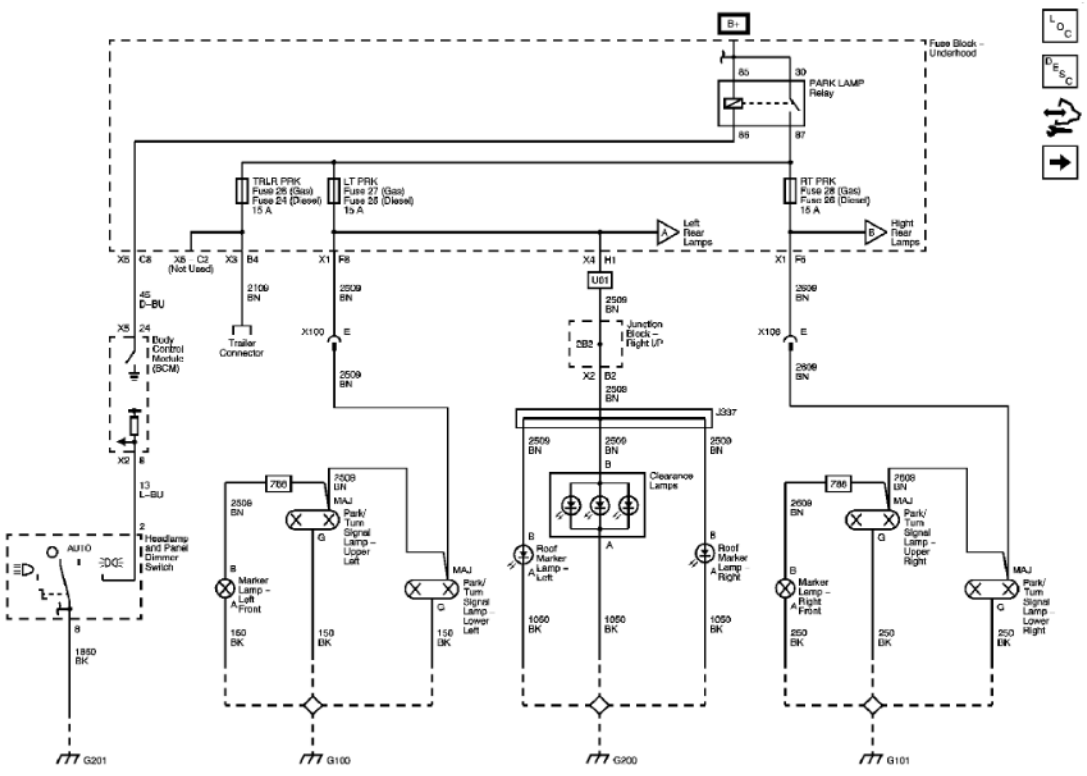


Fig. 5: Park Lamp Controls and Front Park Lamps
Courtesy of GENERAL MOTORS CORP.

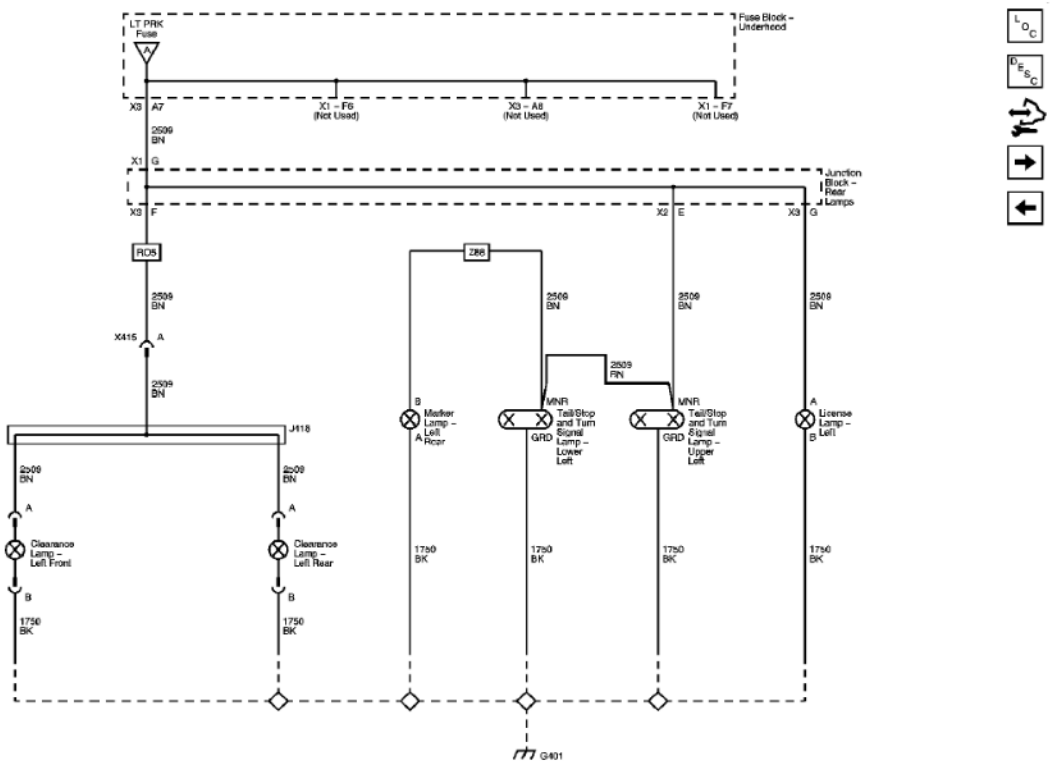


Fig. 6: Left Rear Park Lamps
Courtesy of GENERAL MOTORS CORP.

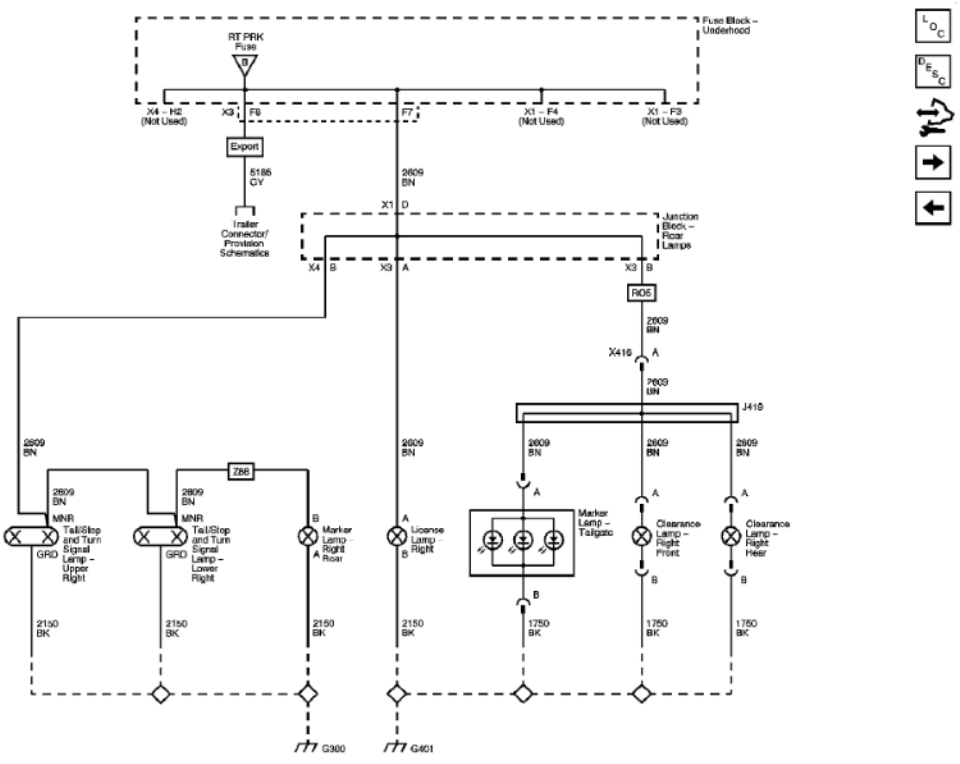


Fig. 7: Right Rear Park Lamps
Courtesy of GENERAL MOTORS CORP.

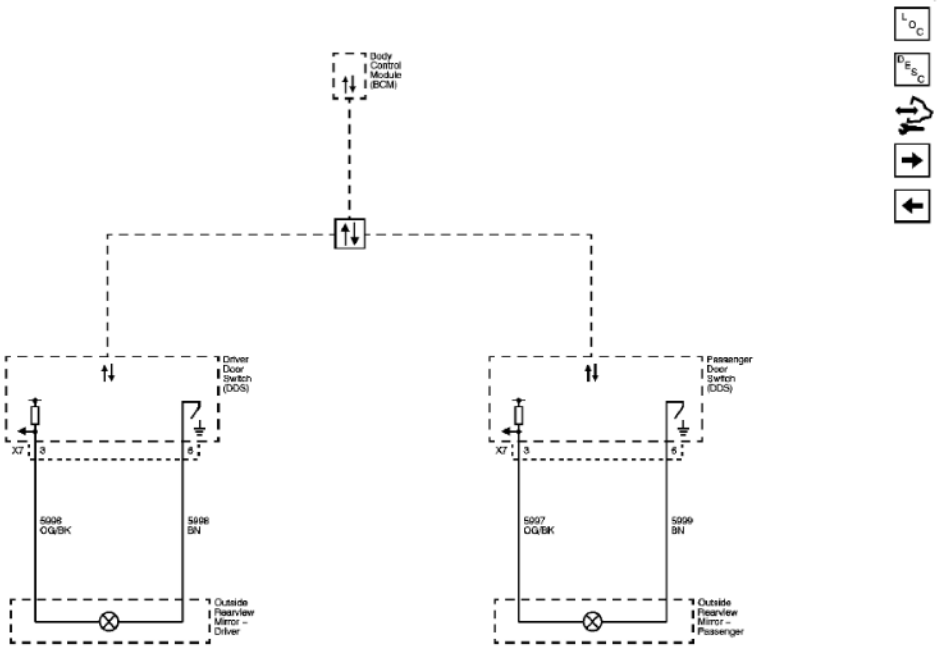


Fig. 8: Exterior Illumination Lamps (DL3/DR4)
Courtesy of GENERAL MOTORS CORP.

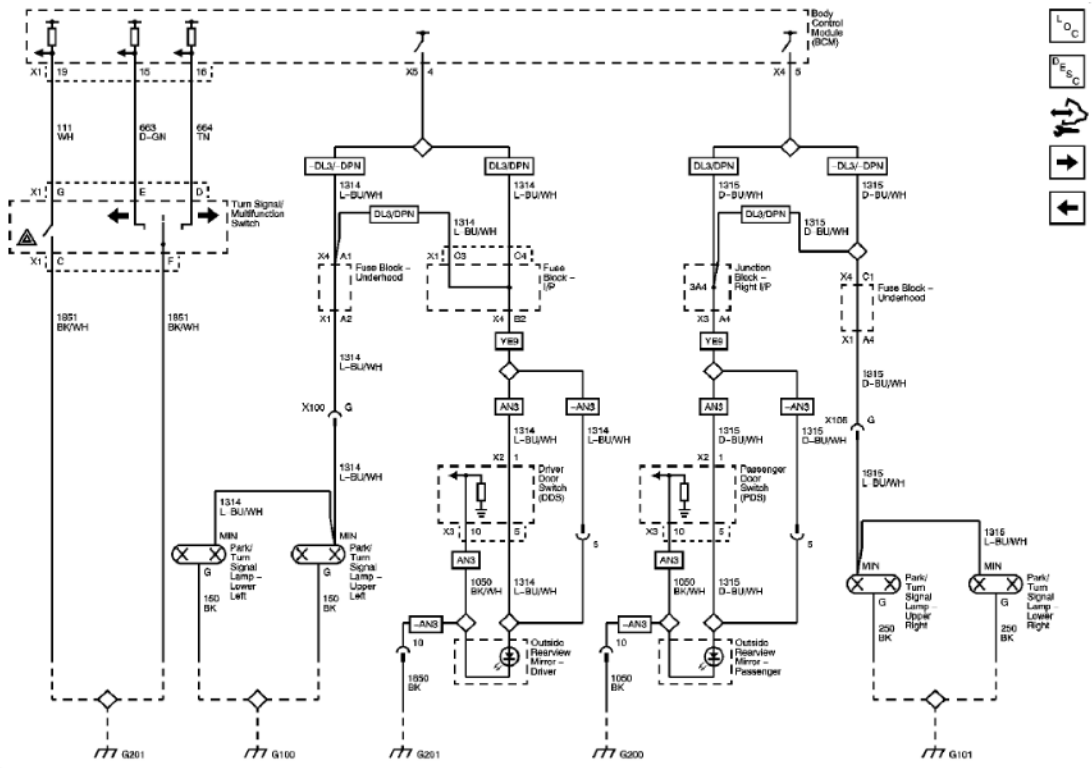


Fig. 9: Turn Signal Controls and Front Turn Signal Lamps
Courtesy of GENERAL MOTORS CORP.

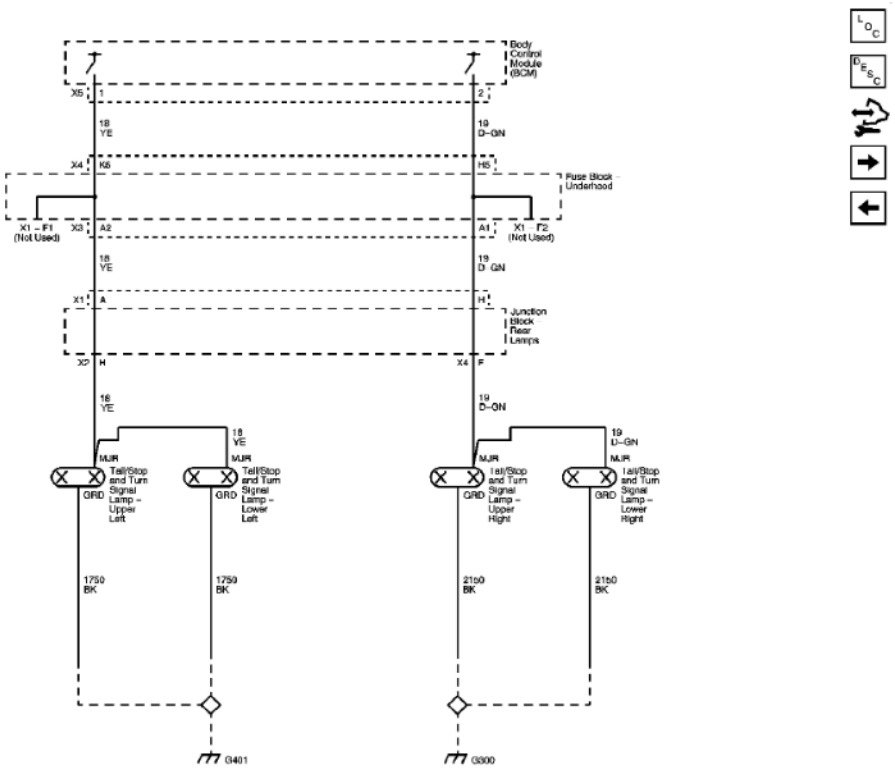


Fig. 10: Rear Stop/Turn Signal Lamps
Courtesy of GENERAL MOTORS CORP.

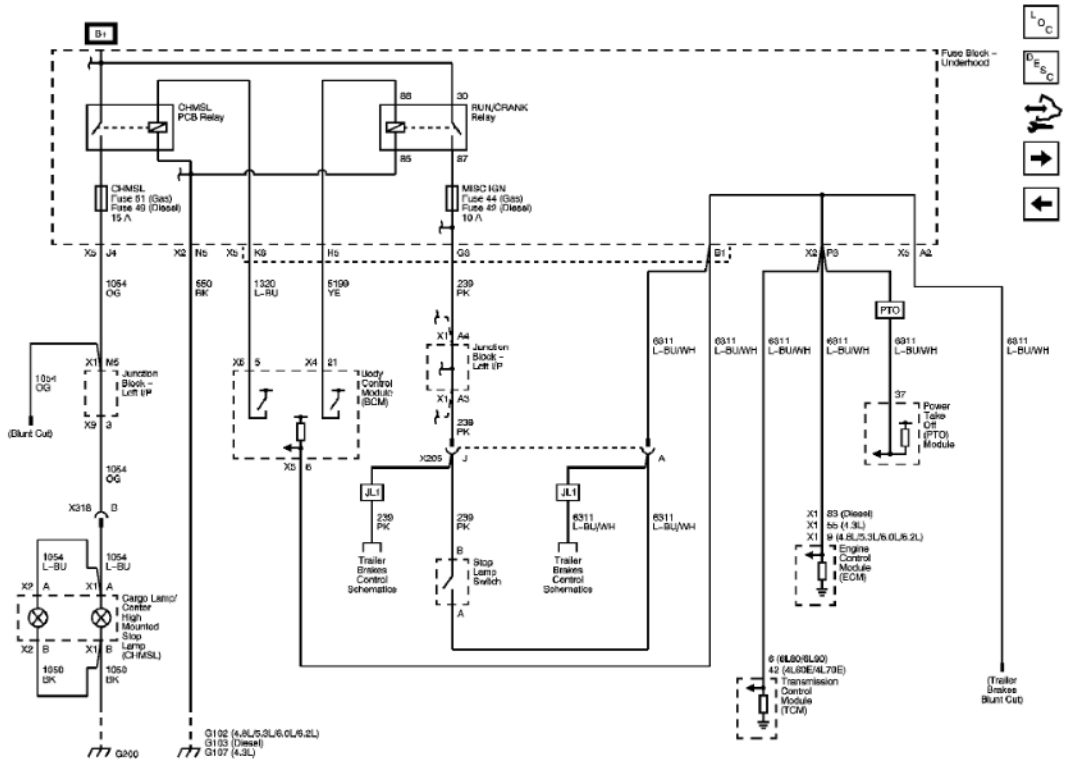


Fig. 11: Stop Lamp Controls and CHMSL
Courtesy of GENERAL MOTORS CORP.

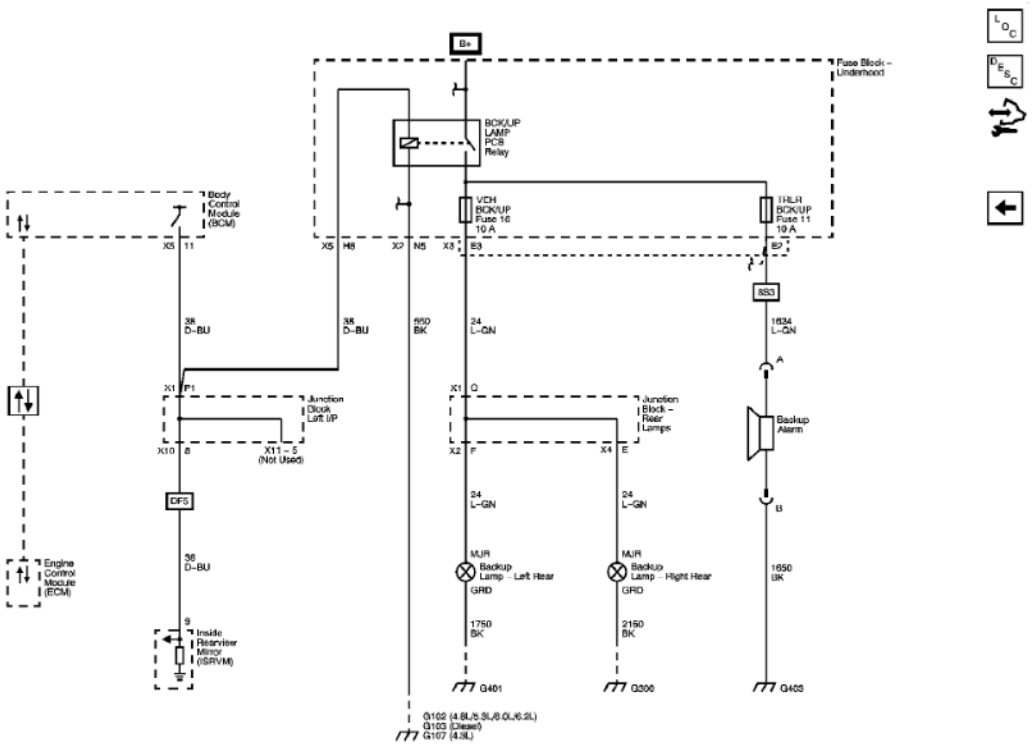


Fig. 12: Backup Lamps and Backup Alarm
Courtesy of GENERAL MOTORS CORP.

INTERIOR LIGHTS SCHEMATICS

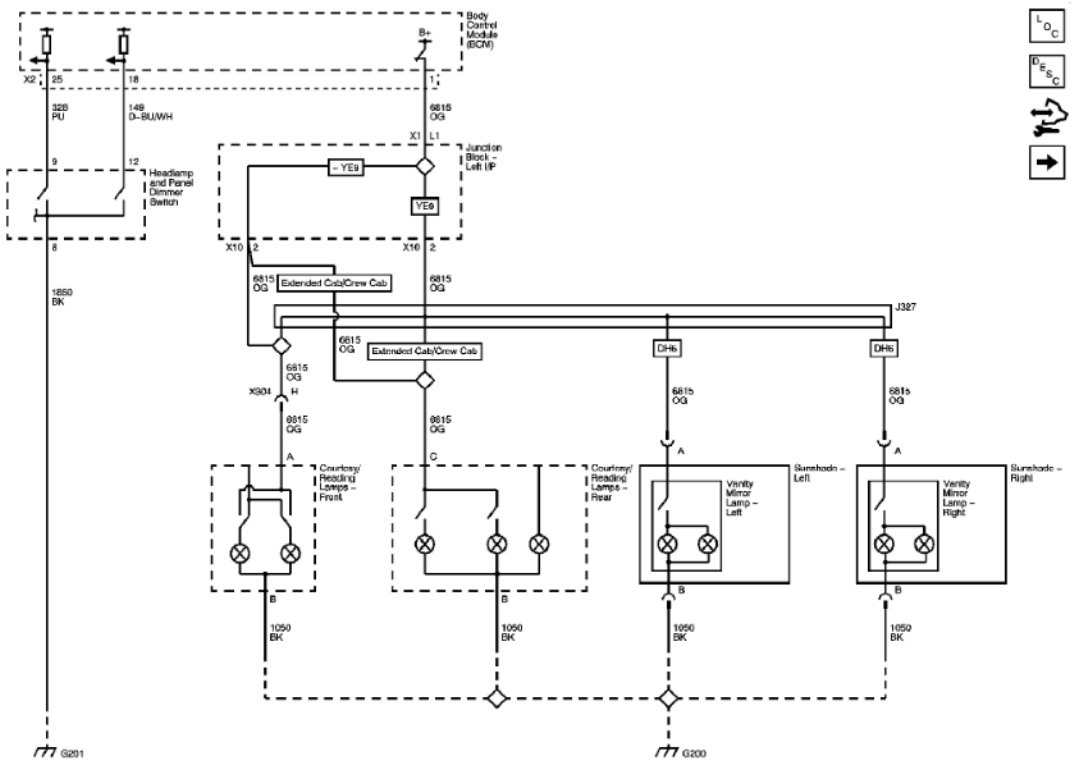


Fig. 13: Inadvertent Lamp Control
Courtesy of GENERAL MOTORS CORP.

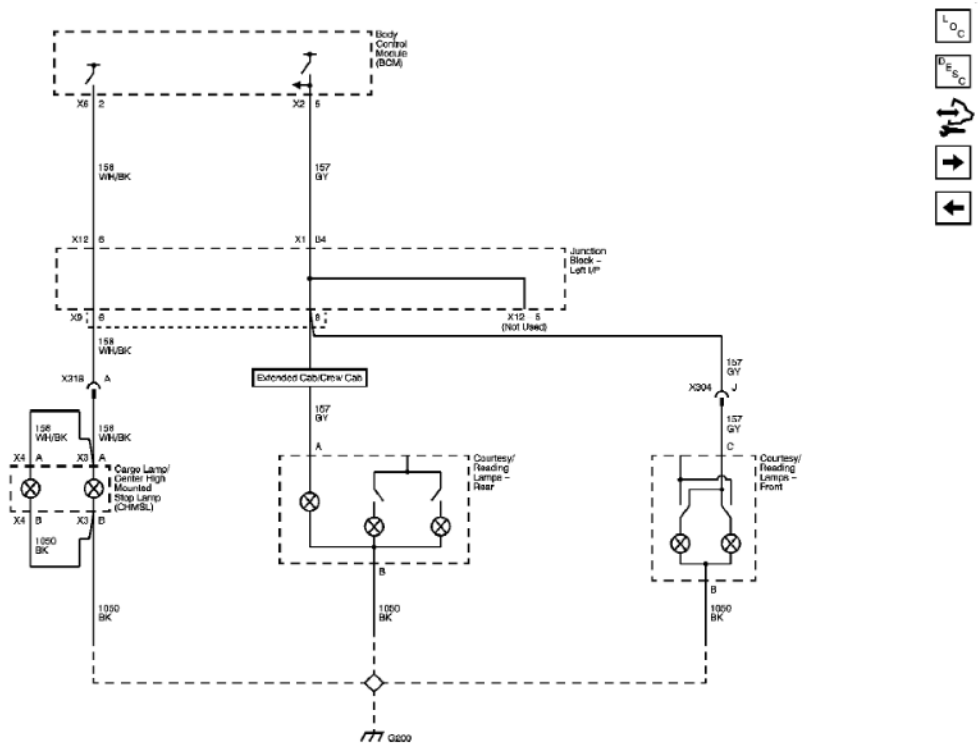


Fig. 14: Courtesy Lamp Control
Courtesy of GENERAL MOTORS CORP.

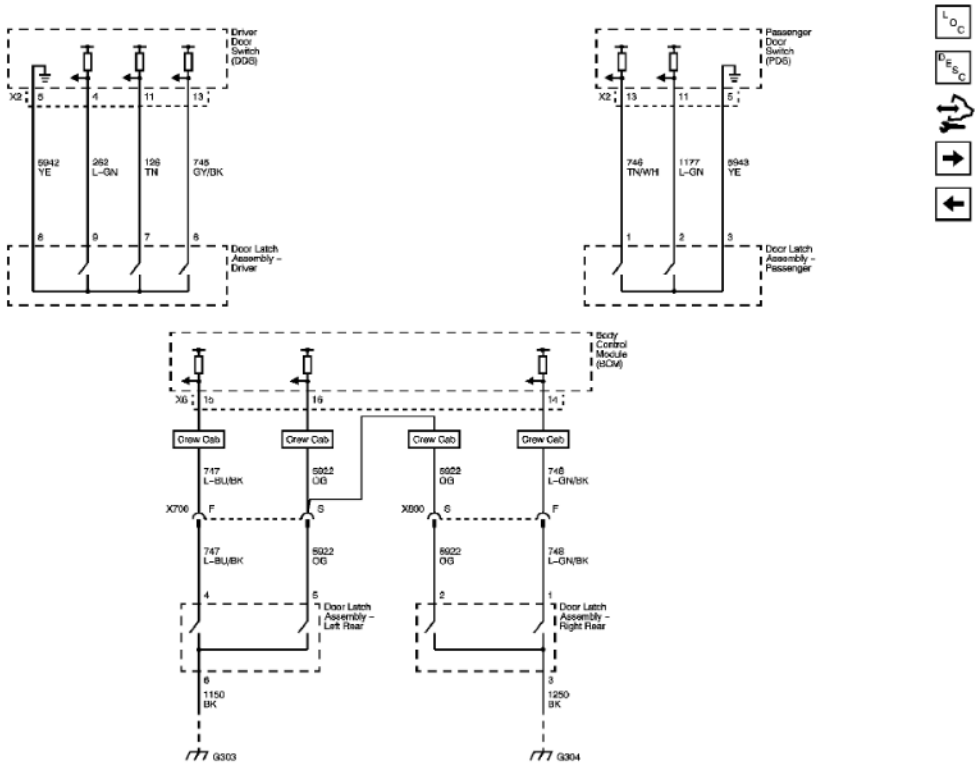


Fig. 15: Door Jamb Switches (AN3/DL3)
Courtesy of GENERAL MOTORS CORP.

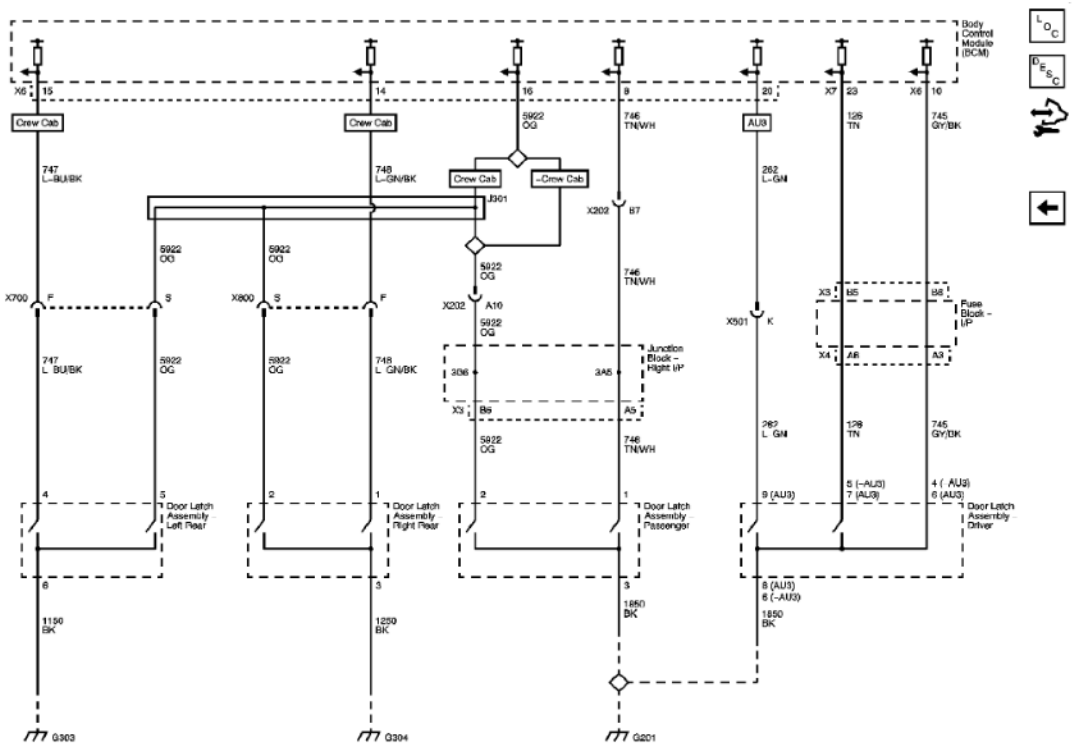


Fig. 16: Door Jamb Switches (-AN3/DL3)
Courtesy of GENERAL MOTORS CORP.

INTERIOR LIGHTS DIMMING SCHEMATICS

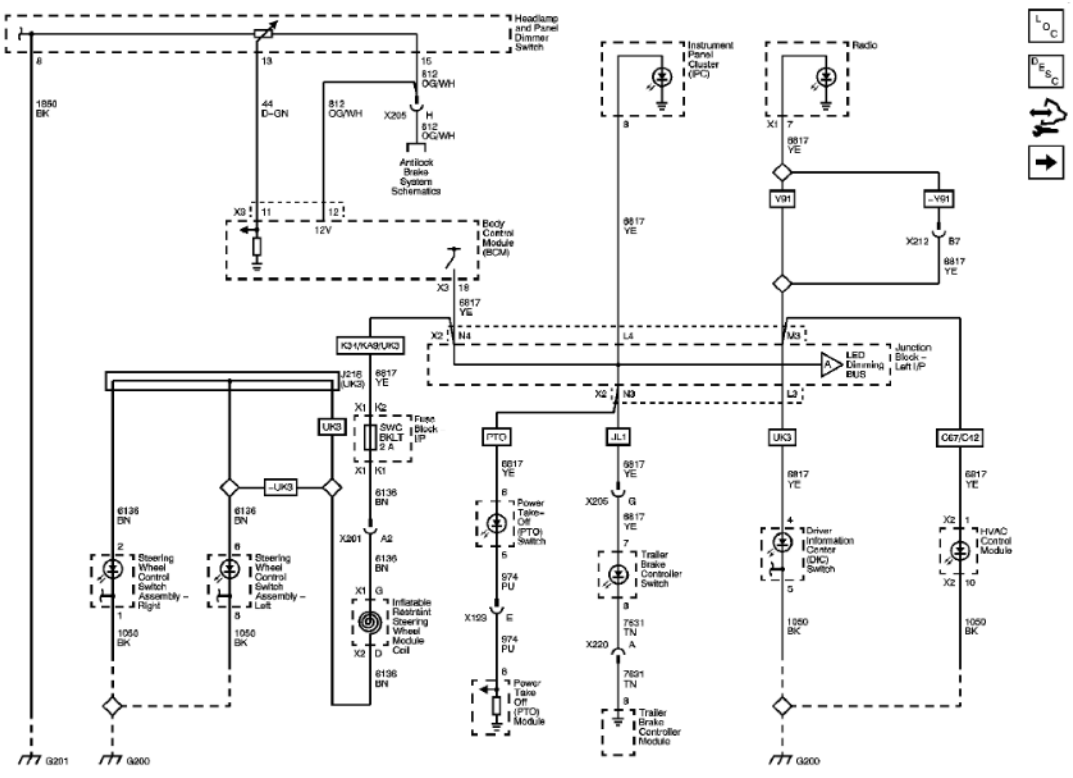


Fig. 17: Dimming Control and LED Dimming 1 of 3
Courtesy of GENERAL MOTORS CORP.

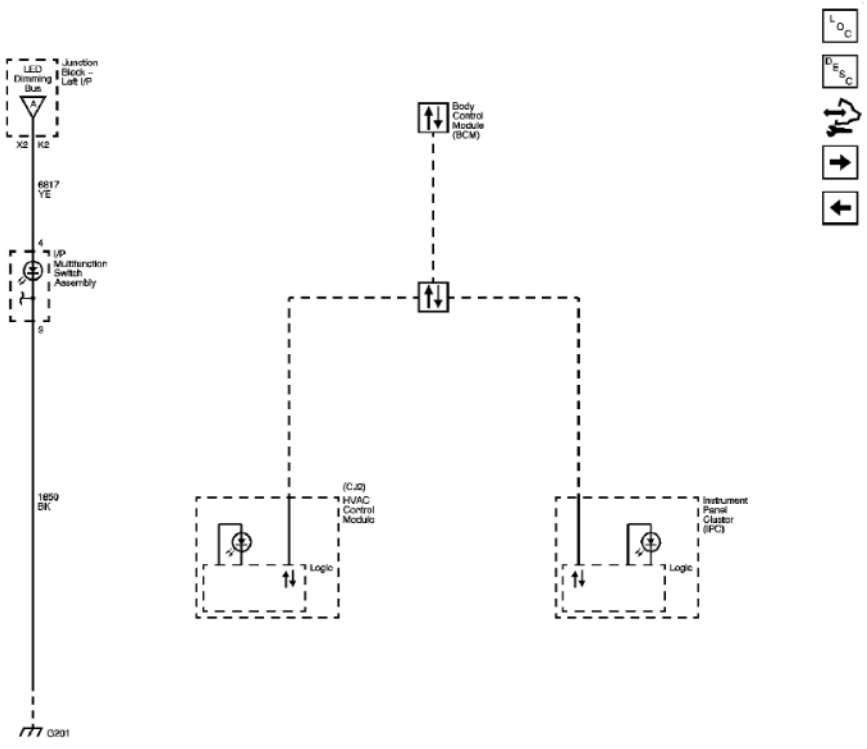


Fig. 18: LED Dimming 2 of 3
Courtesy of GENERAL MOTORS CORP.

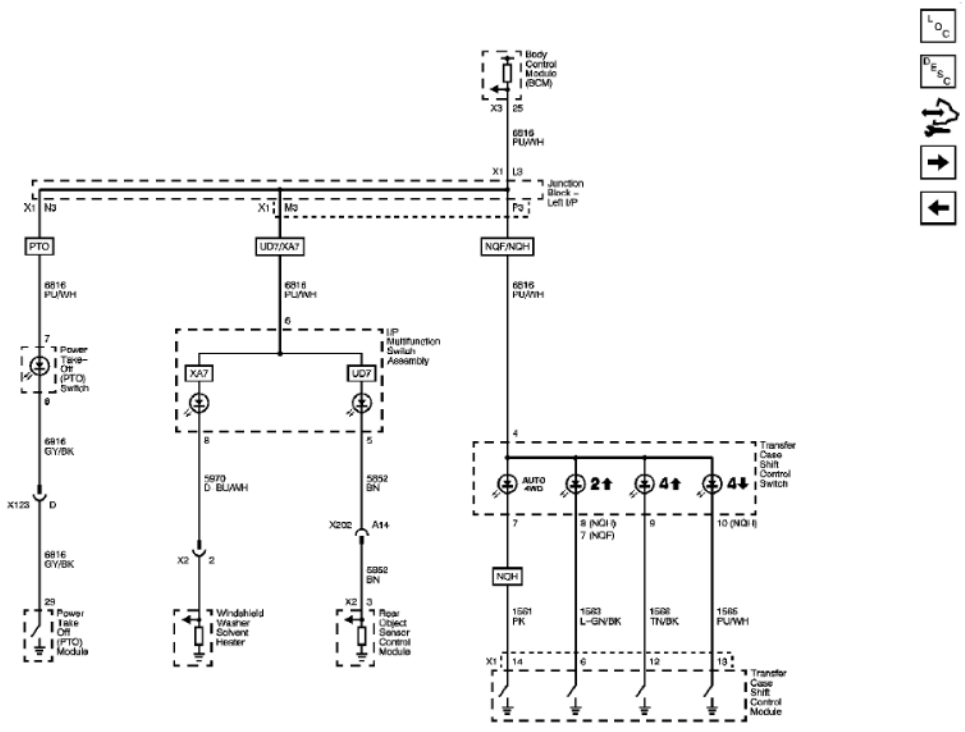


Fig. 19: LED Dimming 3 of 3
Courtesy of GENERAL MOTORS CORP.

