Service Manual: LIGHTING SYSTEM - DESCRIPTION AND OPERATION

DESCRIPTION AND OPERATION > EXTERIOR LIGHTING SYSTEMS DESCRIPTION AND OPERATION

The exterior lighting system consist of the following lamps:

- Backup lamps
- Daytime running lamps
- Front fog lamps
- Hazard warning lamps
- Headlamps
- Park, tail, license, and marker lamps
- Stop lamps
- Turn signal lamps

DESCRIPTION AND OPERATION > EXTERIOR LIGHTING SYSTEMS DESCRIPTION AND OPERATION > LOW BEAM HEADLAMPS

The headlamps may be turned ON in 3 different ways:

- When the turn signal/multifunction switch is placed in the ON position, for normal operation
- When the turn signal/multifunction switch is placed in the AUTO position, for automatic lamp control
- When the turn signal/multifunction switch is placed in the AUTO position, with the windshield wipers ON in daylight conditions, after a 6 second delay

The BCM will also command the low beam headlamps ON during daylight conditions when the following conditions are met:

- Turn signal/multifunction switch in the AUTO position
- Windshield wipers ON
- Vehicle in any gear but PARK

When the BCM commands the low beam headlamps ON, the operator will notice the interior backlighting for the instrument cluster and the various other switches dim to the level of brightness selected by the instrument panel dimmer switch.

DESCRIPTION AND OPERATION > EXTERIOR LIGHTING SYSTEMS DESCRIPTION

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AND OPERATION > LOW BEAM HEADLAMPS (WITHOUT T4F)

The body control module (BCM) monitors three signal circuits from the turn signal/multifunction switch. When the turn signal/multifunction switch is in the AUTO position, all three signal circuits are open. When placed in the AUTO position, the BCM monitors inputs from the ambient light sensor to determine if headlamps are required or if daytime running lamps will be activated based on outside lighting conditions. When the turn signal/multifunction switch is placed in the OFF position, the turn signal/multifunction switch headlamps OFF signal circuit is grounded, indicating to the BCM that the exterior lamps should be turned OFF. With the turn signal/multifunction switch in the PARK position, the turn signal/multifunction switch park lamps ON signal circuit is grounded, indicating that the park lamps have been requested. When the turn signal/multifunction switch is placed in the HEADLAMP position, both the turn signal/multifunction switch park lamps ON signal circuit and the turn signal/multifunction switch headlamps ON signal circuit are grounded. The BCM responds to the inputs by illuminating the park lamps and headlamps. When the low beam headlamps are requested, the BCM applies B+ to both low beam headlamp control circuits illuminating the low beam headlamps.

DESCRIPTION AND OPERATION > EXTERIOR LIGHTING SYSTEMS DESCRIPTION AND OPERATION > LOW BEAM HEADLAMPS (WITH T4F)

WARNING:

The high intensity discharge system produces high voltage and current. To reduce the risk of severe shocks and burns:

- *Never open the high intensity discharge system ballast or the arc tube assembly starter.*
- *Never probe between the high intensity discharge system ballast output connector and the arc tube assembly.*

The body control module (BCM) monitors three signal circuits from the turn signal/multifunction switch. When the turn signal/multifunction switch is in the AUTO position, all three signal circuits are open. When placed in the AUTO position, the BCM monitors inputs from the ambient light sensor to determine if headlamps are required or if daytime running lamps will be activated based on outside lighting conditions. When the turn signal/multifunction switch is placed in the OFF position, the turn signal/multifunction switch headlamps OFF signal circuit is grounded, indicating to the BCM that the exterior lamps should be turned OFF. With the turn signal/multifunction switch in the PARK position, the turn signal/multifunction switch park lamps ON signal circuit is grounded, indicating that the park lamps have been requested. When the turn signal/multifunction switch is placed in the HEADLAMP position, both the turn signal/multifunction switch park lamps ON signal circuit and the turn signal/multifunction switch headlamps ON signal circuit are grounded. The BCM responds to the low beam request by applying ground to the low beam relay control circuit which energizes the headlamp low beam relay. With the headlamp low beam relay energized, the switch contacts close allowing battery voltage to flow through the low beam fuses. Battery voltage is then applied from the fuses, through the low beam control circuits to the left and right headlamp ballast located in each headlamp assembly. When battery voltage is applied to the headlamp ballast through the low beam control circuits, the ballast charge the starter to start the lamp. High intensity discharge (HID) headlamps do not have filaments like traditional bulbs, instead the starter uses a high voltage transformer to convert the input voltage into a higher voltage. This increased voltage is used in order to create an arc between the electrodes in the bulb.

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Run Up Of The Lamp

Each ballast requires higher amperage in order to ensure normal startup and run up of the lamp. Run up is the term used to describe the extra power level given to the bulb. The input current during the steady state operation is lower that the start up amperage. After the lamp receives the strike from the starter and the arc is established, the ballast uses its operating voltage in order to provide the run up power needed in order to keep the lamp on. The lamp rapidly increases in intensity from a dim glow to a very high-intensity, bright light called a steady state. Within a few seconds of the arc being established in the bulb, the majority of steady state is complete. 100 percent of the steady state is completed shortly there after. A high watt power level is necessary in order to bring the lamp to a steady state in such a short period of time. The high watt power level allows the lamp to meet the SAE light vs. time specification.

When To Change The HID Bulb

Bulb failure, end of life occurs when the bulb gets old and becomes unstable. The bulb may begin shutting itself off sporadically and unpredictably at first, perhaps only once during a 24-hour period. When the bulb begins shutting itself off occasionally, the ballast will automatically turn the bulb back on again within 0.5 seconds. The ballast will re-strike the bulb so quickly that the bulb may not appear to have shut off. As the bulb ages, the bulb may begin to shut off more frequently, eventually over 30 times per minute. When the bulb begins to shut off more frequently, the ballast receives excessive, repetitive current input. Repetitive and excessive restarts or re-strikes, without time for the ballast to cool down, will permanently damage the ballast. As a safeguard, when repetitive re-strikes are detected, the ballast will not attempt to re-strike the lamp. The ballast then shuts down and the bulb goes out.

The following symptoms are noticeable signs of bulb failure:

- Flickering light, caused in the early stages of bulb failure
- Lights go out, caused when the ballast detects excessive, repetitive bulb re-strike
- Color change-The lamp may change to a dim pink glow.

Input power to the ballast must be terminated in order to reset the ballast's fault circuitry. In order to terminate the input power to the ballast, turn the lights off and back on again. Turning the lights off and back on again resets all of the fault circuitry within the ballast until the next occurrence of excessive, repetitive bulb re-strikes. When excessive, repetitive bulb re-strikes occur, replace the starter/arc tube assembly. The ballast will begin the start-up process when the starter/arc tube assembly is replaced. Repeatedly resetting the input power can overheat the internal components and cause permanent damage to the ballast. Allow a few minutes of cool-down time in between reset attempts.

Light Color

White light has a different color rating than regular headlamps. The range of white light that is acceptable is broad when compared to halogens. Therefore, some variation in headlight coloring between the right and left headlamp will be normal. One high intensity discharge (HID) at the end of the normal range may appear considerably different in color from one at the other end of the range. Difference in color is normal. Replace the arc tube only if the arc tube is determined to be at the bulb failure stage.

DESCRIPTION AND OPERATION > EXTERIOR LIGHTING SYSTEMS DESCRIPTION AND OPERATION > HIGH BEAM HEADLAMPS (WITHOUT T4F)

When the low beam headlamps are ON and the turn signal/multifunction switch is placed in the high beam position, ground is applied to the BCM through the high beam signal circuit. The BCM responds to the

high beam request by applying ground to the high beam relay control circuit which energizes the high beam relay. With the high beam relay energized, the switch contacts close allowing battery voltage to flow through the left and right high beam fuses to the high beam control circuits illuminating the left and right high beam headlamps.

DESCRIPTION AND OPERATION > EXTERIOR LIGHTING SYSTEMS DESCRIPTION AND OPERATION > HIGH BEAM HEADLAMPS (WITH T4F)

When the low beam headlamps are ON and the turn signal/multifunction switch is placed in the high beam position, ground is applied to the BCM through the high beam signal circuit. The BCM responds to the high beam request by applying ground to the headlamp high beam relay control circuit which energizes the headlamp high beam relay. With the headlamp high beam relay energized, the switch contacts close allowing battery voltage to flow through the left and right high beam fuses to the high beam control circuits and on to the left and right high beam solenoid actuators located in each headlamp assembly. Once the high beam solenoid actuators are active, the high beam solenoid shutters open in each headlamp assembly exposing the remaining portion of the headlamp that was covered by the shutters illuminating the high beams at full intensity.

DESCRIPTION AND OPERATION > EXTERIOR LIGHTING SYSTEMS DESCRIPTION AND OPERATION > DAYTIME RUNNING LAMPS

The daytime running lamps will illuminate continuously when the following conditions are met:

- The ignition is in the RUN or CRANK position
- The shift lever is out of the PARK position for vehicles equipped with automatic transmissions or the parking brake is released for vehicles with manual transmissions
- The low and high beam headlamps are OFF

The ambient light sensor is used to monitor outside lighting conditions. The ambient light sensor provides a voltage signal that will vary between 0.2 and 4.9 V depending on outside lighting conditions. The body control module (BCM) provides a 5 V reference signal to the ambient light sensor and the HVAC control module provides a low reference ground. The BCM monitors the ambient light sensor signal circuit to determine if outside lighting conditions are correct for either daytime running lamps or automatic lamp control when the headlamp switch is in the AUTO position. In daylight conditions the BCM will command the designated daytime running lamps ON. During low light conditions the BCM will command the low beam headlamps ON. Any function or condition that turns on the headlamps will cancel daytime running lamps operation.

DESCRIPTION AND OPERATION > EXTERIOR LIGHTING SYSTEMS DESCRIPTION AND OPERATION > FLASH TO PASS

When the turn signal/multifunction switch is momentarily placed in the flash to pass position, ground is applied to the turn signal/multifunction switch. The turn signal/multifunction switch applies ground to the body control module (BCM) through the flash to pass position switch signal circuit. The BCM responds to the flash to pass position request by applying ground to the high beam relay control circuit. This

energizes the high beam relay, closing the switch side contacts of the high beam relay, applying battery voltage to the left and right high beam fuses. Battery voltage is applied from the high beam fuses through the high beam control circuit to the high beam control circuits and on to the left and right high beam solenoid actuators within the headlamp assemblies. Once the high beam solenoid actuators are active, the solenoid shutters open in each headlamp assembly exposing the remaining portion of the headlamp that was covered by the shutters illuminating the high beams at full intensity.

DESCRIPTION AND OPERATION > EXTERIOR LIGHTING SYSTEMS DESCRIPTION AND OPERATION > FRONT FOG LAMPS

The front fog lamp relay is supplied with battery voltage at all times. The front fog lamp switch signal circuit is grounded momentarily by pressing the front fog lamp switch. The body control module (BCM) energizes the front fog lamp relay by applying ground to the front fog lamp relay control circuit. When the front fog lamp relay is energized, the relay switch contacts close and battery voltage is applied through the front fog lamp fuse to the front fog lamp supply voltage circuit which illuminates the front fog lamps.

DESCRIPTION AND OPERATION > EXTERIOR LIGHTING SYSTEMS DESCRIPTION AND OPERATION > HAZARD LAMPS

The hazard flashers may be activated in any power mode. The hazard switch signal circuit is momentarily grounded when the hazard switch is pressed. The body control module (BCM) responds to the hazard switch signal input by supplying battery voltage to all four turn signal lamps in an ON and OFF duty cycle. When the hazard switch is activated, the BCM sends a serial data message to the instrument panel cluster requesting both turn signal indicators to be cycled ON and OFF.

The instrument panel dimmer switch controls the brightness of the interior backlighting components. When the instrument panel dimmer switch is placed in a desired brightness position, the body control module (BCM) receives a signal from the instrument panel dimmer switch and responds by applying a pulse width modulated voltage to the hazard switch light emitting diode backlighting control circuit illuminating the LED to the desired level of brightness.

DESCRIPTION AND OPERATION > EXTERIOR LIGHTING SYSTEMS DESCRIPTION AND OPERATION > PARK, TAIL, AND LICENSE LAMPS

When the turn signal/multifunction switch is placed in the HEAD or PARK position, ground is applied to the turn signal/multifunction switch park lamp switch ON signal circuit to the body control module (BCM). The BCM responds by applying voltage to the park lamps, tail lamps, and license lamps control circuits illuminating the park, tail, and license lamps.

DESCRIPTION AND OPERATION > EXTERIOR LIGHTING SYSTEMS DESCRIPTION AND OPERATION > STOP LAMPS

The brake pedal position sensor is used to sense the action of the driver application of the brake pedal. The brake pedal position sensor provides an analog voltage signal that will increase as the brake pedal

is applied. The body control module (BCM) provides a low reference signal and a 5 V reference voltage to the brake pedal position sensor. When the variable signal reaches a voltage threshold indicating the brakes have been applied, the BCM will apply battery voltage to the stop lamps and center high mount stop lamp control circuits illuminating the left and right stop lamps and the center high mounted stop lamp.

DESCRIPTION AND OPERATION > EXTERIOR LIGHTING SYSTEMS DESCRIPTION AND OPERATION > TURN SIGNAL LAMPS

Ground is applied at all times to the turn signal/multifunction switch. The turn signal lamps may only be activated with the ignition switch in the ON or START positions. When the turn signal/multifunction switch is placed in either the TURN RIGHT or TURN LEFT position, ground is applied to the body control module (BCM) through either the right turn or left turn signal switch signal circuit. The BCM responds to the turn signal switch input by applying a pulsating voltage to the front and rear turn signal lamps through there respective control circuits. When a turn signal request is received by the BCM, a serial data message is sent to the instrument panel requesting the respective turn signal indicator be pulsed ON and OFF.

DESCRIPTION AND OPERATION > EXTERIOR LIGHTING SYSTEMS DESCRIPTION AND OPERATION > BACKUP LAMPS

With the engine ON and the transmission in the REVERSE position, the transmission control module (TCM) sends a serial data message to the body control module (BCM). The message indicates that the gear selector is in the REVERSE position. The BCM applies battery voltage to the backup lamps control circuit illuminating the backup lamps. Once the driver moves the gear selector out of the REVERSE position, a message is sent by the TCM via serial data requesting the BCM to remove battery voltage from the backup lamps control circuit. The engine must be ON for the backup lamps to operate.

DESCRIPTION AND OPERATION > EXTERIOR LIGHTING SYSTEMS DESCRIPTION AND OPERATION > BATTERY RUN DOWN PROTECTION/INADVERTENT POWER

To provide battery run down protection, the exterior lamps will be deactivated automatically under certain conditions. The BCM monitors the state of the turn signal/multifunction switch. If the turn signal/multifunction switch is placed in the park or headlamp positions when the ignition switch is placed in either the CRANK or RUN position and then placed in the OFF position, the BCM initiates a 10 minute timer. At the end of the 10 minutes, the BCM will turn off the control power output to the park lamp controls as well as the headlamp controls, deactivating the exterior lamps. This feature will be cancelled if any power mode other than OFF becomes active. The BCM will disable battery run down protection if any of the following conditions exist. The park or headlamp switch is placed in the ON to OFF position, and back to the ON position during battery run down protection. The BCM determined that the park or headlamp switch was not active when the ignition was turned OFF.

DESCRIPTION AND OPERATION > INTERIOR LIGHTING SYSTEMS DESCRIPTION AND OPERATION > INTERIOR LAMPS

The interior lighting system consist of two groups. This first group includes lamps that may not be

dimmed.

- Dome lamps
- Instrument panel courtesy lamps
- Reading lamps
- Rear compartment courtesy lamps
- Sunshade mirror lamps

Dome Lamps

The dome lamp switch contains 2 positions: DOOR and ON. The ON position provides a ground for continuous operation and the dome lamp will remain illuminated until the switch is placed in the DOOR position. When in the DOOR position, the dome lamp operation is controlled by the body control module (BCM). When any door is opened, the door ajar switch contacts close and the BCM receives a door open input. The BCM illuminates the dome lamp when any door is opened or a door lock/unlock request is activated with the key fob. After all doors have been closed, the dome lamp will remain illuminated approximately 3 seconds after the last door closes. In the event that the dome lamp were to remain illuminated for more than 10 minutes with the ignition switch in the OFF position, the BCM will deactivate the dome lamp control circuit to prevent total battery discharge. The dome lamps will turn OFF using the theater dimming feature when controlled by the BCM.

Reading Lamps

The inadvertent power supply voltage circuit from the BCM provides battery positive voltage to each reading lamp. When a reading lamp switch is activated, the switch contacts close providing a path to ground and the reading lamp illuminates. If the operator inadvertently leaves a reading lamp ON, the BCM will turn all interior lamps OFF after 10 minutes has passed since any switch activation has been detected by the BCM.

Rear Compartment Courtesy Lamp

When the rear compartment is opened, the rear compartment lid latch opens providing a rear compartment open input signal to the BCM. The BCM responds by applying battery voltage to the rear compartment courtesy lamp control circuit illuminating the rear compartment courtesy lamps.

Sunshade Mirror Lamps

The inadvertent power supply voltage circuit from the BCM provides battery voltage to each set of sunshade mirror lamps. When the sunshade mirror cover is opened, a switch closes providing ground and the sunshade lamps illuminate. If the operator inadvertently leaves a sunshade mirror cover open with the lamps ON, the BCM will turn all interior lamps OFF after 10 minutes has passed since any switch activation has been detected by the BCM.

Keyless Entry Interior Illumination

When the operator uses the keyless entry transmitter in order to unlock the doors, the BCM receives a door-unlock signal. The BCM must receive inputs from various systems that indicate that the ignition switch is OFF, the courtesy lamp switch is OFF, and all doors are closed before the BCM will activate the interior lamps. After all doors have been closed, the courtesy lamps will turn OFF immediately if the ignition switch is turned to the ON position, the door locks are LOCKED, or approximately 20 seconds after the last door closes. The BCM will turn off the courtesy lamps through the theater dimming feature. The BCM keeps the courtesy lamps on for 40 seconds after an alarm event is completed.

DESCRIPTION AND OPERATION > INTERIOR LIGHTING SYSTEMS DESCRIPTION AND OPERATION > INTERIOR LAMPS DIMMING

The second group includes lamps which may be dimmed. This group may use a combination of light emitting diodes (LED), incandescent lamps, and pulse width modulation illumination.

- Door lock switch - driver
- Door lock switch - passenger
- Folding top control switch
- Head - up display switch
- Hazard switch
- HVAC control head assembly
- Ignition mode switch
- Instrument panel dimmer switch
- Park brake switch
- Radio
- Rear compartment lid unlatch switch
- Seat memory switch - driver
- Steering wheel controls switch - left
- Steering wheel controls switch - right
- Sunroof switch
- Window switch - driver
- Window switch - passenger

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With the headlamp switch in the PARK or HEAD position, the park lamp switch signal circuit provides an input to the body control module (BCM). The BCM responds by applying voltage to the park lamps as well as the backlight dimming control circuits illuminating all components with interior backlighting. All interior backlighting turns ON at the dimming level indicated by the instrument panel dimmer switch. The instrument panel dimmer switch is used to increase and decrease the brightness of the interior backlighting components. The instrument panel dimmer switch provides a voltage signal to the body control module (BCM) that will increase as the brightness of the lights are increased and decrease as the brightness of the lights are decreased. The BCM provides a low reference, signal, and B+ voltage reference circuits to the instrument panel dimmer switch. When the instrument panel dimmer switch is placed in the desired position, the dimmed voltage setting is applied from the instrument panel dimmer switch through the instrument panel dimmer switch signal circuit to the BCM. The BCM interprets the signal and applies a pulse width modulated voltage through the LED dimming control circuits illuminating the interior backlighting to the requested level of brightness.

Ambient Lighting (with C70)

The body control module (BCM) supplies battery voltage to the center console flood lamp as well as the accent lamp control module via the accent lamps control circuit. When a door is opened the BCM applies battery voltage to the center console flood lamp as well as the accent lamp control module illuminating all of the accent lighting. The accent lamp control module receives the signal from the BCM and responds by applying voltage to the accent lighting that is controlled by the accent lamp control module. The accent lamp control module monitors this input from the BCM for dimming purposes and adjusts the brightness level based on the input from the BCM. All accent lighting will remain illuminated until all doors are closed and the ignition is OFF. The accent lighting remains illuminated with the ignition ON.

The accent lamp control module is capable of providing 24 separate colors for accent lighting. In addition to the 24 colors, the accent lamp control module contains 3 modes that consist of fade, transition, and car show. The accent lamp control module receives signals from the BCM that are used by the accent lamp control module to change the color of the accent lighting as well as the various modes the accent lighting can be displayed. The BCM provides two pulse width modulated signal circuits to the accent lamp control module, LED accent lamps signal 1 terminal 17 X1 and LED accent lamps signal 2 terminal 26 X6. When the accent lighting color selection switch is operated, a serial data message is sent via the Human Machine Interface Module to the BCM. The BCM responds to the accent lighting color selection by applying a pulse width modulated voltage to the accent lamp control module. The accent lamp control module interprets the pulse width modulated voltage and apply's the appropriate color based on this voltage to the accent lamps. Accent lighting mode selection operates in the same manner. When the accent lighting mode selection switch is operated, a serial data message is sent via the Human Machine Interface Module to the BCM. The BCM responds to the accent lighting mode selection by applying a pulse width modulated voltage to the accent lamp control module. The accent lamp control module interprets the pulse width modulated voltage and apply's the appropriate mode based on this voltage to the accent lamps.

DESCRIPTION AND OPERATION > INTERIOR LIGHTING SYSTEMS DESCRIPTION AND OPERATION > BATTERY RUNDOWN PROTECTION/INADVERTENT POWER

The BCM inadvertent power supply voltage circuit provides battery voltage to all of the interior courtesy lamps. 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 total battery discharge. If the ignition switch is turned to any position other than OFF, or if a lamp switch is activated during this 10 minute period, the timer resets for another 10 minutes.

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Service Manual: LIGHTING SYSTEM - DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B053A: LED ACCENT LIGHTING CONTROL CIRCUIT 1 SHORT TO GROUND > 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 INFORMATION AND PROCEDURES > DTC B053A: LED ACCENT LIGHTING CONTROL CIRCUIT 1 SHORT TO GROUND > DTC DESCRIPTOR

DTC B053A 02

LED Accent Lighting Control Circuit 1 Short to Ground

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B053A: LED ACCENT LIGHTING CONTROL CIRCUIT 1 SHORT TO GROUND > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
LED Accent Lamps Signal 1 - Terminal 17 X1	B053A 02	1	1	-
LED Accent Lamps Signal 2 - Terminal 26 X6	B053B 02	1	1	-
Accent Lamp Control Module B+ (with C70)	1	1	-	-
Accent Lamps - Control Terminal 2 X1 (with C70)	1	1	1	-
Accent Lamps Control 1 - Terminal 22 X7	B255F 02	B255F 04	1	-
Accent Lamps Control 2 - Terminal 23 X1	B255D 02	B255D 04	B255D 01	-
Accent Lamp Control Module Ground (with C70)	-	1	-	-
Accent Lamp - Left Instrument Panel Ground	-	1	-	-

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Accent Lamp - Right Instrument Panel Ground	-	1	-	-
Flood Lamp - Center Console Ground	-	1	-	-
Flood Lamp - Driver Door Handle Ground	-	1	-	-
Flood Lamp - Passenger Door Handle Ground	-	1	-	-
Floor Accent Lamp - Left Front Ground	-	1	-	-
Floor Accent Lamp - Right Front Ground	-	1	-	-
Accent Lamp - Driver Door Lower Ground (with C70)	-	1	-	-
Accent Lamp - Driver Door Upper Ground (with C70)	-	1	-	-
Accent Lamp - Left Instrument Panel Ground (with C70)	-	1	-	-
Accent Lamp - Right Instrument Panel Ground (with C70)	-	1	-	-
Accent Lamp - Passenger Door Lower Ground (with C70)	-	1	-	-
Accent Lamp - Passenger Door Upper Ground (with C70)	-	1	-	-
Floor Accent Lamp - Left Front Ground (with C70)	-	1	-	-
Floor Accent Lamp - Right Front Ground (with C70)	-	1	-	-
Rear Compartment Accent Lamp - Ground (with C70)	-	1	-	-
1. Interior Accent Lighting Malfunction				

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B053A: LED ACCENT LIGHTING CONTROL CIRCUIT 1 SHORT TO GROUND > CIRCUIT/SYSTEM DESCRIPTION

The body control module (BCM) supplies battery voltage to the center console flood lamp as well as the accent lamp control module via the accent lamps control circuit. When a door is opened the BCM applies battery voltage to the center console flood lamp as well as the accent lamp control module illuminating all of the accent lighting. The accent lamp control module receives the signal from the BCM and responds by applying voltage to the accent lighting that is controlled by the accent lamp control module. The

accent lamp control module monitors this input from the BCM for dimming purposes and adjusts the brightness level based on the input from the BCM. All accent lighting will remain illuminated until all doors are closed and the ignition is OFF. The accent lighting remains illuminated with the ignition ON.

The accent lamp control module is capable of providing 24 separate colors for accent lighting. In addition to the 24 colors, the accent lamp control module contains 3 modes that consist of fade, transition, and car show. The accent lamp control module receives signals from the BCM that are used by the accent lamp control module to change the color of the accent lighting as well as the various modes the accent lighting can be displayed. The BCM provides two pulse width modulated signal circuits to the accent lamp control module, LED accent lamps signal 1 terminal 17 X1 and LED accent lamps signal 2 terminal 26 X6. When the accent lighting color selection switch is operated, a serial data message is sent via the Human Machine Interface Module to the BCM. The BCM responds to the accent lighting color selection by applying a pulse width modulated voltage to the accent lamp control module. The accent lamp control module interprets the pulse width modulated voltage and apply's the appropriate color based on this voltage to the accent lamps. Accent lighting mode selection operates in the same manner. When the accent lighting mode selection switch is operated, a serial data message is sent via the Human Machine Interface Module to the BCM. The BCM responds to the accent lighting mode selection by applying a pulse width modulated voltage to the accent lamp control module. The accent lamp control module interprets the pulse width modulated voltage and apply's the appropriate mode based on this voltage to the accent lamps.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B053A: LED ACCENT LIGHTING CONTROL CIRCUIT 1 SHORT TO GROUND > CONDITIONS FOR RUNNING THE DTC

Battery voltage must be between 9-16 V.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B053A: LED ACCENT LIGHTING CONTROL CIRCUIT 1 SHORT TO GROUND > CONDITIONS FOR SETTING THE DTC

The BCM detects a short to ground in the LED accent lamp signal circuit terminal 17 X1.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B053A: LED ACCENT LIGHTING CONTROL CIRCUIT 1 SHORT TO GROUND > ACTIONS TAKEN WHEN THE DTC SETS

The BCM will disable the LED accent lamp signal circuit terminal 17 X1.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B053A: LED ACCENT LIGHTING CONTROL CIRCUIT 1 SHORT TO GROUND > CONDITIONS FOR CLEARING THE DTC

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

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B053A: LED ACCENT LIGHTING CONTROL CIRCUIT 1 SHORT TO GROUND > REFERENCE INFORMATION

Schematic Reference

Interior Lights Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

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

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B053A: LED ACCENT LIGHTING CONTROL CIRCUIT 1 SHORT TO GROUND > CIRCUIT/SYSTEM TESTING

1. Ignition OFF, disconnect the X1 harness connector at the K126 Accent Lamp Control Module, ignition ON.
2. Verify a test lamp illuminates between the control circuit terminal 17 and ground.
    1. **If the test lamp does not illuminate**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the control circuit terminal 17 and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.

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1. If 2 Ω or greater, repair the open/high resistance in the circuit.
2. If less than 2 Ω, replace the K9 Body Control Module.

1. **If the test lamp illuminates**

3. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module, ignition ON.
4. Verify a test lamp does not illuminate between the control circuit terminal 17 and ground.
    1. **If the test lamp illuminates**
        1. Ignition ON.
        2. Test for less than 1 V between the control circuit terminal and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
    1. **If the test lamp does not illuminate**
5. Test or replace the K126 Accent Lamp Control Module.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B053A: LED ACCENT LIGHTING CONTROL CIRCUIT 1 SHORT TO GROUND > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Interior Lamp Control Module Replacement
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B1395: CONTROL MODULE VOLTAGE REFERENCE OUTPUT 1 CIRCUIT VOLTAGE > 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 INFORMATION AND PROCEDURES > DTC B1395: CONTROL MODULE VOLTAGE REFERENCE OUTPUT 1 CIRCUIT VOLTAGE > DTC DESCRIPTORS

DTC B1395 03

Control Module Voltage Reference Output 1 Circuit Low Voltage

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DTC B1395 07

Control Module Voltage Reference Output 1 Circuit High Voltage

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B1395: CONTROL MODULE VOLTAGE REFERENCE OUTPUT 1 CIRCUIT VOLTAGE > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Instrument Panel Dimmer Switch B+ Reference	B1395 03, B3600 03	B1395 03, B3600 03	B1395 07, B3600 07	-
Instrument Panel Dimmer Switch Signal	B1395 03, B3600 03	B1395 03, B3600 03	B1395 07, B3600 07	-
Instrument Panel Dimmer Switch Low Reference	1	1	1	-
1. Interior Backlighting Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B1395: CONTROL MODULE VOLTAGE REFERENCE OUTPUT 1 CIRCUIT VOLTAGE > CIRCUIT/SYSTEM DESCRIPTION

The instrument panel dimmer switch is used to increase and decrease the brightness of the interior backlighting components. The instrument panel dimmer switch provides a voltage signal to the body control module (BCM) that will increase as the brightness of the lights are increased and decrease as the brightness of the lights are decreased. The BCM provides a low reference, signal, and B+ voltage reference to the instrument panel dimmer switch. When the instrument panel dimmer switch is placed in the desired position, the dimmed voltage setting is applied from the instrument panel dimmer switch through the instrument panel dimmer switch signal circuit to the BCM. The BCM interprets the signal and applies a pulse width modulated voltage through the LED dimming 1 and dimming 2 control circuits illuminating the interior backlighting to the requested level of brightness.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B1395: CONTROL MODULE VOLTAGE REFERENCE OUTPUT 1 CIRCUIT VOLTAGE > CONDITIONS FOR RUNNING THE DTC

- Battery voltage must be between 9-16 V.
- Park Lamps ON.

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B1395: CONTROL MODULE VOLTAGE REFERENCE OUTPUT 1 CIRCUIT VOLTAGE > CONDITIONS FOR SETTING THE DTC

DTC B1395 03

- The BCM detects a short to ground or an open/high resistance in the instrument panel dimmer switch B+ reference circuit.
- The BCM detects a short to ground or an open/high resistance in the instrument panel dimmer switch signal circuit.

DTC B1395 07

- The BCM detects a short to voltage in the instrument panel dimmer switch B+ reference circuit.
- The BCM detects a short to voltage in the instrument panel dimmer switch signal circuit.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B1395: CONTROL MODULE VOLTAGE REFERENCE OUTPUT 1 CIRCUIT VOLTAGE > ACTIONS TAKEN WHEN THE DTC SETS

The BCM will not dim any interior backlighting. All interior backlighting will default to the FULL bright.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B1395: CONTROL MODULE VOLTAGE REFERENCE OUTPUT 1 CIRCUIT VOLTAGE > CONDITIONS FOR CLEARING THE DTC

- The condition responsible for setting the DTC no longer exists.
- Disconnect the negative battery cable for 30 s.
- A history DTC will clear once 100 consecutive malfunction-free ignition cycles have occurred.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B1395: CONTROL MODULE VOLTAGE REFERENCE OUTPUT 1 CIRCUIT VOLTAGE > DIAGNOSTIC AIDS

When a short to ground condition exists, the BCM goes into safe mode. The DTC will clear in most cases without removing the negative battery cable, but in order to restore the BCM to normal operating conditions the negative battery cable must be removed. The B+ reference circuit under normal operating conditions will illuminate a test lamp. When the BCM is in safe mode, a test lamp will no longer illuminate but the DTC will clear and the backlighting will dim normally.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B1395: CONTROL MODULE

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VOLTAGE REFERENCE OUTPUT 1 CIRCUIT VOLTAGE > REFERENCE INFORMATION

Schematic Reference

Interior Lights Dimming Schematics

Connector End View Reference

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- Wiring Repairs

Scan Tool Reference

Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B1395: CONTROL MODULE VOLTAGE REFERENCE OUTPUT 1 CIRCUIT VOLTAGE > CIRCUIT/SYSTEM TESTING

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S36 Instrument Panel Dimmer Switch, ignition ON.
2. Test for B+ between the B+ circuit terminal 6 and ground.
    1. **If less than B+**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the B+ circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the B+ circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If B+**
3. Verify a test lamp illuminates between the B+ circuit terminal 6 and the low reference circuit terminal 1.

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1. **If the test lamp does not illuminate**
    1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module, ignition ON.
    2. Test for less than 1 V between the low reference circuit terminal 1 and ground.
        1. If 1 V or greater, repair the short to voltage on the circuit.
        1. If less than 1 V
    3. Test for less than 2 Ω in the low reference circuit end to end.
        1. If 2 Ω or greater, repair the open/high resistance in the circuit.
        2. If less than 2 Ω, replace the K9 Body Control Module.
1. **If the test lamp illuminates**

4. Verify a test lamp does not illuminate between the B+ circuit terminal 6 and the signal circuit terminal 2.
    1. **If the test lamp illuminates**
        1. Ignition OFF, disconnect the X2 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the signal circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            2. If infinite resistance, replace the K9 Body Control Module.
    1. **If the test lamp does not illuminate**
5. Test for B+ between the B+ circuit terminal 6 and the signal circuit terminal 2.
    1. **If less than B+**
        1. Ignition OFF, disconnect the X2 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the signal circuit terminal 2 and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            1. If less than 1 V
        3. Test for less than 2 Ω in the signal circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If B+**
6. Test or replace the S36 Instrument Panel Dimmer Switch.

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B1395: CONTROL MODULE VOLTAGE REFERENCE OUTPUT 1 CIRCUIT VOLTAGE > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Dimmer Switch Replacement
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B1480: BATTERY RUNDOWN PROTECTION CIRCUIT SHORT TO GROUND > 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 INFORMATION AND PROCEDURES > DTC B1480: BATTERY RUNDOWN PROTECTION CIRCUIT SHORT TO GROUND > DTC DESCRIPTOR

DTC B1480 02

Battery Rundown Protection Circuit Short to Ground

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B1480: BATTERY RUNDOWN PROTECTION CIRCUIT SHORT TO GROUND > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
F31UA (BCM 7) Fuse B+	1	1	-	-
Courtesy Lamps Control - Terminal 3 X7	B1480 02	1	1	-
Dome/Reading Lamps - Left Front Ground	-	1	-	-
Dome/Reading Lamps - Right Front Ground	-	1	-	-
Sunshade Mirror Lamp - Left Ground	-	1	-	-
Sunshade Mirror Lamp - Right Ground	-	1	-	-
1. Courtesy Lamps Malfunction				

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B1480: BATTERY RUNDOWN PROTECTION CIRCUIT SHORT TO GROUND > CIRCUIT/SYSTEM DESCRIPTION

The body control module (BCM) supplies battery voltage to the left and right front reading lamps and left and right sunshade lamps via the courtesy lamp control circuit. When a sunshade mirror is opened, the switch contacts close allowing battery voltage to flow illuminating the respective lamps. The front reading lamps are controlled by individual switches that are activated by the occupants when additional cabin lighting is required. In the event that any of these courtesy lamps were to remain illuminated for more than 10 minutes with the ignition switch in the OFF position, the BCM will deactivate the courtesy lamp control circuit to prevent total battery discharge.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B1480: BATTERY RUNDOWN PROTECTION CIRCUIT SHORT TO GROUND > CONDITIONS FOR RUNNING THE DTC

Battery voltage must be between 9-16 V.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B1480: BATTERY RUNDOWN PROTECTION CIRCUIT SHORT TO GROUND > CONDITIONS FOR SETTING THE DTC

The BCM detects a short to ground in the courtesy lamps control circuit terminal 3 X7.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B1480: BATTERY RUNDOWN PROTECTION CIRCUIT SHORT TO GROUND > ACTIONS TAKEN WHEN THE DTC SETS

The BCM will disable the circuit and all lamps controlled by the courtesy lamps control circuit will be inoperative.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B1480: BATTERY RUNDOWN PROTECTION CIRCUIT SHORT TO GROUND > CONDITIONS FOR CLEARING THE DTC

- The condition responsible for setting the DTC no longer exists.
- Disconnect the negative battery cable for 30 s.
- A history DTC will clear once 100 consecutive malfunction-free ignition cycles have occurred.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B1480: BATTERY RUNDOWN

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PROTECTION CIRCUIT SHORT TO GROUND > REFERENCE INFORMATION

Schematic Reference

- Interior Lights Schematics
- Body Control System Schematics

Connector End View Reference

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Scan Tool Reference

Control Module References for scan tool information

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B1480: BATTERY RUNDOWN PROTECTION CIRCUIT SHORT TO GROUND > CIRCUIT/SYSTEM TESTING

1. Ignition OFF, exterior lamps OFF, disconnect the harness connectors at the components listed below.
    1. A31L Sunshade Mirror Lamp - Left
    2. A31R Sunshade Mirror Lamp - Right
    3. E37LF Dome/Reading Lamps - Left Front
    4. E37RF Dome/Reading Lamps - Right Front
2. Connect a test lamp between the appropriate control circuit terminal listed below and ground, ignition ON.
    1. A31L Sunshade Mirror Lamp - Left terminal 1
    2. A31R Sunshade Mirror Lamp - Right terminal 1
    3. E37LF Dome/Reading Lamps - Left Front terminal 2
    4. E37RF Dome/Reading Lamps - Right Front terminal 2
3. Verify the test lamp turns ON and OFF when commanding the Inadvertent Load ON and OFF

with a scan tool.

1. **If the test lamp is always OFF**
    1. Ignition OFF, disconnect the X7 harness connector at the K9 Body Control Module.
    2. Test for infinite resistance between the control circuit and ground.
        1. If less than infinite resistance, repair the short to ground on the circuit.
        1. If infinite resistance
    3. Test for less than 2 Ω in the control circuit end to end.
        1. If 2 Ω or greater, repair the open/high resistance in the circuit.
        2. If less than 2 Ω, replace the K9 Body Control Module.
1. **If the test lamp is always ON**
    1. Ignition OFF, disconnect the X7 harness connector at the K9 Body Control Module, ignition ON.
    2. Test for less than 1 V between the control circuit terminal and ground.
        1. If 1 V or greater, repair the short to voltage on the circuit.
        2. If less than 1 V, replace the K9 Body Control Module.
1. **If the test lamp turns ON and OFF**

4. Test or replace the courtesy lamp.

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B1480: BATTERY RUNDOWN PROTECTION CIRCUIT SHORT TO GROUND > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Sunshade Replacement (Coupe) Sunshade Replacement (Convertible)
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2540: REAR FOG LAMPS CONTROL CIRCUIT > 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 INFORMATION AND PROCEDURES > DTC B2540: REAR FOG LAMPS CONTROL CIRCUIT > DTC DESCRIPTORS

DTC B2540 02

Rear Fog Lamps Control Circuit Short to Ground

DTC B2540 04

Rear Fog Lamps Control Circuit Open

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2540: REAR FOG LAMPS CONTROL CIRCUIT > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Rear Fog Lamp Switch Signal	B3588 00	1	1	-
Rear Fog Lamp Control	B2540 02	B2540 04	1	-
Rear Fog Lamp Ground	-	1	-	-
Turn Signal/Multifunction Switch Ground	-	1	-	-
1. Rear Fog Lamp Malfunction				

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2540: REAR FOG LAMPS CONTROL CIRCUIT > CIRCUIT/SYSTEM DESCRIPTION

The rear fog lamp switch signal circuit is grounded momentarily by pressing the rear fog lamp switch. The body control module (BCM) responds to the rear fog lamp request by applying voltage to the rear fog lamp control circuit which illuminates the rear fog lamp.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2540: REAR FOG LAMPS CONTROL CIRCUIT > CONDITIONS FOR RUNNING THE DTC

- Battery voltage must be between 9-16 V.
- Rear fog lamp ON.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2540: REAR FOG LAMPS CONTROL CIRCUIT > CONDITIONS FOR SETTING THE DTC

DTC B2540 02

The BCM detects a short to ground in the rear fog lamp control circuit.

DTC B2540 04

The BCM detects an open/high resistance in the rear fog lamp control circuit.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2540: REAR FOG LAMPS CONTROL CIRCUIT > ACTIONS TAKEN WHEN THE DTC SETS

The rear fog lamp will not operate when the park lamps are ON and the rear fog lamp switch is active.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2540: REAR FOG LAMPS CONTROL CIRCUIT > 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.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2540: REAR FOG LAMPS CONTROL CIRCUIT > REFERENCE INFORMATION

Schematic Reference

Fog Lights Schematics

Connector End View Reference

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Scan Tool Reference

Control Module References for scan tool information

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2540: REAR FOG LAMPS CONTROL CIRCUIT > CIRCUIT/SYSTEM TESTING

1. Ignition OFF, exterior lamps OFF, disconnect the harness connector at the E29R Fog Lamp - Rear.
2. Test for less than 5 Ω between the ground circuit terminal 2 and ground.
    1. **If 5 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 5 Ω**
3. Connect a test lamp between the control circuit terminal 3 and ground, ignition ON.
4. Verify the test lamp turns ON and OFF when commanding the Rear Fog Lamp ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the X3 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If the test lamp is always ON**
        1. Ignition OFF, disconnect the X3 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the control circuit terminal and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            2. If less than 1 V, replace the K9 Body Control Module.
    1. **If the test lamp turns ON and OFF**
5. Test or replace the E29R Fog Lamp - Rear.

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2540: REAR FOG LAMPS CONTROL CIRCUIT > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Backup Bulb Replacement
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2545: BACKUP LAMPS CIRCUIT > 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 INFORMATION AND PROCEDURES > DTC B2545: BACKUP LAMPS CIRCUIT > DTC DESCRIPTORS

DTC B2545 02

Backup Lamps Circuit Short to Ground

DTC B2545 04

Backup Lamps Circuit Open

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2545: BACKUP LAMPS CIRCUIT > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
F31UA (BCM 7) Fuse B+	1	1	-	-
Backup Lamps Control	B127B 2B, B2545 02	B127B 2B, B2545 04	1	-
Backup Lamp Ground - Left	-	1	-	-
Backup Lamp Ground - Right	-	1	-	-
1. Backup Lamps Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2545: BACKUP LAMPS

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CIRCUIT > CIRCUIT/SYSTEM DESCRIPTION

Automatic Transmission

With the engine running and the transmission in the reverse position, the transmission control module (TCM) sends a serial data message to the body control module (BCM). The message indicates that the gear selector is in the reverse position. The BCM applies battery voltage to the backup lamps control circuit illuminating the backup lamps. Once the driver moves the gear selector out of the reverse position, a message is sent by the TCM via serial data requesting the BCM to remove battery voltage from the backup lamps control circuit. The engine must be running for the backup lamps to operate.

Manual Transmission

The engine control module (ECM) provides a signal circuit to the backup lamp switch which is permanently grounded. With the engine running and the transmission in the reverse position, the backup lamp switch signal circuit is pulled low and the ECM responds by sending a serial data message to the body control module (BCM). The message indicates that the gear selector is in the reverse position. The BCM applies battery voltage to the backup lamps control circuit illuminating the backup lamps. Once the driver moves the gear selector out of the reverse position, a message is sent by the ECM via serial data requesting the BCM to remove battery voltage from the backup lamps control circuit. The engine must be running for the backup lamps to operate.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2545: BACKUP LAMPS CIRCUIT > CONDITIONS FOR RUNNING THE DTC

- Battery voltage must be between 9-16 V.
- Engine RUNNING.
- Transmission placed in REVERSE gear.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2545: BACKUP LAMPS CIRCUIT > CONDITIONS FOR SETTING THE DTC

DTC B2545 02

The BCM detects a short to ground in the backup lamps control circuit.

DTC B2545 04

The BCM detects an open/high resistance in the backup lamps control circuit.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2545: BACKUP LAMPS CIRCUIT > ACTIONS TAKEN WHEN THE DTC SETS

The backup lamps will not operate.

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2545: BACKUP LAMPS CIRCUIT > 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.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2545: BACKUP LAMPS CIRCUIT > REFERENCE INFORMATION

Schematic Reference

- Exterior Lights Schematics
- Body Control System Schematics

Connector End View Reference

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Control Module References for scan tool information

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2545: BACKUP LAMPS CIRCUIT > CIRCUIT/SYSTEM TESTING

1. Ignition OFF, exterior lamps OFF, disconnect the harness connector at the appropriate E5 Backup Lamp. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 5 Ω between the ground circuit terminal B and ground.
    1. **If 5 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.

1. If 2 Ω or greater, repair the open/high resistance in the circuit.
2. If less than 2 Ω, repair the open/high resistance in the ground connection.

1. **If less than 5 Ω**

3. Connect a test lamp between the control circuit terminal A and ground, ignition ON.
4. Verify the test lamp turns ON and OFF when commanding the Backup Lamps ON and OFF with a scan tool.

1. **If the test lamp is always OFF**

1. Ignition OFF, disconnect the X7 harness connector at the K9 Body Control Module.
2. Test for infinite resistance between the control circuit and ground.

1. If less than infinite resistance, repair the short to ground on the circuit.

1. If infinite resistance

3. Test for less than 2 Ω in the control circuit end to end.

1. If 2 Ω or greater, repair the open/high resistance in the circuit.
2. If less than 2 Ω, replace the K9 Body Control Module.

1. **If the test lamp is always ON**

1. Ignition OFF, disconnect the X7 harness connector at the K9 Body Control Module, ignition ON.
2. Test for less than 1 V between the control circuit terminal and ground.

1. If 1 V or greater, repair the short to voltage on the circuit.
2. If less than 1 V, replace the K9 Body Control Module.

1. **If the test lamp turns ON and OFF**

5. Test or replace the E5 Backup Lamp.

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2545: BACKUP LAMPS CIRCUIT > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Backup Bulb Replacement
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B255D: PASSENGER COMPARTMENT LAMP CONTROL 2 CIRCUIT > 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 INFORMATION AND PROCEDURES > DTC B255D: PASSENGER COMPARTMENT LAMP CONTROL 2 CIRCUIT > DTC DESCRIPTORS

DTC B255D 01

Passenger Compartment Lamp Control 2 Circuit Short to Battery

DTC B255D 02

Passenger Compartment Lamp Control 2 Circuit Short to Ground

DTC B255D 04

Passenger Compartment Lamp Control 2 Circuit Open

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B255D: PASSENGER COMPARTMENT LAMP CONTROL 2 CIRCUIT > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Accent Lamps Control 2 - Terminal 23 X1	B255D 02	B255D 04	B255D 01	-
Accent Lamp Control Module Signal (with C70)	1	1	1	-
Flood Lamp - Center Console Ground	-	1	-	-
1. Interior Accent Lighting Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B255D: PASSENGER COMPARTMENT LAMP CONTROL 2 CIRCUIT > CIRCUIT/SYSTEM DESCRIPTION

Accent Lighting without C70

The body control module (BCM) supplies battery voltage to the accent lamps via the accent lamps control circuit. When a door is opened the BCM applies battery voltage to the accent lamps control circuit illuminating all of the accent lighting. The accent lighting will remain illuminated until all doors are closed and the ignition is OFF. The accent lighting remains illuminated with the ignition ON.

Accent Lighting with C70

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The body control module (BCM) supplies battery voltage to the center console flood lamp as well as the accent lamp control module via the accent lamps control circuit. When a door is opened the BCM applies battery voltage to the center console flood lamp as well as the accent lamp control module illuminating all of the accent lighting. The accent lamp control module receives the signal from the BCM and responds by applying voltage to the accent lighting that is controlled by the accent lamp control module. The accent lamp control module monitors this input from the BCM for dimming purposes and adjusts the brightness level based on the input from the BCM. All accent lighting will remain illuminated until all doors are closed and the ignition is OFF. The accent lighting remains illuminated with the ignition ON.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B255D: PASSENGER COMPARTMENT LAMP CONTROL 2 CIRCUIT > CONDITIONS FOR RUNNING THE DTC

Battery voltage must be between 9-16 V.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B255D: PASSENGER COMPARTMENT LAMP CONTROL 2 CIRCUIT > CONDITIONS FOR SETTING THE DTC

DTC B255D 01

The BCM detects a short to voltage in the accent lamps control circuit terminal 23 X1.

DTC B255D 02

The BCM detects a short to ground in the accent lamps control circuit terminal 23 X1.

DTC B255D 04

The BCM detects an open/high resistance in the accent lamps control circuit terminal 23 X1.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B255D: PASSENGER COMPARTMENT LAMP CONTROL 2 CIRCUIT > ACTIONS TAKEN WHEN THE DTC SETS

The BCM will disable the accent lamps control circuit terminal 23 X1.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B255D: PASSENGER COMPARTMENT LAMP CONTROL 2 CIRCUIT > CONDITIONS FOR CLEARING THE DTC

- The condition responsible for setting the DTC no longer exists.
- Turn ignition OFF, open and close drivers door, wait 1 min.
- A history DTC will clear once 100 consecutive malfunction-free ignition cycles have occurred.

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B255D: PASSENGER COMPARTMENT LAMP CONTROL 2 CIRCUIT > REFERENCE INFORMATION

Schematic Reference

Interior Lights Schematics

Connector End View Reference

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Scan Tool Reference

Control Module References for scan tool information

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B255D: PASSENGER COMPARTMENT LAMP CONTROL 2 CIRCUIT > CIRCUIT/SYSTEM TESTING

1. Ignition OFF, disconnect the harness connectors at the components listed below.
    1. E38 Flood Lamp - Center Console
    2. K126 Accent Lamp Control Module (with C70)
2. Connect a test lamp between the appropriate control circuit terminal listed below and ground, ignition ON.
    1. E38 Flood Lamp - Center Console terminal 1
    2. K126 Accent Lamp Control Module terminal 5 (with C70)
3. Verify the test lamp turns ON and OFF when commanding the Accent Lighting 2 ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the control circuit and ground.

1. If less than infinite resistance, repair the short to ground on the circuit.
1. If infinite resistance

3. Test for less than 2 Ω in the control circuit end to end.
1. If 2 Ω or greater, repair the open/high resistance in the circuit.
2. If less than 2 Ω, replace the K9 Body Control Module.

1. **If the test lamp is always ON**
1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module, ignition ON.
2. Test for less than 1 V between the control circuit terminal and ground.
1. If 1 V or greater, repair the short to voltage on the circuit.
2. If less than 1 V, replace the K9 Body Control Module.

1. **If the test lamp turns ON and OFF**

4. Test or replace the accent lamp.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B255D: PASSENGER COMPARTMENT LAMP CONTROL 2 CIRCUIT > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Interior Lamp Control Module Replacement
- Front Floor Console Flood Lamp Replacement
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B255F: INTERIOR DOOR HANDLE BACKLIGHT CIRCUIT > 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 INFORMATION AND PROCEDURES > DTC B255F: INTERIOR DOOR HANDLE BACKLIGHT CIRCUIT > DTC DESCRIPTORS

DTC B255F 02

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Interior Door Handle Backlight Circuit Short to Ground

DTC B255F 04

Interior Door Handle Backlight Circuit Open

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B255F: INTERIOR DOOR HANDLE BACKLIGHT CIRCUIT > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Accent Lamps Control 1 - Terminal 22 X7	B255F 02	B255F 04	1	-
Accent Lamp - Left Instrument Panel Ground	-	1	-	-
Accent Lamp - Right Instrument Panel Ground	-	1	-	-
Flood Lamp - Driver Door Handle Ground	-	1	-	-
Flood Lamp - Passenger Door Handle Ground	-	1	-	-
Floor Accent Lamp - Left Front Ground	-	1	-	-
Floor Accent Lamp - Right Front Ground	-	1	-	-
1. Interior Accent Lighting Malfunction				

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B255F: INTERIOR DOOR HANDLE BACKLIGHT CIRCUIT > CIRCUIT/SYSTEM DESCRIPTION

The body control module (BCM) supplies battery voltage to accent lamps via the accent lamp control circuit. When a door is opened the BCM applies battery voltage to the accent lamp control circuit illuminating all of the accent lighting. The accent lighting will remain illuminated until all doors are closed and the ignition is OFF. The accent lighting remains illuminated with the ignition ON.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B255F: INTERIOR DOOR HANDLE BACKLIGHT CIRCUIT > CONDITIONS FOR RUNNING THE DTC

Battery voltage must be between 9-16 V.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B255F: INTERIOR DOOR HANDLE BACKLIGHT CIRCUIT > CONDITIONS FOR SETTING THE DTC

DTC B255F 02

The BCM detects a short to ground in the accent lamp control circuit terminal 22 X7

DTC B255F 04

The BCM detects an open/high resistance in the accent lamp control circuit terminal 22 X7

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B255F: INTERIOR DOOR HANDLE BACKLIGHT CIRCUIT > ACTIONS TAKEN WHEN THE DTC SETS

The BCM will disable the accent lamp control circuit.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B255F: INTERIOR DOOR HANDLE BACKLIGHT CIRCUIT > CONDITIONS FOR CLEARING THE DTC

- The condition responsible for setting the DTC no longer exists.
- Turn ignition OFF, open and close drivers door, wait 1 min.
- A history DTC will clear once 100 consecutive malfunction-free ignition cycles have occurred.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B255F: INTERIOR DOOR HANDLE BACKLIGHT CIRCUIT > REFERENCE INFORMATION

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Interior Lights Schematics

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Interior Lighting Systems Description and Operation

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- Wiring Repairs

Scan Tool Reference

Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B255F: INTERIOR DOOR HANDLE BACKLIGHT CIRCUIT > CIRCUIT/SYSTEM TESTING

> *NOTE:*
>
> *Each component may need to be disconnected to isolate a short to voltage, short to ground, or an open/high resistance. Use the schematics to identify the following:*
>
> 1. *Courtesy lamps the vehicle is equipped with*
> 2. *Each component's control and ground circuit terminals*
> 3. *Component locations on the exterior courtesy lamps control circuit*

1. Ignition OFF, scan tool disconnected, all doors closed, all accessories OFF, open and close drivers door, disconnect the harness connector at the appropriate component listed below. It may take up to 2 min for all vehicle systems to power down.
    1. E1AA Floor Accent Lamp - Left Front
    2. E1AB Floor Accent Lamp - Right Front
    3. E1G Accent Lamp - Left Instrument Panel
    4. E1H Accent Lamp - Right Instrument Panel
    5. E63D Flood Lamp - Driver Door Handle
    6. E63P Flood Lamp - Passenger Door Handle
2. Test for less than 10 Ω between the appropriate ground circuit terminal listed below and ground.
    1. E1AA Floor Accent Lamp - Left Front terminal 3
    2. E1AB Floor Accent Lamp - Right Front terminal 3
    3. E1G Accent Lamp - Left Instrument Panel terminal 3
    4. E1H Accent Lamp - Right Instrument Panel terminal 3
    5. E63D Flood Lamp - Driver Door Handle terminal 2
    6. E63P Flood Lamp - Passenger Door Handle terminal 2
        1. **If 10 Ω or greater**
            1. Ignition OFF.

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2. Test for less than 2 Ω in the ground circuit end to end.
    1. If 2 Ω or greater, repair the open/high resistance in the circuit.
    2. If less than 2 Ω, repair the open/high resistance in the ground connection.

1. **If less than 10 Ω**

3. Connect a test lamp between the appropriate control circuit terminal listed below and ground, ignition ON.
    1. E1AA Floor Accent Lamp - Left Front terminal 1
    2. E1AB Floor Accent Lamp - Right Front terminal 1
    3. E1G Accent Lamp - Left Instrument Panel terminal 1
    4. E1H Accent Lamp - Right Instrument Panel terminal 1
    5. E63D Flood Lamp - Driver Door Handle terminal 1
    6. E63P Flood Lamp - Passenger Door Handle terminal 1
4. Verify the test lamp turns ON and OFF when commanding the Accent Lighting 1 ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the X7 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If the test lamp is always ON**
        1. Ignition OFF, disconnect the X7 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the control circuit terminal and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            2. If less than 1 V, replace the K9 Body Control Module.
    1. **If the test lamp turns ON and OFF**
5. Test or replace the accent/flood lamp.

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B255F: INTERIOR DOOR HANDLE BACKLIGHT CIRCUIT > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Front Side Door Inside Handle Illumination Lamp Replacement
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2570: TRUNK LAMP CONTROL CIRCUIT > 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 INFORMATION AND PROCEDURES > DTC B2570: TRUNK LAMP CONTROL CIRCUIT > DTC DESCRIPTORS

DTC B2570 02

Trunk Lamp Control Circuit Short to Ground

DTC B2570 04

Trunk Lamp Control Circuit Open

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2570: TRUNK LAMP CONTROL CIRCUIT > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Rear Compartment Courtesy Lamp Control	B2570 02	B2570 04	B2570 04	-
Rear Compartment Courtesy Lamp Ground	-	1	-	-
1. Rear Compartment Lamp Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2570: TRUNK LAMP CONTROL CIRCUIT > CIRCUIT/SYSTEM DESCRIPTION

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The body control module (BCM) applies battery voltage to the rear compartment courtesy lamps through the rear compartment lamp control circuit. When the BCM receives a rear compartment lid open input from the rear compartment lid latch, the BCM applies battery voltage to the rear compartment lamp control circuit illuminating the rear compartment courtesy lamps. In the event that the rear compartment lamps were to remain illuminated for more than 10 minutes with the ignition switch in the OFF position, the BCM will deactivate the rear compartment lamp control circuit to prevent total battery discharge.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2570: TRUNK LAMP CONTROL CIRCUIT > CONDITIONS FOR RUNNING THE DTC

- Battery voltage must be between 9-16 V.
- Rear compartment OPEN.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2570: TRUNK LAMP CONTROL CIRCUIT > CONDITIONS FOR SETTING THE DTC

DTC B2570 02

The BCM detects a short to ground in the rear compartment courtesy lamp control circuit.

DTC B2570 04

The BCM detects a short to voltage or an open/high resistance in the rear compartment courtesy lamp control circuit.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2570: TRUNK LAMP CONTROL CIRCUIT > ACTIONS TAKEN WHEN THE DTC SETS

The rear compartment lamps are inoperative.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2570: TRUNK LAMP CONTROL CIRCUIT > 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.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2570: TRUNK LAMP CONTROL CIRCUIT > REFERENCE INFORMATION

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Scan Tool Reference

Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2570: TRUNK LAMP CONTROL CIRCUIT > CIRCUIT/SYSTEM TESTING

1. Ignition OFF, exterior lamps OFF, disconnect the harness connectors at the E8S Rear Compartment Courtesy Lamp. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between each ground circuit terminal 2 and ground.
    1. **If 10 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 10 Ω**
3. Connect a test lamp between each control circuit terminal 1 and ground, ignition ON.
4. Verify the test lamp turns ON and OFF when commanding the Trunk Lamp ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the X7 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.

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1. If infinite resistance

3. Test for less than 2 Ω in the control circuit end to end.

    1. If 2 Ω or greater, repair the open/high resistance in the circuit.

    2. If less than 2 Ω, replace the K9 Body Control Module.

1. **If the test lamp is always ON**

    1. Ignition OFF, disconnect the X7 harness connector at the K9 Body Control Module, ignition ON.

    2. Test for less than 1 V between the control circuit terminal and ground.

        1. If 1 V or greater, repair the short to voltage on the circuit.

        2. If less than 1 V, replace the K9 Body Control Module.

1. **If the test lamp turns ON and OFF**

5. Test or replace the E8S Rear Compartment Courtesy Lamp.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2570: TRUNK LAMP CONTROL CIRCUIT > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2575 OR B2699: HEADLAMP CONTROL CIRCUIT > 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 INFORMATION AND PROCEDURES > DTC B2575 OR B2699: HEADLAMP CONTROL CIRCUIT > DTC DESCRIPTORS

DTC B2575 01

Headlamps Control Circuit Short to Battery

DTC B2575 02

Headlamps Control Circuit Short to Ground

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DTC B2575 04

Headlamps Control Circuit Open

DTC B2699 01

Right Headlamp Control Circuit Short to Battery

DTC B2699 02

Right Headlamp Control Circuit Short to Ground

DTC B2699 04

Right Headlamp Control Circuit Open

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2575 OR B2699: HEADLAMP CONTROL CIRCUIT > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
F6RA (BCM 4) Fuse B+	B2575 01, B2575 04	B2575 01, B2575 04	-	-
F43RA (BCM 3) Fuse B+	B2699 01, B2699 04	B2699 01, B2699 04	-	-
Low Beam Headlamp Control - Left (without T4F)	B2575 02	B2575 01, B2575 04	1	-
Low Beam Headlamp Control - Right (without T4F)	B2699 02	B2699 01, B2699 04	1	-
Headlamp Assembly - Left Ground	-	1	-	-
Headlamp Assembly - Right Ground	-	1	-	-
1. Headlamps Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2575 OR B2699: HEADLAMP CONTROL CIRCUIT > CIRCUIT/SYSTEM DESCRIPTION

With the headlamp switch in the ON position, the headlamp switch headlamp ON signal circuit is grounded through the headlamp switch. The body control module (BCM) responds by applying battery positive voltage to the left and right low beam headlamp control circuits illuminating the low beam headlamps.

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2575 OR B2699: HEADLAMP CONTROL CIRCUIT > CONDITIONS FOR RUNNING THE DTC

- Battery voltage must be between 9-16 V.
- Low beam headlamps ON.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2575 OR B2699: HEADLAMP CONTROL CIRCUIT > CONDITIONS FOR SETTING THE DTC

DTC B2575 01 and B2575 04

- The BCM detects an open/high resistance in the left low beam headlamp control circuit.
- The BCM detects a short to ground or an open/high resistance in the F43RA (BCM 3) fuse B+ circuit.

DTC B2575 02

The BCM detects a short to ground in the left low beam headlamp control circuit.

DTC B2699 01 and B2699 04

- The BCM detects an open/high resistance in the right low beam headlamp control circuit.
- The BCM detects a short to ground or an open/high resistance in the F6RA (BCM 4) fuse B+ circuit.

DTC B2699 02

The BCM detects a short to ground in the right low beam headlamp control circuit.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2575 OR B2699: HEADLAMP CONTROL CIRCUIT > ACTIONS TAKEN WHEN THE DTC SETS

- When DTC B2575 sets, the left low beam headlamp will be inoperative.
- When DTC B2699 sets, the right low beam headlamp will be inoperative.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2575 OR B2699: HEADLAMP CONTROL CIRCUIT > 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.

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Scan Tool Reference

Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2575 OR B2699: HEADLAMP CONTROL CIRCUIT > CIRCUIT/SYSTEM TESTING

DTC B2575

1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module, ignition ON.
2. Verify a test lamp illuminates between the B+ circuit terminal 3 and ground.
    1. **If the test lamp does not illuminate and the circuit fuse is good**
        1. Ignition OFF, disconnect the X1 harness connector at the X53A Fuse Block - Rear Body.
        2. Test for less than 2 Ω in the B+ circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, verify the fuse is not open and there is voltage at the fuse.
    1. **If the test lamp does not illuminate and the circuit fuse is open**
        1. Ignition OFF, disconnect the X1 harness connector at the X53A Fuse Block - Rear Body.

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2. Test for infinite resistance between the B+ circuit and ground.
    1. If less than infinite resistance, repair the short to ground on the circuit.
    2. If infinite resistance, replace the X53A Fuse Block - Rear Body.

1. **If the test lamp illuminates**

3. Ignition OFF, connect the X1 harness connector at the K9 Body Control Module.
4. Ignition OFF, exterior lamps OFF, remove the E4G Headlamp - Left Low Beam. It may take up to 2 min for all vehicle systems to power down.
5. Test for less than 15 Ω between the ground circuit terminal B and ground.
    1. **If 15 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.

    1. **If less than 15 Ω**

6. Connect a test lamp between the control circuit terminal A and ground, ignition ON.
7. Verify the test lamp turns ON and OFF when commanding the Left Low Beam Headlamp ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.

    1. **If the test lamp is always ON**
        1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the control circuit terminal and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            2. If less than 1 V, replace the K9 Body Control Module.

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1. **If the test lamp turns ON and OFF**

8. Test or replace the E4G Headlamp - Left Low Beam.

DTC B2699

1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module, ignition ON.
2. Verify a test lamp illuminates between the B+ circuit terminal 2 and ground.
    1. **If the test lamp does not illuminate and the circuit fuse is good**
        1. Ignition OFF, disconnect the X3 harness connector at the X53A Fuse Block - Rear Body.
        2. Test for less than 2 Ω in the B+ circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, verify the fuse is not open and there is voltage at the fuse.
    1. **If the test lamp does not illuminate and the circuit fuse is open**
        1. Ignition OFF, disconnect the X3 harness connector at the X53A Fuse Block - Rear Body.
        2. Test for infinite resistance between the B+ circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            2. If infinite resistance, replace the X53A Fuse Block - Rear Body.
    1. **If the test lamp illuminates**
3. Ignition OFF, connect the X1 harness connector at the K9 Body Control Module.
4. Ignition OFF, exterior lamps OFF, remove the E4H Headlamp - Right Low Beam. It may take up to 2 min for all vehicle systems to power down.
5. Test for less than 15 Ω between the ground circuit terminal B and ground.
    1. **If 15 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 15 Ω**
6. Connect a test lamp between the control circuit terminal A and ground, ignition ON.
7. Verify the test lamp turns ON and OFF when commanding the Right Low Beam Headlamp ON and OFF with a scan tool.

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1. **If the test lamp is always OFF**
    1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module.
    2. Test for infinite resistance between the control circuit and ground.
        1. If less than infinite resistance, repair the short to ground on the circuit.
        1. If infinite resistance
    3. Test for less than 2 Ω in the control circuit end to end.
        1. If 2 Ω or greater, repair the open/high resistance in the circuit.
        2. If less than 2 Ω, replace the K9 Body Control Module.
1. **If the test lamp is always ON**
    1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module, ignition ON.
    2. Test for less than 1 V between the control circuit terminal and ground.
        1. If 1 V or greater, repair the short to voltage on the circuit.
        2. If less than 1 V, replace the K9 Body Control Module.
1. **If the test lamp turns ON and OFF**

8. Test or replace the E4H Headlamp - Right Low Beam.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2575 OR B2699: HEADLAMP CONTROL CIRCUIT > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Low Beam Headlamp Bulb Replacement
- Rear Body Fuse Block Replacement
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B257A: HEADLAMP SWITCH INPUT SIGNALS CORRELATION 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.

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B257A: HEADLAMP SWITCH INPUT SIGNALS CORRELATION MALFUNCTION > DTC DESCRIPTOR

DTC B257A 00

Headlamp Switch Input Signals Correlation Malfunction

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B257A: HEADLAMP SWITCH INPUT SIGNALS CORRELATION MALFUNCTION > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Turn Signal/Multifunction Switch Park Lamps ON Signal	2	B257A 00	2	-
Turn Signal/Multifunction Switch Headlamps OFF Signal	B257A 00	1	1	-
Turn Signal/Multifunction Switch Headlamps ON Signal	B257A 00	1	1	-
Turn Signal/Multifunction Switch Ground	-	1, 2	-	-
1. Headlamps Malfunction 2. Park, License, and/or Tail Lamps Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B257A: HEADLAMP SWITCH INPUT SIGNALS CORRELATION MALFUNCTION > CIRCUIT/SYSTEM DESCRIPTION

For headlamp operation, the body control module (BCM) monitors three signal circuits from the turn signal/multifunction switch. When the turn signal/multifunction switch is in the AUTO position, the three signal circuits are unaffected and the BCM relies on the ambient light sensor input to turn the headlamps and daytime running lamps ON and OFF. When the turn signal/multifunction switch is placed in the OFF position, the turn signal/multifunction switch headlamps OFF signal circuit is grounded, indicating to the BCM that the exterior lamps should be turned OFF. With the turn signal/multifunction switch in the PARK LAMPS position, the turn signal/multifunction switch park lamps ON signal circuit is grounded, indicating that the park lamps have been requested. When the turn signal/multifunction switch is in the HEADLAMP position, both the turn signal/multifunction switch park lamps ON signal circuit and the turn signal/multifunction switch headlamps ON signal circuit are grounded. The BCM responds by commanding the park lamps and headlamps ON.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B257A: HEADLAMP SWITCH INPUT SIGNALS CORRELATION MALFUNCTION > CONDITIONS FOR RUNNING THE

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DTC

Battery voltage must be between 9-16 V.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B257A: HEADLAMP SWITCH INPUT SIGNALS CORRELATION MALFUNCTION > CONDITIONS FOR SETTING THE DTC

- The BCM detects an open/high resistance in the turn signal/multifunction switch park lamps ON signal circuit.
- The BCM detects a short to ground in the turn signal/multifunction switch headlamps ON signal circuit.
- The BCM detects a short to ground in the turn signal/multifunction switch headlamps OFF signal circuit.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B257A: HEADLAMP SWITCH INPUT SIGNALS CORRELATION MALFUNCTION > ACTIONS TAKEN WHEN THE DTC SETS

- When DTC B257A 00 is present on the turn signal/multifunction switch headlamps OFF signal circuit, the park lamps and daytime running lamps are always ON in the AUTO and ON positions.
- When DTC B257A 00 is present on the turn signal/multifunction switch headlamps ON signal circuit, the low beam headlamps are always ON in the PARK position. The Park lamps are always ON in all switch positions. The BCM disregards all turn signal/multifunction switch inputs.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B257A: HEADLAMP SWITCH INPUT SIGNALS CORRELATION MALFUNCTION > 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.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B257A: HEADLAMP SWITCH INPUT SIGNALS CORRELATION MALFUNCTION > REFERENCE INFORMATION

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Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B257A: HEADLAMP SWITCH INPUT SIGNALS CORRELATION MALFUNCTION > CIRCUIT/SYSTEM TESTING

1. Ignition OFF, scan tool disconnected, all doors closed, all accessories OFF, open and close drivers door, disconnect the harness connector at the S78 Turn Signal/Multifunction Switch. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 6 and ground.
    1. **If 10 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 10 Ω**
3. Ignition ON.
4. Verify the scan tool Automatic Headlamps Disable Switch parameter is Inactive.
    1. **If not Inactive**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the signal circuit terminal 9 and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            2. If infinite resistance, replace the K9 Body Control Module.
    1. **If Inactive**

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5. Install a 3 A fused jumper wire between the signal circuit terminal 9 and ground.
6. Verify the scan tool Automatic Headlamps Disable Switch parameter is Active.
    1. **If not Active**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the signal circuit terminal 9 and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            1. If less than 1 V
        3. Test for less than 2 Ω in the signal circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If Active**
7. Verify the scan tool Park Lamps Switch parameter is Inactive.
    1. **If not Inactive**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the signal circuit terminal 7 and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            2. If infinite resistance, replace the K9 Body Control Module.
    1. **If Inactive**
8. Install a 3 A fused jumper wire between the signal circuit terminal 7 and ground.
9. Verify the scan tool Park Lamps Switch parameter is Active.
    1. **If not Active**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the signal circuit terminal 7 and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            1. If less than 1 V
        3. Test for less than 2 Ω in the signal circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If Active**

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10. Verify the scan tool Headlamps On Switch parameter is Inactive.
    1. **If not Inactive**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the signal circuit terminal 2 and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            2. If infinite resistance, replace the K9 Body Control Module.
    1. **If Inactive**
11. Install a 3 A fused jumper wire between the signal circuit terminal 2 and ground.
12. Verify the scan tool Headlamps On Switch parameter is Active.
    1. **If not Active**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the signal circuit terminal 2 and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            1. If less than 1 V
        3. Test for less than 2 Ω in the signal circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If Active**
13. Test or replace the S78 Turn Signal/Multifunction Switch.

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B257A: HEADLAMP SWITCH INPUT SIGNALS CORRELATION MALFUNCTION > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

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

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B257B: LIGHTING CONTROL SWITCH SIGNAL VOLTAGE > 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 INFORMATION AND PROCEDURES > DTC B257B: LIGHTING CONTROL SWITCH SIGNAL VOLTAGE > DTC DESCRIPTORS

DTC B257B 03

Lighting Control Switch Signal Low Voltage

DTC B257B 07

Lighting Control Switch Signal High Voltage

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B257B: LIGHTING CONTROL SWITCH SIGNAL VOLTAGE > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Instrument Panel Dimmer Switch B+ Reference	B257B 03	B257B 03	1	-
Instrument Panel Dimmer Switch Signal	B257B 03	B257B 03	B257B 07	-
Instrument Panel Dimmer Switch Low Reference	1	1	1	-
1. Interior Backlighting Malfunction				

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B257B: LIGHTING CONTROL SWITCH SIGNAL VOLTAGE > CIRCUIT/SYSTEM DESCRIPTION

The instrument panel dimmer switch is used to increase and decrease the brightness of the interior backlighting components. The instrument panel dimmer switch provides a voltage signal to the body control module (BCM) that will increase as the brightness of the lights are increased and decrease as the brightness of the lights are decreased. The BCM provides a low reference, signal, and B+ voltage reference to the instrument panel dimmer switch. When the instrument panel dimmer switch is placed in the desired position, the dimmed voltage setting is applied from the instrument panel dimmer switch through the instrument panel dimmer switch signal circuit to the BCM. The BCM interprets the signal and applies a pulse width modulated voltage through the LED dimming 1 and dimming 2 control circuits illuminating the interior backlighting to the requested level of brightness.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B257B: LIGHTING CONTROL

SWITCH SIGNAL VOLTAGE > CONDITIONS FOR RUNNING THE DTC

- Battery voltage must be between 9-16 V.
- Park Lamps ON.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B257B: LIGHTING CONTROL SWITCH SIGNAL VOLTAGE > CONDITIONS FOR SETTING THE DTC

DTC B257B 03

- The BCM detects a short to ground or an open/high resistance in the instrument panel dimmer switch B+ circuit.
- The BCM detects a short to ground or an open/high resistance in the instrument panel dimmer switch signal circuit.

DTC B257B 07

The BCM detects a short to voltage in the instrument panel dimmer switch signal circuit.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B257B: LIGHTING CONTROL SWITCH SIGNAL VOLTAGE > ACTIONS TAKEN WHEN THE DTC SETS

The BCM will not dim any interior backlighting. All interior backlighting will default to the FULL bright.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B257B: LIGHTING CONTROL SWITCH SIGNAL VOLTAGE > 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.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B257B: LIGHTING CONTROL SWITCH SIGNAL VOLTAGE > REFERENCE INFORMATION

Schematic Reference

Interior Lights Dimming Schematics

Connector End View Reference

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Description and Operation

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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

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B257B: LIGHTING CONTROL SWITCH SIGNAL VOLTAGE > CIRCUIT/SYSTEM TESTING

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S36 Instrument Panel Dimmer Switch, ignition ON.
2. Test for B+ between the B+ circuit terminal 6 and ground.
    1. **If less than B+**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the B+ circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the B+ circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If B+**
3. Verify a test lamp does not illuminate between the signal circuit terminal 2 and B+.
    1. **If the test lamp illuminates**
        1. Ignition OFF, disconnect the X2 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the signal circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            2. If infinite resistance, replace the K9 Body Control Module.
    1. **If the test lamp does not illuminate**

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4. Test for B+ between the B+ circuit terminal 6 and the signal circuit terminal 2.
    1. **If less than B+**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the signal circuit terminal 2 and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            1. If less than 1 V
        3. Test for less than 2 Ω in the signal circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If B+**
5. Test or replace the S36 Instrument Panel Dimmer Switch.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B257B: LIGHTING CONTROL SWITCH SIGNAL VOLTAGE > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Dimmer Switch Replacement
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2580: HIGH BEAM CONTROL CIRCUIT > 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 INFORMATION AND PROCEDURES > DTC B2580: HIGH BEAM CONTROL CIRCUIT > DTC DESCRIPTORS

DTC B2580 01

High Beam Control Circuit Short to Battery

DTC B2580 02

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High Beam Control Circuit Short to Ground

DTC B2580 04

High Beam Control Circuit Open

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2580: HIGH BEAM CONTROL CIRCUIT > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Headlamp High Beam Relay Control	B2580 02, B2580 04	B2580 02, B2580 04	B2580 01	-
High Beam Headlamp Control - Left	1	1	1	-
High Beam Headlamp Control - Right	1	1	1	-
Headlamp Ground - Left	-	1	-	-
Headlamp Ground - Right	-	1	-	-
1. Headlamps Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2580: HIGH BEAM CONTROL CIRCUIT > CIRCUIT/SYSTEM DESCRIPTION

High Beams (without T4F)

The high beam and flash to pass functions are contained within the turn signal/multifunction switch. The BCM provides the turn signal/multifunction switch with two signal circuits, the high beam signal circuit and the flash to pass signal circuit. When the low beam headlamps are ON and the turn signal/multifunction switch is placed in the high beam position, ground is applied to the BCM through the high beam signal circuit. The BCM responds to the high beam request by applying ground to the high beam relay control circuit which energizes the high beam relay. With the high beam relay energized, the switch contacts close allowing battery voltage to flow through the high beam fuses to the high beam control circuits illuminating the high beam headlamps.

High Beams (with T4F)

The high beam and flash to pass functions are contained within the turn signal/multifunction switch. The BCM provides the turn signal/multifunction switch with two signal circuits, the high beam signal circuit and the flash to pass signal circuit. When the low beam headlamps are ON and the turn signal/multifunction switch is placed in the high beam position, ground is applied to the BCM through the high beam signal circuit. The BCM responds to the high beam request by applying ground to the high beam relay control circuit which energizes the high beam relay. With the high beam relay energized, the switch contacts close allowing battery voltage to flow through the high beam fuse to the high beam control circuits and on to the left and right high beam solenoid actuators within the headlamp assemblies.

Once the high beam solenoid actuators are active, the solenoid shutters open in each headlamp assembly exposing the remaining portion of the headlamp that was covered by the shutters illuminating the high beams at full intensity.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2580: HIGH BEAM CONTROL CIRCUIT > CONDITIONS FOR RUNNING THE DTC

- Battery voltage must be between 9-16 V.
- High beam headlamps ON.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2580: HIGH BEAM CONTROL CIRCUIT > CONDITIONS FOR SETTING THE DTC

DTC B2580 01

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

DTC B2580 02 and B2580 04

The BCM detects a short to ground or an open/high resistance in the headlamp high beam relay control circuit.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2580: HIGH BEAM CONTROL CIRCUIT > ACTIONS TAKEN WHEN THE DTC SETS

The high beam headlamps and flash to pass will not operate.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2580: HIGH BEAM CONTROL CIRCUIT > 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.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2580: HIGH BEAM CONTROL CIRCUIT > REFERENCE INFORMATION

Schematic Reference

Headlights/Daytime Running Lights (DRL) Schematics

Connector End View Reference

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Scan Tool Reference

Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2580: HIGH BEAM CONTROL CIRCUIT > CIRCUIT/SYSTEM TESTING

1. Ignition OFF, disconnect the KR48 Headlamp High Beam Relay.
2. Connect a test lamp between the control circuit terminal 86 and B+, ignition ON.
3. Verify the test lamp turns ON and OFF when commanding the High Beams ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the X5 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the control circuit terminal and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            1. If less than 1 V
        3. Ignition OFF.
        4. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If the test lamp is always ON**
        1. Ignition OFF, disconnect the X5 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the control circuit terminal and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.

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2. If infinite resistance, replace the K9 Body Control Module.

1. **If the test lamp turns ON and OFF**

4. Test or replace the KR48 Headlamp High Beam Relay.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2580: HIGH BEAM CONTROL CIRCUIT > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

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

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2585 OR B3867: PARK LAMPS CONTROL CIRCUIT > 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 INFORMATION AND PROCEDURES > DTC B2585 OR B3867: PARK LAMPS CONTROL CIRCUIT > DTC DESCRIPTORS

DTC B2585 01

Left Park Lamps Control Circuit Short to Battery

DTC B2585 02

Left Park Lamps Control Circuit Short to Ground

DTC B2585 04

Left Park Lamps Control Circuit Open

DTC B3867 01

Right Park Lamps Control Circuit Short to Battery

DTC B3867 02

Right Park Lamps Control Circuit Short to Ground

DTC B3867 04

Right Park Lamps Control Circuit Open

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2585 OR B3867: PARK LAMPS CONTROL CIRCUIT > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Turn Signal/Multifunction Switch Park Lamps ON Signal	2	B257A 00	2	-
License Plate Lamps Control	B3883 02	B3883 01, B3883 04	B3883 01, B3883 04	-
Park Lamps Control - Left	B2585 02	B2585 04	B2585 01	-
Park Lamps Control - Right	B3867 02	B3867 04	B3867 01	-
License Plate Lamp Ground - Left	-	1	-	-
License Plate Lamp Ground - Right	-	1	-	-
Park Lamp Ground - Left Front	-	1	-	-
Park Lamp Ground - Right Front	-	1	-	-
Side Marker Lamp Ground - Left Front	-	1	-	-
Side Marker Lamp Ground - Left Rear	-	1	-	-
Side Marker Lamp Ground - Right Front	-	1	-	-
Side Marker Lamp Ground - Right Rear	-	1	-	-
Tail Lamp Ground - Left	-	1	-	-
Tail Lamp Ground - Right	-	1	-	-
Turn Signal/Multifunction Switch Ground	-	2	-	-
1. Park, License, and/or Tail Lamps Malfunction 2. Park Lamps Switch Malfunction				

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2585 OR B3867: PARK LAMPS CONTROL CIRCUIT > CIRCUIT/SYSTEM DESCRIPTION

When the headlamp switch is placed in the HEAD or PARK position, ground is applied to the park lamp switch ON signal circuit to the body control module (BCM). The BCM responds by applying voltage to the park lamps, tail lamps, and license lamps control circuits illuminating the park, tail, and license lamps.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2585 OR B3867: PARK LAMPS CONTROL CIRCUIT > CONDITIONS FOR RUNNING THE DTC

- Battery voltage must be between 9-16 V.
- Park lamps ON.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2585 OR B3867: PARK LAMPS CONTROL CIRCUIT > CONDITIONS FOR SETTING THE DTC

DTC B2585 01

The BCM detects a short to voltage in the left park lamps control circuit.

DTC B2585 02

The BCM detects a short to ground in the left park lamps control circuit.

DTC B2585 04

The BCM detects an open/high resistance in the left park lamps control circuit.

DTC B3867 01

The BCM detects a short to voltage in the right park lamps control circuit.

DTC B3867 02

The BCM detects a short to ground in the right park lamps control circuit.

DTC B3867 04

The BCM detects an open/high resistance in the right park lamps control circuit.

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2585 OR B3867: PARK LAMPS CONTROL CIRCUIT > ACTIONS TAKEN WHEN THE DTC SETS

DTC B2585 01

The left park lamps are always ON.

DTC B2585 02 and B2585 04

The left park lamps are always OFF.

DTC B3867 01

The right park lamps are always ON.

DTC B3867 02 and B3867 04

The right park lamps are always OFF.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2585 OR B3867: PARK LAMPS CONTROL CIRCUIT > 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.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2585 OR B3867: PARK LAMPS CONTROL CIRCUIT > DIAGNOSTIC AIDS

When testing at the park/marker lamp bulb sockets, make sure all measurements and test lamp connections are in the correct terminal location and do not come in contact with each other during testing.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2585 OR B3867: PARK LAMPS CONTROL CIRCUIT > REFERENCE INFORMATION

Schematic Reference

- Exterior Lights Schematics
- Body Control System Schematics

Connector End View Reference

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Scan Tool Reference

Control Module References for scan tool information

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2585 OR B3867: PARK LAMPS CONTROL CIRCUIT > CIRCUIT/SYSTEM TESTING

DTC B2585

1. Ignition OFF, exterior lamps OFF, disconnect the harness connector at the appropriate component listed below. It may take up to 2 min for all vehicle systems to power down.
    1. E4J Park Lamp - Left Front
    2. E2LF Side Marker Lamp - Left Front
    3. E2LR Side Marker Lamp- Left Rear
    4. E5E Tail Lamp - Left
2. Test for less than 15 Ω between the appropriate ground circuit terminal listed below and ground.
    1. E4J Park Lamp - Left Front socket terminal
    2. E2LF Side Marker Lamp - Left Front terminal 1
    3. E2LR Side Marker Lamp- Left Rear terminal 1
    4. E5E Tail Lamp - Left terminal B (without WRS/TW7)
    5. E5E Tail Lamp - Left terminal 6 (with WRS/TW7)
    1. **If 15 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 15 Ω**
3. Connect a test lamp between the appropriate control circuit terminal listed below and ground, ignition ON.
    1. E4J Park Lamp - Left Front socket terminal
    2. E2LF Side Marker Lamp - Left Front terminal 2
    3. E2LR Side Marker Lamp- Left Rear terminal 2
    4. E5E Tail Lamp - Left terminal A (without WRS/TW7)
    5. E5E Tail Lamp - Left terminal 5 (with WRS/TW7)
4. Verify the test lamp turns ON and OFF when commanding the Left Park Lamps ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**

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1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module.
2. Test for infinite resistance between the control circuit and ground.
    1. If less than infinite resistance, repair the short to ground on the circuit.
    1. If infinite resistance
3. Test for less than 2 Ω in the control circuit end to end.
    1. If 2 Ω or greater, repair the open/high resistance in the circuit.
    2. If less than 2 Ω, replace the K9 Body Control Module.

1. **If the test lamp is always ON**
    1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module, ignition ON.
    2. Test for less than 1 V between the control circuit terminal and ground.
        1. If 1 V or greater, repair the short to voltage on the circuit.
        2. If less than 1 V, replace the K9 Body Control Module.

1. **If the test lamp turns ON and OFF**

5. Test or replace the left park lamp.

DTC B3867

1. Ignition OFF, exterior lamps OFF, disconnect the harness connector at the appropriate component listed below. It may take up to 2 min for all vehicle systems to power down.
    1. E4K Park Lamp - Right Front
    2. E2RF Side Marker Lamp - Right Front
    3. E2RR Side Marker Lamp- Right Rear
    4. E5F Tail Lamp - Right
2. Test for less than 15 Ω between the appropriate ground circuit terminal listed below and ground.
    1. E4K Park Lamp - Right Front socket terminal
    2. E2RF Side Marker Lamp - Right Front terminal 1
    3. E2RR Side Marker Lamp- Right Rear terminal 1
    4. E5F Tail Lamp - Right terminal B (without WRS/TW7)
    5. E5F Tail Lamp - Right terminal 6 (with WRS/TW7)

    1. **If 15 Ω or greater**
        1. Ignition OFF.

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2. Test for less than 2 Ω in the ground circuit end to end.
    1. If 2 Ω or greater, repair the open/high resistance in the circuit.
    2. If less than 2 Ω, repair the open/high resistance in the ground connection.

1. **If less than 15 Ω**

3. Connect a test lamp between the appropriate control circuit terminal listed below and ground, ignition ON.
    1. E4K Park Lamp - Right Front socket terminal
    2. E2RF Side Marker Lamp - Right Front terminal 2
    3. E2RR Side Marker Lamp- Right Rear terminal 2
    4. E5F Tail Lamp - Right terminal A (without WRS/TW7)
    5. E5F Tail Lamp - Right terminal 5 (with WRS/TW7)
4. Verify the test lamp turns ON and OFF when commanding the Right Park Lamps ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the X5 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If the test lamp is always ON**
        1. Ignition OFF, disconnect the X5 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the control circuit terminal and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            2. If less than 1 V, replace the K9 Body Control Module.
    1. **If the test lamp turns ON and OFF**
5. Test or replace the right park lamp.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2585 OR B3867: PARK

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LAMPS CONTROL CIRCUIT > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Front Side Marker Lamp Bulb Replacement
- Rear Body Structure Stop Lamp Replacement
- Rear Fascia Auxiliary Signal Lamp Replacement
- Rear Fascia Lower Signal Lamp Replacement Rear Fascia Lower Signal Lamp Replacement (Center)
- Tail Bulb Replacement
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B258A: LOW BEAM CONTROL CIRCUIT > 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 INFORMATION AND PROCEDURES > DTC B258A: LOW BEAM CONTROL CIRCUIT > DTC DESCRIPTORS

DTC B258A 01

Low Beam Control Circuit Short to Battery

DTC B258A 02

Low Beam Control Circuit Short to Ground

DTC B258A 04

Low Beam Control Circuit Open

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B258A: LOW BEAM CONTROL CIRCUIT > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Headlamp Low Beam Relay Control	B258A 02, B258A 04	U1511 00, U1521 00, B258A 02,	U1511 00, U1521 00,	-

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		B258A 04	B258A 01	
Low Beam Headlamp Control - Left (with T4F)	1	1	1	-
Low Beam Headlamp Control - Right (with T4F)	1	1	1	-
Headlamp Ground - Left	-	1	-	-
Headlamp Ground - Right	-	1	-	-
1. Headlamps Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B258A: LOW BEAM CONTROL CIRCUIT > CIRCUIT/SYSTEM DESCRIPTION

With the headlamp switch in the ON position, the headlamp switch headlamp ON signal circuit is grounded through the headlamp switch. The body control module (BCM) responds by applying ground to the low beam relay control circuit which energizes the low beam relay. With the low beam relay energized, the switch contacts close allowing battery voltage to flow through the low beam fuses to the low beam control circuits illuminating the low beam headlamps.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B258A: LOW BEAM CONTROL CIRCUIT > CONDITIONS FOR RUNNING THE DTC

- Battery voltage must be between 9-16 V.
- Low beam headlamps ON.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B258A: LOW BEAM CONTROL CIRCUIT > CONDITIONS FOR SETTING THE DTC

DTC B258A 01

The BCM detects a short to voltage in the headlamp low beam relay control circuit.

DTC B258A 02 and B258A 04

The BCM detects a short to ground or an open/high resistance in the headlamp low beam relay control circuit.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B258A: LOW BEAM CONTROL CIRCUIT > ACTIONS TAKEN WHEN THE DTC SETS

DTC B258A 01 or B258A 04

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The low beam headlamps will not operate.

DTC B258A 02

The low beam headlamps will always be ON.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B258A: LOW BEAM CONTROL CIRCUIT > 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.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B258A: LOW BEAM CONTROL CIRCUIT > REFERENCE INFORMATION

Schematic Reference

Headlights/Daytime Running Lights (DRL) Schematics

Connector End View Reference

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Scan Tool Reference

Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B258A: LOW BEAM CONTROL CIRCUIT > CIRCUIT/SYSTEM TESTING

1. Ignition OFF, disconnect the KR49 Headlamp Low Beam Relay.
2. Connect a test lamp between the control circuit terminal 85 and B+, ignition ON.
3. Verify the test lamp turns ON and OFF when commanding the Low Beam Lamps ON and OFF

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with a scan tool.

1. **If the test lamp is always OFF**
    1. Ignition OFF, disconnect the X5 harness connector at the K9 Body Control Module, ignition ON.
    2. Test for less than 1 V between the control circuit terminal and ground.
        1. If 1 V or greater, repair the short to voltage on the circuit.
        1. If less than 1 V
    3. Ignition OFF.
    4. Test for less than 2 Ω in the control circuit end to end.
        1. If 2 Ω or greater, repair the open/high resistance in the circuit.
        2. If less than 2 Ω, replace the K9 Body Control Module.
1. **If the test lamp is always ON**
    1. Ignition OFF, disconnect the X5 harness connector at the K9 Body Control Module.
    2. Test for infinite resistance between the control circuit terminal and ground.
        1. If less than infinite resistance, repair the short to ground on the circuit.
        2. If infinite resistance, replace the K9 Body Control Module.
1. **If the test lamp turns ON and OFF**

4. Test or replace the KR49 Headlamp Low Beam Relay.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B258A: LOW BEAM CONTROL CIRCUIT > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

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

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B25F0 OR B25F1: AUXILIARY DAYTIME RUNNING LAMP CONTROL CIRCUIT SHORT TO GROUND > 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.

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B25F0 OR B25F1: AUXILIARY DAYTIME RUNNING LAMP CONTROL CIRCUIT SHORT TO GROUND > DTC DESCRIPTORS

DTC B25F0 02

Left Auxiliary Daytime Running Lamp Control Circuit Short to Ground

DTC B25F1 02

Right Auxiliary Daytime Running Lamp Control Circuit Short to Ground

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B25F0 OR B25F1: AUXILIARY DAYTIME RUNNING LAMP CONTROL CIRCUIT SHORT TO GROUND > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Park/Daytime Running Lamp - Left Control (uplevel)	B260D 02	1	1	-
Park/Daytime Running Lamp - Right Control (uplevel)	B260E 02	1	1	-
Park/Daytime Running Lamp - Left Lower Control (base)	B25F0 02	1	1	-
Park/Daytime Running Lamp - Right Lower Control (base)	B25F1 02	1	1	-
Park/Daytime Running Lamp - Left Ground (uplevel)	-	1	-	-
Park/Daytime Running Lamp - Right Ground (uplevel)	-	1	-	-
Park/Daytime Running Lamp - Left Lower Ground (base)	-	1	-	-
Park/Daytime Running Lamp - Right Lower Ground (base)	-	1	-	-
1. Daytime Running Lamps Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B25F0 OR B25F1: AUXILIARY DAYTIME RUNNING LAMP CONTROL CIRCUIT SHORT TO GROUND > CIRCUIT/SYSTEM DESCRIPTION

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The ambient light sensor is used to monitor outside lighting conditions. The ambient light sensor provides a voltage signal that will vary between 0.2 and 4.9 V depending on outside lighting conditions. The body control module (BCM) provides a 5 V reference signal to the ambient light sensor and the HVAC control module provides a low reference ground. The BCM monitors the ambient light sensor signal circuit to determine if outside lighting conditions are correct for either daytime running lights or automatic lamp control when the headlamp switch is in the AUTO position. In daylight conditions the BCM will command the designated daytime running lights ON. During low light conditions the BCM will command the low beam headlamps ON. Any function or condition that turns on the headlamps will cancel daytime running lights operation.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B25F0 OR B25F1: AUXILIARY DAYTIME RUNNING LAMP CONTROL CIRCUIT SHORT TO GROUND > CONDITIONS FOR RUNNING THE DTC

Battery voltage must be between 9-16 V.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B25F0 OR B25F1: AUXILIARY DAYTIME RUNNING LAMP CONTROL CIRCUIT SHORT TO GROUND > CONDITIONS FOR SETTING THE DTC

DTC B25F0 02

The BCM detects a short to ground in the left auxiliary daytime running lamp control circuit.

DTC B25F1 02

The BCM detects a short to ground in the right auxiliary daytime running lamp control circuit.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B25F0 OR B25F1: AUXILIARY DAYTIME RUNNING LAMP CONTROL CIRCUIT SHORT TO GROUND > ACTIONS TAKEN WHEN THE DTC SETS

DTC B25F0 02

The left auxiliary daytime running lamp is inoperative.

DTC B25F1 02

The right auxiliary daytime running lamp is inoperative.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B25F0 OR B25F1: AUXILIARY DAYTIME RUNNING LAMP CONTROL CIRCUIT SHORT TO GROUND > CONDITIONS FOR CLEARING THE DTC

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

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B25F0 OR B25F1: AUXILIARY DAYTIME RUNNING LAMP CONTROL CIRCUIT SHORT TO GROUND > REFERENCE INFORMATION

Schematic Reference

- Headlights/Daytime Running Lights (DRL) Schematics
- Body Control System Schematics

Connector End View Reference

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Scan Tool Reference

Control Module References for scan tool information

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B25F0 OR B25F1: AUXILIARY DAYTIME RUNNING LAMP CONTROL CIRCUIT SHORT TO GROUND > CIRCUIT/SYSTEM TESTING

1. Ignition OFF, exterior lamps OFF, disconnect the harness connector at the appropriate E4A Park/Daytime Running Lamp. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 15 Ω between the ground circuit terminal 2 and ground.
    1. **If 15 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.

2. If less than 2 Ω, repair the open/high resistance in the ground connection.

1. **If less than 15 Ω**

3. Connect a test lamp between the control circuit terminal 1 and ground, ignition ON.
4. Verify the test lamp turns ON and OFF when commanding the appropriate Lower Park/Daytime Running Lamp ON and OFF with a scan tool.

    1. **If the test lamp is always OFF**

        1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the control circuit and ground.

            1. If less than infinite resistance, repair the short to ground on the circuit.

            1. If infinite resistance

        3. Test for less than 2 Ω in the control circuit end to end.

            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.

    1. **If the test lamp is always ON**

        1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the control circuit terminal and ground.

            1. If 1 V or greater, repair the short to voltage on the circuit.
            2. If less than 1 V, replace the K9 Body Control Module.

    1. **If the test lamp turns ON and OFF**

5. Test or replace the E4A Park/Daytime Running Lamp.

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B25F0 OR B25F1: AUXILIARY DAYTIME RUNNING LAMP CONTROL CIRCUIT SHORT TO GROUND > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Daytime Running Lamp Replacement (Uplevel) Daytime Running Lamp Replacement (Base)
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B260D OR B260E: DAYTIME RUNNING LAMP AND FRONT PARK LAMP CONTROL CIRCUIT SHORT TO GROUND

> 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 INFORMATION AND PROCEDURES > DTC B260D OR B260E: DAYTIME RUNNING LAMP AND FRONT PARK LAMP CONTROL CIRCUIT SHORT TO GROUND > DTC DESCRIPTORS

DTC B260D 02

Left Daytime Running Lamp and Front Park Lamp Control Circuit Short to Ground

DTC B260E 02

Right Daytime Running Lamp and Front Park Lamp Control Circuit Short to Ground

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B260D OR B260E: DAYTIME RUNNING LAMP AND FRONT PARK LAMP CONTROL CIRCUIT SHORT TO GROUND > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Park/Daytime Running Lamp - Left Control (uplevel)	B260D 02	1	1	-
Park/Daytime Running Lamp - Right Control (uplevel)	B260E 02	1	1	-
Park/Daytime Running Lamp - Left Lower Control (base)	B25F0 02	1	1	-
Park/Daytime Running Lamp - Right Lower Control (base)	B25F1 02	1	1	-
Park/Daytime Running Lamp - Left Ground (uplevel)	-	1	-	-
Park/Daytime Running Lamp - Right Ground (uplevel)	-	1	-	-
Park/Daytime Running Lamp - Left Lower Ground (base)	-	1	-	-
Park/Daytime Running Lamp - Right Lower Ground (base)	-	1	-	-

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1. Daytime Running Lamps Malfunction

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B260D OR B260E: DAYTIME RUNNING LAMP AND FRONT PARK LAMP CONTROL CIRCUIT SHORT TO GROUND > 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 between 0.2 and 4.9 V depending on outside lighting conditions. The body control module (BCM) provides a 5 V reference signal to the ambient light sensor and the HVAC control module provides a low reference ground. The BCM monitors the ambient light sensor signal circuit to determine if outside lighting conditions are correct for either daytime running lights or automatic lamp control when the headlamp switch is in the AUTO position. In daylight conditions the BCM will command the designated daytime running lights ON. During low light conditions the BCM will command the low beam headlamps ON. Any function or condition that turns on the headlamps will cancel daytime running lights operation.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B260D OR B260E: DAYTIME RUNNING LAMP AND FRONT PARK LAMP CONTROL CIRCUIT SHORT TO GROUND > CONDITIONS FOR RUNNING THE DTC

Battery voltage must be between 9-16 V.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B260D OR B260E: DAYTIME RUNNING LAMP AND FRONT PARK LAMP CONTROL CIRCUIT SHORT TO GROUND > CONDITIONS FOR SETTING THE DTC

DTC B260D 02

The BCM detects a short to ground in the left daytime running lamp control circuit.

DTC B260E 02

The BCM detects a short to ground in the right daytime running lamp control circuit.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B260D OR B260E: DAYTIME RUNNING LAMP AND FRONT PARK LAMP CONTROL CIRCUIT SHORT TO GROUND > ACTIONS TAKEN WHEN THE DTC SETS

DTC B260D 02

The left daytime running lamp is inoperative.

DTC B260E 02

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The right daytime running lamp is inoperative.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B260D OR B260E: DAYTIME RUNNING LAMP AND FRONT PARK LAMP CONTROL CIRCUIT SHORT TO GROUND > 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.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B260D OR B260E: DAYTIME RUNNING LAMP AND FRONT PARK LAMP CONTROL CIRCUIT SHORT TO GROUND > REFERENCE INFORMATION

Schematic Reference

- Headlights/Daytime Running Lights (DRL) Schematics
- Body Control System Schematics

Connector End View Reference

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Scan Tool Reference

Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B260D OR B260E: DAYTIME RUNNING LAMP AND FRONT PARK LAMP CONTROL CIRCUIT SHORT TO GROUND > CIRCUIT/SYSTEM TESTING

1. Ignition OFF, exterior lamps OFF, disconnect the harness connector at the appropriate E4A Park/Daytime Running Lamp. It may take up to 2 min for all vehicle systems to power down.

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2. Test for less than 15 Ω between the ground circuit terminal 7 and ground.
    1. **If 15 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 15 Ω**
3. Connect a test lamp between the control circuit terminal 8 and ground, ignition ON.
4. Verify the test lamp turns ON and OFF when commanding the appropriate Front Park Lamp/Daytime Running Lamp ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If the test lamp is always ON**
        1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the control circuit terminal and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            2. If less than 1 V, replace the K9 Body Control Module.
    1. **If the test lamp turns ON and OFF**
5. Test or replace the E4A Park/Daytime Running Lamp.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B260D OR B260E: DAYTIME RUNNING LAMP AND FRONT PARK LAMP CONTROL CIRCUIT SHORT TO GROUND > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

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- Daytime Running Lamp Replacement (Uplevel) Daytime Running Lamp Replacement (Base)
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2610: PASSENGER COMPARTMENT DIMMING 1 CIRCUIT > 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 INFORMATION AND PROCEDURES > DTC B2610: PASSENGER COMPARTMENT DIMMING 1 CIRCUIT > DTC DESCRIPTORS

DTC B2610 02

Passenger Compartment Dimming 1 Circuit Short to Ground

DTC B2610 04

Passenger Compartment Dimming 1 Circuit Open

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2610: PASSENGER COMPARTMENT DIMMING 1 CIRCUIT > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
LED Backlight Dimming Control Terminal 8 X2	B2610 02	B2610 04	B2610 04	-
LED Backlight Dimming Control Terminal 9 X7	B2610 02	B2610 04	B2610 04	-
Instrument Panel Dimmer Switch Low Reference	1	1	1	-
Dome/Reading Lamps - Left Front Ground	-	1	-	-
Dome/Reading Lamps - Right Front Ground	-	1	-	-
Door Lock Switch - Driver Ground	-	1	-	-

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Door Lock Switch - Passenger Ground	-	1	-	-
Folding Top Control Switch Ground	-	1	-	-
Garage Door Opener Ground	-	1	-	-
Hazard Warning Switch Ground	-	1	-	-
Headlamp Leveling Switch Ground	-	1	-	-
Head - Up Display Switch Ground	-	1	-	-
Ignition Mode Switch Ground	-	1	-	-
Instrument Panel Dimmer Switch Ground	-	1	-	-
Park Brake Control Switch Ground	-	1	-	-
Rear Compartment Lid Unlatch Switch - Interior Ground	-	1	-	-
Seat Memory Switch - Driver Ground	-	1	-	-
Steering Wheel Controls Switch - Radio Presets Ground	-	1	-	-
Steering Wheel Controls Switch - Radio Presets Ground	-	1	-	-
Steering Wheel Controls Switch - Left Ground	-	1	-	-
Steering Wheel Controls Switch - Right Ground	-	1	-	-
Sunroof Switch Ground	-	1	-	-
Window Switch - Passenger Ground	-	1	-	-
Vehicle Stability Control Switch Ground	-	1	-	-
1. Interior Backlighting Malfunction				

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2610: PASSENGER COMPARTMENT DIMMING 1 CIRCUIT > CIRCUIT/SYSTEM DESCRIPTION

The instrument panel dimmer switch is used to increase and decrease the brightness of the interior backlighting components. The instrument panel dimmer switch provides a voltage signal to the body

control module (BCM) that will increase as the brightness of the lights are increased and decrease as the brightness of the lights are decreased. The BCM provides a low reference, signal, and B+ voltage reference to the instrument panel dimmer switch. When the instrument panel dimmer switch is placed in the desired position, the dimmed voltage setting is applied from the instrument panel dimmer switch through the instrument panel dimmer switch signal circuit to the BCM. The BCM interprets the signal and applies a pulse width modulated voltage through the LED dimming 1 and dimming 2 control circuits illuminating the interior backlighting to the requested level of brightness. The BCM also sends a serial data message to the following components requesting there backlighting be adjusted to the level selected by the instrument panel dimmer switch:

- Info Display Module
- Instrument Cluster
- Mirror Control Module
- Transmission Shift Lever Position Indicator
- Window Switch - Driver

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2610: PASSENGER COMPARTMENT DIMMING 1 CIRCUIT > CONDITIONS FOR RUNNING THE DTC

- Battery voltage must be between 9-16 V.
- Park lamps ON.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2610: PASSENGER COMPARTMENT DIMMING 1 CIRCUIT > CONDITIONS FOR SETTING THE DTC

DTC B2610 02

The BCM detects a short to ground in the LED backlight dimming control 1 circuit terminal 8 X2 or LED backlight dimming control 2 circuit terminal 9 X7.

DTC B2610 04

The BCM detects a short to voltage or an open/high resistance in the LED backlight dimming control 1 circuit terminal 8 X2 or LED backlight dimming control 2 circuit terminal 9 X7.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2610: PASSENGER COMPARTMENT DIMMING 1 CIRCUIT > ACTIONS TAKEN WHEN THE DTC SETS

The BCM will disable the LED backlight dimming control circuits.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2610: PASSENGER

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COMPARTMENT DIMMING 1 CIRCUIT > CONDITIONS FOR CLEARING THE DTC

- The condition responsible for setting the DTC no longer exists.
- Turn ignition OFF, open and close drivers door, wait 1 min.
- A history DTC will clear once 100 consecutive malfunction-free ignition cycles have occurred.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2610: PASSENGER COMPARTMENT DIMMING 1 CIRCUIT > REFERENCE INFORMATION

Schematic Reference

Interior Lights Dimming Schematics

Connector End View Reference

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Control Module References for scan tool information

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2610: PASSENGER COMPARTMENT DIMMING 1 CIRCUIT > CIRCUIT/SYSTEM TESTING

NOTE:

Each component with backlighting may need to be disconnected to isolate a short to voltage or short to ground. Use the schematics to identify the following:

1. *Backlighting components the vehicle is equipped with*
2. *Each component's control and ground circuit terminals*
3. *Component locations on the backlighting control circuit*

1. Ignition OFF, scan tool disconnected, all doors closed, all accessories OFF, open and close drivers door, disconnect the harness connector at the component with inoperative backlighting. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the appropriate ground circuit terminal and ground.
    1. **If 10 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 10 Ω**
3. Connect a test lamp between the appropriate control circuit terminal and ground, ignition ON.
4. Verify the test lamp turns ON and OFF when commanding the LED Backlight Dimming ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the appropriate harness connector listed below at the K9 Body Control Module.
            1. X2 terminal 8
            2. X7 terminal 9
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If the test lamp is always ON**
        1. Ignition OFF, disconnect the appropriate harness connector listed below at the K9 Body Control Module, ignition ON.
            1. X2 terminal 8
            2. X7 terminal 9
        2. Test for less than 1 V between the control circuit terminal and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            2. If less than 1 V, replace the K9 Body Control Module.

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1. **If the test lamp turns ON and OFF**

5. Test or replace the component with inoperative backlighting.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2610: PASSENGER COMPARTMENT DIMMING 1 CIRCUIT > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Sunroof Switch Replacement
- Dimmer Switch Replacement
- Door Lock Switch Replacement - Driver Side
- Door Lock Switch Replacement - Passenger Front
- Garage Door Opener Transmitter Pushbutton Replacement (Coupe) Garage Door Opener Transmitter Pushbutton Replacement (Convertible)
- Parking Brake Switch Replacement
- Ignition and Start Switch Replacement
- Steering Wheel Spoke Cover Replacement
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2615: PASSENGER COMPARTMENT DIMMING 2 CIRCUIT SHORT TO GROUND > 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 INFORMATION AND PROCEDURES > DTC B2615: PASSENGER COMPARTMENT DIMMING 2 CIRCUIT SHORT TO GROUND > DTC DESCRIPTOR

DTC B2615 02

Passenger Compartment Dimming 2 Circuit Short to Ground

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2615: PASSENGER

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COMPARTMENT DIMMING 2 CIRCUIT SHORT TO GROUND > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
F31UA (BCM 7) Fuse B+	1	1	1	-
Dome/Courtesy Lamps Control Terminal 1 X7	B2615 02	1	1	-
Dome/Courtesy Lamps Control Terminal 5 X2	B2615 02	1	1	-
Dome/Reading Lamps - Left Front Ground	-	1	-	-
Dome/Reading Lamps - Right Front Ground	-	1	-	-
Door Sill Plate Lamp - Driver Ground	-	1	-	-
Door Sill Plate Lamp - Passenger Ground	-	1	-	-
Instrument Panel Courtesy Lamp - Left Ground	-	1	-	-
Instrument Panel Courtesy Lamp - Right Ground	-	1	-	-
1. Dome Lamps Malfunction				

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2615: PASSENGER COMPARTMENT DIMMING 2 CIRCUIT SHORT TO GROUND > CIRCUIT/SYSTEM DESCRIPTION

The body control module (BCM) applies battery voltage to the interior courtesy lamps through the dome/courtesy lamps control circuits at terminal 1 X7 and terminal 5 X2. When any door is opened, the jam switch contacts close and the BCM receives a door-ajar input. If the BCM receives a door lock or unlock input or a rear hatch open input, the BCM will activate the dome/courtesy lamps control circuit terminal 1 X7 and terminal 5 X2, providing battery voltage to all courtesy lamps supplied by the circuits. In the event that any of these courtesy lamps were to remain illuminated for more than 10 minutes with the ignition switch in the OFF position, the BCM will deactivate the courtesy lamp control circuits to prevent total battery discharge.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2615: PASSENGER COMPARTMENT DIMMING 2 CIRCUIT SHORT TO GROUND > CONDITIONS FOR RUNNING THE DTC

Battery voltage must be between 9-16 V.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2615: PASSENGER COMPARTMENT DIMMING 2 CIRCUIT SHORT TO GROUND > CONDITIONS FOR SETTING THE DTC

The BCM detects a short to ground in the dome/courtesy lamps control circuit terminal 1 X7 or terminal 5 X2.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2615: PASSENGER COMPARTMENT DIMMING 2 CIRCUIT SHORT TO GROUND > ACTIONS TAKEN WHEN THE DTC SETS

The BCM will disable the dome lamps control circuits terminal 1 X7 and terminal 5 X2.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2615: PASSENGER COMPARTMENT DIMMING 2 CIRCUIT SHORT TO GROUND > CONDITIONS FOR CLEARING THE DTC

- The condition responsible for setting the DTC no longer exists.
- Disconnect the negative battery cable for 30 s.
- A history DTC will clear once 100 consecutive malfunction-free ignition cycles have occurred.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2615: PASSENGER COMPARTMENT DIMMING 2 CIRCUIT SHORT TO GROUND > REFERENCE INFORMATION

Schematic Reference

Interior Lights Schematics

Connector End View Reference

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Scan Tool Reference

Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2615: PASSENGER COMPARTMENT DIMMING 2 CIRCUIT SHORT TO GROUND > CIRCUIT/SYSTEM TESTING

> *NOTE:*
>
> *Each lighting component may need to be disconnected to isolate a short to ground. Use the schematics to identify the following:*
>
> 1. *Lighting components the vehicle is equipped with*
> 2. *Each component's control and ground circuit terminals*
> 3. *Component locations on the lighting control circuit*

1. Ignition OFF, scan tool disconnected, all doors closed, all accessories OFF, open and close drivers door, disconnect the harness connector at the component with inoperative dome/courtesy lamp. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the appropriate ground circuit terminal listed below and ground.
    1. E8A Door Sill Plate Lamp - Driver terminal 2 (with B7G)
    2. E8B Door Sill Plate Lamp - Passenger terminal 2 (with B7G)
    3. E8J Instrument Panel Courtesy Lamp - Left terminal 2
    4. E8K Instrument Panel Courtesy Lamp - Right terminal 2
    5. E37LF Dome/Reading Lamps - Left Front terminal 4
    6. E37RF Dome/Reading Lamps - Right Front terminal 4
    1. **If 10 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.

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1. **If less than 10 Ω**

3. Connect a test lamp between the appropriate control circuit terminal listed below and ground, ignition ON.
    1. E8A Door Sill Plate Lamp - Driver terminal 1 (with B7G)
    2. E8B Door Sill Plate Lamp - Passenger terminal 1 (with B7G)
    3. E8J Instrument Panel Courtesy Lamp - Left terminal 1
    4. E8K Instrument Panel Courtesy Lamp - Right terminal 1
    5. E37LF Dome/Reading Lamps - Left Front terminal 3
    6. E37RF Dome/Reading Lamps - Right Front terminal 3
4. Verify the test lamp turns ON and OFF when commanding the Courtesy Lamps ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the appropriate harness connector listed below at the K9 Body Control Module.
            1. X2
            2. X7
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If the test lamp is always ON**
        1. Ignition OFF, disconnect the appropriate harness connector listed below at the K9 Body Control Module, ignition ON.
            1. X2
            2. X7
        2. Test for less than 1 V between the control circuit terminal and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            2. If less than 1 V, replace the K9 Body Control Module.
    1. **If the test lamp turns ON and OFF**
5. Test or replace the dome/courtesy lamp.

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2615: PASSENGER COMPARTMENT DIMMING 2 CIRCUIT SHORT TO GROUND > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Roof Console Replacement
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2625: DISPLAY DIMMING PULSE WIDTH MODULATION OUTPUT CIRCUIT > 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 INFORMATION AND PROCEDURES > DTC B2625: DISPLAY DIMMING PULSE WIDTH MODULATION OUTPUT CIRCUIT > DTC DESCRIPTORS

DTC B2625 01

Display Dimming Pulse Width Modulation Output Circuit Short to Battery

DTC B2625 02

Display Dimming Pulse Width Modulation Output Circuit Short to Ground

DTC B2625 04

Display Dimming Pulse Width Modulation Output Circuit Open

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2625: DISPLAY DIMMING PULSE WIDTH MODULATION OUTPUT CIRCUIT > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Switch Indicator LED Backlight Dimming Control Terminal 5 X1	B2625 02	B2625 04	B2625 01	-

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Door Lock Switch - Driver Ground	-	1	-	-
Door Lock Switch - Passenger Ground	-	1	-	-
Steering Wheel Controls Switch - Left Indicator Control	-	2	-	-
1. Door Lock Indicator Malfunction 2. Heated Steering Wheel Indicator Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2625: DISPLAY DIMMING PULSE WIDTH MODULATION OUTPUT CIRCUIT > CIRCUIT/SYSTEM DESCRIPTION

The instrument panel dimmer switch is used to increase and decrease the brightness of the interior backlighting components. The instrument panel dimmer switch provides a voltage signal to the body control module (BCM) that will increase as the brightness of the lights are increased and decrease as the brightness of the lights are decreased. The BCM provides a low reference, signal, and B+ voltage reference to the instrument panel dimmer switch. When the instrument panel dimmer switch is placed in the desired position, the dimmed voltage setting is applied from the instrument panel dimmer switch through the instrument panel dimmer switch signal circuit to the BCM. The BCM interprets the signal and applies a pulse width modulated voltage through the LED dimming 1 and dimming 2 control circuits illuminating the interior backlighting to the requested level of brightness. The backlighting for the switch indicators listed below are controlled by the Switch Indicator LED Backlight Dimming Control Terminal 5 X1.

- Driver Door Lock Switch Indicator
- Heated Steering Wheel Indicator
- Passenger Door Lock Switch Indicator

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2625: DISPLAY DIMMING PULSE WIDTH MODULATION OUTPUT CIRCUIT > CONDITIONS FOR RUNNING THE DTC

- Battery voltage must be between 9-16 V.
- Park lamps ON.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2625: DISPLAY DIMMING PULSE WIDTH MODULATION OUTPUT CIRCUIT > CONDITIONS FOR SETTING THE DTC

DTC B2625 01

The BCM detects a short to voltage in the switch indicator LED backlight dimming control circuit terminal 5 X1.

DTC B2625 02

The BCM detects a short to ground in the switch indicator LED backlight dimming control circuit terminal 5 X1.

DTC B2625 04

The BCM detects an open/high resistance in the switch indicator LED backlight dimming control circuit terminal 5 X1.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2625: DISPLAY DIMMING PULSE WIDTH MODULATION OUTPUT CIRCUIT > ACTIONS TAKEN WHEN THE DTC SETS

The switch indicator LED backlight dimming control circuit driver is shut down.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2625: DISPLAY DIMMING PULSE WIDTH MODULATION OUTPUT CIRCUIT > CONDITIONS FOR CLEARING THE DTC

- The condition responsible for setting the DTC no longer exists.
- Disconnect the negative battery cable for 30 s.
- A history DTC will clear once 100 consecutive malfunction-free ignition cycles have occurred.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2625: DISPLAY DIMMING PULSE WIDTH MODULATION OUTPUT CIRCUIT > REFERENCE INFORMATION

Schematic Reference

Interior Lights Dimming Schematics

Connector End View Reference

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- Connector Repairs

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- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

Scan Tool Reference

Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2625: DISPLAY DIMMING PULSE WIDTH MODULATION OUTPUT CIRCUIT > CIRCUIT/SYSTEM TESTING

1. Ignition OFF, disconnect the harness connectors at the components listed below.
    1. S13D Door Lock Switch - Driver
    2. S13P Door Lock Switch - Passenger
    3. S70L Steering Wheel Controls Switch - Left
2. Ignition ON, place the S36 Instrument Panel Dimmer Switch in the HIGH position for high backlighting intensity.

> *NOTE:*
>
> *The test lamp in the following step will illuminate at LOW intensity. This is normal circuit operation and does not indicate a circuit malfunction.*

3. Verify a test lamp illuminates between each control circuit terminal listed below and ground.
    1. S13D Door Lock Switch - Driver terminal 5
    2. S13P Door Lock Switch - Passenger terminal 5
    3. S70L Steering Wheel Controls Switch - Left terminal 7
        1. **If the test lamp does not illuminate**
            1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module.
            2. Test for infinite resistance between the control circuit and ground.
                1. If less than infinite resistance, repair the short to ground on the circuit.
                1. If infinite resistance
            3. Test for less than 2 Ω in the control circuit end to end.
                1. If 2 Ω or greater, repair the open/high resistance in the circuit.
                2. If less than 2 Ω, replace the K9 Body Control Module.
        1. **If the test lamp illuminates**

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4. Place the S36 Instrument Panel Dimmer Switch in the LOW position for low backlighting intensity.
5. Verify a test lamp does not illuminate at FULL intensity between each control circuit terminal listed below and ground.
    1. S13D Door Lock Switch - Driver terminal 5
    2. S13P Door Lock Switch - Passenger terminal 5
    3. S70L Steering Wheel Controls Switch - Left terminal 7
    1. **If the test lamp illuminates at full intensity**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the control circuit terminal and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            2. If less than 1 V, replace the K9 Body Control Module.
    1. **If the test lamp does not illuminate at full intensity**
6. Test or replace the appropriate component.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2625: DISPLAY DIMMING PULSE WIDTH MODULATION OUTPUT CIRCUIT > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Door Lock Switch Replacement - Driver Side
- Door Lock Switch Replacement - Passenger Front
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2645: AMBIENT LIGHT SENSOR CIRCUIT VOLTAGE > 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 INFORMATION AND PROCEDURES > DTC B2645: AMBIENT LIGHT SENSOR CIRCUIT VOLTAGE > DTC DESCRIPTORS

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DTC B2645 03

Ambient Light Sensor Circuit Low Voltage

DTC B2645 07

Ambient Light Sensor Circuit High Voltage

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2645: AMBIENT LIGHT SENSOR CIRCUIT VOLTAGE > 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	-
Ambient Light Sensor Low Reference	1	B2645 07, B0163 05, B0183 05,	1	-
1. Daytime Running Lamps Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2645: AMBIENT LIGHT SENSOR CIRCUIT VOLTAGE > 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 between 0.2 and 4.9 V depending on outside lighting conditions. The body control module (BCM) provides a 5 V reference signal to the ambient light sensor and the HVAC control module provides a low reference ground. The BCM monitors the ambient light sensor signal circuit to determine if outside lighting conditions are correct for either daytime running lamps or automatic lamp control when the headlamp switch is in the AUTO position. In daylight conditions the BCM will command the daytime running lamps ON. During low light conditions the BCM will command the low beam headlamps ON. Any function or condition that turns on the headlamps will cancel daytime running lamps operation.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2645: AMBIENT LIGHT SENSOR CIRCUIT VOLTAGE > CONDITIONS FOR RUNNING THE DTC

Battery voltage must be between 9-16 V.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2645: AMBIENT LIGHT SENSOR CIRCUIT VOLTAGE > CONDITIONS FOR SETTING THE DTC

DTC B2645 03

The BCM detects a short to ground in the ambient light sensor signal circuit.

DTC B2645 07

- The BCM detects a short to voltage or an open/high resistance in the ambient light sensor signal circuit.
- The BCM detects an open/high resistance in the ambient light sensor low reference circuit.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2645: AMBIENT LIGHT SENSOR CIRCUIT VOLTAGE > ACTIONS TAKEN WHEN THE DTC SETS

- Automatic headlamp system and daytime running lamps are inoperative.
- The BCM defaults to low light status and commands the low beam headlamps ON.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2645: AMBIENT LIGHT SENSOR CIRCUIT VOLTAGE > 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.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2645: AMBIENT LIGHT SENSOR CIRCUIT VOLTAGE > REFERENCE INFORMATION

Schematic Reference

Headlights/Daytime Running Lights (DRL) Schematics

Connector End View Reference

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Scan Tool Reference

Control Module References for scan tool information

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2645: AMBIENT LIGHT SENSOR CIRCUIT VOLTAGE > CIRCUIT/SYSTEM TESTING

1. Ignition OFF, scan tool disconnected, all doors closed, all accessories OFF, open and close drivers door, disconnect the harness connector at the B10B Ambient Light/Sunload Sensor. It may take up to 10 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the low reference circuit terminal 6 and ground.
    1. **If 10 Ω or greater**
        1. Ignition OFF, disconnect the X2 harness connector at the K33 HVAC Control Module.
        2. Test for less than 2 Ω in the low reference circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K33 HVAC control module.
    1. **If less than 10 Ω**
3. Ignition ON.
4. Verify the scan tool Ambient Light Sensor parameter is greater than 4.65 V.
    1. **If 4.65 V or less**
        1. Ignition OFF, disconnect the X2 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the signal circuit terminal 3 and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            2. If infinite resistance, replace the K9 Body Control Module.
    1. **If greater than 4.65 V**
5. Install a 3 A fused jumper wire between the signal circuit terminal 3 and the low reference circuit terminal 6.
6. Verify the scan tool Ambient Light Sensor parameter is less than 0.196 V.
    1. **If 0.196 V or greater**
        1. Ignition OFF, disconnect the X2 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the signal circuit terminal 3 and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            1. If less than 1 V
        3. Test for less than 2 Ω in the signal circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.

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2. If less than 2 Ω, replace the K9 Body Control Module.

1. **If less than 0.196 V**

7. Test or replace the B10B Ambient Light/Sunload Sensor.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B2645: AMBIENT LIGHT SENSOR CIRCUIT VOLTAGE > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Sun Load Temperature and Ambient Light and Security Indicator Sensor Replacement
- Control Module References for BCM or HVAC Control Module replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3588: REAR FOG LAMP SWITCH CIRCUIT 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 INFORMATION AND PROCEDURES > DTC B3588: REAR FOG LAMP SWITCH CIRCUIT MALFUNCTION > DTC DESCRIPTOR

DTC B3588 00

Rear Fog Lamp Switch Circuit Malfunction

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3588: REAR FOG LAMP SWITCH CIRCUIT MALFUNCTION > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Rear Fog Lamp Switch Signal	B3588 00	1	1	-
Rear Fog Lamp Control	B2540 02	B2540 04	1	-
Rear Fog Lamp Ground	-	1	-	-
Turn Signal/Multifunction Switch Ground	-	1	-	-

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1. Rear Fog Lamp Malfunction

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3588: REAR FOG LAMP SWITCH CIRCUIT MALFUNCTION > CIRCUIT/SYSTEM DESCRIPTION

The rear fog lamp switch signal circuit is grounded momentarily by pressing the rear fog lamp switch. The body control module (BCM) responds to the rear fog lamp request by applying voltage to the rear fog lamp control circuit which illuminates the rear fog lamp.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3588: REAR FOG LAMP SWITCH CIRCUIT MALFUNCTION > CONDITIONS FOR RUNNING THE DTC

Battery voltage must be between 9-16 V.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3588: REAR FOG LAMP SWITCH CIRCUIT MALFUNCTION > CONDITIONS FOR SETTING THE DTC

The BCM detects a short to ground in the turn signal/multifunction switch rear fog lamp signal circuit.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3588: REAR FOG LAMP SWITCH CIRCUIT MALFUNCTION > ACTIONS TAKEN WHEN THE DTC SETS

The rear fog lamp indicator on the instrument cluster is always ON.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3588: REAR FOG LAMP SWITCH CIRCUIT MALFUNCTION > 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.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3588: REAR FOG LAMP SWITCH CIRCUIT MALFUNCTION > REFERENCE INFORMATION

Schematic Reference

Fog Lights Schematics

Connector End View Reference

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Scan Tool Reference

Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3588: REAR FOG LAMP SWITCH CIRCUIT MALFUNCTION > CIRCUIT/SYSTEM TESTING

1. Ignition OFF, scan tool disconnected, all doors closed, all accessories OFF, open and close drivers door, disconnect the harness connector at the S78 Turn Signal/Multifunction Switch. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 6 and ground.
    1. **If 10 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 10 Ω**
3. Ignition ON.
4. Verify the scan tool Rear Fog Lamp Switch parameter is Inactive.
    1. **If not Inactive**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the signal circuit terminal 3 and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            2. If infinite resistance, replace the K9 Body Control Module.
    1. **If Inactive**

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5. Install a 3 A fused jumper wire between the signal circuit terminal 3 and ground.
6. Verify the scan tool Rear Fog Lamp Switch parameter is Active.
    1. **If not Active**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the signal circuit terminal 3 and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            1. If less than 1 V
        3. Test for less than 2 Ω in the signal circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If Active**
7. Test or replace the S78 Turn Signal/Multifunction Switch.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3588: REAR FOG LAMP SWITCH CIRCUIT MALFUNCTION > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

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

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3596: HAZARD LAMPS REQUEST CIRCUIT 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 INFORMATION AND PROCEDURES > DTC B3596: HAZARD LAMPS REQUEST CIRCUIT MALFUNCTION > DTC DESCRIPTOR

DTC B3596 00

Hazard Lamps Request Circuit Malfunction

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3596: HAZARD LAMPS REQUEST CIRCUIT MALFUNCTION > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Hazard Warning Switch Signal	B3596 00	1	1	B3596 00
Hazard Warning Switch Ground	-	1	-	-
1. Hazard Lamps Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3596: HAZARD LAMPS REQUEST CIRCUIT MALFUNCTION > CIRCUIT/SYSTEM DESCRIPTION

The hazard flashers may be activated in any power mode. The hazard warning switch signal circuit is momentarily grounded when the hazard warning switch is pressed. The body control module (BCM) responds to the hazard warning switch signal input by supplying battery voltage to all four turn signal lamps in an ON and OFF duty cycle. When the hazard warning switch is activated, the BCM sends a serial data message to the instrument cluster requesting both turn signal indicators to be cycled ON and OFF.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3596: HAZARD LAMPS REQUEST CIRCUIT MALFUNCTION > CONDITIONS FOR RUNNING THE DTC

- Battery voltage must be between 9-16 V.
- Hazard lamps ON.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3596: HAZARD LAMPS REQUEST CIRCUIT MALFUNCTION > CONDITIONS FOR SETTING THE DTC

The hazard warning switch input is active for longer than 60 s.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3596: HAZARD LAMPS REQUEST CIRCUIT MALFUNCTION > ACTIONS TAKEN WHEN THE DTC SETS

The hazard lamps are inoperative.

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3596: HAZARD LAMPS REQUEST CIRCUIT MALFUNCTION > 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.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3596: HAZARD LAMPS REQUEST CIRCUIT MALFUNCTION > REFERENCE INFORMATION

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

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Scan Tool Reference

Control Module References for scan tool information

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3596: HAZARD LAMPS REQUEST CIRCUIT MALFUNCTION > CIRCUIT/SYSTEM TESTING

1. Ignition OFF, scan tool disconnected, all doors closed, all accessories OFF, open and close drivers door, disconnect the harness connector at the S26 Hazard Warning Switch. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 2 and ground.
    1. **If 10 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.