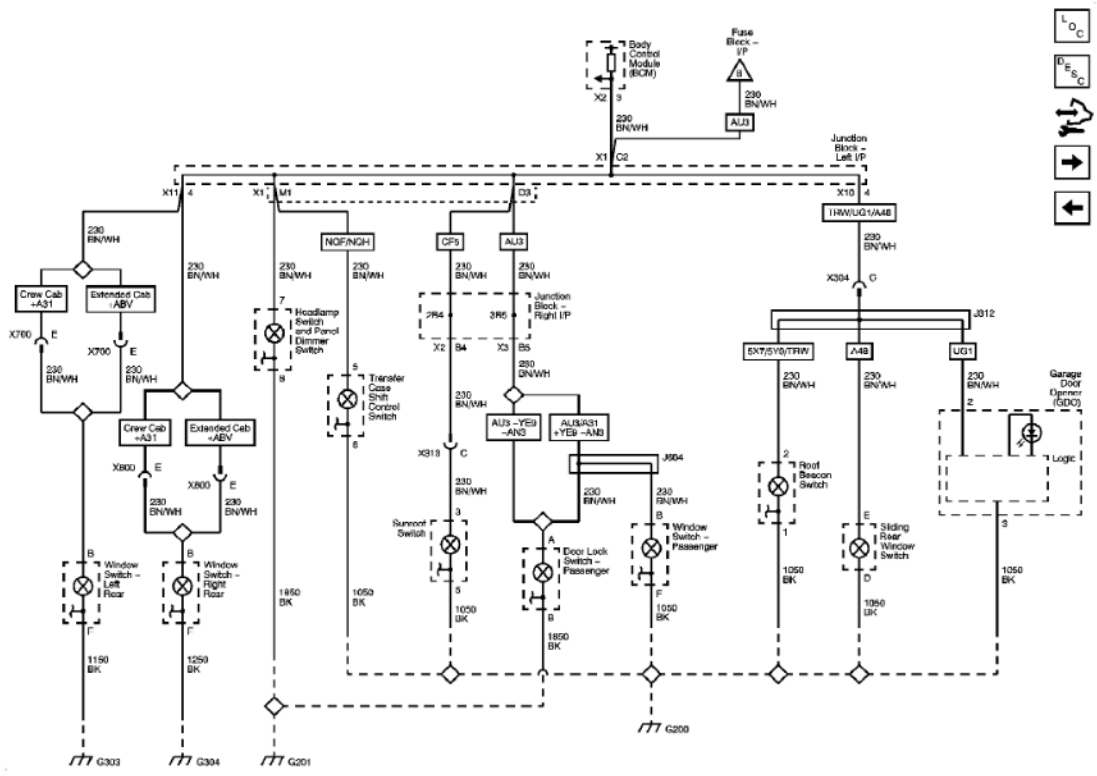


Fig. 20: I/P Bulb Dimming 1 of 2
Courtesy of GENERAL MOTORS CORP.

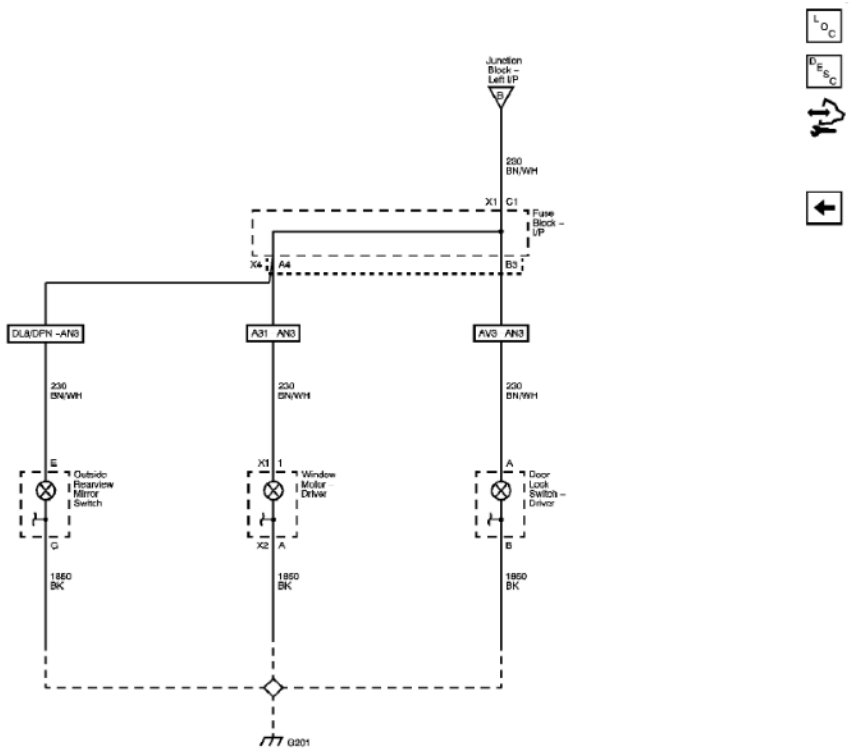


Fig. 21: I/P Bulb Dimming 2 of 2
Courtesy of GENERAL MOTORS CORP.

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

DTC	Description
DTC B1395	B1395 03: Voltage Below Threshold B1395 07: Voltage Above Threshold
DTC B2530	B2530 00: Front Fog Lamp Control Circuit
DTC B2545	B2545 00: Backup Lamps Circuit
DTC B2555	B2555 01: Passenger Compartment Lamp Control Circuit Short to Battery B2555 02: Passenger Compartment Lamp Control Circuit Short to Ground
DTC B2575	2575 00: Headlamp Control Circuit
DTC B257A	B257A 00: Headlamp Switch Input Signal Mismatch

DTC B2580	B2580 00: Headlamp High Beam Control Circuit
DTC B2585	B2585 00: Park Lamp Control Circuit
DTC B2600	B2600 00: Daytime Running Lamp Control Circuit
DTC B2610	B2610 00: Passenger Compartment Dimming 1 Circuit B2610 01: Passenger Compartment Dimming 1 Circuit Short to Battery B2610 02: Passenger Compartment Dimming 1 Circuit Short to Ground B2610 04: Passenger Compartment Dimming 1 Circuit Open
DTC B2615	B2615 00: Passenger Compartment Dimming 2 Circuit B2615 01: Passenger Compartment Dimming 2 Circuit Short to Battery B2615 02: Passenger Compartment Dimming 2 Circuit Short to Ground B2615 04: Passenger Compartment Dimming 2 Circuit Open
DTC B2625	B2625 00: Display Dimming Pulse Width Modulation (PWM) Output Circuit
DTC B2645	B2645 03: Ambient Light Sensor Circuit Below Threshold B2645 07: Ambient Light Sensor Circuit Above Threshold
DTC B2652	B2652 00: Passenger Compartment Dimming 3
DTC B3445	B3445 00: Stop Lamp Circuit
DTC B3600	B3600 03: Voltage Below Threshold B3600 07: Voltage Above Threshold
DTC B3884	B3884 00: Center High Mounted Stop Lamp (CHMSL) Circuit

DIAGNOSTIC STARTING POINT - LIGHTING

Begin the system diagnosis with the **Diagnostic System Check - Vehicle** . The Diagnostic System Check - Vehicle will provide the following information:

- The identification of the control modules which command the system
- The ability of the control modules to communicate through the serial data circuit
- The identification of any stored diagnostic trouble codes (DTCs) and their status

The Use of the Diagnostic System Check - Vehicle will identify the correct procedure for diagnosing the system and where the procedure is located.

DTC B1395

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 B1395 03

Voltage Below Threshold

DTC B1395 07

Voltage Above Threshold

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
I/P Dimming Voltage Reference	B1395 03 and B3600 03	B1395 03, B2652 00, and B3600 03	B1395 07	B1395 03, B1395 07
Stop Lamp Signal	B1395 03 and B3600 03	-	-	-

Circuit/System Description

Voltage for the interior backlighting components and stop lamp switch activation signal is supplied from the body control module (BCM). The BCM applies a voltage reference through the instrument panel (I/P) dimming voltage reference circuit to the interior lamp dimming switch, which is part of the headlamp switch. When the dimming switch is placed in the desired position, the dimmed voltage setting is applied from the interior lamp dimming switch through the I/P dimming control circuit to the BCM. The BCM then applies the dimmed voltage to the I/P lamps supply voltage circuit and they dim to the correct level.

The stop lamp switch is also supplied voltage on the same circuit for a stop lamp OFF signal to the BCM. When the stop lamp switch is activated the voltage signal circuit to the BCM is opened prompting the BCM to illuminate the stop lamps.

Conditions for Running the DTC

The ignition is ON.

Conditions for Setting the DTC

B1395 03

The BCM detects a voltage that is lower than 0.33 volt on the I/P dimming voltage reference circuit.

B1395 07

The BCM detects a voltage that is greater than 4.97 volts on I/P dimming voltage reference circuit.

B3600 03

The BCM detects a voltage that is lower than 0.10 volt on the I/P dimming control circuit.

Action Taken When the DTC Sets

- The I/P lamps are dim or not illuminated.
- The I/P lamps will not dim.
- The stop lamps are always ON.

Conditions for Clearing the DTC

- The conditions for setting the DTC are no longer present.
- A history DTC clears after 100 malfunction-free ignition cycles.

Reference Information

Schematic Reference

- **Interior Lights Dimming Schematics**
- **Exterior Lights Schematics**

Connector End View Reference

Component Connector End Views

Description and Operation

Interior Lighting Systems 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

Ignition ON, cover the ambient light sensor. Vary the interior lamp dimming switch from dim to full bright. The I/P lamps should dim and then become full bright.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the headlamp switch.
2. Ignition OFF, verify that a test lamp illuminates between the ground circuit terminal 8 and B+.
    - If the test lamp does not illuminate, test the ground circuit for an open/high resistance.
3. Ignition ON, verify the scan tool Dimming Control Signal parameter is less than 0.1 volts.
    - If greater than the specified range, test the signal circuit terminal 13 for a short to voltage. If the circuit tests normal, replace the BCM.
4. Ignition ON, test for 12 volts between the I/P dimming voltage reference circuit terminal 15 and ground.
    - If less than the specified value, test the voltage reference circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
5. Install a 3A fused jumper wire between the signal circuit terminal 13 and the voltage reference circuit terminal 15. Verify the scan tool BCM Dimming Control Signal parameter is greater than 2.6 volts.
    - If less than the specified range, test the signal circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
6. If all circuits test normal, test or replace the headlamp switch.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Headlamp Switch Replacement (without RPO SLT)** or **Headlamp Switch Replacement (with RPO SLT)**
- **Control Module References** for BCM replacement, setup, and programming

DTC B2530

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 Descriptor

DTC B2530 00

Front Fog Lamp Control Circuit

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Front Fog Lamp Relay Control Circuit	1	2	B2530 00	-
1. Fog Lamps Always On 2. Fog Lamps Inoperative				

Circuit/System Description

Voltage is applied at all times to the fog lamp relay. When the fog lamp switch is placed in the ON position, a ground signal is applied to the body control module (BCM) through the fog lamp switch signal circuit. The BCM then applies a ground to the front fog lamp control circuit. This engages the fog lamp relay and applies voltage through the FOG LAMP fuse to the front fog lamps.

Conditions for Running the DTC

- The ignition is ON.
- Park lamps must be ON and the fog lamps must be commanded ON.

Conditions for Setting the DTC

The BCM detects a short to voltage on the front fog lamp control circuit.

Action Taken When the DTC Sets

The front fog lamps do not illuminate.

Conditions for Clearing the DTC

- The conditions for setting the DTC are no longer present.
- A history DTC clears after 100 malfunction-free ignition cycles.

Reference Information

Schematic Reference

Fog Lights Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Exterior Lighting Systems 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

Ignition ON, activate the Fog Lamps output control on the scan tool. The Front Fog Lamp Relay Command parameter in the data list should display On and the front fog lamps should illuminate.

Circuit/System Testing

1. Ignition OFF, remove the fog lamp relay in the underhood fuse block.
2. Ignition ON, test for voltage at the relay control circuit terminal 86 of the underhood fuse block.
    - If voltage is present, test the control circuit for a short to voltage. If all circuits/connections test normal, replace the fog lamp relay.

- If voltage is not present, replace the BCM.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Relay Replacement (Attached to Wire Harness)** or **Relay Replacement (Within an Electrical Center)**
- **Control Module References** for BCM replacement, setup, and programming

DTC B2545

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 Descriptor

DTC B2545 00

Backup Lamps Circuit

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Backup Lamps Voltage Supply	B2545 00	1	2	-
1. Backup Lamps Inoperative 2. Backup Lamps Always On				

Circuit/System Description

When the PRNDL is placed in the REVERSE position, a signal is sent to the body control module (BCM). The BCM then applies voltage through the backup lamps relay control circuit to the BACK/UP lamp relay in the underhood fuse block, inside rearview mirror, and rearview camera module. The BACK/UP lamp relay then illuminates the backup lamps.

Conditions for Running the DTC

- The ignition is ON.
- The backup lamps must be commanded ON.

Conditions for Setting the DTC

The BCM detects a short to ground on the backup lamp relay control circuit when the backup lamps are being commanded ON.

Action Taken When the DTC Sets

The backup lamps do not illuminate.

Conditions for Clearing the DTC

- The conditions for setting the DTC are no longer present.
- A history DTC clears after 100 malfunction-free ignition cycles.

Reference Information

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Exterior Lighting Systems 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

Ignition ON, activate the Backup Lamps output control on the scan tool. The Backup Lamps parameter in the data list should display On and the backup lamps should illuminate.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector X2 at the BCM.
2. Ignition ON, vehicle in park, verify the backup lamps are not on.
    - If the backup lamps are on, test the backup lamp relay control circuit terminal 22 for a short to voltage. If the circuit tests normal replace the underhood fuse block.
3. Install a 10A fused jumper wire between the relay control circuit terminal 22 and battery voltage. Verify the backup lamps are on.
    - If the backup lamps are not on, test the backup lamp relay control circuit for an open/high resistance or short to ground. If the circuit tests normal replace the underhood fuse block.
4. If all circuits test normal, replace the BCM.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Underhood Electrical Center or Junction Block Replacement**
- **Control Module References** for BCM, inside rearview mirror, and rearview camera module replacement, setup, and programming

DTC B2555

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 B2555 01

Passenger Compartment Lamp Control Circuit Short to Battery

DTC B2555 02

Passenger Compartment Lamp Control Circuit Short to Ground

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Left Courtesy Lamp Control Circuit	B2555 02	1	B2555 01	-
Right Courtesy Lamp Control Circuit	B2555 02	1	B2555 01	-
1. Courtesy Lamps Inoperative				

Circuit/System Description

When the body control module (BCM) signals for courtesy lamp operation, a message is sent over the GM LAN serial data circuit to the driver door and passenger door switches. The driver door switch and passenger door switch the applies battery voltage to the left and right courtesy lamp control circuits illuminating the door courtesy lamps. The driver door and passenger door switches also provide ground to the lamps.

Conditions for Running the DTC

- Battery voltage must be between 9-16 volts.
- A message is sent from the BCM over the GM LAN serial data circuit to the driver door and passenger door switches to active the door courtesy lamps.

Conditions for Setting the DTC

B2555 01

This DTC will set when the driver or passenger door switch detects a short to voltage in the courtesy lamp control circuit.

B2555 02

This DTC will set when the driver or passenger door switch detects a short to ground in the courtesy lamp control circuit.

Action Taken When the DTC Sets

B2555 01

When this DTC is present, the door courtesy lamps will remain illuminated.

B2555 02

When this DTC is present, the door courtesy lamps will be inoperative.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 100 consecutive malfunction-free ignition cycles have occurred.

Reference Information

Schematic Reference

Interior Lights Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Interior Lighting Systems 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 Testing

1. Disconnect the X2 harness connector at the affected door module.
2. Verify that a test lamp illuminates between the ground circuit terminal 15 and B+.
    - If the test lamp does not illuminate, test the ground circuit for an open/high resistance. If the circuit tests normal replace the affected door module.
3. Connect a test lamp between the control circuit terminal 10 and the ground circuit terminal 15.
4. Command the Puddle/Courtesy Lamp ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
    - If the test lamp is always ON, test the control circuit for a short to voltage. If the circuit tests normal, replace the affected door module.
    - If the test lamp is always OFF, test the control circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the affected door module.
5. If all circuits test normal, test or replace the courtesy lamp bulb.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

Control Module References for driver or passenger door lock and side window switch replacement, setup, and programming

DTC B2575

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 Descriptor

DTC 2575 00

Headlamp Control Circuit

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Headlamp Low Beam Relay Control Circuit	2	1	B2575 00	-
1. Headlamps Inoperative - Low Beams 2. Headlamps Always On - Low Beams				

Circuit/System Description

The low beam headlamps are controlled by the body control module (BCM). The BCM grounds the headlamp low beam relay control circuit in order to energize the LO BEAM relay coil. The LO BEAM relay then sends voltage to the low beam headlamps.

Conditions for Running the DTCs

- The headlamps are commanded ON.
- The headlamp dimmer switch must be in the low beam position.

Condition for Setting the DTC

The headlamp low beam relay control circuit is shorted to voltage.

Action Taken When the DTC Sets

The BCM turns off the headlamp low beam relay control for the remainder of the ignition cycle.

Conditions for Clearing the DTC

- The conditions for setting the DTC are no longer present.
- A history DTC clears after 100 malfunction-free ignition cycles.

Reference Information

Schematic Reference

Headlights/Daytime Running Lights (DRL) Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Exterior Lighting Systems 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

Ignition ON, activate the Low Beam output control on the scan tool. The Low Beam Relay Command parameter in the data list should display On and the low beam headlamps should illuminate.

Circuit/System Testing

1. Ignition OFF, remove the low beam relay in the underhood fuse block.
2. Ignition ON, test for voltage at the relay control circuit terminal 85 of the underhood fuse block.
    - If voltage is present, test the control circuit for a short to voltage. If the circuit tests normal, replace the underhood fuse block.

- If voltage is not present, replace the BCM.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Relay Replacement (Attached to Wire Harness)** or **Relay Replacement (Within an Electrical Center)**
- **Control Module References** for BCM replacement, setup, and programming

DTC B257A

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 Descriptor

DTC B257A 00

Headlamp Switch Input Signal Mismatch

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Headlamp Switch Off	B257A 00	2 and 4	4	-
Park Lamp Switch On	B257A 00	B257A 00	3	-
Headlamp Switch On	B257A 00	1	1	-
Headlamp Switch Ground	-	1,3, and 4	-	-

1. Headlamps Inoperative Low and High Beams
2. Headlamps Always On Low or High Beam
3. Park, License, and Tail Lamps Inoperative
4. Daytime Running Lamps (DRL) Defeat Inoperative

Circuit/System Description

When the headlamp switch is in the AUTO position, the body control module (BCM) receives a ground signal through the headlamp switch headlamps OFF signal circuit and no signal on the headlamp switch headlamp ON signal circuit and headlamp switch park lamps ON signal circuit. When the headlamp switch is in the PARK or HEAD position, the BCM receives no signal through the headlamp switch headlamps OFF signal circuit and a ground signal through the headlamp switch headlamp ON signal circuit and headlamp switch park lamps ON signal circuit.

Conditions for Running the DTC

The ignition is ON.

Conditions for Setting the DTC

The BCM receives a mismatched signal between the headlamp switch headlamps OFF signal circuit, the headlamps switch headlamps ON signal circuit, and the headlamp switch parklamps signal circuit.

Action Taken When the DTC Sets

The BCM disregards the headlamp switch input and defaults to automatic headlamp function.

Conditions for Clearing the DTC

- The conditions for setting the DTC are no longer present.
- A history DTC clears after 100 malfunction-free ignition cycles.

Reference Information

Schematic Reference

Headlights/Daytime Running Lights (DRL) Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Exterior Lighting Systems 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

Ignition ON, headlamp switch to PARK, just the park lamps should illuminate. Headlamp switch to HEAD, the park lamps and headlamps should illuminate.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the headlamp switch.
2. Ignition ON, verify the scan tool headlamp switch parameter is inactive.
   - If not the specified value, test the signal circuit terminal 1 for a short to ground. If the circuit tests normal, replace the BCM.
3. Install a 3A fused jumper wire between the signal circuit terminal 2 and the low reference circuit terminal 8. Verify the scan tool park lamp switch parameter is active.
   - If not the specified value, test the park lamp switch signal circuit for an open/high resistance. If the circuit tests normal, replace the BCM.
4. If all circuits test normal, test or replace the headlamp switch.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Headlamp Switch Replacement (without RPO SLT)** or **Headlamp Switch Replacement (with RPO SLT)**
- **Control Module References** for BCM replacement, setup, and programming

DTC B2580

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 Descriptor

DTC B2580 00

Headlamp High Beam Control Circuit

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Headlamp High Beam Relay Control Circuit	2	1	B2580 00	-

1. Headlamps Inoperative - High Beams
2. Headlamps Always On - High Beams

Circuit/System Description

Voltage is applied at all times to the high beam headlamp relay from battery voltage. When the multifunction switch is placed in either the FTP or HIGH position, ground is applied to the body control module (BCM). The BCM then applies a ground to the headlamp high beam relay control circuit. This engages the relay and applies voltage through the HI HEADLAMP fuses to both left and right high beam headlamps.

Conditions for Running the DTC

- The headlamps are commanded ON.
- Headlamp dimmer switch must be in the high beam position.

Conditions for Setting the DTC

The BCM detects a short to voltage on the headlamp high beam relay control circuit.

Action Taken When the DTC Sets

The high beam headlamps are inoperative.

Conditions for Clearing the DTC

- The conditions for setting the DTC are no longer present.
- A history DTC clears after 100 malfunction-free ignition cycles.

Reference Information

Schematic Reference

Headlights/Daytime Running Lights (DRL) Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Exterior Lighting Systems 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

Ignition ON, activate the High Beam output control on the scan tool. The High Beam Relay Command parameter in the data list should display On and the high beam headlamps should illuminate.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector X4 at the BCM.
2. Low beam headlamps ON, verify the high beam headlamps are not on.
    - If the high beam headlamps are on, test the high beam relay control circuit for a short to ground. If the circuit tests normal replace the underhood fuse block.
3. Install a 10A fused jumper wire between the relay control circuit terminal 16 and ground. Verify the high beam headlamps are on.
    - If the high beam headlamps are not on, test the high beam relay control circuit for a short to voltage or an open/high resistance. If the circuit tests normal replace the underhood fuse block.
4. If all circuits test normal, replace the BCM.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Underhood Electrical Center or Junction Block Replacement**
- **Control Module References** for BCM replacement, setup, and programming

DTC B2585

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 Descriptor

DTC B2585 00

Park Lamp Control Circuit

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Park Lamp Relay Control Circuit	1	2	B2585 00	-

1. Park, License, and Tail Lamps Always On
2. Park, License, and Tail Lamps Inoperative

Circuit/System Description

Voltage is applied at all times to the park lamp relay from battery voltage. When the headlamp switch is placed in the PARK position and the body control module (BCM) commands the park lamps ON, the BCM then applies a ground to the park lamp relay control circuit. This engages the relay and applies voltage through the park lamp fuses and to all the park, license, and tail lamps.

Conditions for Running the DTC

- The Ignition is ON.
- The park lamps must be commanded ON by the BCM.

Conditions for Setting the DTC

The BCM detects a short to voltage on the park lamp relay control circuit.

Action Taken When the DTC Sets

All park, license, and tail lamps are inoperative.

Conditions for Clearing the DTC

- The conditions for setting the DTC are no longer present.
- A history DTC clears after 100 malfunction-free ignition cycles.

Reference Information

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Exterior Lighting Systems 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

Ignition ON, activate the Parking Lamp output control on the scan tool. The Park Lamp Relay Command parameter in the data list should display On and the park lamps should illuminate.

Circuit/System Testing

1. Ignition OFF, disconnect the park lamp relay.
2. Connect a test lamp between the relay control circuit terminal 85 and the B+ circuit terminal 86.
3. Command the parking lamps ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.

- If the test lamp is always ON, test the relay control circuit for a short to ground. If the circuit tests normal, replace the BCM.
- If the test lamp is always OFF, test the relay control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.

4. If all circuits test normal, test or replace the park lamp relay.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Relay Replacement (Attached to Wire Harness)** or **Relay Replacement (Within an Electrical Center)**
- **Control Module References** for BCM replacement, setup, and programming

DTC B2600

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 Descriptor

DTC B2600 00

Daytime Running Lamp Control Circuit

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
DRL Relay Control Circuit	1	2	B2600 00	-

1. Daytime Running Lamps (DRL) Always On
2. Daytime Running Lamps (DRL) Inoperative

Circuit/System Description

The daytime running lamps (DRL) are controlled by the body control module (BCM). The BCM grounds the DRL relay control circuit in order to energize the DRL relay coil. The DRL relay

then sends voltage to the dedicated DRL or low beam headlamps.

Conditions for Running the DTCs

- The headlamp switch is OFF.
- The park brake is unapplied.
- The engine is running.

Conditions for Setting the DTC

The DRL relay control circuit is shorted to voltage.

Action Taken When the DTC Sets

The BCM turns off the DRL relay control for the remainder of the ignition cycle.

Conditions for Clearing the DTC

- The conditions for setting the DTC are no longer present.
- A history DTC clears after 100 malfunction-free ignition cycles.

Reference Information

Schematic Reference

Headlights/Daytime Running Lights (DRL) Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Exterior Lighting Systems 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

Block the drive wheels. Carefully supply sufficient light to simulate daylight conditions to the ambient light sensor. With the engine running, headlamp switch in AUTO, and the park brake released, the DRL should illuminate.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector X4 at the BCM.
2. Ignition ON, verify the daytime running lamps are not on.
    - If the daytime running lamps are on, test the DRL relay control circuit for a short to ground. If the circuit tests normal replace the underhood fuse block.
3. Install a 10A fused jumper wire between the relay control circuit terminal 23 and ground. Verify the daytime running lamps are on. are on.
    - If the daytime running lamps are not on, test the DRL relay control circuit for a short to voltage or an open/high resistance. If the circuit tests normal replace the underhood fuse block.
4. If all circuits test normal, replace the BCM.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Underhood Electrical Center or Junction Block Replacement**
- **Control Module References** for BCM replacement, setup, and programming

DTC B2610

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 B2610 00

Passenger Compartment Dimming 1 Circuit

DTC B2610 01

Passenger Compartment Dimming 1 Circuit Short to Battery

DTC B2610 02

Passenger Compartment Dimming 1 Circuit Short to Ground

DTC B2610 04

Passenger Compartment Dimming 1 Circuit Open

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
LED Dimming Supply	B2610 00 or B2610 02	B2610 00 or B2610 04	B2610 00 or B2610 01	-
LED Backlighting Ground	-	1	-	-
1. Interior Backlighting Inoperative				

Circuit/System Description

When the instrument panel lamps dimmer switch is activated, a variable voltage signal is applied through the LED dimmer switch signal circuit to the body control module (BCM). The BCM then applies a message on the low speed GMLAN serial data communication circuit to the door switches to illuminate the switch backlighting. The BCM, driver door switch, and passenger door switch then applies a variable voltage signal through the LED dimming supply circuit to the components on that circuit.

Conditions for Running the DTC

The ignition is ON.

Conditions for Setting the DTC

The BCM, driver door lock and side window switch, or passenger door lock and side window switch detects a short to voltage, short to ground, or an open on the LED dimming supply circuit.

Action Taken When the DTC Sets

The BCM, driver door switch, and passenger door switch will cease attempts to dim or illuminate the LED lamps.

Conditions for Clearing the DTC

- The conditions for setting the DTC are no longer present.
- A history DTC clears after 100 malfunction-free ignition cycles.

Reference Information

Schematic Reference

Interior Lights Dimming Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Interior Lighting Systems 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

Ignition and park lamps ON, vary the interior lamp dimming switch from dim to full bright. The LED lamps should dim and then become full bright.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the affected component.

2. Ignition OFF, verify that a test lamp illuminates between the listed ground circuit terminal and B+.
    - Left steering wheel switch terminal 8
    - Right steering wheel switch terminal 1
    - PTO switch terminal 5
    - Trailer brake controller switch terminal 8
    - DIC switch terminal 5
    - HVAC control module terminal 10 X2
    - IP multifunction switch terminal 3
    - If the test lamp does not illuminate, test the ground circuit for an open/high resistance.
3. Connect a test lamp between the listed LED dimming control circuit terminal and ground.
    - Left steering wheel switch terminal 6
    - Right steering wheel switch terminal 2
    - PTO switch terminal 6
    - Trailer brake controller switch terminal 7
    - DIC switch terminal 4
    - HVAC control module terminal 1 X2
    - IP multifunction switch terminal 4
4. Command the dimming test high to low with a scan tool. The test lamp should turn from bright to dim when changing between the commanded states.
    - If the test lamp is always off, test the control circuit for an open/high resistance or short to ground. If the circuit tests normal, replace the BCM.
    - If the test lamp is always bright, test the control circuit for a short to voltage. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the affected component.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- Refer to the appropriate replacement procedure for the component causing the condition.
- **Control Module References** for BCM, driver door lock and side window switch, or passenger door lock and side window switch replacement, setup, and programming

DTC B2615

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 B2615 00

Passenger Compartment Dimming 2 Circuit

DTC B2615 01

Passenger Compartment Dimming 2 Circuit Short to Battery

DTC B2615 02

Passenger Compartment Dimming 2 Circuit Short to Ground

DTC B2615 04

Passenger Compartment Dimming 2 Circuit Open

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Courtesy Lamps Voltage Supply	B2615 00 or B2615 02	B2615 00 or B2615 04	B2615 00 or B2615 01	-
Courtesy Lamp Ground	-	1	-	-
1. Courtesy Lamps Inoperative				

Circuit/System Description

Voltage for the courtesy lamps is supplied from body control module (BCM), driver door switch, and passenger door switch. When a door is opened, a signal is applied to the door module. The door module then applies a message on the low speed GMLAN serial data communication circuit to the BCM to activate the courtesy lamps. The BCM then applies voltage to the courtesy lamps voltage supply circuit and the components on that circuit.

Conditions for Running the DTC

The ignition is ON, the BCM, driver door switch, and passenger door switch attempt to illuminate the courtesy lamps.

Conditions for Setting the DTC

The BCM, driver door lock and side window switch, or passenger door lock and side window switch detects a short to ground, short to voltage, or open on the courtesy lamp voltage supply circuit.

Action Taken When the DTC Sets

The BCM, driver door lock and side window switch, and passenger door lock and side window switch cease attempts to illuminate the courtesy lamps.

Conditions for Clearing the DTC

- The conditions for setting the DTC are no longer present.
- A history DTC clears after 100 malfunction-free ignition cycles.

Reference Information

Schematic Reference

Interior Lights Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Interior Lighting Systems 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

Ignition ON, activate the Courtesy Lamps output control with the scan tool. The interior courtesy lamps should illuminate.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at an affected lamp bulb.
2. Test for less than 1 ohm of resistance between the ground circuit terminal and ground.
    - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Connect a test lamp between the control circuit terminal and the ground circuit terminal.
4. Ignition ON, command the Courtesy Lamps output control on and off with the scan tool. The test lamp should turn on and off.
    - If the test lamp is always ON, test the control circuit for a short to voltage. If the circuit tests normal, replace the BCM.
    - If the test lamp is always OFF, test the control circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the bulb.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- Refer to the appropriate replacement procedure for the component causing the condition.
- **Control Module References** for BCM, driver door lock and side window switch, or passenger door lock and side window switch replacement, setup, and programming

DTC B2625

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 Descriptor

DTC B2625 00

Display Dimming Pulse Width Modulation (PWM) Output Circuit

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
LED Indicator Dimming Supply	B2625 00	B2625 00	B2625 00	-

Circuit/System Description

When the interior lamps dimming switch is activated, a variable voltage signal is applied through the instrument panel lamps dimmer switch signal circuit to the body control module (BCM). The BCM then applies a variable voltage signal through the LED indicator dimming supply circuit to the components on the circuit.

Conditions for Running the DTC

The ignition is ON.

Conditions for Setting the DTC

The BCM receives a ground signal on the LED indicator dimming supply circuit.

Action Taken When the DTC Sets

The BCM cease attempt to dim or illuminate the LED indicator lamps.

Conditions for Clearing the DTC

- The conditions for setting the DTC are no longer present.
- A history DTC clears after 100 malfunction-free ignition cycles.

Reference Information

Schematic Reference

Interior Lights Dimming Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Interior Lighting Systems 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

Ignition ON, headlamp switch to PARK, vary the interior lamp dimming switch from dim to full bright. The LED lamps should dim and then become full bright.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the affected component.
2. Connect a test lamp between the listed LED dimming control circuit terminal and ground.
   - IP multifunction switch terminal 6
   - 4wd mode switch terminal 4
   - PTO switch terminal 7
3. Command the dimming test high to low with a scan tool. The test lamp should turn from bright to dim when changing between the commanded states.
   - If the test lamp is always off, test the control circuit for an open/high resistance or short to ground. If the circuit tests normal, replace the BCM.
   - If the test lamp is always bright, test the control circuit for a short to voltage. If the circuit tests normal, replace the BCM.
4. If all circuits test normal, test or replace the affected component.

Repair Procedures

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

- Refer to the appropriate replacement procedure for the component causing the condition.
- **Control Module References** for BCM replacement, setup, and programming

DTC B2645

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 B2645 03

Ambient Light Sensor Circuit Below Threshold

DTC B2645 07

Ambient Light Sensor Circuit Above Threshold

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Ambient Light Sensor Signal Circuit	B2645 03	B2645 07	B2645 07	B2645 03 or B2645 07
Ambient Light Sensor Ground Circuit	-	B2645 07	-	B2645 03 or B2645 07

Circuit/System Description

The ambient light sensor is used to monitor outside lighting conditions. The ambient light sensor provides a voltage signal that will vary depending on outside lighting conditions. The body control module (BCM) provides a 5-volt reference signal to the ambient light sensor. The BCM monitors the ambient light sensor signal circuit to determine if outside lighting conditions are correct for either daytime running lights (DRL) or automatic lamp control (ALC) when the headlamp switch is in the AUTO position. In daylight conditions, the BCM will command the DRLs ON. In low light conditions, when the headlamps switch is in AUTO position, the BCM will command the low beam headlamps ON.

Conditions for Running the DTC

Battery voltage must be between 9-16 volts.

Conditions for Setting the DTC

B2645 03

The DTC will set when the BCM detects voltage is below 0.196 volt in the ambient light sensor signal circuit.

B2645 07

The DTC will set when the BCM detects voltage is above 4.9 volts in the ambient light sensor signal circuit or if the ambient light sensor ground circuit is open.

Action Taken When the DTC Sets

When DTC B2645 03 or B2645 07 is present, the ALC will default to ON.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 100 consecutive malfunction-free ignition cycles have occurred.

Reference Information

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Exterior Lighting Systems 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 Testing

1. Ignition OFF, disconnect the harness connector at the ambient light sensor.
2. Ignition OFF, test for less than 1 ohm of resistance between the ground circuit terminal C and ground.
    - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify the scan tool ambient light sensor parameter is greater than 4.5 volts.
    - If less than the specified range, test the signal circuit for a short to ground. If the circuit tests normal, replace the BCM.
4. Install a 3A fused jumper wire between the signal circuit terminal D and the low reference circuit terminal C. Verify the scan tool light sensor parameter is less than 1.0 volt.
    - If greater than the specified range, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the ambient light sensor.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Ambient Light Sensor Replacement**
- **Control Module References** for BCM replacement, setup, and programming

DTC B2652

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 Descriptor

DTC B2652 00

Passenger Compartment Dimming 3

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Instrument Panel Lamps Dimming Control	B2652 00	B2652 00	B2652 00	-

Circuit/System Description

The body control module (BCM) applies a 12-volt reference voltage through the headlamp and panel dimmer switch 12-volt reference circuit to the headlamp and panel dimmer switch. When the dimming switch is placed in the desired position, the dimmed voltage setting is applied from the headlamp and panel dimmer switch through the instrument panel (I/P) lamp dimming switch signal circuit to the BCM. The BCM then applies the dimmed voltage to the I/P lamp dimming control circuit and the components on the circuit.

Conditions for Running the DTC

The ignition is ON.

Conditions for Setting the DTC

The BCM receives an open, voltage, or ground signal on the I/P lamp dimming control circuit.

Action Taken When the DTC Sets

The I/P lamps are not illuminated.

Conditions for Clearing the DTC

- The conditions for setting the DTC are no longer present.
- A history DTC clears after 100 malfunction-free ignition cycles.