2. If less than 2 Ω, repair the open/high resistance in the ground connection.

1. **If less than 10 Ω**

3. Ignition ON.
4. Verify the scan tool Hazard Lamps Switch parameter is Inactive.
    1. **If not Inactive**
        1. Ignition OFF, disconnect the X2 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the signal circuit terminal 1 and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            2. If infinite resistance, replace the K9 Body Control Module.
    1. **If Inactive**
5. Install a 3 A fused jumper wire between the signal circuit terminal 1 and ground.
6. Verify the scan tool Hazard Lamps Switch parameter is Active.
    1. **If not Active**
        1. Ignition OFF, disconnect the X2 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the signal circuit terminal 1 and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            1. If less than 1 V
        3. Test for less than 2 Ω in the signal circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If Active**
7. Test or replace the S26 Hazard Warning Switch.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3596: HAZARD LAMPS REQUEST CIRCUIT MALFUNCTION > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Hazard Warning Switch Replacement
- Control Module References for BCM replacement, programming, and setup

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3600: PASSENGER COMPARTMENT DIMMING REQUEST SIGNAL CIRCUIT VOLTAGE > 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 INFORMATION AND PROCEDURES > DTC B3600: PASSENGER COMPARTMENT DIMMING REQUEST SIGNAL CIRCUIT VOLTAGE > DTC DESCRIPTORS

DTC B3600 03

Passenger Compartment Dimming Request Signal Circuit Low Voltage

DTC B3600 07

Passenger Compartment Dimming Request Signal Circuit High Voltage

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3600: PASSENGER COMPARTMENT DIMMING REQUEST SIGNAL CIRCUIT VOLTAGE > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Instrument Panel Dimmer Switch B+ Reference	B1395 03, B3600 03	B1395 03, B3600 03	B1395 07, B3600 07	-
Instrument Panel Dimmer Switch Signal	B1395 03, B3600 03	B1395 03, B3600 03	B1395 07, B3600 07	-
Instrument Panel Dimmer Switch Low Reference	1	1	1	-
1. Interior Backlighting Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3600: PASSENGER COMPARTMENT DIMMING REQUEST SIGNAL CIRCUIT VOLTAGE > CIRCUIT/SYSTEM DESCRIPTION

The instrument panel dimmer switch is used to increase and decrease the brightness of the interior backlighting components. The instrument panel dimmer switch provides a voltage signal to the body

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control module (BCM) that will increase as the brightness of the lights are increased and decrease as the brightness of the lights are decreased. The BCM provides a low reference, signal, and B+ voltage reference to the instrument panel dimmer switch. When the instrument panel dimmer switch is placed in the desired position, the dimmed voltage setting is applied from the instrument panel dimmer switch through the instrument panel dimmer switch signal circuit to the BCM. The BCM interprets the signal and applies a pulse width modulated voltage through the LED dimming 1 and dimming 2 control circuits illuminating the interior backlighting to the requested level of brightness.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3600: PASSENGER COMPARTMENT DIMMING REQUEST SIGNAL CIRCUIT VOLTAGE > CONDITIONS FOR RUNNING THE DTC

- Battery voltage must be between 9-16 V.
- Park Lamps ON.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3600: PASSENGER COMPARTMENT DIMMING REQUEST SIGNAL CIRCUIT VOLTAGE > CONDITIONS FOR SETTING THE DTC

DTC B3600 03

- The BCM detects a short to ground or an open/high resistance in the instrument panel dimmer switch B+ reference circuit.
- The BCM detects a short to ground or an open/high resistance in the instrument panel dimmer switch signal circuit.

DTC B3600 07

- The BCM detects a short to voltage in the instrument panel dimmer switch B+ reference circuit.
- The BCM detects a short to voltage in the instrument panel dimmer switch signal circuit.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3600: PASSENGER COMPARTMENT DIMMING REQUEST SIGNAL CIRCUIT VOLTAGE > ACTIONS TAKEN WHEN THE DTC SETS

The BCM will not dim any interior backlighting. All interior backlighting will default to the FULL bright.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3600: PASSENGER COMPARTMENT DIMMING REQUEST SIGNAL CIRCUIT VOLTAGE > CONDITIONS FOR CLEARING THE DTC

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- The condition responsible for setting the DTC no longer exists.
- Disconnect the negative battery cable for 30 s.
- A history DTC will clear once 100 consecutive malfunction-free ignition cycles have occurred.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3600: PASSENGER COMPARTMENT DIMMING REQUEST SIGNAL CIRCUIT VOLTAGE > DIAGNOSTIC AIDS

When a short to ground condition exists, the BCM goes into safe mode. The DTC will clear in most cases without removing the negative battery cable, but in order to restore the BCM to normal operating conditions the negative battery cable must be removed. The B+ reference circuit under normal operating conditions will illuminate a test lamp. When the BCM is in safe mode, a test lamp will no longer illuminate but the DTC will clear and the backlighting will dim normally.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3600: PASSENGER COMPARTMENT DIMMING REQUEST SIGNAL CIRCUIT VOLTAGE > REFERENCE INFORMATION

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Scan Tool Reference

Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3600: PASSENGER COMPARTMENT DIMMING REQUEST SIGNAL CIRCUIT VOLTAGE >

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CIRCUIT/SYSTEM TESTING

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S36 Instrument Panel Dimmer Switch, ignition ON.
2. Test for B+ between the B+ circuit terminal 6 and ground.
    1. **If less than B+**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the B+ circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the B+ circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If B+**
3. Verify a test lamp illuminates between the B+ circuit terminal 6 and the low reference circuit terminal 1.
    1. **If the test lamp does not illuminate**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the low reference circuit terminal 1 and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            1. If less than 1 V
        3. Test for less than 2 Ω in the low reference circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If the test lamp illuminates**
4. Verify a test lamp does not illuminate between the B+ circuit terminal 6 and the signal circuit terminal 2.
    1. **If the test lamp illuminates**
        1. Ignition OFF, disconnect the X2 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the signal circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            2. If infinite resistance, replace the K9 Body Control Module.

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1. **If the test lamp does not illuminate**

5. Test for B+ between the B+ circuit terminal 6 and the signal circuit terminal 2.
    1. **If less than B+**
        1. Ignition OFF, disconnect the X2 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the signal circuit terminal 2 and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            1. If less than 1 V
        3. Test for less than 2 Ω in the signal circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If B+**
6. Test or replace the S36 Instrument Panel Dimmer Switch.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3600: PASSENGER COMPARTMENT DIMMING REQUEST SIGNAL CIRCUIT VOLTAGE > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Dimmer Switch Replacement
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3650: HIGH BEAM REQUEST SIGNAL CIRCUIT PERFORMANCE - SIGNAL INVALID > 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 INFORMATION AND PROCEDURES > DTC B3650: HIGH BEAM REQUEST SIGNAL CIRCUIT PERFORMANCE - SIGNAL INVALID > DTC DESCRIPTOR

DTC B3650 08

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3650: HIGH BEAM REQUEST SIGNAL CIRCUIT PERFORMANCE - SIGNAL INVALID > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Turn Signal/Multifunction Switch Headlamps OFF Signal	B257A 00	1	1	-
Turn Signal/Multifunction Switch Headlamps ON Signal	B257A 00	1	1	-
Turn Signal/Multifunction Switch Park Lamps ON Signal	2	B257A 00	2	-
Turn Signal/Multifunction Switch Flash To Pass Signal	B3806 00	1	1	-
Turn Signal/Multifunction Switch High Beam Signal	B3650 08	1	1	-
Turn Signal/Multifunction Switch Ground	-	1	-	-
1. Headlamps Malfunction 2. Park, License, and/or Tail Lamps Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3650: HIGH BEAM REQUEST SIGNAL CIRCUIT PERFORMANCE - SIGNAL INVALID > CIRCUIT/SYSTEM DESCRIPTION

When the low beam headlamps are on and the turn signal/multifunction switch is placed in the high beam position, ground is applied to the body control module (BCM) through the high beam signal circuit. The BCM responds to the high beam request by applying ground to the high beam relay control circuit which energizes the high beam relay. With the high beam relay energized, the switch contacts close allowing battery voltage to flow through the high beam fuses to the high beam control circuits illuminating the high beam headlamps.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3650: HIGH BEAM REQUEST SIGNAL CIRCUIT PERFORMANCE - SIGNAL INVALID > CONDITIONS FOR RUNNING THE DTC

Battery voltage must be between 9-16 V.

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3650: HIGH BEAM REQUEST SIGNAL CIRCUIT PERFORMANCE - SIGNAL INVALID > CONDITIONS FOR SETTING THE DTC

The BCM detects a short to ground in the turn signal/multifunction switch high beam signal circuit.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3650: HIGH BEAM REQUEST SIGNAL CIRCUIT PERFORMANCE - SIGNAL INVALID > ACTIONS TAKEN WHEN THE DTC SETS

The high beam headlamps will not operate.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3650: HIGH BEAM REQUEST SIGNAL CIRCUIT PERFORMANCE - SIGNAL INVALID > 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.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3650: HIGH BEAM REQUEST SIGNAL CIRCUIT PERFORMANCE - SIGNAL INVALID > REFERENCE INFORMATION

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3650: HIGH BEAM REQUEST SIGNAL CIRCUIT PERFORMANCE - SIGNAL INVALID > CIRCUIT/SYSTEM TESTING

1. Ignition OFF, scan tool disconnected, all doors closed, all accessories OFF, open and close the drivers door, disconnect the harness connector at the S78 Turn Signal/Multifunction Switch. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 6 and ground.
    1. **If 10 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 10 Ω**
3. Ignition ON.
4. Verify the scan tool High Beam Select Switch parameter is Inactive.
    1. **If not Inactive**
        1. Ignition OFF, disconnect the X3 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the signal circuit terminal 11 and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            2. If infinite resistance, replace the K9 Body Control Module.
    1. **If Inactive**
5. Install a 3 A fused jumper wire between the signal circuit terminal 11 and ground.
6. Verify the scan tool High Beam Select Switch parameter is Active.
    1. **If not Active**
        1. Ignition OFF, disconnect the X3 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the signal circuit terminal 11 and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.

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1. If less than 1 V

3. Test for less than 2 Ω in the signal circuit end to end.

1. If 2 Ω or greater, repair the open/high resistance in the circuit.

2. If less than 2 Ω, replace the K9 Body Control Module.

1. **If Active**

7. Test or replace the S78 Turn Signal/Multifunction Switch.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3650: HIGH BEAM REQUEST SIGNAL CIRCUIT PERFORMANCE - SIGNAL INVALID > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

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

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3806: HIGH BEAM AND HEADLAMP FLASH SELECT CIRCUIT 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 INFORMATION AND PROCEDURES > DTC B3806: HIGH BEAM AND HEADLAMP FLASH SELECT CIRCUIT MALFUNCTION > DTC DESCRIPTOR

DTC B3806 00

High Beam and Headlamp Flash Select Circuit Malfunction

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3806: HIGH BEAM AND HEADLAMP FLASH SELECT CIRCUIT MALFUNCTION > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to	Open/High	Short to	Signal

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	Ground	Resistance	Voltage	Performance
Turn Signal/Multifunction Switch Headlamps OFF Signal	B257A 00	1	1	-
Turn Signal/Multifunction Switch Headlamps ON Signal	B257A 00	1	1	-
Turn Signal/Multifunction Switch Park Lamps ON Signal	2	B257A 00	2	-
Turn Signal/Multifunction Switch Flash To Pass Signal	B3806 00	1	1	-
Turn Signal/Multifunction Switch High Beam Signal	B3650 08	1	1	-
Turn Signal/Multifunction Switch Ground	-	1	-	-
1. Headlamps Malfunction 2. Park, License, and/or Tail Lamps Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3806: HIGH BEAM AND HEADLAMP FLASH SELECT CIRCUIT MALFUNCTION > CIRCUIT/SYSTEM DESCRIPTION

When the turn signal/multifunction switch is momentarily placed in the flash to pass position, ground is applied to the body control module (BCM) through the flash to pass signal circuit. The BCM responds to the flash to pass request by applying ground to the high beam relay control circuit which energizes the high beam relay. With the high beam relay energized, the switch contacts close allowing battery voltage to flow through the high beam fuses to the high beam control circuits illuminating the high beam headlamps. The high beam headlamps will only illuminate for as long at the flash to pass switch is activated.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3806: HIGH BEAM AND HEADLAMP FLASH SELECT CIRCUIT MALFUNCTION > CONDITIONS FOR RUNNING THE DTC

Battery voltage must be between 9-16 V.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3806: HIGH BEAM AND HEADLAMP FLASH SELECT CIRCUIT MALFUNCTION > CONDITIONS FOR SETTING THE DTC

The BCM detects a short to ground in the turn signal/multifunction switch flash to pass signal circuit.

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3806: HIGH BEAM AND HEADLAMP FLASH SELECT CIRCUIT MALFUNCTION > ACTIONS TAKEN WHEN THE DTC SETS

The high beam lamps and the high beam indicator on the instrument cluster are always ON.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3806: HIGH BEAM AND HEADLAMP FLASH SELECT CIRCUIT MALFUNCTION > 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.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3806: HIGH BEAM AND HEADLAMP FLASH SELECT CIRCUIT MALFUNCTION > REFERENCE INFORMATION

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Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3806: HIGH BEAM AND HEADLAMP FLASH SELECT CIRCUIT MALFUNCTION > CIRCUIT/SYSTEM TESTING

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1. Ignition OFF, scan tool disconnected, all doors closed, all accessories OFF, open and close drivers door, disconnect the harness connector at the S78 Turn Signal/Multifunction Switch. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 6 and ground.
    1. **If 10Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 10 Ω**
3. Ignition ON.
4. Verify the scan tool Headlamps Flash Switch parameter is Inactive.
    1. **If not Inactive**
        1. Ignition OFF, disconnect the X3 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the signal circuit terminal 12 and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            2. If infinite resistance, replace the K9 Body Control Module.
    1. **If Inactive**
5. Install a 3 A fused jumper wire between the signal circuit terminal 12 and ground.
6. Verify the scan tool Headlamps Flash Switch parameter is Active.
    1. **If not Active**
        1. Ignition OFF, disconnect the X3 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the signal circuit terminal 12 and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            1. If less than 1 V
        3. Test for less than 2 Ω in the signal circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If Active**
7. Test or replace the S78 Turn Signal/Multifunction Switch.

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3806: HIGH BEAM AND HEADLAMP FLASH SELECT CIRCUIT MALFUNCTION > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

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

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3883: LICENSE PLATE LAMP CIRCUIT > 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 INFORMATION AND PROCEDURES > DTC B3883: LICENSE PLATE LAMP CIRCUIT > DTC DESCRIPTORS

DTC B3883 01

License Plate Lamp Circuit Short to Battery

DTC B3883 02

License Plate Lamp Circuit Short to Ground

DTC B3883 04

License Plate Lamp Circuit Open

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3883: LICENSE PLATE LAMP CIRCUIT > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
F11DA (BCM 1) Fuse B+	B1325 03, B3265 01, B3265 04, B3873 01, B3873 04, B3883 01,	B1325 03, B3265 01, B3265 04, B3873 01, B3873 04, B3883 01, B3883 04, C0297 01	-	-

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	B3883 04, C0297 01			
License Plate Lamp Control	B3883 02	B3883 01, B3883 04	B3883 01, B3883 04	-
License Plate Lamp Ground - Right	-	1	-	-
License Plate Lamp Ground - Left	-	1	-	-
1. Park, License, and/or Tail Lamps Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3883: LICENSE PLATE LAMP CIRCUIT > CIRCUIT/SYSTEM DESCRIPTION

When the turn signal/multifunction switch is placed in the HEAD or PARK position, ground is applied to the park lamp switch ON signal circuit to the body control module (BCM). The BCM responds by applying voltage to the park lamps, tail lamps, and license lamps control circuits illuminating the park, tail, and license lamps.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3883: LICENSE PLATE LAMP CIRCUIT > CONDITIONS FOR RUNNING THE DTC

Battery voltage must be between 9-16 V.

DTC B3883 01

Turn signal/multifunction switch in OFF position.

DTC B3883 02 or B3883 04

Turn signal/multifunction switch in AUTO, PARK or ON positions.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3883: LICENSE PLATE LAMP CIRCUIT > CONDITIONS FOR SETTING THE DTC

DTC B3883 01 and DTC B3883 04

- The BCM detects a short to voltage or an open/high resistance in the license lamps control circuit.
- The BCM detects a short to ground or an open/high resistance in the F11DA (BCM 1) fuse B+ circuit.

DTC B3883 02

The BCM detects a short to ground in the license lamps control circuit.

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3883: LICENSE PLATE LAMP CIRCUIT > ACTIONS TAKEN WHEN THE DTC SETS

DTC B3883 01

License lamps always ON.

DTC B3883 02 or B3883 04

License lamps inoperative.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3883: LICENSE PLATE LAMP CIRCUIT > 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.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3883: LICENSE PLATE LAMP CIRCUIT > REFERENCE INFORMATION

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- Exterior Lights Schematics
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Scan Tool Reference

Control Module References for scan tool information

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3883: LICENSE PLATE LAMP CIRCUIT > CIRCUIT/SYSTEM TESTING

1. Ignition OFF, exterior lamps OFF, remove both E7 License Plate Lamp bulbs. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 5 Ω between each ground circuit terminal 2 and ground.
    1. **If 5 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 5 Ω**
3. Connect a test lamp between the E7L License Plate Lamp - Left control circuit terminal 1 and ground, ignition ON.
4. Verify the test lamp turns ON and OFF when commanding the License Plate Lamps ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If the test lamp is always ON**
        1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the control circuit terminal and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            2. If less than 1 V, replace the K9 Body Control Module.
    1. **If the test lamp turns ON and OFF**
5. Ignition OFF.

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6. Connect a test lamp between the E7R License Plate Lamp - Right control circuit terminal 1 and ground, ignition ON.
7. Verify the test lamp turns ON and OFF when commanding the License Plate Lamps ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
    1. **If the test lamp turns ON and OFF**
8. Test or replace the E7 License Plate Lamp bulb.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3883: LICENSE PLATE LAMP CIRCUIT > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Rear License Plate Lamp Replacement
- Rear License Plate Lamp Bulb Replacement
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3884: CENTER HIGH MOUNTED STOP LAMP CIRCUIT > 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 INFORMATION AND PROCEDURES > DTC B3884: CENTER HIGH MOUNTED STOP LAMP CIRCUIT > DTC DESCRIPTORS

DTC B3884 01

Center High Mounted Stop Lamp Circuit Short to Battery

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DTC B3884 02

Center High Mounted Stop Lamp Circuit Short to Ground

DTC B3884 04

Center High Mounted Stop Lamp Circuit Open

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3884: CENTER HIGH MOUNTED STOP LAMP CIRCUIT > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Center High Mounted Stop Lamp Control	B3884 02	B3884 01, B3884 04	B3884 01, B3884 04	-
Center High Mounted Stop Lamp Ground	-	1	-	-
1. Stop Lamps Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3884: CENTER HIGH MOUNTED STOP LAMP CIRCUIT > CIRCUIT/SYSTEM DESCRIPTION

The brake pedal position sensor is used to sense the action of the driver application of the brake pedal. The brake pedal position sensor provides an analog voltage signal that will increase as the brake pedal is applied. The body control module (BCM) provides a low reference signal and a 5 V reference voltage to the brake pedal position sensor. When the variable signal reaches a voltage threshold indicating the brakes have been applied, the BCM will apply battery voltage to the stop lamp/center high mounted stop lamp control circuit illuminating the left and right inner stop lamps and the center high mounted stop lamp.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3884: CENTER HIGH MOUNTED STOP LAMP CIRCUIT > CONDITIONS FOR RUNNING THE DTC

- Battery voltage must be between 9-16 V.
- Brakes APPLIED.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3884: CENTER HIGH MOUNTED STOP LAMP CIRCUIT > CONDITIONS FOR SETTING THE DTC

DTC B3884 01 and B3884 04

The BCM detects a short to voltage or an open/high resistance in the center high mounted stop lamp control circuit.

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DTC B3884 02

The BCM detects a short to ground in the center high mounted stop lamp control circuit.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3884: CENTER HIGH MOUNTED STOP LAMP CIRCUIT > ACTIONS TAKEN WHEN THE DTC SETS

The BCM will not illuminate the center high mounted stop lamp.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3884: CENTER HIGH MOUNTED STOP LAMP CIRCUIT > CONDITIONS FOR CLEARING THE DTC

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

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3884: CENTER HIGH MOUNTED STOP LAMP CIRCUIT > REFERENCE INFORMATION

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Scan Tool Reference

Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3884: CENTER HIGH MOUNTED STOP LAMP CIRCUIT > CIRCUIT/SYSTEM TESTING

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1. Ignition OFF, exterior lamps OFF, disconnect the harness connector at the E6 Center High Mounted Stop Lamp. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 5 Ω between the ground circuit terminal A and ground.
    1. **If 5 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 5 Ω**
3. Connect a test lamp between the control circuit terminal B and ground, ignition ON.
4. Verify the test lamp turns ON and OFF when commanding the Center Brake Lamp ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If the test lamp is always ON**
        1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the control circuit terminal and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            2. If less than 1 V, replace the K9 Body Control Module.
    1. **If the test lamp turns ON and OFF**
5. Test or replace the E6 Center High Mounted Stop Lamp.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3884: CENTER HIGH MOUNTED STOP LAMP CIRCUIT > REPAIR INSTRUCTIONS

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Perform the Diagnostic Repair Verification after completing the repair.

- High Mount Stop Lamp Replacement
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3948 OR B3949: FRONT TURN SIGNAL CIRCUIT > 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 INFORMATION AND PROCEDURES > DTC B3948 OR B3949: FRONT TURN SIGNAL CIRCUIT > DTC DESCRIPTORS

DTC B3948 01

Left Front Turn Signal Circuit Short to Battery

DTC B3948 02

Left Front Turn Signal Circuit Short to Ground

DTC B3948 04

Left Front Turn Signal Circuit Open

DTC B3949 01

Right Front Turn Signal Circuit Short to Battery

DTC B3949 02

Right Front Turn Signal Circuit Short to Ground

DTC B3949 04

Right Front Turn Signal Circuit Open

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3948 OR B3949: FRONT TURN SIGNAL CIRCUIT > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Turn Signal Switch Signal - Left	1	1	1	-

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Turn Signal Switch Signal - Right	1	1	1	-
Turn Signal Control - Left Front	B3948 02	B3948 01, B3948 04	1	-
Turn Signal Control - Left Rear (with TW7)	B3950 02	B3950 01, B3950 04	1	-
Stop/Turn Signal Lamp Control - Left Rear (without TW7)	B3950 02	B3950 01, B3950 04	1	-
Turn Signal Control - Right Front	B3949 02	B3949 01, B3949 04	1	-
Turn Signal Control - Right Rear (with TW7)	B3951 02	B3951 01, B3951 04	1	-
Stop/Turn Signal Lamp Control - Right Rear (without TW7)	B3951 02	B3951 01, B3951 04	1	-
Outside Rearview Mirror - Driver Ground	-	1	-	-
Outside Rearview Mirror - Passenger Ground	-	1	-	-
Turn Signal Lamp - Left Front Ground	-	1	-	-
Turn Signal Lamp - Right Front Ground	-	1	-	-
Tail Lamp Assembly - Left Rear Ground	-	1	-	-
Tail Lamp Assembly - Right Rear Ground	-	1	-	-
Turn Signal/Multifunction Switch Ground	-	1	-	-
1. Turn Signal Lamps and/or Indicators Malfunction				

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3948 OR B3949: FRONT TURN SIGNAL CIRCUIT > CIRCUIT/SYSTEM DESCRIPTION

Ground is applied at all times to the turn signal/multifunction switch. The turn signal lamps may only be activated with the ignition switch in the ON or START positions. When the turn signal/multifunction switch is placed in either the turn right or turn left position, ground is applied to the body control module (BCM) through either the right turn or left turn signal switch signal circuit. The BCM responds to the turn signal switch input by applying a pulsating voltage to the front and rear turn signal lamps through there respective control circuits. When a turn signal request is received by the BCM, a serial data message is sent to the instrument cluster requesting the respective turn signal indicator be pulsed ON and OFF.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3948 OR B3949: FRONT TURN SIGNAL CIRCUIT > CONDITIONS FOR RUNNING THE DTC

Battery voltage must be between 9-16 V.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3948 OR B3949: FRONT TURN SIGNAL CIRCUIT > CONDITIONS FOR SETTING THE DTC

DTC B3948 01 and B3948 04

The BCM detects an open/high resistance in the left front turn signal control circuit.

DTC B3948 02

The BCM detects a short to ground in the left front turn signal control circuit.

DTC B3949 01 and B3949 04

The BCM detects an open/high resistance in the right front turn signal control circuit.

DTC B3949 02

The BCM detects a short to ground in the right front turn signal control circuit.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3948 OR B3949: FRONT TURN SIGNAL CIRCUIT > ACTIONS TAKEN WHEN THE DTC SETS

DTC B3948

- The left front turn signal is inoperative.
- The left turn signal indicator on the instrument cluster flashes rapidly.
- The driver information center displays "Left Front Turn Indicator Failure".

DTC B3949

- The right front turn signal is inoperative.
- The right turn signal indicator on the instrument cluster flashes rapidly.
- The driver information center displays "Right Front Turn Indicator Failure".

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3948 OR B3949: FRONT TURN SIGNAL CIRCUIT > 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.

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3948 OR B3949: FRONT TURN SIGNAL CIRCUIT > DIAGNOSTIC AIDS

When testing at the turn signal lamp bulb sockets, make sure all measurements and test lamp connections are in the correct terminal location and do not come in contact with each other during testing.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3948 OR B3949: FRONT TURN SIGNAL CIRCUIT > REFERENCE INFORMATION

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- Wiring Repairs

Scan Tool Reference

Control Module References for scan tool information

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3948 OR B3949: FRONT TURN SIGNAL CIRCUIT > CIRCUIT/SYSTEM TESTING

DTC B3948

1. Ignition OFF, exterior lamps OFF, disconnect the harness connector at the appropriate component listed below. It may take up to 2 min for all vehicle systems to power down.
    1. A9A Outside Rearview - Driver
    2. E4LF Turn Signal Lamp - Left Front
2. Test for less than 15 Ω between the appropriate ground circuit terminal listed below and ground.

1. A9A Outside Rearview - Driver terminal 5
2. E4LF Turn Signal Lamp - Left Front socket terminal

1. **If 15 Ω or greater**
    1. Ignition OFF.
    2. Test for less than 2 Ω in the ground circuit end to end.
        1. If 2 Ω or greater, repair the open/high resistance in the circuit.
        2. If less than 2 Ω, repair the open/high resistance in the ground connection.

1. **If less than 15 Ω**

3. Connect a test lamp between the appropriate control circuit terminal listed below and ground, ignition ON.
    1. A9A Outside Rearview - Driver terminal 13
    2. E4LF Turn Signal Lamp - Left Front socket terminal
4. Verify the test lamp turns ON and OFF when commanding the Left Front Turn Signal Lamp ON and OFF with a scan tool.

    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the X5 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.

    1. **If the test lamp is always ON**
        1. Ignition OFF, disconnect the X5 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the control circuit terminal and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            2. If less than 1 V, replace the K9 Body Control Module.

    1. **If the test lamp turns ON and OFF**

5. Test or replace the turn signal lamp - left front.

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1. Ignition OFF, exterior lamps OFF, disconnect the harness connector at the appropriate component listed below. It may take up to 2 min for all vehicle systems to power down.
    1. A9B Outside Rearview - Driver
    2. E4RF Turn Signal Lamp - Right Front
2. Test for less than 15 Ω between the appropriate ground circuit terminal listed below and ground.
    1. A9B Outside Rearview - Driver terminal 5
    2. E4RF Turn Signal Lamp - Right Front socket terminal
    1. **If 15 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 15 Ω**
3. Connect a test lamp between the appropriate control circuit terminal listed below and ground, ignition ON.
    1. A9B Outside Rearview - Driver terminal 13
    2. E4RF Turn Signal Lamp - Right Front socket terminal
4. Verify the test lamp turns ON and OFF when commanding the Right Front Turn Signal Lamp ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If the test lamp is always ON**
        1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the control circuit terminal and ground.

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1. If 1 V or greater, repair the short to voltage on the circuit.
2. If less than 1 V, replace the K9 Body Control Module.

1. **If the test lamp turns ON and OFF**

5. Test or replace the turn signal lamp - right front.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3948 OR B3949: FRONT TURN SIGNAL CIRCUIT > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Outside Rearview Mirror Turn Signal Lamp Replacement
- Turn Signal Bulb Replacement - Left Side (LTG) Turn Signal Bulb Replacement - Left Side (LGX) Turn Signal Bulb Replacement - Left Side (LT1)
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3950 OR B3951: REAR TURN SIGNAL CIRCUIT > 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 INFORMATION AND PROCEDURES > DTC B3950 OR B3951: REAR TURN SIGNAL CIRCUIT > DTC DESCRIPTORS

DTC B3950 01

Left Rear Turn Signal Circuit Short to Battery

DTC B3950 02

Left Rear Turn Signal Circuit Short to Ground

DTC B3950 04

Left Rear Turn Signal Circuit Open

DTC B3951 01

Right Rear Turn Signal Circuit Short to Battery

DTC B3951 02

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Right Rear Turn Signal Circuit Short to Ground

DTC B3951 04

Right Rear Turn Signal Circuit Open

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3950 OR B3951: REAR TURN SIGNAL CIRCUIT > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Turn Signal Switch Signal - Left	1	1	1	-
Turn Signal Switch Signal - Right	1	1	1	-
Turn Signal Control - Left Front	B3948 02	B3948 01, B3948 04	1	-
Turn Signal Control - Left Rear (with TW7)	B3950 02	B3950 01, B3950 04	1	-
Stop/Turn Signal Lamp Control - Left Rear (without TW7)	B3950 02	B3950 01, B3950 04	1	-
Turn Signal Control - Right Front	B3949 02	B3949 01, B3949 04	1	-
Turn Signal Control - Right Rear (with TW7)	B3951 02	B3951 01, B3951 04	1	-
Stop/Turn Signal Lamp Control - Right Rear (without TW7)	B3951 02	B3951 01, B3951 04	1	-
Outside Rearview Mirror - Driver Ground	-	1	-	-
Outside Rearview Mirror - Passenger Ground	-	1	-	-
Turn Signal Lamp - Left Front Ground	-	1	-	-
Turn Signal Lamp - Right Front Ground	-	1	-	-
Tail Lamp Assembly - Left Rear Ground	-	1	-	-
Tail Lamp Assembly - Right Rear Ground	-	1	-	-
Turn Signal/Multifunction Switch Ground	-	1	-	-
1. Turn Signal Lamps and/or Indicators Malfunction				

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3950 OR B3951: REAR TURN SIGNAL CIRCUIT > CIRCUIT/SYSTEM DESCRIPTION

Ground is applied at all times to the turn signal/multifunction switch. The turn signal lamps may only be activated with the ignition switch in the ON or START positions. When the turn signal/multifunction switch is placed in either the turn right or turn left position, ground is applied to the body control module (BCM) through either the right turn or left turn signal switch signal circuit. The BCM responds to the turn signal switch input by applying a pulsating voltage to the front and rear turn signal lamps through there respective control circuits. When a turn signal request is received by the BCM, a serial data message is sent to the instrument cluster requesting the respective turn signal indicator be pulsed ON and OFF.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3950 OR B3951: REAR TURN SIGNAL CIRCUIT > CONDITIONS FOR RUNNING THE DTC

Battery voltage must be between 9-16 V.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3950 OR B3951: REAR TURN SIGNAL CIRCUIT > CONDITIONS FOR SETTING THE DTC

DTC B3950 01 and B3950 04

The BCM detects an open/high resistance in the left rear turn signal control circuit.

DTC B3950 02

The BCM detects a short to ground in the left rear turn signal control circuit.

DTC B3951 01 and B3951 04

The BCM detects an open/high resistance in the right rear turn signal control circuit.

DTC B3951 02

The BCM detects a short to ground in the right rear turn signal control circuit.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3950 OR B3951: REAR TURN SIGNAL CIRCUIT > ACTIONS TAKEN WHEN THE DTC SETS

DTC B3950

- The left rear turn signal is inoperative.
- The left turn signal indicator on the instrument cluster flashes rapidly.
- The driver information center displays "Left Rear Turn Indicator Failure".

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DTC B3951

- The right rear turn signal is inoperative.
- The right turn signal indicator on the instrument cluster flashes rapidly.
- The driver information center displays "Right Rear Turn Indicator Failure".

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3950 OR B3951: REAR TURN SIGNAL CIRCUIT > 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.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3950 OR B3951: REAR TURN SIGNAL CIRCUIT > DIAGNOSTIC AIDS

When testing at the turn signal lamp bulb sockets, make sure all measurements and test lamp connections are in the correct terminal location and do not come in contact with each other during testing.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3950 OR B3951: REAR TURN SIGNAL CIRCUIT > REFERENCE INFORMATION

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Scan Tool Reference

Control Module References for scan tool information

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3950 OR B3951: REAR TURN SIGNAL CIRCUIT > CIRCUIT/SYSTEM TESTING

DTC B3950

1. Ignition OFF, exterior lamps OFF, disconnect the harness connector at the appropriate component listed below. It may take up to 2 min for all vehicle systems to power down.
    1. A5AM Stop/Turn Signal Lamp - Left (without WRS/TW7)
    2. A5AM Stop/Turn Signal Lamp - Left (with WRS without TW7)
    3. E4LR Turn Signal Lamp - Left Rear (with TW7)
2. Test for less than 5 Ω between the appropriate ground circuit terminal listed below and ground.
    1. A5AM Stop/Turn Signal Lamp - Left socket terminal (without WRS/TW7)
    2. A5AM Stop/Turn Signal Lamp - Left terminal 6 (with WRS without TW7)
    3. E4LR Turn Signal Lamp - Left Rear socket terminal (with TW7)
        1. **If 5 Ω or greater**
            1. Ignition OFF.
            2. Test for less than 2 Ω in the ground circuit end to end.
                1. If 2 Ω or greater, repair the open/high resistance in the circuit.
                2. If less than 2 Ω, repair the open/high resistance in the ground connection.
        1. **If less than 5 Ω**
3. Connect a test lamp between the appropriate control circuit terminal listed below and ground, ignition ON.
    1. A5AM Stop/Turn Signal Lamp - Left socket terminal (without WRS/TW7)
    2. A5AM Stop/Turn Signal Lamp - Left terminal 1 (with WRS without TW7)
    3. E4LR Turn Signal Lamp - Left Rear socket terminal (with TW7)
4. Verify the test lamp turns ON and OFF when commanding the Left Rear Turn Signal/Stop Lamp ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the X5 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance

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3. Test for less than 2 Ω in the control circuit end to end.
    1. If 2 Ω or greater, repair the open/high resistance in the circuit.
    2. If less than 2 Ω, replace the K9 Body Control Module.

1. **If the test lamp is always ON**
    1. Ignition OFF, disconnect the X5 harness connector at the K9 Body Control Module, ignition ON.
    2. Test for less than 1 V between the control circuit terminal and ground.
        1. If 1 V or greater, repair the short to voltage on the circuit.
        2. If less than 1 V, replace the K9 Body Control Module.

1. **If the test lamp turns ON and OFF**

5. Test or replace the turn signal lamp - left rear.

DTC B3951

1. Ignition OFF, exterior lamps OFF, disconnect the harness connector at the appropriate component listed below. It may take up to 2 min for all vehicle systems to power down.
    1. A5AN Stop/Turn Signal Lamp - Right (without WRS/TW7)
    2. A5AN Stop/Turn Signal Lamp - Right (with WRS without TW7)
    3. E4RR Turn Signal Lamp - Right Rear (with TW7)
2. Test for less than 5 Ω between the appropriate ground circuit terminal listed below and ground.
    1. A5AN Stop/Turn Signal Lamp - Right socket terminal (without WRS/TW7)
    2. A5AN Stop/Turn Signal Lamp - Right terminal 6 (with WRS without TW7)
    3. E4RR Turn Signal Lamp - Right Rear socket terminal (with TW7)

    1. **If 5 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.

    1. **If less than 5 Ω**

3. Connect a test lamp between the appropriate control circuit terminal listed below and ground, ignition ON.
    1. A5AN Stop/Turn Signal Lamp - Right socket terminal (without WRS/TW7)
    2. A5AN Stop/Turn Signal Lamp - Right terminal 1 (with WRS without TW7)

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3. E4RR Turn Signal Lamp - Right Rear socket terminal (with TW7)

4. Verify the test lamp turns ON and OFF when commanding the Right Rear Turn Signal/Stop Lamp ON and OFF with a scan tool.

    1. **If the test lamp is always OFF**

        1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.

    1. **If the test lamp is always ON**

        1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the control circuit terminal and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            2. If less than 1 V, replace the K9 Body Control Module.

    1. **If the test lamp turns ON and OFF**

5. Test or replace the turn signal lamp - right rear.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC B3950 OR B3951: REAR TURN SIGNAL CIRCUIT > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Rear Body Structure Stop Lamp Replacement
- Tail Bulb Replacement
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0010: REVERSE GEAR SIGNAL CIRCUIT NOT PLAUSIBLE > 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.

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- Diagnostic Procedure Instructions provides an overview of each diagnostic category.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0010: REVERSE GEAR SIGNAL CIRCUIT NOT PLAUSIBLE > DTC DESCRIPTOR

DTC C0010 5A

Reverse Gear Signal Circuit Not Plausible

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0010: REVERSE GEAR SIGNAL CIRCUIT NOT PLAUSIBLE > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Backup Lamp Switch Signal	2	2	2	C0010 5A
Backup Lamps Control	B127B 2B, B2545 02	B127B 2B, B2545 04	1	-
Backup Lamp Switch Ground	-	2	-	-
Backup Lamp Ground - Left	-	1	-	-
Backup Lamp Ground - Right	-	1	-	-
1. Backup Lamps Malfunction 2. Backup Lamp Switch Malfunction				

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0010: REVERSE GEAR SIGNAL CIRCUIT NOT PLAUSIBLE > CIRCUIT/SYSTEM DESCRIPTION

The engine control module (ECM) provides a signal circuit to the backup lamp switch which is permanently grounded. With the engine running and the transmission in the reverse position, the backup lamp switch signal circuit is pulled low and the ECM responds by sending a serial data message to the body control module (BCM). The message indicates that the gear selector is in the reverse position. The BCM applies battery voltage to the backup lamps control circuit illuminating the backup lamps. Once the driver moves the gear selector out of the reverse position, a message is sent by the ECM via serial data requesting the BCM to remove battery voltage from the backup lamps control circuit. The engine must be running for the backup lamps to operate.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0010: REVERSE GEAR SIGNAL CIRCUIT NOT PLAUSIBLE > CONDITIONS FOR RUNNING THE DTC

- Battery voltage must be between 9-16 V.

- Engine ON.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0010: REVERSE GEAR SIGNAL CIRCUIT NOT PLAUSIBLE > CONDITIONS FOR SETTING THE DTC

The ECM detects a stuck backup lamp switch.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0010: REVERSE GEAR SIGNAL CIRCUIT NOT PLAUSIBLE > CONDITIONS FOR CLEARING THE DTC

- The condition for setting the DTC is no longer present.
- A history DTC will clear once 50 malfunction-free ignition cycles have occurred.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0010: REVERSE GEAR SIGNAL CIRCUIT NOT PLAUSIBLE > REFERENCE INFORMATION

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Scan Tool Reference

Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0010: REVERSE GEAR SIGNAL CIRCUIT NOT PLAUSIBLE > CIRCUIT/SYSTEM TESTING

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1. Ignition OFF, exterior lamps OFF, all doors closed, disconnect the harness connector at the B16 Backup Lamp Switch. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 5 Ω between the ground circuit terminal B and ground.
    1. **If 5 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 5 Ω**
3. Ignition ON.
4. Verify the scan tool Reverse Position Switch parameter is Off.
    1. **If not Off**
        1. Ignition OFF, disconnect the appropriate harness connector listed below at the K20 Engine Control Module.
            1. X2 - (with LGX)
            2. X3 - (with LTG)
        2. Test for infinite resistance between the signal circuit terminal A and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            2. If infinite resistance, replace the K20 Engine Control Module.
    1. **If Off**
5. Install a 3 A fused jumper wire between the signal circuit terminal A and ground.
6. Verify the scan tool Reverse Position Switch parameter is On.
    1. **If not On**
        1. Ignition OFF, disconnect the appropriate harness connector listed below at the K20 Engine Control Module, ignition ON.
            1. X2 - (with LGX)
            2. X3 - (with LTG)
        2. Test for less than 1 V between the signal circuit terminal A and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            1. If less than 1 V
        3. Test for less than 2 Ω in the signal circuit end to end.

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1. If 2 Ω or greater, repair the open/high resistance in the circuit.
2. If less than 2 Ω, replace the K20 Engine Control Module.

1. **If On**

7. Test or replace the B16 Backup Lamp Switch.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0010: REVERSE GEAR SIGNAL CIRCUIT NOT PLAUSIBLE > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Backup Lamp Switch Replacement
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0277 OR C0890: BRAKE PEDAL POSITION SENSOR CIRCUIT, CONTROL MODULE VOLTAGE REFERENCE OUTPUT 3 CIRCUIT VOLTAGE > 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 INFORMATION AND PROCEDURES > DTC C0277 OR C0890: BRAKE PEDAL POSITION SENSOR CIRCUIT, CONTROL MODULE VOLTAGE REFERENCE OUTPUT 3 CIRCUIT VOLTAGE > DTC DESCRIPTORS

DTC C0277 06

Brake Pedal Position Sensor Circuit Low Voltage/Open

DTC C0277 07

Brake Pedal Position Sensor Circuit High Voltage

DTC C0277 09

Brake Pedal Position Sensor Circuit Too Fast Transitions

DTC C0277 12

Brake Pedal Position Sensor Circuit Low Input

DTC C0277 4B

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Brake Pedal Position Sensor Circuit Calibration Not Learned

DTC C0890 03

Control Module Voltage Reference Output 3 Circuit Low Voltage

DTC C0890 07

Control Module Voltage Reference Output 3 Circuit High Voltage

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0277 OR C0890: BRAKE PEDAL POSITION SENSOR CIRCUIT, CONTROL MODULE VOLTAGE REFERENCE OUTPUT 3 CIRCUIT VOLTAGE > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
F11DA (BCM 1) Fuse B+	B1325 03, B3265 01, B3265 04, B3873 01, B3873 04, B3883 01, B3883 04, C0297 01	B1325 03, B3265 01, B3265 04, B3873 01, B3873 04, B3883 01, B3883 04, C0297 01	-	-
Brake Pedal Position Sensor 5 V Reference	C0277 06, C0890 03, U0422 00, U0422 71	C0277 06, U0422 00, U0422 71	C0277 07, C0890 07, U0422 00, U0422 71	-
Brake Pedal Position Sensor Signal	C0277 06, U0422 00, U0422 71	C0277 06, U0422 00, U0422 71	C0277 07, C0890 07, U0422 00, U0422 71	C0277 09, C0277 12
Brake Pedal Position Sensor Low Reference	-	C0277 07, U0422 00, U0422 71	1	-
1. Stop Lamps Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0277 OR C0890: BRAKE PEDAL POSITION SENSOR CIRCUIT, CONTROL MODULE VOLTAGE REFERENCE OUTPUT 3 CIRCUIT VOLTAGE > CIRCUIT/SYSTEM DESCRIPTION

The brake pedal position sensor is used to sense the action of the driver application of the brake pedal. The brake pedal position sensor provides an analog voltage signal that will increase as the brake pedal is applied. The body control module (BCM) provides a low reference signal and a 5 V reference voltage to the brake pedal position sensor. When the variable signal reaches a voltage threshold indicating the brakes have been applied, the BCM will apply battery voltage to the left and right stop lamp control

circuits as well as the center high mounted stop lamp control circuit illuminating the left and right stop lamps and the center high mounted stop lamp.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0277 OR C0890: BRAKE PEDAL POSITION SENSOR CIRCUIT, CONTROL MODULE VOLTAGE REFERENCE OUTPUT 3 CIRCUIT VOLTAGE > CONDITIONS FOR RUNNING THE DTC

- Battery voltage must be between 9-16 V.
- Brakes APPLIED.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0277 OR C0890: BRAKE PEDAL POSITION SENSOR CIRCUIT, CONTROL MODULE VOLTAGE REFERENCE OUTPUT 3 CIRCUIT VOLTAGE > CONDITIONS FOR SETTING THE DTC

DTC C0277 06

- The BCM detects a short to ground or an open/high resistance in the brake pedal position sensor 5 V reference circuit.
- The BCM detects a short to ground or an open/high resistance in the brake pedal position sensor signal circuit.

DTC C0277 07

- The BCM detects a short to voltage in the brake pedal position sensor signal circuit.
- The BCM detects a short to voltage in the brake pedal position sensor 5 V reference circuit.
- The BCM detects an open/high resistance in the brake pedal position sensor low reference circuit.

DTC C0277 09

The BCM detects the brake pedal position sensor signal is changing faster than possible under normal operating conditions.

DTC C0277 4B

The DTC will set when the brake pedal position sensor home position is not learned.

DTC C0890 03

The BCM detects a short to ground in the brake pedal position sensor 5 V reference circuit.

DTC C0890 07

The BCM detects a short to voltage in the brake pedal position sensor 5 V reference circuit.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0277 OR C0890: BRAKE

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PEDAL POSITION SENSOR CIRCUIT, CONTROL MODULE VOLTAGE REFERENCE OUTPUT 3 CIRCUIT VOLTAGE > ACTIONS TAKEN WHEN THE DTC SETS

- The "Park Assist Temporarily Unavailable" message is displayed on the driver information center.
- For DTC C0277 4B, the stop lamps may not activate at the expected brake pedal positions.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0277 OR C0890: BRAKE PEDAL POSITION SENSOR CIRCUIT, CONTROL MODULE VOLTAGE REFERENCE OUTPUT 3 CIRCUIT VOLTAGE > CONDITIONS FOR CLEARING THE DTC

- The condition responsible for setting the DTC no longer exists.
- Disconnect the negative battery cable for 30 s.
- For DTC C0277 07 the ignition must be cycled before the code can be cleared.
- For DTC C0277 4B a successful brake pedal position sensor calibration has been performed.
- A history DTC will clear once 50 malfunction-free ignition cycles have occurred.
- A DTC will not clear the current status until the next ignition cycle.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0277 OR C0890: BRAKE PEDAL POSITION SENSOR CIRCUIT, CONTROL MODULE VOLTAGE REFERENCE OUTPUT 3 CIRCUIT VOLTAGE > REFERENCE INFORMATION

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

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Exterior Lighting Systems Description and Operation

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

Scan Tool Reference

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0277 OR C0890: BRAKE PEDAL POSITION SENSOR CIRCUIT, CONTROL MODULE VOLTAGE REFERENCE OUTPUT 3 CIRCUIT VOLTAGE > CIRCUIT/SYSTEM TESTING

DTC C0277 06, C0277 07, C0277 12, C0890 03, and C0890 07

1. Ignition OFF, disconnect the harness connector at the B22 Brake Pedal Position Sensor, ignition ON.
2. Verify a test lamp illuminates between the low reference circuit terminal 2 and B+.
    1. **If the test lamp does not illuminate**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module.
        2. Test for less than 2 Ω in the low reference circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If the test lamp illuminates**
3. Ignition ON.
4. Test for 4.8-5.2 V between the 5 V reference circuit terminal 1 and ground.
    1. **If less than 4.8 V**
        1. Ignition OFF, disconnect the X2 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the 5 V reference circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the 5 V reference circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If greater than 5.2 V**
        1. Ignition OFF, disconnect the X2 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the 5 V reference circuit and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            2. If less than 1 V, replace the K9 Body Control Module.

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1. **If between 4.8-5.2 V**

5. Test for less than 1 V between the signal circuit terminal 3 and ground.
    1. **If 1 V or greater**
        1. Ignition OFF, disconnect the X2 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the signal circuit terminal 3 and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            2. If less than 1 V, replace the K9 Body Control Module.
    1. **If less than 1 V**

> *NOTE:*
>
> *The scan tool Brake Pedal Applied parameter will change to Active for 3 s as the 3 A fused jumper wire is connected between the 5 V reference circuit and the signal circuit and then default to Inactive. This is normal operation.*

6. Install a 3 A fused jumper wire between the 5 V reference circuit terminal 1 and the signal circuit terminal 3.
7. Verify the scan tool Brake Pedal Applied parameter is Active for 3 s before defaulting to Inactive.
    1. **If not Active**
        1. Ignition OFF, disconnect the X2 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the signal circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the signal circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If Active**
8. Test or replace the B22 Brake Pedal Position Sensor.

DTC C0277 4B

1. Verify DTC C0277 4B is not set.
    1. **If DTC C0277 4B is set**
        1. Ignition ON

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2. Perform the brake pedal position sensor learn procedure for the K9 Body Control Module. Refer to Brake Pedal Position Sensor Calibration .
3. Verify the DTC does not reset while operating the vehicle under the conditions for running the DTC.
    1. If the DTC resets, replace the B22 Brake Pedal Position Sensor.
    1. If the DTC does not reset
4. All OK.

1. **If DTC C0277 4B is not set**

2. All OK.

DTC C0277 09

1. Verify DTC C0277 09 is not set.
    1. **If DTC C0277 09 is set**
        1. Replace the B22 Brake Pedal Position Sensor.
        2. Perform the brake pedal position sensor learn procedure for the K9 Body Control Module. Refer to Brake Pedal Position Sensor Calibration .
        3. Verify the DTC does not reset while operating the vehicle under the conditions for running the DTC.
            1. If the DTC resets, replace the K9 Body Control Module.
            1. If the DTC does not reset
        4. All OK.
    1. **If DTC C0277 09 is not set**
2. All OK.

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0277 OR C0890: BRAKE PEDAL POSITION SENSOR CIRCUIT, CONTROL MODULE VOLTAGE REFERENCE OUTPUT 3 CIRCUIT VOLTAGE > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Brake Pedal Position Sensor Calibration
- Brake Pedal Position Sensor Replacement
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0297: BRAKE APPLIED

OUTPUT CIRCUIT SHORT > 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 INFORMATION AND PROCEDURES > DTC C0297: BRAKE APPLIED OUTPUT CIRCUIT SHORT > DTC DESCRIPTORS

DTC C0297 01

Brake Applied Output Circuit Short to Battery

DTC C0297 02

Brake Applied Output Circuit Short to Ground

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0297: BRAKE APPLIED OUTPUT CIRCUIT SHORT > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
F11DA (BCM 1) Fuse B+	B1325 03, B3265 01, B3265 04, B3873 01, B3873 04, B3883 01, B3883 04, C0297 01	B1325 03, B3265 01, B3265 04, B3873 01, B3873 04, B3883 01, B3883 04, C0297 01	-	-
Brake Applied Signal	C0297 02	1	C0297 01	-
1. Cruise Control Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0297: BRAKE APPLIED OUTPUT CIRCUIT SHORT > CIRCUIT/SYSTEM DESCRIPTION

The brake pedal position sensor is used to sense the action of the driver application of the brake pedal. The brake pedal position sensor provides an analog voltage signal that will increase as the brake pedal is applied. The body control module (BCM) provides a low reference signal and a 5 V reference voltage to the brake pedal position sensor. When the variable signal reaches a voltage threshold indicating the brakes have been applied, the BCM will apply battery voltage to the right and left stop lamp control circuits, engine control module (ECM), and center high mounted stop lamp control circuit.

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DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0297: BRAKE APPLIED OUTPUT CIRCUIT SHORT > CONDITIONS FOR RUNNING THE DTC

- Battery voltage must be between 9-16 V.
- Brakes APPLIED.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0297: BRAKE APPLIED OUTPUT CIRCUIT SHORT > CONDITIONS FOR SETTING THE DTC

DTC C0297 01

- The BCM detects a short to voltage or an open/high resistance in the brake applied signal circuit.
- The BCM detects a short to ground or an open/high resistance in the F11DA (BCM 1) fuse B+ circuit.

DTC C0297 02

The BCM detects a short to ground or an open/high resistance in the brake applied signal circuit.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0297: BRAKE APPLIED OUTPUT CIRCUIT SHORT > ACTIONS TAKEN WHEN THE DTC SETS

The cruise control system is disabled.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0297: BRAKE APPLIED OUTPUT CIRCUIT SHORT > CONDITIONS FOR CLEARING THE DTC

- The condition responsible for setting the DTC no longer exists.
- A history DTC will clear once 50 consecutive malfunction-free ignition cycles have occurred.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0297: BRAKE APPLIED OUTPUT CIRCUIT SHORT > DIAGNOSTIC AIDS

Verify that the brake pedal position sensor is properly calibrated.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0297: BRAKE APPLIED OUTPUT CIRCUIT SHORT > REFERENCE INFORMATION

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Schematic Reference

- Cruise Control Schematics
- Body Control System Schematics

Connector End View Reference

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Exterior Lighting Systems Description and Operation

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- Wiring Repairs

Scan Tool Reference

Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0297: BRAKE APPLIED OUTPUT CIRCUIT SHORT > CIRCUIT/SYSTEM TESTING

1. Ignition OFF, disconnect the X1 harness connector at the K20 Engine Control Module.
2. Connect a test lamp between the appropriate signal circuit terminal listed below and ground, ignition ON.
    1. Terminal 13 - with LGX
    2. Terminal 50 - with LTG
    3. Terminal 57 - with LT1/LT4
3. Verify the test lamp turns ON and OFF while pressing and releasing the brake pedal.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the X5 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the signal circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the signal circuit end to end.

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1. If 2 Ω or greater, repair the open/high resistance in the circuit.
2. If less than 2 Ω, replace the K9 Body Control Module.

1. **If the test lamp is always ON**
    1. Ignition OFF, disconnect the X5 harness connector at the K9 Body Control Module, ignition ON.
    2. Test for less than 1 V between the signal circuit terminal and ground.
        1. If 1 V or greater, repair the short to voltage on the circuit.
        2. If less than 1 V, replace the K9 Body Control Module.

1. **If the test lamp turns ON and OFF**

4. Replace the K20 Engine Control Module.

DIAGNOSTIC INFORMATION AND PROCEDURES > DTC C0297: BRAKE APPLIED OUTPUT CIRCUIT SHORT > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Brake Pedal Position Sensor Calibration
- Control Module References for BCM or ECM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > SYMPTOMS - LIGHTING

> *NOTE:*
>
> *The following steps must be completed before using a symptom table.*

- Perform the Diagnostic System Check - Vehicle before using a symptom table in order to verify that all of the following conditions are true:
    - There are no DTCs set.
    - The control modules can communicate via the serial data link.
- Review the system description and 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

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DIAGNOSTIC INFORMATION AND PROCEDURES > SYMPTOMS - LIGHTING > 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.

DIAGNOSTIC INFORMATION AND PROCEDURES > SYMPTOMS - LIGHTING > INTERMITTENT

Thoroughly inspect the wiring and connectors. An incomplete inspection of the wiring and connectors may result in misdiagnosis causing part replacement with the reappearance of the malfunction. If an intermittent malfunction exists, refer to Testing for Intermittent Conditions and Poor Connections .

DIAGNOSTIC INFORMATION AND PROCEDURES > SYMPTOMS - LIGHTING > SYMPTOM LIST

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

- Backup Lamps Malfunction (Automatic Transmission) Backup Lamps Malfunction (Manual Transmission)
- Courtesy Lamps Malfunction
- Daytime Running Lamps Malfunction
- Dome Lamps Malfunction
- Rear Fog Lamps Malfunction
- Hazard Lamps Malfunction
- Headlamps Malfunction
- Headlamp Leveling Malfunction
- Interior Accent Lighting Malfunction (Without C70) Interior Accent Lighting Malfunction (With C70)
- Interior Backlighting Malfunction
- Park, License, and/or Tail Lamps Malfunction
- Rear Compartment Lamp Malfunction
- Stop Lamps Malfunction
- Turn Signal Lamps and/or Indicators Malfunction

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DIAGNOSTIC INFORMATION AND PROCEDURES > BACKUP LAMPS MALFUNCTION (AUTOMATIC TRANSMISSION) > 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 INFORMATION AND PROCEDURES > BACKUP LAMPS MALFUNCTION (AUTOMATIC TRANSMISSION) > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
F31UA (BCM 7) Fuse B+	1	1	-	-
Backup Lamps Control	B127B 2B, B2545 02	B127B 2B, B2545 04	1	-
Backup Lamp Ground - Left	-	1	-	-
Backup Lamp Ground - Right	-	1	-	-
1. Backup Lamps Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > BACKUP LAMPS MALFUNCTION (AUTOMATIC TRANSMISSION) > CIRCUIT/SYSTEM DESCRIPTION

With the engine running and the transmission in the reverse position, the transmission control module (TCM) sends a serial data message to the body control module (BCM). The message indicates that the gear selector is in the reverse position. The BCM applies battery voltage to the backup lamps control circuit illuminating the backup lamps. Once the driver moves the gear selector out of the reverse position, a message is sent by the TCM via serial data requesting the BCM to remove battery voltage from the backup lamps control circuit. The engine must be running for the backup lamps to operate.

DIAGNOSTIC INFORMATION AND PROCEDURES > BACKUP LAMPS MALFUNCTION (AUTOMATIC TRANSMISSION) > REFERENCE INFORMATION

Schematic Reference

- Exterior Lights Schematics
- Body Control System Schematics

Connector End View Reference

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- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

Scan Tool Reference

Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > BACKUP LAMPS MALFUNCTION (AUTOMATIC TRANSMISSION) > CIRCUIT/SYSTEM TESTING

1. Ignition OFF, exterior lamps OFF, disconnect the harness connector at the appropriate E5 Backup Lamp. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 5 Ω between the ground circuit terminal B and ground.
    1. **If 5 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 5 Ω**
3. Connect a test lamp between the control circuit terminal A and ground, ignition ON.
4. Verify the test lamp turns ON and OFF when commanding the Backup Lamps ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the X7 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.

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2. If less than 2 Ω, replace the K9 Body Control Module.

1. **If the test lamp is always ON**

    1. Ignition OFF, disconnect the X7 harness connector at the K9 Body Control Module, ignition ON.
    2. Test for less than 1 V between the control circuit terminal and ground.
        1. If 1 V or greater, repair the short to voltage on the circuit.
        2. If less than 1 V, replace the K9 Body Control Module.

1. **If the test lamp turns ON and OFF**

5. Test or replace the E5 Backup Lamp.

DIAGNOSTIC INFORMATION AND PROCEDURES > BACKUP LAMPS MALFUNCTION (AUTOMATIC TRANSMISSION) > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Backup Bulb Replacement
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > BACKUP LAMPS MALFUNCTION (MANUAL TRANSMISSION) > 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 INFORMATION AND PROCEDURES > BACKUP LAMPS MALFUNCTION (MANUAL TRANSMISSION) > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
F31UA (BCM 7) Fuse B+	1	1	-	-
Backup Lamp Switch Signal	2	2	2	-
Backup Lamps Control	B127B 2B, B2545 02	B127B 2B, B2545 04	1	-
Backup Lamp Switch Ground	-	2	-	-

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Backup Lamp Ground - Left	-	1	-	-
Backup Lamp Ground - Right	-	1	-	-
1. Backup Lamps Malfunction 2. Backup Lamp Switch Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > BACKUP LAMPS MALFUNCTION (MANUAL TRANSMISSION) > CIRCUIT/SYSTEM DESCRIPTION

The engine control module (ECM) provides a signal circuit to the backup lamp switch which is permanently grounded. With the engine running and the transmission in the reverse position, the backup lamp switch signal circuit is pulled low and the ECM responds by sending a serial data message to the body control module (BCM). The message indicates that the gear selector is in the reverse position. The BCM applies battery voltage to the backup lamps control circuit illuminating the backup lamps. Once the driver moves the gear selector out of the reverse position, a message is sent by the ECM via serial data requesting the BCM to remove battery voltage from the backup lamps control circuit. The engine must be running for the backup lamps to operate.

DIAGNOSTIC INFORMATION AND PROCEDURES > BACKUP LAMPS MALFUNCTION (MANUAL TRANSMISSION) > REFERENCE INFORMATION

Schematic Reference

- Exterior Lights Schematics
- Body Control System Schematics

Connector End View Reference

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- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

Scan Tool Reference

Control Module References for scan tool information

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DIAGNOSTIC INFORMATION AND PROCEDURES > BACKUP LAMPS MALFUNCTION (MANUAL TRANSMISSION) > CIRCUIT/SYSTEM VERIFICATION

1. Engine ON.
2. Verify the scan tool Reverse Position Switch parameter changes between ON and OFF while shifting the vehicle between the neutral and reverse gears.
    1. **If the parameter does not change**

       Refer to Circuit/System Testing - Backup Lamp Switch Malfunction.

    1. **If the parameter changes**
3. Verify the backup lamps turn ON and OFF when commanding the Backup Lamps ON and OFF with a scan tool.
    1. **If the backup lamps do not turn ON and OFF**

       Refer to Circuit/System Testing - Backup Lamps Malfunction.

    1. **If the backup lamps turn ON and OFF**
4. All OK.

DIAGNOSTIC INFORMATION AND PROCEDURES > BACKUP LAMPS MALFUNCTION (MANUAL TRANSMISSION) > CIRCUIT/SYSTEM TESTING

Backup Lamp Switch Malfunction

1. Ignition OFF, exterior lamps OFF, all doors closed, disconnect the harness connector at the B16 Backup Lamp Switch. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 5 Ω between the ground circuit terminal B and ground.
    1. **If 5 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 5 Ω**
3. Ignition ON.
4. Verify the scan tool Reverse Position Switch parameter is Off.
    1. **If not Off**
        1. Ignition OFF, disconnect the X3 harness connector at the K20 Engine Control Module.

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2. Test for infinite resistance between the signal circuit terminal A and ground.
    1. If less than infinite resistance, repair the short to ground on the circuit.
    2. If infinite resistance, replace the K20 Engine Control Module.

1. **If Off**

5. Install a 3 A fused jumper wire between the signal circuit terminal A and ground.
6. Verify the scan tool Reverse Position Switch parameter is On.
    1. **If not On**
        1. Ignition OFF, disconnect the X3 harness connector at the K20 Engine Control Module, ignition ON.
        2. Test for less than 1 V between the signal circuit terminal A and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            1. If less than 1 V
        3. Test for less than 2 Ω in the signal circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K20 Engine Control Module.

    1. **If On**

7. Test or replace the B16 Backup Lamp Switch.

Backup Lamps Malfunction

1. Ignition OFF, exterior lamps OFF, disconnect the harness connector at the appropriate E5 Backup Lamp. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 5 Ω between the ground circuit terminal B and ground.
    1. **If 5 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.

    1. **If less than 5 Ω**

3. Connect a test lamp between the control circuit terminal A and ground, ignition ON.
4. Verify the test lamp turns ON and OFF when commanding the Backup Lamps ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**

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1. Ignition OFF, disconnect the X7 harness connector at the K9 Body Control Module.
2. Test for infinite resistance between the control circuit and ground.
    1. If less than infinite resistance, repair the short to ground on the circuit.
    1. If infinite resistance
3. Test for less than 2 Ω in the control circuit end to end.
    1. If 2 Ω or greater, repair the open/high resistance in the circuit.
    2. If less than 2 Ω, replace the K9 Body Control Module.

1. **If the test lamp is always ON**
    1. Ignition OFF, disconnect the X7 harness connector at the K9 Body Control Module, ignition ON.
    2. Test for less than 1 V between the control circuit terminal and ground.
        1. If 1 V or greater, repair the short to voltage on the circuit.
        2. If less than 1 V, replace the K9 Body Control Module.

1. **If the test lamp turns ON and OFF**

5. Test or replace the E5 Backup Lamp.

DIAGNOSTIC INFORMATION AND PROCEDURES > BACKUP LAMPS MALFUNCTION (MANUAL TRANSMISSION) > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Backup Lamp Switch Replacement
- Backup Bulb Replacement
- Control Module References for BCM or ECM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > 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.

DIAGNOSTIC INFORMATION AND PROCEDURES > COURTESY LAMPS

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MALFUNCTION > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
F31UA (BCM 7) Fuse B+	1	1	-	-
Courtesy Lamps Control - Terminal 3 X7	B1480 02	1	1	-
Dome/Reading Lamps - Left Front Ground	-	1	-	-
Dome/Reading Lamps - Right Front Ground	-	1	-	-
Sunshade Mirror Lamp - Left Ground	-	1	-	-
Sunshade Mirror Lamp - Right Ground	-	1	-	-
1. Courtesy Lamps Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > COURTESY LAMPS MALFUNCTION > CIRCUIT/SYSTEM DESCRIPTION

The body control module (BCM) supplies battery voltage to the left and right front reading lamps and left and right sunshade lamps via the courtesy lamp control circuit. When a sunshade mirror is opened, the switch contacts close allowing battery voltage to flow illuminating the respective lamps. The front reading lamps are controlled by individual switches that are activated by the occupants when additional cabin lighting is required. In the event that any of these courtesy lamps were to remain illuminated for more than 10 minutes with the ignition switch in the OFF position, the BCM will deactivate the courtesy lamp control circuit to prevent total battery discharge.

DIAGNOSTIC INFORMATION AND PROCEDURES > COURTESY LAMPS MALFUNCTION > REFERENCE INFORMATION

Schematic Reference

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Interior Lighting Systems Description and Operation

Electrical Information Reference

- Circuit Testing
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- Wiring Repairs

Scan Tool Reference

Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > COURTESY LAMPS MALFUNCTION > CIRCUIT/SYSTEM TESTING

1. Ignition OFF, scan tool disconnected, all doors closed, all accessories OFF, open and close drivers door, disconnect the harness connector at the inoperative courtesy lamp. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the appropriate ground circuit terminal listed below and ground.
    1. A31L Sunshade Mirror Lamp - Left terminal 2
    2. A31R Sunshade Mirror Lamp - Right terminal 2
    3. E37LF Dome/Reading Lamps - Left Front terminal 4
    4. E37RF Dome/Reading Lamps - Right Front terminal 4

    1. **If 10 Ω or greater**

        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.

            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.

    1. **If less than 10 Ω**
3. Connect a test lamp between the appropriate control circuit terminal listed below and ground, ignition ON.
    1. A31L Sunshade Mirror Lamp - Left terminal 1
    2. A31R Sunshade Mirror Lamp - Right terminal 1
    3. E37LF Dome/Reading Lamps - Left Front terminal 2
    4. E37RF Dome/Reading Lamps - Right Front terminal 2
4. Verify the test lamp turns ON and OFF when commanding the Inadvertent Load ON and OFF with a scan tool.

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1. **If the test lamp is always OFF**
    1. Ignition OFF, disconnect the X7 harness connector at the K9 Body Control Module.
    2. Test for infinite resistance between the control circuit and ground.
        1. If less than infinite resistance, repair the short to ground on the circuit.
        1. If infinite resistance
    3. Test for less than 2 Ω in the control circuit end to end.
        1. If 2 Ω or greater, repair the open/high resistance in the circuit.
        2. If less than 2 Ω, replace the K9 Body Control Module.
1. **If the test lamp is always ON**
    1. Ignition OFF, disconnect the X7 harness connector at the K9 Body Control Module, ignition ON.
    2. Test for less than 1 V between the control circuit terminal and ground.
        1. If 1 V or greater, repair the short to voltage on the circuit.
        2. If less than 1 V, replace the K9 Body Control Module.
1. **If the test lamp turns ON and OFF**

5. Test or replace the courtesy lamp.

DIAGNOSTIC INFORMATION AND PROCEDURES > COURTESY LAMPS MALFUNCTION > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Sunshade Replacement (Coupe) Sunshade Replacement (Convertible)
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > 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 INFORMATION AND PROCEDURES > DAYTIME RUNNING LAMPS

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MALFUNCTION > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Ambient Light/Sunload Sensor Signal	B2645 03	B2645 07	B2645 07	-
Park/Daytime Running Lamp - Left Control (uplevel)	B260D 02	1	1	-
Park/Daytime Running Lamp - Right Control (uplevel)	B260E 02	1	1	-
Park/Daytime Running Lamp - Left Lower Control (base)	B25F0 02	1	1	-
Park/Daytime Running Lamp - Right Lower Control (base)	B25F1 02	1	1	-
Ambient Light/Sunload Sensor Low Reference	1	B2645 07, B0163 05, B0183 05,	1	-
Park/Daytime Running Lamp - Left Ground (uplevel)	-	1	-	-
Park/Daytime Running Lamp - Left Ground (uplevel)	-	1	-	-
Park/Daytime Running Lamp - Left Lower Ground (base)	-	1	-	-
Park/Daytime Running Lamp - Right Lower Ground (base)	-	1	-	-
1. Daytime Running Lamps Malfunction				

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DIAGNOSTIC INFORMATION AND PROCEDURES > DAYTIME RUNNING LAMPS MALFUNCTION > 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 between 0.2 and 4.9 V depending on outside lighting conditions. The body control module (BCM) provides a 5 V reference signal to the ambient light sensor and the HVAC control module provides a low reference ground. The BCM monitors the ambient light sensor signal circuit to determine if outside lighting conditions are correct for either daytime running lights or automatic lamp control when the headlamp switch is in the AUTO position. In daylight conditions the BCM will command the designated daytime running lights ON. During low light conditions the BCM will command the low beam headlamps ON. Any function or condition that turns on the headlamps will cancel daytime running lights operation.

DIAGNOSTIC INFORMATION AND PROCEDURES > DAYTIME RUNNING LAMPS MALFUNCTION > REFERENCE INFORMATION

Schematic Reference

Headlights/Daytime Running Lights (DRL) Schematics

Connector End View Reference

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Scan Tool Reference

Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > DAYTIME RUNNING LAMPS MALFUNCTION > CIRCUIT/SYSTEM VERIFICATION

1. Ignition ON.
2. Verify the left daytime running lamp turns ON and OFF while commanding the Left Dedicated Daytime Running Lamp ON and OFF with a scan tool.
    1. **If the left daytime running lamp does not turn ON and OFF**

       Refer to Circuit/System Testing - Daytime Running Lamps Malfunction.

    1. **If the left daytime running lamp turns ON and OFF**
3. Verify the right daytime running lamp turns ON and OFF while commanding the Right Dedicated Daytime Running Lamp ON and OFF with a scan tool.
    1. **If the right daytime running lamp does not turn ON and OFF**

       Refer to Circuit/System Testing - Daytime Running Lamps Malfunction.

    1. **If the right daytime running lamp turns ON and OFF**
4. Refer to Circuit/System Testing - Ambient Light Sensor Malfunction.

DIAGNOSTIC INFORMATION AND PROCEDURES > DAYTIME RUNNING LAMPS MALFUNCTION > CIRCUIT/SYSTEM TESTING

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Daytime Running Lamps Malfunction

1. Ignition OFF, exterior lamps OFF, disconnect the harness connector at the appropriate component listed below. It may take up to 2 min for all vehicle systems to power down.
    1. E4AC Park/Daytime Running Lamp - Left (uplevel)
    2. E4AD Park/Daytime Running Lamp - Right (uplevel)
    3. E4AL Park/Daytime Running Lamp - Left Lower (base)
    4. E4AM Park/Daytime Running Lamp - Right Lower (base)
2. Test for less than 15 Ω between the appropriate ground circuit terminal listed below and ground.
    1. E4AC Park/Daytime Running Lamp - Left terminal 7 (uplevel)
    2. E4AD Park/Daytime Running Lamp - Right terminal 7 (uplevel)
    3. E4AL Park/Daytime Running Lamp - Left Lower terminal 2 (base)
    4. E4AM Park/Daytime Running Lamp - Right Lower terminal 2 (base)
    1. **If 15 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 15 Ω**
3. Connect a test lamp between the appropriate control circuit terminal listed below and ground, ignition ON.
    1. E4AC Park/Daytime Running Lamp - Left terminal 8 (uplevel)
    2. E4AD Park/Daytime Running Lamp - Right terminal 8 (uplevel)
    3. E4AL Park/Daytime Running Lamp - Left Lower terminal 1 (base)
    4. E4AM Park/Daytime Running Lamp - Right Lower terminal 1 (base)
4. Verify the test lamp turns ON and OFF when commanding the appropriate Dedicated Daytime Running Lamp ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance

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3. Test for less than 2 Ω in the control circuit end to end.
    1. If 2 Ω or greater, repair the open/high resistance in the circuit.
    2. If less than 2 Ω, replace the K9 Body Control Module.

1. **If the test lamp is always ON**
    1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module, ignition ON.
    2. Test for less than 1 V between the control circuit terminal and ground.
        1. If 1 V or greater, repair the short to voltage on the circuit.
        2. If less than 1 V, replace the K9 Body Control Module.

1. **If the test lamp turns ON and OFF**

5. Test or replace the E4A Park/Daytime Running Lamp.

Ambient Light Sensor Malfunction

1. Ignition OFF, scan tool disconnected, all doors closed, all accessories OFF, open and close drivers door, disconnect the harness connector at the B10B Ambient Light/Sunload Sensor. It may take up to 10 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the low reference circuit terminal 6 and ground.
    1. **If 10 Ω or greater**
        1. Ignition OFF, disconnect the X2 harness connector at the K33 HVAC Control Module.
        2. Test for less than 2 Ω in the low reference circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K33 HVAC Control Module.
    1. **If less than 10 Ω**
3. Ignition ON.
4. Verify the scan tool Ambient Light Sensor parameter is greater than 4.65 V.
    1. **If 4.65 V or less**
        1. Ignition OFF, disconnect the X2 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the signal circuit terminal 3 and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            2. If infinite resistance, replace the K9 Body Control Module.
    1. **If greater than 4.65 V**
5. Install a 3 A fused jumper wire between the signal circuit terminal 3 and the low reference circuit terminal 6.

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6. Verify the scan tool Ambient Light Sensor parameter is less than 0.196 V.
    1. **If 0.196 V or greater**
        1. Ignition OFF, disconnect the X2 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the signal circuit terminal 3 and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            1. If less than 1 V
        3. Test for less than 2 Ω in the signal circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If less than 0.196 V**
7. Test or replace the B10B Ambient Light/Sunload Sensor.

DIAGNOSTIC INFORMATION AND PROCEDURES > DAYTIME RUNNING LAMPS MALFUNCTION > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Daytime Running Lamp Replacement (Uplevel) Daytime Running Lamp Replacement (Base)
- Sun Load Temperature and Ambient Light and Security Indicator Sensor Replacement
- Control Module References for BCM or HVAC control module replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > DOME 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 INFORMATION AND PROCEDURES > DOME LAMPS MALFUNCTION > DIAGNOSTIC FAULT INFORMATION

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

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F31UA (BCM 7) Fuse B+	1	1	1	-
Instrument Panel Dimmer Switch - Dome Lamps ON Signal	2	2	2	-
Dome/Courtesy Lamps Control Terminal 1 X7	B2615 02	1	1	-
Dome/Courtesy Lamps Control Terminal 5 X2	B2615 02	1	1	-
Dome/Reading Lamps - Left Front Ground	-	1	-	-
Dome/Reading Lamps - Right Front Ground	-	1	-	-
Door Sill Plate Lamp - Driver Ground	-	1	-	-
Door Sill Plate Lamp - Passenger Ground	-	1	-	-
Instrument Panel Courtesy Lamp - Left Ground	-	1	-	-
Instrument Panel Courtesy Lamp - Right Ground	-	1	-	-
1. Dome Lamps Malfunction 2. Dome Lamp Switch Malfunction				

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DIAGNOSTIC INFORMATION AND PROCEDURES > DOME LAMPS MALFUNCTION > CIRCUIT/SYSTEM DESCRIPTION

The dome lamp switch has 2 positions: DOOR and ON. The ON position provides a ground for continuous operation and the dome/courtesy lamps will remain illuminated until the switch is placed in the DOOR position. When in the DOOR position, the dome/courtesy lamps operation is controlled by the body control module (BCM). The body control module (BCM) applies battery voltage to the interior courtesy lamps through the dome/courtesy lamps control circuits at terminal 1 X7 and terminal 5 X2. When any door is opened, the jam switch contacts close and the BCM receives a door-ajar input. If the BCM receives a door lock or unlock input or a rear hatch open input, the BCM will activate the dome/courtesy lamps control circuit terminal 1 X7 and terminal 5 X2, providing battery voltage to all courtesy lamps supplied by the circuits. In the event that any of these courtesy lamps were to remain illuminated for more than 10 minutes with the ignition switch in the OFF position, the BCM will deactivate the courtesy lamp control circuits to prevent total battery discharge.

DIAGNOSTIC INFORMATION AND PROCEDURES > DOME LAMPS MALFUNCTION > REFERENCE INFORMATION

Schematic Reference

Interior Lights Schematics

Connector End View Reference

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Scan Tool Reference

Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > DOME LAMPS MALFUNCTION > CIRCUIT/SYSTEM VERIFICATION

1. Ignition ON.
2. Verify the scan tool Door Ajar Sw. parameter changes between Active and Inactive while opening and closing each vehicle door.
    1. **If the parameter does not change**

       Refer to Door Ajar Indicator Malfunction .
    1. **If the parameter changes**
3. Verify the scan tool Interior/Courtesy Lighting Master Switch parameter changes between Door and On while placing the dome lamp switch in the Door and On positions.
    1. **If the parameter does not change**

       Refer to Circuit/System Testing - Dome Lamp Switch Malfunction.
    1. **If the parameter changes**
4. Verify all dome/courtesy lamps controlled by the dome/courtesy lamps control circuits at terminal 1 X7 and terminal 5 X2 turn ON and OFF while commanding the Courtesy Lamps ON and OFF with a scan tool.
    1. **If the dome/courtesy lamps do not turn ON and OFF**

       Refer to Circuit/System Testing - Dome/Courtesy Lamps Malfunction.
    1. **If the dome/courtesy lamps turn ON and OFF**

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5. All OK.

DIAGNOSTIC INFORMATION AND PROCEDURES > DOME LAMPS MALFUNCTION > CIRCUIT/SYSTEM TESTING

Dome Lamp Switch Malfunction

1. Ignition OFF, scan tool disconnected, all doors closed, all accessories OFF, open and close drivers door, disconnect the harness connector at the S36 Instrument Panel Dimmer Switch. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 4 and ground.
    1. **If 10 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 10 Ω**
3. Ignition ON.
4. Verify the scan tool Interior/Courtesy Lighting Master Switch parameter is Door.
    1. **If On**
        1. Ignition OFF, disconnect the X2 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the signal circuit terminal 3 and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            2. If infinite resistance, replace the K9 Body Control Module.
    1. **If Door**
5. Install a 3 A fused jumper wire between the signal circuit terminal 3 and ground.
6. Verify the scan tool Interior/Courtesy Lighting Master Switch parameter is On.
    1. **If not On**
        1. Ignition OFF, disconnect the X2 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the signal circuit terminal 3 and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            1. If less than 1 V

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3. Test for less than 2 Ω in the signal circuit end to end.
    1. If 2 Ω or greater, repair the open/high resistance in the circuit.
    2. If less than 2 Ω, replace the K9 Body Control Module.

1. **If On**

7. Test or replace the S36 Instrument Panel Dimmer Switch.

Dome/Courtesy Lamps Malfunction

> *NOTE:*
>
> *Each lighting component may need to be disconnected to isolate a short to ground. Use the schematics to identify the following:*
>
> *1. Lighting components the vehicle is equipped with*
>
> *2. Each component's control and ground circuit terminals*
>
> *3. Component locations on the lighting control circuit*

1. Ignition OFF, scan tool disconnected, all doors closed, all accessories OFF, open and close drivers door, disconnect the harness connector at the component with inoperative dome/courtesy lamp. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the appropriate ground circuit terminal listed below and ground.
    1. E8A Door Sill Plate Lamp - Driver terminal 2 (with B7G)
    2. E8B Door Sill Plate Lamp - Passenger terminal 2 (with B7G)
    3. E8J Instrument Panel Courtesy Lamp - Left terminal 2
    4. E8K Instrument Panel Courtesy Lamp - Right terminal 2
    5. E37LF Dome/Reading Lamps - Left Front terminal 4
    6. E37RF Dome/Reading Lamps - Right Front terminal 4

    1. **If 10 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.

    1. **If less than 10 Ω**

3. Connect a test lamp between the appropriate control circuit terminal listed below and ground, ignition ON.

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1. E8A Door Sill Plate Lamp - Driver terminal 1 (with B7G)
2. E8B Door Sill Plate Lamp - Passenger terminal 1 (with B7G)
3. E8J Instrument Panel Courtesy Lamp - Left terminal 1
4. E8K Instrument Panel Courtesy Lamp - Right terminal 1
5. E37LF Dome/Reading Lamps - Left Front terminal 3
6. E37RF Dome/Reading Lamps - Right Front terminal 3

4. Verify the test lamp turns ON and OFF when commanding the Courtesy Lamps ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the appropriate harness connector listed below at the K9 Body Control Module.
            1. X2
            2. X7
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If the test lamp is always ON**
        1. Ignition OFF, disconnect the appropriate harness connector listed below at the K9 Body Control Module, ignition ON.
            1. X2
            2. X7
        2. Test for less than 1 V between the control circuit terminal and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            2. If less than 1 V, replace the K9 Body Control Module.
    1. **If the test lamp turns ON and OFF**
5. Test or replace the dome/courtesy lamp.

DIAGNOSTIC INFORMATION AND PROCEDURES > DOME LAMPS MALFUNCTION >

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REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Dimmer Switch Replacement
- Roof Console Replacement
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > REAR 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.

DIAGNOSTIC INFORMATION AND PROCEDURES > REAR FOG LAMPS MALFUNCTION > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Rear Fog Lamp Switch Signal	B3588 00	2	2	-
Rear Fog Lamps Control	B2540 02	B2540 04	1	-
Rear Fog Lamp Ground	-	1	-	-
Turn Signal/Multifunction Switch Ground	-	2	-	-
1. Rear Fog Lamp Malfunction 2. Rear Fog Lamp Switch Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > REAR FOG LAMPS MALFUNCTION > CIRCUIT/SYSTEM DESCRIPTION

The rear fog lamp switch signal circuit is grounded momentarily by pressing the rear fog lamp switch. The body control module (BCM) responds to the rear fog lamp request by applying voltage to the rear fog lamp control circuit which illuminates the rear fog lamp.

DIAGNOSTIC INFORMATION AND PROCEDURES > REAR FOG LAMPS MALFUNCTION > REFERENCE INFORMATION

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Schematic Reference

Fog Lights Schematics

Connector End View Reference

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Scan Tool Reference

Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > REAR FOG LAMPS MALFUNCTION > CIRCUIT/SYSTEM VERIFICATION

1. Ignition ON, headlamps ON.
2. Verify the scan tool Rear Fog Lamps Switch parameter changes between Active and Inactive while commanding the rear fog lamp ON and OFF with the rear fog lamp switch.
    1. **If the parameter does not change**

       Refer to Circuit/System Testing - Rear Fog Lamp Switch Malfunction.

    1. **If the parameter changes**
3. Verify the rear fog lamp turns ON and OFF when commanding the Rear Fog Lamps ON and OFF with a scan tool.
    1. **If the rear fog lamp does not turn ON and OFF**

       Refer to Circuit/System Testing - Rear Fog Lamp Malfunction.

    1. **If the rear fog lamp turns ON and OFF**
4. All OK.

DIAGNOSTIC INFORMATION AND PROCEDURES > REAR FOG LAMPS MALFUNCTION > CIRCUIT/SYSTEM TESTING

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Rear Fog Lamp Switch Malfunction

1. Ignition OFF, scan tool disconnected, all doors closed, all accessories OFF, open and close drivers door, disconnect the harness connector at the S78 Turn Signal/Multifunction Switch. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 6 and ground.
    1. **If 10 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 10 Ω**
3. Ignition ON.
4. Verify the scan tool Rear Fog Lamp Switch parameter is Inactive.
    1. **If not Inactive**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the signal circuit terminal 3 and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            2. If infinite resistance, replace the K9 Body Control Module.
    1. **If Inactive**
5. Install a 3 A fused jumper wire between the signal circuit terminal 3 and ground.
6. Verify the scan tool Rear Fog Lamp Switch parameter is Active.
    1. **If not Active**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the signal circuit terminal 3 and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            1. If less than 1 V
        3. Test for less than 2 Ω in the signal circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If Active**

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7. Test or replace the S78 Turn Signal/Multifunction Switch.

Rear Fog Lamp Malfunction

1. Ignition OFF, exterior lamps OFF, disconnect the harness connector at the E29R Fog Lamp - Rear. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 5 Ω between the ground circuit terminal 2 and ground.
    1. **If 5 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 5 Ω**
3. Connect a test lamp between the control circuit terminal 3 and ground, ignition ON.
4. Verify the test lamp turns ON and OFF when commanding the Rear Fog Lamp ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the X3 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If the test lamp is always ON**
        1. Ignition OFF, disconnect the X3 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the control circuit terminal and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            2. If less than 1 V, replace the K9 Body Control Module.
    1. **If the test lamp turns ON and OFF**
5. Test or replace the E29R Fog Lamp - Rear.

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DIAGNOSTIC INFORMATION AND PROCEDURES > REAR FOG LAMPS MALFUNCTION > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Backup Bulb Replacement
- Turn Signal Switch Replacement
- Control Module References for BCM and instrument cluster replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > 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 INFORMATION AND PROCEDURES > HAZARD LAMPS MALFUNCTION > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Hazard Warning Switch Signal	B3596 00	1	1	B3596 00
Hazard Warning Switch LED Backlighting Control	2	2	2	-
Hazard Warning Switch Ground	-	1, 2	-	-
1. Hazard Lamps Malfunction 2. Hazard Warning Switch Backlighting Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > HAZARD LAMPS MALFUNCTION > CIRCUIT/SYSTEM DESCRIPTION

The hazard flashers may be activated in any power mode. The hazard warning switch signal circuit is momentarily grounded when the hazard warning switch is pressed. The body control module (BCM) responds to the hazard warning switch signal input by supplying battery voltage to all four turn signal lamps in an ON and OFF duty cycle. When the hazard warning switch is activated, the BCM sends a serial data message to the instrument cluster requesting both turn signal indicators to be cycled ON and OFF.

The instrument panel dimmer switch controls are located on the headlamp switch assembly and are used to increase and decrease the brightness of the interior backlighting components. When the instrument

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panel dimmer switch is placed in a desired brightness position, the body control module (BCM) receives a signal from the instrument panel dimmer switch and responds by applying a pulse width modulated voltage to the hazard warning switch LED backlighting control circuit illuminating the LED to the desired level of brightness.

DIAGNOSTIC INFORMATION AND PROCEDURES > HAZARD LAMPS MALFUNCTION > REFERENCE INFORMATION

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

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

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DIAGNOSTIC INFORMATION AND PROCEDURES > HAZARD LAMPS MALFUNCTION > CIRCUIT/SYSTEM VERIFICATION

1. Ignition ON.
2. Verify the scan tool Hazard Lamps Switch parameter changes between Active and Inactive while commanding the hazard lamps ON and OFF with the hazard warning switch.
    1. **If the parameter does not change**

        Refer to Circuit/System Testing.

    1. **If the parameter changes**
3. Verify all left and right turn signal lamps turn ON and OFF while commanding the hazard lamps ON and OFF with the hazard warning switch.
    1. **If all turn signal lamps do not turn ON and OFF**

Refer to Turn Signal Lamps and/or Indicators Malfunction

1. **If all turn signal lamps turn ON and OFF**

4. Verify the hazard warning switch backlighting turns ON and OFF while commanding the Hazard Lamps Switch Backlight ON and OFF with a scan tool.
    1. **If the hazard warning switch backlighting does not turn ON and OFF**

       Refer to Hazard Warning Switch Backlighting Malfunction.

    1. **If the hazard warning switch backlighting turns ON and OFF**
5. All OK.

DIAGNOSTIC INFORMATION AND PROCEDURES > HAZARD LAMPS MALFUNCTION > CIRCUIT/SYSTEM TESTING

Hazard Warning Switch Malfunction

1. Ignition OFF, scan tool disconnected, all doors closed, all accessories OFF, open and close drivers door, disconnect the harness connector at the S26 Hazard Warning Switch. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 2 and ground.
    1. **If 10 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 10 Ω**
3. Ignition ON.
4. Verify the scan tool Hazard Lamps Switch parameter is Inactive.
    1. **If not Inactive**
        1. Ignition OFF, disconnect the X2 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the signal circuit terminal 1 and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            2. If infinite resistance, replace the K9 Body Control Module.
    1. **If Inactive**
5. Install a 3 A fused jumper wire between the signal circuit terminal 1 and ground.

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6. Verify the scan tool Hazard Lamps Switch parameter is Active.
    1. **If not Active**
        1. Ignition OFF, disconnect the X2 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the signal circuit terminal 1 and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            1. If less than 1 V
        3. Test for less than 2 Ω in the signal circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If Active**
7. Test or replace the S26 Hazard Warning Switch.

Hazard Warning Switch Backlighting Malfunction

1. Ignition OFF, scan tool disconnected, all doors closed, all accessories OFF, open and close drivers door, disconnect the harness connector at the S26 Hazard Warning Switch. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 15 Ω between the ground circuit terminal 1 and ground.
    1. **If 15 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 15 Ω**
3. Connect a test lamp between the control circuit terminal 4 and ground, ignition ON.
4. Place the interior backlighting dimmer switch in the HIGH position for high backlighting intensity.
5. Verify the test lamp turns ON and OFF when commanding the Hazard Lamps Switch Backlight ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance

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3. Test for less than 2 Ω in the control circuit end to end.
    1. If 2 Ω or greater, repair the open/high resistance in the circuit.
    2. If less than 2 Ω, replace the K9 Body Control Module.

1. **If the test lamp is always ON**
    1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module, ignition ON.
    2. Test for less than 1 V between the control circuit terminal and ground.
        1. If 1 V or greater, repair the short to voltage on the circuit.
        2. If less than 1 V, replace the K9 Body Control Module.

1. **If the test lamp turns ON and OFF**

6. Test or replace the S26 Hazard Warning Switch.

DIAGNOSTIC INFORMATION AND PROCEDURES > HAZARD LAMPS MALFUNCTION > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Hazard Warning Switch Replacement
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > 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 INFORMATION AND PROCEDURES > HEADLAMPS MALFUNCTION > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
F6RA (BCM 4) Fuse B+	B2699 01, B2699 04	B2699 01, B2699 04	-	-

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F43RA (BCM 3) Fuse B+	B2575 01, B2575 04	B2575 01, B2575 04	-	-
Headlamp Low Beam Relay Control (with T4F)	B258A 02, B258A 04	U1511 00, U1521 00, B258A 02, B258A 04	U1511 00, U1521 00, B258A 01	-
Headlamp High Beam Relay Control	B2580 02, B2580 04	B2580 02, B2580 04	B2580 01	-
Low Beam Headlamp Control - Left (without T4F)	B2575 02	B2575 01, B2575 04	1	-
Low Beam Headlamp Control - Right (without T4F)	B2699 02	B2699 01, B2699 04	1	-
Low Beam Headlamp Control - Left (with T4F)	1	1	1	-
Low Beam Headlamp Control - Right (with T4F)	1	1	1	-
High Beam Headlamp Control - Left	2	2	2	-
High Beam Headlamp Control - Right	2	2	2	-
Turn Signal/Multifunction Switch Park Lamps ON Signal	3	B257A 00	3	-
Turn Signal/Multifunction Switch Headlamps OFF Signal	B257A 00	3	3	-
Turn Signal/Multifunction Switch Headlamps ON Signal	B257A 00	3	3	-
Turn Signal/Multifunction Switch Flash To Pass Signal	B3806 00	3	3	-
Turn Signal/Multifunction Switch High Beam Signal	B3650 08	3	3	-
Headlamp Assembly - Left Ground	-	1	-	-
Headlamp Assembly - Right Ground	-	1	-	-
Turn Signal/Multifunction Switch Ground	-	3	-	-

1. Headlamps Malfunction - Low Beam
2. Headlamps Malfunction - High Beam
3. Turn Signal/Multifunction Switch Malfunction

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DIAGNOSTIC INFORMATION AND PROCEDURES > HEADLAMPS MALFUNCTION > CIRCUIT/SYSTEM DESCRIPTION

Low Beam Headlamps (without T4F)

For headlamp operation, the body control module (BCM) monitors three signal circuits from the turn signal/multifunction switch. When the turn signal/multifunction switch is in the AUTO position, the three signal circuits are unaffected (open) and the BCM relies on the ambient light sensor input to turn the headlamps and daytime running lamps ON and OFF. When the turn signal/multifunction switch is placed in the OFF position, the turn signal/multifunction switch headlamps OFF signal circuit is grounded, indicating to the BCM that the exterior lamps should be turned OFF. With the turn signal/multifunction switch in the PARK LAMPS position, the turn signal/multifunction switch park lamps ON signal circuit is grounded, indicating that the park lamps have been requested. When the turn signal/multifunction switch is in the HEADLAMP position, both the turn signal/multifunction switch park lamps ON signal circuit and the turn signal/multifunction switch headlamps ON signal circuit are grounded. The BCM responds by commanding the park lamps and low beam headlamps ON. With the headlamp switch in the HEADLAMP or AUTO position, the BCM responds by applying battery positive voltage to the left and right low beam headlamp control circuits illuminating the low beam headlamps.

Low Beam Headlamps (with T4F)

For headlamp operation, the body control module (BCM) monitors three signal circuits from the turn signal/multifunction switch. When the turn signal/multifunction switch is in the AUTO position, the three signal circuits are unaffected (open) and the BCM relies on the ambient light sensor input to turn the headlamps and daytime running lamps ON and OFF. When the turn signal/multifunction switch is placed in the OFF position, the turn signal/multifunction switch headlamps OFF signal circuit is grounded, indicating to the BCM that the exterior lamps should be turned OFF. With the turn signal/multifunction switch in the PARK LAMPS position, the turn signal/multifunction switch park lamps ON signal circuit is grounded, indicating that the park lamps have been requested. When the turn signal/multifunction switch is in the HEADLAMP position, both the turn signal/multifunction switch park lamps ON signal circuit and the turn signal/multifunction switch headlamps ON signal circuit are grounded. The BCM responds to the low beam request by applying ground to the low beam relay control circuit which energizes the low beam relay. With the low beam relay energized, the switch contacts close allowing battery voltage to flow through the low beam fuses. Battery voltage is then applied from the fuses, through the low beam control circuits to the left and right headlamp ballast located in each headlamp assembly. When battery voltage is applied to the headlamp ballast through the low beam control circuits, the ballast charge the starter to start the lamp. High intensity discharge headlamps do not have filaments like traditional bulbs, instead the starter uses a high voltage transformer to convert the input voltage into a higher voltage. This increased voltage is used in order to create an arc between the electrodes in the bulb illuminating the low beam headlamps.

High Beam Headlamps

The high beam and flash to pass functions are contained within the turn signal/multifunction switch. The BCM provides the turn signal/multifunction switch with two signal circuits, the high beam signal circuit and the flash to pass signal circuit. When the low beam headlamps are ON and the turn signal/multifunction switch is placed in the high beam position, ground is applied to the BCM through the high beam signal circuit. The BCM responds to the high beam request by applying ground to the high beam relay control circuit which energizes the high beam relay. With the high beam relay energized, the switch contacts close allowing battery voltage to flow through the left and right high beam fuses to the high beam control circuits actuating the left and right high beam solenoid actuators opening the right and left high beam shutters exposing the full headlamps for high beam operation.

Flash to Pass

When the turn signal/multifunction switch is momentarily placed in the flash to pass position, ground is applied to the BCM through the flash to pass signal circuit. The BCM responds by applying ground to the

high beam relay control circuit which energizes the high beam relay illuminating the high beams for a brief moment or until the flash to pass switch is released.

DIAGNOSTIC INFORMATION AND PROCEDURES > HEADLAMPS MALFUNCTION > REFERENCE INFORMATION

Schematic Reference

- Headlights/Daytime Running Lights (DRL) Schematics
- Body Control System Schematics

Connector End View Reference

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Scan Tool Reference

Control Module References for scan tool information

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DIAGNOSTIC INFORMATION AND PROCEDURES > HEADLAMPS MALFUNCTION > CIRCUIT/SYSTEM VERIFICATION

1. Ignition ON.
2. Verify the scan tool Headlamps On Switch parameter changes between Active and Inactive while commanding the headlamp ON and OFF with the turn signal/multifunction switch.
    1. **If the parameter does not change**

        Refer to Circuit/System Testing - Turn Signal/Multifunction Switch Malfunction.

    1. **If the parameter changes**
3. Verify the scan tool Automatic Headlamps Disable Switch parameter changes between Active and Inactive while commanding the automatic lamp control ON and OFF with the turn signal/multifunction switch.
    1. **If the parameter does not change**

Refer to Circuit/System Testing - Turn Signal/Multifunction Switch Malfunction.

1. **If the parameter changes**

4. Verify the scan tool Headlamps Flash Switch parameter changes between Active and Inactive while commanding the flash to pass ON and OFF with the turn signal/multifunction switch.

    1. **If the parameter does not change**

        Refer to Circuit/System Testing - Turn Signal/Multifunction Switch Malfunction.

    1. **If the parameter changes**

5. Verify the scan tool High Beam Select Switch parameter changes between Active and Inactive while commanding the high beams ON and OFF with the turn signal/multifunction switch.

    1. **If the parameter does not change**

        Refer to Circuit/System Testing - Turn Signal/Multifunction Switch Malfunction.

    1. **If the parameter changes**

6. Verify the left low beam headlamp turns ON and OFF when commanding the appropriate Low Beam Lamp ON and OFF with a scan tool.

    1. **If the left low beam headlamp does not turn ON and OFF**

        Refer to Circuit/System Testing - Headlamps Malfunction - Low Beam.

    1. **If the left low beam headlamp turns ON and OFF**

7. Verify the right low beam headlamp turns ON and OFF when commanding the appropriate Low Beam Lamp ON and OFF with a scan tool.

    1. **If the right low beam headlamp does not turn ON and OFF**

        Refer to Circuit/System Testing - Headlamps Malfunction - Low Beam.

    1. **If the right low beam headlamp turns ON and OFF**

8. Verify the high beams turn ON and OFF when commanding the High Beams ON and OFF with a scan tool.

    1. **If the high beams do not turn ON and OFF**

        Refer to Circuit/System Testing - Headlamps Malfunction - High Beam.

    1. **If the high beams turn ON and OFF**

9. All OK.

DIAGNOSTIC INFORMATION AND PROCEDURES > HEADLAMPS MALFUNCTION > CIRCUIT/SYSTEM TESTING

Turn Signal/Multifunction Switch Malfunction

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1. Ignition OFF, scan tool disconnected, all doors closed, all accessories OFF, open and close drivers door, disconnect the harness connector at the S78 Turn Signal/Multifunction Switch. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 6 and ground.
    1. **If 10 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 10 Ω**
3. Ignition ON.
4. Verify the scan tool Automatic Headlamps Disable Switch parameter is Inactive.
    1. **If not Inactive**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the signal circuit terminal 9 and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            2. If infinite resistance, replace the K9 Body Control Module.
    1. **If Inactive**
5. Install a 3 A fused jumper wire between the signal circuit terminal 9 and ground.
6. Verify the scan tool Automatic Headlamps Disable Switch parameter is Active.
    1. **If not Active**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the signal circuit terminal 9 and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            1. If less than 1 V
        3. Test for less than 2 Ω in the signal circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If Active**
7. Verify the scan tool Park Lamps Switch parameter is Inactive.

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1. **If not Inactive**
    1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module.
    2. Test for infinite resistance between the signal circuit terminal 7 and ground.
        1. If less than infinite resistance, repair the short to ground on the circuit.
        2. If infinite resistance, replace the K9 Body Control Module.
1. **If Inactive**

8. Install a 3 A fused jumper wire between the signal circuit terminal 7 and ground.
9. Verify the scan tool Park Lamps Switch parameter is Active.
    1. **If not Active**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the signal circuit terminal 7 and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            1. If less than 1 V
        3. Test for less than 2 Ω in the signal circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If Active**
10. Verify the scan tool Headlamps On Switch parameter is Inactive.
    1. **If not Inactive**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the signal circuit terminal 2 and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            2. If infinite resistance, replace the K9 Body Control Module.
    1. **If Inactive**
11. Install a 3 A fused jumper wire between the signal circuit terminal 2 and ground.
12. Verify the scan tool Headlamps On Switch parameter is Active.
    1. **If not Active**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the signal circuit terminal 2 and ground.

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1. If 1 V or greater, repair the short to voltage on the circuit.
1. If less than 1 V

3. Test for less than 2 Ω in the signal circuit end to end.
1. If 2 Ω or greater, repair the open/high resistance in the circuit.
2. If less than 2 Ω, replace the K9 Body Control Module.

1. **If Active**

13. Verify the scan tool High Beam Select Switch parameter is Inactive.

1. **If not Inactive**
1. Ignition OFF, disconnect the X3 harness connector at the K9 Body Control Module.
2. Test for infinite resistance between the signal circuit terminal 11 and ground.
1. If less than infinite resistance, repair the short to ground on the circuit.
2. If infinite resistance, replace the K9 Body Control Module.

1. **If Inactive**

14. Install a 3 A fused jumper wire between the signal circuit terminal 11 and ground.
15. Verify the scan tool High Beam Select Switch parameter is Active.

1. **If not Active**
1. Ignition OFF, disconnect the X3 harness connector at the K9 Body Control Module, ignition ON.
2. Test for less than 1 V between the signal circuit terminal 11 and ground.
1. If 1 V or greater, repair the short to voltage on the circuit.
1. If less than 1 V

3. Test for less than 2 Ω in the signal circuit end to end.
1. If 2 Ω or greater, repair the open/high resistance in the circuit.
2. If less than 2 Ω, replace the K9 Body Control Module.

1. **If Active**

16. Verify the scan tool Headlamps Flash Switch parameter is Inactive.

1. **If not Inactive**
1. Ignition OFF, disconnect the X3 harness connector at the K9 Body Control Module.
2. Test for infinite resistance between the signal circuit terminal 12 and ground.
1. If less than infinite resistance, repair the short to ground on the circuit.

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2. If infinite resistance, replace the K9 Body Control Module.

1. **If Inactive**

17. Install a 3 A fused jumper wire between the signal circuit terminal 12 and ground.
18. Verify the scan tool Headlamps Flash Switch parameter is Active.
    1. **If not Active**
        1. Ignition OFF, disconnect the X3 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the signal circuit terminal 12 and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            1. If less than 1 V
        3. Test for less than 2 Ω in the signal circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If Active**
19. Test or replace the S78 Turn Signal/Multifunction Switch.

Headlamps Malfunction - Low Beam (without T4F)

1. Ignition OFF, exterior lamps OFF, disconnect the harness connector at the appropriate E4 Headlamp - Low Beam. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 15 Ω between the ground circuit terminal 6 and ground.
    1. **If 15 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 15 Ω**
3. Connect a test lamp between the control circuit terminal 7 and ground, ignition ON.
4. Verify the test lamp turns ON and OFF when commanding the appropriate Low Beam Headlamp ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the control circuit and ground.

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1. If less than infinite resistance, repair the short to ground on the circuit.
1. If infinite resistance

3. Test for less than 2 Ω in the control circuit end to end.
1. If 2 Ω or greater, repair the open/high resistance in the circuit.
2. If less than 2 Ω, replace the K9 Body Control Module.

1. **If the test lamp is always ON**
1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module, ignition ON.
2. Test for less than 1 V between the control circuit terminal and ground.
1. If 1 V or greater, repair the short to voltage on the circuit.
2. If less than 1 V, replace the K9 Body Control Module.

1. **If the test lamp turns ON and OFF**

5. Test or replace the E4 Headlamp - Low Beam.

Headlamps Malfunction - Low Beam (with T4F)

1. Ignition OFF, disconnect the KR49 Headlamp Low Beam Relay.
2. Verify a test lamp illuminates between the B+ circuit terminal 86 and ground.
1. **If the test lamp does not illuminate**

   Replace the X50A Fuse Block - Underhood.

1. **If the test lamp illuminates**

3. Verify a test lamp illuminates between the B+ circuit terminal 30 and ground.
1. **If the test lamp does not illuminate**

   Replace the X50A Fuse Block - Underhood.

1. **If the test lamp illuminates**

4. Connect a test lamp between the control circuit terminal 85 and B+, ignition ON.
5. Verify the test lamp turns ON and OFF when commanding the Low Beams ON and OFF with a scan tool.
1. **If the test lamp is always OFF**
1. Ignition OFF, disconnect the X5 harness connector at the K9 Body Control Module, ignition ON.
2. Test for less than 1 V between the control circuit terminal and ground.
1. If 1 V or greater, repair the short to voltage on the circuit.

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1. If less than 1 V

3. Ignition OFF.
4. Test for less than 2 Ω in the control circuit end to end.
    1. If 2 Ω or greater, repair the open/high resistance in the circuit.
    2. If less than 2 Ω, replace the K9 Body Control Module.

1. **If the test lamp is always ON**
    1. Ignition OFF, disconnect the X5 harness connector at the K9 Body Control Module.
    2. Test for infinite resistance between the control circuit terminal and ground.
        1. If less than infinite resistance, repair the short to ground on the circuit.
        2. If infinite resistance, replace the K9 Body Control Module.

1. **If the test lamp turns ON and OFF**

6. Ignition OFF, exterior lamps OFF, connect the KR49 Headlamp Low Beam Relay.
7. Disconnect the harness connector at the appropriate E4 Headlamp - Low Beam. It may take up to 2 min for all vehicle systems to power down.
8. Test for less than 15 Ω between the ground circuit terminal 2 and ground.
    1. **If 15 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.

    1. **If less than 15 Ω**

9. Connect a test lamp between the control circuit terminal 1 and ground, ignition ON.
10. Verify the test lamp turns ON and OFF when commanding the Low Beams ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the X1 harness connector at the X50A Fuse Block - Underhood.
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.

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1. If 2 Ω or greater, repair the open/high resistance in the circuit.
2. If less than 2 Ω, replace the KR49 Headlamp Low Beam Relay.

1. **If the test lamp is always ON**
    1. Ignition OFF, disconnect the X1 harness connector at the X50A Fuse Block - Underhood, ignition ON.
    2. Test for less than 1 V between the control circuit terminal and ground.
        1. If 1 V or greater, repair the short to voltage on the circuit.
        2. If less than 1 V, replace the KR49 Headlamp Low Beam Relay.

1. **If the test lamp turns ON and OFF**

11. Ignition OFF, replace the appropriate T7 Headlamp Ballast.
12. Ignition ON, verify the appropriate low beam headlamp illuminates when commanded ON with the headlamp switch.
    1. **If the low beam headlamp does not illuminate**
        1. Replace the appropriate E4 Headlamp - Low Beam bulb.

    1. **If the low beam headlamp illuminates**
13. All OK.

Headlamps Malfunction - High Beam

1. Ignition OFF, disconnect the KR48 Headlamp High Beam Relay.
2. Verify a test lamp illuminates between the B+ circuit terminal 85 and ground.
    1. **If the test lamp does not illuminate**

        Replace the X50A Fuse Block - Underhood.

    1. **If the test lamp illuminates**
3. Verify a test lamp illuminates between the B+ circuit terminal 30 and ground.
    1. **If the test lamp does not illuminate**

        Replace the X50A Fuse Block - Underhood.

    1. **If the test lamp illuminates**
4. Connect a test lamp between the control circuit terminal 86 and B+, ignition ON.
5. Verify the test lamp turns ON and OFF when commanding the High Beams ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the X5 harness connector at the K9 Body Control Module, ignition ON.

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2. Test for less than 1 V between the control circuit terminal and ground.
    1. If 1 V or greater, repair the short to voltage on the circuit.
    1. If less than 1 V
3. Ignition OFF.
4. Test for less than 2 Ω in the control circuit end to end.
    1. If 2 Ω or greater, repair the open/high resistance in the circuit.
    2. If less than 2 Ω, replace the K9 Body Control Module.

1. **If the test lamp is always ON**
    1. Ignition OFF, disconnect the X5 harness connector at the K9 Body Control Module.
    2. Test for infinite resistance between the control circuit terminal and ground.
        1. If less than infinite resistance, repair the short to ground on the circuit.
        2. If infinite resistance, replace the K9 Body Control Module.

1. **If the test lamp turns ON and OFF**

6. Ignition OFF, exterior lamps OFF, connect the KR48 Headlamp High Beam Relay.
7. Disconnect the harness connector at the appropriate component listed below. It may take up to 2 min for all vehicle systems to power down.
    1. E4E Headlamp - Left High Beam (without T4F)
    2. E4F Headlamp - Right High Beam (without T4F)
    3. M28L High Beam Solenoid Actuator - Left (with T4F)
    4. M28R High Beam Solenoid Actuator - Right (with T4F)
8. Test for less than 15 Ω between the appropriate ground circuit terminal listed below and ground.
    1. E4E Headlamp - Left High Beam socket terminal (without T4F)
    2. E4F Headlamp - Right High Beam socket terminal (without T4F)
    3. M28L High Beam Solenoid Actuator - Left terminal 6 (with T4F)
    4. M28R High Beam Solenoid Actuator - Right terminal 6 (with T4F)

    1. **If 15 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.

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1. **If less than 15 Ω**

9. Connect a test lamp between the appropriate control circuit terminal listed below and ground, ignition ON.
    1. E4E Headlamp - Left High Beam socket terminal (without T4F)
    2. E4F Headlamp - Right High Beam socket terminal (without T4F)
    3. M28L High Beam Solenoid Actuator - Left terminal 3 (with T4F)
    4. M28R High Beam Solenoid Actuator - Right terminal 3 (with T4F)
10. Verify the test lamp turns ON and OFF when commanding the High Beams ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the X1 harness connector at the X50A Fuse Block - Underhood.
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the X50A Fuse Block - Underhood.
    1. **If the test lamp is always ON**
        1. Ignition OFF, disconnect the X1 harness connector at the X50A Fuse Block - Underhood, ignition ON.
        2. Test for less than 1 V between the control circuit terminal and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            2. If less than 1 V, replace the X50A Fuse Block - Underhood.
    1. **If the test lamp turns ON and OFF**
11. Test or replace the high beam.

DIAGNOSTIC INFORMATION AND PROCEDURES > HEADLAMPS MALFUNCTION > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Headlamp Bulb Replacement (HID)
- Headlamp Ballast Replacement

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- Relay Replacement (Attached to Wire Harness) Relay Replacement (Within an Electrical Center)
- Turn Signal Switch Replacement
- Headlamp Bulb Replacement - Left Side (High Beam - LTG) Headlamp Bulb Replacement - Left Side (High Beam - LGX)
- Headlamp Bulb Replacement - Right Side (High Beam)
- Low Beam Headlamp Bulb Replacement
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > HEADLAMP LEVELING 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 INFORMATION AND PROCEDURES > HEADLAMP LEVELING MALFUNCTION > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Headlamp Leveling Actuator - Left B+	1	1	-	-
Headlamp Leveling Actuator - Right B+	1	1	-	-
Headlamp Leveling Switch B+	1	1	-	-
Headlamp Leveling Switch Control	1	1	1	-
Headlamp Leveling Actuator - Left Ground	-	1	-	-
Headlamp Leveling Actuator - Right Ground	-	1	-	-
Headlamp Leveling Switch Ground	-	1	-	-
1. Headlamp Leveling Malfunction - Manual				

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DIAGNOSTIC INFORMATION AND PROCEDURES > HEADLAMP LEVELING MALFUNCTION > CIRCUIT/SYSTEM DESCRIPTION

Each headlamp assembly contains a headlamp leveling actuator that is controlled by the headlamp leveling switch. The headlamp leveling switch is supplied with ignition voltage and ground and contains a resistor ladder with 4 positions for adjusting the headlamps up or down. When the headlamp leveling switch is activated to the desired position, voltage from the B+ ignition circuit is pulled down through the resistor ladder and the voltage is applied to the left and right headlamp leveling actuators via the headlamp leveling control circuit. The headlamp leveling actuators are supplied with B+ and ground. When the headlamp leveling switch is activated, the left and right headlamp leveling actuators respond by moving the headlamps to the desired position.

DIAGNOSTIC INFORMATION AND PROCEDURES > HEADLAMP LEVELING MALFUNCTION > REFERENCE INFORMATION

Schematic Reference

Headlights/Daytime Running Lights (DRL) Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

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

DIAGNOSTIC INFORMATION AND PROCEDURES > HEADLAMP LEVELING MALFUNCTION > CIRCUIT/SYSTEM TESTING

1. Ignition OFF, exterior lamps OFF, disconnect the harness connector at the appropriate E4 Headlamp Assembly. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 15 Ω between the ground circuit terminal 6 and ground.
    1. **If 15 Ω or greater**

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1. Ignition OFF.
2. Test for less than 2 Ω in the ground circuit end to end.
    1. If 2 Ω or greater, repair the open/high resistance in the circuit.
    2. If less than 2 Ω, repair the open/high resistance in the ground connection.

1. **If less than 15 Ω**

3. Ignition ON.
4. Verify a test lamp illuminates between the B+ circuit terminal 4 and ground.
    1. **If the test lamp does not illuminate**
        1. Ignition OFF, disconnect the X1 harness connector at the X50A Fuse Block - Underhood.
        2. Test for infinite resistance between the B+ circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the X50A Fuse Block - Underhood.

    1. **If the test lamp illuminates**

5. Ignition OFF, disconnect the harness connector at the S42 Headlamp Leveling Switch. It may take up to 2 min for all vehicle systems to power down.
6. Test for less than 10 Ω between the ground circuit terminal 1 and ground.
    1. **If 10 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.

    1. **If less than 10 Ω**

7. Ignition ON.
8. Verify a test lamp illuminates between the B+ circuit terminal 6 and ground.
    1. **If the test lamp does not illuminate**
        1. Ignition OFF, disconnect the X2 harness connector at the X50A Fuse Block - Underhood.

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2. Test for infinite resistance between the B+ circuit and ground.
    1. If less than infinite resistance, repair the short to ground on the circuit.
    1. If infinite resistance
3. Test for less than 2 Ω in the control circuit end to end.
    1. If 2 Ω or greater, repair the open/high resistance in the circuit.
    2. If less than 2 Ω, replace the X50A Fuse Block - Underhood.

1. **If the test lamp illuminates**

9. Ignition OFF, connect the harness connector at the S42 Headlamp Leveling Switch.
10. Ignition ON, exterior lights OFF.
11. Test the voltage between the control circuit terminal 5 at the E4 Headlamp Assembly harness connector and ground for each S42 Headlamp Leveling Switch position listed below.
    1. Headlamp leveling switch position 0 - 10 V - 11 V
    2. Headlamp leveling switch position 1 - 8.5 V - 9.9 V
    3. Headlamp leveling switch position 2 - 8 V - 9 V
    4. Headlamp leveling switch position 3 - 6 V - 7 V

    1. **If less than the specified voltage range for each headlamp leveling switch position**
        1. Ignition OFF, disconnect the harness connector at the S42 Headlamp Leveling Switch.
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the S42 Headlamp Leveling Switch.

    1. **If greater than the specified voltage range for each headlamp leveling switch position**
        1. Ignition OFF, disconnect the harness connector at the S42 Headlamp Leveling Switch, ignition ON.
        2. Test for less than 1 V between the control circuit terminal and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            2. If less than 1 V, replace the S42 Headlamp Leveling Switch.

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1. **If within the specified voltage range for each headlamp leveling switch position**

12. Test or replace the M29 Headlamp Leveling Actuator.

DIAGNOSTIC INFORMATION AND PROCEDURES > HEADLAMP LEVELING MALFUNCTION > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

Engine Wiring Harness Junction Block Replacement

DIAGNOSTIC INFORMATION AND PROCEDURES > INTERIOR ACCENT LIGHTING MALFUNCTION (WITHOUT C70) > 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 INFORMATION AND PROCEDURES > INTERIOR ACCENT LIGHTING MALFUNCTION (WITHOUT C70) > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Accent Lamps Control 1 - Terminal 22 X7	B255F 02	B255F 04	1	-
Accent Lamps Control 2 - Terminal 23 X1	B255D 02	B255D 04	B255D 01	-
Accent Lamp - Left Instrument Panel Ground	-	1	-	-
Accent Lamp - Right Instrument Panel Ground	-	1	-	-
Flood Lamp - Center Console Ground	-	1	-	-
Flood Lamp - Driver Door Handle Ground	-	1	-	-
Flood Lamp - Passenger Door Handle Ground	-	1	-	-
Floor Accent Lamp - Left Front Ground	-	1	-	-

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Floor Accent Lamp - Right Front Ground	-	1	-	-
1. Interior Accent Lighting Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > INTERIOR ACCENT LIGHTING MALFUNCTION (WITHOUT C70) > CIRCUIT/SYSTEM DESCRIPTION

The body control module (BCM) supplies battery voltage to the accent lamps via the accent lamps control circuit. When a door is opened the BCM applies battery voltage to the accent lamps control circuit illuminating all of the accent lighting. The accent lighting will remain illuminated until all doors are closed and the ignition is OFF. The accent lighting remains illuminated with the ignition ON.

DIAGNOSTIC INFORMATION AND PROCEDURES > INTERIOR ACCENT LIGHTING MALFUNCTION (WITHOUT C70) > REFERENCE INFORMATION

Schematic Reference

Interior Lights Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

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

DIAGNOSTIC INFORMATION AND PROCEDURES > INTERIOR ACCENT LIGHTING MALFUNCTION (WITHOUT C70) > CIRCUIT/SYSTEM TESTING

> *NOTE:*
>
> *Each component may need to be disconnected to isolate a short to voltage, short to*

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ground, or an open/high resistance. Use the schematics to identify the following:

1. *Courtesy lamps the vehicle is equipped with*
2. *Each component's control and ground circuit terminals*
3. *Component locations on the exterior courtesy lamps control circuit*

1. Ignition OFF, scan tool disconnected, all doors closed, all accessories OFF, open and close drivers door, disconnect the harness connector at the appropriate component listed below. It may take up to 2 min for all vehicle systems to power down.
    1. E1AA Floor Accent Lamp - Left Front
    2. E1AB Floor Accent Lamp - Right Front
    3. E1G Accent Lamp - Left Instrument Panel
    4. E1H Accent Lamp - Right Instrument Panel
    5. E38 Flood Lamp - Center Console
    6. E63D Flood Lamp - Driver Door Handle
    7. E63P Flood Lamp - Passenger Door Handle
2. Test for less than 15 Ω between the appropriate ground circuit terminal listed below and ground.
    1. E1AA Floor Accent Lamp - Left Front terminal 3
    2. E1AB Floor Accent Lamp - Right Front terminal 3
    3. E1G Accent Lamp - Left Instrument Panel terminal 3
    4. E1H Accent Lamp - Right Instrument Panel terminal 3
    5. E38 Flood Lamp - Center Console terminal 2
    6. E63D Flood Lamp - Driver Door Handle terminal 2
    7. E63P Flood Lamp - Passenger Door Handle terminal 2
        1. **If 15 Ω or greater**
            1. Ignition OFF.
            2. Test for less than 2 Ω in the ground circuit end to end.
                1. If 2 Ω or greater, repair the open/high resistance in the circuit.
                2. If less than 2 Ω, repair the open/high resistance in the ground connection.
        1. **If less than 15 Ω**
3. Connect a test lamp between the appropriate control circuit terminal listed below and ground, ignition ON.

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1. E1AA Floor Accent Lamp - Left Front terminal 1
2. E1AB Floor Accent Lamp - Right Front terminal 1
3. E1G Accent Lamp - Left Instrument Panel terminal 1
4. E1H Accent Lamp - Right Instrument Panel terminal 1
5. E38 Flood Lamp - Center Console terminal 1
6. E63D Flood Lamp - Driver Door Handle terminal 1
7. E63P Flood Lamp - Passenger Door Handle terminal 1

4. Verify the test lamp turns ON and OFF when commanding the appropriate accent lighting command listed below ON and OFF with a scan tool.
    1. Accent Lighting 1 - terminal 22 X7
    2. Accent Lighting 2 - terminal 23 X1

    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the appropriate harness connector listed below at the K9 Body Control Module.
            1. Connector X1
            2. Connector X7
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.

    1. **If the test lamp is always ON**
        1. Ignition OFF, disconnect the appropriate harness connector listed below at the K9 Body Control Module, ignition ON.
            1. Connector X1
            2. Connector X7
        2. Test for less than 1 V between the control circuit terminal and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            2. If less than 1 V, replace the K9 Body Control Module.

    1. **If the test lamp turns ON and OFF**

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5. Test or replace the accent/flood lamp.

DIAGNOSTIC INFORMATION AND PROCEDURES > INTERIOR ACCENT LIGHTING MALFUNCTION (WITHOUT C70) > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Front Floor Console Flood Lamp Replacement
- Front Side Door Inside Handle Illumination Lamp Replacement
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > INTERIOR ACCENT LIGHTING MALFUNCTION (WITH C70) > 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 INFORMATION AND PROCEDURES > INTERIOR ACCENT LIGHTING MALFUNCTION (WITH C70) > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
LED Accent Lamps Signal 1 - Terminal 17 X1	B053A 02	3	3	-
LED Accent Lamps Signal 2 - Terminal 26 X6	B053B 02	3	3	-
Accent Lamp Control Module B+ (with C70)	2	2	-	-
Accent Lamps - Control Terminal 2 X1 (with C70)	2	2	2	-
Accent Lamps Control 1 - Terminal 22 X7	B255F 02	B255F 04	1	-
Accent Lamps Control 2 - Terminal 23 X1	B255D 02	B255D 04	B255D 01	-
Accent Lamp Control Module Ground (with C70)	-	2	-	-

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Accent Lamp - Left Instrument Panel Ground	-	1	-	-
Accent Lamp - Right Instrument Panel Ground	-	1	-	-
Flood Lamp - Center Console Ground	-	1	-	-
Flood Lamp - Driver Door Handle Ground	-	1	-	-
Flood Lamp - Passenger Door Handle Ground	-	1	-	-
Floor Accent Lamp - Left Front Ground	-	1	-	-
Floor Accent Lamp - Right Front Ground	-	1	-	-
Accent Lamp - Driver Door Lower Ground (with C70)	-	2	-	-
Accent Lamp - Driver Door Upper Ground (with C70)	-	2	-	-
Accent Lamp - Left Instrument Panel Ground (with C70)	-	2	-	-
Accent Lamp - Right Instrument Panel Ground (with C70)	-	2	-	-
Accent Lamp - Passenger Door Lower Ground (with C70)	-	2	-	-
Accent Lamp - Passenger Door Upper Ground (with C70)	-	2	-	-
Floor Accent Lamp - Left Front Ground (with C70)	-	2	-	-
Floor Accent Lamp - Right Front Ground (with C70)	-	2	-	-
Rear Compartment Accent Lamp - Ground (with C70)	-	2	-	-
1. Interior Accent Lighting Malfunction 2. Interior Accent Lamp Control Module Malfunction 3. Interior Accent Light Pipes Color/Mode Malfunction				

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DIAGNOSTIC INFORMATION AND PROCEDURES > INTERIOR ACCENT LIGHTING MALFUNCTION (WITH C70) > CIRCUIT/SYSTEM DESCRIPTION

The body control module (BCM) supplies battery voltage to the center console flood lamp as well as the

accent lamp control module via the accent lamps control circuit. When a door is opened the BCM applies battery voltage to the center console flood lamp as well as the accent lamp control module illuminating all of the accent lighting. The accent lamp control module receives the signal from the BCM and responds by applying voltage to the accent lighting that is controlled by the accent lamp control module. The accent lamp control module monitors this input from the BCM for dimming purposes and adjusts the brightness level based on the input from the BCM. All accent lighting will remain illuminated until all doors are closed and the ignition is OFF. The accent lighting remains illuminated with the ignition ON.

The accent lamp control module is capable of providing 24 separate colors for accent lighting. In addition to the 24 colors, the accent lamp control module contains 3 modes that consist of fade, transition, and car show. The accent lamp control module receives signals from the BCM that are used by the accent lamp control module to change the color of the accent lighting as well as the various modes the accent lighting can be displayed. The BCM provides two pulse width modulated signal circuits to the accent lamp control module, LED accent lamps signal 1 terminal 17 X1 and LED accent lamps signal 2 terminal 26 X6. When the accent lighting color selection switch is operated, a serial data message is sent via the Human Machine Interface Module to the BCM. The BCM responds to the accent lighting color selection by applying a pulse width modulated voltage to the accent lamp control module. The accent lamp control module interprets the pulse width modulated voltage and apply's the appropriate color based on this voltage to the accent lamps. Accent lighting mode selection operates in the same manner. When the accent lighting mode selection switch is operated, a serial data message is sent via the Human Machine Interface Module to the BCM. The BCM responds to the accent lighting mode selection by applying a pulse width modulated voltage to the accent lamp control module. The accent lamp control module interprets the pulse width modulated voltage and apply's the appropriate mode based on this voltage to the accent lamps.

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DIAGNOSTIC INFORMATION AND PROCEDURES > INTERIOR ACCENT LIGHTING MALFUNCTION (WITH C70) > REFERENCE INFORMATION

Schematic Reference

Interior Lights Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

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

DIAGNOSTIC INFORMATION AND PROCEDURES > INTERIOR ACCENT LIGHTING MALFUNCTION (WITH C70) > CIRCUIT/SYSTEM VERIFICATION

1. Ignition ON.
2. Verify the accent lamps for the components listed below, if equipped, dim from LOW to HIGH while operating the dimmer switch from LOW to HIGH.
    1. E1AA Floor Accent Lamp - Left Front
    2. E1AB Floor Accent Lamp - Right Front
    3. E1G Accent Lamp - Left Instrument Panel
    4. E1H Accent Lamp - Right Instrument Panel
    5. E38 Flood Lamp - Center Console
    6. E63D Flood Lamp - Driver Door Handle
    7. E63P Flood Lamp - Passenger Door Handle

    1. **If the accent lamps do not dim from LOW to HIGH**

        Refer to Circuit/System Testing - Interior Accent Lighting Malfunction.

    1. **If the accent lamps dim from LOW to HIGH**
3. Verify the accent light pipes for the components listed below, if equipped, dim from LOW to HIGH while operating the dimmer switch from LOW to HIGH.
    1. E1AA Floor Accent Lamp - Left Front
    2. E1AB Floor Accent Lamp - Right Front
    3. E1AC Accent Lamp- Center Console Cupholder
    4. E1AR Rear Compartment Accent Lamp
    5. E1D Accent Lamp - Driver Door Upper
    6. E1D Accent Lamp - Driver Door Lower
    7. E1G Accent Lamp - Left Instrument Panel
    8. E1H Accent Lamp - Right Instrument Panel
    9. E1P Accent Lamp - Passenger Door Upper
    10. E1P Accent Lamp - Passenger Door Lower

    1. **If the accent light pipes do not dim from LOW to HIGH**

        Refer to Circuit/System Testing - Interior Accent Light Pipes Malfunction.

    1. **If the accent light pipes dim from LOW to HIGH**

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4. Verify the accent light pipes for the components listed below, if equipped, change colors and animation modes while operating the color/mode selection switches.
    1. E1AA Floor Accent Lamp - Left Front
    2. E1AB Floor Accent Lamp - Right Front
    3. E1AC Accent Lamp- Center Console Cupholder
    4. E1AR Rear Compartment Accent Lamp
    5. E1D Accent Lamp - Driver Door Upper
    6. E1D Accent Lamp - Driver Door Lower
    7. E1G Accent Lamp - Left Instrument Panel
    8. E1H Accent Lamp - Right Instrument Panel
    9. E1P Accent Lamp - Passenger Door Upper
    10. E1P Accent Lamp - Passenger Door Lower
        1. **If the accent light pipes do not change colors or modes**

            Refer to Circuit/System Testing - Interior Accent Light Pipes Color/Mode Malfunction.
        1. **If the accent light pipes change colors and modes**
5. All OK.

DIAGNOSTIC INFORMATION AND PROCEDURES > INTERIOR ACCENT LIGHTING MALFUNCTION (WITH C70) > CIRCUIT/SYSTEM TESTING

Interior Accent Lighting Malfunction

> *NOTE:*
>
> *Each component may need to be disconnected to isolate a short to voltage, short to ground, or an open/high resistance. Use the schematics to identify the following:*
>
> *1. Courtesy lamps the vehicle is equipped with*
>
> *2. Each component's control and ground circuit terminals*
>
> *3. Component locations on the exterior courtesy lamps control circuit*

1. Ignition OFF, scan tool disconnected, all doors closed, all accessories OFF, open and close drivers door, disconnect the harness connector at the appropriate component listed below. It may take up to 2 min for all vehicle systems to power down.
    1. E1AA Floor Accent Lamp - Left Front
    2. E1AB Floor Accent Lamp - Right Front

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3. E1G Accent Lamp - Left Instrument Panel
4. E1H Accent Lamp - Right Instrument Panel
5. E38 Flood Lamp - Center Console
6. E63D Flood Lamp - Driver Door Handle
7. E63P Flood Lamp - Passenger Door Handle

2. Test for less than 15 Ω between the appropriate ground circuit terminal listed below and ground.
    1. E1AA Floor Accent Lamp - Left Front terminal 3
    2. E1AB Floor Accent Lamp - Right Front terminal 3
    3. E1G Accent Lamp - Left Instrument Panel terminal 3
    4. E1H Accent Lamp - Right Instrument Panel terminal 3
    5. E38 Flood Lamp - Center Console terminal 2
    6. E63D Flood Lamp - Driver Door Handle terminal 2
    7. E63P Flood Lamp - Passenger Door Handle terminal 2

    1. **If 15 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.

    1. **If less than 15 Ω**

3. Connect a test lamp between the appropriate control circuit terminal listed below and ground, ignition ON.
    1. E1AA Floor Accent Lamp - Left Front terminal 1
    2. E1AB Floor Accent Lamp - Right Front terminal 1
    3. E1G Accent Lamp - Left Instrument Panel terminal 1
    4. E1H Accent Lamp - Right Instrument Panel terminal 1
    5. E38 Flood Lamp - Center Console terminal 1
    6. E63D Flood Lamp - Driver Door Handle terminal 1
    7. E63P Flood Lamp - Passenger Door Handle terminal 1
    8. K126 Accent Lamp Control Module terminal 5 (with C70)

4. Verify the test lamp turns ON and OFF when commanding the appropriate accent lighting

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command listed below ON and OFF with a scan tool.