Reference Information

Schematic Reference

Interior Lights Dimming Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Interior Lighting Systems 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

Ignition ON and park lamps ON, vary the headlamp and panel dimmer switch from dim to full bright. The I/P lamps should dim and then become full bright.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the affected component.
2. Ignition OFF, verify that a test lamp illuminates between the listed ground circuit terminal and battery voltage.
    - Headlamp Switch terminal 8
    - Sunroof switch terminal 5
    - Front door lock switch w/o AN3 terminal B
    - Driver window switch w/o AN3 terminal A X2
    - Front passenger window switch w/o AN3 terminal F
    - OSRVM switch w/o AN3 terminal G
    - Transfer case shift control switch terminal 6
    - Roof beacon switch terminal 1
    - Sliding rear window switch terminal D

- Rear window switch terminal F
  - If the test lamp does not illuminate, test the ground circuit for an open/high resistance.
3. Connect a test lamp between the listed backlighting control circuit terminal and ground.
   - Headlamp Switch terminal 7
   - Sunroof switch terminal 3
   - Front door lock switch w/o AN3 terminal A
   - Driver window switch w/o AN3 terminal 1 X1
   - Front passenger window switch w/o AN3 terminal B
   - OSRVM switch w/o AN3 terminal E
   - Transfer case shift control switch terminal 5
   - Roof beacon switch terminal 2
   - Sliding rear window switch terminal E
   - Rear window switch terminal B
4. Command the dimming test high to low with a scan tool. The test lamp should turn from bright to dim when changing between the commanded states.
   - If the test lamp is always off, test the control circuit for an open/high resistance or short to ground. If the circuit tests normal, replace the BCM.
   - If the test lamp is always bright, test the control circuit for a short to voltage. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the affected component.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- Refer to the appropriate replacement procedure for the component causing the condition.
- **Control Module References** for BCM replacement, setup, and programming

DTC B3445

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 Descriptor

DTC B3445 00

Stop Lamp Circuit

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Stop Lamp Supply Voltage	B3445 00	1	2	-
1. Stop Lamps Inoperative 2. Stop Lamps Always On				

Circuit/System Description

When the brake pedal is applied, the brake pedal switch normally closed contact signal circuit voltage is interrupted to the body control module (BCM). The BCM then applies a voltage to the stop lamp supply voltage circuit to the stop lamps.

Conditions for Running the DTC

- The ignition is ON.
- The stop lamps must be commanded ON.

Conditions for Setting the DTC

The BCM detects a short to ground in the stop lamp supply voltage circuit when the stop lamps are commanded ON.

Action Taken When the DTC Sets

The stop lamps do not illuminate.

Conditions for Clearing the DTC

- The conditions for setting the DTC are no longer present.
- A history DTC clears after 100 malfunction-free ignition cycles.

Reference Information

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Exterior Lighting Systems 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

Ignition ON, press the brake pedal. The stop lamps should illuminate.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the affected stop lamp.
2. Test for less than 1 ohm of resistance between the ground circuit terminal A and ground.
    - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Connect a test lamp between the stop lamp control circuit terminal D and the ground circuit terminal A.
4. Ignition ON, press and release the brake pedal. The test lamp should turn ON and OFF when changing between the commanded states.
    - If the test lamp is always ON, test the control circuit for a short to voltage.
    - If the test lamp is always OFF, test the control circuit for a short to ground or an open/high resistance.
5. If all circuits test normal, test or replace the affected stop lamp.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Tail Lamp Bulb Replacement (GMC)** or **Tail Lamp Bulb Replacement (Chevrolet)**
- **Control Module References** for BCM replacement, setup, and programming

DTC B3600

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 B3600 03

Voltage Below Threshold

DTC B3600 07

Voltage Above Threshold

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Instrument Panel Lamp Dimmer Switch Signal	B3600 03	B3600 03	B3600 07	B3600 03 or B3600 07
Reference Voltage	B1395 03 and B3600 07	B1395 03 and B3600 07	B1395 07	B1395 03, B1395 07 and B3600 03, B3600 07

Circuit/System Description

Voltage for the interior backlighting components is supplied from the body control module (BCM). The BCM applies a voltage reference through the 12-volt reference circuit to the headlamp and panel dimmer switch. When the dimming switch is placed in the desired position, the dimmed voltage setting is applied from the headlamp and panel dimmer switch through the instrument panel (I/P) lamp dimmer switch signal circuit to the BCM. The BCM then applies the dimmed voltage to the lamp supply voltage circuits and they are dimmed to the correct level.

Conditions for Running the DTC

The ignition is ON.

Conditions for Setting the DTC

B3600 03

The BCM detects a voltage that is lower than 0.10 volt on the I/P lamp dimmer switch signal circuit.

B3600 07

The BCM detects a voltage that is higher than 4.97 volts on the I/P lamp dimmer switch signal circuit.

Action Taken When the DTC Sets

The I/P lamps are not illuminated.

Conditions for Clearing the DTC

The BCM clears this code from current when the fault is removed from the system.

Reference Information

Schematic Reference

Interior Lights Dimming Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Interior Lighting Systems 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

Ignition ON, headlamp switch to HEAD, vary the interior lamp dimming switch from dim to full bright. The I/P lamps should dim and then become full bright.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the headlamp switch.
2. Ignition OFF, verify that a test lamp illuminates between the ground circuit terminal 8 and B+.
    - If the test lamp does not illuminate, test the ground circuit for an open/high resistance.
3. Ignition ON, verify the scan tool Dimming Control Signal parameter is less than 0.1 volts.
    - If greater than the specified range, test the signal circuit terminal 13 for a short to voltage. If the circuit tests normal, replace the BCM.
4. Ignition ON, test for 12 volts between the I/P dimming voltage reference circuit terminal 15 and ground.
    - If less than the specified value, test the voltage reference circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
5. Install a 3A fused jumper wire between the signal circuit terminal 13 and the voltage reference circuit terminal 15. Verify the scan tool BCM Dimming Control Signal parameter is greater than 2.6 volts.
    - If less than the specified range, test the signal circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
6. If all circuits test normal, test or replace the headlamp switch.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Headlamp Switch Replacement (without RPO SLT)** or **Headlamp Switch Replacement (with RPO SLT)**
- **Control Module References** for BCM replacement, setup, and programming

DTC B3884

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 Descriptor

DTC B3884 00

Center High Mounted Stop Lamp (CHMSL) Circuit

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
CHMSL Relay Control	B3884 00	1	2	-
CHMSL Control	1	1	2	-
CHMSL Relay Control	-	1	-	-
CHMSL Ground	-	1	-	-

1. Center High Mounted Stop Lamp (CHMSL) Inoperative
2. Center High Mounted Stop Lamp (CHMSL) Always On

Circuit/System Description

When the brake pedal is applied, the brake pedal switch normally closed contact signal circuit voltage is interrupted to the body control module (BCM). Upon brake activation, the body control module (BCM) applies voltage through the CHMSL relay control circuit to the coil side of the relay. Ground is applied at all times to the other side of the CHMSL relay coil therefore the relay is now energized. Battery voltage is then applied through the switch side of the relay, the CHMSL fuse, and the CHMSL control circuit to the center high mounted stop lamp (CHMSL). The CHMSL is grounded at G 200.

Conditions for Running the DTC

- The ignition is ON.
- The stop lamps must be commanded ON.

Conditions for Setting the DTC

The BCM detects a short to ground in the CHMSL relay control circuit when the stop lamps are commanded ON.

Action Taken When the DTC Sets

The CHMSL does not illuminate.

Conditions for Clearing the DTC

- The conditions for setting the DTC are no longer present.
- A history DTC clears after 100 malfunction-free ignition cycles.

Reference Information

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Exterior Lighting Systems 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

Ignition ON, press the brake pedal. The CHMSL should illuminate.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connectors at the center high mounted stop lamp.
2. Test for less than 1.0 ohm of resistance between the ground circuit terminals B and ground.
    - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Connect a test lamp between the stop lamp control circuit terminals A and ground circuit terminals B.
4. Ignition ON, press and release the brake pedal. The test lamp should turn ON and OFF when changing between the commanded states.
    - If the test lamp is always ON, test the control circuit for a short to voltage.
    - If the test lamp is always OFF, test the control circuit for a short to ground or an open/high resistance.
5. If all circuits test normal, test or replace the center high mounted stop lamp.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Underhood Electrical Center or Junction Block Replacement**
- **Control Module References** for BCM replacement, setup, and programming

SYMPTOMS - LIGHTING

1. Perform the **Diagnostic System Check - Vehicle** , before using the Symptom Tables in order to verify that all of the following are true:
    - There are no DTCs set.
    - The control modules can communicate via the serial data link.
2. Review the system operation in order to familiarize yourself with the system functions. Refer to the following:
    - **Exterior Lighting Systems Description and Operation**
    - **Interior Lighting Systems Description and Operation**

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the Lighting System. Refer to **Checking Aftermarket Accessories** .
- Inspect the easily accessible or visible system components for obvious damage or conditions which could cause the symptom.

Intermittent

Faulty electrical connections or wiring may be the cause of intermittent conditions. Refer to **Testing for Intermittent Conditions and Poor Connections** .

Symptom List

Refer to a symptom diagnostic procedure from the following list in order to diagnose the symptom:

- **Backup Lamps Malfunction**
- **Courtesy Lamps Malfunction (w/AN3)** or **Courtesy Lamps Malfunction (w/o AN3)**
- **Daytime Running Lamps Malfunction**
- **Exterior Courtesy Lamps Malfunction**
- **Front Fog Lamps Malfunction**
- **Hazard Lamps Malfunction**
- **Headlamps Malfunction**
- **Headlamps Flash to Pass Inoperative**
- **High Beam Indicator Malfunction**
- **Interior Backlighting Malfunction (w/AN3)** or **Interior Backlighting Malfunction (w/o AN3)**
- **Park, License, and/or Tail Lamps Malfunction**
- **Reading Lamps Malfunction**
- **Stop Lamps Malfunction**
- **Turn Signal Lamps and/or Indicators Malfunction**
- **Vanity Mirror Lamp Malfunction**

BACKUP LAMPS MALFUNCTION

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.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance

Backup Lamp Relay Control	1	1	2	-
Backup Lamp Control	B2545 00	1	2	-
Backup Lamp Ground	-	1	-	-
1. Backup lamps inoperative 2. Backup lamps always on				

Circuit/System Description

When the PRNDL is placed in the REVERSE position, a signal is sent to the body control module (BCM). The BCM then applies voltage through the backup lamps relay control circuit to the BACK/UP lamp relay in the underhood fuse block, and the inside rearview mirror. The BACK/UP lamp relay then illuminates the backup lamps.

Reference Information

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Exterior Lighting Systems 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. Connect a test lamp between the relay side of the backup lamp fuse and ground.

2. Ignition ON, verify that the test lamp turns on and off while commanding the backup lamps on and off with a scan tool.
    - If the test lamp does not turn on and off while changing between the commanded states, refer to the Backup Lamp Relay Control Circuit Test below.
3. If 1 or both of the backup lamps do not turn on and off, refer to the Backup Lamp Circuit Test below.

Circuit/System Testing

Backup Lamp Relay Control Circuit Test

1. Ignition OFF, disconnect the harness connector X5 at the BCM.
2. Ignition ON, vehicle in park, verify the backup lamps are not on.
    - If the backup lamps are on, test the backup lamp relay control circuit terminal11 for a short to voltage. If the circuit tests normal replace the underhood fuse block.
3. Install a 10A fused jumper wire between the relay control circuit terminal 11 and battery voltage. Verify the backup lamps are on.
    - If the backup lamps are not on, test the backup lamp relay control circuit for an open/high resistance or short to gerund. If the circuit tests normal replace the underhood fuse block.
4. If all circuits test normal, replace the BCM.

Backup Lamp Circuit Test

1. Ignition OFF, disconnect the harness connector at the affected backup lamp.
2. Test for less than 1 ohm of resistance between the ground circuit terminal GRD and ground.
    - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Connect a test lamp between the control circuit terminal MJR and the ground circuit terminal GRD.
4. Command the backup lamps on and off with a scan tool. The test lamp should turn on and off when changing between the commanded states.
    - If the test lamp is always ON, test the control circuit for a short to voltage. If the circuit tests normal, replace the underhood fuse block.
    - If the test lamp is always OFF, test the control circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the underhood fuse block.
5. If all circuits test normal, test or replace the affected backup lamp.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Backup Lamp Bulb Replacement (GMC)** or **Backup Lamp Bulb Replacement (Chevrolet)**
- **Underhood Electrical Center or Junction Block Replacement**
- **Control Module References** for BCM replacement, programming, and setup.

COURTESY LAMPS MALFUNCTION (W/AN3)

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.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Dome Lamp Switch Signal	1	3	-	-
Interior Lamp Defeat Switch Signal	2	4	-	-
Door Open Switch Signal	1		-	-
Courtesy Lamp Control	B2615	2	1	-
1. Courtesy lamps always on 2. Courtesy lamps inoperative 3. Courtesy lamps inoperative from dome lamp switch 4. Manual defeat switch inoperative 3. Courtesy lamps not on with door open				

Circuit/System Description

Voltage for the courtesy lamps is supplied from body control module (BCM), driver door switch, and passenger door switch. When a door is opened, a signal is applied to the door module. The door module then applies a message on the low speed GMLAN serial data communication circuit to the BCM to activate the courtesy lamps. The BCM then applies voltage to the courtesy lamps voltage supply circuit and the components on that circuit.

Reference Information

Schematic Reference

Interior Lights Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Interior Lighting Systems 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. Ignition ON, command the Courtesy Lamps output control on and off with the scan tool. The interior courtesy lamps should turn on and off.
    - If one or more of the courtesy lamps are always on or always off refer to the courtesy lamp control circuit test below.
2. Observe the scan tool Driver Door Switch, Driver Door Open Sw. parameter while opening and closing the driver door. The reading should change between active and inactive.
    - If the Driver Door Open Sw. parameter does not change between active and inactive, refer to Door Open Switch Test-Front below.
3. Observe the scan tool Passenger Door Switch, Passenger Door Open Sw. parameter while opening and closing the front passenger door. The reading should change between active and inactive.
    - If the Passenger Door Open Sw. parameter does not change between active and inactive, refer to Door Open Switch Test-Front below.
4. Observe the scan tool BCM Ctsy. Lamp Actv. Reason parameter while opening and closing

each rear doors one at a time. The reading should change between Door Open and Door Closed

- If the Ctsy. Lamp Actv. Reason parameter does not change between Door Open and Door Closed, refer to Door Open Switch Test-Rear below.

5. Ignition ON and all doors closed, observe the scan tool BCM Ctsy. Lamp Actv. Reason parameter while turning the dome lamp switch ON and OFF. The reading should change between Off and Manual.
   - If the Ctsy. Lamp Actv. Reason parameter does not change between Off and Manual, refer to Dome/Interior Lamp Switch Test below.
6. Ignition ON and all doors closed, observe the scan tool BCM Ctsy. Lamp Actv. Reason parameter while turning the interior lamp defeat switch ON and OFF. The reading should change between Off and Manual Defeat.
   - If the Ctsy. Lamp Actv. Reason parameter does not change between Off and Manual, refer to Dome/Interior Lamp Switch Test below.

Circuit/System Testing

Courtesy Lamp Control Circuit Test

1. Ignition OFF, disconnect the harness connector at an affected lamp bulb.
2. Test for less than 1 ohm of resistance between the ground circuit terminal and ground.
   - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Connect a test lamp between the control circuit terminal and the ground circuit terminal.
4. Ignition ON, command the Courtesy Lamps output control on and off with the scan tool. The test lamp should turn on and off.
   - If the test lamp is always ON, test the control circuit for a short to voltage. If the circuit tests normal, replace the BCM.
   - If the test lamp is always OFF, test the control circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the bulb.

Door Open Switch Test-Front

1. Ignition OFF, disconnect the harness connector at the affected door latch.
2. Test for less than 1 ohm of resistance between the listed ground circuit terminal and ground.
   - Driver terminal 8
   - Passenger terminal 3

- If greater than the specified range, test the ground circuit for an open/high resistance.

3. Ignition ON, verify the scan tool door open switch parameter is inactive.
   - If not the specified value, test the listed signal circuit terminal for a short to ground. If the circuit tests normal, replace the affected door switch.
     - Driver terminal 7
     - Passenger terminal 2
4. Install a 3A fused jumper wire between the listed signal circuit terminal and low reference circuit terminal. Verify the scan tool door open switch parameter is active.
   - Driver terminal 7 to terminal 8
   - Passenger terminal 2 to terminal 3
   - If not the specified value, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the affected door switch.
5. If all circuits test normal, test or replace the affected door latch.

Door Open Switch Test-Rear

1. Ignition OFF, disconnect the harness connector at the affected door latch.
2. Test for less than 1 ohm of resistance between the listed ground circuit terminal and ground.
   - Left terminal 6
   - Right terminal 3
   - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify the scan tool passenger door open switch parameter is Closed.
   - If not the specified value, test the listed signal circuit terminal for a short to ground. If the circuit tests normal, replace the BCM.
     - Left terminal 5
     - Right terminal 2
4. Install a 3A fused jumper wire between the listed signal circuit terminal and low reference circuit terminal. Verify the scan tool passenger door open switch parameter is Open.
   - Left terminal 5 to terminal 6
   - Right terminal 2 to terminal 3
   - If not the specified value, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the affected door latch.

Dome/Interior Lamp Switch Test

1. Ignition OFF, disconnect the harness connector at the headlamp switch.
2. Test for less than 1 ohm of resistance between the ground circuit terminal 8 and ground.
    - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify the scan tool Ctsy. Lamp Actv. Reason parameter is Off.
    - If not the parameter is Manual or Manual Defeat, test the affected signal circuit terminal for a short to ground. If the circuit tests normal, replace the BCM.
        - Manual terminal 12
        - Manual Defeat terminal 9
4. Install a 3A fused jumper wire between the signal circuit terminal 12 and the ground circuit terminal 8. Verify the scan tool Ctsy. Lamp Actv. Reason parameter is Manual.
    - If not the specified value, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
5. Install a 3A fused jumper wire between the signal circuit terminal 9 and the ground circuit terminal 8. Verify the scan tool Ctsy. Lamp Actv. Reason parameter is Manual Defeat.
    - If not the specified value, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
6. If all circuits test normal, test or replace the headlamp switch.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Dome Lamp Replacement**
- **Front Side Door Lock Replacement**
- **Rear Door Lock Replacement (Extended Cab Upper)** or **Rear Door Lock Replacement (Crew Cab)** or **Rear Door Lock Replacement (Extended Cab Lower)**
- **Headlamp Switch Replacement (without RPO SLT)** or **Headlamp Switch Replacement (with RPO SLT)**
- **Control Module References** for BCM, driver door switch, or passenger door switch replacement, programming, and setup.

COURTESY LAMPS MALFUNCTION (W/O AN3)

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.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Dome Lamp Switch Signal	1	3	-	-
Interior Lamp Defeat Switch Signal	2	4	-	-
Door Open Switch Signal	1		-	-
Courtesy Lamp Control	B2615	2	1	-
1. Courtesy lamps always on 2. Courtesy lamps inoperative 3. Courtesy lamps inoperative from dome lamp switch 4. Manual defeat switch inoperative 3. Courtesy lamps not on with door open				

Circuit/System Description

Voltage for the courtesy lamps is supplied from body control module (BCM). When a door is opened, a signal is applied to the BCM. The BCM then applies voltage to the courtesy lamps voltage supply circuit and the components on that circuit.

Reference Information

Schematic Reference

Interior Lights Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Interior Lighting Systems 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. Ignition ON, command the Courtesy Lamps output control on and off with the scan tool. The interior courtesy lamps should turn on and off.
    - If one or more of the courtesy lamps are always on or always off refer to the courtesy lamp control circuit test below.
2. Observe the scan tool BCM, Driver Door Open Sw. parameter while opening and closing the driver door. The reading should change between Open and Closed.
    - If the Driver Door Open Sw. parameter does not change between Open and Closed, refer to Driver Door Open Switch Test below.
3. Observe the scan tool BCM, Passenger Door Open Sw. parameter while opening and closing the front passenger door. The reading should change between Open and Closed.
    - If the Passenger Door Open Sw. parameter does not change between Open and Closed, refer to Passenger Door Open Switch Test below.
4. Observe the scan tool BCM Passenger Door Open Sw. parameter while opening and closing each rear doors one at a time. The reading should change between Open and Closed.
    - If the Ctsy. Lamp Actv. Reason parameter does not change between Open and Closed, refer to Passenger Door Open Switch Test below.
5. Ignition ON and all doors closed, observe the scan tool BCM Ctsy. Lamp Actv. Reason parameter while turning the dome lamp switch ON and OFF. The reading should change between Off and Manual.
    - If the Ctsy. Lamp Actv. Reason parameter does not change between Off and Manual, refer to Dome/Interior Lamp Switch Test below.
6. Ignition ON and all doors closed, observe the scan tool BCM Ctsy. Lamp Actv. Reason parameter while turning the interior lamp defeat switch ON and OFF. The reading should change between Off and Manual Defeat.
    - If the Ctsy. Lamp Actv. Reason parameter does not change between Off and Manual, refer to Dome/Interior Lamp Switch Test below.

Circuit/System Testing

Courtesy Lamp Control Circuit Test

1. Ignition OFF, disconnect the harness connector at an affected lamp bulb.
2. Test for less than 1 ohm of resistance between the ground circuit terminal and ground.
    - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Connect a test lamp between the control circuit terminal and the ground circuit terminal.
4. Ignition ON, command the Courtesy Lamps output control on and off with the scan tool. The test lamp should turn on and off.
    - If the test lamp is always ON, test the control circuit for a short to voltage. If the circuit tests normal, replace the BCM.
    - If the test lamp is always OFF, test the control circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the bulb.

Driver Door Open Switch Test

1. Ignition OFF, disconnect the harness connector at the door latch.
2. Test for less than 1 ohm of resistance between the listed ground circuit terminal and ground.
    - With power door locks terminal 8
    - With out power door locks terminal 6
    - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify the scan tool driver door open switch parameter is Closed.
    - If not the specified value, test the listed signal circuit terminal for a short to ground. If the circuit tests normal, replace the affected door switch.
        - With power door locks terminal 7
        - With out power door locks terminal 5
4. Install a 3A fused jumper wire between the listed signal circuit terminal and low reference circuit terminal. Verify the scan tool door open switch parameter is active.
    - With power door locks terminal 7 to terminal 8
    - With out power door locks terminal 6 to terminal 5
    - If not the specified value, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the driver door switch.
5. If all circuits test normal, test or replace the driver door latch.

Passenger Door Open Switch Test

1. Ignition OFF, disconnect the harness connector at the affected door latch.
2. Test for less than 1 ohm of resistance between the listed ground circuit terminal and ground.
    - Left terminal 6
    - Right terminal 3
    - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify the scan tool passenger door open switch parameter is Closed.
    - If not the specified value, test the listed signal circuit terminal for a short to ground. If the circuit tests normal, replace the BCM.
        - Left terminal 5
        - Right terminal 2
4. Install a 3A fused jumper wire between the listed signal circuit terminal and low reference circuit terminal. Verify the scan tool passenger door open switch parameter is Open.
    - Left terminal 5 to terminal 6
    - Right terminal 2 to terminal 3
    - If not the specified value, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the affected door latch.

Dome/Interior Lamp Switch Test

1. Ignition OFF, disconnect the harness connector at the headlamp switch.
2. Test for less than 1 ohm of resistance between the ground circuit terminal 8 and ground.
    - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify the scan tool Ctsy. Lamp Actv. Reason parameter is Off.
    - If not the parameter is Manual or Manual Defeat, test the affected signal circuit terminal for a short to ground. If the circuit tests normal, replace the BCM.
        - Manual terminal 12
        - Manual Defeat terminal 9
4. Install a 3A fused jumper wire between the signal circuit terminal 12 and the ground circuit terminal 8. Verify the scan tool Ctsy. Lamp Actv. Reason parameter is Manual.
    - If not the specified value, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
5. Install a 3A fused jumper wire between the signal circuit terminal 9 and the ground circuit terminal 8. Verify the scan tool Ctsy. Lamp Actv. Reason parameter is Manual Defeat.
    - If not the specified value, test the signal circuit for a short to voltage or an open/high

resistance. If the circuit tests normal, replace the BCM.

6. If all circuits test normal, test or replace the headlamp switch.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Dome Lamp Replacement**
- **Front Side Door Lock Replacement**
- **Rear Door Lock Replacement (Extended Cab Upper)** or **Rear Door Lock Replacement (Crew Cab)** or **Rear Door Lock Replacement (Extended Cab Lower)**
- **Headlamp Switch Replacement (without RPO SLT)** or **Headlamp Switch Replacement (with RPO SLT)**
- **Control Module References** for BCM, driver door switch, or passenger door switch replacement, programming, and setup.

DAYTIME RUNNING LAMPS MALFUNCTION

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.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Ambient Light Sensor Signal	B2645 03	B2645 07	B2645 07	-
DRL Relay Control	1	2	B2600 00	-
Low Beam Headlamp Control	4	4	3	-
Low Beam Headlamp Ground	-	4	-	-
Ambient Light Sensor Ground	-	B2645 07	-	-
1. The daytime running lamps are always on. 2. The daytime running lamps are inoperative. 3. The low beam headlamps are always on. 4. The low beam headlamps are inoperative.				

Circuit/System Description

The daytime running lamps (DRL) are controlled by the body control module (BCM). The BCM grounds the DRL relay control circuit in order to energize the DRL relay coil. The DRL relay then sends voltage to the low beam headlamps.

Reference Information

Schematic Reference

Fog Lights Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Exterior Lighting Systems 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. Ignition ON, observe the scan tool Ambient Light Sensor parameter voltage while carefully supplying sufficient light to simulate daylight conditions to the ambient light sensor, then covering to simulate darkness. The voltage reading should change from approximately 0.69 to 4.52 volts.
    - If the reading does not change between light and dark, refer to the Ambient Light Sensor Circuit Test below.
2. Connect a test lamp between the relay side of the DRL fuse and ground.
3. Verify that the test lamp turns on and off while commanding the daytime running lamps ON and OFF with a scan tool.

- If the test lamp does not turn on and off while changing between the commanded states, refer to the DRL Relay Control Circuit Test below.

4. If 1 or both of the daytime running lamps do not turn on and off, refer to the Daytime Running Lamps Circuit Test below.

Circuit/System Testing

Ambient Light Sensor Circuit Test

1. Ignition OFF, disconnect the harness connector at the ambient light sensor.
2. Ignition OFF, test for less than 1 ohm of resistance between the listed ground circuit terminal and ground.
   - Ambient light sensor terminal B
   - Ambient light/sunload sensor terminal C
   - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify the scan tool ambient light sensor parameter is greater than 4.5 volts.
   - If less than the specified range, test the signal circuit for a short to ground. If the circuit tests normal, replace the BCM.
4. Install a 3A fused jumper wire between the listed signal circuit terminal and the low reference circuit terminal. Verify the scan tool light sensor parameter is less than 1.0 volt.
   - Ambient light sensor terminal A to B
   - Ambient light/sunload sensor terminal D to C
   - If greater than the specified range, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM
5. If all circuits test normal, test or replace the ambient light sensor.

DRL Relay Control Circuit Test

1. Ignition OFF, disconnect the harness connector X4 at the BCM.
2. Ignition ON, verify the daytime running lamps are not on.
   - If the daytime running lamps are on, test the DRL relay control circuit for a short to ground. If the circuit tests normal replace the underhood fuse block.
3. Install a 10A fused jumper wire between the relay control circuit terminal 23 and ground. Verify the daytime running lamps are on. are on.
   - If the daytime running lamps are not on, test the DRL relay control circuit for an open/high resistance. If the circuit tests normal replace the underhood fuse block.
4. If all circuits test normal, replace the BCM.

Daytime Running Lamps Circuit Test

1. Ignition OFF, disconnect the harness connector at the affected headlamp.
2. Test for less than 1 ohm of resistance between the ground circuit terminal B and ground.
   - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Connect a test lamp between the control circuit terminal A and the ground circuit terminal B.
4. Command the daytime running lamps on and off with a scan tool. The test lamp should turn on and off when changing between the commanded states.
   - If the test lamp is always on, test the control circuit for a short to voltage. If the circuit tests normal, replace the underhood fuse block.
   - If the test lamp is always off, test the control circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the underhood fuse block.
5. If all circuits test normal, test or replace the affected headlamp.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Ambient Light Sensor Replacement**
- **Headlamp Bulb Replacement (GMC)** or **Headlamp Bulb Replacement (Chevrolet)**
- **Underhood Electrical Center or Junction Block Replacement**
- **Control Module References** for BCM replacement, programming, and setup.

EXTERIOR COURTESY LAMPS MALFUNCTION

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.

Circuit/System Description

The exterior courtesy lamps are supplied with the courtesy lamp supply voltage from the driver and passenger door lock and side window switches. The lamps are controlled by the driver and passenger door lock and side window switches through low side drive control circuits.

Reference Information

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Exterior Lighting Systems 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

Ignition ON, command the Puddle/Courtesy Lamp ON and OFF with a scan tool. Verify the exterior courtesy lamps turn on and off.

Circuit/System Testing

1. Disconnect the harness connector at the affected courtesy lamp bulb.
2. Ignition ON, verify that a test lamp illuminates between the courtesy lamp supply circuit terminal and ground.
    - If the test lamp does not illuminate, test the courtesy lamp supply circuit for a short to ground or an open/high resistance.
3. Connect a test lamp between the low side control circuit terminal and the courtesy lamp supply circuit terminal.
4. Command the Puddle/Courtesy Lamp ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
    - If the test lamp is always ON, test the control circuit for a short to ground. If the

circuit tests normal, replace the door lock and side window switch.

- If the test lamp is always OFF, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the door lock and side window switch.

5. If all circuits test normal, test or replace the affected bulb.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Outside Rearview Mirror Courtesy Lamp Replacement**
- **Control Module References** for driver or passenger door lock and side window switch replacement, programming, and setup.

FRONT FOG LAMPS MALFUNCTION

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.

Circuit/System Description

The front fog lamp switch signal circuit is referenced from battery voltage by the BCM. When the fog lamp switch is activated, the signal circuit is grounded through the switch and the signal circuit voltage goes low. The BCM controls the front fog lamps through the fog lamp relay in the underhood fuse block. Battery voltage is supplied to the relay coil and switch, and the BCM energizes the relay by grounding the fog lamp relay control circuit.

Reference Information

Schematic Reference

Fog Lights Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Exterior Lighting Systems 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. Ignition ON, observe the scan tool Front Fog Lamp Switch parameter while pressing and releasing the front fog lamp switch. The reading should change between Active and Inactive.
    - If not the specified value, refer to the fog lamp switch circuit test below.
2. Ignition ON, command the Fog Lamps ON and OFF with a scan tool. Verify the front fog lamps turn on and off.
    - If the front fog lamps are always on or always off, refer to the fog lamp control circuit test below.

Circuit/System Testing

Fog Lamp Switch Circuit Test

1. Ignition OFF, disconnect the harness connector at the headlamp switch.
2. Test for less than 1 ohm of resistance between the ground circuit terminal 8 and ground.
    - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify the scan tool Front Fog Lamp Switch parameter is Inactive.
    - If not the specified value, test the signal circuit terminal 10 for a short to ground. If the circuit tests normal, replace the BCM.
4. Install a 3A fused jumper wire between the signal circuit terminal 10 and the ground circuit terminal 8. Verify the scan tool Front Fog Lamp Switch parameter is Active.
    - If not the specified value, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the headlamp switch.

Fog Lamp Control Circuit Test

1. Ignition OFF, disconnect the fog lamp relay.
2. Ignition ON, verify that a test lamp does not illuminate between the control circuit terminal 87 and ground.
    - If the test lamp illuminates, test the fog lamp control circuit for a short to voltage.
3. Verify that a test lamp illuminates between the B+ circuit terminal 30 and ground.
    - If the test lamp does not illuminate, replace the underhood fuse block.
4. Verify that a test lamp illuminates between the B+ circuit terminal 85 and ground.
    - If the test lamp does not illuminate, replace the underhood fuse block.
5. Disconnect the harness connector at the affected fog lamp.
6. Test for less than 1 ohm of resistance between the fog lamp ground circuit terminal B and ground.
    - If greater than the specified range, test the ground circuit for an open/high resistance.
7. Connect the harness connector at the fog lamp.
8. Connect a 15A fused jumper wire between the B+ circuit terminal 30 and the control circuit terminal 87. Verify the fog lamps are activated.
    - If the fog lamps do not activate, test the control circuit for an open/high resistance. If the circuit tests normal, test or replace the affected fog lamp.
9. Connect a test lamp between the B+ circuit terminal 85 and the relay control circuit terminal 86.
10. Command the Fog Lamps ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
    - If the test lamp is always ON, test the relay control circuit for a short to ground. If the circuit tests normal, replace the BCM.
    - If the test lamp is always OFF, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
11. If all circuits test normal, test or replace the fog lamp relay.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Front Fog Lamp Bulb Replacement (GMC)** or **Front Fog Lamp Bulb Replacement (Chevrolet)**
- **Fog Lamp Switch Replacement (with RPO SLT)** or **Fog Lamp Switch Replacement**

(without RPO SLT)

- **Control Module References** for BCM replacement, programming, and setup.

HAZARD LAMPS MALFUNCTION

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.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Hazard Switch Signal	2	1	-	-
Hazard Switch Ground	-	1	-	-
1. Hazard flashers inoperative 2. Hazard flashers always on				

Circuit/System Description

The hazard switch signal circuit is referenced from battery voltage by the BCM. When the hazard switch is activated, the signal circuit is grounded through the switch and the signal circuit voltage goes low. The BCM then sends an ON-OFF voltage signal through the fuses to the appropriate turn signal lamps or to all of the turn signal fuses for hazard operation.

Reference Information

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Interior Lighting Systems 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

Ignition ON, observe the scan tool hazard lamp switch parameter while operating the hazard switch on and off. The reading should change between active and inactive.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector X1 at the turn signal/multifunction switch.
2. Test for less than 1 ohm of resistance between the ground circuit terminal C and ground.
    - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify the scan tool hazard lamp switch parameter is Inactive.
    - If not the specified value, test the signal circuit terminal G for a short to ground. If the circuit tests normal, replace the BCM.
4. Install a 3A fused jumper wire between the signal circuit terminal G and the ground circuit terminal C. Verify the scan tool hazard lamp switch parameter is Active.
    - If not the specified value, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the turn signal/multifunction switch

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Turn Signal Multifunction Switch Replacement**
- **Control Module References** for BCM replacement, programming, and setup.

HEADLAMPS MALFUNCTION

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.

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Low Beam Hedalamp Control	1	1	3	-
High Beam Hedalamp Control	2	2	4	-
Low Beam Relay Control	3	1	B2575	-
High Beam Relay Control	5	2	B2580	-
Headlamp On Switch Signal	B257A	6	-	-
High/Low Beam Select Switch Signal	5	2	-	-
Low Beam Headlamp Ground	-	2	-	-
High Beam Headlamp Ground	-	2	-	-

1. Low beam headlamps inoperative
2. High beam headlamps inoperative
3. Low beam headlamps always on
4. High beam headlamps always on
5. High beam headlamps always on with low beams
6. Manual headlamps inoperative

Circuit/System Description

The low beam headlamps are controlled by the BCM through the headlamp low/HID relay, and the high beams are controlled by the BCM through the high beam relay. Both relays are supplied battery voltage and are energized when the BCM grounds the low side drive control circuits. The headlamp on switch and high/low beam select switch signal circuits are referenced from battery voltage by the BCM. When a switch is activated the signal circuit is grounded, and the BCM determines the switch is active when the signal circuit voltage is low.

Reference Information

Schematic Reference

Headlights/Daytime Running Lights (DRL) Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Exterior Lighting Systems 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. Ignition ON, observe the scan tool Headlamp Switch parameter while cycling the headlamp switch between the auto and headlamp position. The parameter should cycle between Active and Inactive.
    - If the parameter does not cycle between the specified values, refer to the Headlamp Switch Circuit Test below.
2. Observe the headlamps while cycling the headlamp switch between the auto and headlamp position. The low beam headlamps should turn on and off.
    - If 1 or both of the low beam headlamps do not turn on and off, refer to the Low Beam Headlamp Circuit Test below.
3. Low beam headlamps ON, observe the scan tool High Beam Select Switch parameter while switching the high/low beam select switch between the low and high beam positions. The parameter should cycle between Active and Inactive.
    - If the parameter does not cycle between the specified values, refer to the High/Low Beam Select Switch Circuit Test below.
4. Connect a test lamp between the relay side of a high beam headlamp fuse and ground.
5. Verify that the test lamp turns on and off while switching the high/low beam select switch between the low and high beam positions.

- If the test lamp does not turn on and off while changing between the commanded states, refer to the High Beam Relay Control Circuit Test below

6. If 1 or both of the high beam headlamps do not turn on and off, refer to the High Beam Headlamp Circuit Test below.

Circuit/System Testing

Headlamp Switch Circuit Test

1. Ignition OFF, disconnect the harness connector at the headlamp switch.
2. Test for less than 1 ohm of resistance between the ground circuit terminal 8 and ground.
   - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify the scan tool Headlamp Switch parameter is Inactive.
   - If not the specified value, test the signal circuit terminal 1 for a short to ground. If the circuit tests normal, replace the BCM.
4. Install a 3A fused jumper wire between the signal circuit terminal 1 and the ground circuit terminal 8. Verify the scan tool Headlamp Switch parameter is Active.
   - If not the specified value, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the headlamp switch.

High/Low Beam Select Switch Circuit Test

1. Ignition OFF, disconnect the harness connector X2 at the turn signal/multifunction switch.
2. Test for less than 1 ohm of resistance between the ground circuit terminal D and ground.
   - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify the scan tool High Beam Select Switch parameter is Inactive.
   - If not the specified value, test the signal circuit terminal E for a short to ground. If the circuit tests normal, replace the BCM.
4. Install a 3A fused jumper wire between the signal circuit terminal E and the ground circuit terminal D. Verify the scan tool High Beam Select Switch parameter is Active.
   - If not the specified value, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the signal/multifunction switch.

Low Beam Headlamp Circuit Test

1. Ignition OFF, disconnect the headlamp low/HID relay.
2. Ignition ON, verify that a test lamp does not illuminate between the headlamp control circuit terminal 87 and ground.
    - If the test lamp illuminates, test the headlamp control circuit for a short to voltage.
3. Verify that a test lamp illuminates between the B+ circuit terminal 30 and ground.
    - If the test lamp does not illuminate, replace the underhood fuse block.
4. Verify that a test lamp illuminates between the B+ circuit terminal 85 and ground.
    - If the test lamp does not illuminate, replace the underhood fuse block.
5. Disconnect the harness connector at the affected headlamp.
6. Test for less than 1 ohm of resistance between the headlamp ground circuit terminal B and ground.
    - If greater than the specified range, test the ground circuit for an open/high resistance.
7. Connect the harness connector at the headlamp.
8. Connect a 20A fused jumper wire between the B+ circuit terminal 30 and the headlamp control circuit terminal 87. Verify the low beam headlamps are on.
    - If the headlamps do not turn on, test the control circuit for an open/high resistance. If the circuit tests normal, test or replace the affected headlamp.
9. Connect a test lamp between the B+ circuit terminal 85 and the relay control circuit terminal 86.
10. Command the Low Beams ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
    - If the test lamp is always ON, test the relay control circuit for a short to ground. If the circuit tests normal, replace the BCM.
    - If the test lamp is always OFF, test the relay control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
11. If all circuits test normal, test or replace the headlamp low/HID relay.

High Beam Relay Control Circuit Test

1. Ignition OFF, disconnect the harness connector X4 at the BCM.
2. Low beam headlamps ON, verify the high beam headlamps are not on.
    - If the high beam headlamps are on, test the high beam relay control circuit for a short to ground. If the circuit tests normal replace the underhood fuse block.
3. Install a 10A fused jumper wire between the relay control circuit terminal 16 and ground. Verify the high beam headlamps are on.

- If the high beam headlamps are not on, test the high beam relay control circuit for an open/high resistance. If the circuit tests normal replace the underhood fuse block.

4. If all circuits test normal, replace the BCM.

High Beam Headlamp Circuit Test

1. Ignition OFF, disconnect the harness connector at the affected headlamp.
2. Test for less than 1 ohm of resistance between the ground circuit terminal B and ground.
   - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Connect a test lamp between the control circuit terminal A and the ground circuit terminal B.
4. Command the High Beams ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
   - If the test lamp is always ON, test the control circuit for a short to voltage. If the circuit tests normal, replace the underhood fuse block.
   - If the test lamp is always OFF, test the control circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the underhood fuse block.
5. If all circuits test normal, test or replace the affected headlamp.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Headlamp Bulb Replacement (GMC)** or **Headlamp Bulb Replacement (Chevrolet)**
- **Headlamp Switch Replacement (without RPO SLT)** or **Headlamp Switch Replacement (with RPO SLT)**
- **Turn Signal Multifunction Switch Replacement**
- **Control Module References** for BCM replacement, programming, and setup.

HEADLAMPS FLASH TO PASS INOPERATIVE

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.

Circuit/System Description

The high beam headlamps are controlled by the BCM through the high beam relay. The relay is supplied battery voltage and is energized when the BCM grounds the low side drive control circuit. The flash to pass switch signal circuit is referenced from battery voltage by the BCM and when the switch is activated the signal circuit is grounded, and the BCM determines the switch is active when the signal circuit voltage is low.

Reference Information

Schematic Reference

Headlights/Daytime Running Lights (DRL) Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Exterior Lighting Systems 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

With the headlamps ON, observe the scan tool Flash to Pass Switch parameter while pulling and releasing the flash to pass switch. The parameter should cycle between Active and Inactive.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector X2 at the turn signal/multifunction switch.
2. Test for less than 1 ohm of resistance between the ground circuit terminal D and ground.
    - If greater than the specified range, test the ground circuit for an open/high resistance.

3. Ignition ON, verify the scan tool Flash to Pass Switch parameter is Inactive.
    - If not the specified value, test the signal circuit terminal A for a short to ground. If the circuit tests normal, replace the BCM.
4. Install a 3A fused jumper wire between the signal circuit terminal A and the ground circuit terminal D. Verify the scan tool Flash to Pass Switch parameter is Active.
    - If not the specified value, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the signal/multifunction switch.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Turn Signal Multifunction Switch Replacement**
- **Control Module References** for BCM replacement, programming, and setup.

HIGH BEAM INDICATOR MALFUNCTION

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.

Circuit/System Description

The instrument panel cluster (IPC) illuminates the high beam indicator when the BCM detects that the high beams are requested. The IPC receives a message from the BCM requesting illumination.

Reference Information

Schematic Reference

Instrument Cluster Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Exterior Lighting Systems 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

Ignition ON, low beam headlamps ON, turn the headlamp dimmer switch to the high beam position and observe the headlamps and the IPC high beam indicator. The high beam headlamps and the high beam indicator should illuminate.

Circuit/System Testing

Ignition ON, with a scan tool perform the Display Test for the instrument panel cluster (IPC) and observe the high beam indicator.

- If the high beam indicator does not illuminate during the test or remains illuminated at all times, replace the IPC.
- If the high beam indicator illuminates during the test, replace the BCM.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

Control Module References for BCM or IPC replacement, programming, and setup.

INTERIOR BACKLIGHTING MALFUNCTION (W/AN3)

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.

Circuit/System Description

When the ignition switch is turned to the RUN position, the radio VF display turns ON at maximum brightness. When the park lamps are ON, all incandescent and LED back lighting turn ON at the dimming level indicated by the instrument panel (I/P) dimmer switch. At the same time all VF displays dim to match the indicated dimming level. The panel dimmer switch potentiometer is an input to the body control module (BCM). When the driver selects a dimming setting by moving the I/P dimming switch potentiometer, all incandescent back lighting lamps are provided with a specific voltage. When the I/P dimmer switch is moved from MIN to MAX, all VF displays, as well as all incandescent back lighting respond from minimum intensity to maximum brightness in response to the I/P dimmer switch

Reference Information

Schematic Reference

Interior Lights Dimming Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Interior Lighting Systems 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. Ignition ON, observe the driver door switch while commanding the Driver Door Switch Integrated Sw. Backlighting Test ON and OFF with a scan tool. The switch backlighting should turn ON and OFF between commanded states.
    - If the backlighting does not turn On and OFF or remains always ON, replace the driver door lock and side window switch.
2. Ignition ON, observe the driver memory/heated seat switch while commanding the Driver Door Switch Non-Integrated Sw. Backlighting Test ON and OFF with a scan tool. The switch backlighting should turn ON and OFF between commanded states.
    - If the backlighting does not turn On and OFF or remains always ON, refer to Front Door Switch Backlighting Circuit Test below.
3. Ignition ON, observe the passenger door switch while commanding the Passenger Door Switch Integrated Sw. Backlighting Test ON and OFF with a scan tool. The switch backlighting should turn ON and OFF between commanded states.
    - If the backlighting does not turn On and OFF or always remains ON, replace the passenger door lock and side window switch.
4. Ignition ON, observe the passenger heated seat switch while commanding the Passenger Door Switch Non-Integrated Sw. Backlighting Test ON and OFF with a scan tool. The switch backlighting should turn ON and OFF between commanded states.
    - If the backlighting does not turn On and OFF or remains always ON, refer to Front Door Switch Backlighting Circuit Test below.
5. Ignition ON, observe the scan tool BCM Dimming Control Signal parameter while operating the dimmer switch from high to low. The reading should change from a high percent to a low percent as the switch is rotated.
    - If the reading does not change, refer to Dimmer Switch Circuit Test below.

- If the scan tool dimmer control operates normal, refer to the Interior Backlighting Circuit Test or the LED Dimming Circuit Test below.

Circuit/System Testing

Dimmer Switch Circuit Test

1. Ignition OFF, disconnect the harness connector at the headlamp switch.
2. Ignition OFF, verify that a test lamp illuminates between the ground circuit terminal 8 and B+.
    - If the test lamp does not illuminate, test the ground circuit for an open/high resistance.
3. Ignition ON, verify the scan tool Dimming Control Signal parameter is less than 0.1 volts.

- If greater than the specified range, test the signal circuit terminal 13 for a short to voltage. If the circuit tests normal, replace the BCM.

4. Ignition ON, test for B+ between the I/P dimming voltage reference circuit terminal 15 and ground.
   - If less than the specified value, test the voltage reference circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
5. Install a 3A fused jumper wire between the signal circuit terminal 13 and the voltage reference circuit terminal 15. Verify the scan tool BCM Dimming Control Signal parameter is greater than 2.6 volts.
   - If less than the specified range, test the signal circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
6. If all circuits test normal, test or replace the headlamp switch.

Interior Backlighting Circuit Test

1. Ignition OFF, disconnect the harness connector at the affected component.
2. Ignition OFF, verify that a test lamp illuminates between the listed ground circuit terminal and battery voltage.
   - Rear window switch terminal F
   - Headlamp switch terminal 8
   - Transfer case control switch terminal 6
   - Sunroof switch terminal 5
   - Roof beacon switch terminal 1
   - Sliding rear window switch terminal D
   - Garage door opener switch terminal 3
   - If the test lamp does not illuminate, test the ground circuit for an open/high resistance.
3. Connect a test lamp between the listed backlighting control circuit terminal and ground.
   - Rear window switch terminal B
   - Headlamp switch terminal 7
   - Transfer case control switch terminal 5
   - Sunroof switch terminal 3
   - Roof beacon switch terminal 2
   - Sliding rear window switch terminal E
   - Garage door opener switch terminal 2
4. Command the dimming test high to low with a scan tool. The test lamp should turn from

bright to dim when changing between the commanded states.

- If the test lamp is always off, test the control circuit for an open/high resistance or short to ground. If the circuit tests normal, replace the BCM.
- If the test lamp is always bright, test the control circuit for a short to voltage. If the circuit tests normal, replace the BCM.

5. If all circuits test normal, test or replace the affected component.

LED Dimming Circuit Test

1. Ignition OFF, disconnect the harness connector at the affected component.
2. Ignition OFF, verify that a test lamp illuminates between the listed ground circuit terminal and battery voltage.
   - Right steering wheel switch terminal 1
   - Left steering wheel switch terminal 8
   - DIC switch terminal 5
   - Manual HVAC control module terminal 10 X2
   - Multifunction accessory switch terminal 3
   - If the test lamp does not illuminate, test the ground circuit for an open/high resistance.
3. Connect a test lamp between the listed LED dimming control circuit terminal and ground.
   - Right steering wheel switch terminal 2
   - Left steering wheel switch terminal 6
   - Power take off switch terminal 6
   - Trailer brake controller switch terminal 7
   - IPC terminal 8
   - Radio terminal 7 X1
   - DIC switch terminal 4
   - Manual HVAC control module terminal 1 X2
   - Multifunction accessory switch terminal 4
4. Command the dimming test high to low with a scan tool. The test lamp should turn from bright to dim when changing between the commanded states.
   - If the test lamp is always off, test the control circuit for an open/high resistance or short to ground. If the circuit tests normal, replace the BCM.
   - If the test lamp is always bright, test the control circuit for a short to voltage. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the affected component.

Front Door Switch Backlighting Circuit Test

1. Ignition OFF, disconnect the harness connector X4 at the door lock and side window switch.
2. Connect a 3A fused jumper wire between the low reference circuit terminal 4 and ground.
3. Connect a test lamp between the backlight supply voltage circuit terminal 13 and B+. The heated seat switch backlighting should illuminate.
    - If the switch backlighting does not illuminate, replace the heated seat switch.
4. If the switch backlighting tests normal, replace the door lock and side window switch.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Front Seat Heater Switch Replacement (w/o KB6)**
- **Steering Wheel Control Switch Assembly Replacement**
- **Driver Information Display Switch Replacement (without RPO SLT)** or **Driver Information Display Switch Replacement (with RPO SLT)**
- **Accessory Switch Replacement (with RPO SLT)** or **Accessory Switch Replacement (without RPO SLT)**
- **Headlamp Switch Replacement (without RPO SLT)** or **Headlamp Switch Replacement (with RPO SLT)**
- **Control Module References** for BCM, door lock and side window switch, IPC, radio, HVAC control module, and rear seat audio controller replacement, programming, and setup.

INTERIOR BACKLIGHTING MALFUNCTION (W/O AN3)

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.

Circuit/System Description

When the ignition switch is turned to the RUN position, the radio VF display turns ON at maximum brightness. When the park lamps are ON, all incandescent and LED back lighting turn ON at the dimming level indicated by the instrument panel (I/P) dimmer switch. At the same time all VF displays dim to match the indicated dimming level. The panel dimmer switch

potentiometer is an input to the body control module (BCM). When the driver selects a dimming setting by moving the I/P dimming switch potentiometer, all incandescent back lighting lamps are provided with a specific voltage. When the I/P dimmer switch is moved from MIN to MAX, all VF displays, as well as all incandescent back lighting respond from minimum intensity to maximum brightness in response to the I/P dimmer switch

Reference Information

Schematic Reference

Interior Lights Dimming Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Interior Lighting Systems 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

Ignition ON, observe the scan tool BCM Dimming Control Signal parameter while operating the dimmer switch from high to low. The reading should change from a high percent to a low percent as the switch is rotated.

- If the reading does not change, refer to Dimmer Switch Circuit Test below.
- If the scan tool dimmer control operates normal, refer to the Interior Backlighting Circuit Test or the LED Dimming Circuit Test below.

Circuit/System Testing

Dimmer Switch Circuit Test

1. Ignition OFF, disconnect the harness connector at the headlamp switch.
2. Ignition OFF, verify that a test lamp illuminates between the ground circuit terminal 8 and B+.
    - If the test lamp does not illuminate, test the ground circuit for an open/high resistance.
3. Ignition ON, verify the scan tool Dimming Control Signal parameter is less than 0.1 volts.
    - If greater than the specified range, test the signal circuit terminal 13 for a short to voltage. If the circuit tests normal, replace the BCM.
4. Ignition ON, test for B+ between the I/P dimming voltage reference circuit terminal 15 and ground.
    - If less than the specified value, test the voltage reference circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
5. Install a 3A fused jumper wire between the signal circuit terminal 13 and the voltage reference circuit terminal 15. Verify the scan tool BCM Dimming Control Signal parameter is greater than 2.6 volts.
    - If less than the specified range, test the signal circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
6. If all circuits test normal, test or replace the headlamp switch.

Interior Backlighting Circuit Test

1. Ignition OFF, disconnect the harness connector at the affected component.
2. Ignition OFF, verify that a test lamp illuminates between the listed ground circuit terminal and battery voltage.
    - Passenger window switch terminal F
    - Headlamp switch terminal 8
    - Transfer case control switch terminal 6
    - Sunroof switch terminal 5
    - Door lock switch terminal B
    - Roof beacon switch terminal 1
    - Sliding rear window switch terminal D
    - Garage door opener switch terminal 3
    - Outside rear view mirror switch terminal G

- Driver window switch terminal A X2
  - If the test lamp does not illuminate, test the ground circuit for an open/high resistance.
3. Connect a test lamp between the listed backlighting control circuit terminal and ground.
   - Passenger window switch terminal B
   - Headlamp switch terminal 7
   - Transfer case control switch terminal 5
   - Sunroof switch terminal 3
   - Door lock switch terminal A
   - Roof beacon switch terminal 2
   - Sliding rear window switch terminal E
   - Garage door opener switch terminal 2
   - Outside rear view mirror switch terminal E
   - Driver window switch terminal 1 X1
4. Command the dimming test high to low with a scan tool. The test lamp should turn from bright to dim when changing between the commanded states.
   - If the test lamp is always off, test the control circuit for an open/high resistance or short to ground. If the circuit tests normal, replace the BCM.
   - If the test lamp is always bright, test the control circuit for a short to voltage. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the affected component.

LED Dimming Circuit Test

1. Ignition OFF, disconnect the harness connector at the affected component.
2. Ignition OFF, verify that a test lamp illuminates between the listed ground circuit terminal and battery voltage.
   - Right steering wheel switch terminal 1
   - Left steering wheel switch terminal 8
   - DIC switch terminal 5
   - Manual HVAC control module terminal 10 X2
   - Multifunction accessory switch terminal 3
   - If the test lamp does not illuminate, test the ground circuit for an open/high resistance.
3. Connect a test lamp between the listed LED dimming control circuit terminal and ground.
   - Right steering wheel switch terminal 2

- Left steering wheel switch terminal 6
- Power take off switch terminal 6
- Trailer brake controller switch terminal 7
- IPC terminal 8
- Radio terminal 7 X1
- DIC switch terminal 4
- Manual HVAC control module terminal 1 X2
- Multifunction accessory switch terminal 4

4. Command the dimming test high to low with a scan tool. The test lamp should turn from bright to dim when changing between the commanded states.
    - If the test lamp is always off, test the control circuit for an open/high resistance or short to ground. If the circuit tests normal, replace the BCM.
    - If the test lamp is always bright, test the control circuit for a short to voltage. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the affected component.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Front Seat Heater Switch Replacement (w/o KB6)**
- **Steering Wheel Control Switch Assembly Replacement**
- **Driver Information Display Switch Replacement (without RPO SLT)** or **Driver Information Display Switch Replacement (with RPO SLT)**
- **Accessory Switch Replacement (with RPO SLT)** or **Accessory Switch Replacement (without RPO SLT)**
- **Headlamp Switch Replacement (without RPO SLT)** or **Headlamp Switch Replacement (with RPO SLT)**
- **Control Module References** for BCM, IPC, radio, and HVAC control module replacement, programming, and setup.

PARK, LICENSE, AND/OR TAIL LAMPS MALFUNCTION

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.

Circuit/System Description

The park, tail and marker lamps, including the license lamps, are turned ON when the headlamp switch is placed in the PARK or HEAD position or anytime the headlights are requested. The underhood fuse block supplies battery positive voltage to both the park lamp relay switch contacts and the park lamp coil circuit. The BCM provides a ground or control circuit to the park lamp relay coil circuit. When the park lamps are turned ON, the BCM energizes the park lamp relay. If the headlight switch is left in the ON position, the inadvertent power control feature will turn OFF the park, tail and marker lamps approximately 10 minutes after the ignition switch is turned to the OFF position. If the driver places the headlight switch in the ON position after the ignition switch has been turned OFF, or if the ignition switch is in the ACCY position, the park, tail and marker lamps will remain ON until turned OFF or the battery runs dead.

Reference Information

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Exterior Lighting Systems 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. Ignition ON, observe the scan tool parklamp switch parameter while cycling the headlamp switch between the park and off positions. The parameter should cycle between active and inactive.
    - If the parameter does not cycle between the specified values, refer to Park Lamp Switch Circuit Test below.
2. Connect a test lamp between the relay side of a park lamp fuse and ground.
3. Command the parking lamps on and off with a scan tool. Verify that the test lamp turns on and off while switching between the commanded states.
    - If the test lamp does not turn on and off while changing between the commanded states, refer to the Park Lamp Relay Circuit Test below.
4. If any of the park, marker, license, or tail lamps do not turn on and off, refer to the Exterior Lamp Circuit Test below.

Circuit/System Testing

Park Lamp Switch Circuit Test

1. Ignition OFF, disconnect the harness connector at the headlamp switch.
2. Ignition OFF, test for less than 1.0 ohm of resistance between the ground circuit terminal 8 and ground.
    - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify the scan tool parklamp switch parameter is inactive.
    - If not the specified value, test the signal circuit terminal 2 for a short to ground. If the circuit tests normal, replace the BCM.
4. Install a 3A fused jumper wire between the signal circuit terminal 2 and ground. Verify the scan tool BCM parklamp switch parameter is active.
    - If not the specified value, test the signal circuit for a short to voltage or open/high resistance. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the headlamp switch.

Park Lamp Relay Circuit Test

1. Ignition OFF, disconnect the park lamp relay.
2. Ignition ON, verify that a test lamp illuminates between the B+ circuit terminal 30 and ground.
    - If the test lamp does not illuminate, replace the underhood fuse block.
3. Ignition ON, verify that a test lamp illuminates between the B+ circuit terminal 86 and

ground.

- If the test lamp does not illuminate, replace the underhood fuse block.

4. Connect a test lamp between the relay control circuit terminal 85 and the B+ circuit terminal 86.
5. Command the parking lamps ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
   - If the test lamp is always ON, test the relay control circuit for a short to ground. If the circuit tests normal, replace the BCM.
   - If the test lamp is always OFF, test the relay control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
6. If all circuits test normal, test or replace the park lamp relay.

Exterior Lamps Circuit Test

1. Ignition OFF, disconnect the harness connector at an affected park, marker, license, or tail lamp.
2. Verify that a test lamp illuminates when connected between battery voltage and the listed ground circuit terminal.
   - Front park lamp terminal G
   - Tail lamp terminal GRD
   - Marker and clearance lamps terminal A
   - License lamp terminal B
   - If the test lamp does not illuminate, test the ground circuit for an open/high resistance.
3. Ignition ON, connect a test lamp between the listed control circuit terminal and ground.
   - Front park lamp terminal MAJ
   - Tail lamp terminal MNR
   - Marker and clearance lamps terminal B
   - License lamp terminal A
4. Command the parking lamps ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
   - If the test lamp is always ON, test the control circuit for a short to ground. If the circuit tests normal, replace the BCM.
   - If the test lamp is always OFF, test the control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the affected lamp.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Park/Turn Signal Lamp Bulb Replacement (Chevrolet)** or **Park/Turn Signal Lamp Bulb Replacement (GMC)**
- **Rear License Lamp Replacement (VF7)** or **Rear License Lamp Replacement (Silverado)**
- **Tail Lamp Bulb Replacement (GMC)** or **Tail Lamp Bulb Replacement (Chevrolet)**
- **Headlamp Switch Replacement (without RPO SLT)** or **Headlamp Switch Replacement (with RPO SLT)**
- **Control Module References** for BCM replacement, programming, and setup.

READING LAMPS MALFUNCTION

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.

Circuit/System Description

The inadvertent power supply voltage circuit of the body control module (BCM) provides battery positive voltage to the reading lamps. The reading lamps and switch are integral to the courtesy/reading lamp assembly. When the switch is closed, voltage is supplied and the lamp illuminates.

Reference Information

Schematic Reference

Interior Lights Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Interior Lighting Systems 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

Ignition ON, turn the reading lamps on and off. The reading lamps should turn on and off.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at an affected courtesy/reading lamp center.
2. Test for less than 1 ohm of resistance between the ground circuit terminal B and ground.
    - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify that a test lamp illuminates between the listed inadvertent power supply circuit terminal and ground.
    - Front terminal A
    - Rear terminal C
    - If the test lamp does not illuminate, test the inadvertent power supply circuit for a short to ground or an open/high resistance. If the circuit tests normal replace the BCM.
4. Connect the harness connector at the courtesy/reading lamp center, and remove the reading lamp bulb.
5. Connect a test lamp across the bulb terminals.
6. Ignition ON, turn the reading lamp switch on and off. The test lamp should turn on and off when changing between the commanded states.
    - If the test lamp is always on, replace the affected courtesy/reading lamp center.
    - If the test lamp is always off, replace the affected courtesy/reading lamp center.
7. If all circuits test normal, test or replace the affected reading lamp bulb.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Dome Lamp Replacement**
- **Control Module References** for BCM replacement, programming, and setup.

STOP LAMPS MALFUNCTION

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.

Circuit/System Description

When the driver presses the brake pedal, the switch contacts open and battery positive voltage is interrupted to the BCM. The BCM then supplies voltage to both the turn/stop lamp supply voltage circuit and trailer rear turn/stop lamp supply voltage circuits. The BCM also supplies a control voltage to the CHMSL relay energizing the relay and illuminating the CHMSL.

Reference Information

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Exterior Lighting Systems 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. Ignition ON, observe the scan tool BCM Stop Lamp Switch Status parameter while pressing and releasing the brake pedal. The reading should change between 1 count and approximately 1023 counts.
    - If not the specified value, refer to the Stop Lamp Switch Circuit Test below.
2. Ignition ON, observe the scan tool TCM Brake Switch parameter while pressing and releasing the brake pedal. The reading should change between Pressed and Released.
    - If not the specified value, refer to the Brake Switch Circuit Test below.
3. Ignition ON, observe the left, and right stop lamps while pressing and releasing the brake pedal. The stop lamps should turn on and off.
    - If the left and or right stop lamps are always on or inoperative, refer to the Stop Lamp Circuit Test below.
4. Connect a test lamp between the relay side of the CHMSL fuse and ground.
5. Verify that the test lamp turns on and off while pressing and releasing the brake pedal.
    - If the test lamp does not turn on and off while changing between the commanded states, refer to the CHMSL Relay Control Circuit Test below.
6. If the center high mount stop lamp is always on or inoperative refer to the CHMSL Circuit Test below.

Circuit/System Testing

Stop Lamp Switch Circuit Test

1. Ignition OFF, disconnect the harness connector at the stop lamp switch.
2. Ignition ON, test for battery voltage between the 12-volt reference circuit terminal C and ground.
    - If less than the specified range, test the 12-volt reference circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
3. Verify the scan tool BCM Stop Lamp Switch Status parameter is approximately 1023 counts.
    - If not the specified value, test the signal circuit terminal D for a short to voltage. If the circuit tests normal, replace the BCM.
4. Install a 3A fused jumper wire between the signal circuit terminal D and the 12-volt reference circuit terminal C. Verify the scan tool Stop Lamp Switch Status parameter is 1 count.

- If not the specified value, test the signal circuit for an open/high resistance. If the circuit tests normal, replace the BCM.

5. If all circuits test normal, test or replace the stop lamp switch.

Brake Switch Circuit Test

1. Ignition OFF, disconnect the harness connector at the stop lamp switch.
2. Ignition ON, test for battery voltage between the ignition supply circuit terminal B and ground.
   - If less than the specified range, test the ignition supply circuit for a short to ground or an open/high resistance.
3. Verify the scan tool TCM Brake Switch parameter is Released.
   - If not the specified value, test the signal circuit terminal A for a short to voltage.
4. Install a 3A fused jumper wire between the signal circuit terminal B and the ignition supply circuit terminal A. Verify the scan tool Brake Switch parameter is Applied.
   - If not the specified value, test the signal circuit for an open/high resistance.
5. If all circuits test normal, test or replace the stop lamp switch.

Stop Lamp Circuit Test

1. Ignition OFF, disconnect the harnes connector X4 at the BCM.
2. Ignition ON, verify a test lamp illuminates between the terminals listed below and ground.
   - Terminal 1
   - Terminal 2
   - Terminal 4
   - If the test lamp does not illuminate, test the B+ circuit for an open/high resistance or short to ground.
3. Connect the harnes connector X4 at the BCM.
4. Ignition OFF, disconnect the harness connector at the affected stop lamp.
5. Test for less than 1 ohm of resistance between the ground circuit terminal GRD and ground.
   - If greater than the specified range, test the ground circuit for an open/high resistance.
6. Connect a test lamp between the stop lamp control circuit terminal MJR and ground.
7. Ignition ON, press and release the brake pedal. The test lamp should turn ON and OFF when changing between the commanded states.
   - If the test lamp is always ON, test the control circuit for a short to voltage.

- If the test lamp is always OFF, test the control circuit for a short to ground or an open/high resistance.

8. If all circuits test normal, test or replace the affected stop lamp.

CHMSL Relay Control Circuit Test

1. Ignition OFF, disconnect the harness connector X5 at the BCM.
2. Ignition ON, verify the center high mount stop lamp is not on.
   - If the center high mount stop lamp is on, test the CHMSL relay control circuit terminal 5 for a short to voltage. If the circuit tests normal replace the underhood fuse block.
3. Install a 10A fused jumper wire between the CHMSL relay control circuit terminal 5 and battery voltage. Verify the center high mount stop lamp is on.
   - If the center high mount stop lamp is not on or the fuse in the jumper wire opens, test the CHMSL relay control circuit for a short to ground or an open/high resistance. If the circuit tests normal replace the underhood fuse block.
4. If all circuits test normal, replace the BCM.

CHMSL Circuit Test

1. Ignition OFF, disconnect the harnes connector at the center high mount stop lamp.
2. Test for less than 1 ohm of resistance between the ground circuit terminal 1 and ground.
   - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Connect a test lamp between the control circuit terminal A and the ground circuit terminal B.
4. Ignition ON, press and release the brake pedal. The test lamp should turn ON and OFF when changing between the commanded states.
   - If the test lamp is always ON, test the control circuit for a short to voltage.
   - If the test lamp is always OFF, test the control circuit for a short to ground or an open/high resistance.
5. If all circuits test normal, test or replace the center high mounted stop lamp.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Stop Lamp Switch Replacement (Non-Adjustable Pedal)** or **Stop Lamp Switch Replacement (Adjustable Pedal)**

- **High Mount Stop Lamp Replacement (Regular Cab)** or **High Mount Stop Lamp Replacement (Extended and Crew Cab)**
- **Tail Lamp Bulb Replacement (GMC)** or **Tail Lamp Bulb Replacement (Chevrolet)**
- **Control Module References** for BCM replacement, programming, and setup.

TURN SIGNAL LAMPS AND/OR INDICATORS MALFUNCTION

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.

Circuit/System Description

When the turn signal switch is placed in either the left or right position, a ground signal is completed from the turn signal switch to the BCM. When the hazard flasher switch is activated, a ground signal is completed from the turn signal/hazard switch to the BCM. The BCM then sends an ON-OFF voltage signal through the fuses to the appropriate turn signal and side repeater (export only) lamps or to all of the turn signal fuses for hazard operation. The driver door switch and passenger door switch also receive voltage from the BCM turn signal supply voltage circuits for the mirror turn signals. The door switches have no function or control of the mirror turn signals other than a pass through connection for the circuits. The audio chime is also activated when the turn signals are ON. The instrument panel cluster (IPC) receives the signals to activate the turn signal indicators over the GMLAN serial data system.

Reference Information

Schematic Reference

Fog Lights Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Exterior Lighting Systems 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. Ignition ON, command the following ON and OFF with a scan tool. The respective turn signal lamp should turn on and off.
    - LF Turn Signal
    - LR Turn Signal
    - RF Turn Signal
    - RR Turn Signal
    - If the turn signal lamp is always on or does not turn on, refer to Turn Signal Lamp Circuit Malfunction below.
2. Ignition ON, operate the left and right turn signals from the multifunction/turn signal switch and verify the left and right turn signal lamps and indicators operate normal.
    - If the left or right turn signals do not operate, refer to the Turn Signal Switch Circuit Test below.

Circuit/System Testing

Turn Signal Lamp Circuit Malfunction

1. Ignition OFF, disconnect the X4 harness connector at the BCM.
2. Ignition ON, verify a test lamp illuminates between the following B+ terminals and ground.
    - B+ terminal 1
    - B+ terminal 2
    - B+ terminal 3
    - If the test lamp does not illuminate, test the B+ circuit for an open/high resistance. If the circuit fuse is open, test the B+ circuit and the affected turn signal control circuits for a short to ground.
3. Ignition OFF, connect the harness connector X4 harness connector at the BCM.

4. Disconnect the harness connector at the affected turn signal lamp.
5. Test for less than 1.0 ohms of resistance between the affected ground circuit terminal and ground.
    - Front terminal G
    - Rear terminal GRD
    - Outside mirror terminal 10
    - If greater than the specified range, test the ground circuit for an open/high resistance.
6. Connect a test lamp between the affected turn signal control circuit terminal and ground.
    - Front terminal MIN
    - Rear terminal MJR
    - Outside mirror terminal 5
7. Ignition ON, command the affected turn signal on and off with a scan tool. The test lamp should turn on and off when changing between the commanded states.
    - If the test lamp is always on, test the supply voltage circuit for a short to voltage. If the circuit tests normal, replace the BCM.
    - If the test lamp is always off, test the supply voltage circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
8. If all circuits test normal, test or replace the appropriate turn signal bulb.

Turn Signal Switch Circuit Test

1. Ignition OFF, disconnect the harness connector 1 at the turn signal/multifunction switch.
2. Test for less than 1.0 ohm of resistance between the ground circuit terminal F and ground.
    - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify the scan tool left and right turn signal parameters are Inactive.
    - If not the specified value, test the affected signal circuit terminal for a short to ground. If the circuit tests normal, replace the BCM.
        - Left terminal E
        - Right terminal D
4. Install a 3A fused jumper wire between the affected signal circuit terminal and the ground circuit terminal F. Verify the scan tool left or right turn signal parameter is Active.
    - Left terminal E
    - Right terminal D
    - If not the specified value, test the affected signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.

5. If all circuits test normal, test or replace the turn signal/multifunction switch.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

- **Park/Turn Signal Lamp Bulb Replacement (Chevrolet)** or **Park/Turn Signal Lamp Bulb Replacement (GMC)**
- **Tail Lamp Bulb Replacement (GMC)** or **Tail Lamp Bulb Replacement (Chevrolet)**
- **Turn Signal Multifunction Switch Replacement**
- **Control Module References** for BCM replacement, programming, and setup.

VANITY MIRROR LAMP MALFUNCTION

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.

Circuit/System Description

The inadvertent power supply voltage circuit of the body control module (BCM) provides battery positive voltage to each vanity mirror lamp. When the vanity mirror cover on the sunshade is opened, a switch closes to provide a ground circuit and the vanity lamp illuminates.

Reference Information

Schematic Reference

Interior Lights Schematics

Connector End View Reference

Component Connector End Views

Description and Operation

Interior Lighting Systems 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

Ignition On, fold down the sun visors and verify the vanity lamps illuminate.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at an affected vanity mirror lamp.
2. Test for less than 1 ohm of resistance between the ground circuit terminal B and ground.
    - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, verify that a test lamp illuminates between the inadvertent power supply circuit terminal A and ground.
    - If the test lamp does not illuminate, test the inadvertent power supply circuit for a short to ground or an open/high resistance. If the circuit tests normal replace the BCM.
4. Connect the harness connector at the vanity mirror lamp, and remove the vanity lamp bulb.
5. Connect a test lamp across the bulb terminals
6. Ignition ON, open and close the vanity mirror. The test lamp should turn on and off when changing between the commanded states.
    - If the test lamp is always on, replace the affected vanity mirror lamp.
    - If the test lamp is always off, replace the affected vanity mirror lamp.
7. If all circuits test normal, test or replace the affected vanity lamp bulb.

Repair Procedures

Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.