1. Accent Lighting 1 - terminal 22 X7
2. Accent Lighting 2 - terminal 23 X1

1. **If the test lamp is always OFF**
    1. Ignition OFF, disconnect the appropriate harness connector listed below at the K9 Body Control Module.
        1. X1
        2. X7
    2. Test for infinite resistance between the control circuit and ground.
        1. If less than infinite resistance, repair the short to ground on the circuit.
        1. If infinite resistance
    3. Test for less than 2 Ω in the control circuit end to end.
        1. If 2 Ω or greater, repair the open/high resistance in the circuit.
        2. If less than 2 Ω, replace the K9 Body Control Module.

1. **If the test lamp is always ON**
    1. Ignition OFF, disconnect the appropriate harness connector listed below at the K9 Body Control Module, ignition ON.
        1. X1
        2. X7
    2. Test for less than 1 V between the control circuit terminal and ground.
        1. If 1 V or greater, repair the short to voltage on the circuit.
        2. If less than 1 V, replace the K9 Body Control Module.

1. **If the test lamp turns ON and OFF**

5. Test or replace the accent/flood lamp.

Interior Accent Light Pipes Malfunction

> *NOTE:*
>
> *Each component may need to be disconnected to isolate a short to voltage, short to ground, or an open/high resistance. Use the schematics to identify the following:*
>
> *1. Courtesy lamps the vehicle is equipped with*
>
> *2. Each component's control and ground circuit terminals*
>
> *3. Component locations on the exterior courtesy lamps control circuit*

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1. Ignition OFF, scan tool disconnected, all doors closed, all accessories OFF, open and close drivers door, disconnect the X1 harness connector at the K126 Accent Lamp Control Module. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 15 Ω between the ground circuit terminal 18 and ground.
    1. **If 15 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 15 Ω**
3. Ignition ON.
4. Verify a test lamp illuminates between the B+ circuit terminal 1 and ground.
    1. **If the test lamp does not illuminate**
        1. Ignition OFF, disconnect the X3 harness connector at the X53A Fuse Block - Rear Body.
        2. Test for infinite resistance between the B+ circuit terminal 1 and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the X53A Fuse Block - Rear Body.
    1. **If the test lamp illuminates**
5. Ignition OFF, connect the X1 harness connector at the K126 Accent Lamp Control Module.
6. Disconnect the harness connector at the appropriate component listed below. It may take up to 2 min for all vehicle systems to power down.
    1. E1AA Floor Accent Lamp - Left Front
    2. E1AB Floor Accent Lamp - Right Front
    3. E1AC Accent Lamp- Center Console Cupholder
    4. E1AR Rear Compartment Accent Lamp
    5. E1D Accent Lamp - Driver Door Upper
    6. E1D Accent Lamp - Driver Door Lower

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7. E1G Accent Lamp - Left Instrument Panel
8. E1H Accent Lamp - Right Instrument Panel
9. E1P Accent Lamp - Passenger Door Upper
10. E1P Accent Lamp - Passenger Door Lower

7. Test for less than 15 Ω between the appropriate ground circuit terminal listed below and ground.
    1. E1AA Floor Accent Lamp - Left Front terminal 3
    2. E1AB Floor Accent Lamp - Right Front terminal 3
    3. E1AC Accent Lamp- Center Console Cupholder terminal 2
    4. E1AR Rear Compartment Accent Lamp terminal 3
    5. E1D Accent Lamp - Driver Door Upper terminal 2
    6. E1D Accent Lamp - Driver Door Lower terminal 2
    7. E1G Accent Lamp - Left Instrument Panel terminal 2
    8. E1H Accent Lamp - Right Instrument Panel terminal 2
    9. E1P Accent Lamp - Passenger Door Upper terminal 2
    10. E1P Accent Lamp - Passenger Door Lower terminal 2

    1. **If 15 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.

    1. **If less than 15 Ω**

8. Connect a test lamp between the appropriate control circuit terminal listed below and ground, ignition ON.
    1. E1AA Floor Accent Lamp - Left Front terminal 1
    2. E1AB Floor Accent Lamp - Right Front terminal 1
    3. E1AC Accent Lamp- Center Console Cupholder terminal 3
    4. E1AR Rear Compartment Accent Lamp terminal 1
    5. E1D Accent Lamp - Driver Door Upper terminal 3
    6. E1D Accent Lamp - Driver Door Lower terminal 3
    7. E1G Accent Lamp - Left Instrument Panel terminal 3

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8. E1H Accent Lamp - Right Instrument Panel terminal 3
9. E1P Accent Lamp - Passenger Door Upper terminal 3
10. E1P Accent Lamp - Passenger Door Lower terminal 3

9. Verify the test lamp turns ON and OFF when commanding the Accent Lighting 1 command ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the X1 harness connector at the K126 Accent Lamp Control Module.
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K126 Accent Lamp Control Module.
    1. **If the test lamp is always ON**
        1. Ignition OFF, disconnect the X1 harness connector at the K126 Accent Lamp Control Module, ignition ON.
        2. Test for less than 1 V between the control circuit terminal and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            2. If less than 1 V, replace the K126 Accent Lamp Control Module.
    1. **If the test lamp turns ON and OFF**
10. Test or replace the E1 Accent Lamp.

Interior Accent Light Pipes Color/Mode Malfunction

1. Ignition OFF, disconnect the X1 harness connector at the K126 Accent Lamp Control Module, ignition ON.
2. Verify a test lamp illuminates between each control circuit terminal listed below and ground.
    1. Terminal 3
    2. Terminal 4
    1. **If the test lamp does not illuminate**
        1. Ignition OFF, disconnect the appropriate harness connector listed below at the K9 Body Control Module.
            1. X1

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2. X6

2. Test for infinite resistance between the control circuit and ground.

    1. If less than infinite resistance, repair the short to ground on the circuit.

    1. If infinite resistance

3. Test for less than 2 Ω in the control circuit end to end.

    1. If 2 Ω or greater, repair the open/high resistance in the circuit.

    2. If less than 2 Ω, replace the K9 Body Control Module.

1. **If the test lamp illuminates**

3. Ignition OFF, disconnect the X1 and X6 harness connectors at the K9 Body Control Module, ignition ON.

4. Verify a test lamp does not illuminate between each control circuit terminal listed below and ground.

    1. Terminal 3

    2. Terminal 4

    1. **If the test lamp illuminates**

        1. Ignition ON.

        2. Test for less than 1 V between the control circuit terminal and ground.

            1. If 1 V or greater, repair the short to voltage on the circuit.

    1. **If the test lamp does not illuminate**

5. Test or replace the K126 Accent Lamp Control Module.

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DIAGNOSTIC INFORMATION AND PROCEDURES > INTERIOR ACCENT LIGHTING MALFUNCTION (WITH C70) > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Interior Lamp Control Module Replacement
- Front Floor Console Flood Lamp Replacement
- Front Side Door Inside Handle Illumination Lamp Replacement
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > INTERIOR BACKLIGHTING 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 INFORMATION AND PROCEDURES > INTERIOR BACKLIGHTING MALFUNCTION > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Instrument Panel Dimmer Switch B+	B1395 03, B3600 03	B1395 03, B3600 03	B1395 07, B3600 07	-
Instrument Panel Dimmer Switch Signal	B1395 03, B3600 03	B1395 03, B3600 03	B1395 07, B3600 07	-
LED Backlight Dimming Control Terminal 8 X2	B2610 02	B2610 04	B2610 04	-
LED Backlight Dimming Control Terminal 9 X7	B2610 02	B2610 04	B2610 04	-
Switch Indicator LED Backlight Dimming Control Terminal 5 X1	B2625 02	B2625 04	B2625 01	-
Door Lock Switch - Driver Amber Indicator Control	4	4	4	-
Door Lock Switch - Passenger Amber Indicator Control	4	4	4	-
Passenger Air Bag Disable Indicator Backlighting Control	3	3	3	-
Steering Wheel Controls Switch - Left Heated Steering Wheel Amber Indicator Control	5	5	5	-
Instrument Panel Dimmer Switch Low Reference	1	1	1	-
Dome/Reading Lamps - Left Front Ground	-	2	-	-
Dome/Reading Lamps - Right Front Ground	-	2	-	-
Door Lock Switch - Driver Ground	-	2	-	-
Door Lock Switch - Passenger Ground	-	2	-	-

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Folding Top Control Switch Ground	-	2	-	-
Garage Door Opener Ground	-	2	-	-
Hazard Warning Switch Ground	-	2	-	-
Headlamp Leveling Switch Ground	-	2	-	-
Head - Up Display Switch Ground	-	2	-	-
Ignition Mode Switch Ground	-	2	-	-
Instrument Panel Dimmer Switch Ground	-	2	-	-
Park Brake Control Switch Ground	-	2	-	-
Passenger Air Bag Disable Indicator Backlighting Ground	-	3	-	-
Rear Compartment Lid Unlatch Switch - Interior Ground	-	2	-	-
Seat Memory Switch - Driver Ground	-	2	-	-
Steering Wheel Controls Switch - Radio Presets Ground	-	2	-	-
Steering Wheel Controls Switch - Radio Presets Ground	-	2	-	-
Steering Wheel Controls Switch - Left Ground	-	2	-	-
Steering Wheel Controls Switch - Right Ground	-	2	-	-
Sunroof Switch Ground	-	2	-	-
Window Switch - Passenger Ground	-	2	-	-
Vehicle Stability Control Switch Ground	-	2	-	-

1. Dimmer Switch Malfunction
2. Interior Backlighting Malfunction
3. Passenger Air Bag Disable Indicator Backlighting Malfunction
4. Door Lock Indicator Malfunction
5. Heated Steering Wheel Indicator Malfunction

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DIAGNOSTIC INFORMATION AND PROCEDURES > INTERIOR BACKLIGHTING

MALFUNCTION > CIRCUIT/SYSTEM DESCRIPTION

The instrument panel dimmer switch is used to increase and decrease the brightness of the interior backlighting components. The instrument panel dimmer switch provides a voltage signal to the body control module (BCM) that will increase as the brightness of the lights are increased and decrease as the brightness of the lights are decreased. The BCM provides a low reference, signal, and B+ voltage reference to the instrument panel dimmer switch. When the instrument panel dimmer switch is placed in the desired position, the dimmed voltage setting is applied from the instrument panel dimmer switch through the instrument panel dimmer switch signal circuit to the BCM. The BCM interprets the signal and applies a pulse width modulated voltage through the LED dimming 1 and dimming 2 control circuits illuminating the interior backlighting to the requested level of brightness. The BCM also sends a serial data message to the following components requesting there backlighting be adjusted to the level selected by the instrument panel dimmer switch:

- Info Display Module
- Instrument Cluster
- Mirror Control Module
- Transmission Shift Lever Position Indicator
- Window Switch - Driver

The backlighting for the switch indicators listed below are controlled by the Switch Indicator LED Backlight Dimming Control Terminal 5 X1.

- Driver Door Lock Switch Indicator
- Heated Steering Wheel Indicator
- Passenger Door Lock Switch Indicator

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DIAGNOSTIC INFORMATION AND PROCEDURES > INTERIOR BACKLIGHTING MALFUNCTION > DIAGNOSTIC AIDS

When a fault is present in the Switch Indicator LED Backlight Dimming Control Terminal 5 X1 circuit, it is necessary to remove the negative battery cable for 30 seconds after the fault has been repaired.

DIAGNOSTIC INFORMATION AND PROCEDURES > INTERIOR BACKLIGHTING MALFUNCTION > REFERENCE INFORMATION

Schematic Reference

- Interior Lights Dimming Schematics
- SIR Schematics
- Object Detection Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

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

DIAGNOSTIC INFORMATION AND PROCEDURES > INTERIOR BACKLIGHTING MALFUNCTION > CIRCUIT/SYSTEM VERIFICATION

1. Ignition ON.
2. Verify the scan tool LED Backlight Dimming Command parameter changes between a high percentage to a low percentage while operating the dimmer switch from high to low.
    1. **If the parameter does not change**

        Refer to Circuit/System Testing - Dimmer Switch Malfunction.

    1. **If the parameter changes**
3. Verify the switch backlighting/amber indicators for the components listed below dim from LOW to HIGH while operating the dimmer switch from LOW to HIGH.
    1. Driver Door Lock Switch Indicator
    2. Heated Steering Wheel Indicator
    3. Passenger Door Lock Switch Indicator
    1. **If the switch backlighting/amber indicators do not dim from LOW to HIGH**

        Refer to Circuit/System Testing - Switch Indicator LED Backlighting Malfunction.

    1. **If the switch backlighting/amber indicators dim from LOW to HIGH**
4. Verify all backlighting components turn ON and OFF while commanding the LED Backlight Dimming ON and OFF with a scan tool.
    1. **If all backlighting components do not turn ON and OFF**

        Refer to Circuit/System Testing - Interior Backlighting Malfunction.

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1. **If all backlighting components turn ON and OFF**

5. Verify the phrase PASSENGER AIR BAG is illuminated on the Passenger Air Bag Disable Indicator.

    1. **If the phrase PASSENGER AIR BAG is not illuminated**

       Refer to Circuit/System Testing - Passenger Air Bag Disable Indicator Backlighting Malfunction.

    1. **If the phrase PASSENGER AIR BAG is illuminated**

6. All OK.

DIAGNOSTIC INFORMATION AND PROCEDURES > INTERIOR BACKLIGHTING MALFUNCTION > CIRCUIT/SYSTEM TESTING

Dimmer Switch Malfunction

1. Ignition OFF and all vehicle systems OFF, disconnect the harness connector at the S36 Instrument Panel Dimmer Switch, ignition ON.

2. Test for B+ between the B+ circuit terminal 6 and ground.

    1. **If less than B+**

        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module.

        2. Test for infinite resistance between the B+ circuit and ground.

            1. If less than infinite resistance, repair the short to ground on the circuit.

            1. If infinite resistance

        3. Test for less than 2 Ω in the B+ circuit end to end.

            1. If 2 Ω or greater, repair the open/high resistance in the circuit.

            2. If less than 2 Ω, replace the K9 Body Control Module.

    1. **If B+**

3. Verify a test lamp illuminates between the B+ circuit terminal 6 and the low reference circuit terminal 1.

    1. **If the test lamp does not illuminate**

        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module, ignition ON.

        2. Test for less than 1 V between the low reference circuit terminal 1 and ground.

            1. If 1 V or greater, repair the short to voltage on the circuit.

            1. If less than 1 V

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3. Test for less than 2 Ω in the low reference circuit end to end.
    1. If 2 Ω or greater, repair the open/high resistance in the circuit.
    2. If less than 2 Ω, replace the K9 Body Control Module.

1. **If the test lamp illuminates**

4. Verify a test lamp does not illuminate between the B+ circuit terminal 6 and the signal circuit terminal 2.
    1. **If the test lamp illuminates**
        1. Ignition OFF, disconnect the X2 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the signal circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            2. If infinite resistance, replace the K9 Body Control Module.
    1. **If the test lamp does not illuminate**
5. Test for B+ between the B+ circuit terminal 6 and the signal circuit terminal 2.
    1. **If less than B+**
        1. Ignition OFF, disconnect the X2 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the signal circuit terminal 2 and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            1. If less than 1 V
        3. Test for less than 2 Ω in the signal circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If B+**
6. Test or replace the S36 Instrument Panel Dimmer Switch.

Interior Backlighting Malfunction

> *NOTE:*
>
> *Each component with backlighting may need to be disconnected to isolate a short to voltage or short to ground. Use the schematics to identify the following:*
>
> 1. *Backlighting components the vehicle is equipped with*
> 2. *Each component's control and ground circuit terminals*
> 3. *Component locations on the backlighting control circuit*

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1. Ignition OFF, scan tool disconnected, all doors closed, all accessories OFF, open and close drivers door, disconnect the harness connector at the component with inoperative backlighting. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the appropriate ground circuit terminal and ground.
    1. **If 10 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 10 Ω**
3. Connect a test lamp between the appropriate control circuit terminal and ground, ignition ON.
4. Verify the test lamp turns ON and OFF when commanding the LED Backlight Dimming ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the appropriate harness connector listed below at the K9 Body Control Module.
            1. X2 terminal 8
            2. X7 terminal 9
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If the test lamp is always ON**
        1. Ignition OFF, disconnect the appropriate harness connector listed below at the K9 Body Control Module, ignition ON.
            1. X2 terminal 8
            2. X7 terminal 9
        2. Test for less than 1 V between the control circuit terminal and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.

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2. If less than 1 V, replace the K9 Body Control Module.

1. **If the test lamp turns ON and OFF**

5. Test or replace the component with inoperative backlighting.

Switch Indicator LED Backlighting Malfunction

1. Ignition OFF, disconnect the harness connectors at the components listed below.
    1. S13D Door Lock Switch - Driver
    2. S13P Door Lock Switch - Passenger
    3. S70L Steering Wheel Controls Switch - Left
2. Ignition ON, place the S36 Instrument Panel Dimmer Switch in the HIGH position for high backlighting intensity.

> *NOTE:*
>
> *The test lamp in the following step will illuminate at LOW intensity. This is normal circuit operation and does not indicate a circuit malfunction.*

3. Verify a test lamp illuminates between each control circuit terminal listed below and ground.
    1. S13D Door Lock Switch - Driver terminal 5
    2. S13P Door Lock Switch - Passenger terminal 5
    3. S70L Steering Wheel Controls Switch - Left terminal 7
    1. **If the test lamp does not illuminate**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If the test lamp illuminates**
4. Place the S36 Instrument Panel Dimmer Switch in the LOW position for low backlighting intensity.
5. Verify a test lamp does not illuminate at FULL intensity between each control circuit terminal listed below and ground.

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1. S13D Door Lock Switch - Driver terminal 5
2. S13P Door Lock Switch - Passenger terminal 5
3. S70L Steering Wheel Controls Switch - Left terminal 7

1. **If the test lamp illuminates at full intensity**

    1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module, ignition ON.
    2. Test for less than 1 V between the control circuit terminal and ground.

        1. If 1 V or greater, repair the short to voltage on the circuit.
        2. If less than 1 V, replace the K9 Body Control Module.

1. **If the test lamp does not illuminate at full intensity**

6. Test or replace the appropriate component.

Passenger Air Bag Disable Indicator Backlighting Malfunction

1. Ignition OFF, scan tool disconnected, all doors closed, all accessories OFF, open and close drivers door, disconnect the harness connector at the P14 Passenger Air Bag Disable Indicator. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 2 and ground.

    1. **If 10 Ω or greater**

        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.

            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.

    1. **If less than 10 Ω**

3. Connect a test lamp between the control circuit terminal 4 and ground.
4. Verify the test lamp turns ON and OFF while turning the ignition switch ON and OFF.

    1. **If the test lamp is always OFF**

        1. Ignition OFF, disconnect the X3 harness connector at the X50A Fuse Block - Underhood.
        2. Test for infinite resistance between the control circuit and ground.

            1. If less than infinite resistance, repair the short to ground on the circuit.

            1. If infinite resistance

        3. Test for less than 2 Ω in the control circuit end to end.

            1. If 2 Ω or greater, repair the open/high resistance in the circuit.

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2. If less than 2 Ω, replace the X50A Fuse Block - Underhood.

1. **If the test lamp is always ON**

    1. Ignition OFF, disconnect the X3 harness connector at the X50A Fuse Block - Underhood, ignition ON.
    2. Test for less than 1 V between the control circuit terminal and ground.
        1. If 1 V or greater, repair the short to voltage on the circuit.
        2. If less than 1 V, replace the X50A Fuse Block - Underhood.

1. **If the test lamp turns ON and OFF**

5. Test or replace the P14 Passenger Air Bag Disable Indicator.

DIAGNOSTIC INFORMATION AND PROCEDURES > INTERIOR BACKLIGHTING MALFUNCTION > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Sunroof Switch Replacement
- Dimmer Switch Replacement
- Instrument Panel Airbag Arming Status Display Replacement (Coupe) Instrument Panel Airbag Arming Status Display Replacement (Convertible)
- Door Lock Switch Replacement - Driver Side
- Door Lock Switch Replacement - Passenger Front
- Garage Door Opener Transmitter Pushbutton Replacement (Coupe) Garage Door Opener Transmitter Pushbutton Replacement (Convertible)
- Parking Brake Switch Replacement
- Ignition and Start Switch Replacement
- Steering Wheel Spoke Cover Replacement
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > 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.

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DIAGNOSTIC INFORMATION AND PROCEDURES > PARK, LICENSE, AND/OR TAIL LAMPS MALFUNCTION > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
F11DA (BCM 1) B+ Fuse	B1325 03, B3265 01, B3265 04, B3873 01, B3873 04, B3883 01, B3883 04, C0297 01	B1325 03, B3265 01, B3265 04, B3873 01, B3873 04, B3883 01, B3883 04, C0297 01	-	-
F12DA (BCM 5) B+ Fuse	B3938 01, B3938 04	B3938 01, B3938 04	-	-
Turn Signal/Multifunction Switch Park Lamps ON Signal	2	B257A 00	2	-
License Plate Lamps Control	B3883 02	B3883 01, B3883 04	B3883 01, B3883 04	-
Park/Daytime Running Lamp - Left Control (uplevel)	B260D 02	3	3	-
Park/Daytime Running Lamp - Right Control (uplevel)	B260E 02	3	3	-
Park/Daytime Running Lamp - Left Lower Control (base)	B25F0 02	3	3	-
Park/Daytime Running Lamp - Right Lower Control (base)	B25F1 02	3	3	-
Park Lamps Control - Left	B2585 02	B2585 04	B2585 01	-
Park Lamps Control - Right	B3867 02	B3867 04	B3867 01	-
License Plate Lamp Ground - Left	-	1	-	-
License Plate Lamp Ground - Right	-	1	-	-
Park/Daytime Running Lamp - Left Ground (uplevel)	-	3	-	-
Park/Daytime Running Lamp - Right Ground (uplevel)	-	3	-	-
Park/Daytime Running Lamp - Left Lower Ground (base)	-	3	-	-
Park/Daytime Running Lamp - Right Lower Ground (base)	-	3	-	-

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Park Lamp Ground - Left Front	-	1	-	-
Park Lamp Ground - Right Front	-	1	-	-
Side Marker Lamp Ground - Left Front	-	1	-	-
Side Marker Lamp Ground - Left Rear	-	1	-	-
Side Marker Lamp Ground - Right Front	-	1	-	-
Side Marker Lamp Ground - Right Rear	-	1	-	-
Tail Lamp Ground - Left	-	1	-	-
Tail Lamp Ground - Right	-	1	-	-
Turn Signal/Multifunction Switch Ground	-	2	-	-
1. Park, License, and/or Tail Lamps Malfunction 2. Turn Signal/Multifunction Switch Malfunction 3. Daytime Running Lamps Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > PARK, LICENSE, AND/OR TAIL LAMPS MALFUNCTION > CIRCUIT/SYSTEM DESCRIPTION

When the headlamp switch is placed in the HEAD or PARK position, ground is applied to the park lamp switch ON signal circuit to the body control module (BCM). The BCM responds by applying voltage to the park lamps, tail lamps, and license lamps control circuits illuminating the park, tail, and license lamps.

DIAGNOSTIC INFORMATION AND PROCEDURES > PARK, LICENSE, AND/OR TAIL LAMPS MALFUNCTION > DIAGNOSTIC AIDS

When testing at the park/marker/license lamp bulb sockets, make sure all measurements and test lamp connections are in the correct terminal location and do not come in contact with each other during testing.

DIAGNOSTIC INFORMATION AND PROCEDURES > PARK, LICENSE, AND/OR TAIL LAMPS MALFUNCTION > REFERENCE INFORMATION

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

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COMPONENT CONNECTOR END VIEWS - INDEX

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

DIAGNOSTIC INFORMATION AND PROCEDURES > PARK, LICENSE, AND/OR TAIL LAMPS MALFUNCTION > CIRCUIT/SYSTEM VERIFICATION

1. Ignition ON.
2. Verify the scan tool Park Lamps Switch parameter changes between Active and Inactive while commanding the park lamps ON and OFF with the turn signal/multifunction switch.
    1. **If the parameter does not change**

        Refer to Circuit/System Testing - Turn Signal/Multifunction Switch Malfunction.

    1. **If the parameter changes**
3. Verify the left park lamps turn ON and OFF when commanding the Left Park Lamps ON and OFF with a scan tool.
    1. **If the left park lamps do not turn ON and OFF**

        Refer to Circuit/System Testing - Park Lamps Malfunction.

    1. **If the left park lamps turn ON and OFF**
4. Verify the right park lamps turn ON and OFF when commanding the Right Park Lamps ON and OFF with a scan tool.
    1. **If the right park lamps do not turn ON and OFF**

        Refer to Circuit/System Testing - Park Lamps Malfunction.

    1. **If the right park lamps turn ON and OFF**
5. Verify the license plate lamps turn ON and OFF when commanding the License Plate Lamps ON and OFF with a scan tool.
    1. **If the license plate lamps do not turn ON and OFF**

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Refer to Circuit/System Testing - License Plate Lamps Malfunction.

1. **If the license plate lamps turn ON and OFF**

6. All OK.

DIAGNOSTIC INFORMATION AND PROCEDURES > PARK, LICENSE, AND/OR TAIL LAMPS MALFUNCTION > CIRCUIT/SYSTEM TESTING

Turn Signal/Multifunction Switch Malfunction

1. Ignition OFF, scan tool disconnected, all doors closed, all accessories OFF, open and close drivers door, disconnect the harness connector at the S78 Turn Signal/Multifunction Switch. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 6 and ground.
    1. **If 10 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 10 Ω**
3. Ignition ON.
4. Verify the scan tool Park Lamps Switch parameter is Inactive.
    1. **If not Inactive**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the signal circuit terminal 7 and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            2. If infinite resistance, replace the K9 Body Control Module.
    1. **If Inactive**
5. Install a 3 A fused jumper wire between the signal circuit terminal 7 and ground.
6. Verify the scan tool Park Lamps Switch parameter is Active.
    1. **If not Active**
        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the signal circuit terminal 7 and ground.

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1. If 1 V or greater, repair the short to voltage on the circuit.
1. If less than 1 V

3. Test for less than 2 Ω in the signal circuit end to end.
1. If 2 Ω or greater, repair the open/high resistance in the circuit.
2. If less than 2 Ω, replace the K9 Body Control Module.

1. **If Active**

7. Test or replace the S78 Turn Signal/Multifunction Switch.

Park Lamps Malfunction

1. Ignition OFF, exterior lamps OFF, disconnect the harness connector at the appropriate component listed below. It may take up to 2 min for all vehicle systems to power down.
1. E4J Park Lamp - Left Front
2. E2LF Side Marker Lamp - Left Front
3. E2LR Side Marker Lamp- Left Rear
4. E5E Tail Lamp - Left
5. E4K Park Lamp - Right Front
6. E2RF Side Marker Lamp - Right Front
7. E2RR Side Marker Lamp- Right Rear
8. E5F Tail Lamp - Right

2. Test for less than 15 Ω between the appropriate ground circuit terminal listed below and ground.
1. E4J Park Lamp - Left Front socket terminal
2. E2LF Side Marker Lamp - Left Front terminal 1
3. E2LR Side Marker Lamp- Left Rear terminal 1
4. E5E Tail Lamp - Left terminal B (without WRS/TW7)
5. E5E Tail Lamp - Left terminal 6 (with WRS/TW7)
6. E4K Park Lamp - Right Front socket terminal
7. E2RF Side Marker Lamp - Right Front terminal 1
8. E2RR Side Marker Lamp- Right Rear terminal 1
9. E5F Tail Lamp - Right terminal B (without WRS/TW7)
10. E5F Tail Lamp - Right terminal 6 (with WRS/TW7)
1. **If 15 Ω or greater**

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1. Ignition OFF.
2. Test for less than 2 Ω in the ground circuit end to end.
    1. If 2 Ω or greater, repair the open/high resistance in the circuit.
    2. If less than 2 Ω, repair the open/high resistance in the ground connection.

1. **If less than 15 Ω**

3. Connect a test lamp between the appropriate control circuit terminal listed below and ground, ignition ON.
    1. E4J Park Lamp - Left Front socket terminal
    2. E2LF Side Marker Lamp - Left Front terminal 2
    3. E2LR Side Marker Lamp- Left Rear terminal 2
    4. E5E Tail Lamp - Left terminal A (without WRS/TW7)
    5. E5E Tail Lamp - Left terminal 5 (with WRS/TW7)
    6. E4K Park Lamp - Right Front socket terminal
    7. E2RF Side Marker Lamp - Right Front terminal 2
    8. E2RR Side Marker Lamp- Right Rear terminal 2
    9. E5F Tail Lamp - Right terminal A (without WRS/TW7)
    10. E5F Tail Lamp - Right terminal 5 (with WRS/TW7)
4. Verify the test lamp turns ON and OFF when commanding the appropriate Park Lamps ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the appropriate harness connector listed below at the K9 Body Control Module.
            1. X4 - left park lamps
            2. X5 - right park lamps
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If the test lamp is always ON**

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1. Ignition OFF, disconnect the appropriate harness connector listed below at the K9 Body Control Module, ignition ON.
    1. X4 - left park lamps
    2. X5 - right park lamps
2. Test for less than 1 V between the control circuit terminal and ground.
    1. If 1 V or greater, repair the short to voltage on the circuit.
    2. If less than 1 V, replace the K9 Body Control Module.

1. **If the test lamp turns ON and OFF**

5. Test or replace the park/marker lamp.

License Plate Lamps Malfunction

1. Ignition OFF, exterior lamps OFF, remove both E7 License Plate Lamps. It may take up to 2 min for all vehicle systems to power down. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 5 Ω between the ground circuit terminal 2 and ground.
    1. **If 5 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.

    1. **If less than 5 Ω**
3. Connect a test lamp between the E7L License Plate Lamp - Left control circuit terminal 1 and ground, ignition ON.
4. Verify the test lamp turns ON and OFF when commanding the License Plate Lamps ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.

            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.

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1. **If the test lamp is always ON**
    1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module, ignition ON.
    2. Test for less than 1 V between the control circuit terminal and ground.
        1. If 1 V or greater, repair the short to voltage on the circuit.
        2. If less than 1 V, replace the K9 Body Control Module.
1. **If the test lamp turns ON and OFF**

5. Connect a test lamp between the E7R License Plate Lamp - Right control circuit terminal 1 and ground, ignition ON.
6. Verify the test lamp turns ON and OFF when commanding the License Plate Lamps ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If the test lamp turns ON and OFF**
7. Test or replace the E7 License Plate Lamp.

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DIAGNOSTIC INFORMATION AND PROCEDURES > PARK, LICENSE, AND/OR TAIL LAMPS MALFUNCTION > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Rear License Plate Lamp Bulb Replacement
- Turn Signal Switch Replacement
- Front Side Marker Lamp Bulb Replacement
- Rear Body Structure Stop Lamp Replacement
- Rear Fascia Auxiliary Signal Lamp Replacement
- Rear Fascia Lower Signal Lamp Replacement Rear Fascia Lower Signal Lamp Replacement (Center)

- Tail Bulb Replacement
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > REAR COMPARTMENT 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.

DIAGNOSTIC INFORMATION AND PROCEDURES > REAR COMPARTMENT LAMP MALFUNCTION > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Rear Compartment Courtesy Lamp Control	B2570 02	B2570 04	B2570 04	-
Rear Compartment Courtesy Lamp Ground	-	1	-	-
1. Rear Compartment Lamp Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > REAR COMPARTMENT LAMP MALFUNCTION > CIRCUIT/SYSTEM DESCRIPTION

The body control module (BCM) applies battery voltage to the rear compartment courtesy lamps through the rear compartment lamp control circuit. When the BCM receives a rear compartment lid open input from the rear compartment lid latch, the BCM applies battery voltage to the rear compartment lamp control circuit illuminating the rear compartment courtesy lamps. In the event that the rear compartment lamps were to remain illuminated for more than 10 minutes with the ignition switch in the OFF position, the BCM will deactivate the rear compartment lamp control circuit to prevent total battery discharge.

DIAGNOSTIC INFORMATION AND PROCEDURES > REAR COMPARTMENT LAMP MALFUNCTION > REFERENCE INFORMATION

Schematic Reference

Interior Lights Schematics

Connector End View Reference

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- Testing for Intermittent Conditions and Poor Connections
- Wiring Repairs

Scan Tool Reference

Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > REAR COMPARTMENT LAMP MALFUNCTION > CIRCUIT/SYSTEM TESTING

1. Ignition OFF, exterior lamps OFF, disconnect the harness connectors at the E8S Rear Compartment Courtesy Lamp. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between each ground circuit terminal 2 and ground.
    1. **If 10 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.
    1. **If less than 10 Ω**
3. Connect a test lamp between each control circuit terminal 1 and ground, ignition ON.
4. Verify the test lamp turns ON and OFF when commanding the Trunk Lamp ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the X7 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.

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1. If 2 Ω or greater, repair the open/high resistance in the circuit.
2. If less than 2 Ω, replace the K9 Body Control Module.

1. **If the test lamp is always ON**
    1. Ignition OFF, disconnect the X7 harness connector at the K9 Body Control Module, ignition ON.
    2. Test for less than 1 V between the control circuit terminal and ground.
        1. If 1 V or greater, repair the short to voltage on the circuit.
        2. If less than 1 V, replace the K9 Body Control Module.

1. **If the test lamp turns ON and OFF**

5. Test or replace the E8S Rear Compartment Courtesy Lamp.

DIAGNOSTIC INFORMATION AND PROCEDURES > REAR COMPARTMENT LAMP MALFUNCTION > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > 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.

DIAGNOSTIC INFORMATION AND PROCEDURES > STOP LAMPS MALFUNCTION > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Brake Pedal Position Sensor 5 V Reference	C0277 06, C0890 03, U042B 00, U0415 00, U0422 00	C0277 06, U042B 00, U0415 00, U0422 00	C0277 07, C0890 07, U042B 00, U0415 00, U0422 00	-

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Brake Pedal Position Sensor Signal	C0277 06, U042B 00, U0415 00, U0422 00	C0277 06, U042B 00, U0415 00, U0422 00	C0277 07, C0890 07, U042B 00, U0415 00, U0422 00	C0277 09
Center High Mounted Stop Lamp Control	B3884 02	B3884 01, B3884 04	B3884 01, B3884 04	-
Stop Lamp - Left Control	1	1	1	-
Stop Lamp - Right Control	1	1	1	-
Brake Pedal Position Sensor Low Reference	-	C0277 07, U042B 00, U0415 00, U0422 00	1	-
Center High Mounted Stop Lamp Ground	-	2	-	-
Tail Lamp Assembly - Left Ground	-	1	-	-
Tail Lamp Assembly - Right Ground	-	1	-	-
1. Stop Lamps Malfunction 2. Center High Mounted Stop Lamp Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > STOP LAMPS MALFUNCTION > CIRCUIT/SYSTEM DESCRIPTION

The brake pedal position sensor is used to sense the action of the driver application of the brake pedal. The brake pedal position sensor provides an analog voltage signal that will increase as the brake pedal is applied. The body control module (BCM) provides a low reference signal and a 5 V reference voltage to the brake pedal position sensor. When the variable signal reaches a voltage threshold indicating the brakes have been applied, the BCM will apply battery voltage to the left and right stop lamp control circuits as well as the center high mounted stop lamp control circuit illuminating the left and right stop lamps and the center high mounted stop lamp.

DIAGNOSTIC INFORMATION AND PROCEDURES > STOP LAMPS MALFUNCTION > DIAGNOSTIC AIDS

When testing at the stop lamp bulb sockets, make sure all measurements and test lamp connections are in the correct terminal location and do not come in contact with each other during testing.

DIAGNOSTIC INFORMATION AND PROCEDURES > STOP LAMPS MALFUNCTION > REFERENCE INFORMATION

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

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- Wiring Repairs

Scan Tool Reference

Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > STOP LAMPS MALFUNCTION > CIRCUIT/SYSTEM VERIFICATION

1. Ignition ON.
2. Verify the scan tool Brake Pedal Applied parameter changes between Active and Inactive while pressing and releasing the brake pedal.
    1. **If the parameter does not change**

        Refer to Circuit/System Testing - Brake Pedal Position Sensor Malfunction.

    1. **If the parameter changes**
3. Verify the left brake lamp turns ON and OFF when commanding the Left Stop Lamp ON and OFF with a scan tool.
    1. **If the left brake lamp does not turn ON and OFF**

        Refer to Circuit/System Testing - Stop Lamps Malfunction.

    1. **If the left brake lamp turns ON and OFF**
4. Verify the right brake lamp turns ON and OFF when commanding the Right Stop Lamp ON and OFF with a scan tool.
    1. **If the right brake lamp does not turn ON and OFF**

        Refer to Circuit/System Testing - Stop Lamps Malfunction.

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1. **If the right brake lamp turns ON and OFF**

5. Verify the center high mounted stop lamp turns ON and OFF when commanding the Center Stop Lamp ON and OFF with a scan tool.

    1. **If the center high mounted stop does not turn ON and OFF**

        Refer to Circuit/System Testing - Center High Mount Stop Lamp Malfunction.

    1. **If the center high mounted stop turns ON and OFF**

6. All OK.

DIAGNOSTIC INFORMATION AND PROCEDURES > STOP LAMPS MALFUNCTION > CIRCUIT/SYSTEM TESTING

Brake Pedal Position Sensor Malfunction

1. Ignition OFF, disconnect the harness connector at the B22 Brake Pedal Position Sensor, ignition ON.
2. Test for less than 1 V between the low reference circuit terminal 2 and ground.

    1. **If 1 V or greater**

        1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the low reference circuit and ground.

            1. If 1 V or greater, repair the short to voltage on the circuit.
            2. If less than 1 V, replace the K9 Body Control Module.

    1. **If less than 1 V**

3. Test or replace the B22 Brake Pedal Position Sensor.

Stop Lamps Malfunction

1. Ignition OFF, exterior lamps OFF, disconnect the harness connector at the appropriate component listed below. It may take up to 2 min for all vehicle systems to power down.

    1. E5AM Stop/Turn Signal Lamp - Left (without WRS/TW7)
    2. E5AN Stop/Turn Signal Lamp - Right (without WRS/TW7)
    3. E5AM Stop/Turn Signal Lamp - Left (with WRS without TW7)
    4. E5AN Stop/Turn Signal Lamp - Right (with WRS without TW7)
    5. E5L Stop Lamp - Left (with TW7)
    6. E5R Stop Lamp - Right (with TW7)

2. Test for less than 15 Ω between the appropriate ground circuit terminal listed below and

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ground.

1. E5AM Stop/Turn Signal Lamp - Left socket terminal (without WRS/TW7)
2. E5AN Stop/Turn Signal Lamp - Right socket terminal (without WRS/TW7)
3. E5AM Stop/Turn Signal Lamp - Left terminal 6 (with WRS without TW7)
4. E5AN Stop/Turn Signal Lamp - Right terminal 6 (with WRS without TW7)
5. E5L Stop Lamp - Left terminal 6 (with TW7)
6. E5R Stop Lamp - Right terminal 6 (with TW7)

1. **If 15 Ω or greater**
    1. Ignition OFF.
    2. Test for less than 2 Ω in the ground circuit end to end.
        1. If 2 Ω or greater, repair the open/high resistance in the circuit.
        2. If less than 2 Ω, repair the open/high resistance in the ground connection.

1. **If less than 15 Ω**

3. Connect a test lamp between the appropriate control circuit terminal listed below and ground, ignition ON.
    1. E5AM Stop/Turn Signal Lamp - Left socket terminal (without WRS/TW7)
    2. E5AN Stop/Turn Signal Lamp - Right socket terminal (without WRS/TW7)
    3. E5AM Stop/Turn Signal Lamp - Left terminal 1 (with WRS without TW7)
    4. E5AN Stop/Turn Signal Lamp - Right terminal 1 (with WRS without TW7)
    5. E5L Stop Lamp - Left terminal 1 (with TW7)
    6. E5R Stop Lamp - Right terminal 1 (with TW7)
4. Verify the test lamp turns ON and OFF when commanding the appropriate Stop Lamp ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the appropriate harness connector listed below at the K9 Body Control Module.
            1. X4 right stop lamp
            2. X5 left stop lamp
            3. X7 right stop lamp (with TW7)
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.

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1. If infinite resistance

3. Test for less than 2 Ω in the control circuit end to end.

    1. If 2 Ω or greater, repair the open/high resistance in the circuit.

    2. If less than 2 Ω, replace the K9 Body Control Module.

1. **If the test lamp is always ON**

    1. Ignition OFF, disconnect the appropriate harness connector listed below at the K9 Body Control Module, ignition ON.

        1. X4 right stop lamp

        2. X5 left stop lamp

        3. X7 right stop lamp (with TW7)

    2. Test for less than 1 V between the control circuit terminal and ground.

        1. If 1 V or greater, repair the short to voltage on the circuit.

        2. If less than 1 V, replace the K9 Body Control Module.

1. **If the test lamp turns ON and OFF**

5. Test or replace the stop lamp.

Center High Mount Stop Lamp Malfunction

1. Ignition OFF, exterior lamps OFF, disconnect the harness connector at the E6 Center High Mounted Stop Lamp. It may take up to 2 min for all vehicle systems to power down.

2. Test for less than 15 Ω between the ground circuit terminal A and ground.

    1. **If 15 Ω or greater**

        1. Ignition OFF.

        2. Test for less than 2 Ω in the ground circuit end to end.

            1. If 2 Ω or greater, repair the open/high resistance in the circuit.

            2. If less than 2 Ω, repair the open/high resistance in the ground connection.

    1. **If less than 15 Ω**

3. Connect a test lamp between the control circuit terminal B and ground, ignition ON.

4. Verify the test lamp turns ON and OFF when commanding the Center Stop Lamp ON and OFF with a scan tool.

    1. **If the test lamp is always OFF**

        1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module.

        2. Test for infinite resistance between the control circuit and ground.

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1. If less than infinite resistance, repair the short to ground on the circuit.
1. If infinite resistance

3. Test for less than 2 Ω in the control circuit end to end.
1. If 2 Ω or greater, repair the open/high resistance in the circuit.
2. If less than 2 Ω, replace the K9 Body Control Module.

1. **If the test lamp is always ON**
1. Ignition OFF, disconnect the X4 harness connector at the K9 Body Control Module, ignition ON.
2. Test for less than 1 V between the control circuit terminal and ground.
1. If 1 V or greater, repair the short to voltage on the circuit.
2. If less than 1 V, replace the K9 Body Control Module.

1. **If the test lamp turns ON and OFF**

5. Test or replace the E6 Center High Mounted Stop Lamp.

DIAGNOSTIC INFORMATION AND PROCEDURES > STOP LAMPS MALFUNCTION > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- High Mount Stop Lamp Replacement
- Rear Body Structure Stop Lamp Replacement
- Turn Signal Bulb Replacement - Left Side (LTG) Turn Signal Bulb Replacement - Left Side (LGX) Turn Signal Bulb Replacement - Left Side (LT1)
- Turn Signal Bulb Replacement - Right Side
- Brake Pedal Position Sensor Replacement
- Brake Pedal Position Sensor Calibration
- Control Module References for BCM replacement, programming, and setup

DIAGNOSTIC INFORMATION AND PROCEDURES > 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.

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DIAGNOSTIC INFORMATION AND PROCEDURES > TURN SIGNAL LAMPS AND/OR INDICATORS MALFUNCTION > DIAGNOSTIC FAULT INFORMATION

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
F4UA (BCM 6) Fuse B+	U152D 00, B2355 06	U152D 00, B2355 06	-	-
F6RA (BCM 4) Fuse B+	1	1	-	-
F31UA (BCM 7) Fuse B+	1	1	-	-
F43RA (BCM 3) Fuse B+	1	1	-	-
Turn Signal Switch Signal - Left	2	2	2	-
Turn Signal Switch Signal - Right	2	2	2	-
Turn Signal Lamp Outage Detection Signal - Left Rear	3	3	3	-
Turn Signal Lamp Outage Detection Signal - Right Rear	3	3	3	-
Turn Signal Control - Left Front	B3948 02	B3948 01, B3948 04	1	-
Turn Signal Control - Left Rear (with TW7)	B3950 02	B3950 01, B3950 04	1	-
Stop/Turn Signal Lamp Control - Left Rear (without TW7)	B3950 02	B3950 01, B3950 04	1	-
Turn Signal Control - Right Front	B3949 02	B3949 01, B3949 04	1	-
Turn Signal Control - Right Rear (with TW7)	B3951 02	B3951 01, B3951 04	1	-
Stop/Turn Signal Lamp Control - Right Rear (without TW7)	B3951 02	B3951 01, B3951 04	1	-
Outside Rearview Mirror - Driver Ground	-	1	-	-
Outside Rearview Mirror - Passenger Ground	-	1	-	-
Turn Signal Lamp - Left Front Ground	-	1	-	-
Turn Signal Lamp - Right Front Ground	-	1	-	-
Tail Lamp Assembly - Left Rear Ground	-	1	-	-

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Tail Lamp Assembly - Right Rear Ground	-	1	-	-
Turn Signal/Multifunction Switch Ground	-	1	-	-
1. Turn Signal Lamps and/or Indicators Malfunction 2. Turn Signal/Multifunction Switch Malfunction 3. Turn Signal Lamp Outage Detection Malfunction				

DIAGNOSTIC INFORMATION AND PROCEDURES > TURN SIGNAL LAMPS AND/OR INDICATORS MALFUNCTION > CIRCUIT/SYSTEM DESCRIPTION

Ground is applied at all times to the turn signal/multifunction switch. The turn signal lamps may only be activated with the ignition switch in the ON or START positions. When the turn signal/multifunction switch is placed in either the turn right or turn left position, ground is applied to the body control module (BCM) through either the right turn or left turn signal switch signal circuit. The BCM responds to the turn signal switch input by applying a pulsating voltage to the front and rear turn signal lamps through there respective control circuits. When a turn signal request is received by the BCM, a serial data message is sent to the instrument cluster requesting the respective turn signal indicator be pulsed ON and OFF.

DIAGNOSTIC INFORMATION AND PROCEDURES > TURN SIGNAL LAMPS AND/OR INDICATORS MALFUNCTION > DIAGNOSTIC AIDS

When testing at the turn signal lamp bulb sockets, make sure all measurements and test lamp connections are in the correct terminal location and do not come in contact with each other during testing.

DIAGNOSTIC INFORMATION AND PROCEDURES > TURN SIGNAL LAMPS AND/OR INDICATORS MALFUNCTION > REFERENCE INFORMATION

Schematic Reference

- Exterior Lights Schematics
- Body Control System Schematics

Connector End View Reference

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- Wiring Repairs

Scan Tool Reference

Control Module References for scan tool information

DIAGNOSTIC INFORMATION AND PROCEDURES > TURN SIGNAL LAMPS AND/OR INDICATORS MALFUNCTION > CIRCUIT/SYSTEM VERIFICATION

1. Ignition ON.
2. Verify the scan tool Right Turn Signal Switch and Left Turn Signal Switch parameters change between Active and Inactive while cycling the turn signal switch between the right and left positions.
    1. **If the parameters do not change**

       Refer to Circuit/System Testing - Turn Signal/Multifunction Switch Malfunction.

    1. **If the parameters change**
3. Verify the left front turn signal lamps turn ON and OFF while commanding the Left Front Turn Signal Lamp ON and OFF with a scan tool.
    1. **If the left front turn signal lamps do not turn ON and OFF**

       Refer to Circuit/System Testing - Turn Signal Lamps Malfunction.

    1. **If the left front turn signal lamps turn ON and OFF**
4. Verify the right front turn signal lamps turn ON and OFF while commanding the Right Front Turn Signal Lamp ON and OFF with a scan tool.
    1. **If the right front turn signal lamps do not turn ON and OFF**

       Refer to Circuit/System Testing - Turn Signal Lamps Malfunction.

    1. **If the right front turn signal lamps turn ON and OFF**
5. Verify the left rear turn signal lamp turns ON and OFF while commanding the Left Rear Turn Signal/Stop Lamp ON and OFF with a scan tool.
    1. **If the left rear turn signal lamp does not turn ON and OFF**

       Refer to Circuit/System Testing - Turn Signal Lamps Malfunction.

    1. **If the left rear turn signal lamp turns ON and OFF**
6. Verify the right rear turn signal lamp turns ON and OFF while commanding the Right Rear Turn Signal/Stop Lamp ON and OFF with a scan tool.
    1. **If the right rear turn signal lamp does not turn ON and OFF**

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Refer to Circuit/System Testing - Turn Signal Lamps Malfunction.

1. **If the right rear turn signal lamp turns ON and OFF**

7. Observe the left and right turn signal lamps and turn signal indicators on the instrument cluster while activating the left and right turn signals. The left and right turn signal lamps and indicators should illuminate and flash at a normal rate when turned ON.

    1. **If the left and right turn signal lamps and indictors illuminate but flash in a rapid manner**

        Refer to Circuit/System Testing - Turn Signal Lamp Outage Detection Malfunction.

    1. **If the left and right turn signal lamps and indictors operate normally**

8. All OK.

DIAGNOSTIC INFORMATION AND PROCEDURES > TURN SIGNAL LAMPS AND/OR INDICATORS MALFUNCTION > CIRCUIT/SYSTEM TESTING

Turn Signal/Multifunction Switch Malfunction

1. Ignition OFF, scan tool disconnected, all doors closed, all accessories OFF, open and close drivers door, disconnect the harness connector at the S78 Turn Signal/Multifunction Switch. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 6 and ground.

    1. **If 10 Ω or greater**

        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.

            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.

    1. **If less than 10 Ω**

3. Ignition ON.
4. Verify the scan tool Left Turn Signal Switch parameter is Inactive.

    1. **If not Inactive**

        1. Ignition OFF, disconnect the X3 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the signal circuit terminal 5 and ground.

            1. If less than infinite resistance, repair the short to ground on the circuit.
            2. If infinite resistance, replace the K9 Body Control Module.

    1. **If Inactive**

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5. Install a 3 A fused jumper wire between the signal circuit terminal 5 and ground.
6. Verify the scan tool Left Turn Signal Switch parameter is Active.
    1. **If not Active**
        1. Ignition OFF, disconnect the X3 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the signal circuit terminal 5 and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            1. If less than 1 V
        3. Test for less than 2 Ω in the signal circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If Active**
7. Verify the scan tool Right Turn Signal Switch parameter is Inactive.
    1. **If not Inactive**
        1. Ignition OFF, disconnect the X3 harness connector at the K9 Body Control Module.
        2. Test for infinite resistance between the signal circuit terminal 4 and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            2. If infinite resistance, replace the K9 Body Control Module.
    1. **If Inactive**
8. Install a 3 A fused jumper wire between the signal circuit terminal 4 and ground.
9. Verify the scan tool Right Turn Signal Switch parameter is Active.
    1. **If not Active**
        1. Ignition OFF, disconnect the X3 harness connector at the K9 Body Control Module, ignition ON.
        2. Test for less than 1 V between the signal circuit terminal 4 and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            1. If less than 1 V
        3. Test for less than 2 Ω in the signal circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If Active**

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10. Test or replace the S78 Turn Signal/Multifunction Switch.

Turn Signal Lamps Malfunction

1. Ignition OFF, disconnect the X1 harness connector at the K9 Body Control Module, ignition ON.
2. Verify a test lamp illuminates between the B+ circuit terminal 2 and ground.
    1. **If the test lamp does not illuminate and the circuit fuse is good**
        1. Ignition OFF, disconnect the X3 harness connector at the X53A Fuse Block - Rear Body.
        2. Test for less than 2 Ω in the B+ circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, verify the fuse is not open and there is voltage at the fuse.
    1. **If the test lamp does not illuminate and the circuit fuse is open**
        1. Ignition OFF, disconnect the X3 harness connector at the X53A Fuse Block - Rear Body.
        2. Test for infinite resistance between the B+ circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            2. If infinite resistance, replace the K9 Body Control Module.
    1. **If the test lamp illuminates**
3. Verify a test lamp illuminates between the B+ circuit terminal 3 and ground.
    1. **If the test lamp does not illuminate and the circuit fuse is good**
        1. Ignition OFF, disconnect the X1 harness connector at the X53A Fuse Block - Rear Body.
        2. Test for less than 2 Ω in the B+ circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, verify the fuse is not open and there is voltage at the fuse.
    1. **If the test lamp does not illuminate and the circuit fuse is open**
        1. Ignition OFF, disconnect the X1 harness connector at the X53A Fuse Block - Rear Body.
        2. Test for infinite resistance between the B+ circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            2. If infinite resistance, replace the K9 Body Control Module.
    1. **If the test lamp illuminates**

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4. Ignition OFF, connect the X1 harness connector at the K9 Body Control Module.
5. Disconnect the X5 harness connector at the K9 Body Control Module, ignition ON.
6. Verify a test lamp illuminates between the B+ circuit terminal 3 and ground.
    1. **If the test lamp does not illuminate and the circuit fuse is good**
        1. Ignition OFF, disconnect the X2 harness connector at the X50A Fuse Block - Underhood.
        2. Test for less than 2 Ω in the B+ circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, verify the fuse is not open and there is voltage at the fuse.
    1. **If the test lamp does not illuminate and the circuit fuse is open**
        1. Ignition OFF, disconnect the X2 harness connector at the X50A Fuse Block - Underhood.
        2. Test for infinite resistance between the B+ circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            2. If infinite resistance, replace the K9 Body Control Module.
    1. **If the test lamp illuminates**
7. Verify a test lamp illuminates between the B+ circuit terminal 4 and ground.
    1. **If the test lamp does not illuminate and the circuit fuse is good**
        1. Ignition OFF, disconnect the X2 harness connector at the X50A Fuse Block - Underhood.
        2. Test for less than 2 Ω in the B+ circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, verify the fuse is not open and there is voltage at the fuse.
    1. **If the test lamp does not illuminate and the circuit fuse is open**
        1. Ignition OFF, disconnect the X2 harness connector at the X50A Fuse Block - Underhood.
        2. Test for infinite resistance between the B+ circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            2. If infinite resistance, replace the K9 Body Control Module.
    1. **If the test lamp illuminates**
8. Ignition OFF, connect the X5 harness connector at the K9 Body Control Module.
9. Ignition OFF, exterior lamps OFF, disconnect the harness connector at the appropriate turn

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signal lamp. It may take up to 2 min for all vehicle systems to power down.

10. Test for less than 15 Ω between the appropriate ground circuit terminal listed below and ground.
    1. A9A Outside Rearview - Driver terminal 5
    2. A9B Outside Rearview - Passenger terminal 5
    3. E4LF Turn Signal Lamp - Left Front socket terminal
    4. E4RF Turn Signal Lamp - Right Front socket terminal
    5. A5AM Stop/Turn Signal Lamp - Left socket terminal (without WRS/TW7)
    6. A5AM Stop/Turn Signal Lamp - Left terminal 6 (with WRS without TW7)
    7. E4LR Turn Signal Lamp - Left Rear socket terminal (with TW7)
    8. A5AN Stop/Turn Signal Lamp - Right socket terminal (without WRS/TW7)
    9. A5AN Stop/Turn Signal Lamp - Right terminal 6 (with WRS without TW7)
    10. E4RR Turn Signal Lamp - Right Rear socket terminal (with TW7)

    1. **If 15 Ω or greater**
        1. Ignition OFF.
        2. Test for less than 2 Ω in the ground circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, repair the open/high resistance in the ground connection.

    1. **If less than 15 Ω**

11. Connect a test lamp between the appropriate control circuit terminal listed below and ground, ignition ON.
    1. A9A Outside Rearview - Driver terminal 13
    2. A9B Outside Rearview - Passenger terminal 13
    3. E4LF Turn Signal Lamp - Left Front socket terminal
    4. E4RF Turn Signal Lamp - Right Front socket terminal
    5. A5AM Stop/Turn Signal Lamp - Left socket terminal (without WRS/TW7)
    6. A5AM Stop/Turn Signal Lamp - Left terminal 1 (with WRS without TW7)
    7. E4LR Turn Signal Lamp - Left Rear socket terminal (with TW7)
    8. A5AN Stop/Turn Signal Lamp - Right socket terminal (without WRS/TW7)
    9. A5AN Stop/Turn Signal Lamp - Right terminal 1 (with WRS without TW7)
    10. E4RR Turn Signal Lamp - Right Rear socket terminal (with TW7)

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12. Verify the test lamp turns ON and OFF when commanding the appropriate Turn Signal Lamp ON and OFF with a scan tool.
    1. **If the test lamp is always OFF**
        1. Ignition OFF, disconnect the appropriate harness connector listed below at the K9 Body Control Module.
            1. X5 left turn signals
            2. X4 right turn signals
        2. Test for infinite resistance between the control circuit and ground.
            1. If less than infinite resistance, repair the short to ground on the circuit.
            1. If infinite resistance
        3. Test for less than 2 Ω in the control circuit end to end.
            1. If 2 Ω or greater, repair the open/high resistance in the circuit.
            2. If less than 2 Ω, replace the K9 Body Control Module.
    1. **If the test lamp is always ON**
        1. Ignition OFF, disconnect the appropriate harness connector listed below at the K9 Body Control Module, ignition ON.
            1. X5 left turn signals
            2. X4 right turn signals
        2. Test for less than 1 V between the control circuit terminal and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            2. If less than 1 V, replace the K9 Body Control Module.
    1. **If the test lamp turns ON and OFF**
13. Test or replace the turn signal lamp.

Turn Signal Lamp Outage Detection Malfunction

1. Ignition OFF, disconnect the harness connector at the appropriate component listed below, ignition ON.
    1. A5AM Stop/Turn Signal Lamp - Left (with WRS without TW7)
    2. A5AN Stop/Turn Signal Lamp - Right (with WRS without TW7)
2. Test for B+ between the appropriate signal circuit terminal listed below and ground.
    1. A5AM Stop/Turn Signal Lamp - Left terminal 2 (with WRS without TW7)
    2. A5AN Stop/Turn Signal Lamp - Right terminal 2 (with WRS without TW7)
        1. **If not B+**

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1. Ignition OFF, disconnect the appropriate harness connector listed below at the K9 Body Control Module.
    1. X6 left rear turn signal
    2. X7 right rear turn signal
2. Test for infinite resistance between the signal circuit and ground.
    1. If less than infinite resistance, repair the short to ground on the circuit.
    1. If infinite resistance
3. Test for less than 2 Ω in the signal circuit end to end.
    1. If 2 Ω or greater, repair the open/high resistance in the circuit.
    2. If less than 2 Ω, replace the K9 Body Control Module.

1. **If B+**

3. Verify a test lamp does not illuminate between the appropriate signal circuit terminal listed below and ground.
    1. A5AM Stop/Turn Signal Lamp - Left terminal 2 (with WRS without TW7)
    2. A5AN Stop/Turn Signal Lamp - Right terminal 2 (with WRS without TW7)

    1. **If the test lamp illuminates**
        1. Ignition OFF, disconnect the appropriate harness connector listed below at the K9 Body Control Module, ignition ON.
            1. X6 left rear turn signal
            2. X7 right rear turn signal
        2. Test for less than 1 V between the signal circuit terminal and ground.
            1. If 1 V or greater, repair the short to voltage on the circuit.
            2. If less than 1 V, replace the K9 Body Control Module.

    1. **If the test lamp does not illuminate**

4. Test or replace the A5A Stop/Turn Signal Lamp.

DIAGNOSTIC INFORMATION AND PROCEDURES > TURN SIGNAL LAMPS AND/OR INDICATORS MALFUNCTION > REPAIR INSTRUCTIONS

Perform the Diagnostic Repair Verification after completing the repair.

- Turn Signal Switch Replacement
- Outside Rearview Mirror Turn Signal Lamp Replacement

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- Rear Body Structure Stop Lamp Replacement
- Tail Bulb Replacement
- Turn Signal Bulb Replacement - Left Side (LTG) Turn Signal Bulb Replacement - Left Side (LGX) Turn Signal Bulb Replacement - Left Side (LT1)
- Control Module References for BCM replacement, programming, and setup

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Service Manual: LIGHTING SYSTEM - FASTENER SPECIFICATIONS

SPECIFICATIONS > FASTENER SPECIFICATIONS

Application	Specification	
	Metric	English
Brake Pedal Position Sensor Bolt	2.5 N.m	22 lb in
Daytime Running Lamp Screw	2.5 N.m	22 lb in
Front Suspension Automatic Forward Lighting Position Sensor Nut	12 N.m	106 lb in
Headlamp Automatic Control Module Bolt	1.5 N.m	13 lb in
Headlamp Ballast Fastener	2.5 N.m	22 lb in
Headlamp Bolt	2.5 N.m	22 lb in
Headlamp LED Driver Module Fastener	2.5 N.m	22 lb in
High Mount Stop Lamp Fastener	2.5 N.m	22 lb in
Outside Rearview Mirror Fastener	2.5 N.m	22 lb in
Rear Body Structure Stop Lamp Nut	4.7 N.m	42 lb in
Rear Fascia Lower Signal Lamp Fastener	2.5 N.m	22 lb in
Rear Suspension Automatic Forward Lighting Leveling Position Sensor Nut	12 N.m	106 lb in

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Service Manual: LIGHTING SYSTEM - REPAIR INSTRUCTIONS

REPAIR INSTRUCTIONS > WIRE TO WIRE REPAIR - LIGHTING

Special Tools

- **EL-38125-10** Splice Sleeve Crimping Tool (non GMNA)
- **J-38125-5A** Ultra Torch Special Tool
- **J-38125-8** Splice Sleeve Crimping Tool (GMNA)

For equivalent regional tools, refer to Special Tools .

WARNING:

In order to reduce the risk of personal injury, loss of high voltage isolation to ground and higher system impedance, do not attempt to repair any HV wiring, connector, or terminal that is damaged. High voltage coaxial type cables are not repairable. Never attempt to repair a coaxial type cable. The entire cable/harness or component must be replaced. In order to maintain system integrity and personal safety, never attempt to repair any high voltage wiring, cables, or terminals. Performing this procedure on high voltage circuits may result in serious injury or death.

NOTE:

If the wiring harness internal to the transmission is damaged, the wiring harness must be replaced. The use of splice sleeves in an attempt to repair the internal transmission wires, connectors, or terminals could result in performance issues.

NOTE:

Do not splice wires in Door Harness Grommets.

NOTE:

The DuraSeal splice sleeves have the following 2 critical features:

- *A special heat shrink sleeve environmentally seals the splice. The heat shrink sleeve contains a sealing adhesive inside.*
- *A cross hatched (knurled) core crimp provides the necessary low resistance contact integrity for these sensitive, low energy circuits.*

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Use only DuraSeal splice sleeves to form a one-to-one splice on all types of insulation except high voltage and specialty cables. Use DuraSeal splice sleeves where there are special requirements such as moisture sealing. Follow the instructions below in order to splice copper wire using DuraSeal splice sleeves.

Splice Sleeve Selection

Splice Sleeve Color	Crimp Tool Nest Color		Wire Gauge mm^2 / (AWG)
	3 Crimp Nests	4 Crimp Nests	
Salmon (Yellow-Pink) 19300089	Red (1) or Red/Green (1)	Red (2)	0.22-0.8/(18-26)
Blue 19168447	Blue (2)	Blue (3)	1.0-2.0/(14-16)
Yellow 19168448	Yellow (3)	Yellow (4)	3.0-5.0/(10-12)

NOTE:

You must perform the following procedures in the listed order. Repeat the procedure if any wire strands are damaged. You must obtain a clean strip with all of the wire strands intact.

1. Open the harness by removing any tape:
    1. Use a sewing seam ripper, available from sewing supply stores, in order to cut open the harness in order to avoid wire insulation damage.
    2. Use the DuraSeal splice sleeves on all types of insulation except Tefzel and coaxial.
    3. Do not use the crimp and DuraSeal splice sleeve to form a splice with more than 2 wires coming together.
2. Cut as little wire off the harness as possible. You may need the extra length of wire in order to change the location of a splice.