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

REPAIR INSTRUCTIONS

STOP LAMP SWITCH REPLACEMENT (NON-ADJUSTABLE PEDAL)

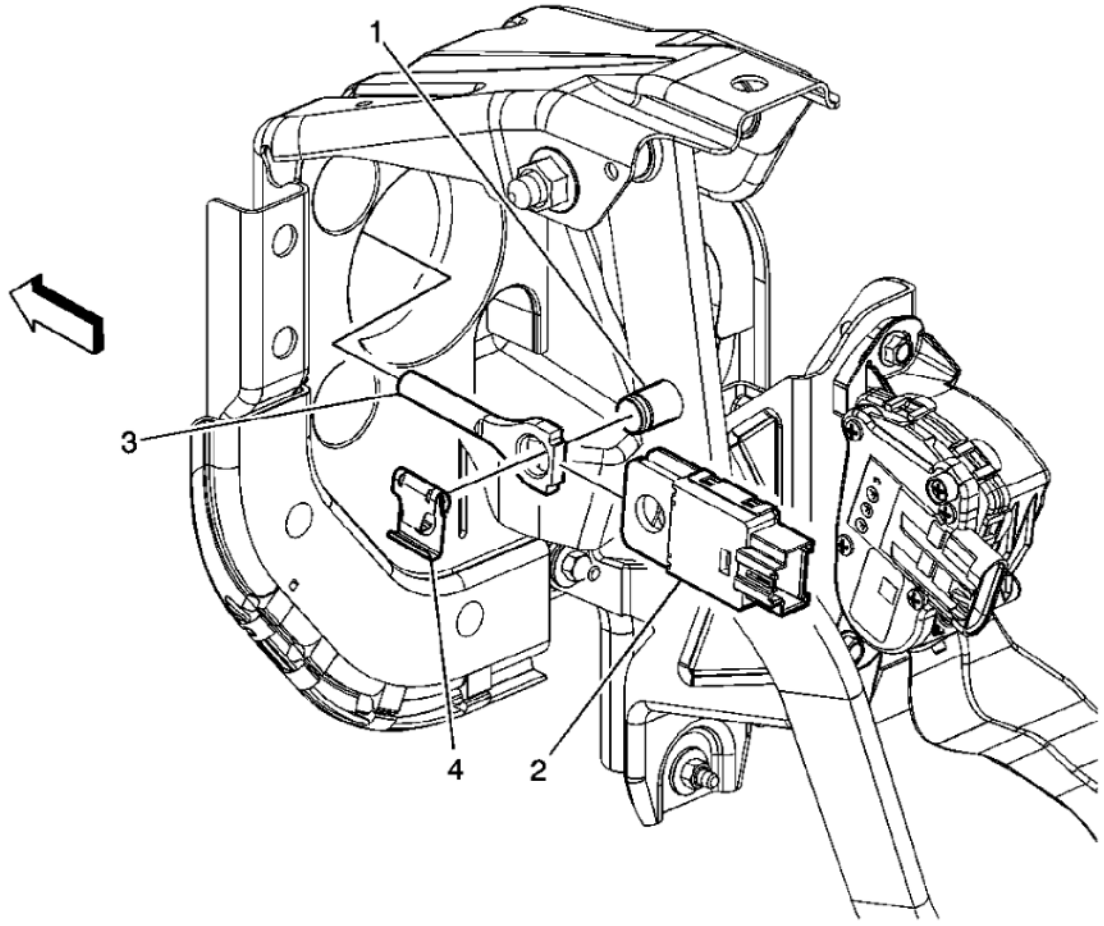


Fig. 22: Stop Lamp Switch Replacement (Non-Adjustable Pedal)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Brake Pedal Pin
2	Stop Lamp Switch Assembly **Tip:** Disconnect electrical connector.
3	Brake Booster Push Rod
4	Stop Lamp Switch Assembly Retainer

STOP LAMP SWITCH REPLACEMENT (ADJUSTABLE PEDAL)

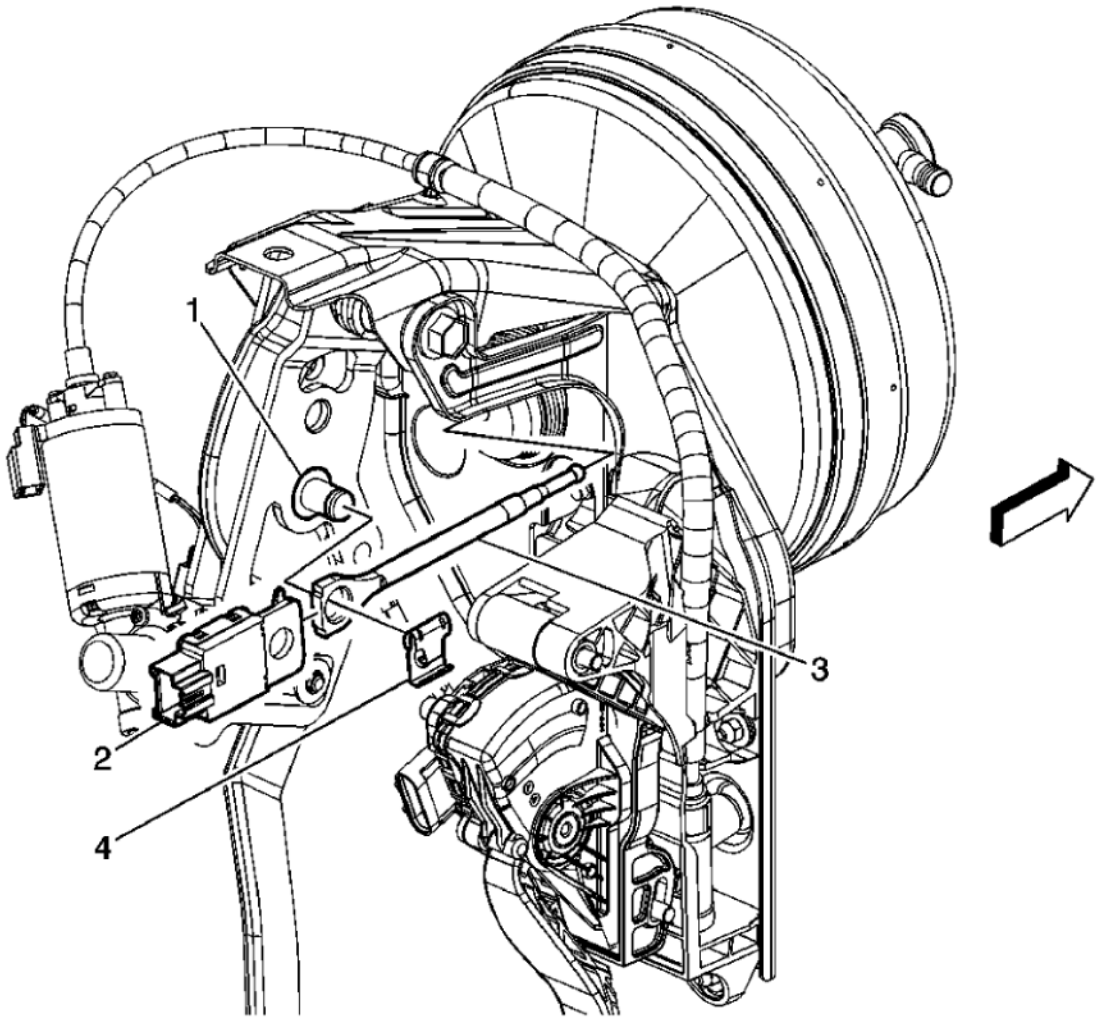


Fig. 23: Stop Lamp Switch Replacement (Adjustable Pedal)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Brake Pedal Pin
2	Stop Lamp Switch Assembly **Tip:** Disconnect electrical connector.
3	Brake Booster Push Rod
4	Stop Lamp Switch Assembly Retainer

HEADLAMP SWITCH REPLACEMENT (WITHOUT RPO SLT)

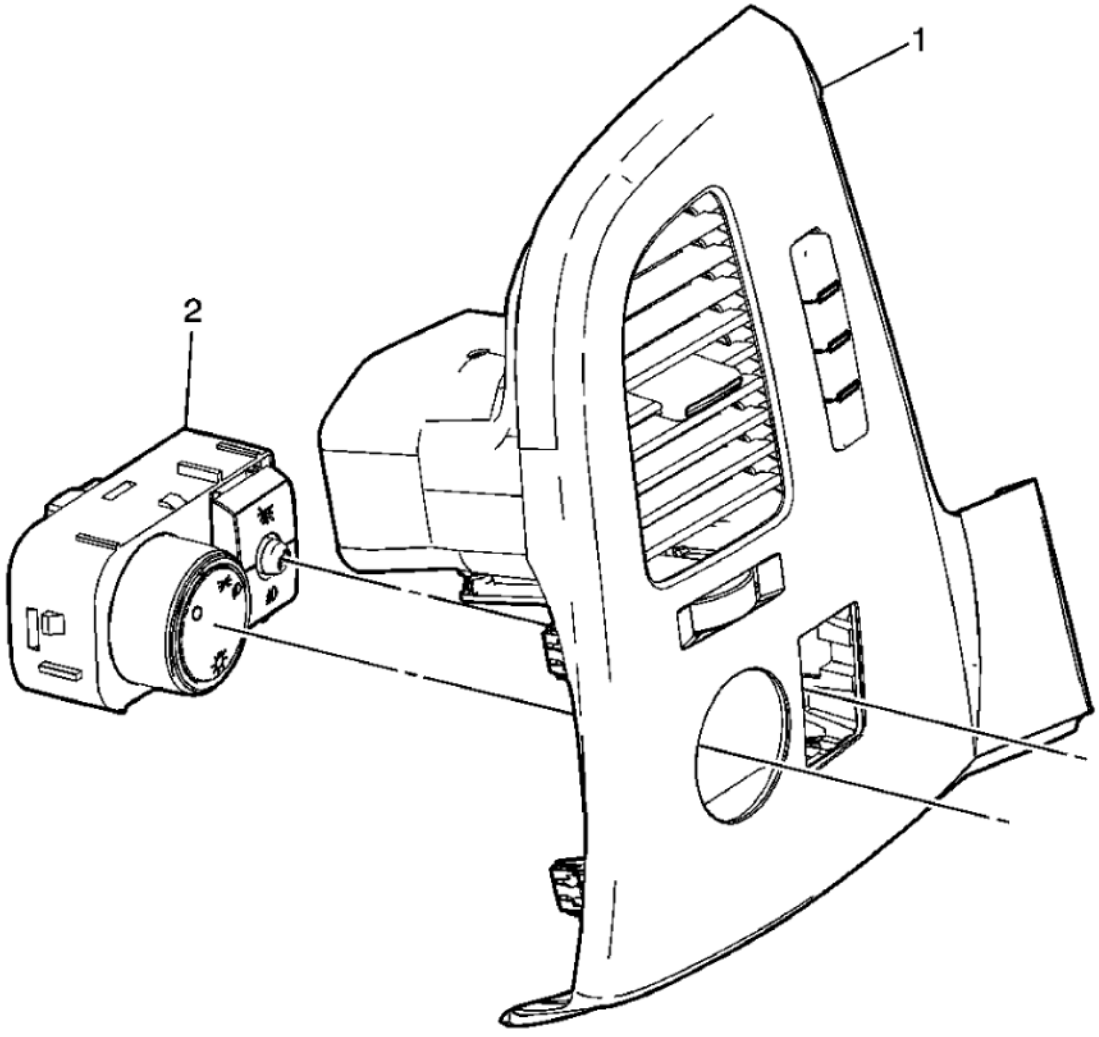


Fig. 24: View Of Switch (without RPO SLT)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Instrument Panel Trim Plate Assembly Refer to **Instrument Panel Trim Plate Replacement (Without RPO SLT)**
2	Headlamp and I/P Lamp Dimmer and Dome Lamp Switch Assembly

HEADLAMP SWITCH REPLACEMENT (WITH RPO SLT)

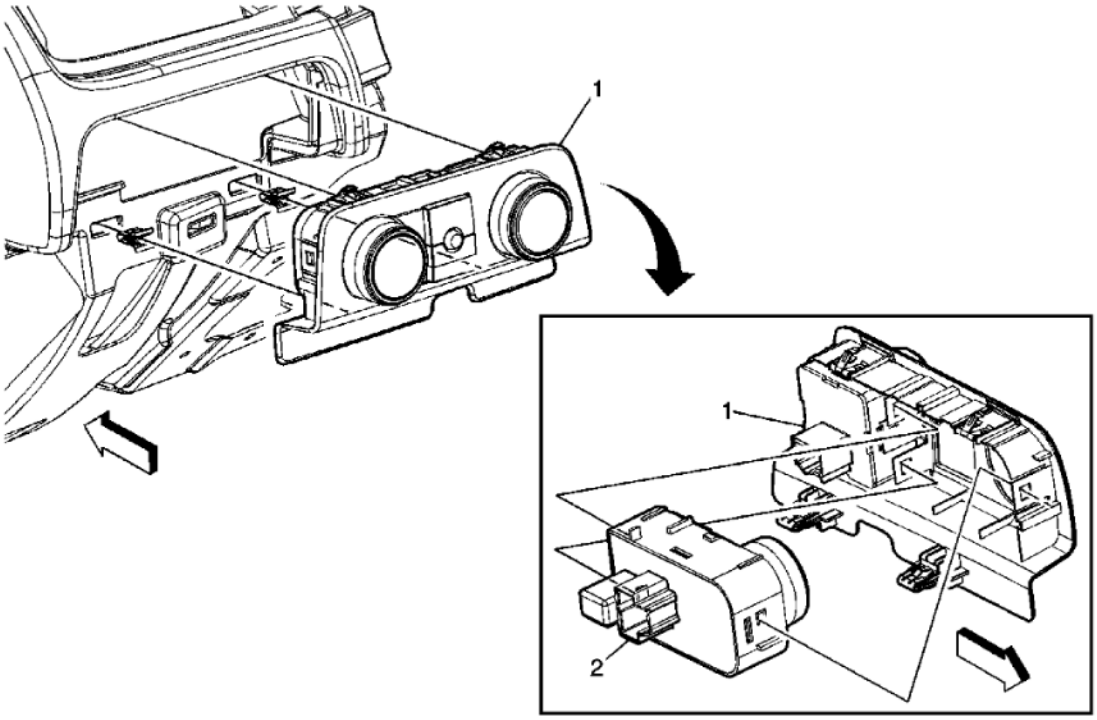


Fig. 25: Headlamp Switch Replacement (with RPO SLT)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Headlamp Switch Trim Plate Assembly Refer to **Headlamp Switch Bezel Replacement (with RPO SLT)** .
2	Headlamp and I/P Lamp Dimmer and Dome Lamp Switch Assembly

FOG LAMP SWITCH REPLACEMENT (WITH RPO SLT)

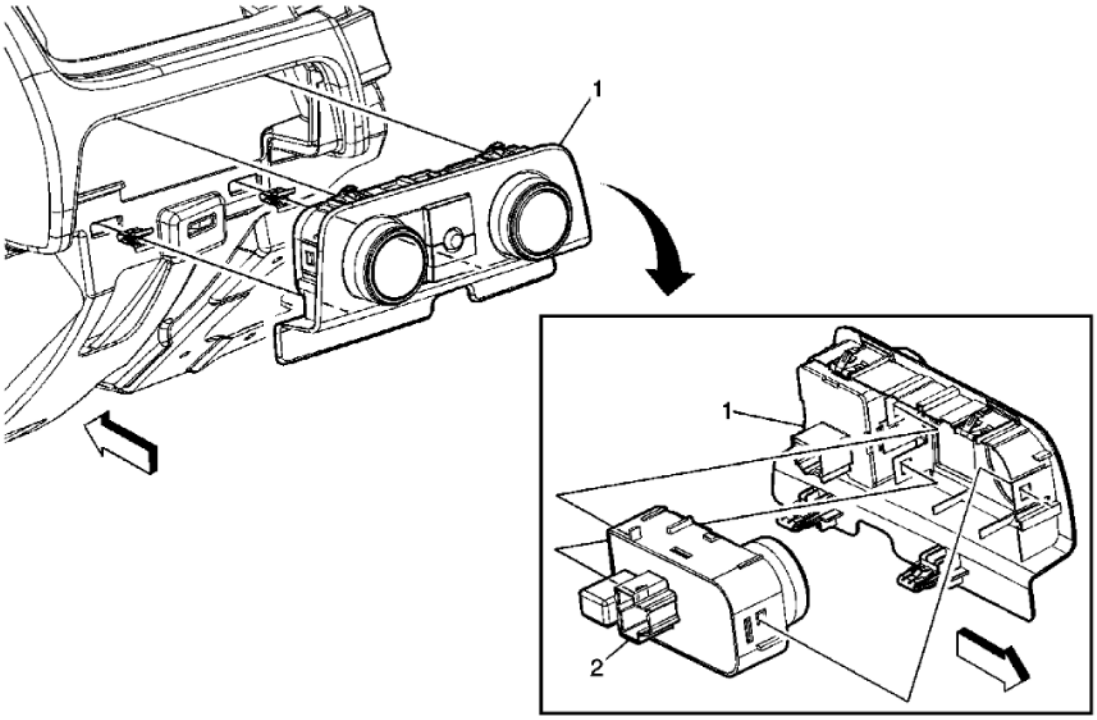


Fig. 26: Fog Lamp Switch Replacement (with RPO SLT)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Headlamp Switch Trim Plate Assembly Refer to **Headlamp Switch Bezel Replacement (with RPO SLT)** .
2	Headlamp and I/P Lamp Dimmer and Dome Lamp Switch Assembly **Tip:** Fog lamp switch is an integral part of the headlamp switch and the unit must therefore be replaced in whole.

FOG LAMP SWITCH REPLACEMENT (WITHOUT RPO SLT)

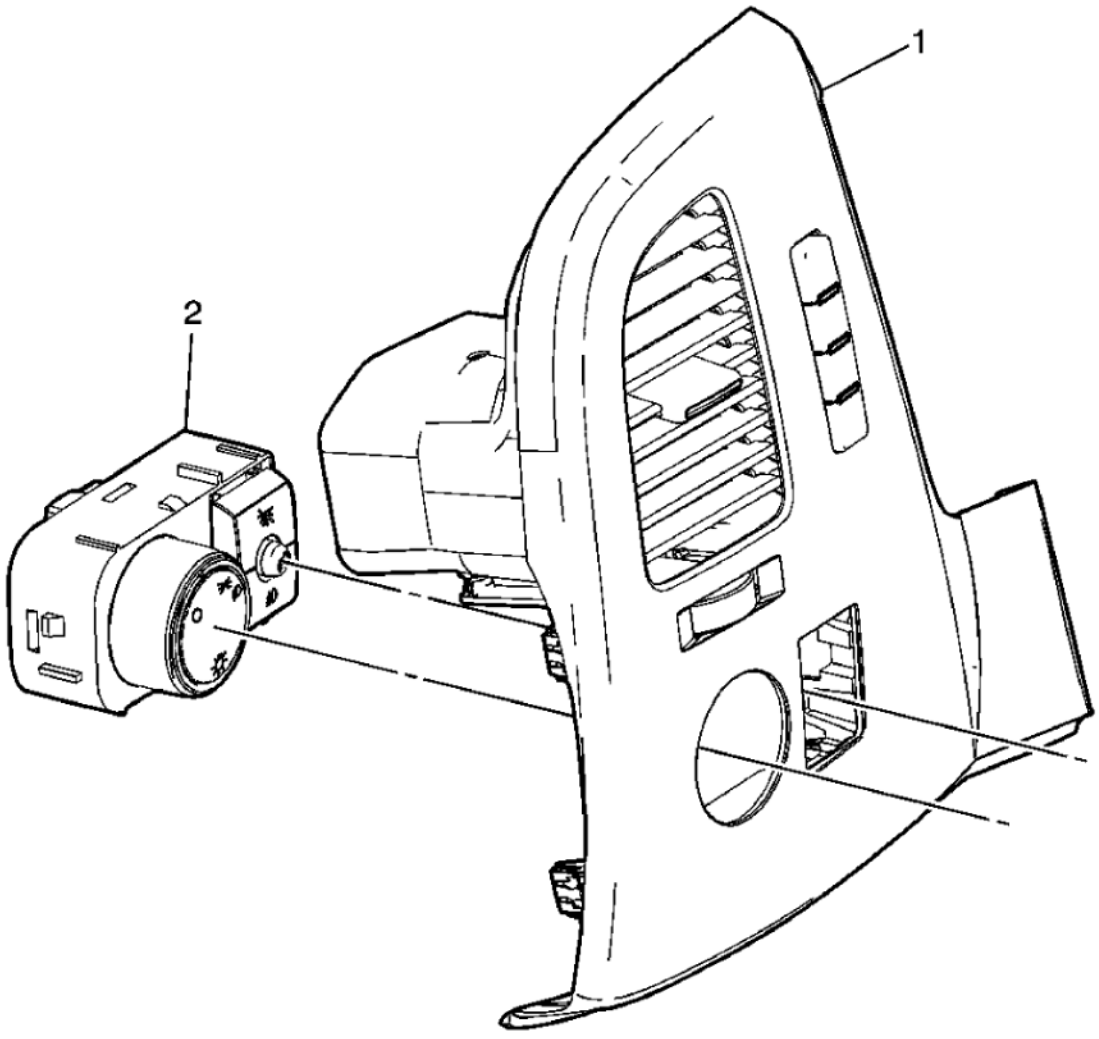


Fig. 27: View Of Switch (without RPO SLT)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Instrument Panel Trim Plate Assembly Refer to **Instrument Panel Trim Plate Replacement (Without RPO SLT)** .
2	Headlamp and I/P Lamp Dimmer and Dome Lamp Switch Assembly **Tip:** Fog lamp switch is an integral part of the headlamp switch and the unit must therefore be replaced in whole.

AMBIENT LIGHT SENSOR REPLACEMENT

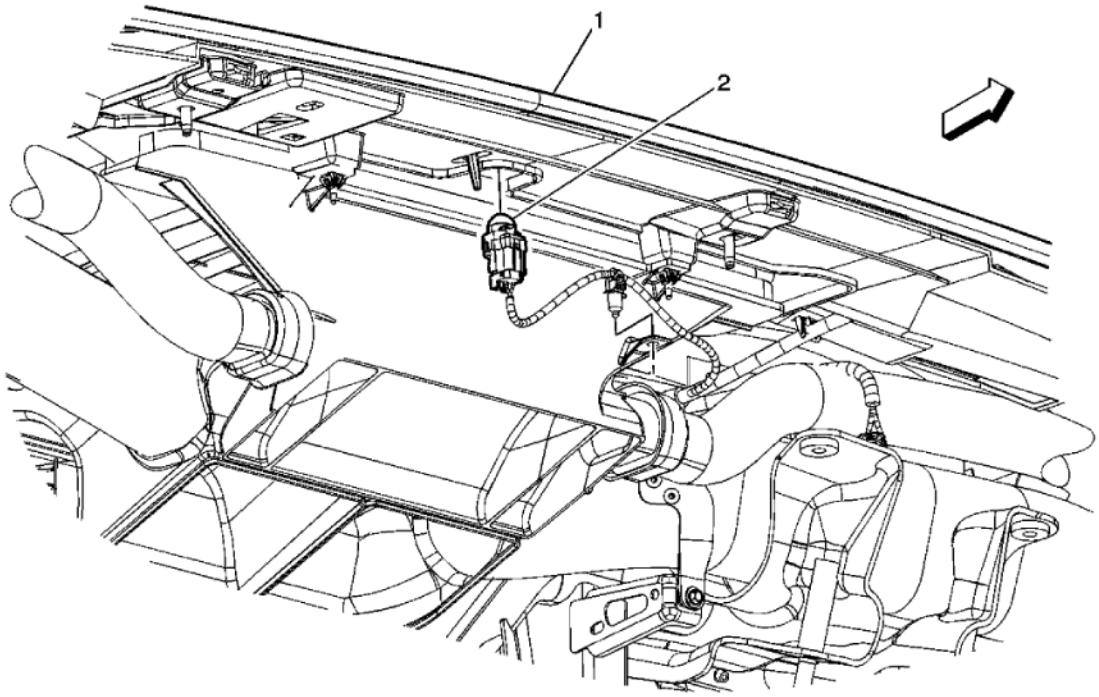


Fig. 28: Ambient Light Sensor Replacement
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Instrument Panel Trim Panel Refer to **Instrument Panel Upper Trim Panel with Windshield Defroster Nozzle Grille Replacement (without RPO SLT)** or **Instrument Panel Upper Trim Panel with Windshield Defroster Nozzle Grille Replacement (with RPO SLT)** .
2	Headlamp Auto Control Ambient Light Sensor Assembly **Tip:** 1. Twist and pull down to remove. 2. Disconnect electrical connector.

OUTSIDE REARVIEW MIRROR COURTESY LAMP REPLACEMENT

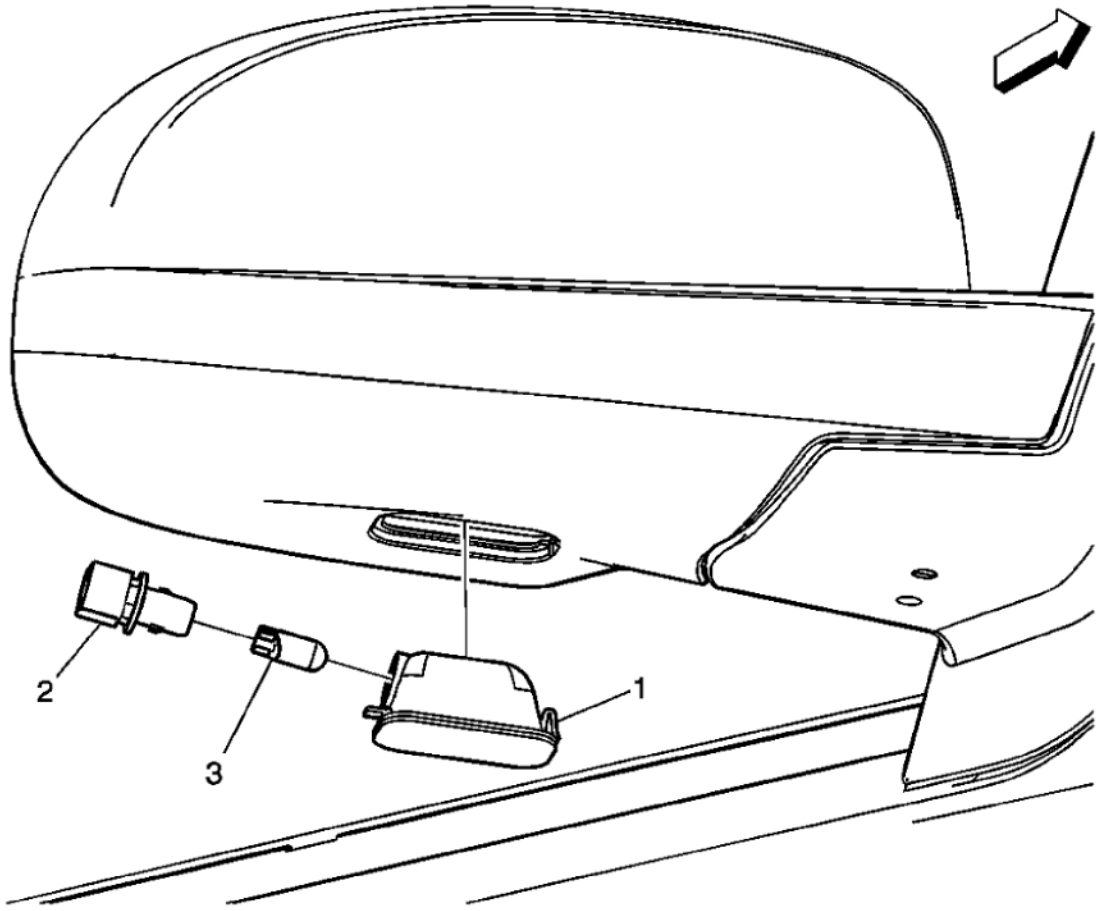


Fig. 29: Outside Rearview Mirror Courtesy Lamp Replacement
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Fastener Tightening Specifications: Refer to **Fastener Tightening Specifications**.	
1	Exterior Courtesy Lamp Assembly **Tip:** 1. Use a flat-bladed tool to pry off assembly starting at end closest to door. Tilt assembly end and pull down to release. 2. Disconnect electrical connector.
2	Exterior Courtesy Lamp Socket **Tip:** Twist and pull to release.
3	Exterior Courtesy Lamp Bulb

DOME LAMP REPLACEMENT

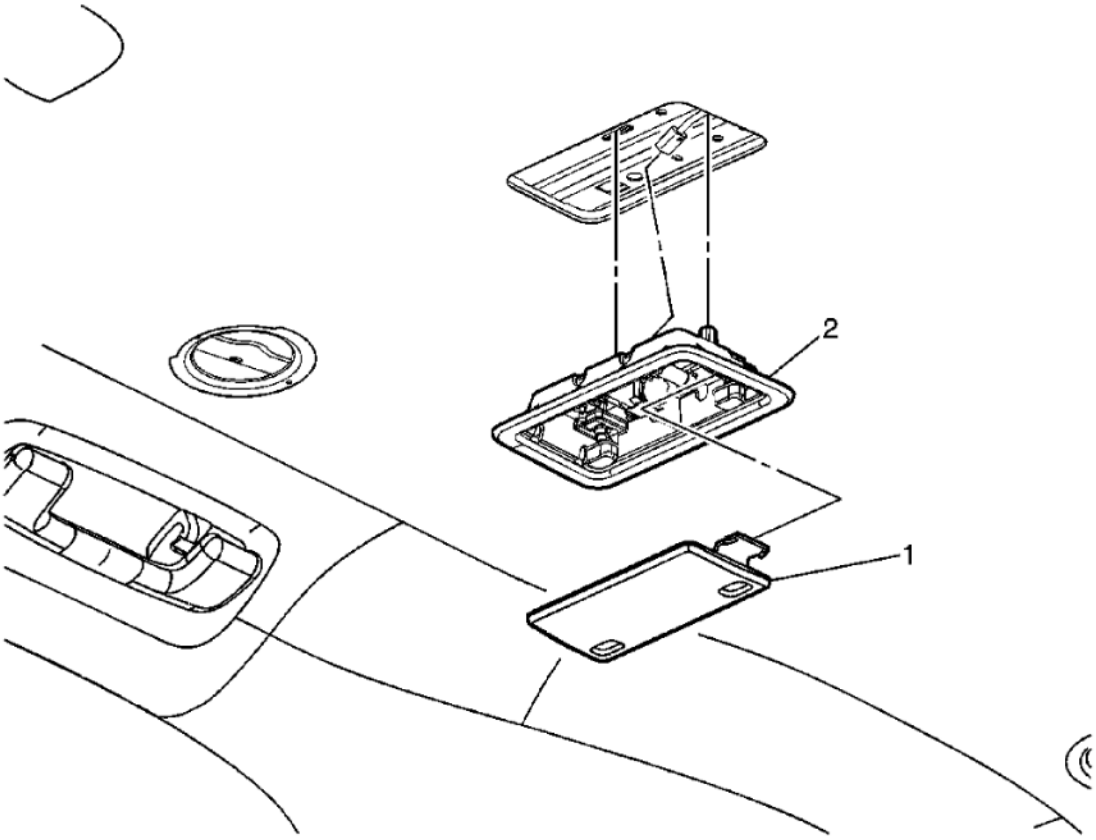


Fig. 30: Dome Lamp Replacement
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Dome Lamp Lens **Tip:** Using a flat-bladed tool pry down on right side of lens to avoid damaging tab.
2	Dome Lamp Housing **Tip:** Disconnect electrical connector.

HEADLAMP REPLACEMENT (GMC HD)

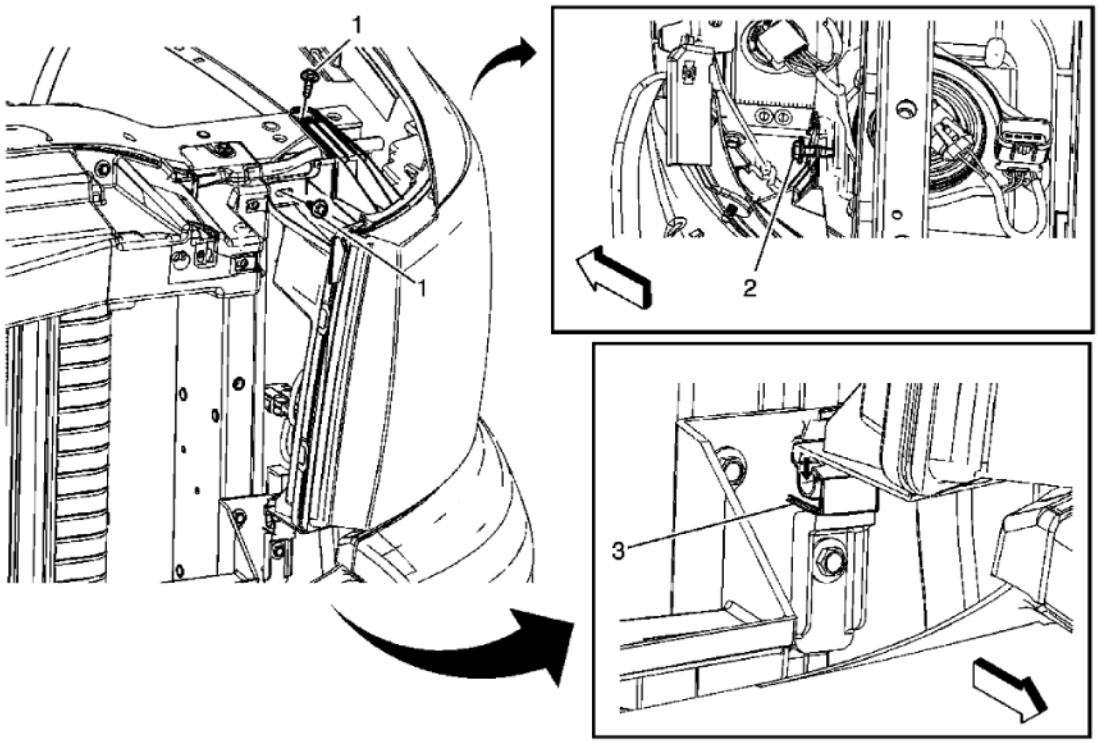


Fig. 31: Headlamp Replacement (GMC HD)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure 1. Remove the front bumper fascia trim cap. Refer to **Front Bumper Fascia Trim Cap Replacement (GMC)** . 2. Loosen only, do not remove, the lower outside hidden headlamp bolt (2). 3. Pull the lamp assembly slightly forward to access the electrical connection. 4. Disconnect the forward lamp harness main electrical connector from the headlamp harness.	
1	Headlamp Screws (Qty: 2) **NOTE:** **Refer to Fastener Notice .** **Tighten:** Tighten the screws to 6 N.m (53 lb in)
	Headlamp Screw (Hidden)

2	**Tighten:** Tighten the screws to 6 N.m (53 lb in)
3	Headlamp Housing Support **Tip:** Depress the housing support tab with a flat-bladed tool downward in order to release the headlamp assembly from the support.

HEADLAMP REPLACEMENT (CHEVROLET)

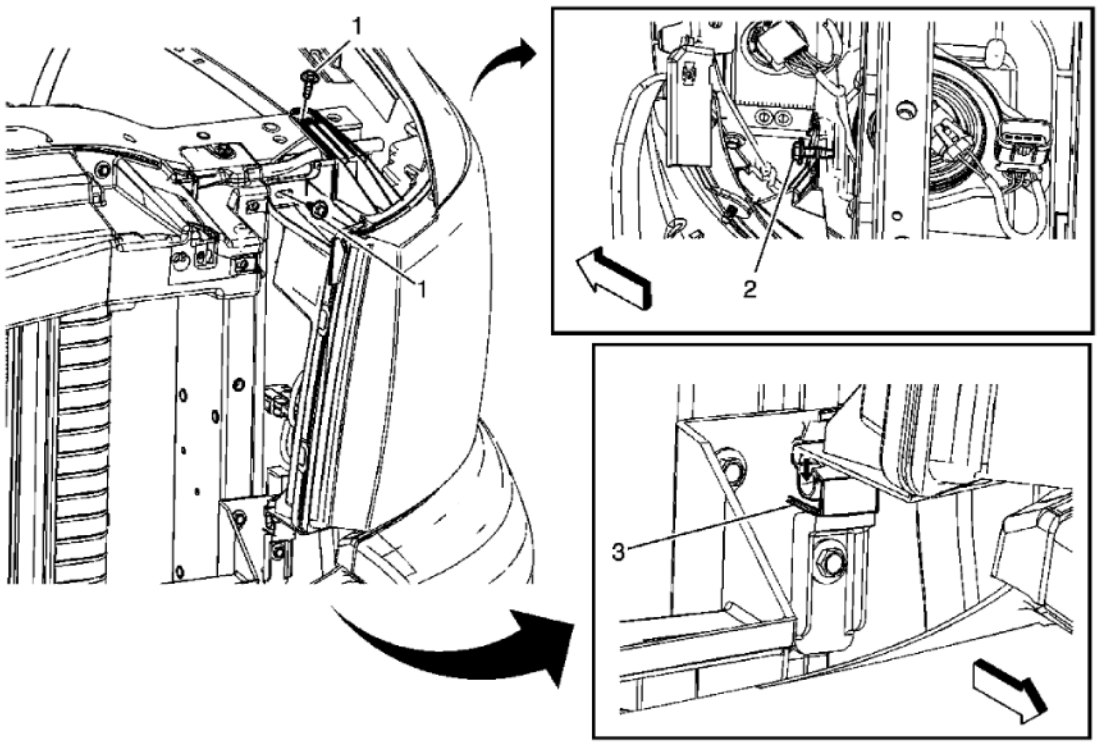


Fig. 32: Headlamp Replacement (Chevrolet)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure 1. Remove the upper radiator grille. Refer to **Radiator Grille Replacement (Chevrolet)** or **Radiator Grille Replacement (GMC)** . 2. Behind the headlamp at the top of the front bumper access the lower inside hidden headlamp bolt. 3. Loosen the bolt only, do not remove, the lower outside hidden headlamp bolt.	
	Headlamp Screws (Qty: 2)

1	**NOTE:** **Refer to Fastener Notice .** **Tighten:** Tighten the screws to 6 N.m (53 lb in)
2	Headlamp Screw (Hidden) **Tighten:** Tighten the screws to 6 N.m (53 lb in)
3	Headlamp Housing Support **Procedure** 1. Apply masking tape to the front bumper end caps to protect the painted surface. 2. For the right side lamp assembly only, disengage the upper retainer for the radiator air baffle. 3. Release the headlamp from the support tab, rotate the lamp assembly towards the center of the vehicle. 4. Disengage the headlamp electrical connector from the forward lamp harness.