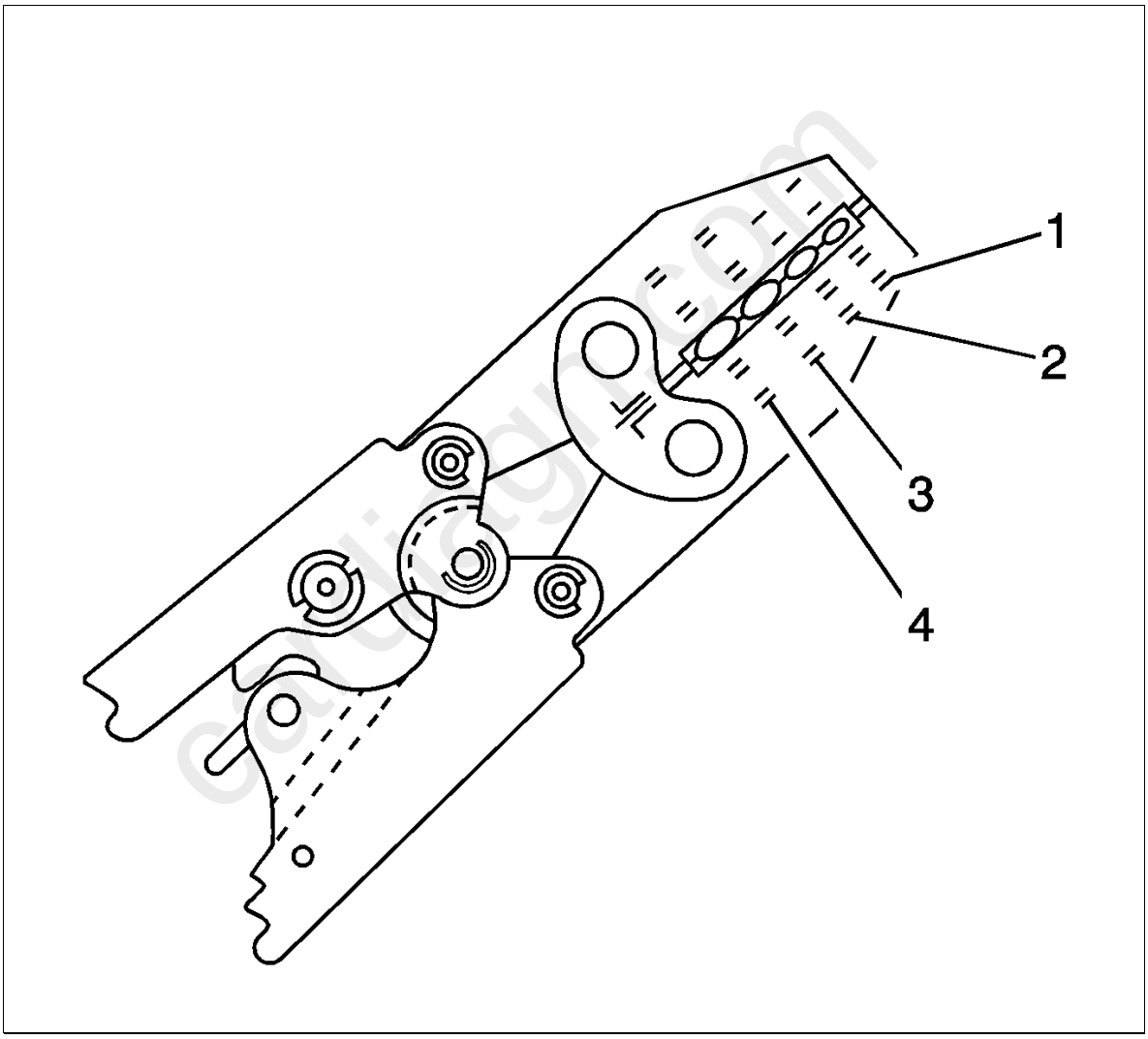
   Adjust splice locations so that each splice is at least 40 mm (1.5 in) away from the other splices, harness branches, or connectors.
3. Strip the insulation:
    1. When adding a length of wire to the existing harness, use the same size wire as the original wire.
    2. Perform one of the following items in order to find the correct wire size:
        1. Find the wire on the schematic and convert to regional wiring gauge size.
        2. If you are unsure of the wire size, begin with the largest opening in the wire stripper and work down until achieving a clean strip of the insulation.

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3. Strip approximately 5.0 mm (0.20 in) of insulation from each wire to be spliced.
4. Do not nick or cut any of the strands. Inspect the stripped wire for nicks or cut strands.
5. If the wire is damaged, repeat this procedure after removing the damaged section.

4. For high temperature wiring, slide a section of high temperature SCT1 shrink tubing down the length of wire to be spliced. Ensure that the shrink tubing will not interfere with the splice procedure.
5. Select the proper DuraSeal splice sleeve according to the wire size. Refer to the above table at the beginning of the repair procedure for the color coding of the DuraSeal splice sleeves and the crimp tool nests.

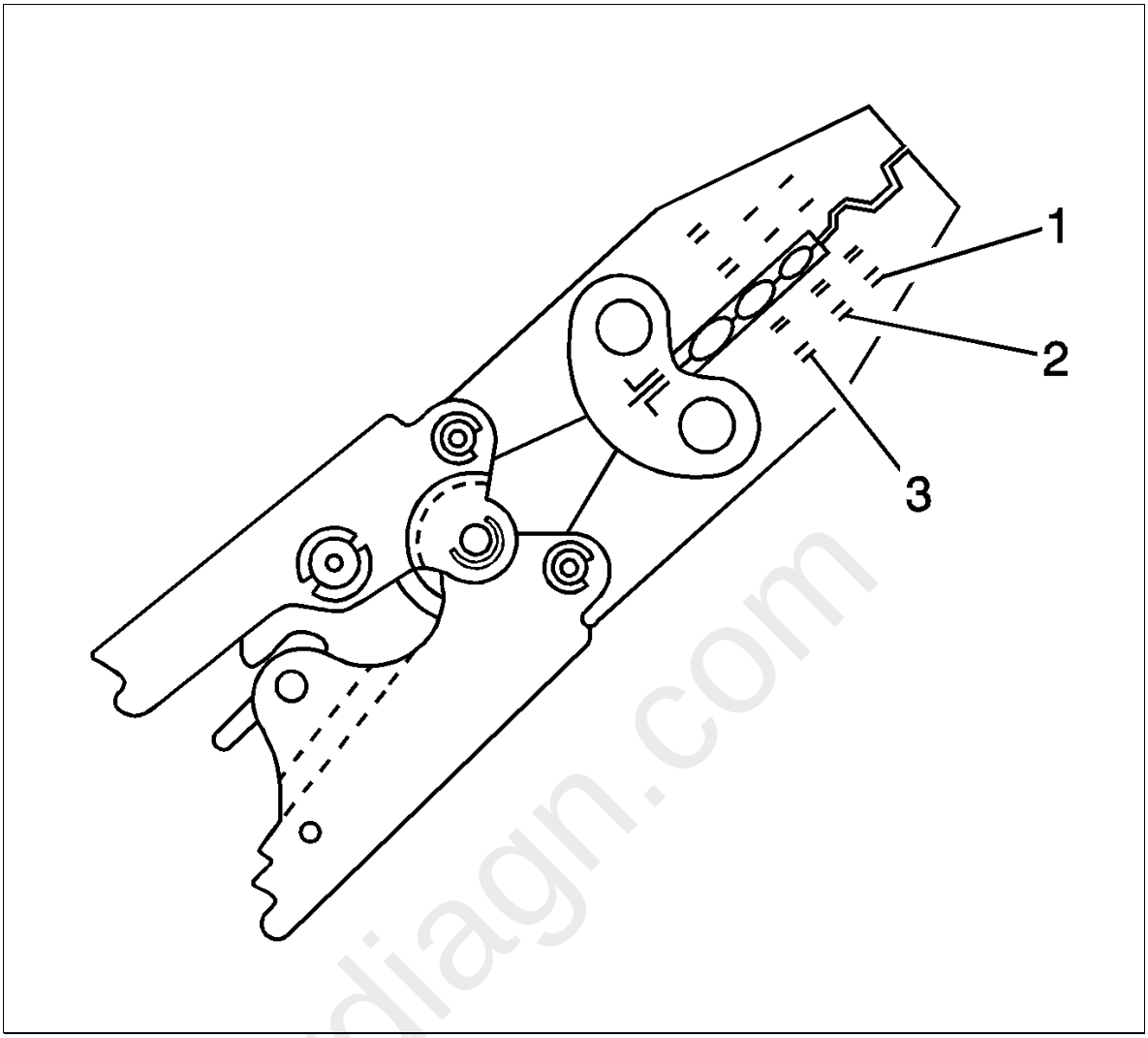
Fig 1: Crimping Tool



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6. The **EL-38125-10** splice sleeve crimping tool has four crimp nests. The largest crimp nest (4) is used for crimping 10 and 12 gauge wires. The second largest crimp nest (3) is used for crimping 14 and 16 gauge wires. The third largest crimp nest (2) is used for crimping 18 and 20 gauge wires. The smallest crimp nest (1) is used for crimping 22 to 26 gauge wires. The crimp nests are referenced in the table (farther above) under the crimp tool nest color.

Fig 2: Splice Crimp Tool Nests Terminal Identification



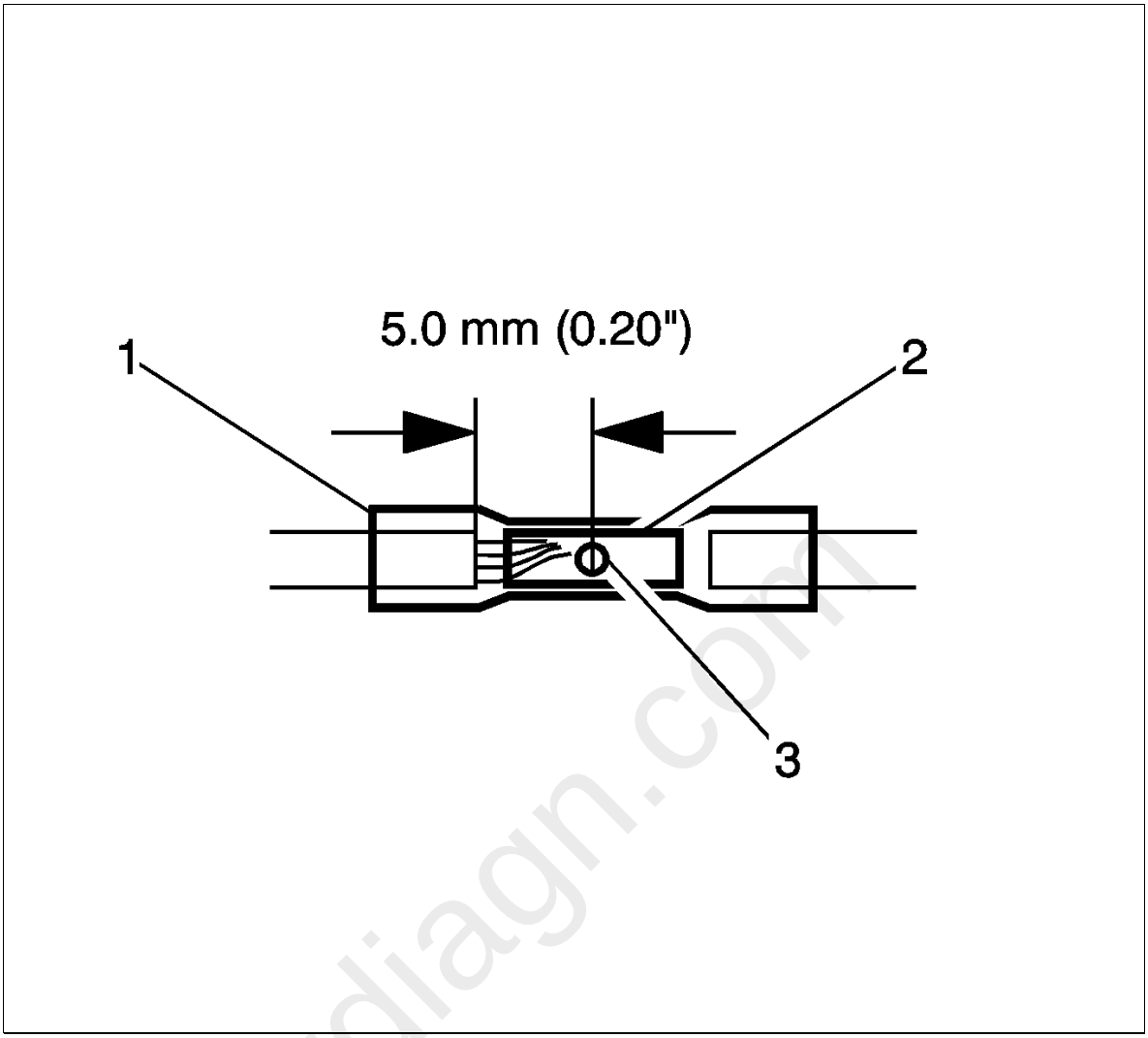
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7. The **J-38125-8** splice sleeve crimping tool has three crimp nests. The largest crimp nest (3) is used for crimping 10 and 12 gauge wires. The second largest crimp nest (2) is used for crimping 14 and 16 gauge wires. The smallest crimp nest (1) is used for crimping 18 to 20 gauge wires. The crimp nests are referenced in the table (farther above) under the crimp tool nest color.

8. Use the splice sleeve crimp tool in order to position the DuraSeal splice sleeve in the proper color nest of the splice sleeve crimp tool. For the four crimp nest tool, use the three largest crimp nests to crimp the splice sleeves. For the three crimp nest tool, use all three crimp nests to crimp the splice sleeves. Use the four and three crimp tool diagrams (above) and the table (farther above) to match the splice sleeve with the correct crimp nest. The crimp tool diagram callout numbers match the numbers in the table (under crimp tool nest color).

Fig 3: Duraseal Splice Sleeve

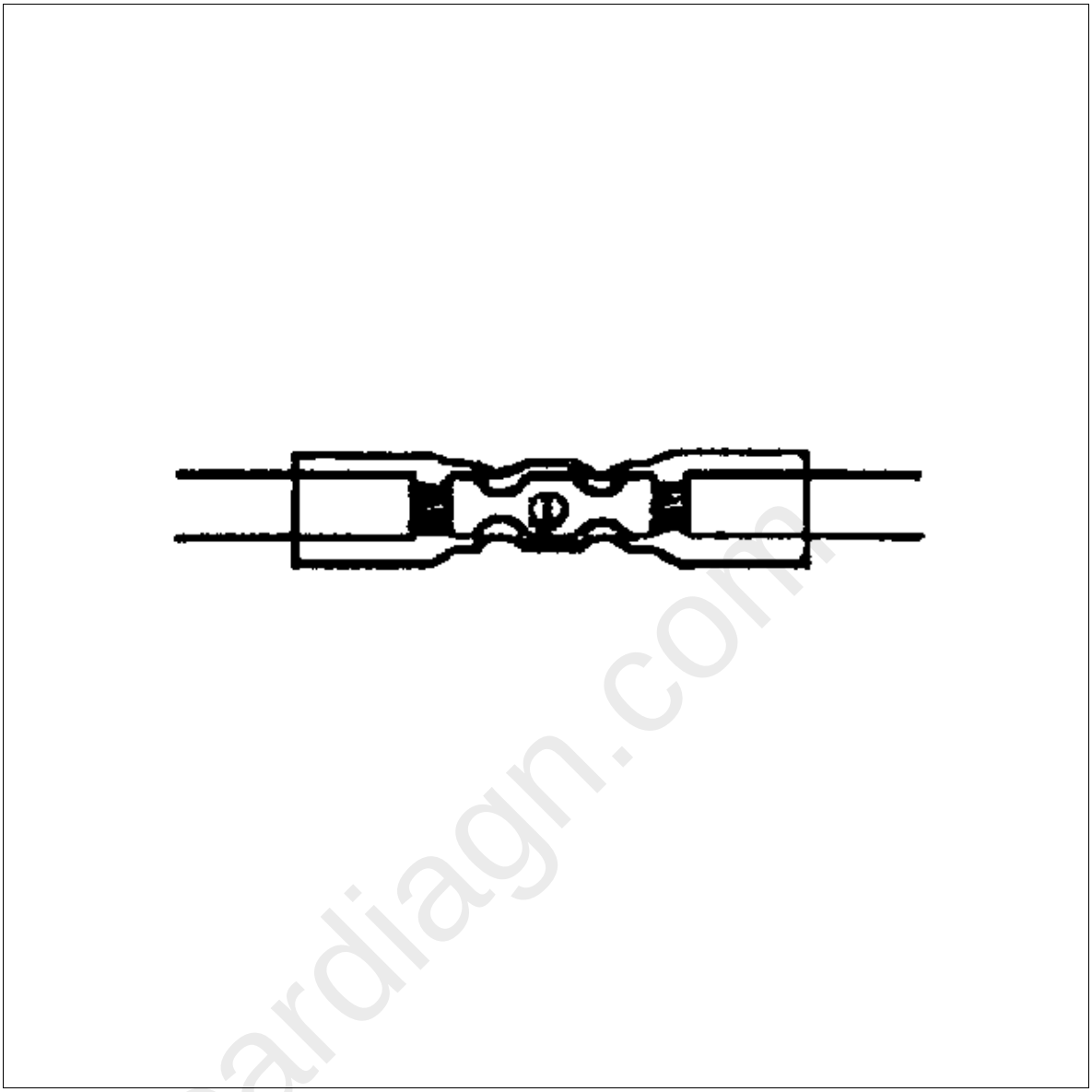


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9. Place the DuraSeal splice sleeve in the nest. Ensure that the crimp falls midway between the end of the barrel and the stop. The sleeve has a stop (3) in the middle of the barrel (2) in order to prevent the wire (1) from going further. Close the hand crimper handles slightly in order to firmly hold the DuraSeal splice sleeve in the proper nest.

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Fig 4: Crimped Duraseal Splice Sleeve



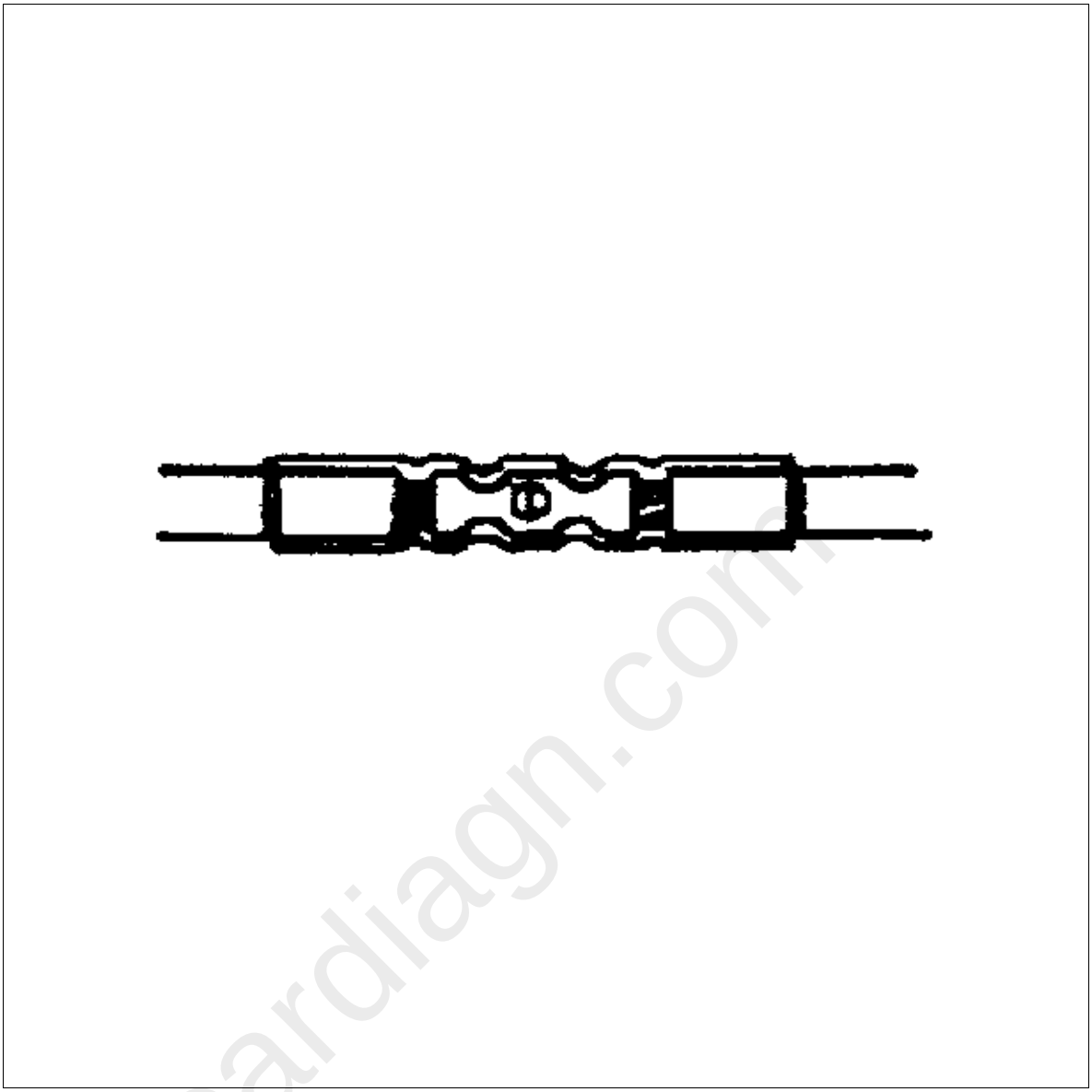
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10. Insert the wire into the splice sleeve barrel until the wire hits the barrel stop. Refer to Folded-Over Wire Repair for splicing wires of 0.35 mm or less (22, 24, 26 gauge sizes) and for splicing wires of different gauges.
11. Tightly close the handles of the crimp tool until the crimper handles open when released.

    The crimper handles will not open until you apply the proper amount of pressure to the DuraSeal splice sleeve. Repeat steps 4 and 6 for the opposite end of the splice.

Fig 5: Crimped Duraseal Splice Sleeve



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12. Using the heat torch, apply heat to the crimped area of the barrel.
13. Start in the middle and gradually move the heat barrel to the open ends of the tubing:
    1. The tubing will shrink completely as the heat is moved along the insulation.
    2. A small amount of sealant will come out of the end of the tubing when sufficient shrinkage is achieved.

REPAIR INSTRUCTIONS > WIRE TO WIRE REPAIR - LIGHTING > HIGH TEMPERATURE WIRING REPAIRS

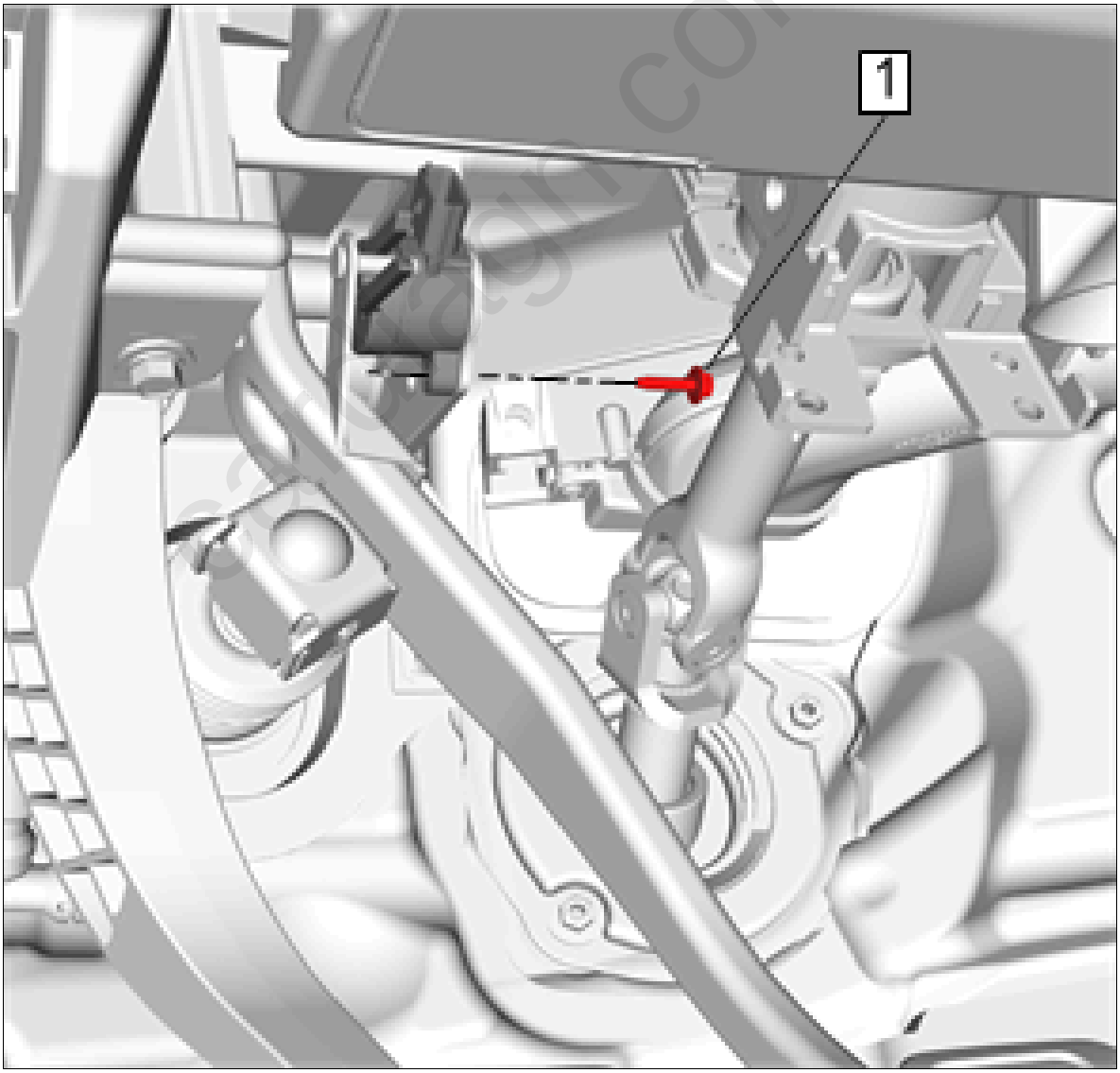
Use the following procedures to perform high temperature wiring repairs:

1. Center the high temperature SCT1 shrink tube over the DuraSeal splice sleeve.
2. Using the heat torch, apply heat to the high temperature heat shrink tubing.
3. Gradually move the heat from the center to the open end of the tubing:
    1. The tubing will shrink completely as the heat is moved along the insulation.
    2. A small amount of sealant will come out of the end of the tubing when sufficient shrinkage is achieved.
4. Replace any reflective tape and clips that may have been removed during the repair.

REPAIR INSTRUCTIONS > BRAKE PEDAL POSITION SENSOR REPLACEMENT > REMOVAL PROCEDURE

1. Brake Pedal Position SensorElectrical Connector»Disconnect

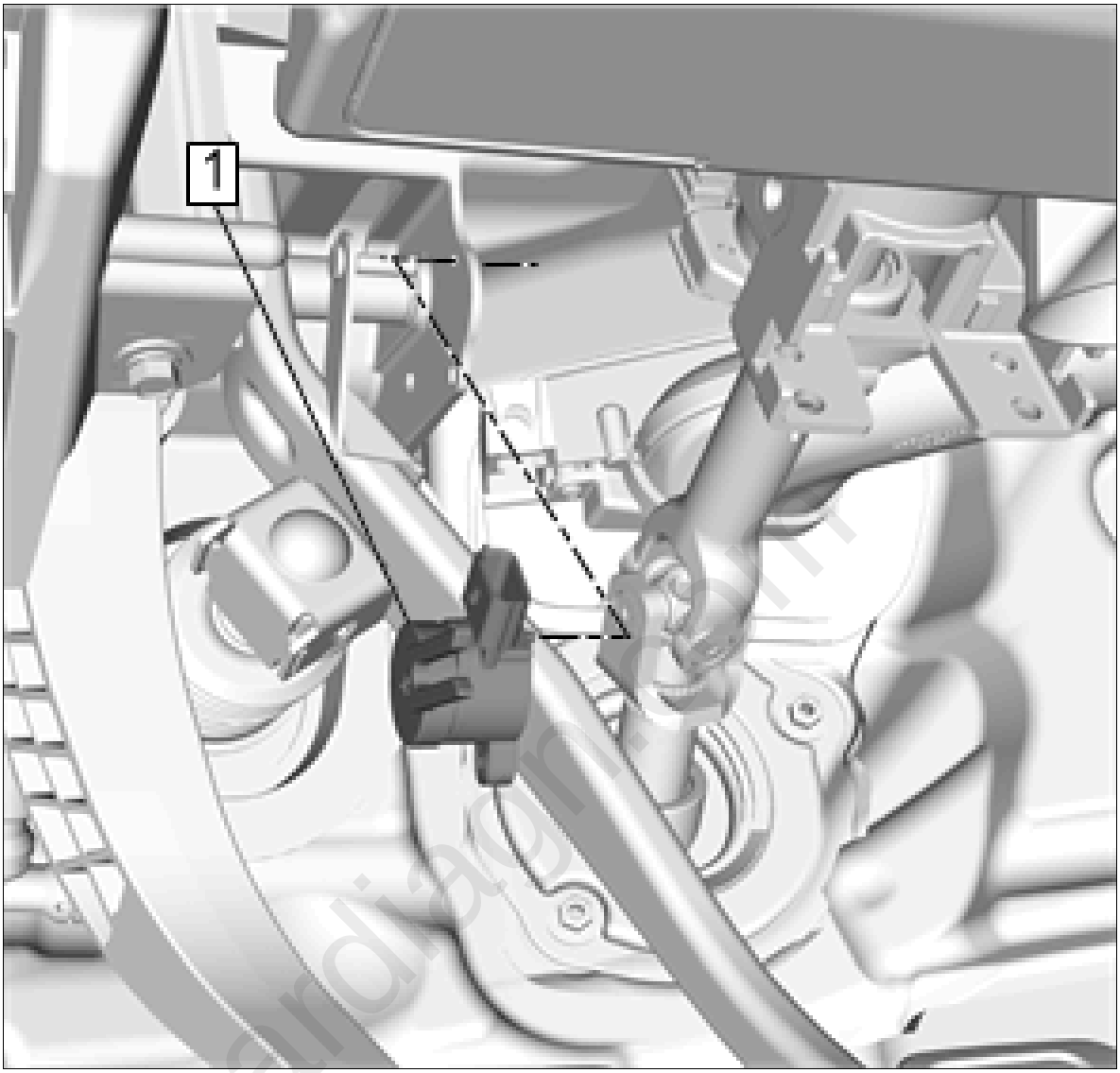
Fig 1: Brake Pedal Position Sensor Bolt



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2. Remove Brake Pedal Position Sensor Bolt (1)

Fig 2: Brake Pedal Position Sensor

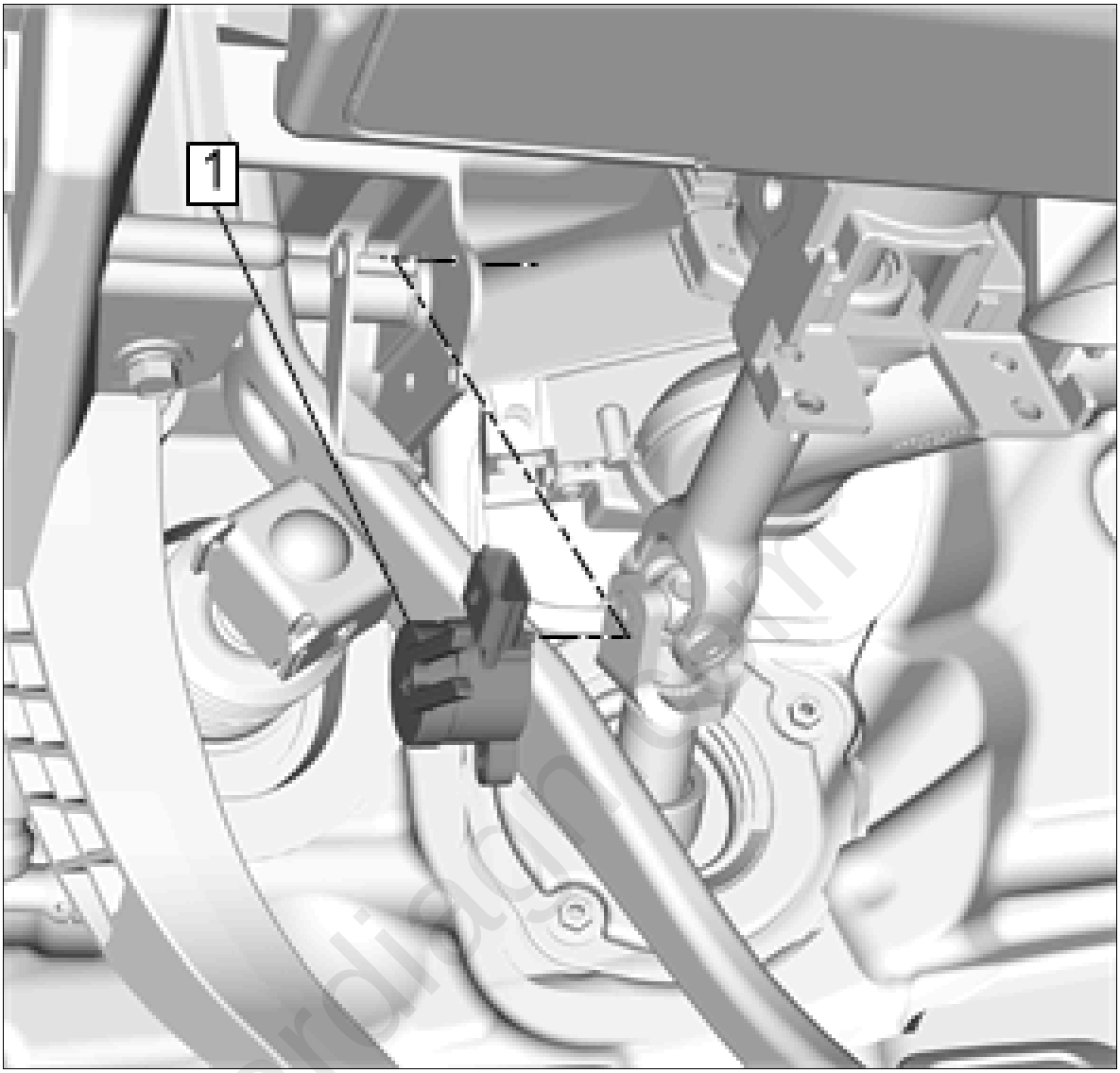


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3. Remove Brake Pedal Position Sensor (1)

REPAIR INSTRUCTIONS > BRAKE PEDAL POSITION SENSOR REPLACEMENT > INSTALLATION PROCEDURE

Fig 1: Brake Pedal Position Sensor



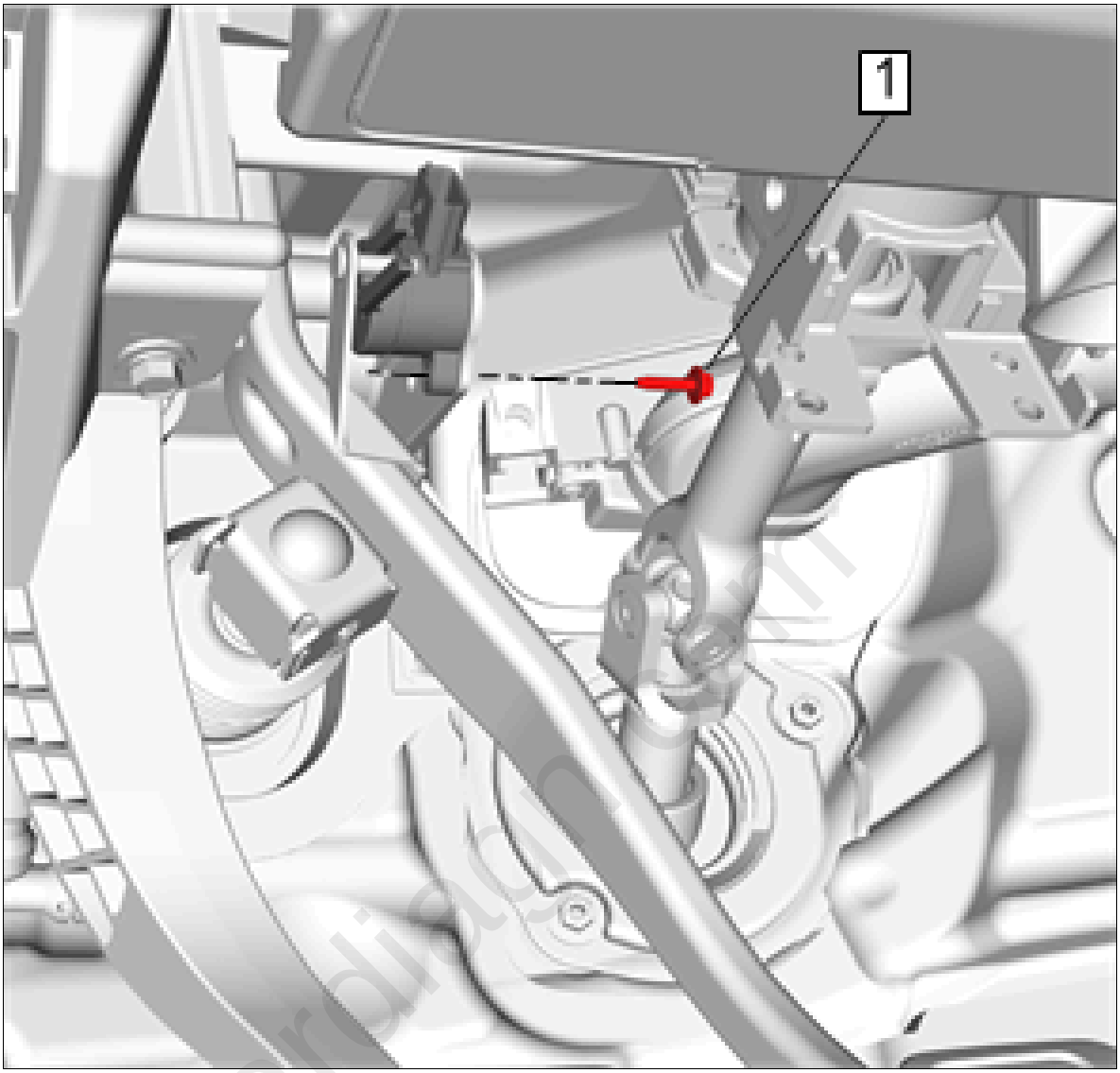
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NOTE:

Position the fork of the sensor over the post on the brake pedal arm.

1. Install Brake Pedal Position Sensor (1)

Fig 2: Brake Pedal Position Sensor Bolt



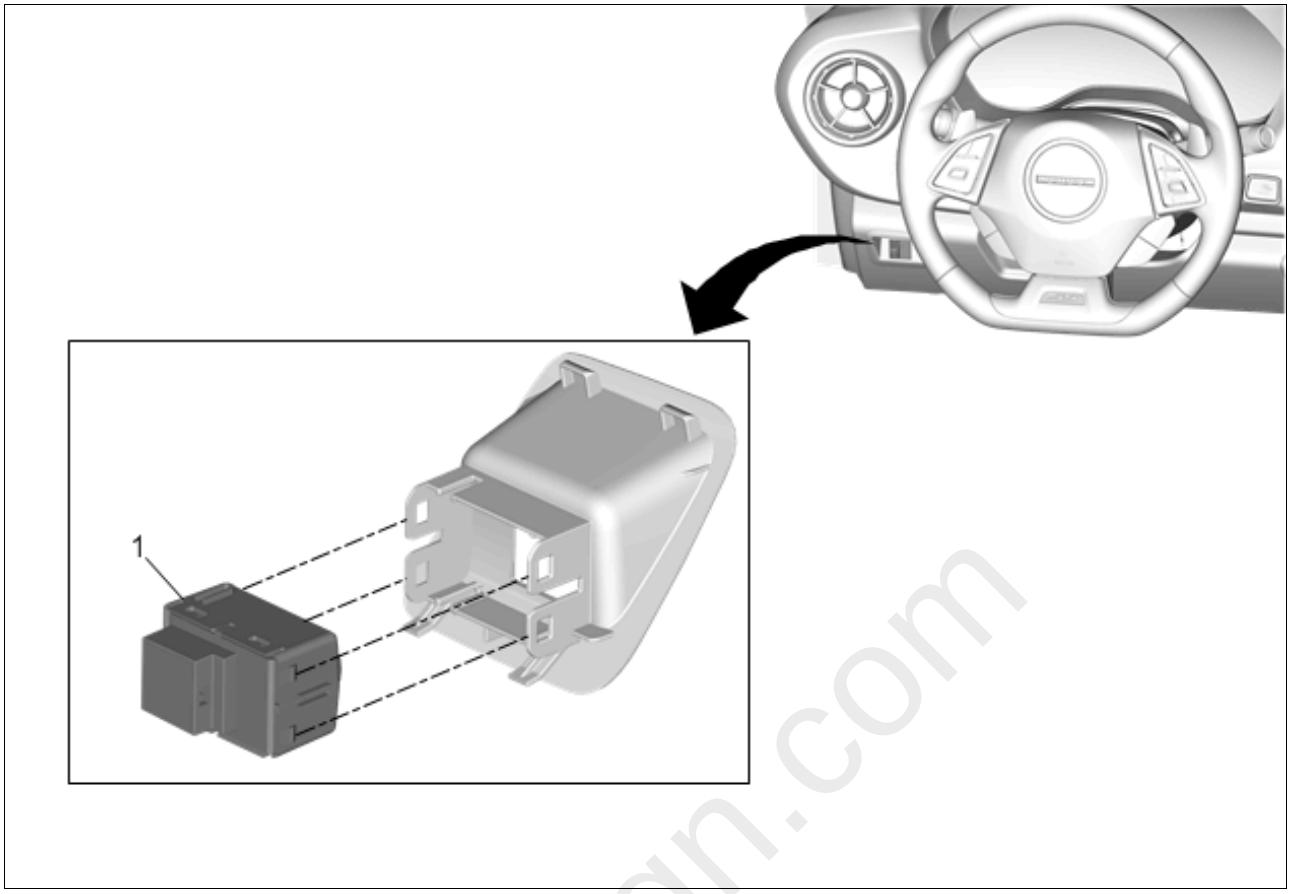
Courtesy of GENERAL MOTORS COMPANY

> ⚠ *CAUTION:*
>
> *Fastener Caution*

2. Install Brake Pedal Position Sensor Bolt (1) and tighten to 2.5 N.m (22 lb in)
3. Connect Brake Pedal Position SensorElectrical Connector
4. Calibrate the brake pedal position sensor. Brake Pedal Position Sensor Calibration

REPAIR INSTRUCTIONS > HEADLAMP LEVELING ACTUATOR SWITCH REPLACEMENT

Fig 1: Headlamp Leveling Actuator Switch



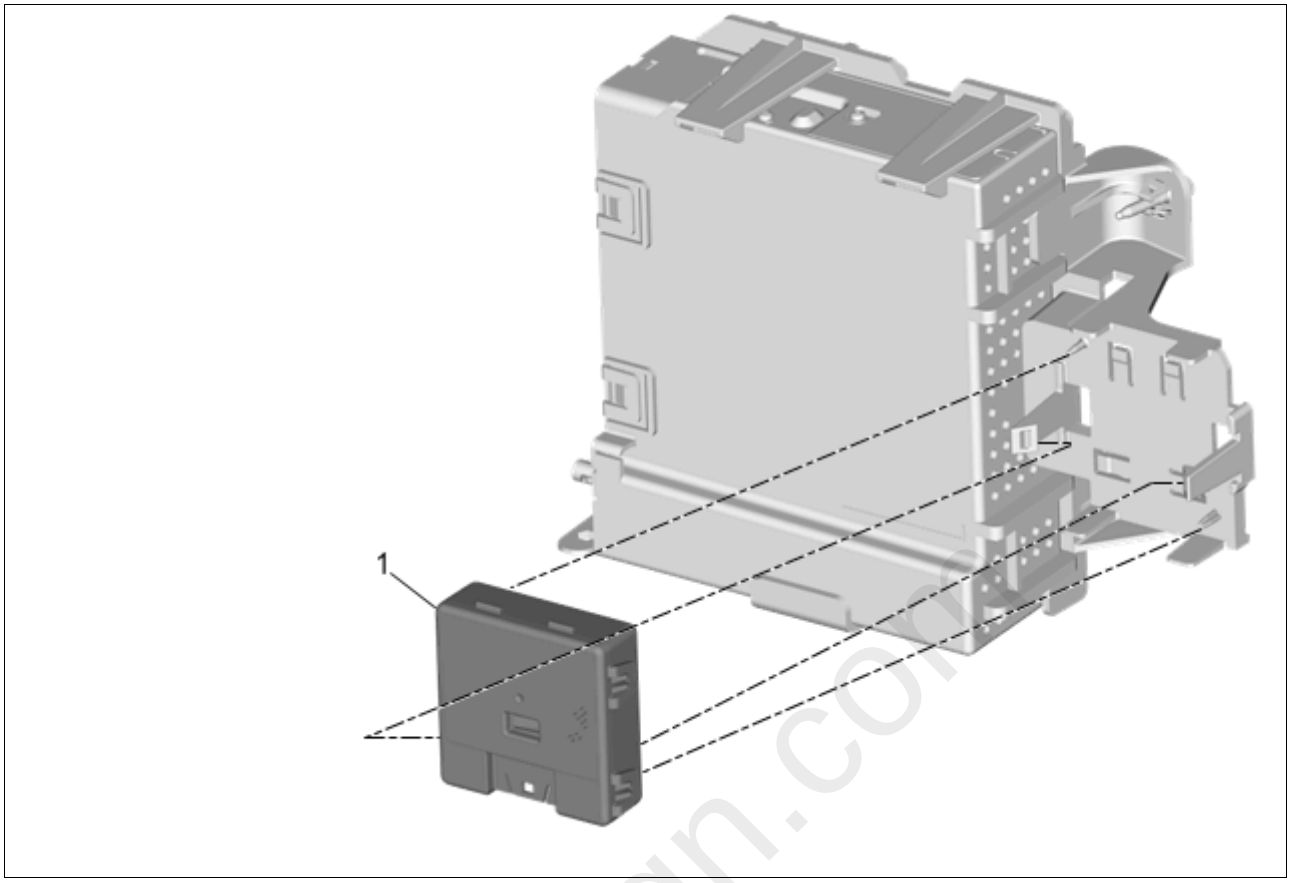
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Callout	Component Name
Preliminary Procedure Instrument Panel Switch Trim Plate Replacement (Head-Up Display Switch) Instrument Panel Switch Trim Plate Replacement (Headlamp Leveling Switch)	
1	Headlamp Leveling Actuator Switch **Procedure** Use the appropriate tool to depress the tabs and remove the switch from the trim plate.

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REPAIR INSTRUCTIONS > INTERIOR LAMP CONTROL MODULE REPLACEMENT

Fig 1: Interior Lamp Control Module



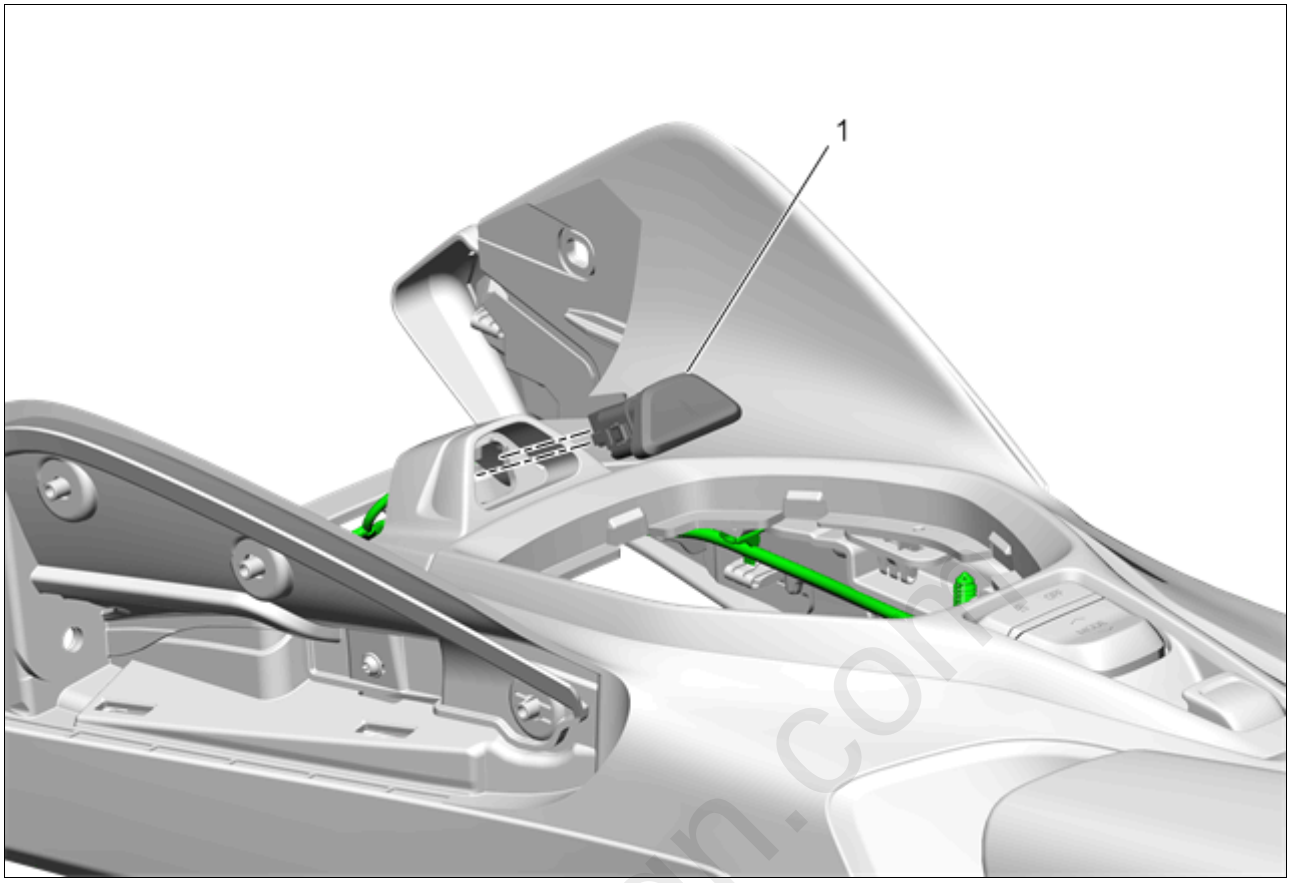
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Callout	Component Name
Preliminary Procedure Radio Bracket Replacement	
1	Interior Lamp Control Module **Procedure** Release the retaining tabs.

REPAIR INSTRUCTIONS > HAZARD WARNING SWITCH REPLACEMENT

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Fig 1: Hazard Warning Switch



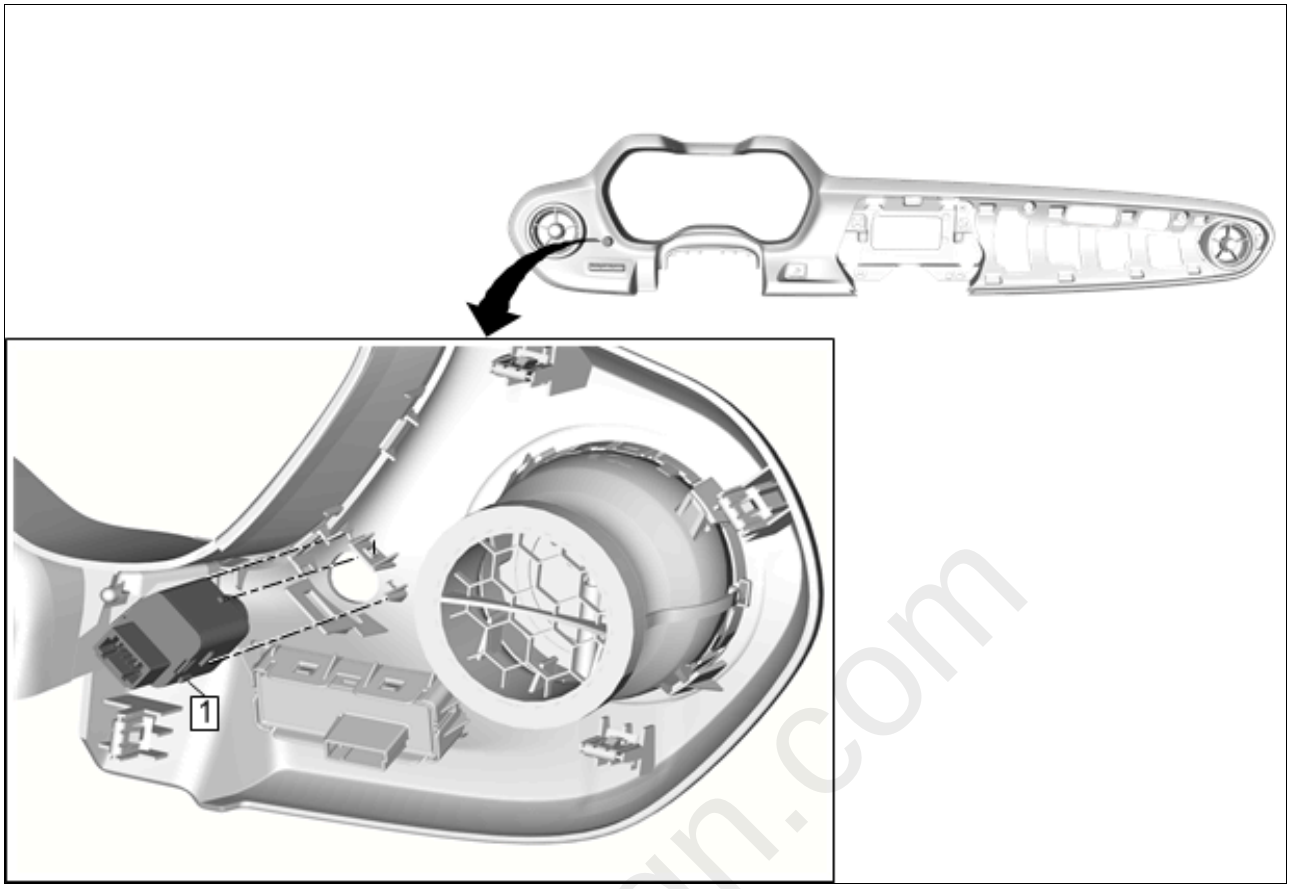
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Front Floor Console Replacement	
1	Hazard Warning Switch Procedure 1. Disconnect the electrical connector. 2. Release the tabs and remove the switch.

REPAIR INSTRUCTIONS > DIMMER SWITCH REPLACEMENT

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Fig 1: Dimmer Switch

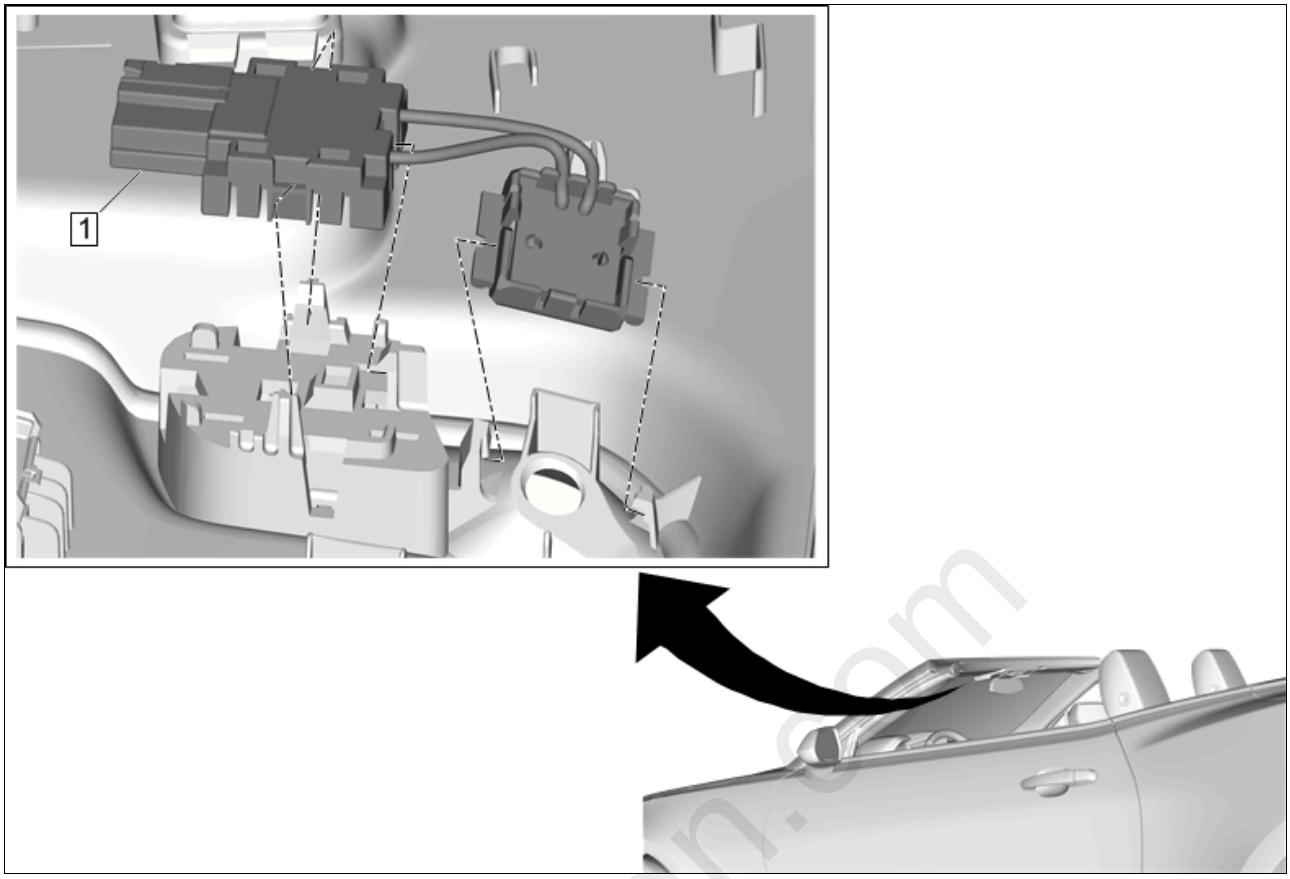


Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Instrument Panel Cluster Trim Plate Replacement	
1	Dimmer Switch **Procedure** Release the retaining tabs.

REPAIR INSTRUCTIONS > CENTER READING AND COURTESY LAMP REPLACEMENT

Fig 1: Center Reading and Courtesy Lamp



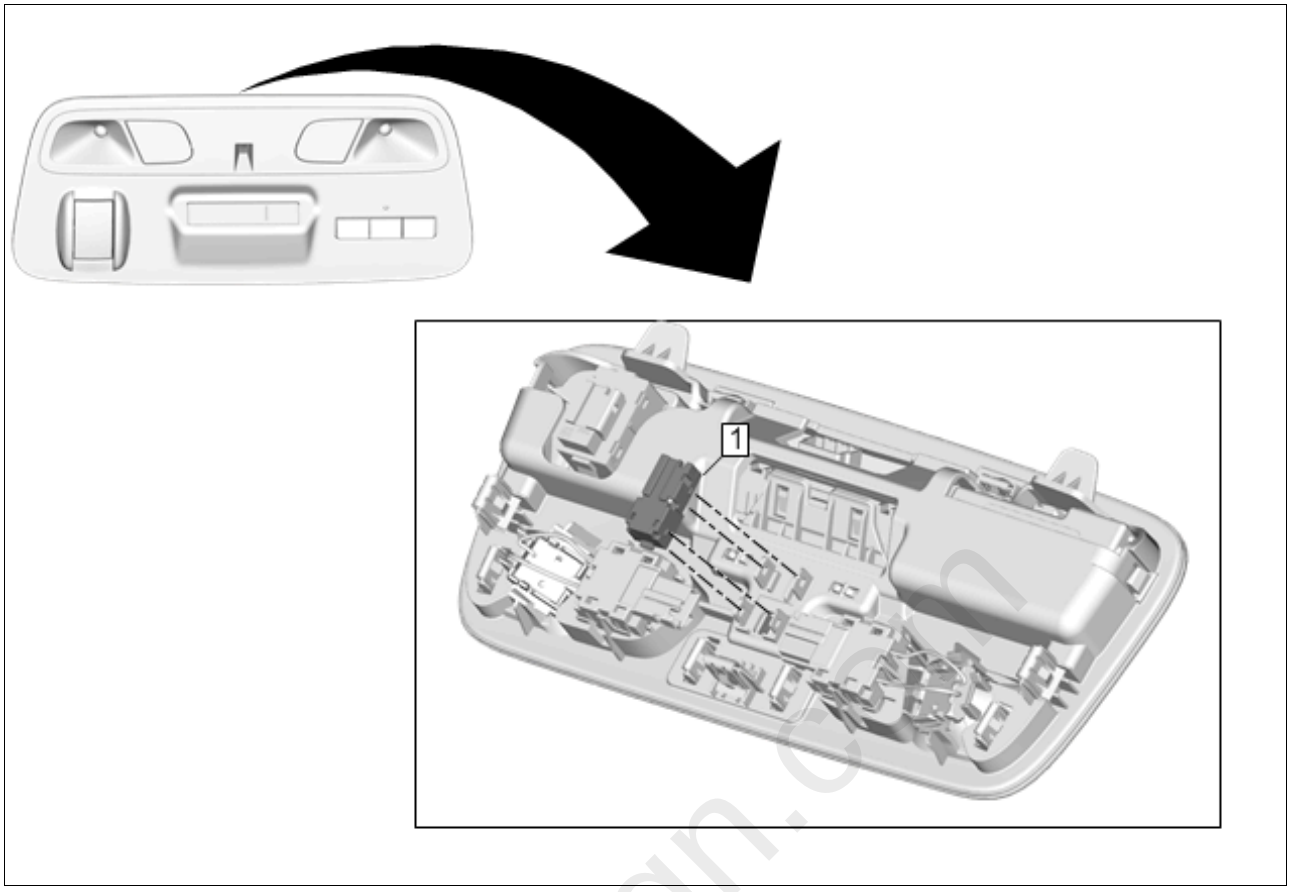
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Windshield Upper Garnish Molding Replacement	
1	Center Reading and Courtesy Lamp **Procedure** Release the retaining tabs.

REPAIR INSTRUCTIONS > FRONT FLOOR CONSOLE FLOOD LAMP REPLACEMENT

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Fig 1: Front Floor Console Flood Lamp



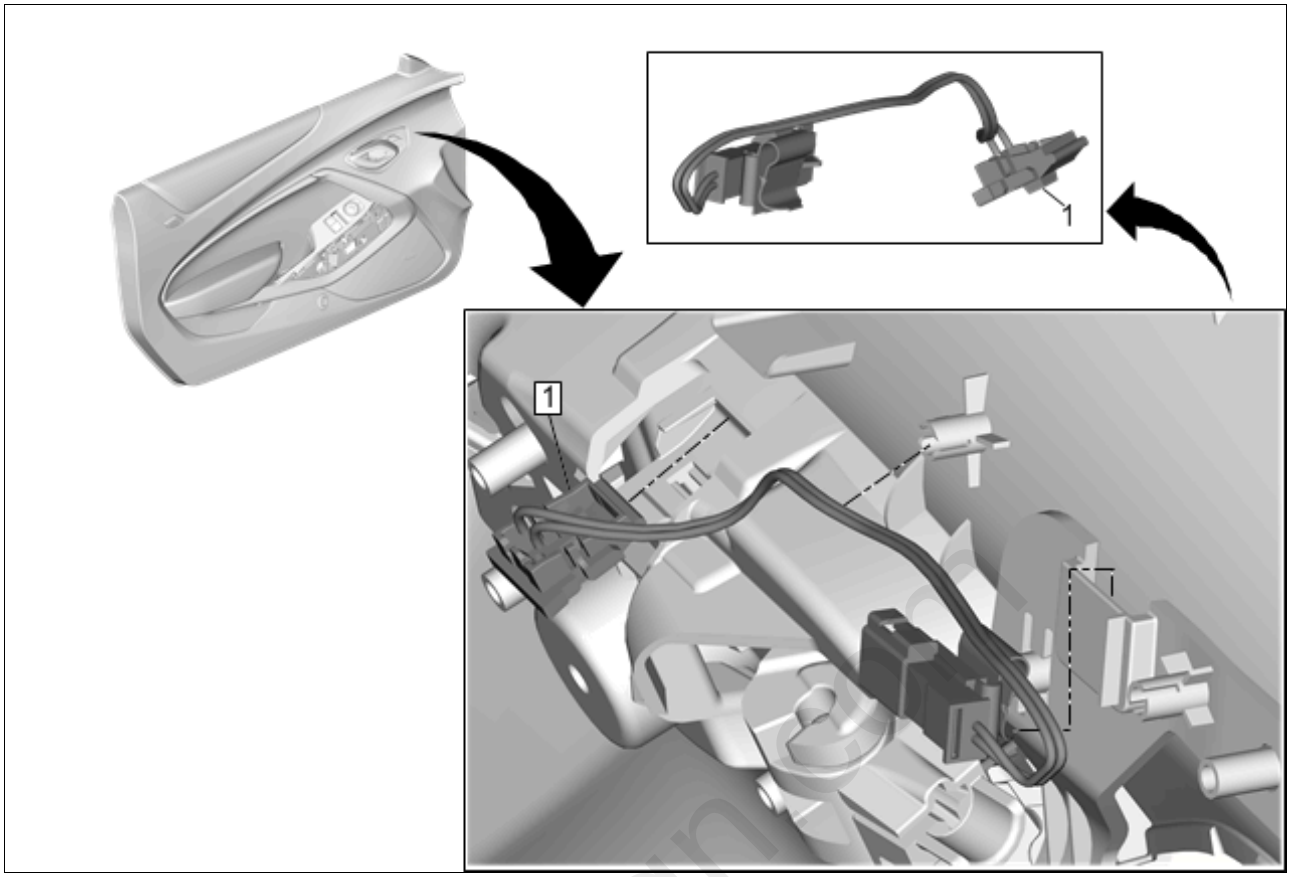
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Roof Console Replacement	
1	Front Floor Console Flood Lamp Procedure 1. Use the appropriate tool to depress the tabs and remove the switch from the underside of the roof console. 2. Disconnect the electrical connector.