HEADLAMP BULB REPLACEMENT (GMC)

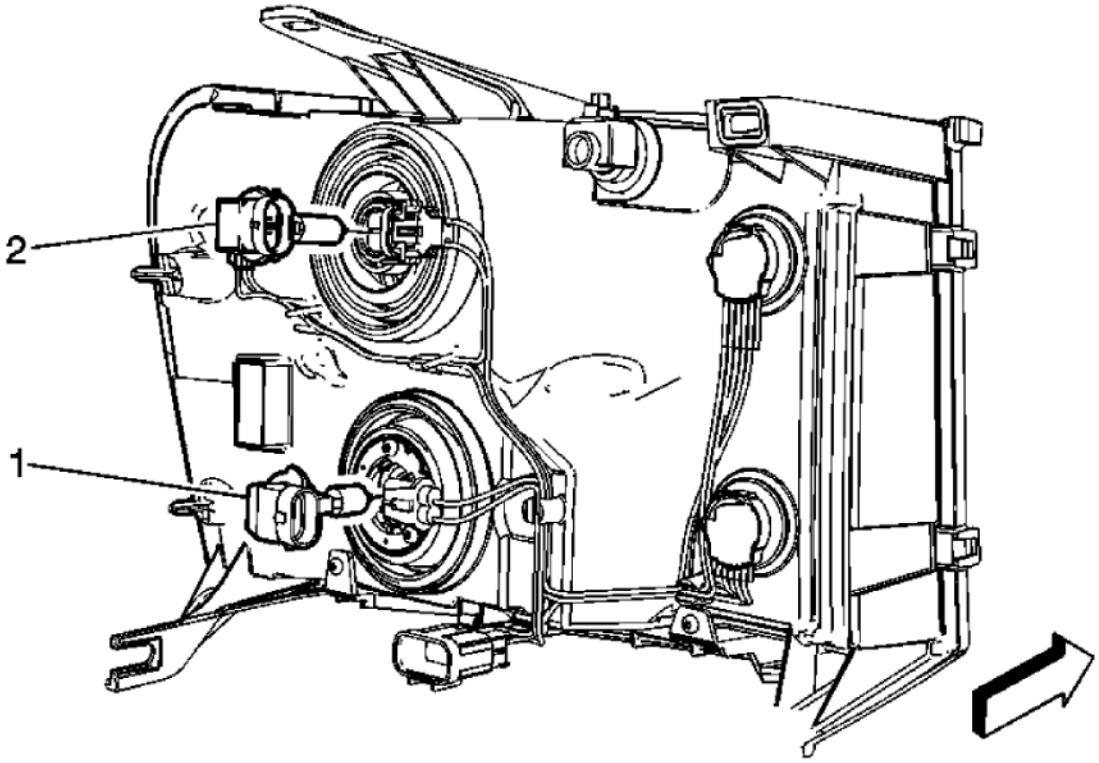


Fig. 33: Headlamp Bulb Replacement (GMC)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Remove either the LF or RF headlamp assembly. Refer to **Headlamp Replacement (GMC HD)** or **Headlamp Replacement (Chevrolet)**.	
1	Headlamp Bulb (Hi) **CAUTION:** **Refer to Halogen Bulb Caution .** **Tip:** Rotate the bulb socket a quarter turn counterclockwise and remove the bulb from the headlamp.
2	Headlamp Bulb (Lo) **Tip:** Rotate the bulb socket a quarter turn counterclockwise and remove the bulb from the headlamp.

HEADLAMP BULB REPLACEMENT (CHEVROLET)

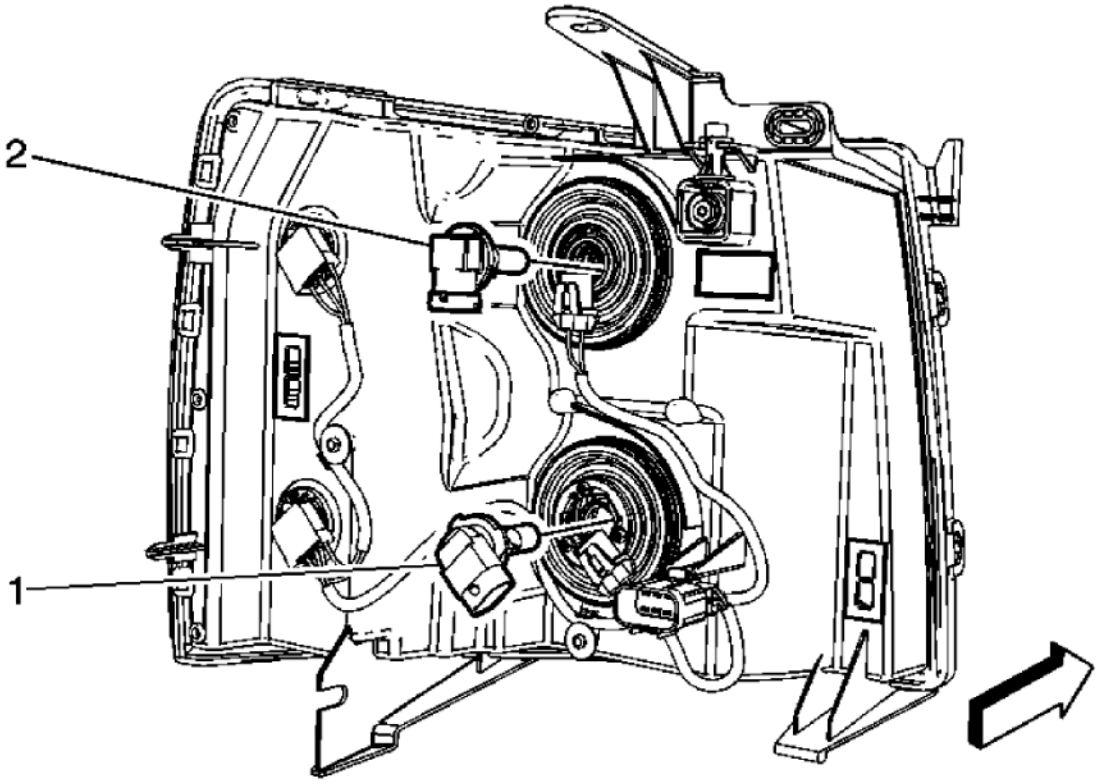


Fig. 34: Headlamp Bulb Replacement (Chevrolet)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Remove either the LF or RF headlamp Assembly. Refer to **Headlamp Replacement (GMC HD)** or **Headlamp Replacement (Chevrolet)**.	
1	Headlamp Bulb (Hi) **CAUTION:** **Refer to Halogen Bulb Caution .** **Tip:** Disconnect the headlamp bulb electrical connector and turn the bulb assembly a quarter counterclockwise to remove.
2	Headlamp Bulb (Lo) **Tip:** Disconnect the headlamp bulb electrical connector and turn the bulb assembly a quarter counterclockwise to remove.

HEADLAMP AIMING (CHEVROLET/GMC)

Headlamp aiming is done with the low beam lamps. The high beam lamps will be correctly aimed if the low beam lamps are aimed properly.

Screen Method for Headlamp Aiming (Visual Aim)

The screen method requires an area set up specifically for headlamp aim.

The area should consist of a level surface large enough to allow for a vehicle and an additional 7.62 m (25 ft) as measured from the face of the headlamps to the aiming screen.

The screen should be a wall or other flat surface at least 1.52 m (5 ft) high by 3.66 m (12 ft) wide with a matte white surface well shaded from extraneous light, and 90 degrees to the floor. The screen should be provided with a permanent vertical reference line 0.61 m (2 ft) from the left edge of the screen, 2 laterally adjustable vertical tapes, and one vertically adjustable horizontal tape.

After the aiming screen has been set up and located, paint or tape a reference line on the floor 15.24 m (50 ft) from the vertical reference line on the screen. This line should be perpendicular to the aiming screen and a mark placed at 7.62 m (25 ft) from the screen.

Headlamp Aiming Procedure

1. Align the left tires of the vehicle with the reference line extending from the screen with the headlamps aligned with the reference line.
2. Remove any snow, ice or mud from the vehicle.
3. The vehicle should be fully assembled and all other work stopped while the headlamp aiming is being done.
4. The vehicle should contain cargo or be loaded to represent normal vehicle use.
5. Tires should be properly inflated.
6. Rock the vehicle to stabilize the suspension.
7. Measure from the floor to the center of the lamp bulb on the vehicle. Some lamps have an aim dot marked on the lens.
8. At the screen, measure from the floor and place the horizontal tape at the measured distance.

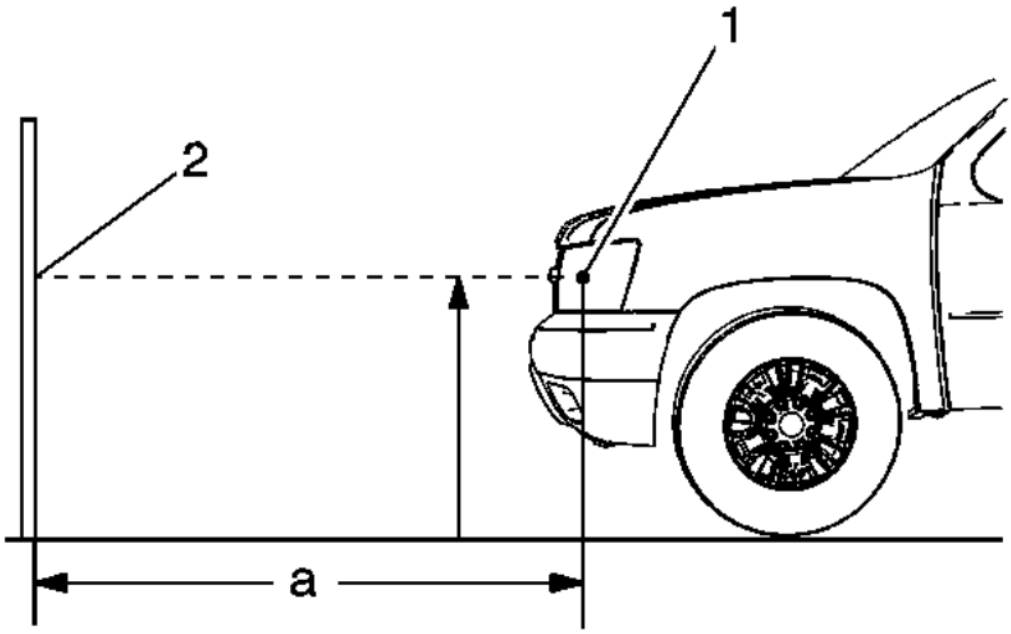


Fig. 35: View Of Left Headlamp Bulb Centerline & Measured Distance
Courtesy of GENERAL MOTORS CORP.

9. Measure from the reference line on the floor to the left headlamp bulb centerline (1).
10. At the screen, measure from the reference line and place the vertical tape at the measured distance (2).
11. Measure from the reference line on the floor to the right headlamp bulb centerline.
12. At the screen, measure from the reference line and place the vertical tape at the measured distance.
13. Turn the headlamps ON.
14. Block the light from projecting onto the screen from the passenger side headlamp. This will allow the cutoff in the beam pattern from the drivers side to be more pronounced for easier aim verification.

IMPORTANT: DO NOT cover the headlamp, this may cause excessive heat build up.

15. On this vehicle you will be verifying the aim of the vertical cutoff on the right side of the

lamp vertical bulb centerline as it is projected onto the aim board.

16. If the location of the cutoff projected onto the board differs from figure 4 then an adjustment to the beam pattern location is necessary.

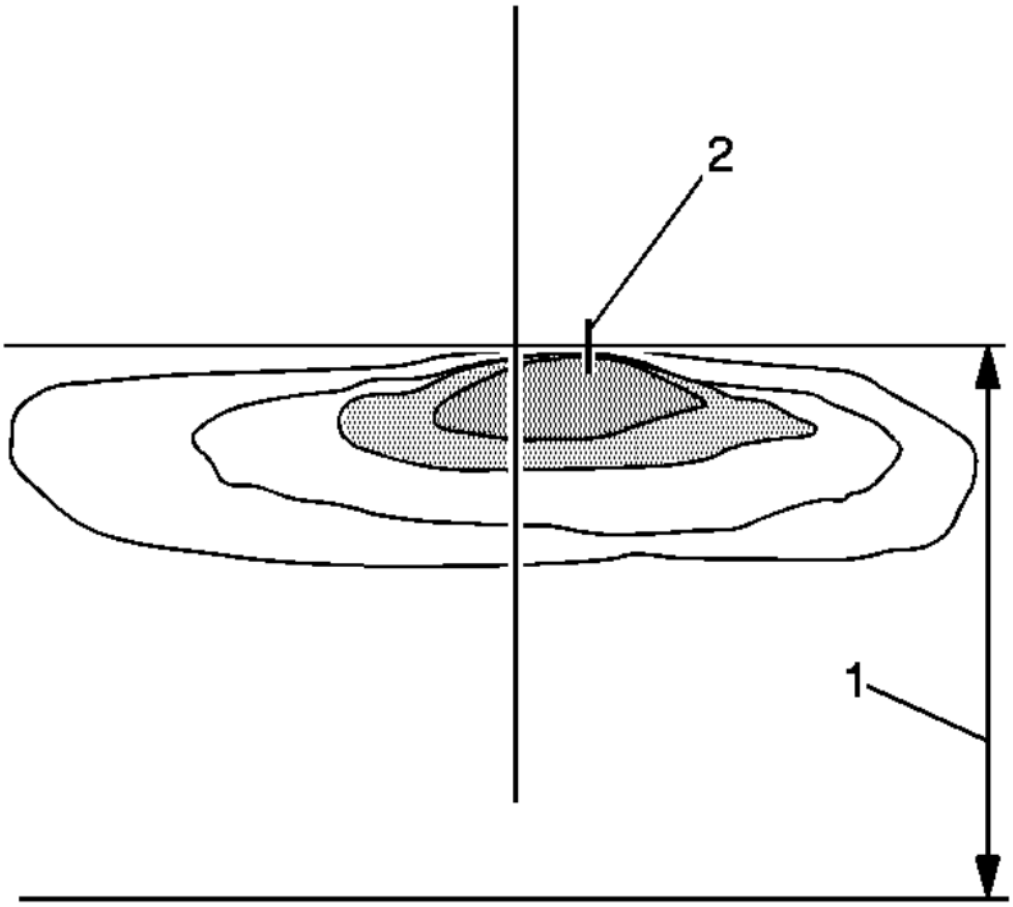


Fig. 36: Measuring Horizontal & vertical Axis
Courtesy of GENERAL MOTORS CORP.

17. Adjust the vertical headlamp adjustment screw until the Right Gradient Line (Cutoff Line) is set at the Horizontal Axis within +/- 2.0 inches (2) measured at 7.62 m (25 ft).
18. Verify proper aim location.
19. Repeat the aiming procedure for the passengers side headlamp while blocking the light from projecting onto the screen from the drivers side headlamp.

FRONT FOG LAMP REPLACEMENT (CHEVROLET)

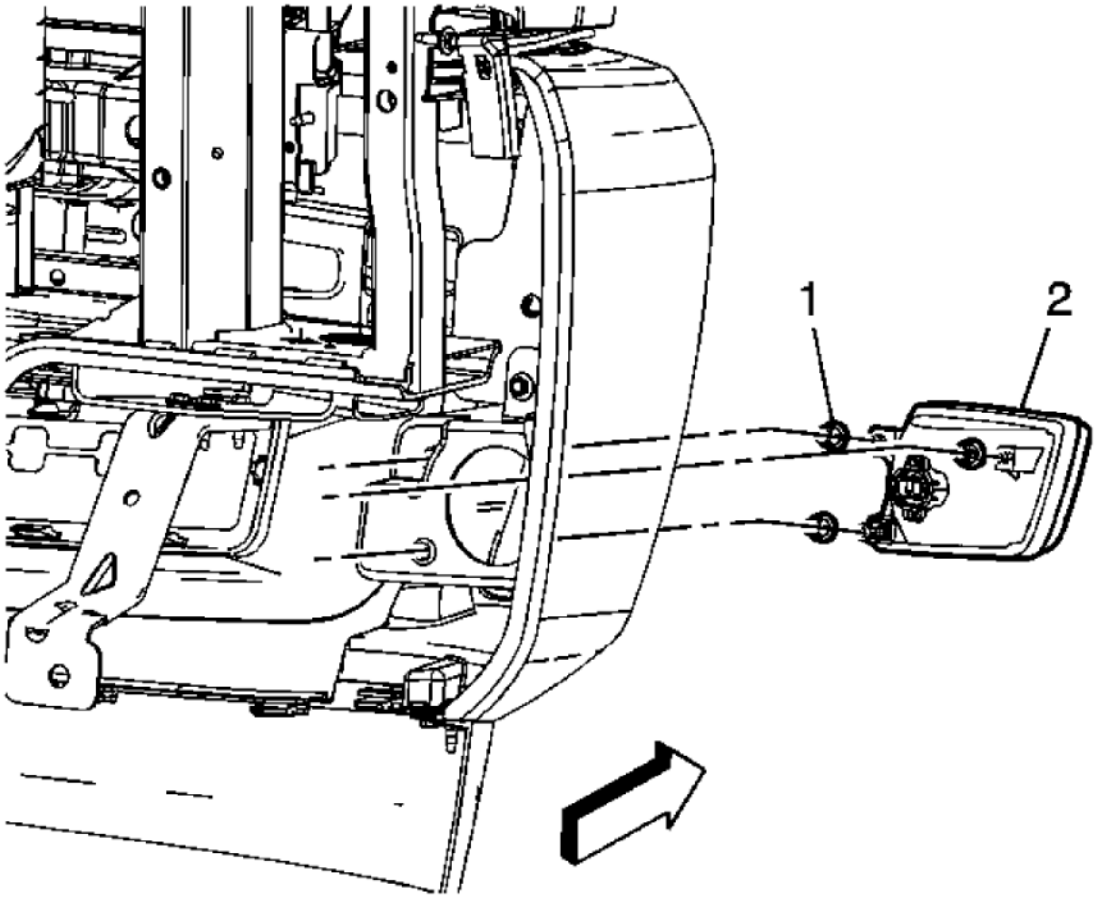


Fig. 37: Front Fog Lamp Replacement (Chevrolet)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name

Preliminary Procedures

1. Remove either the LF or RF wheelhouse liners. Refer to **Front Wheelhouse Liner Replacement - Left Side (Chevrolet)** or **Front Wheelhouse Liner Replacement - Left Side (GMC)** for the LF or **Front Wheelhouse Liner Replacement - Right Side (GMC)** or **Front Wheelhouse Liner Replacement - Right Side (Chevrolet)** for the RF wheelhouse liner.
2. Disconnect the electrical connector.
3. From inside the from bumper fascia, using a blunt instrument, pinch the retainers and push outward on the 2 upper mounting studs for the fog lamp.

4. Using the same blunt instrument, pinch the retainer and push outward on the lower adjustment screw for the fog lamp.
5. Aim the fog lamps after the fog lamp has been replaced. Refer to **Fog Lamp Aiming**.

1	Fog Lamp Retainers (Qty: 3) **Procedure** 1. Install the retainers back onto the fog lamp upper mounting studs. 2. Install the retainer onto the fog lamp adjusting screw. 3. Firmly push the lamp back into the lower bumper fascia until all three retainers are engaged to the fascia.
2	Fog Lamp Assembly **CAUTION:** **Refer to Halogen Bulb Caution .** **Tip:** Transfer the bulb assembly as needed.

FRONT FOG LAMP REPLACEMENT (GMC)

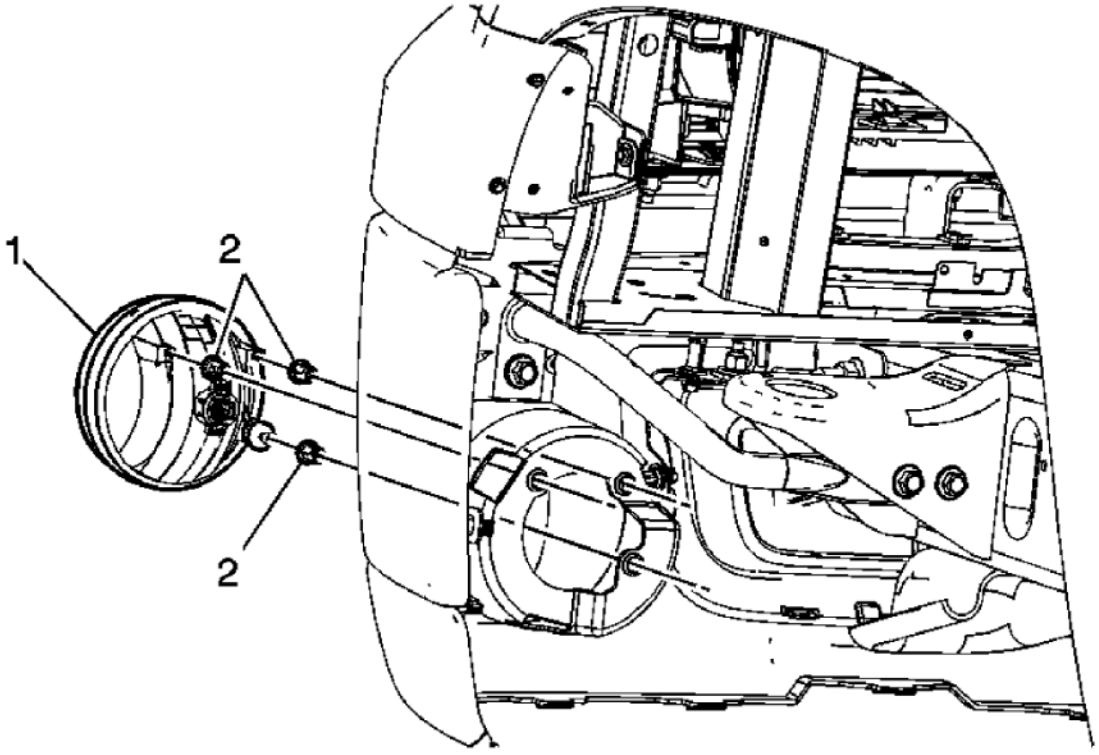


Fig. 38: Front Fog Lamp Replacement (GMC)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedures 1. Remove either the LF or RF wheelhouse liners. Refer to **Front Wheelhouse Liner Replacement - Left Side (Chevrolet)** or **Front Wheelhouse Liner Replacement - Left Side (GMC)** for the LF or **Front Wheelhouse Liner Replacement - Right Side (GMC)** or **Front Wheelhouse Liner Replacement - Right Side (Chevrolet)** for the RF wheelhouse liner. 2. Disconnect the electrical connector. 3. From inside the from bumper fascia, using a blunt instrument, pinch the retainers and push outward on the 2 upper mounting studs for the fog lamp. 4. Using the same blunt instrument, pinch the retainer and push outward on the lower adjustment screw for the fog lamp. 5. Aim the fog lamps after the fog lamp has been replaced. Refer to **Fog Lamp Aiming**.	
	Fog Lamp Assembly

1	**CAUTION:** **Refer to Halogen Bulb Caution .** **Tip:** Transfer the bulb assembly as needed.
2	Fog Lamp Retainers (Qty: 3) **Procedure** 1. Install the retainers back onto the fog lamp upper mounting studs. 2. Install the retainer onto the fog lamp adjusting screw. 3. Firmly push the lamp back into the lower bumper fascia until all three retainers are engaged to the fascia.

FRONT FOG LAMP BULB REPLACEMENT (GMC)

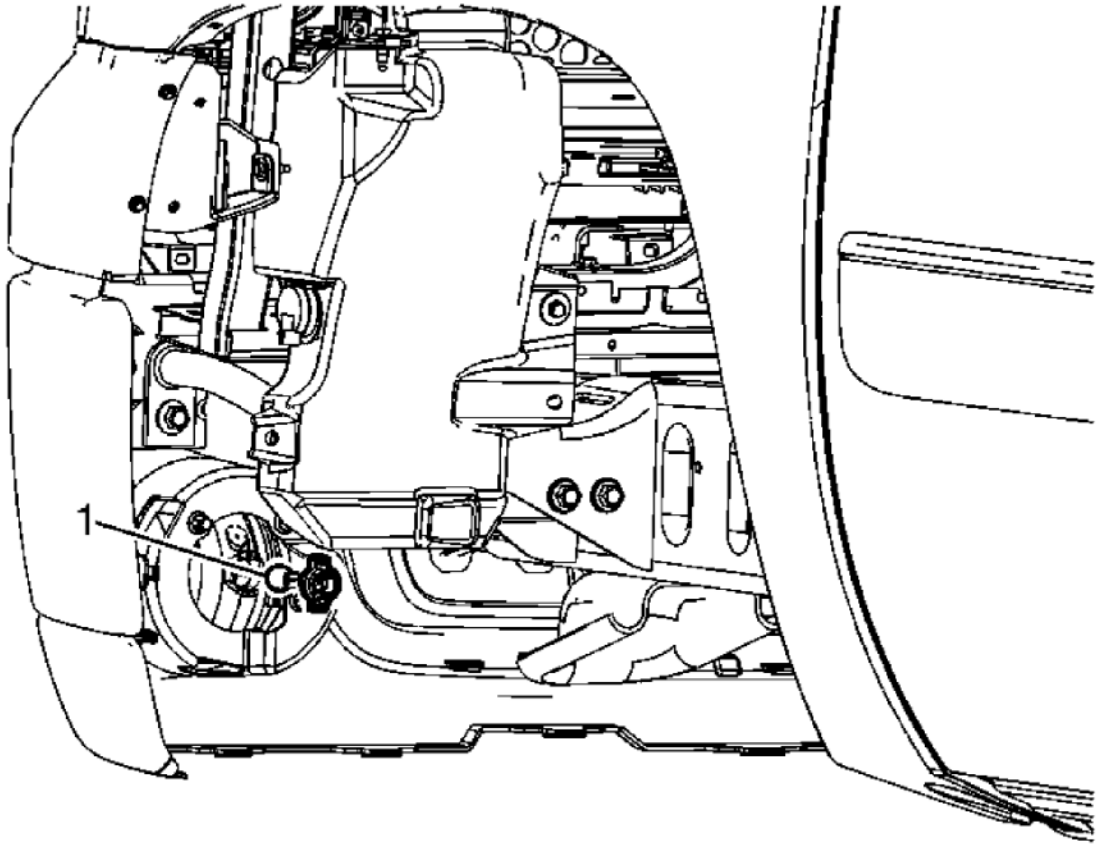


Fig. 39: Front Fog Lamp Bulb Replacement (GMC)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedures 1. Reach under the front air deflector in order to access the bulb socket. 2. Disconnect the electrical connector.	
1	Fog Lamp Bulb **CAUTION:** **Refer to Halogen Bulb Caution .** **Tip:** Squeeze the tabs and rotate the bulb socket in order to release the bulb socket from the fog lamp assembly.

FRONT FOG LAMP BULB REPLACEMENT (CHEVROLET)

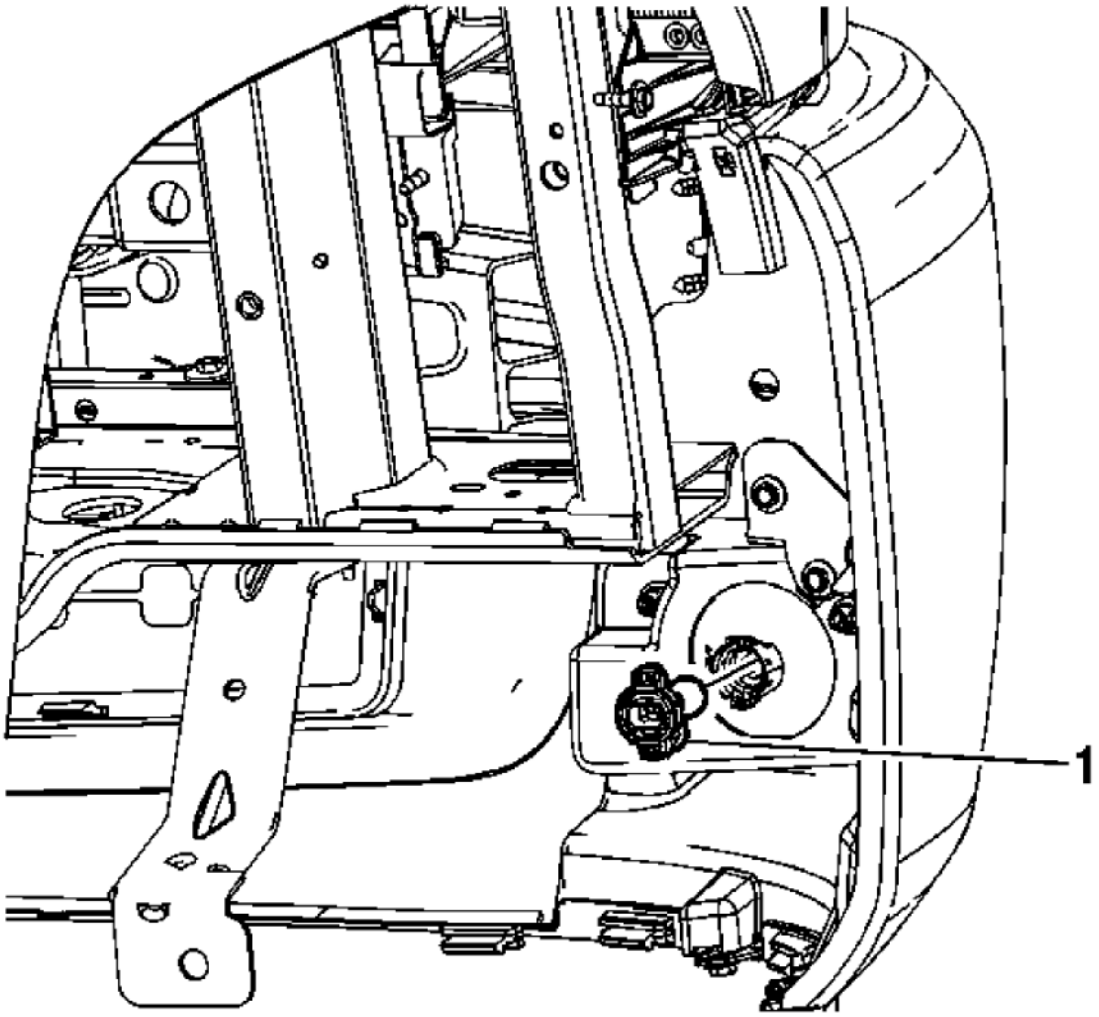


Fig. 40: Front Fog Lamp Bulb Replacement (Chevrolet)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedures 1. Reach under the front air deflector in order to access the fog lamp bulb socket. 2. Disconnect the electrical connector.	
1	Fog Lamp Bulb **CAUTION:** **Refer to Halogen Bulb Caution .**

	Tip: Squeeze the tabs and rotate in order to release the bulb socket from the fog lamp assembly.

FOG LAMP AIMING

The front fog lamps must be aimed for proper illumination of the road. The front fog lamp aim should be checked when a new front fog lamp assembly is installed, or if service or repairs in the front end area may have disturbed the front fog lamp mounting.

Preparation Procedure

IMPORTANT: Horizontal aim is not adjustable on this vehicle. Vertical aim is adjusted by an adjusting screw located on the bottom rear of the fog lamp. Prior to aiming the fog lamps, perform the following steps:

1. Completely assemble all of the components on the vehicle.
2. Park the vehicle on a level surface.
3. Stop all unnecessary operations or work on the vehicle that affect the vehicle trim.
4. Close the doors and ensure that the vehicle has no load other than the driver.
5. Stabilize the suspension by rocking the vehicle sideways.
6. Ensure that the fuel level is 1/2 full.
7. Ensure that the tires are inflated to the proper pressure.
8. Ensure that the driver or a similar weight, approximately 75 kg (165 lb), is in the vehicle driver seat.

Aiming Procedure

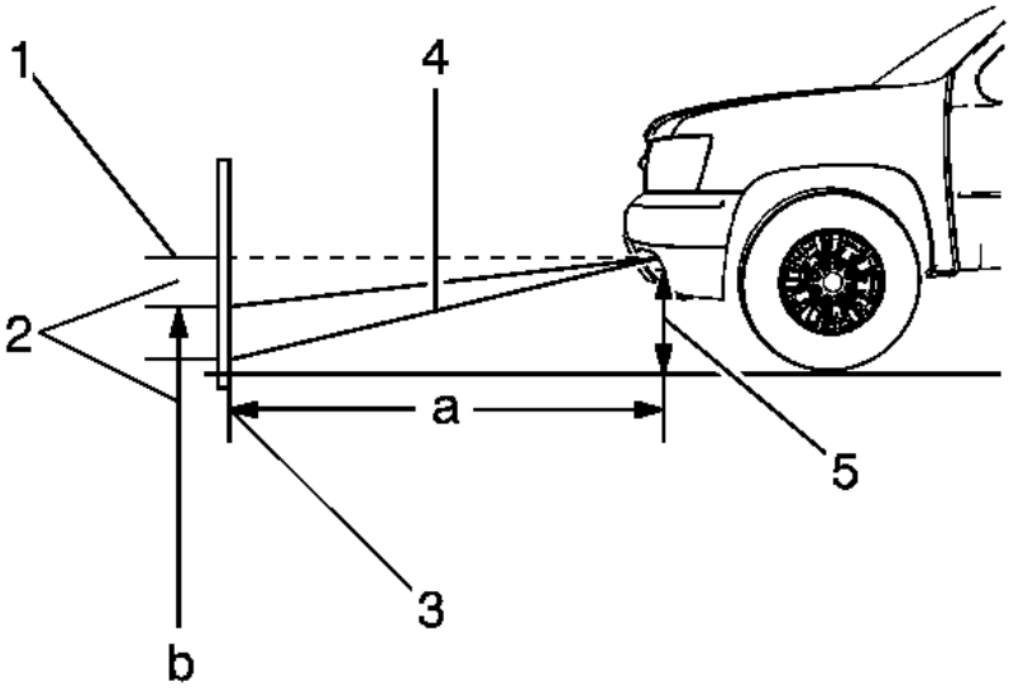


Fig. 41: Fog Lamp Aiming Procedure
Courtesy of GENERAL MOTORS CORP.

1. Park the vehicle on a level surface 7.6 m (25 ft) (3) away from a wall or other flat surface.
2. Measure the distance from the floor to the center of the fog lamp (5).
3. Using this measurement, mark the horizontal centerline of the fog lamp (1) on the flat surface directly in front of the vehicle.
4. Remove the front portion of the front wheel liner in order to access the adjusting screw.
5. Turn ON the fog lamps.
6. Reach inside of the front portion of the fender liner in order to access the fog lamp vertical adjustment screw on the bottom of the fog lamp.
7. Adjust the fog lamp so that the top edge of the fog lamp beam pattern is 100 mm (4 in) below the horizontal centerline (2).
8. Turn OFF the fog lamps.
9. Secure the forward edge of the front fender liner.

FRONT SIDE MARKER LAMP BULB REPLACEMENT (GMC)

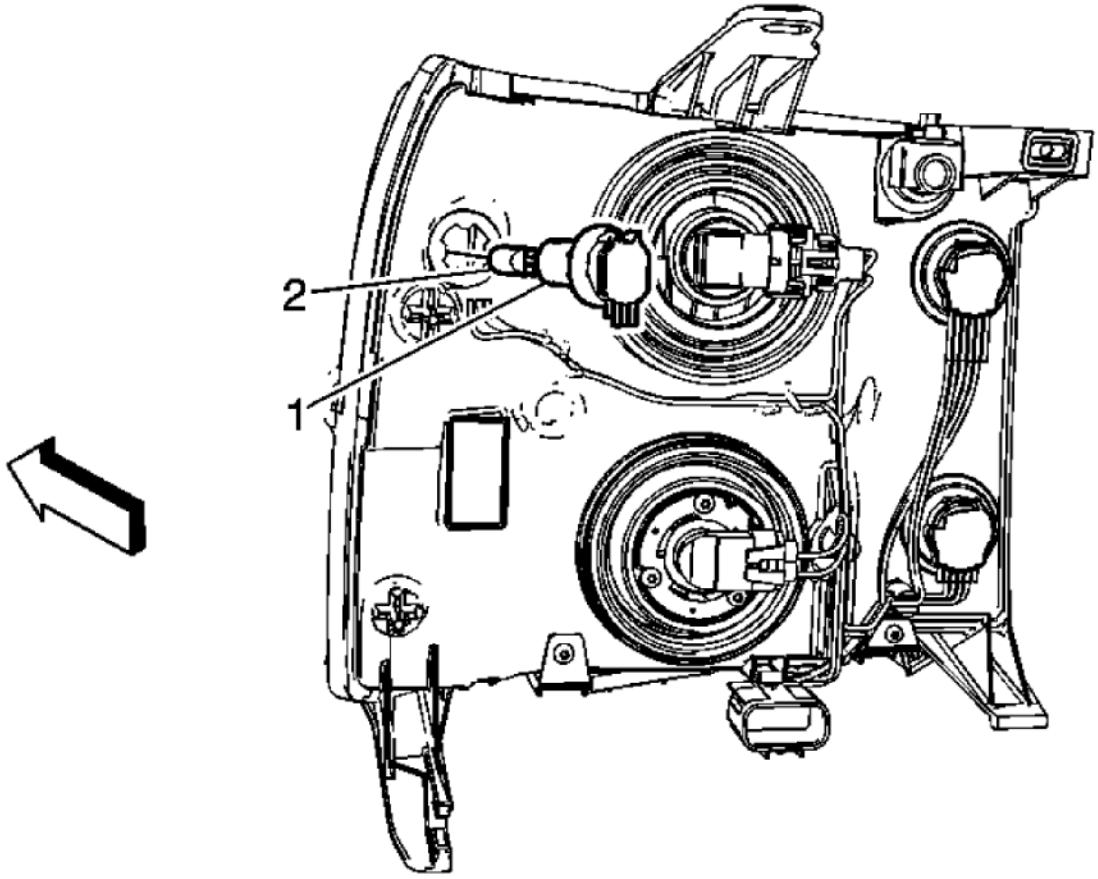


Fig. 42: Front Side Marker Lamp Bulb Replacement (GMC)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Remove either the LF or RF headlamp assembly. Refer to **Headlamp Replacement (GMC HD)** or **Headlamp Replacement (Chevrolet)**.	
1	Lamp Harness Socket **Tip:** Rotate the marker lamp socket a quarter turn counterclockwise and remove the lamp socket from the headlamp assembly.
2	Front Side Marker Lamp Bulb **Tip:** Pull the front side marker lamp bulb straight from the lamp socket.