REPAIR INSTRUCTIONS > FRONT SIDE DOOR INSIDE HANDLE ILLUMINATION LAMP REPLACEMENT

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Fig 1: Front Side Door Inside Handle Illumination Lamp

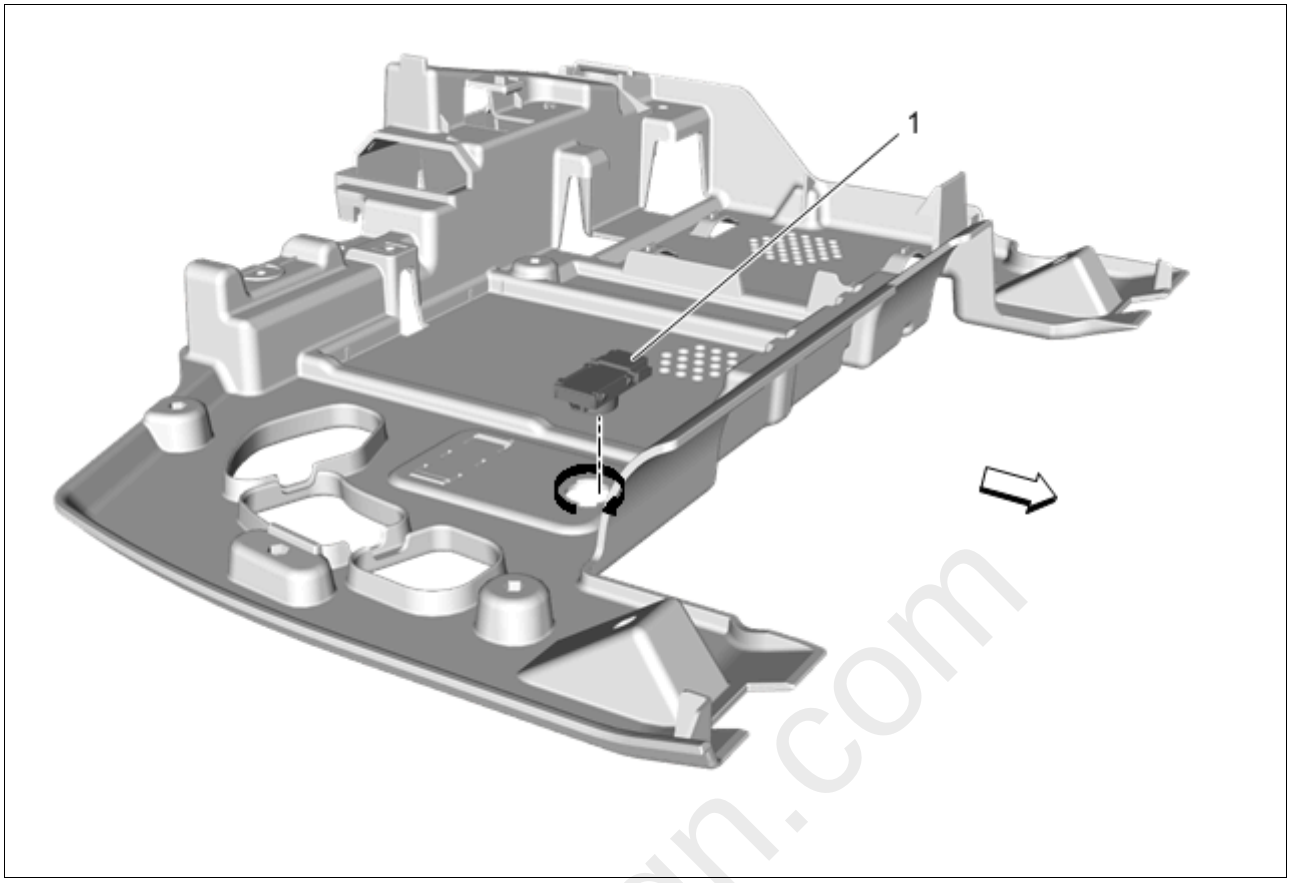


Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Front Side Door Trim Replacement	
1	Front Side Door Inside Handle Illumination Lamp Procedure 1. Disconnect the electrical connector. 2. Unsnap lamp from the trim panel tabs. 3. Unhook lamp from the trim panel by lifting upward.

REPAIR INSTRUCTIONS > INSTRUMENT PANEL COMPARTMENT LAMP REPLACEMENT

Fig 1: Instrument Panel Compartment Lamp



Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Multiuse Module Bracket Replacement - Instrument Panel	
1	Instrument Panel Compartment Lamp Procedure 1. Disconnect the electrical connector. 2. Rotate the lamp and pull up to remove.

REPAIR INSTRUCTIONS > OUTSIDE REARVIEW MIRROR TURN SIGNAL LAMP REPLACEMENT > REMOVAL PROCEDURE

1. Remove Outside Rearview Mirror Replacement
2. Remove Outside Rearview Mirror Glass Replacement

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Fig 1: Outside Rearview Mirror Fastener



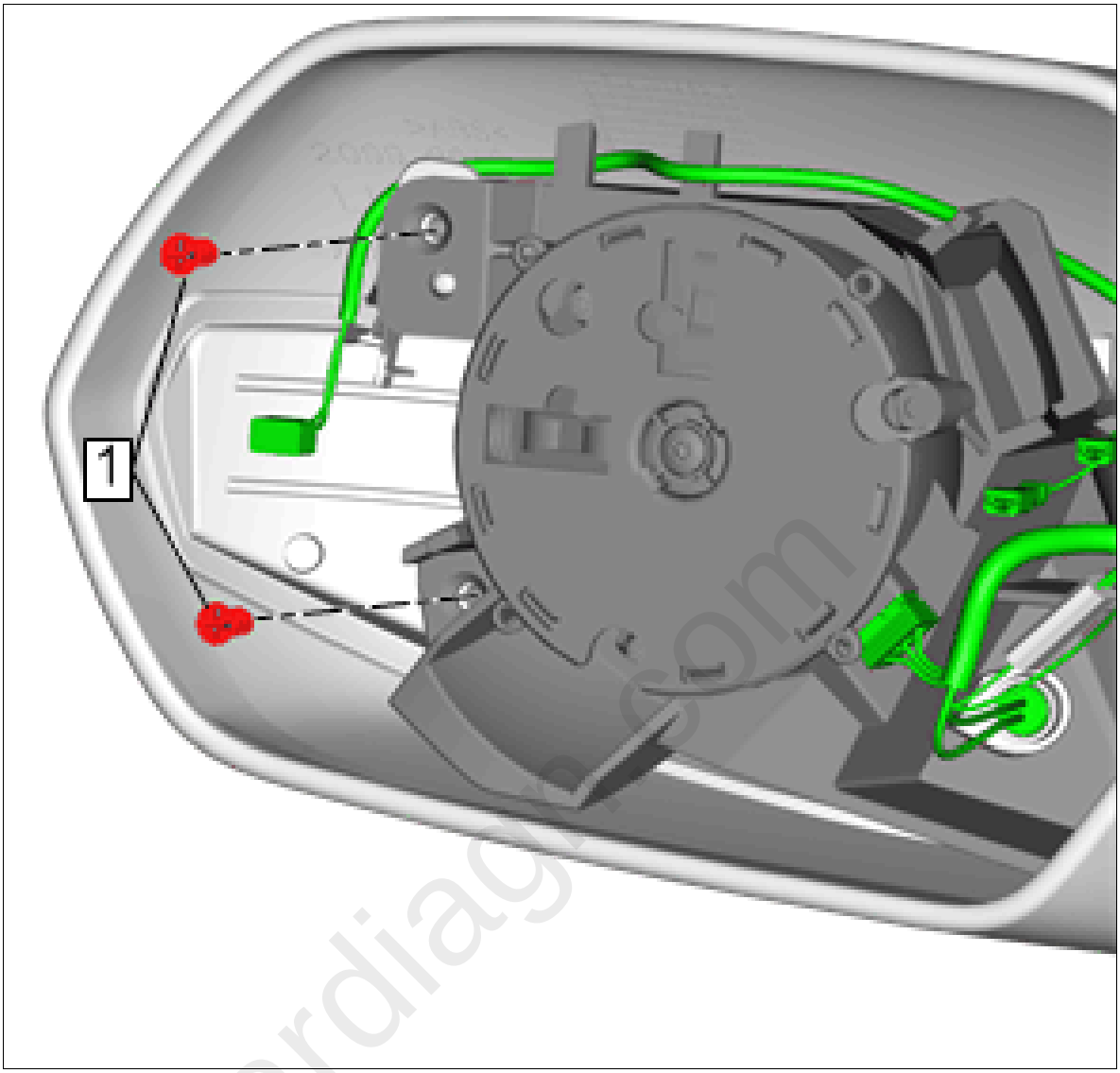
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3. Rotate the mirror base.

   Remove Outside Rearview Mirror Fastener (1)

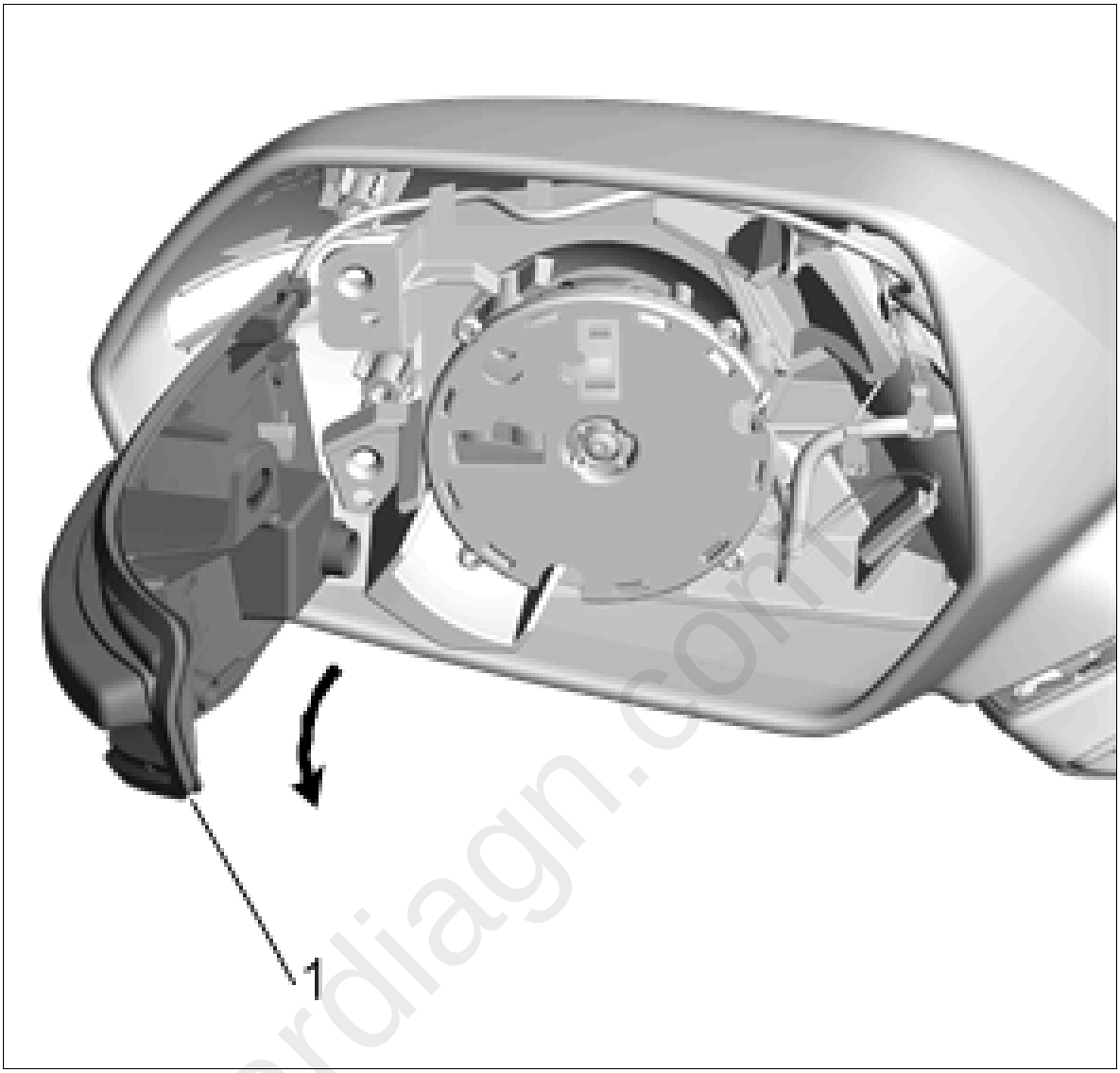
Fig 2: Rearview Mirror Electrical Connector



Courtesy of GENERAL MOTORS COMPANY

4. Disconnect the electrical connector.
5. Remove Outside Rearview Mirror Fastener (1) (Qty: 2)

Fig 3: Outside Rearview Mirror Turn Signal Lamp



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6. Press inward on the outside rearview mirror turn signal lamp (1).
7. Rotate the outside rearview mirror turn signal lamp (1) out of the outside rearview mirror housing.

REPAIR INSTRUCTIONS > OUTSIDE REARVIEW MIRROR TURN SIGNAL LAMP REPLACEMENT > INSTALLATION PROCEDURE

Fig 1: Outside Rearview Mirror Turn Signal Lamp

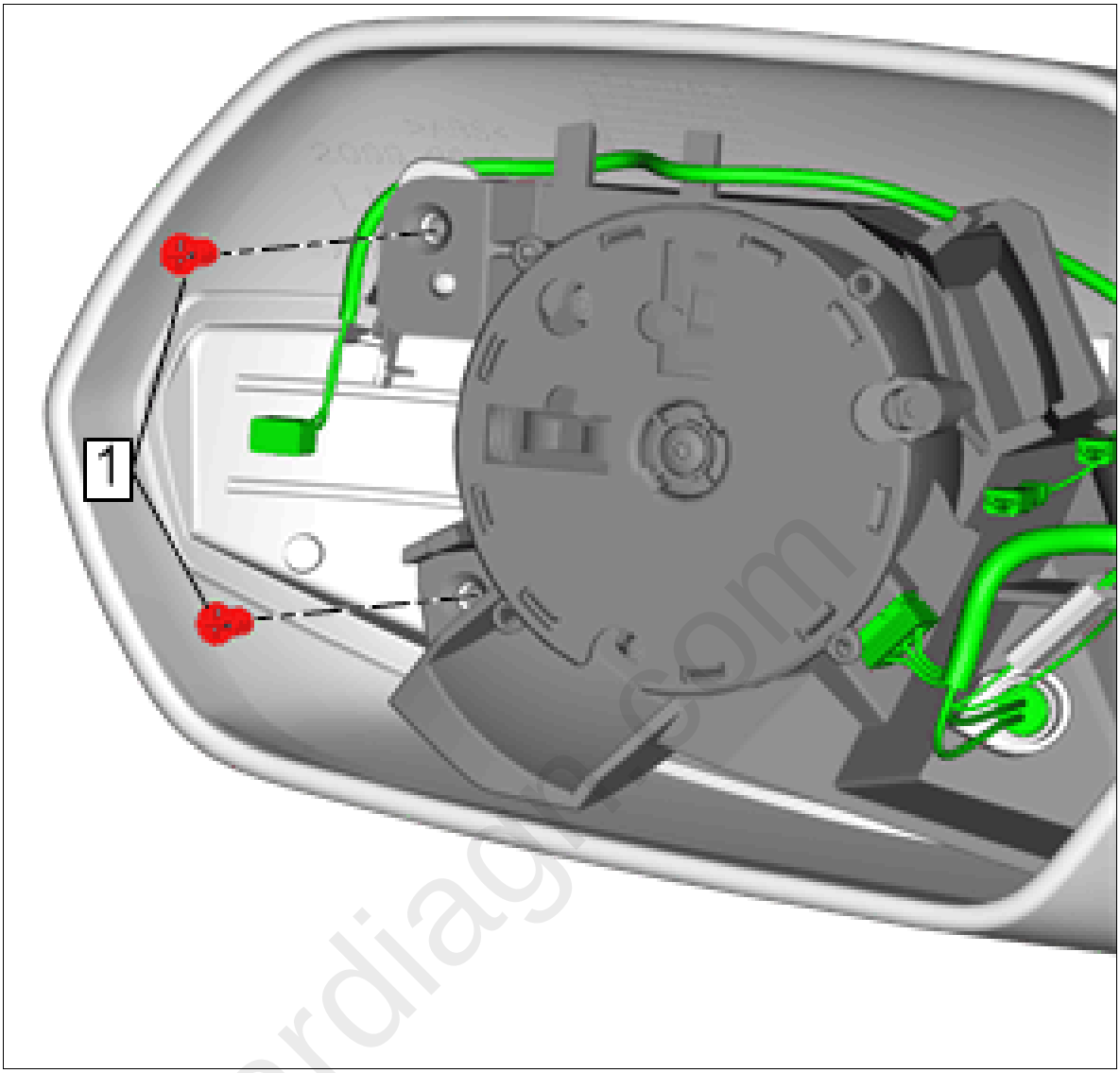


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1. Install Outside Rearview Mirror Turn Signal Lamp (1)

Fig 2: Rearview Mirror Electrical Connector



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> ⚠ *CAUTION:*
>
> *Refer to Fastener Caution .*

2. Install Outside Rearview Mirror Fastener (1) (Qty: 2) and tighten to 2.5 N.m (22 lb in)
3. Connect the electrical connector.

Fig 3: Outside Rearview Mirror Fastener



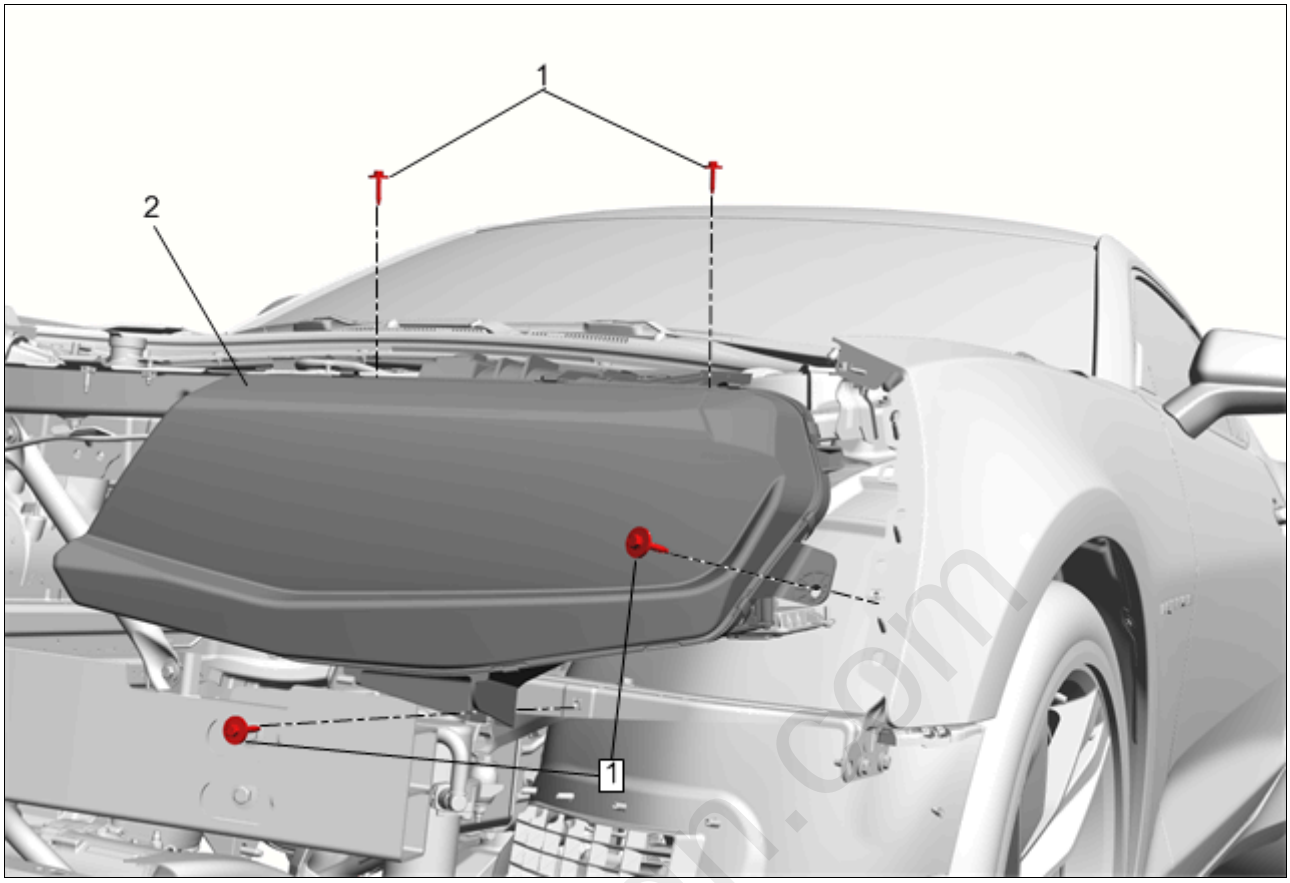
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4. Install Outside Rearview Mirror Fastener (1) and tighten to 2.5 N.m (22 lb in)
5. Install Outside Rearview Mirror Glass Replacement
6. Install Outside Rearview Mirror Replacement

REPAIR INSTRUCTIONS > HEADLAMP REPLACEMENT (HID)

Fig 1: Headlamp (HID)



Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name

WARNING:

The high intensity discharge system produces high voltage and current. In order to reduce the risk of severe shocks and burns, the battery negative cable must be disconnected any time service work is being performed on or around the high intensity discharge system.

WARNING:

The high intensity discharge system produces high voltage and current. To reduce the risk of severe shocks and burns:

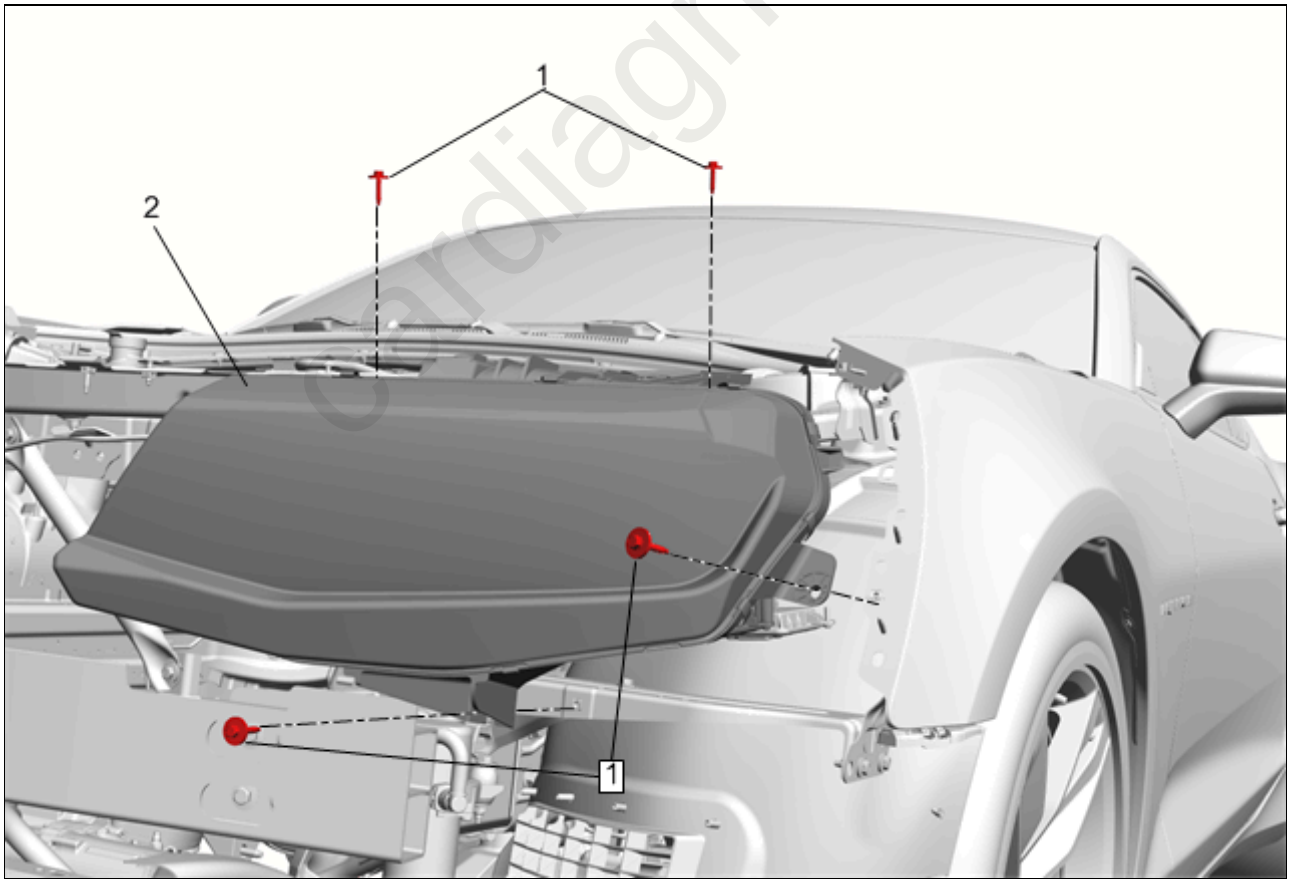
- *Never open the high intensity discharge system ballast or the arc tube assembly starter.*
- *Never probe between the high intensity discharge system ballast output connector and the arc tube assembly.*

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Preliminary Procedure Front Bumper Fascia Replacement	
1	Headlamp Bolt (Qty: 4) *CAUTION:* *Refer to Fastener Caution .* **Tighten** 2.5 N.m (22 lb in)
2	Headlamp 1. Disconnect the electrical connector. 2. Headlamp Aiming

REPAIR INSTRUCTIONS > HEADLAMP REPLACEMENT (HALOGEN)

Fig 1: Headlamp (Halogen)



Courtesy of GENERAL MOTORS COMPANY

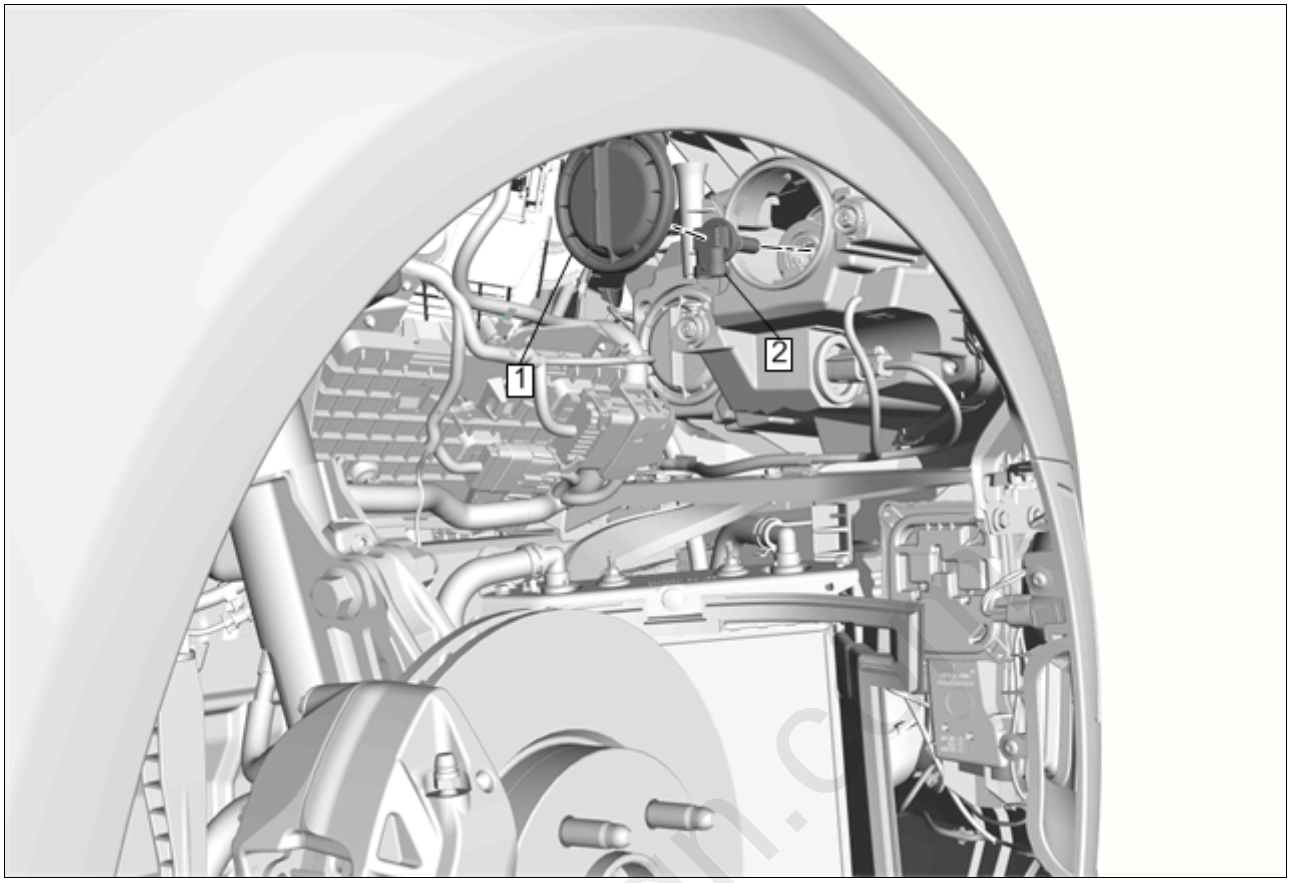
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Callout	Component Name
WARNING: *Refer to Halogen Bulb Warning .*	
Preliminary Procedure Front Bumper Fascia Replacement	
1	Headlamp Bolt (Qty: 4) *CAUTION:* *Refer to Fastener Caution .* **Tighten** 2.5 N.m (22 lb in)
2	Headlamp Headlamp Aiming

REPAIR INSTRUCTIONS > LOW BEAM HEADLAMP BULB REPLACEMENT

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Fig 1: Low Beam Headlamp Bulb



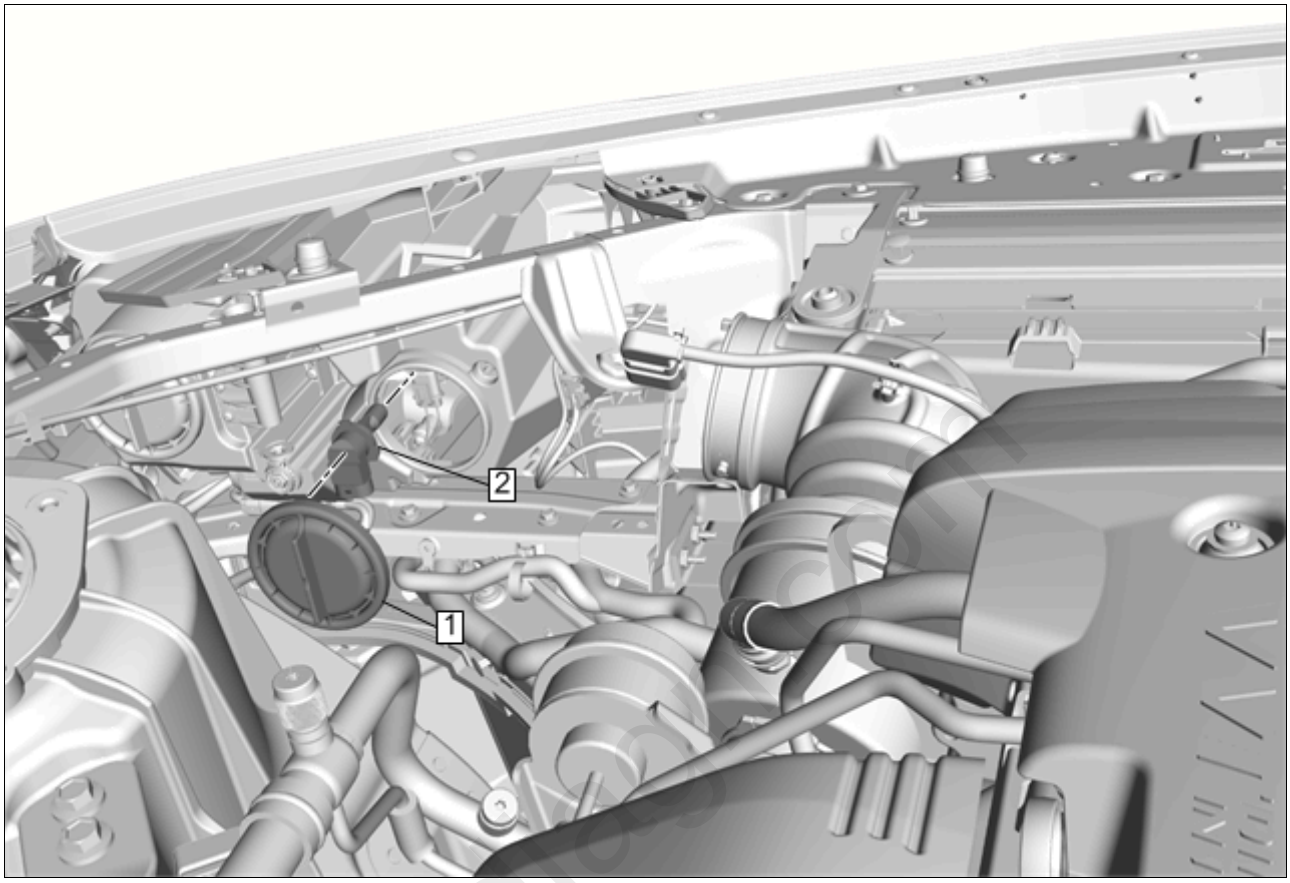
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Front Wheelhouse Splash Shield Replacement	
1	Headlamp Bulb Access Cover **Procedure** Rotate the headlamp bulb access cover counterclockwise and pull from the headlamp.
2	Headlamp Bulb *WARNING:* *Refer to Halogen Bulb Warning .* Procedure 1. Disconnect the electrical connector. 2. Rotate the headlamp bulb counterclockwise and remove from the headlamp.

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REPAIR INSTRUCTIONS > HEADLAMP BULB REPLACEMENT - LEFT SIDE (HIGH BEAM - LTG)

Fig 1: Headlamp Bulb - Left Side (High Beam - LTG)



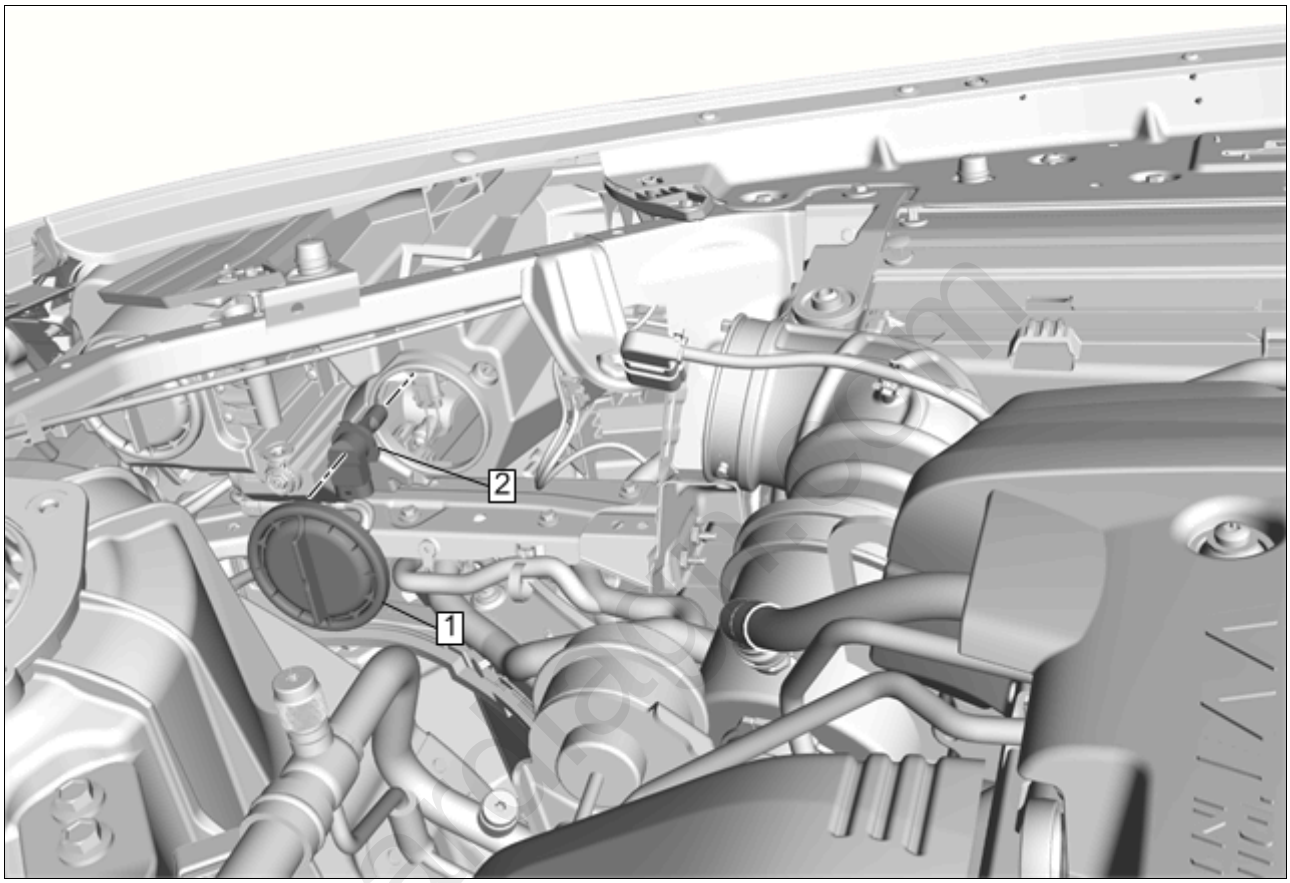
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Air Cleaner Assembly Replacement	
1	Headlamp Bulb Access Cover **Procedure** Rotate the headlamp bulb access cover counterclockwise and pull from the headlamp.
2	Headlamp Bulb *WARNING:* *Refer to Halogen Bulb Warning .* Procedure 1. Disconnect the electrical connector.

	2. Rotate the headlamp bulb counterclockwise and remove from the headlamp.

REPAIR INSTRUCTIONS > HEADLAMP BULB REPLACEMENT - LEFT SIDE (HIGH BEAM - LGX)

Fig 1: Headlamp Bulb - Left Side (High Beam - LGX)



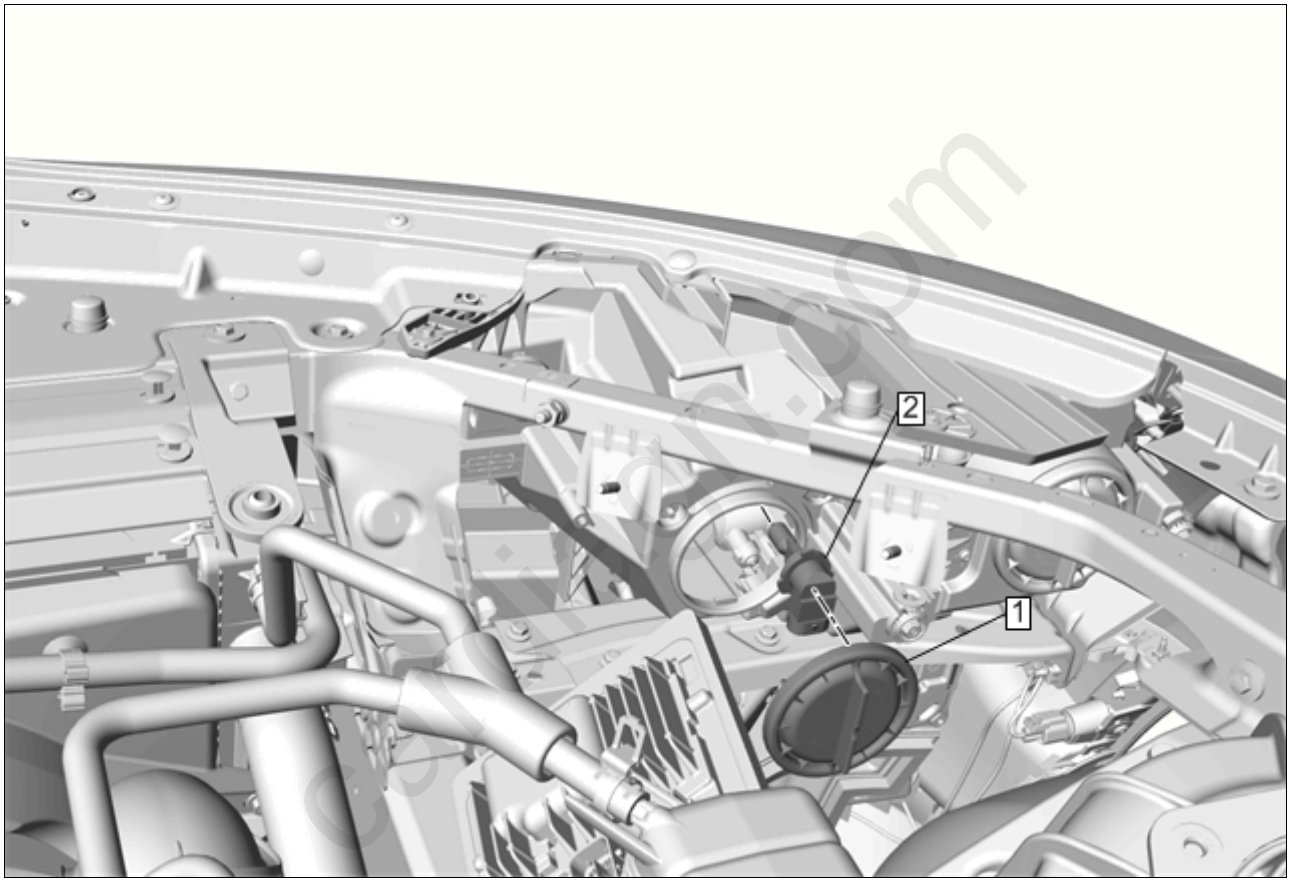
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Air Cleaner Assembly Replacement	
1	Headlamp Bulb Access Cover **Procedure** Rotate the headlamp bulb access cover counterclockwise and pull from the headlamp.
2	Headlamp Bulb *WARNING:* *Refer to Halogen Bulb Warning .*

	Procedure 1. Disconnect the electrical connector. 2. Rotate the headlamp bulb counterclockwise and remove from the headlamp.

REPAIR INSTRUCTIONS > HEADLAMP BULB REPLACEMENT - RIGHT SIDE (HIGH BEAM)

Fig 1: Headlamp Bulb - Right Side (High Beam)



Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Front Wheelhouse Liner Replacement	
1	Headlamp Bulb Access Cover **Procedure** Rotate the headlamp bulb access cover counterclockwise and pull from the headlamp.
2	Headlamp Bulb

WARNING:

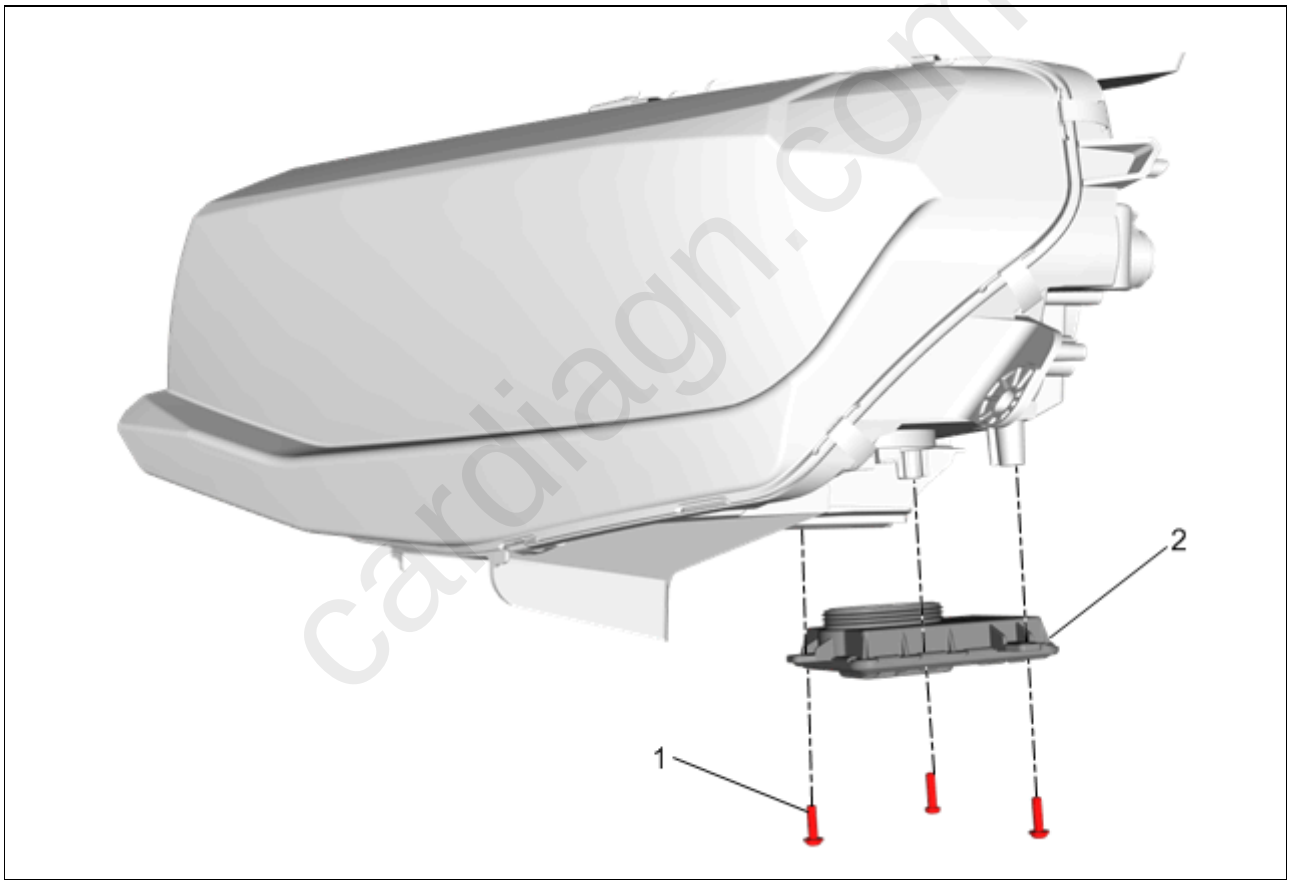
Refer to Halogen Bulb Warning .

Procedure

1. Disconnect the electrical connector.
2. Rotate the headlamp bulb counterclockwise and remove from the headlamp.

REPAIR INSTRUCTIONS > HEADLAMP BALLAST REPLACEMENT

Fig 1: Headlamp Ballast



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Callout	Component Name

WARNING:

The high intensity discharge system produces high voltage and current. In order to reduce

the risk of severe shocks and burns, the battery negative cable must be disconnected any time service work is being performed on or around the high intensity discharge system.

WARNING:

The high intensity discharge system produces high voltage and current. To reduce the risk of severe shocks and burns:

- *Never open the high intensity discharge system ballast or the arc tube assembly starter.*
- *Never probe between the high intensity discharge system ballast output connector and the arc tube assembly.*

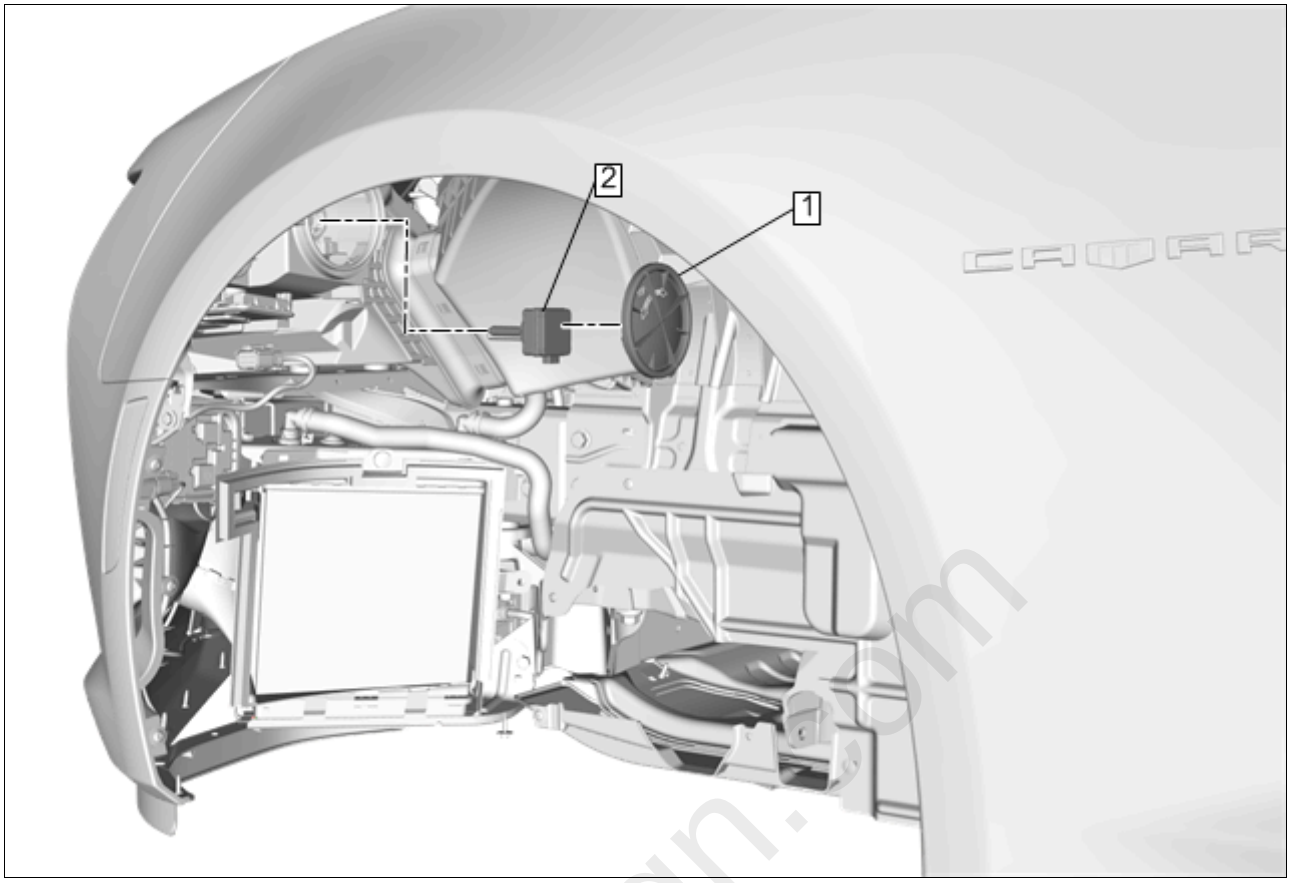
Preliminary Procedure Headlamp Replacement (HID) Headlamp Replacement (Halogen)

1	Headlamp Ballast Fastener (Qty: 3) *CAUTION:* *Refer to Fastener Caution .* **Tighten** 2.5 N.m (22 lb in)
2	Headlamp Ballast **Procedure** Disconnect the electrical connector.

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REPAIR INSTRUCTIONS > HEADLAMP BULB REPLACEMENT (HID)

Fig 1: Headlamp Bulb (HID)



Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name

WARNING:

The high intensity discharge system produces high voltage and current. In order to reduce the risk of severe shocks and burns, the battery negative cable must be disconnected any time service work is being performed on or around the high intensity discharge system.

WARNING:

The high intensity discharge system produces high voltage and current. To reduce the risk of severe shocks and burns:

- *Never open the high intensity discharge system ballast or the arc tube assembly starter.*
- *Never probe between the high intensity discharge system ballast output connector and the arc tube assembly.*

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Preliminary Procedure Front Wheelhouse Liner Replacement	
1	Headlamp Bulb Access Cover
2	Headlamp Bulb **Procedure** Disconnect the electrical connector.

REPAIR INSTRUCTIONS > HEADLAMP AIMING > AIMING HEADLAMPS (VISUAL AIM)

NOTE:

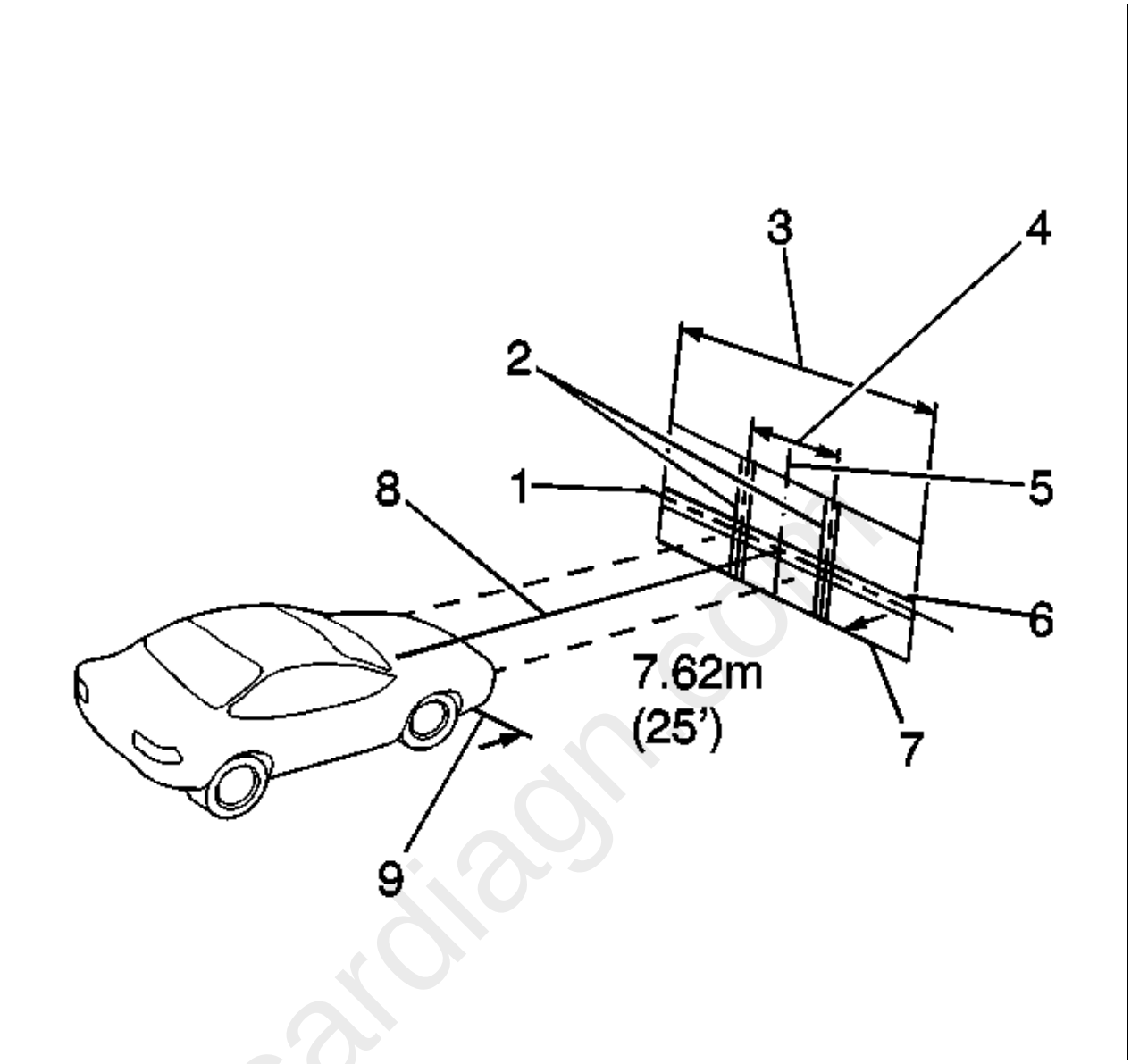
Some state and local laws specify requirements for headlamp aim. All of these laws must be complied with when performing any headlamp aiming operations.

Headlamp aim should be checked:

- When a new headlamp capsule is installed.
- If service or repairs to the front end area have (or may have) disturbed the headlamps or their mounting.
- Suspension components have been replaced or repaired.
- The area will consist of a level surface large enough to allow for a vehicle and an additional 7.62 m (25 ft) measured from face of lamps to the front of the aiming screen.
- The screen will be 1.52 m (5 ft) high x 3.66 m (12 ft) wide with a matte white surface well shaded from extraneous light, and properly adjusted to the floor on which the vehicle stands. Provisions may be made for moving the screen so it can be aligned parallel with the vehicle.
- The screen shall be provided with a fixed vertical centerline, 2 laterally adjustable vertical tapes, and 1 vertically adjustable horizontal tape.
- If a regular commercial aiming screen is not available, the screen may consist of a vertical wall having a clear uninterrupted area approximately 1.83 m (6 ft) high and 3.66 m (12 ft) wide. The surface should be finished with a washable non-gloss white paint.

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Fig 1: Headlamp Aiming/Adjustment Procedure



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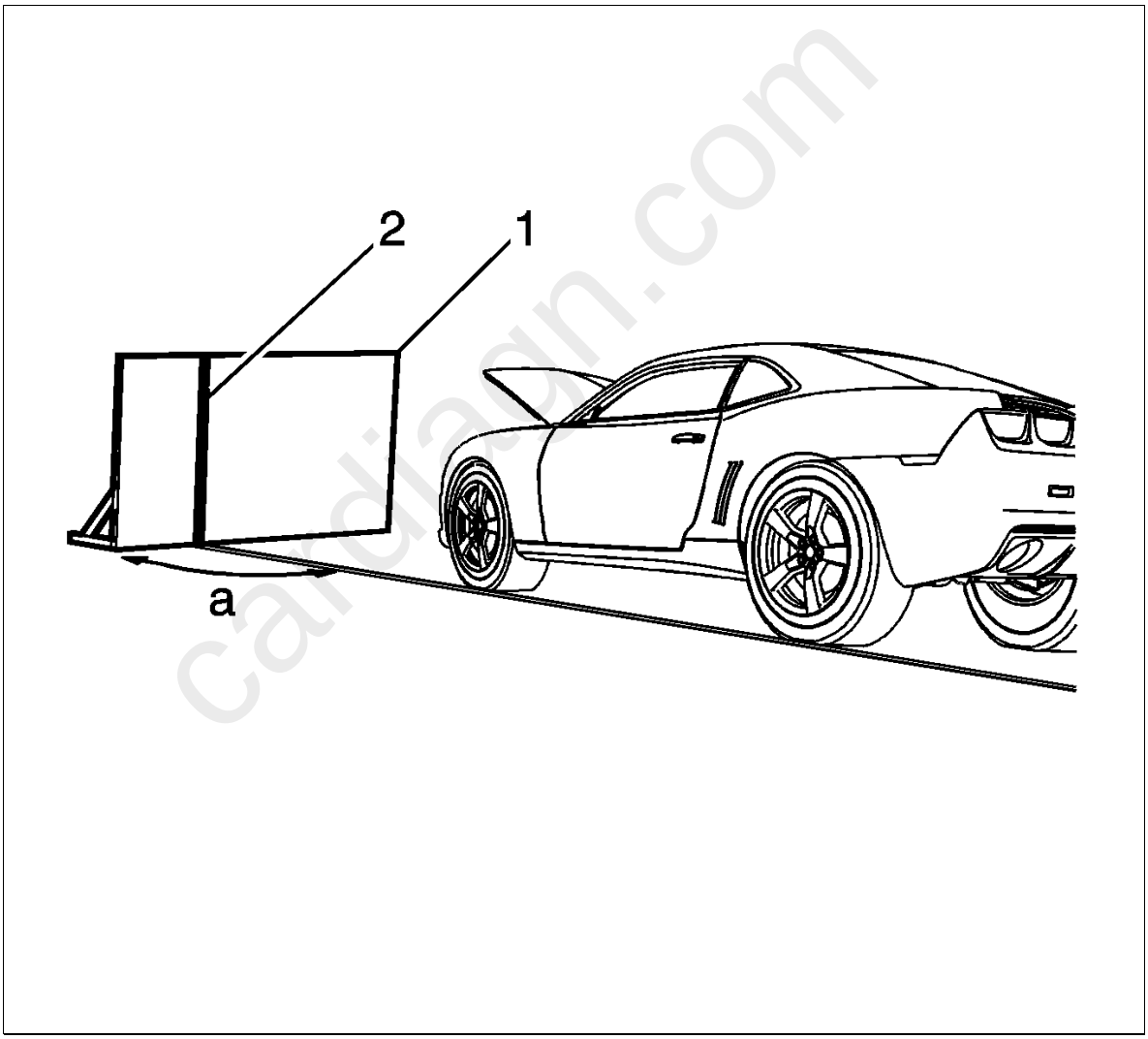
- After the aiming screen has been set up in its permanent location, it is necessary to paint a reference line on the floor directly under the lens of the lamps to indicate the proper location of the headlamps when they are being aimed:
    - Distance between headlamps (1)
    - Center line of screen (2)
    - Adjustable vertical pointer (3)
    - Adjustable horizontal tape (4)
    - Diagram of light screen (5)
    - Vertical center line ahead of right headlamp pointer position (6)

- 7.62 m (25 ft) (7)
- Car centerline axis (8)

Prior to aiming the headlamps, the following steps must be taken:

1. Remove any snow, ice or mud from the vehicle.
2. The vehicle must have a full tank of gas.
3. Stop all other work on the vehicle.
4. If any service has been performed on the vehicle, make sure that all of the components are back in their original place.
5. The vehicle must be on a level surface.

   Fig 2: Vertical Reference Line



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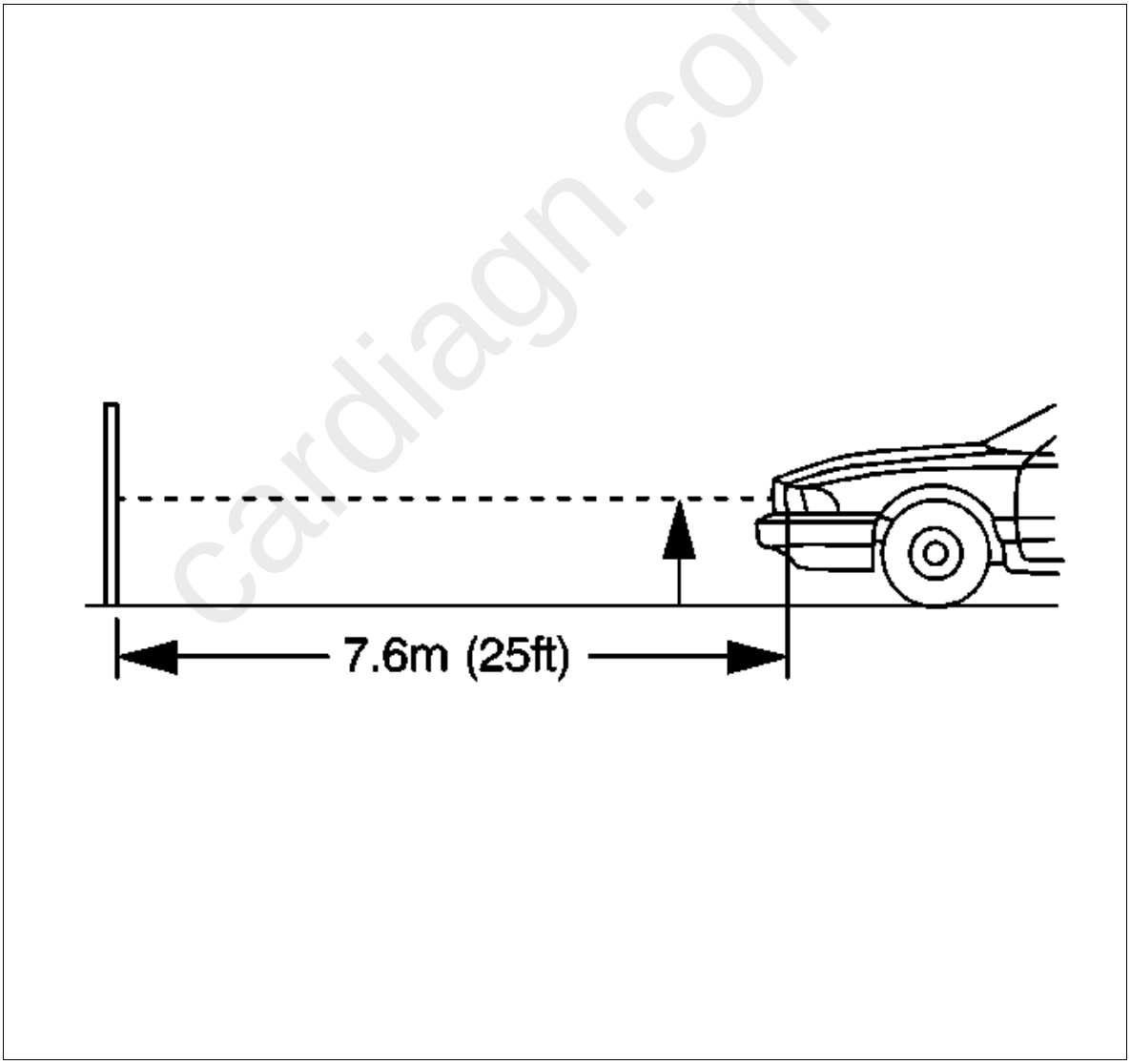
6. The vehicle left tires must be aligned with the reference line extending from the screen with the headlamps aligned with the vertical reference line (2).
7. Do not load any cargo in the vehicle.