ROOF MARKER LAMP REPLACEMENT (U01)

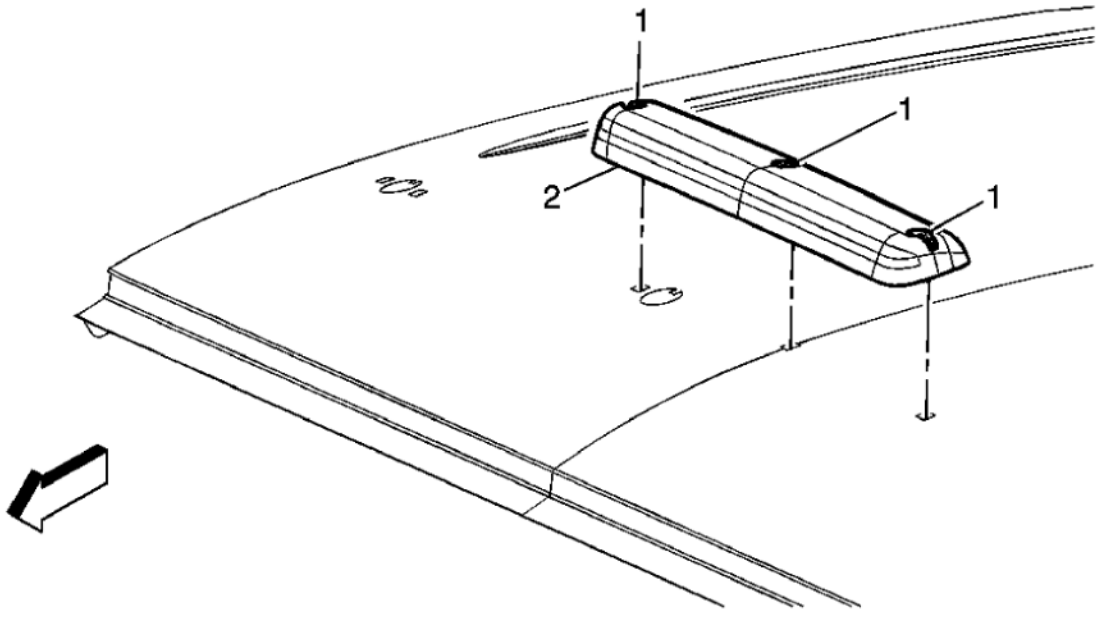


Fig. 43: Roof Marker Lamp Replacement (U01)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Screw (Qty: 3) **NOTE:** Refer to Fastener Notice . **Tighten:** 2 N.m (18 lb in)
2	Roof Outer Lamp Assembly **Tip:** Lift the lamp cover lens and replace the bulb as needed.

ROOF MARKER LAMP REPLACEMENT (MINUS SRW)

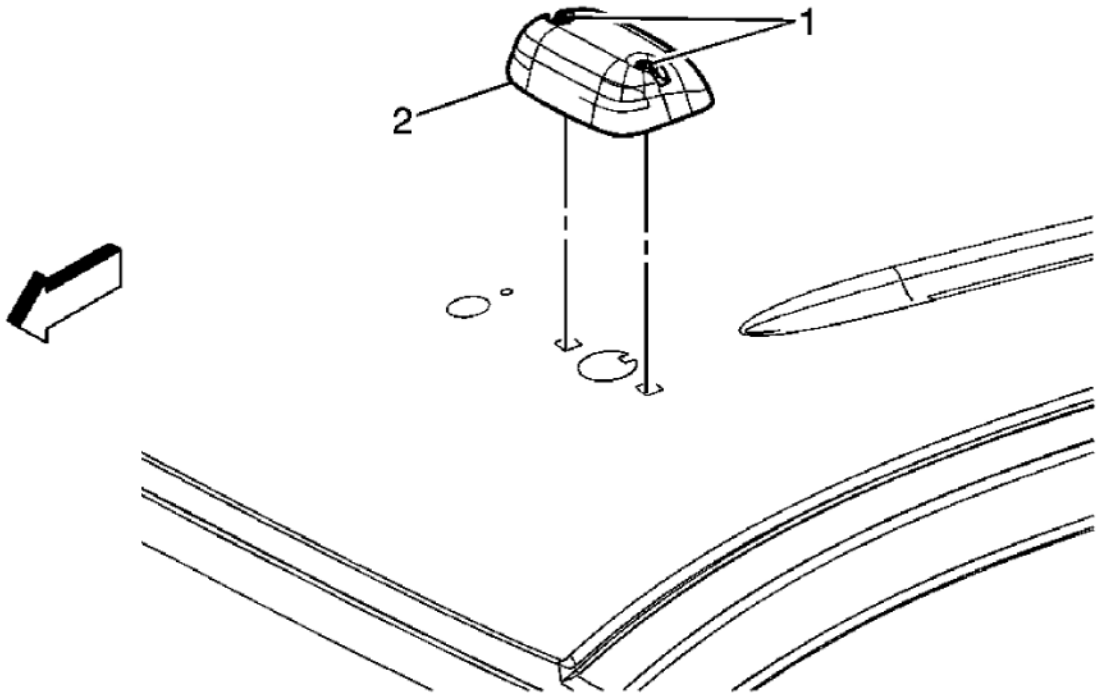


Fig. 44: Roof Marker Lamp Replacement (Minus SRW)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Screw (Qty: 2) **NOTE:** **Refer to Fastener Notice .** **Tighten:** 2 N.m (18 lb in)
2	Roof Outer Lamp Assembly **Tip:** Lift the lamp cover lens and replace the bulb as needed.

PARK/TURN SIGNAL LAMP BULB REPLACEMENT (CHEVROLET)

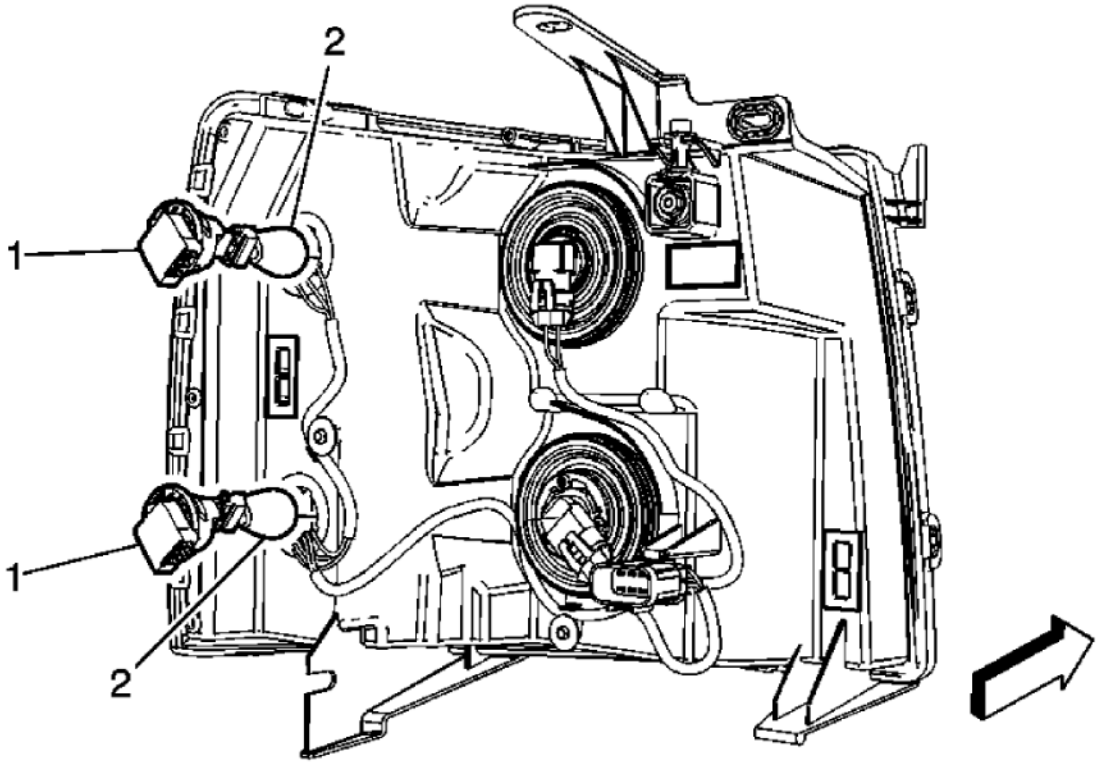


Fig. 45: Park/Turn Signal Lamp Bulb Replacement (Chevrolet)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Remove either the LF or RF headlamp assembly in order to access the headlamp bulbs. Refer to **Headlamp Replacement (GMC HD)** or **Headlamp Replacement (Chevrolet)**.	
1	Directional Bulb Sockets (Qty: 2) **CAUTION:** **Refer to Halogen Bulb Caution .** **Tip:** Rotate the bulb sockets a quarter turn counter-clockwise to access the bulbs.
2	Directional Bulbs (Qty: 2) **Tip:** Pull the bulbs straight from the lamp sockets.

PARK/TURN SIGNAL LAMP BULB REPLACEMENT (GMC)

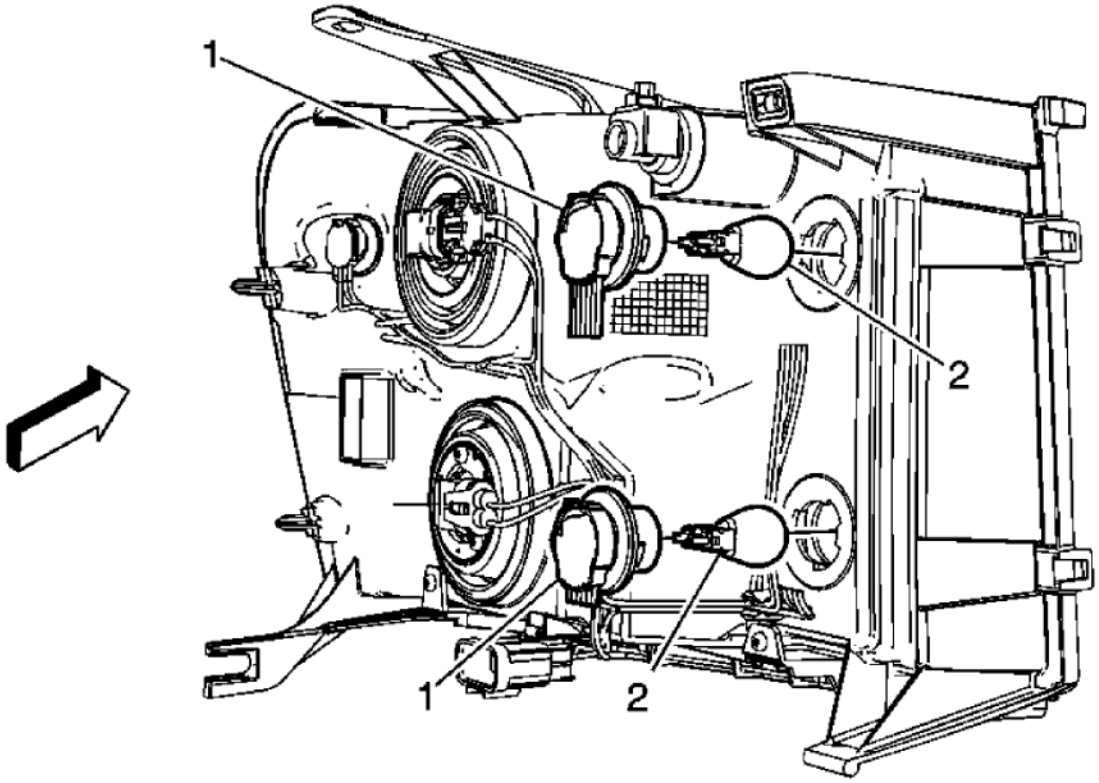


Fig. 46: Park/Turn Signal Lamp Bulb Replacement (GMC)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Remove either the LF or RF headlamp assembly. Refer to **Headlamp Replacement (GMC HD)** or **Headlamp Replacement (Chevrolet)**.	
1	Directional Lamp Bulb Socket **Tip:** Rotate the marker lamp socket a quarter turn counterclockwise and remove the lamp socket from the headlamp assembly.
2	Directional / DRL Bulb **Tip:** Pull the marker lamp bulbs straight from the lamp bulb socket.

PICKUP BOX IDENTIFICATION LAMP REPLACEMENT (GMC HD)

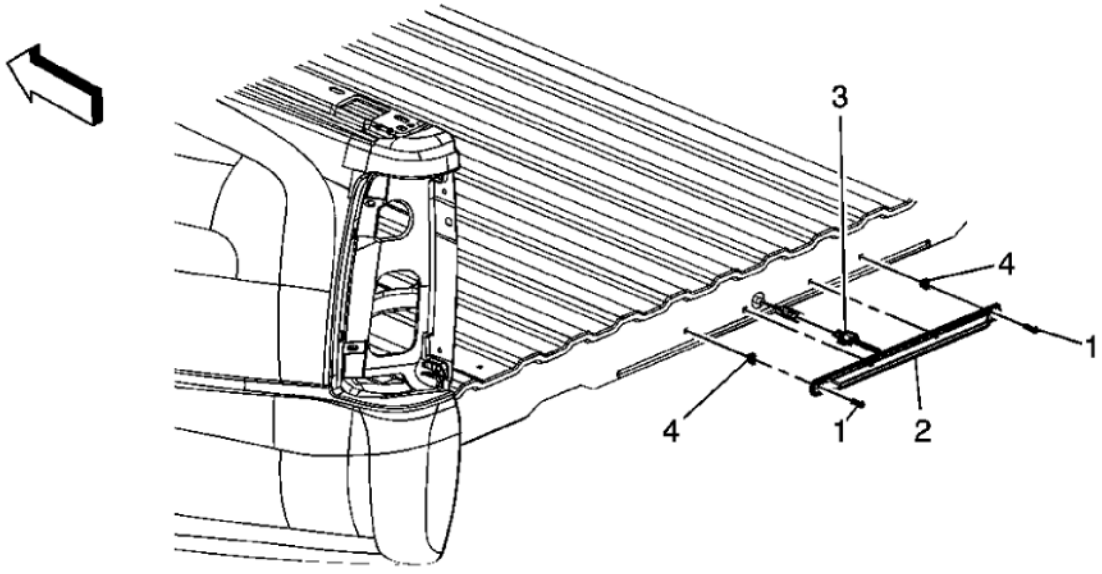


Fig. 47: Pickup Box Identification Lamp Replacement (GMC HD)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Rear Side Marker Lamp Assembly Screw (Qty: 2) **NOTE:** Refer to Fastener Notice . **Tighten:** 2.5 N.m (22 lb in)
2	Rear Side Marker Lamp Assembly
3	Rear Side Marker Lamp Electrical Connector
4	Rear Cross Sill Nut (Qty: 2)

PICKUP BOX IDENTIFICATION LAMP REPLACEMENT (CHEVROLET HD)

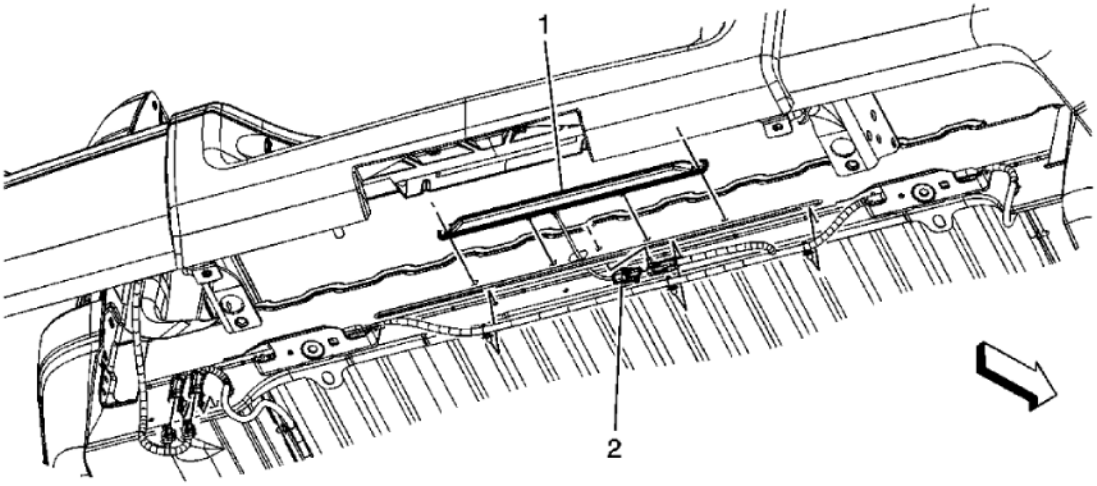


Fig. 48: Pickup Box Identification Lamp Replacement (Chevrolet HD)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Rear Side Marker Lamp Assembly **Tip:** Release the 3 integral clips securing the lamp assembly to the pick up box end panel.
2	Rear Side Marker Lamp Electrical Connector

REAR FENDER CLEARANCE LAMP REPLACEMENT

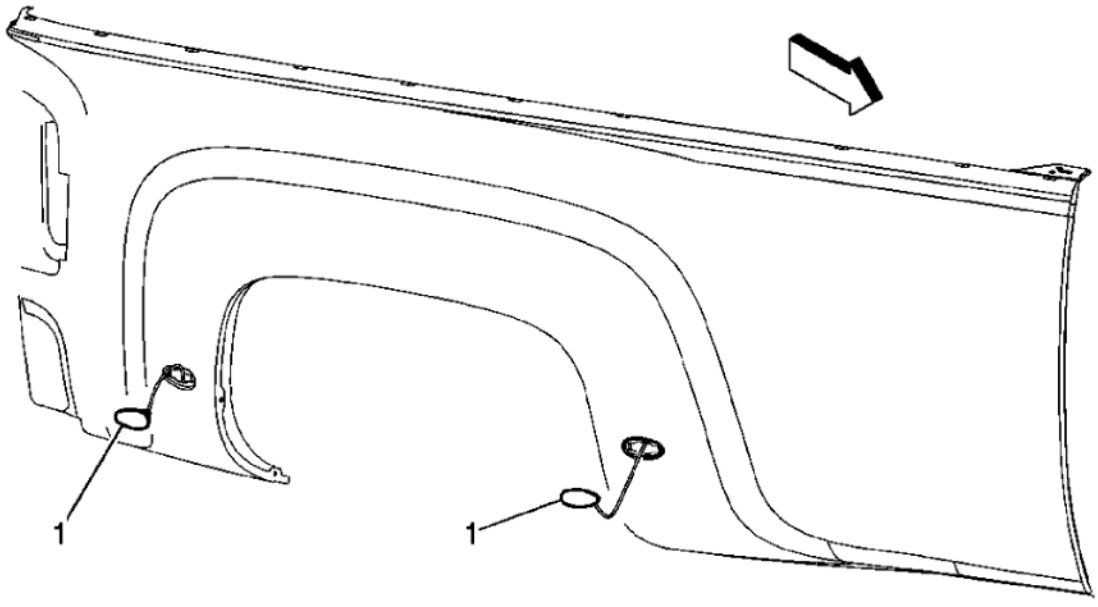


Fig. 49: Rear Fender Clearance Lamp Replacement
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure 1. Reach inside the rear fender and wheelhouse in order to disconnect the electrical connector for the rear fender lamp from the main chassis harness. 2. Disengage the retainer securing the connector to the pick up box panel brace. 3. From inside the wheelhouse push inward on the locking tab for the lamp assembly and push the lamp outward from the fender. 4. Remove the lamp and electrical harness.	
1	Rear Fender Clearance Lamps

HIGH MOUNT STOP LAMP REPLACEMENT (REGULAR CAB)

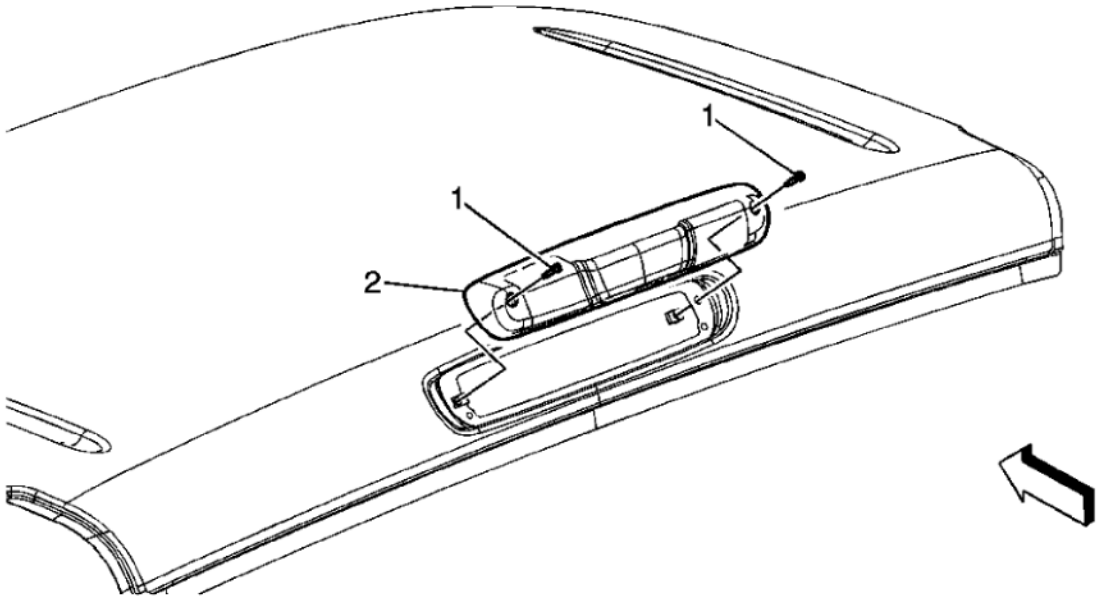


Fig. 50: High Mount Stop Lamp Replacement (Regular Cab)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	High Mounted Stop and Cargo Lamp Opening Cover Screw (Qty: 2) **NOTE:** **Refer to Fastener Notice .** **Tighten:** 2.5 N.m (22 lb in)
2	High Mounted Stop and Cargo Lamp Opening Cover **Tip:** Pull the lamp rearward in order to access the electrical connector.

HIGH MOUNT STOP LAMP REPLACEMENT (EXTENDED AND CREW CAB)

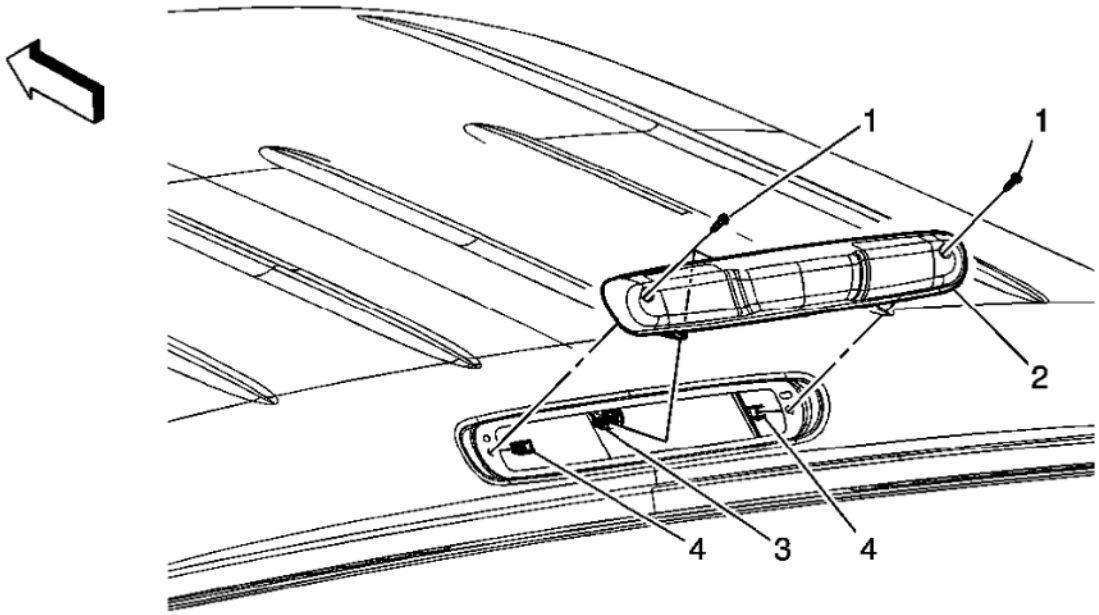


Fig. 51: High Mount Stop Lamp Replacement (Extended and Crew Cab)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	High Mounted Stop and Cargo Lamp Opening Cover Screw (Qty: 2) **NOTE:** Refer to Fastener Notice . **Tighten:** 2.5 N.m (22 lb in)
2	High Mounted Stop and Cargo Lamp Opening Cover **Tip:** Pull the lamp rearward in order to access the electrical connector.
3	Electrical Connector
4	High Mounted Stop and Cargo Lamp Opening Cover Retainer Clip (Qty: 2)

HIGH MOUNT STOP LAMP BULB REPLACEMENT (GMC DENALI)

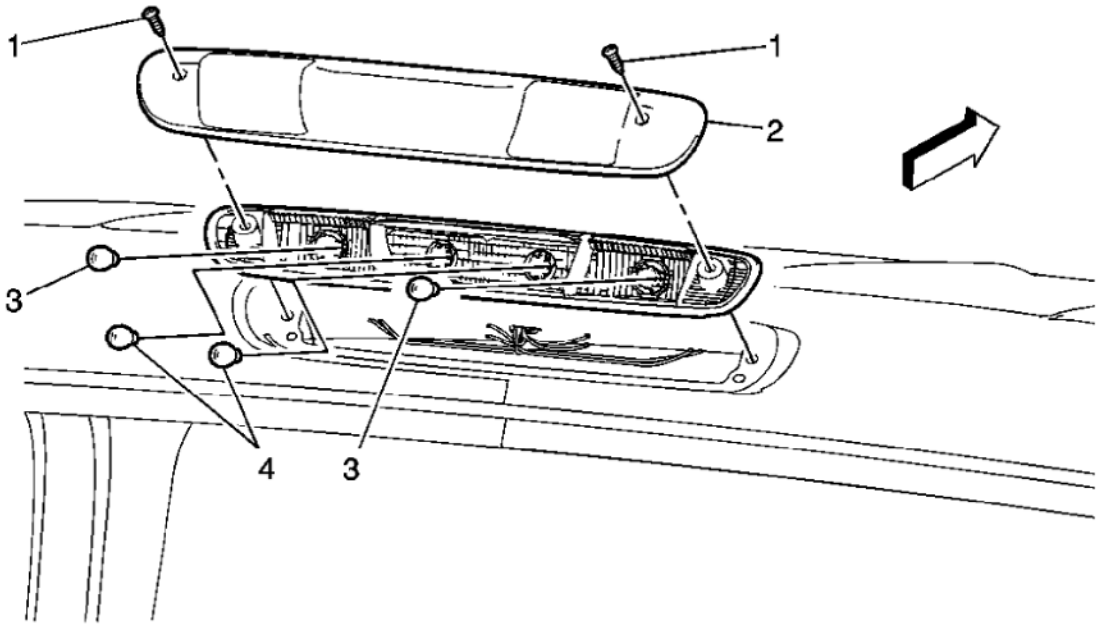


Fig. 52: High Mount Stop Lamp Bulb Replacement (GMC Denali)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Remove the high mounted stop lamp cover assembly. Refer to **High Mount Stop Lamp Replacement (Regular Cab)** or **High Mount Stop Lamp Replacement (Extended and Crew Cab)**.	
1	High Mounted Stop and Cargo Lamp Opening Cover Screw (Qty: 2) **NOTE:** **Refer to Fastener Notice .** **Tighten:** 2.5 N.m (22 lb in)
2	High Mounted Stop and Cargo Lamp Opening Cover
3	Cargo Lamp Bulb (Qty: 2) **Tip:** Rotate the bulb sockets a quarter turn counter-clockwise to unlock in order to remove the bulbs from the bulb sockets.
4	Brake Lamp Bulb (Qty: 2) **Tip:** Rotate the bulb sockets a quarter turn counter-clockwise to unlock in order to remove the bulbs from the bulb sockets.

BACKUP LAMP BULB REPLACEMENT (GMC)

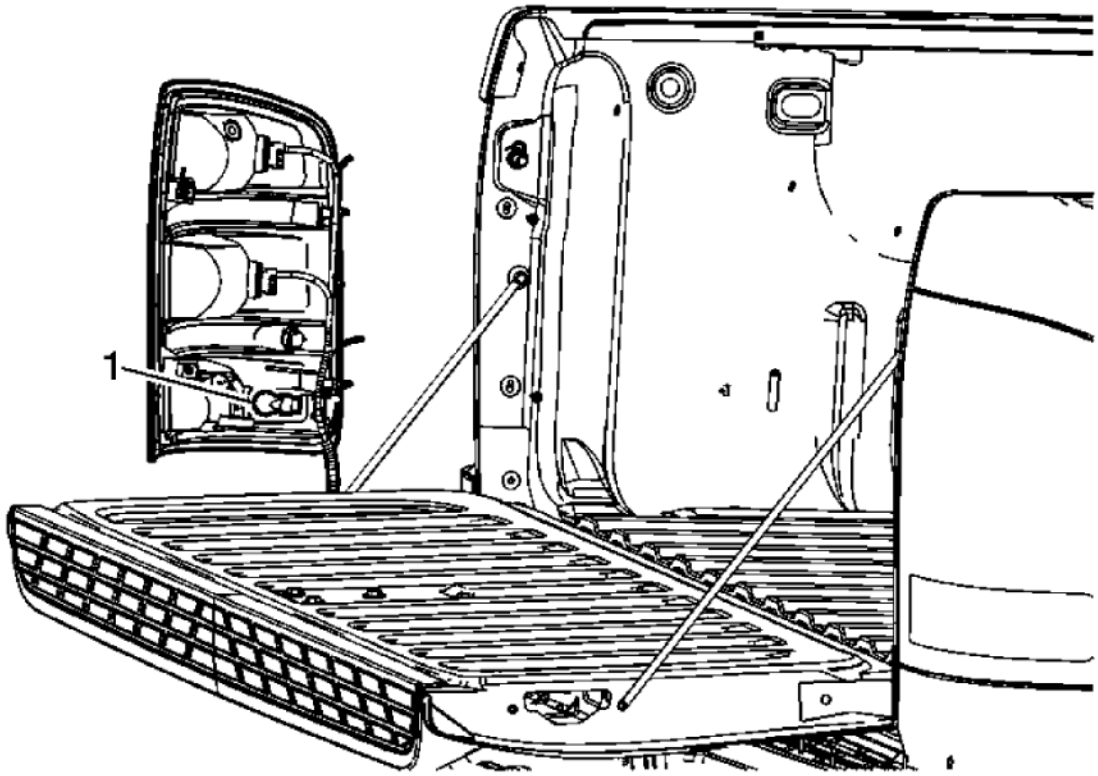


Fig. 53: Backup Lamp Bulb Replacement (GMC)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Remove either the LR or RR tail lamp assembly. Refer to **Tail Lamp Replacement (GMC)** or **Tail Lamp Replacement (Chevrolet)**.	
1	Back Up Lamp Bulb

BACKUP LAMP BULB REPLACEMENT (CHEVROLET)

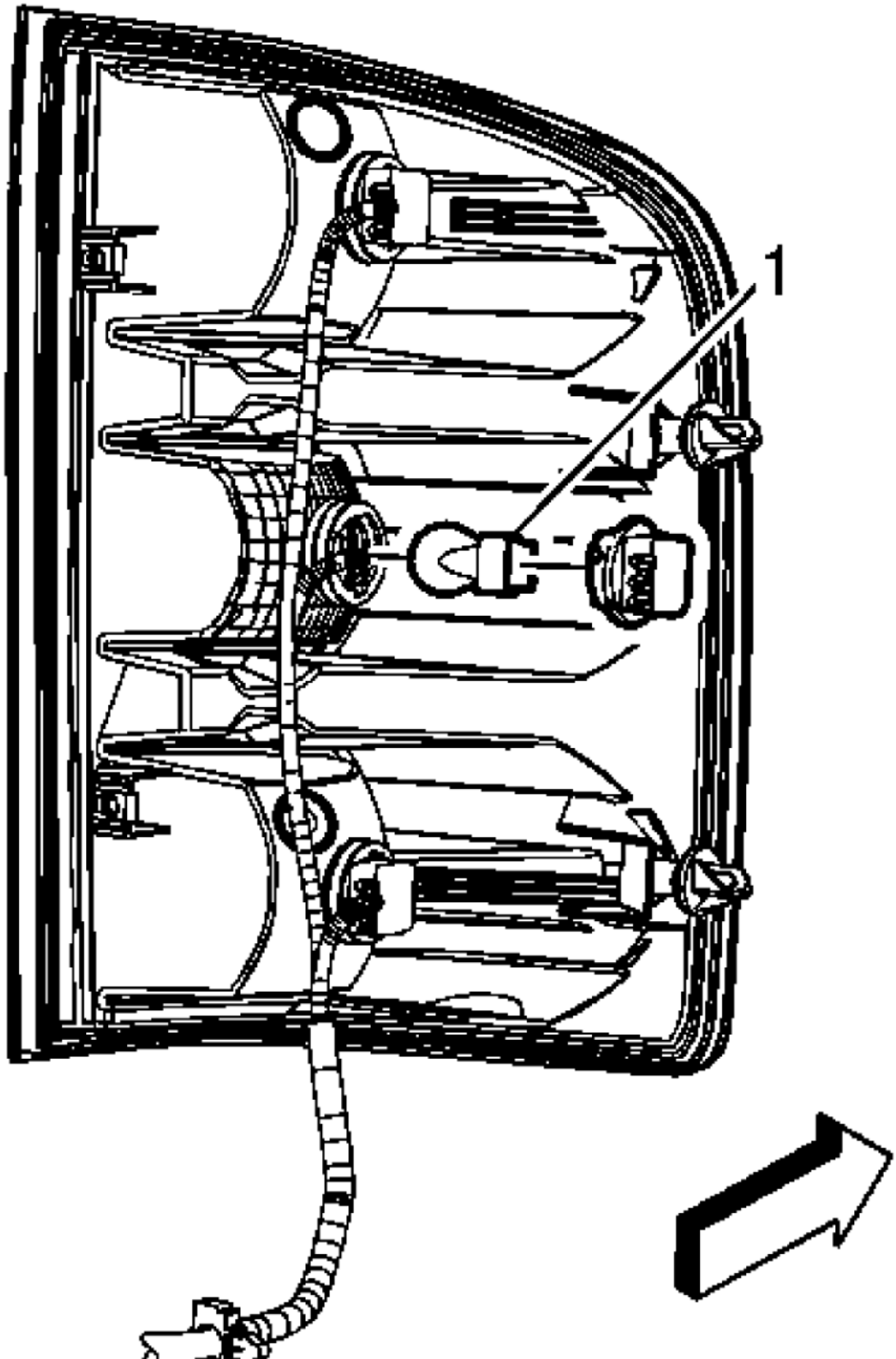

1

Fig. 54: Backup Lamp Bulb Replacement (Chevrolet)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Remove either the LR or RR tail lamp assembly. Refer to **Tail Lamp Replacement (GMC)** or **Tail Lamp Replacement (Chevrolet)**.	
1	Back Up Lamp Bulb

REAR LICENSE LAMP REPLACEMENT (VF7)

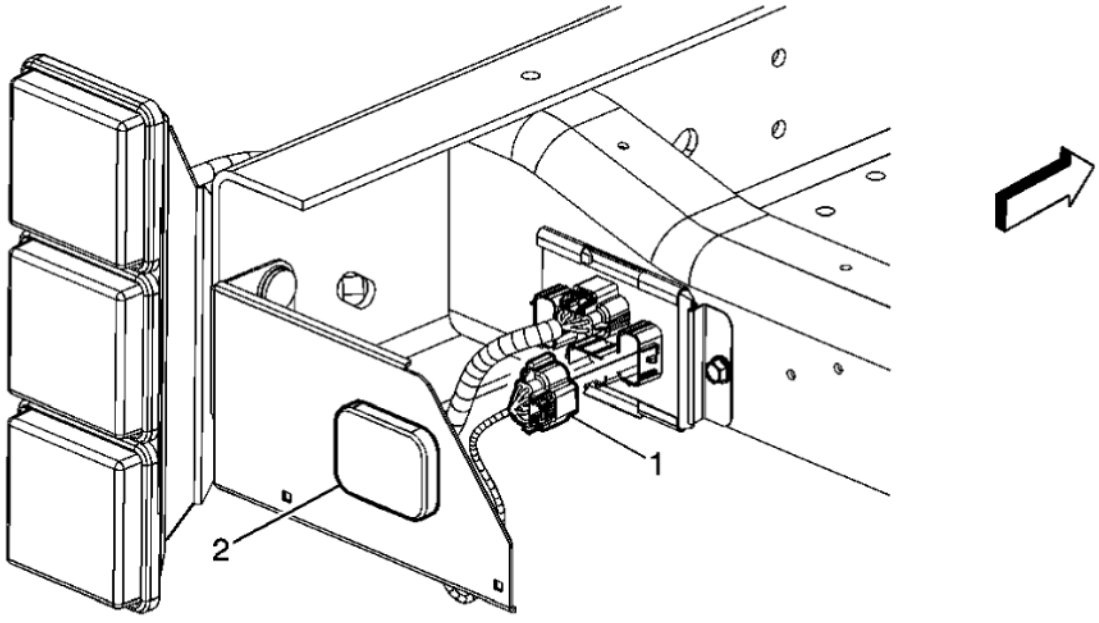


Fig. 55: Rear License Lamp Replacement (VF7)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	License Plate Lamp Electrical Connector **Tip:** Disconnect the electrical connector from the rear junction block.
2	Rear License Plate Lamp Assembly

REAR LICENSE LAMP REPLACEMENT (SILVERADO)

Removal Procedure

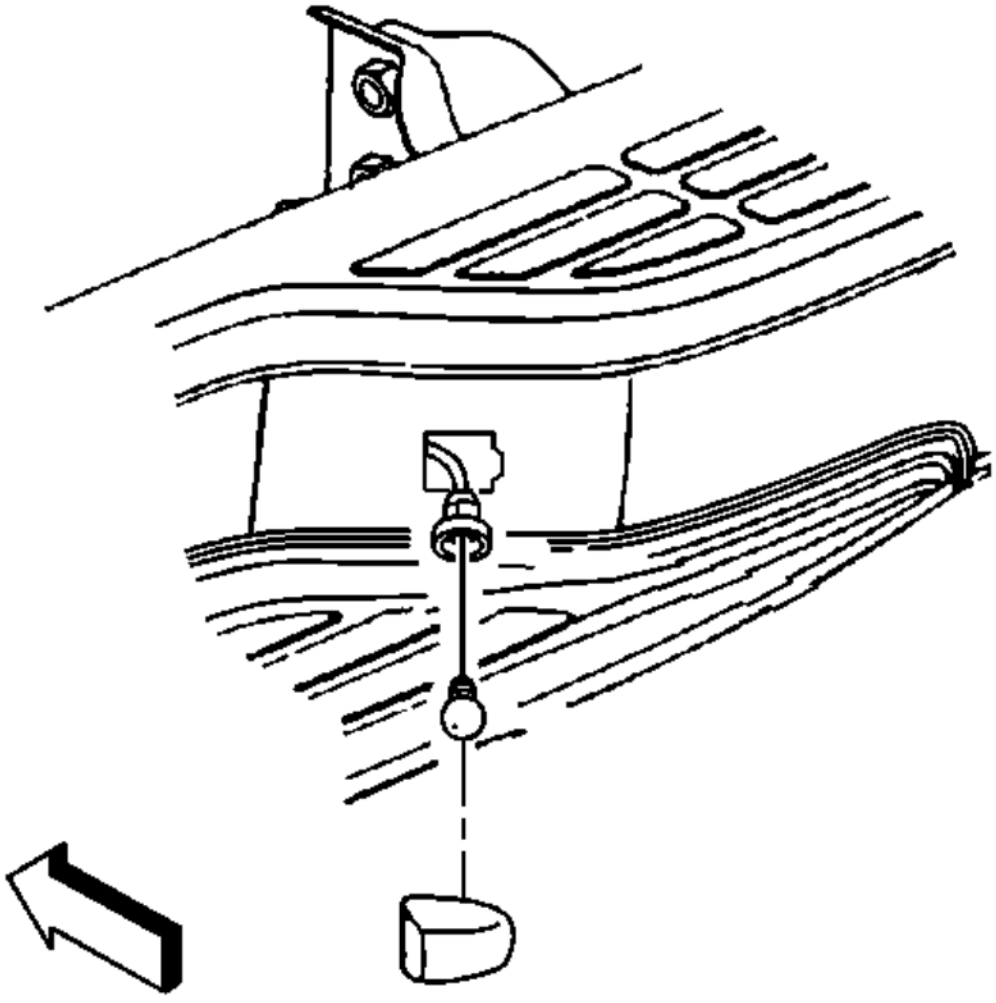


Fig. 56: View Of License Lamp (W/ Step Bumper)
Courtesy of GENERAL MOTORS CORP.

1. Ensure the headlamp switch is in the OFF position.
2. Reach under the rear bumper and press on the lens end of the cover in order to release the locking tab.
3. Remove the lens housing from the bumper assembly.
4. Remove the bulb.

Installation Procedure

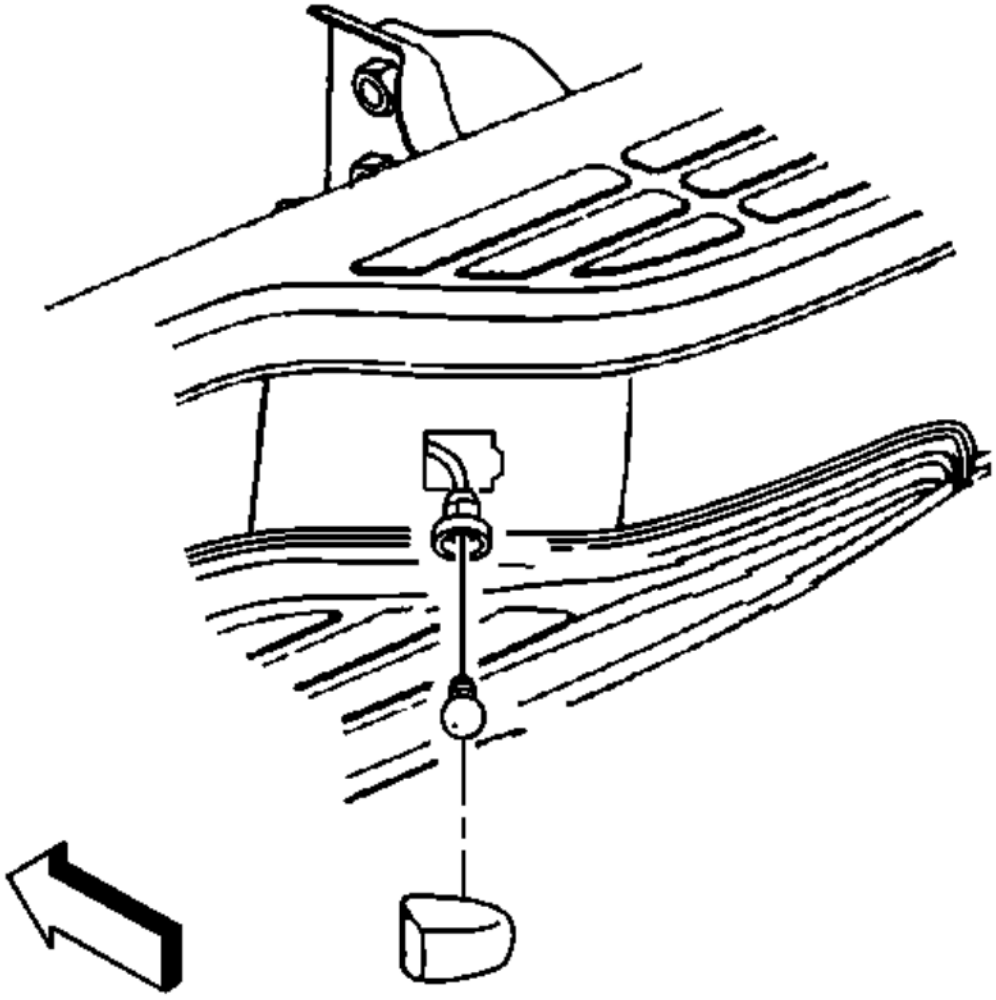


Fig. 57: View Of License Lamp (W/ Step Bumper)
Courtesy of GENERAL MOTORS CORP.

1. Install the bulb.
2. Install the rear edge of the lens housing into the rear bumper.
3. Push on the lens side of the housing in order to snap the housing into the rear bumper assembly.

4. Inspect the operation.

LICENSE LAMP BULB REPLACEMENT

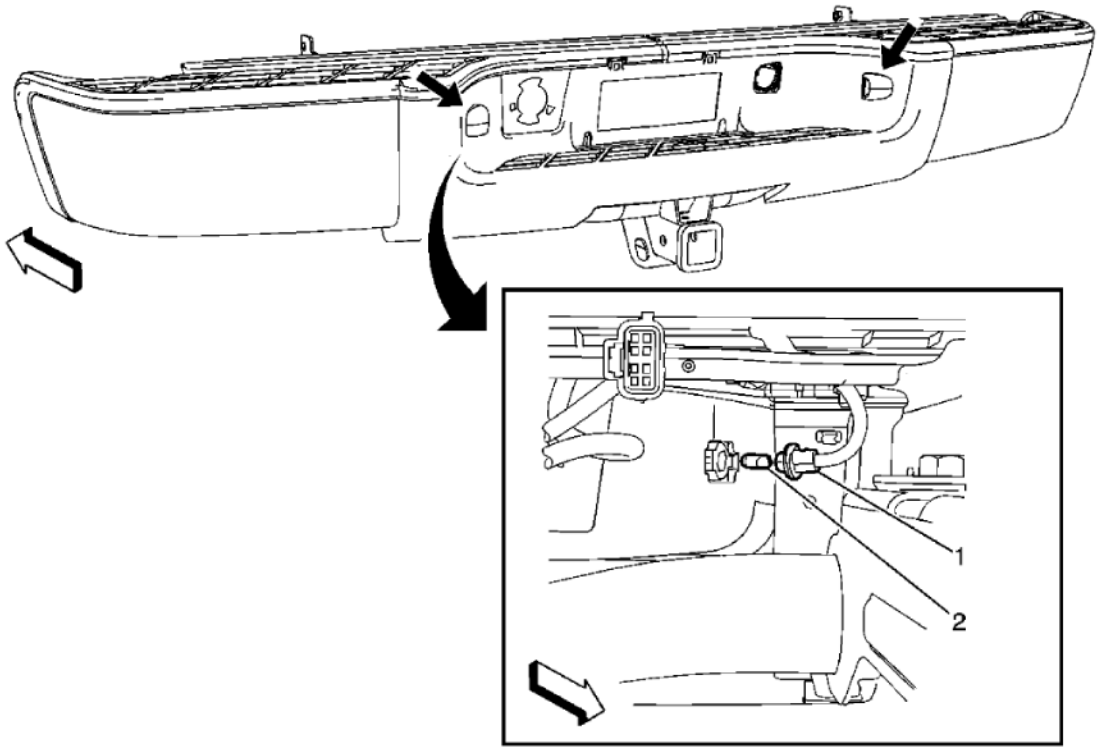


Fig. 58: License Lamp Bulb Replacement
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Procedure 1. Reach under the rear bumper for the bulb socket. 2. Turn the bulb socket counter-clockwise and pull the bulb socket out of the connector. 3. Pull the old bulb from the socket, keeping the bulb straight as you pull it out. 4. Install the new bulb.	
1	Bulb Socket
2	Rear License Plate Lamp Bulb

TAIL LAMP REPLACEMENT (GMC)

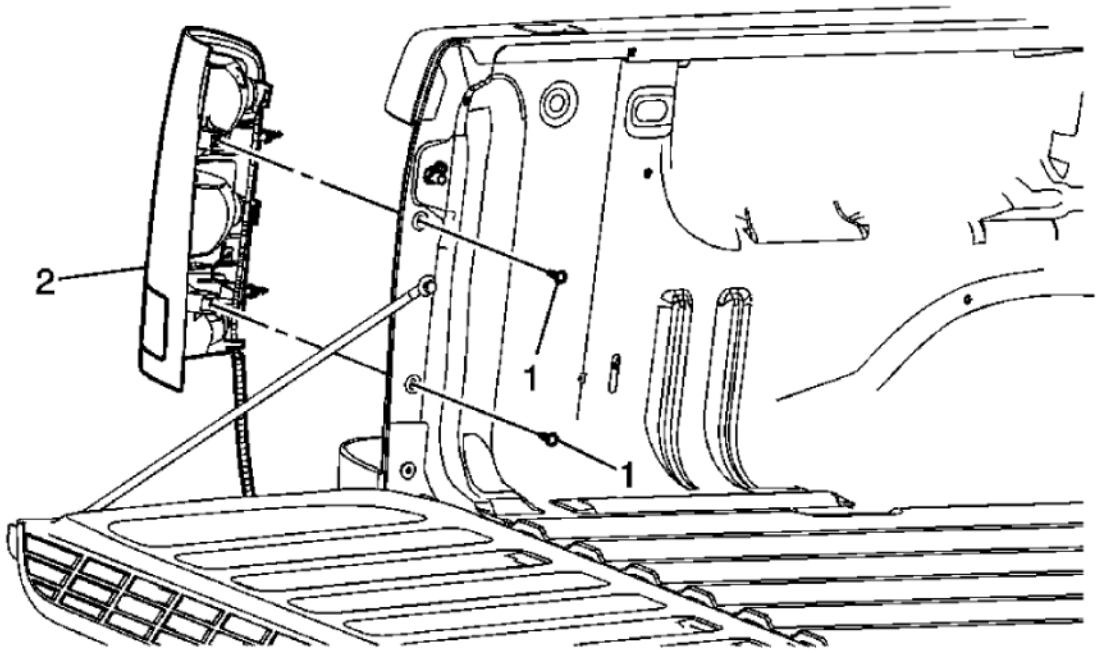


Fig. 59: Tail Lamp Replacement (GMC)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedures 1. Open the endgate in order to access the tail lamp assembly screws. 2. Disconnect the electrical harness to the tail lamp.	
1	Tail Lamp Assembly Screws (Qty: 2) **NOTE:** **Refer to Fastener Notice .** **Tighten:** 2 N.m (18 lb in)
2	Tail Lamp Assembly **Tip:** Upon installation, push inward on the outer edge of the tail lamp in order to seat the 2 locating pins in the body panel.

TAIL LAMP REPLACEMENT (CHEVROLET)

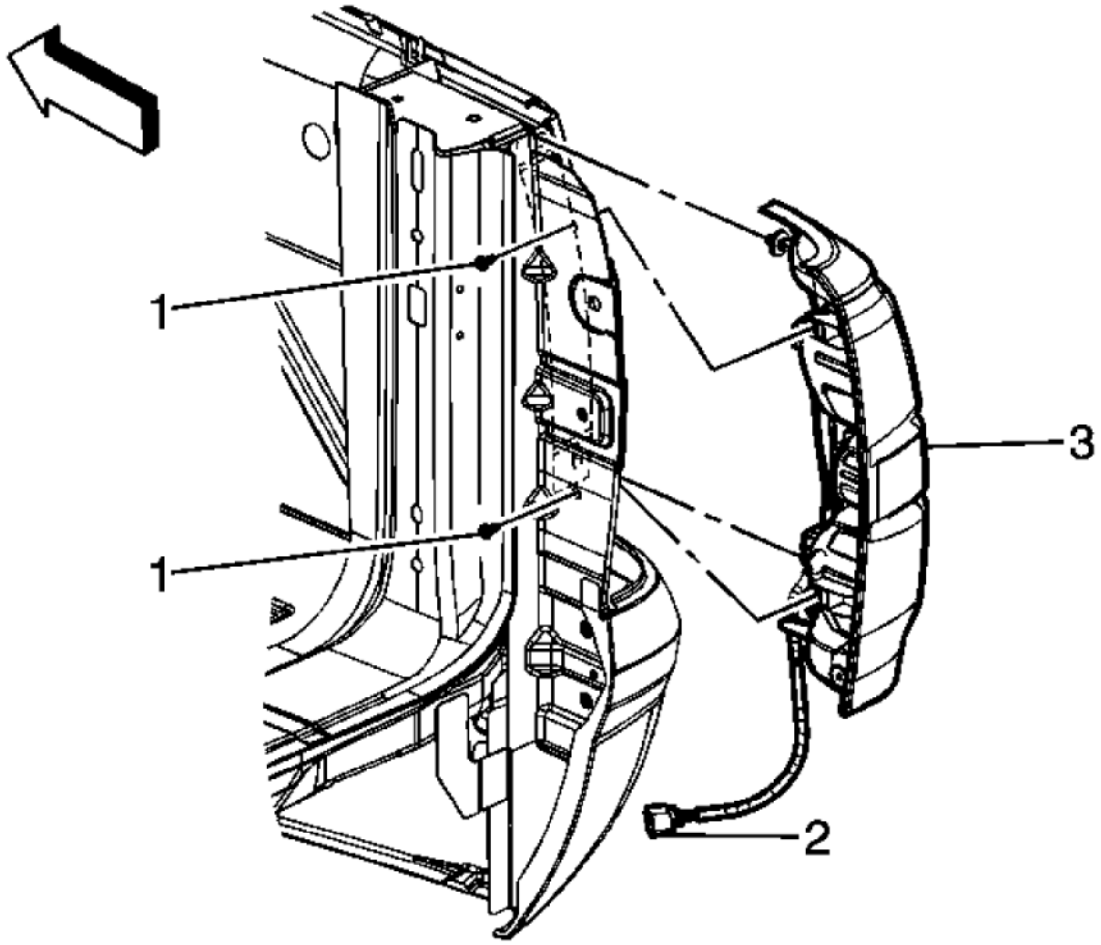


Fig. 60: Tail Lamp Replacement (Chevrolet)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Open the endgate in order to access the tail lamp assembly screws.	
1	Tail Lamp Assembly Screw (Qty: 2) **NOTE:** **Refer to Fastener Notice .** **Tighten:** 2 N.m (18 lb in)
2	Tail Lamp Wiring Harness Assembly Connector
3	Tail Lamp Assembly **Tip:** Upon installation, push inward on the tail lamp in order to seat the 2

	locating pins in the body panel.

TAIL LAMP BULB REPLACEMENT (GMC)

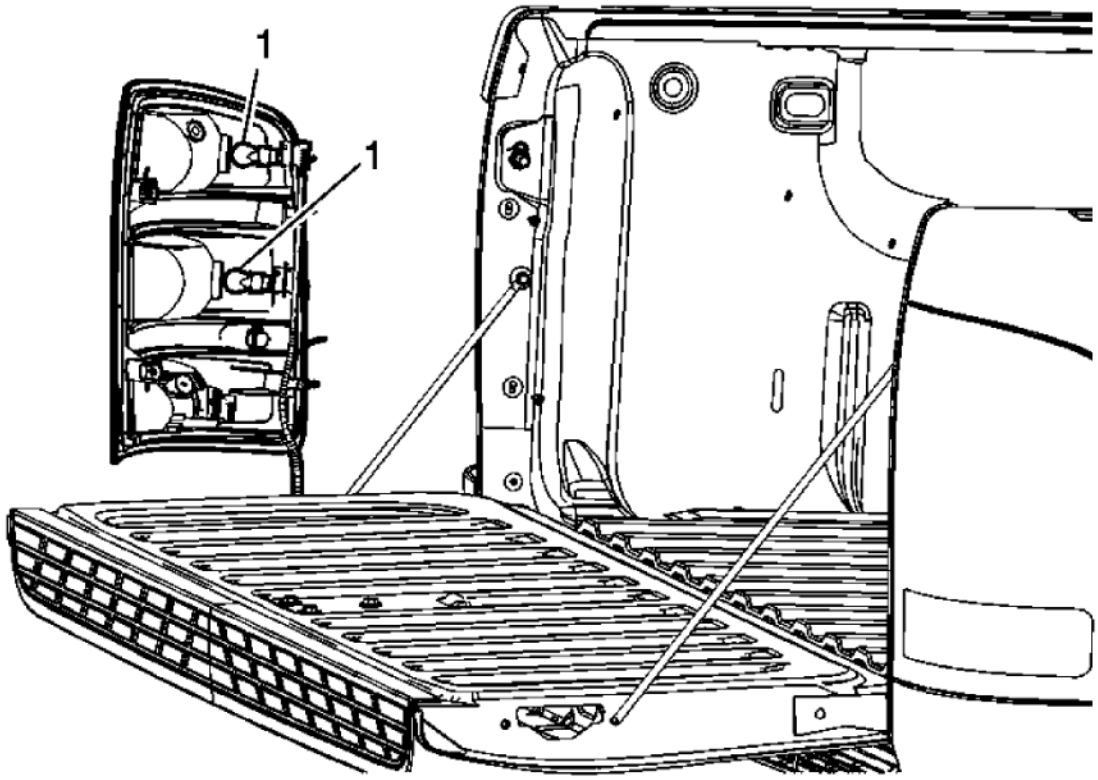


Fig. 61: Tail Lamp Bulb Replacement (GMC)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Remove the rear tail lamp. Refer to **Tail Lamp Replacement (GMC)** or **Tail Lamp Replacement (Chevrolet)**.	
1	Park and Turn Signal Lamp Bulbs (Qty: 2)

TAIL LAMP BULB REPLACEMENT (CHEVROLET)

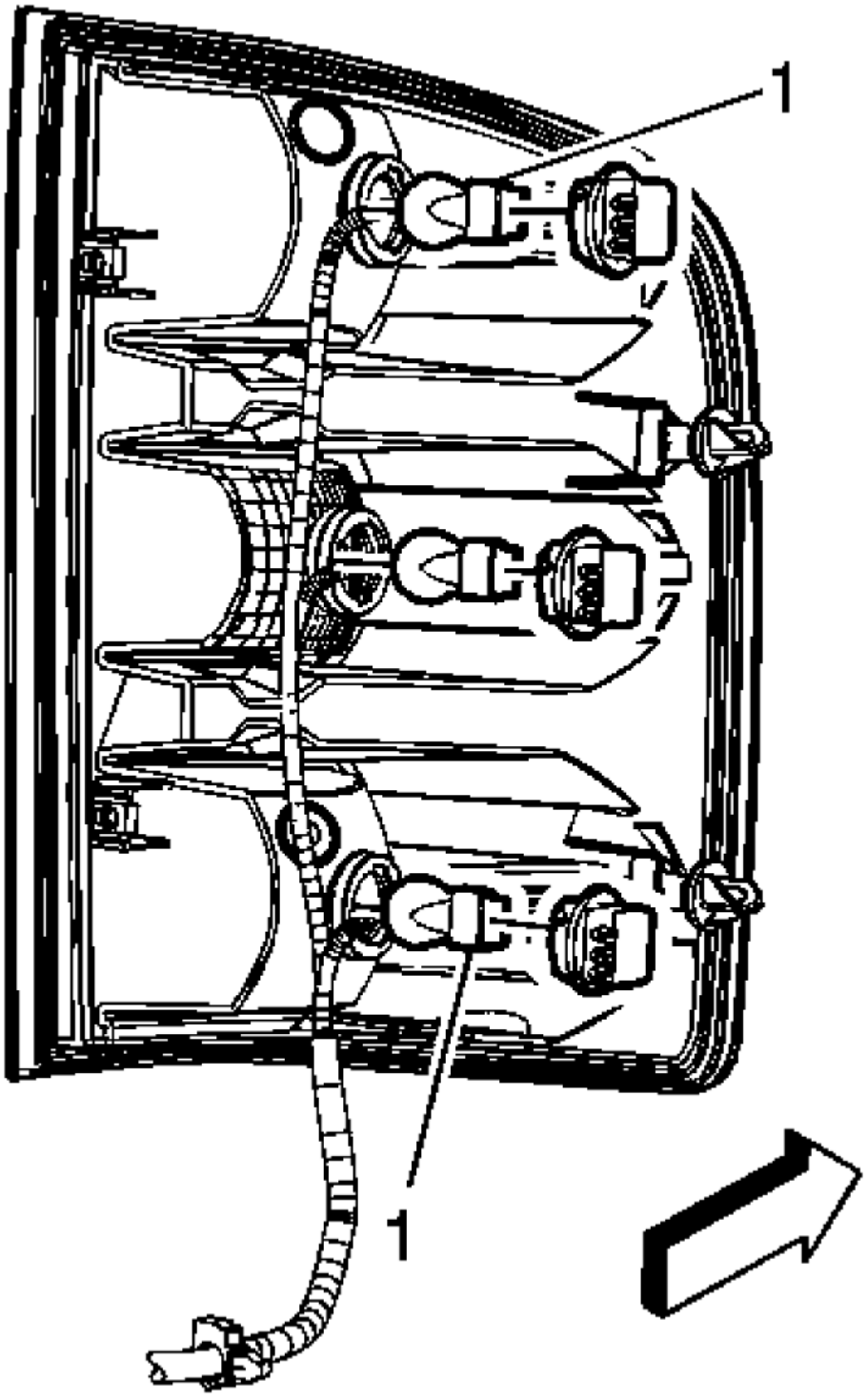


Fig. 62: Tail Lamp Bulb Replacement (Chevrolet)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Remove the rear tail lamp. Refer to **Tail Lamp Replacement (GMC)** or **Tail Lamp Replacement (Chevrolet)**.	
1	Park and Turn Signal Lamp Bulb (Qty: 2)

DESCRIPTION AND OPERATION

EXTERIOR LIGHTING SYSTEMS DESCRIPTION AND OPERATION

Exterior Lamps

The exterior lighting system consists of the following lamps:

- The headlamps
- The daytime running lamps (DRL)
- The front fog lamps
- The park, tail and marker lamps
- The exterior courtesy lamps
- The turn signal/hazard lamps
- The stop lamps
- The backup lamps
- The cargo lamps
- The roof beacon lamp (if equipped)

Headlamps

The headlamps may be turned on in 2 different ways. First, when the driver places the headlamp switch in the HEADLAMP position, for normal operation. Second, with the headlamp switch placed in the AUTO position, for automatic lamp control (ALC). During ALC the headlamps will be in DRL operation in daylight conditions, or headlamp operation in low light conditions.

Headlamp ON/OFF control is determined by the body control module (BCM) by a signal on the headlamp switch on input circuit when the headlamp switch is in the HEAD position. When the headlamp switch is in the AUTO position, the BCM determines headlamps ON/OFF by the voltage from the ambient light sensor.

If the headlight switch is left in the ON position, the inadvertent power control feature will turn off the headlights approximately 10 minutes after the ignition switch is turned to the OFF

position. If the driver places the headlight switch in the ON position after the ignition switch has been turned OFF, or if the ignition switch is in the ACCY position, the headlights will remain on until turned off or the battery runs dead.

The high beam indicator is illuminated when the instrument cluster receives a GMLAN serial data message from the BCM that the high beams are illuminated.

High Beams

The high beam headlamps receive voltage from the headlamp high relay located in the underhood fuse block. The BCM controls the relay on the headlamp high beam relay control circuit. High beam control is determined by a signal on the headlamp dimmer switch signal circuit from the multifunction switch. When the headlamp dimmer switch signal circuit is grounded, the BCM grounds the headlamp high beam relay control circuit, illuminating the high beam headlamps. The right and left high beam circuits are independent and are fused independently in the underhood fuse block.

Low Beams

The low beam headlamps receive voltage from the headlamp low beam relay located in the underhood fuse block. The BCM controls the relay on the headlamp low beam relay control circuit. Low beam control is determined by a signal on the headlamp dimmer switch signal circuit from the multifunction switch. When the headlamp dimmer switch signal circuit is open, the BCM grounds the headlamp low beam relay control circuit, illuminating the low beam headlamps. The right and left low beam circuits are independent are fused independently in the underhood fuse block.

Daytime Running Lamps (DRL)

The DRL will only operate while the engine is running and the headlamp switch is in the AUTO position. When these conditions have been met and the ambient light sensor indicates daytime conditions, the DRL will illuminate. The ambient light sensor is a light sensitive transistor that varies its voltage signal to the BCM in response to changes to the outside ambient light level. When the BCM receives this signal it will either turn on the dedicated DRL on the X88, the low beam headlamps only as DRL on the Z88, or the headlamps, park, and tail lamps for auto headlamp operation in low light conditions. Any function or condition that turns on the headlights will cancel the daytime running lamps operation. The DRL can be manually turned OFF by activating the AHL/DRL switch in the headlamp switch. The AHL/DRL defeat switch sends a ground signal through the DRL switch signal circuit to the BCM. The BCM then turns OFF the DRL. When the AHL/DRL are manually turned OFF at the headlamp switch, the AHL/DRL will default to ON with the next ignition cycle. With the headlight switch in the AUTO position, the DRL will either be turned ON or OFF after an approximate 8 second delay, depending on

whether daylight or low light conditions are sensed. When the BCM energizes the DRL relay, the DRL receives voltage on the DRL supply voltage circuit.

Fog Lamps

With both the ignition switch in the RUN position, and the park lamps ON, the fog lights will illuminate when the driver depresses the fog lamp switch. The BCM receives the park lamp ON signal from the interior park lamps supply voltage signal circuit. With the headlamp switch in either the park or headlamp position, and the fog lamp switch is in the ON position, the BCM will ground the fog lamp relay control circuit causing the relay to energize. The current flows from the fog lamp relay to both front fog lamps. The state of the fog lamps will remain the same until the fog lamp switch position is changed, or the ignition switch is cycled OFF and ON. Fog lamp operation will be cancelled whenever the park lamps, are turned OFF or the high beam headlights have been selected.

Park, Tail and Marker Lamps

The park, tail and marker lamps, including the license lamps, are turned on when the headlamp switch is placed in the PARK or HEAD position or anytime the headlights are requested. The underhood fuse block supplies battery positive voltage to both the park lamp relay switch contacts and the park lamp coil circuit. The BCM provides a ground or control circuit to the park lamp relay coil circuit. When the park lamps are turned ON, the BCM energizes the park lamp relay. If the headlight switch is left in the ON position, the inadvertent power control feature will turn OFF the park, tail and marker lamps approximately 10 minutes after the ignition switch is turned to the OFF position. If the driver places the headlight switch in the ON position after the ignition switch has been turned OFF, or if the ignition switch is in the ACCY position, the park, tail and marker lamps will remain on until turned OFF or the battery runs dead.

Exterior Courtesy Lamps

The BCM, driver door switch, and the passenger door switch communicate through the GMLAN serial data system. The driver door switch and passenger door switch supply power and ground to the left and right exterior lamps respectively. When the BCM commands illuminated entry, a command is also sent to the door switches for illumination of the exterior courtesy lamps. If the door locks are activated to the LOCK position, or if the ignition switch is turned to either the ON or RUN position the exterior courtesy lamps will deactivate immediately.

Turn Signal/Hazard Lamps

When the turn signal switch is placed in either the left or right position, a ground signal is completed from the turn signal switch to the BCM. When the hazard flasher switch is activated, a ground signal is completed from the turn signal/hazard switch to the BCM. The BCM then sends

an ON-OFF voltage signal through the fuses to the appropriate turn signal and side repeater (export only) lamps or to all of the turn signal fuses for hazard operation. The driver door switch and passenger door switch also receive voltage from the BCM turn signal supply voltage circuits for the mirror turn signals. The door switches have no function or control of the mirror turn signals other than a pass through connection for the circuits. The audio chime is also activated when the turn signals are ON. The instrument panel cluster (IPC) receives the signals to activate the turn signal indicators over the GMLAN serial data system. When the hazard switch is pressed, all turn signal lamps will flash including both IPC turn indicators.

Stop Lamps

When the driver presses the brake pedal, the switch contacts open and battery positive voltage is interrupted to the BCM. The BCM then supplies voltage to both the turn/stop lamp supply voltage circuit and trailer rear turn/stop lamp supply voltage circuits. The BCM also supplies a control voltage to the CHMSL relay energizing the relay and illuminating the CHMSL.

Backup Lamps

The backup lamp request signal is sent from the PCM to the BCM on the GMLAN serial data system. This signal is based on the park neutral position (PNP) switch signal. The BCM supplies voltage to the backup relay and to the automatic day/night mirror when the vehicle is in reverse. The backup relay supplies a voltage on the backup lamp supply voltage circuit to the backup lamps and trailer backup circuit.

Cargo Lamps

The cargo lamp is controlled by the courtesy lamp supply voltage circuit. The BCM supplies voltage to the cargo lamp anytime courtesy lamp activation is requested.

Clearance Lamps

The clearance lamps, are turned ON when the headlamp switch is placed in the PARK or HEAD position or anytime the headlamps are requested. The underhood fuse block supplies battery positive voltage to both the park lamp relay switch contacts and the park lamp coil circuit. The BCM provides a ground or control circuit to the park lamps relay coil circuit. When the park lamps are turned ON, the BCM energizes the park lamp relay. If the headlamp switch is left in the ON position, the inadvertent power control feature will turn OFF the park, tail and clearance lamps approximately 10 minutes after the ignition switch is turned to the OFF position. If the driver places the headlamp switch in the ON position after the ignition switch has been turned OFF, or if the ignition switch is in the ACCY position, the park, tail and marker lamps will remain ON until turned OFF or the battery runs dead.

INTERIOR LIGHTING SYSTEMS DESCRIPTION AND OPERATION

Interior Lamps

The interior lighting consists of 2 groups. The first group includes lamps that may not be dimmed.

- Courtesy/illuminated entry lamps
- Dome lamps
- Map lamps
- Reading lamps
- Vanity mirror lamps

Courtesy/Illuminated Entry Lamps

The courtesy/illuminated entry lamps, may be manually turned ON or OFF by placing the interior lamp switch in the ON or OFF position. If an outside door handle is lifted and a door is opened, the courtesy/illuminated entry lamps illuminate. After all the doors have been closed the courtesy/illuminated entry lamps will remain illuminated approximately 15 seconds. The body control module (BCM) will then turn them OFF through the theater dimming feature. The courtesy/illuminated entry lamps will also turn ON prior to any door being opened, and remain illuminated approximately 40 seconds when the driver removes the ignition key. When the driver places the dome lamp defeat switch in the OFF position, the courtesy/illuminated entry lamps will be disabled.

The BCM and the door modules communicate through the GMLAN serial data circuit for the lamp illumination commands of the door switch signals. The left and right rear door latch switches are both on one circuit that is also an input to the BCM.

The left and right front door courtesy lamps (if equipped) receive voltage and ground from the driver door switch and the passenger door switch respectively. The remaining courtesy lamps are controlled and receive voltage from the BCM. Voltage for the courtesy lamp supply voltage circuit is from the INT LTS fuse in the instrument panel fuse block.

Keyless Entry Interior Illumination

When the driver uses the door key in order to unlock the doors, the body control module (BCM) receives a door unlock signal. The BCM must have inputs or serial data messages that indicate that the ignition switch is OFF, the courtesy lamp switch is OFF and all the doors are closed. The BCM will then activate the interior lamps. The courtesy lamps will remain ON, approximately 15 seconds after the door is closed. The BCM will then turn them OFF through the theater dimming feature. If the door locks are activated to the LOCK position, or if the ignition switch is turned to

either the RUN or CRANK position the courtesy lamps will turn OFF immediately.

When the driver uses the remote function actuator transmitter to unlock the doors, trunk or presses the panic button, the BCM will keep the courtesy lamps ON approximately 40 seconds. When the driver uses the remote function actuator transmitter to lock the doors, the BCM will keep the courtesy lamps on approximately 2 seconds. If the ignition switch is turned to either the RUN or CRANK position the courtesy lamps will turn OFF immediately.

Vanity Lamps

The inadvertent power supply voltage circuit of the body control module (BCM) provides battery positive voltage to each vanity mirror lamp. When the vanity mirror cover on the sunshade is opened, a switch closes to provide a ground circuit and the vanity lamp illuminates.

Reading Lamps

The inadvertent power supply voltage circuit of the body control module (BCM) provides battery positive voltage to the reading lamps. The reading lamps and switch are integral to the courtesy/reading lamp assembly. When the switch is closed, voltage is supplied and the lamp illuminates.

Battery Rundown Protection/Inadvertent Power

The body control module (BCM) inadvertent power supply voltage circuit provides battery positive voltage to all of the interior reading lamps, visor vanity mirror lamps, and cargo lamps if equipped. In the event that any of these lamps were to remain illuminated for a period of more than 10 minutes with the ignition switch in the OFF position, the BCM will deactivate the inadvertent power supply voltage circuit to prevent a total battery discharge condition.

Interior Lamps Dimming

The second interior lighting group includes lamps which may be dimmed. This group may use a combination of vacuum fluorescent (VF) illumination, LED illumination and incandescent lamps.

When the ignition switch is turned to the RUN position, the radio VF display turns ON at maximum brightness. When the park lamps are ON, all incandescent and LED back lighting turn ON at the dimming level indicated by the instrument panel (I/P) dimmer switch. At the same time all VF displays dim to match the indicated dimming level. The panel dimmer switch potentiometer is an input to the body control module (BCM). When the driver selects a dimming setting by moving the I/P dimming switch potentiometer, all incandescent back lighting lamps are provided with a specific voltage. When the I/P dimmer switch is moved from MIN to MAX, all VF displays, as well as all incandescent back lighting respond from minimum intensity to

maximum brightness in response to the I/P dimmer switch.

The following switches and components have back lighting when the park lamps are ON:

- The instrument panel cluster (IPC)
- Window and heated seat switches
- Rear HVAC switches
- Sunroof switch
- Accessory switches
- Fog lamp switches
- Garage door opener
- Rear parking assist (RPA) disable switches
- Transfer case shift control switch
- Power take off switch
- Roof beacon switch
- Sliding rear window switch
- PRNDL lamps
- Traction control switch
- Steering wheel control switches
- Integrated trailer brake controller switch

The left and right front door switch illumination is controlled, receives voltage and ground from the driver door switch and passenger switch respectively. The radio is also a GMLAN module and has full control of its illumination. The BCM, door switches, and radio communicate through GMLAN serial data for the lamp illumination commands.

The various switches, HVAC control assembly, and the PRNDL lamps receive voltage and are controlled by the BCM on the I/P lamps dimming control circuit.

The following indicators receive voltage from the BCM and are controlled by ground from a switch or from various modules:

- Tow indicator
- Transfer case control switch 4WD position indicators
- Fog lamp indicators
- Radio

- Analog clock
- HVAC control assembly
- Instrument panel cluster (IPC)
- Driver information center (DIC)
- Headlamp and panel dimmer switch
- Rear parking assist (RPA) indicator

The indicators receive voltage from the BCM on the LED dimming circuit. Control for the indicators is from the various modules or switches. Voltage for the LED dimming supply circuit, instrument panel lamps dimming control circuit and the instrument panel lamps dimming supply circuit is from the BCM.

The modules controlling the above indicators are as follows:

- Transfer case shift control module
- BCM