8. The vehicle must contain 1 person or 72.56 kg (160 lb) on the driver's seat.
9. Inflate the tires to the proper pressure.
10. Simulate the vehicle loads if the intended use of the vehicle is for hauling heavy loads or towing a trailer.
11. Rock the vehicle in order to stabilize the suspension.
12. Turn ON the headlamps to low beam and observe the left and the top edges of the high intensity zone on the screen. The edges of the high intensity zone should fall within the specifications.

REPAIR INSTRUCTIONS > HEADLAMP AIMING > HEADLAMP AIMING PROCEDURE

1. Open the hood.

Fig 1: Measuring Distance Between Headlamps Face & Aiming Screen

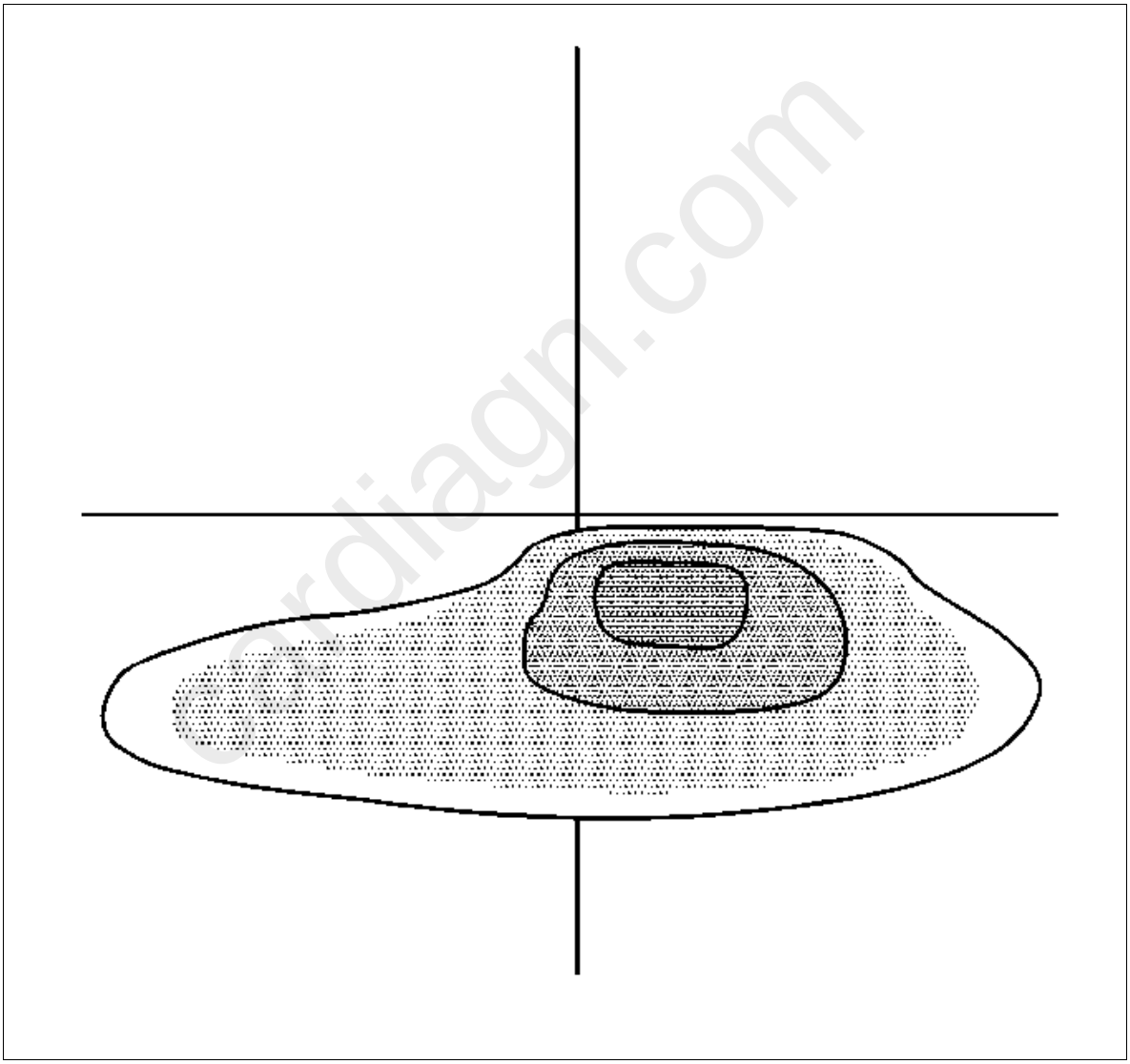


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2. Measure from the floor to the center of the headlamp bulb, some headlamps have an aim dot marked on the headlamp lens.
3. At the screen, measure from the floor and place the horizontal tape at the measured distance.
4. Measure from the reference line on the floor to the left headlamp bulb centerline.
5. At the screen, measure from the reference line and place the vertical tape at the measured distance.
6. Measure from the reference line on the floor to the right headlamp bulb centerline.
7. At the screen, measure from the reference line and place the vertical tape at the measured distance.

Fig 2: Right Side Low Beam Proper Screen Positioning



Courtesy of GENERAL MOTORS COMPANY

> *NOTE:*
>
> *Do not cover the headlamp, this may cause excessive heat build up.*

8. Turn on the low beam headlamps and block the light from projecting onto the screen from the passenger side headlamp.

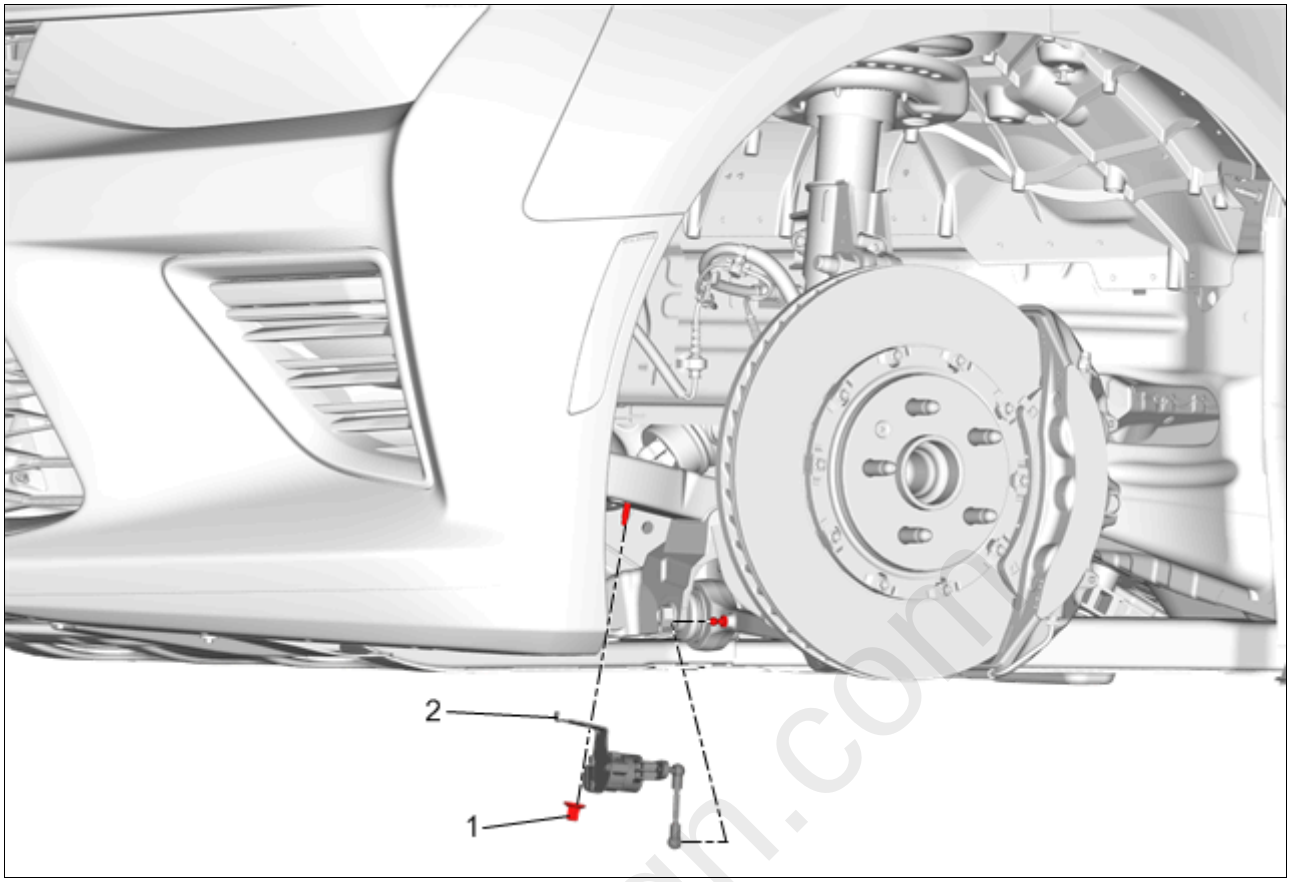
> *NOTE:*
>
> *Horizontal headlamp adjustment does not exist.*

9. Adjust the vertical aim of the headlamps to the specifications required by the state and the local authorities, or as shown in step number 8.
10. Rotate the headlamp adjuster to change the vertical aim of the headlamp.
11. Repeat the aiming procedure for the passenger side headlamp while blocking the light from projecting onto the screen from the driver side headlamp.
12. Close the hood.

REPAIR INSTRUCTIONS > FRONT SUSPENSION AUTOMATIC FORWARD LIGHTING POSITION SENSOR REPLACEMENT

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Fig 1: Front Suspension Automatic Forward Lighting Position Sensor



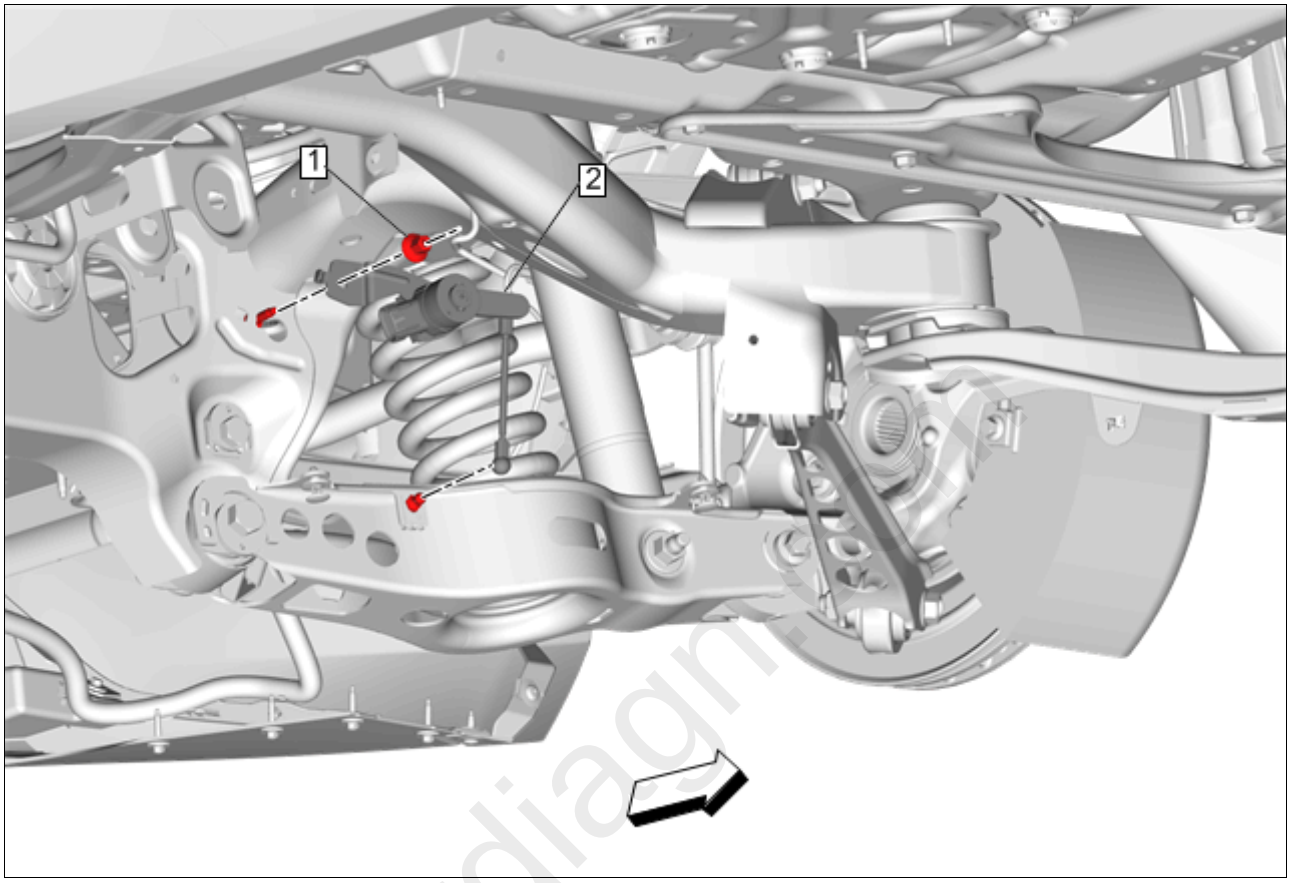
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Front Wheelhouse Splash Shield Replacement	
1	Front Suspension Automatic Forward Lighting Position Sensor Nut *CAUTION:* *Refer to Fastener Caution .* **Tighten** 12 N.m (106 lb in)
2	Front Suspension Automatic Forward Lighting Position Sensor Procedure 1. Disconnect the electrical connector. 2. Using an appropriate tool, separate the ball and socket.

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REPAIR INSTRUCTIONS > REAR SUSPENSION AUTOMATIC FORWARD LIGHTING LEVELING POSITION SENSOR REPLACEMENT

Fig 1: Rear Suspension Automatic Forward Lighting Leveling Position Sensor



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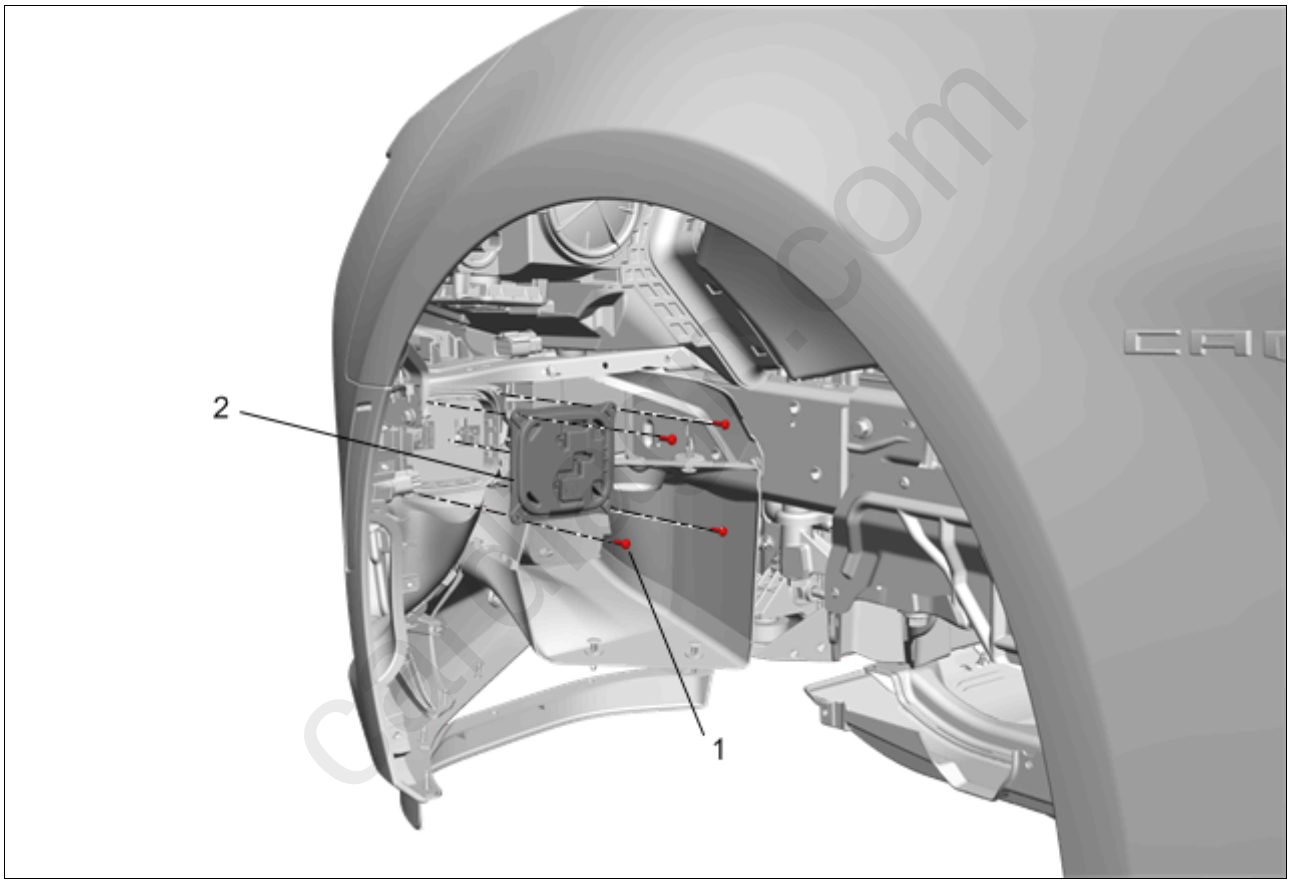
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Callout	Component Name
Preliminary Procedure Rear Suspension Lower Control Arm Cover Replacement	
1	Rear Suspension Automatic Forward Lighting Leveling Position Sensor Nut *CAUTION:* *Refer to Fastener Caution .* **Tighten** 12 N.m (106 lb in)

2	Rear Suspension Automatic Forward Lighting Leveling Position Sensor Procedure 1. Disconnect the electrical connector. 2. Using an appropriate tool, separate the ball and socket.

REPAIR INSTRUCTIONS > HEADLAMP AUTOMATIC CONTROL MODULE REPLACEMENT

Fig 1: Headlamp Automatic Control Module



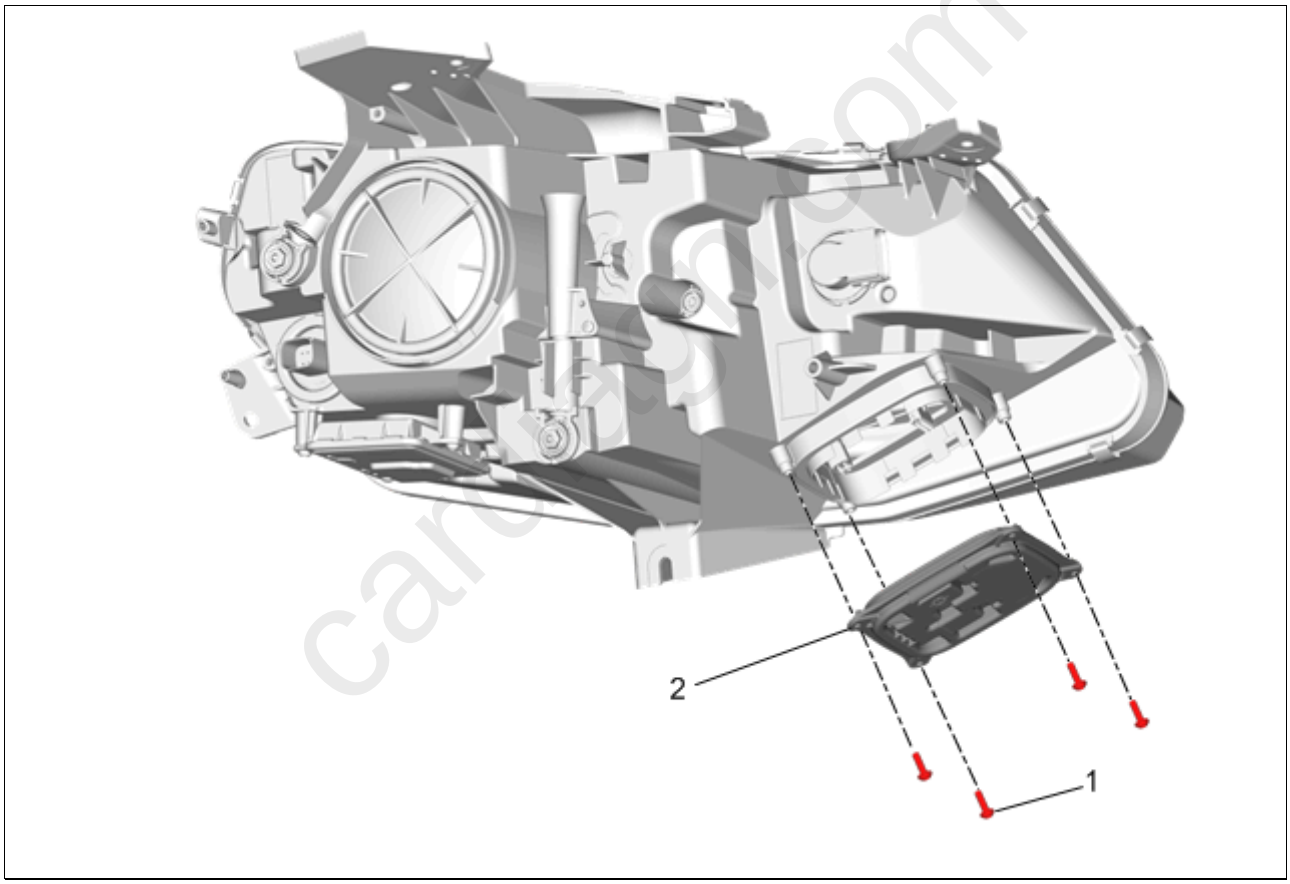
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Front Wheelhouse Splash Shield Replacement	
1	Headlamp Automatic Control Module Bolt (Qty: 4) *CAUTION:*

	Refer to Fastener Caution . **Tighten** 1.5 N.m (13 lb in)
2	Headlamp Automatic Control Module **Procedure** Pull the headlamp automatic control module straight out and disconnect the electrical connectors.

REPAIR INSTRUCTIONS > HEADLAMP LED DRIVER MODULE REPLACEMENT

Fig 1: Headlamp LED Driver Module



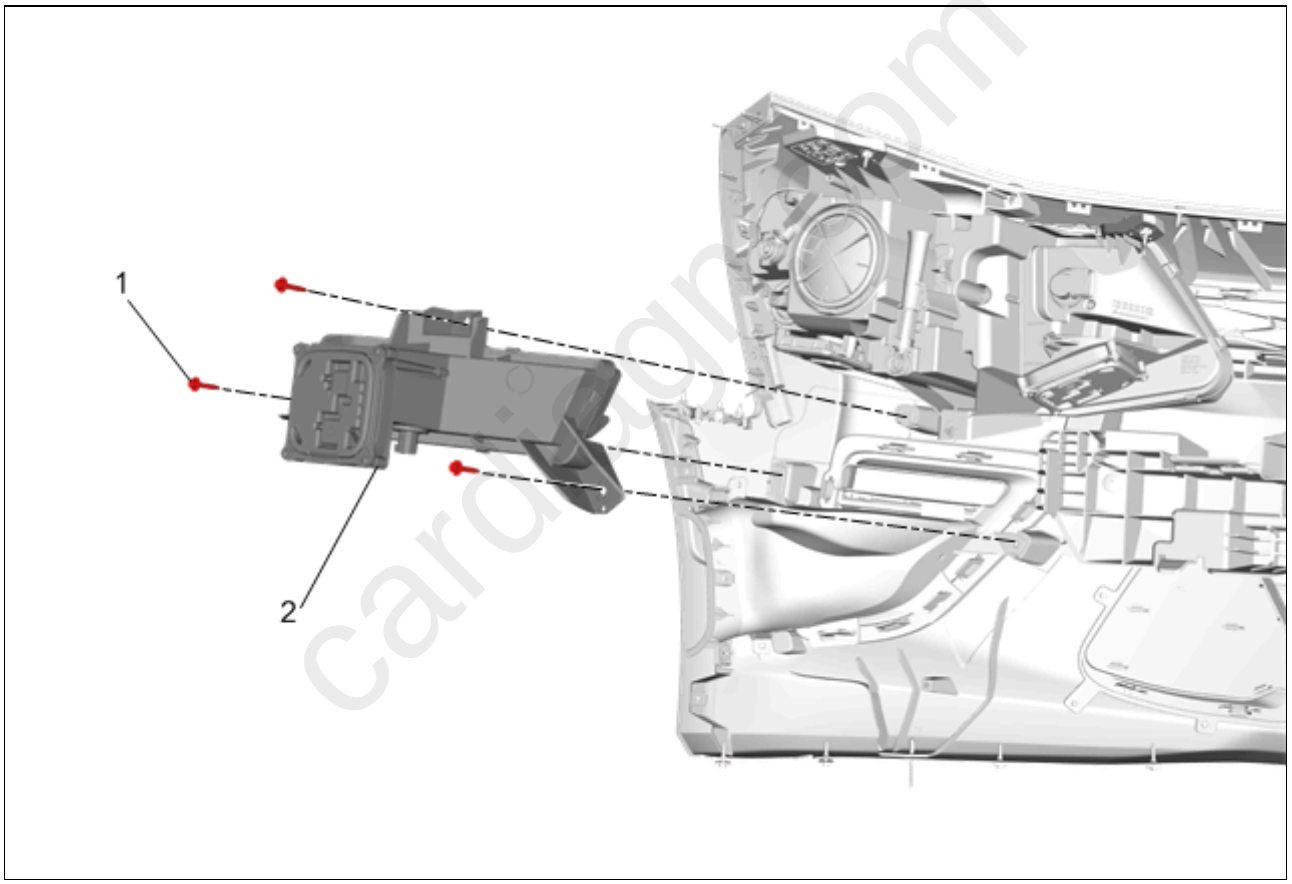
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Headlamp Replacement (HID) Headlamp Replacement (Halogen)	
1	Headlamp LED Driver Module Fastener (Qty: 4)

	CAUTION: *Refer to Fastener Caution .* **Tighten** 2.5 N.m (22 lb in)
2	Headlamp LED Driver Module

REPAIR INSTRUCTIONS > DAYTIME RUNNING LAMP REPLACEMENT (UPLEVEL)

Fig 1: Daytime Running Lamp (Uplevel)



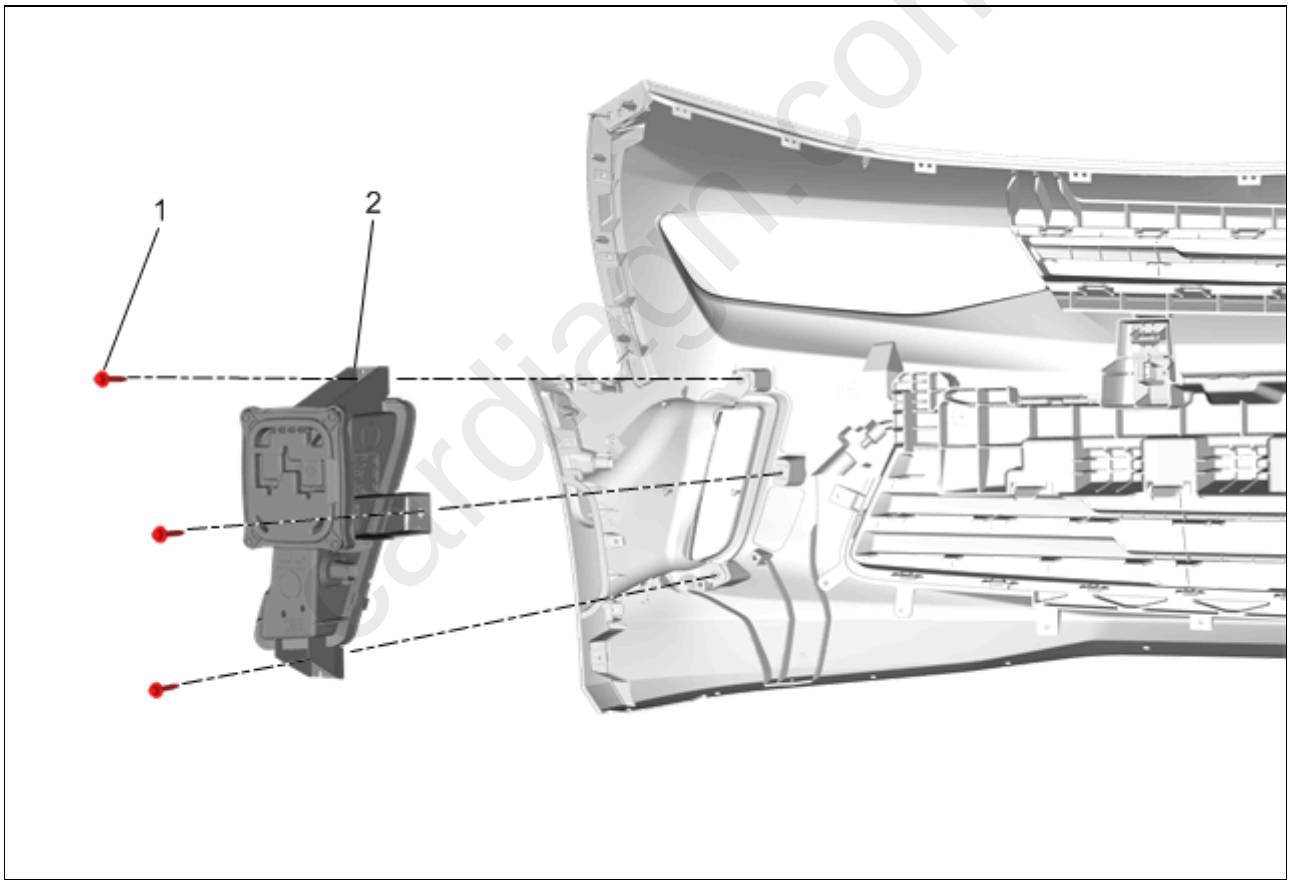
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Front Bumper Fascia Replacement	
1	Daytime Running Lamp Screw (Qty: 3)

	CAUTION: *Refer to Fastener Caution .* **Tighten** 2.5 N.m (22 lb in)
2	Daytime Running Lamp **Procedure** Disconnect the electrical connector.

REPAIR INSTRUCTIONS > DAYTIME RUNNING LAMP REPLACEMENT (BASE)

Fig 1: Daytime Running Lamp (Base)



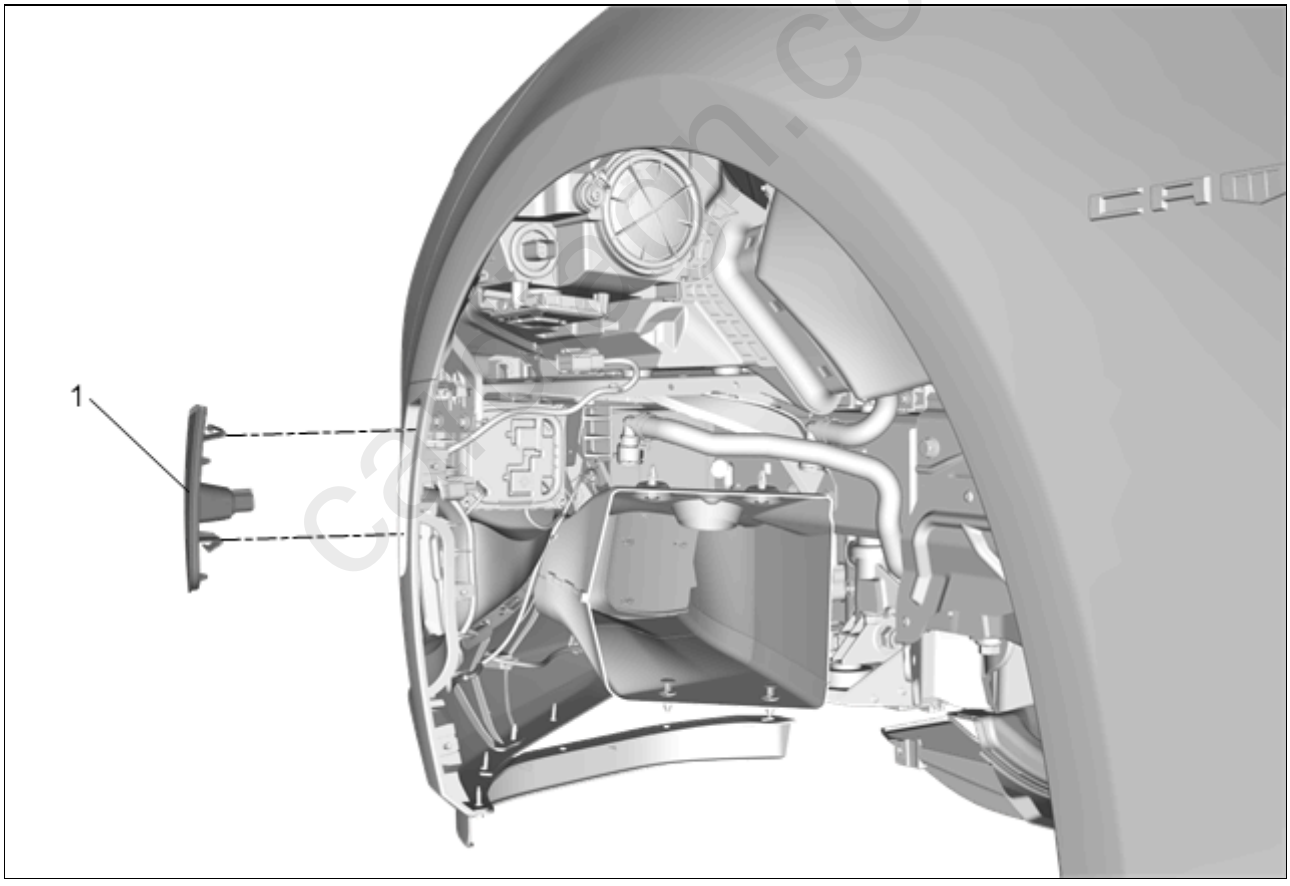
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Front Bumper Fascia Replacement	

1	Daytime Running Lamp Screw (Qty: 3) *CAUTION:* *Refer to Fastener Caution .* **Tighten** 2.5 N.m (22 lb in)
2	Daytime Running Lamp **Procedure** Disconnect the electrical connector.

REPAIR INSTRUCTIONS > FRONT SIDE MARKER LAMP REPLACEMENT

Fig 1: Front Side Marker Lamp



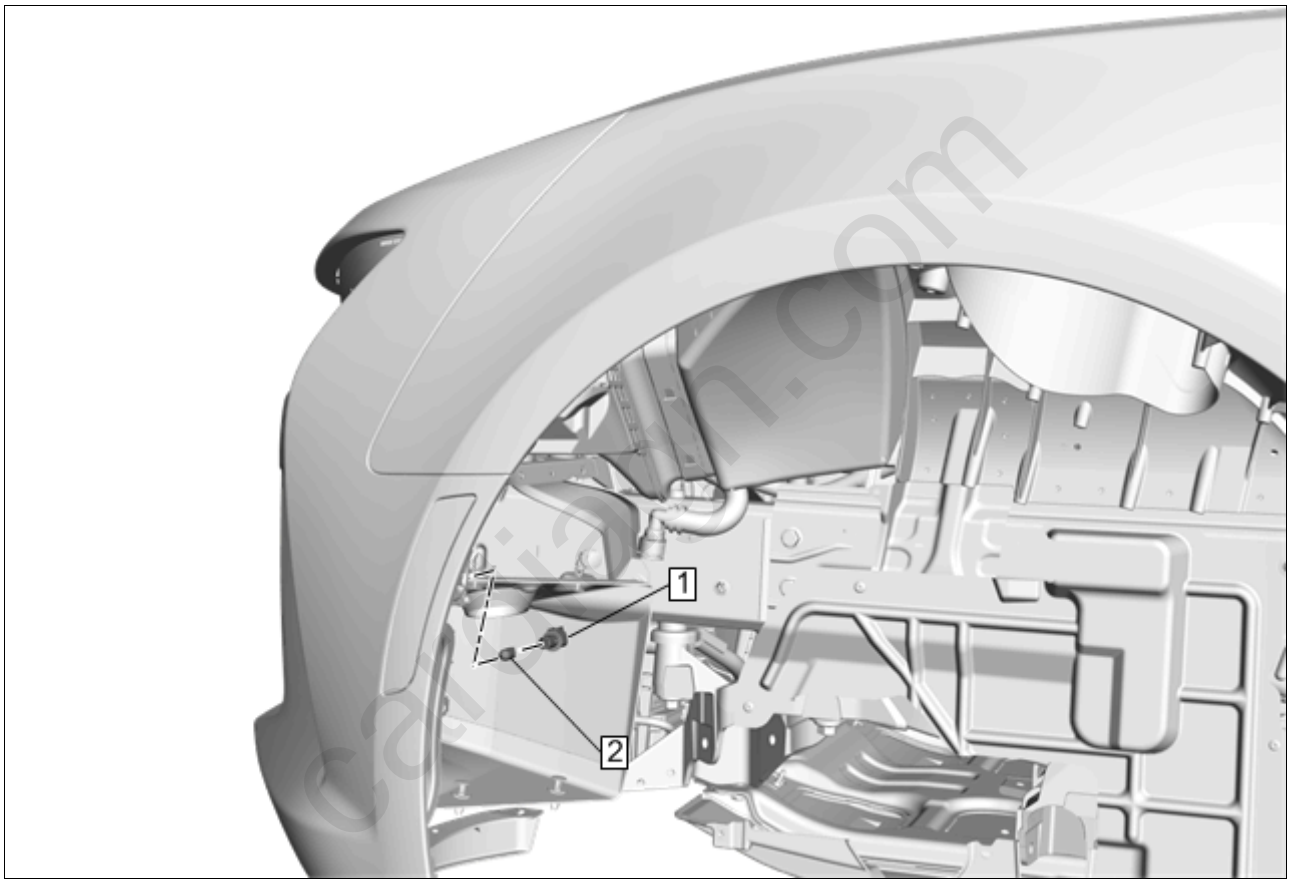
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Front Wheelhouse Liner Replacement	

1	Front Side Marker Lamp Procedure 1. Disconnect the electrical connector. 2. Compress the upper and lower clips and pull from the front bumper fascia.

REPAIR INSTRUCTIONS > FRONT SIDE MARKER LAMP BULB REPLACEMENT

Fig 1: Front Side Marker Lamp Bulb

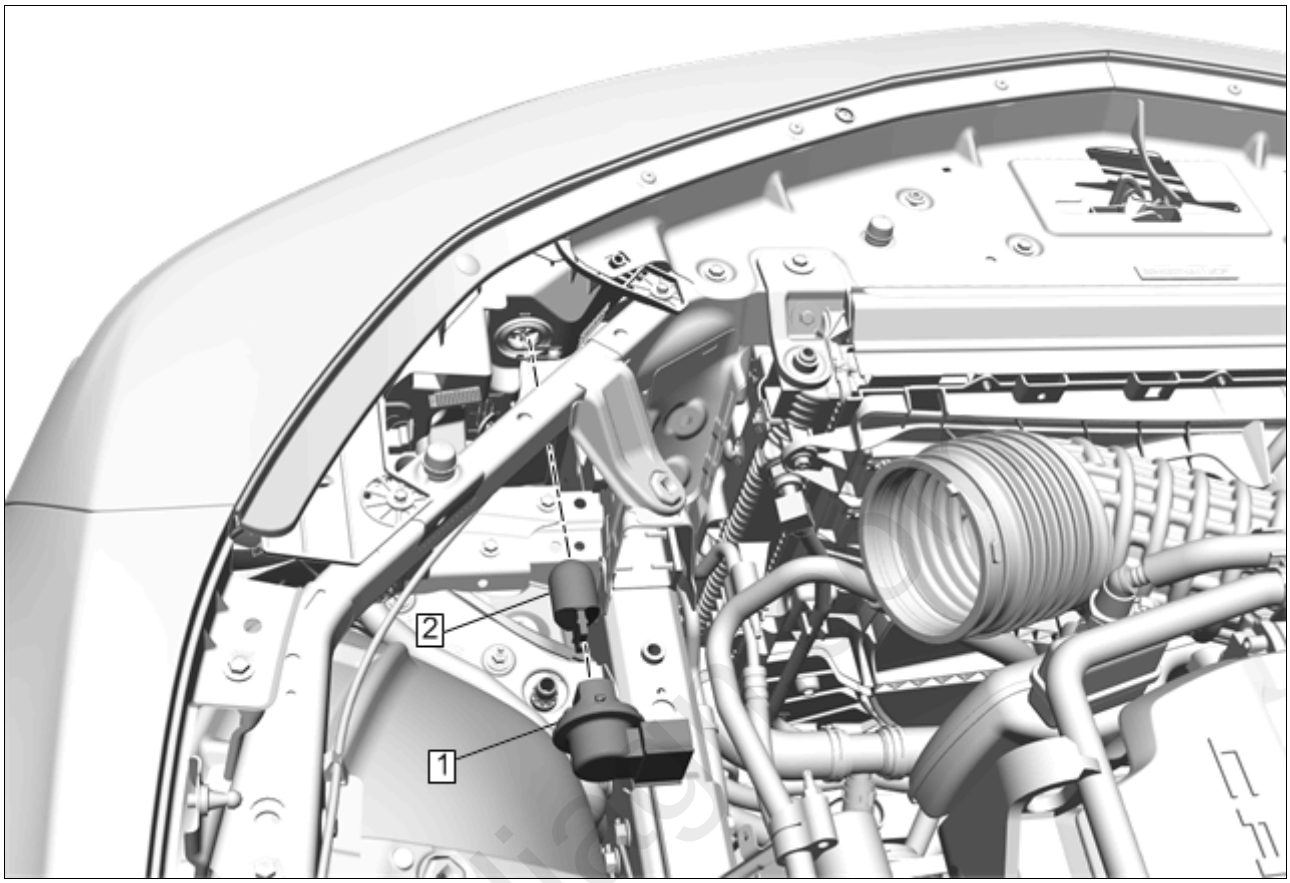


Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Front Wheelhouse Splash Shield Replacement	
1	Front Side Marker Lamp Socket **Procedure** Rotate counterclockwise and pull from the front side marker lamp.
2	Front Side Marker Lamp Bulb **Procedure** Pull the front side marker lamp bulb straight out of the socket.

REPAIR INSTRUCTIONS > TURN SIGNAL BULB REPLACEMENT - LEFT SIDE (LTG)

Fig 1: Turn Signal Bulb - Left Side (LTG)

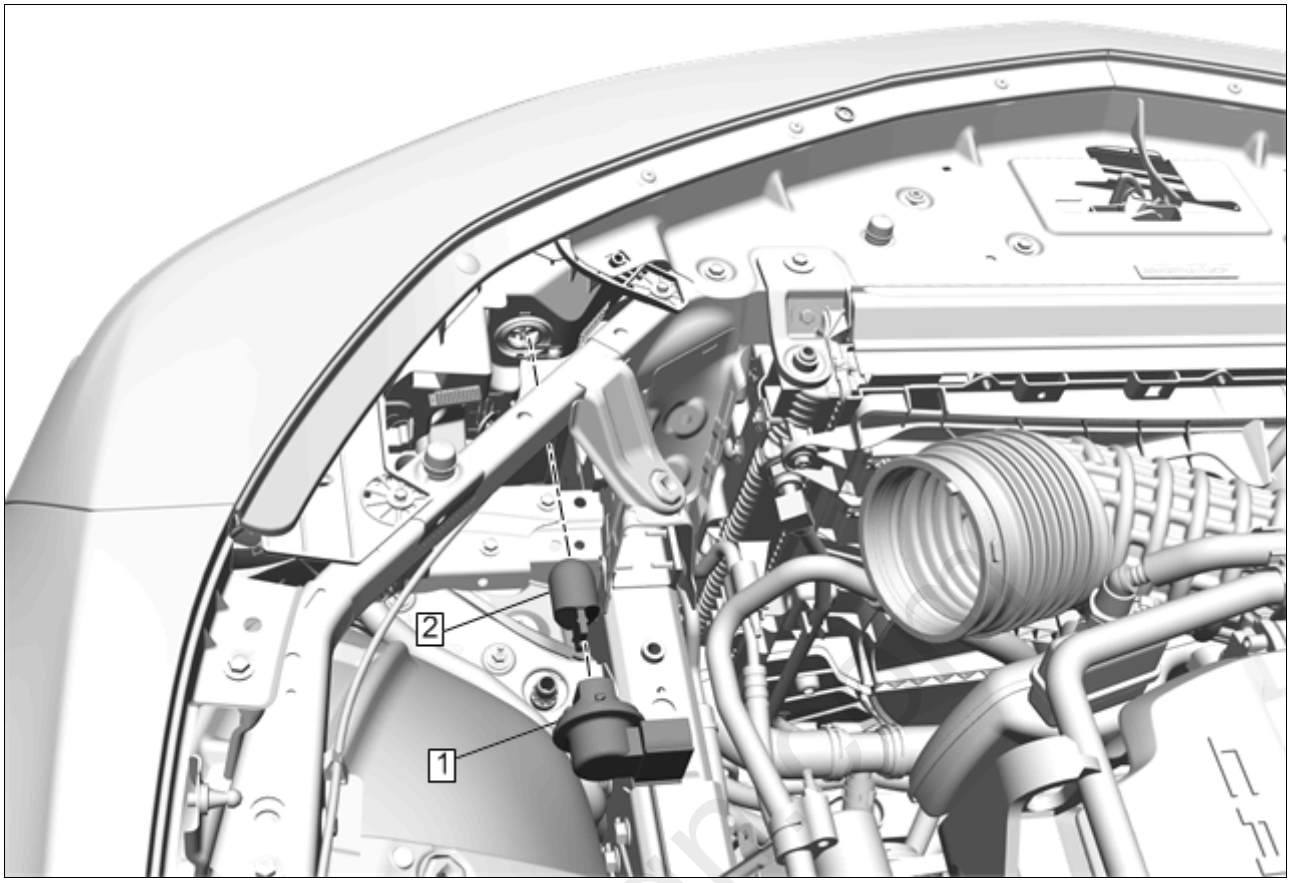


Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Air Cleaner Assembly Replacement	
1	Front Turn Signal Lamp Socket **Procedure** Rotate counterclockwise and pull from the headlamp.
2	Front Turn Signal Lamp Bulb **Procedure** Pull the turn signal lamp bulb straight out of the socket.

REPAIR INSTRUCTIONS > TURN SIGNAL BULB REPLACEMENT - LEFT SIDE (LGX)

Fig 1: Turn Signal Bulb - Left Side (LGX)

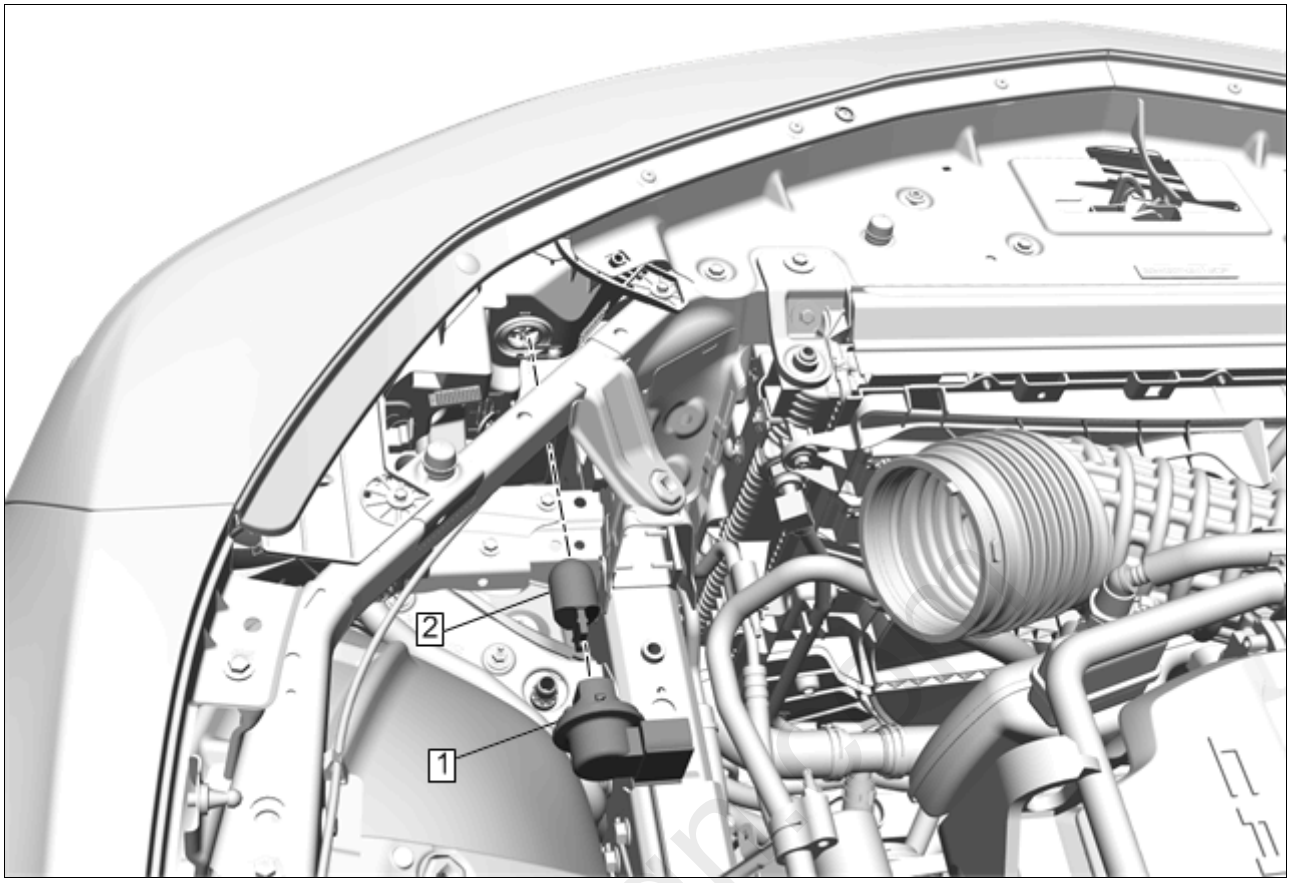


Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Air Cleaner Assembly Replacement	
1	Front Turn Signal Lamp Socket **Procedure** Rotate counterclockwise and pull from the headlamp.
2	Front Turn Signal Lamp Bulb **Procedure** Pull the turn signal lamp bulb straight out of the socket.

REPAIR INSTRUCTIONS > TURN SIGNAL BULB REPLACEMENT - LEFT SIDE (LT1)

Fig 1: Turn Signal Bulb - Left Side (LT1)

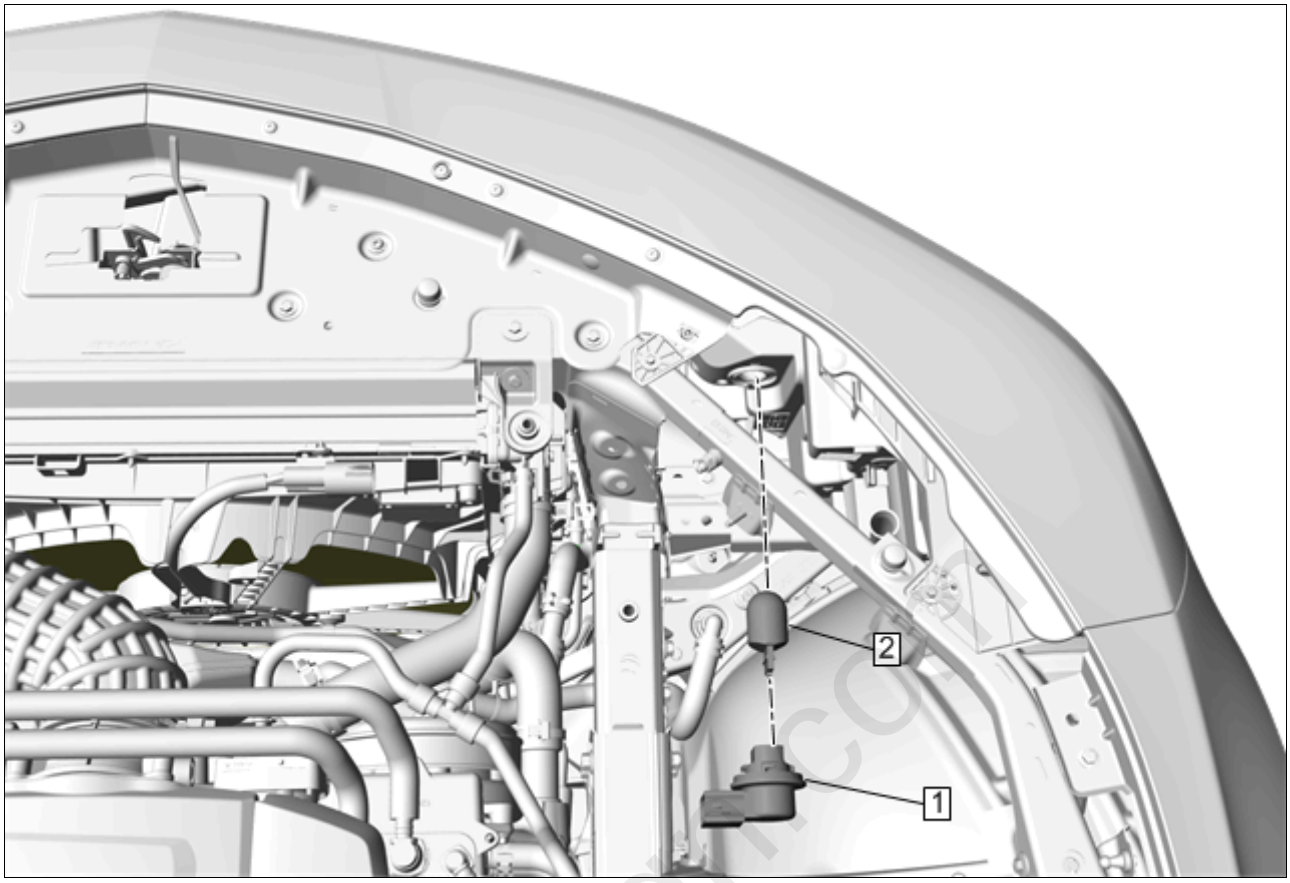


Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Air Cleaner Assembly Replacement	
1	Front Turn Signal Lamp Socket **Procedure** Rotate counterclockwise and pull from the headlamp.
2	Front Turn Signal Lamp Bulb **Procedure** Pull the turn signal lamp bulb straight out of the socket.

REPAIR INSTRUCTIONS > TURN SIGNAL BULB REPLACEMENT - RIGHT SIDE

Fig 1: Turn Signal Bulb - Right Side

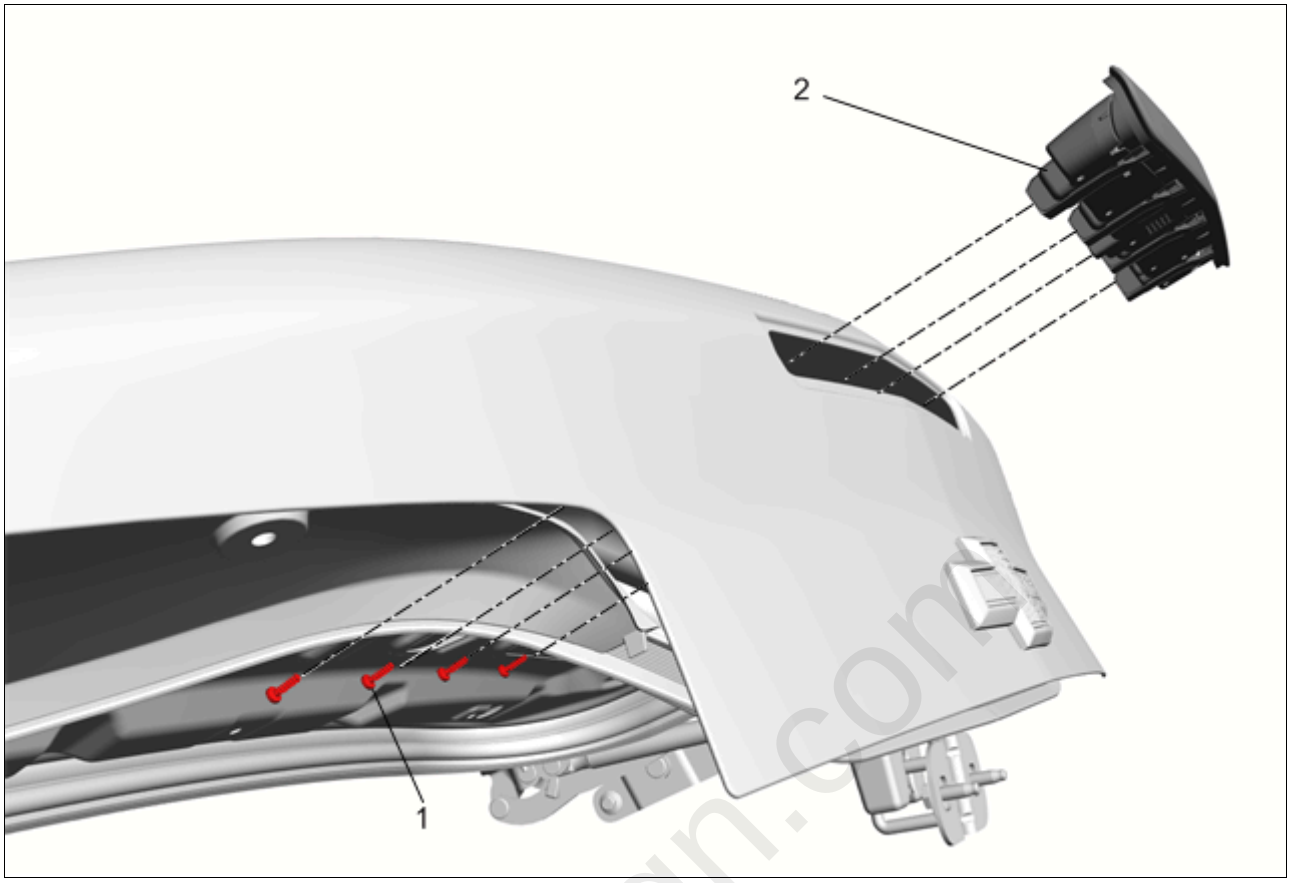


Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Front Turn Signal Lamp Socket **Procedure** Rotate counterclockwise and pull from the headlamp.
2	Front Turn Signal Lamp Bulb **Procedure** Pull the turn signal lamp bulb straight out of the socket.

REPAIR INSTRUCTIONS > HIGH MOUNT STOP LAMP REPLACEMENT

Fig 1: High Mount Stop Lamp



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Callout	Component Name
Preliminary Procedure Rear Compartment Lid Inner Panel Trim Replacement	
1	High Mount Stop Lamp Fastener (Qty: 4) *CAUTION:* *Refer to Fastener Caution .* **Tighten** 2.5 N.m (22 lb in)
2	High Mount Stop Lamp Procedure 1. Remove the high mount stop lamp from the vehicle. 2. Disconnect the electrical connector.

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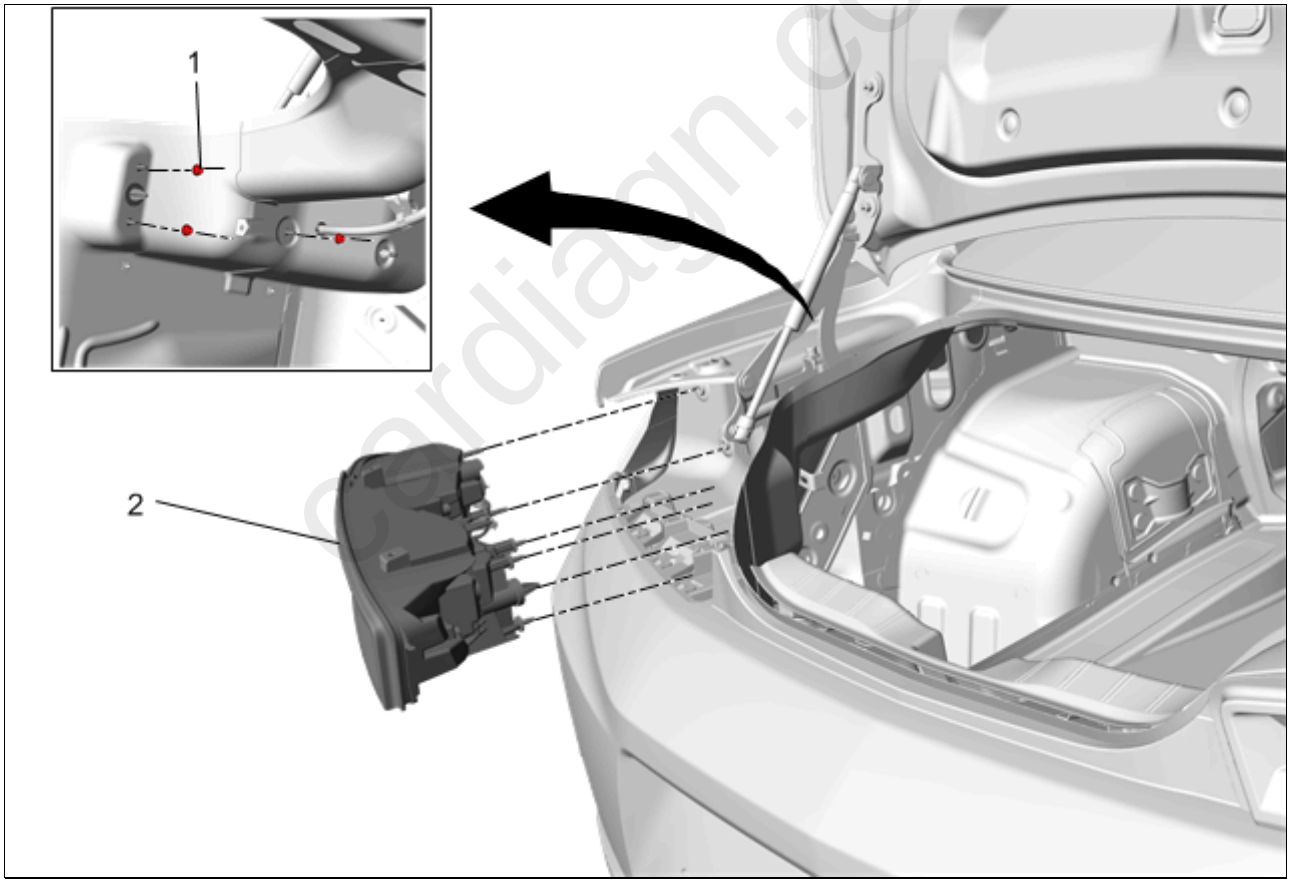
3. Clean the area with a 50/50 mixture of isopropyl alcohol and clean drinkable water to remove any gasket adhesive residue.
4. Dry the area with a clean dry cotton cloth.
5. When removing the protective liner from the new high mount stop lamp gasket, do not allow the tape to come in contact with dirt or any foreign matter.

NOTE:

Do not re-install the high mount stop lamp, replace with a new high mount stop lamp.

REPAIR INSTRUCTIONS > REAR BODY STRUCTURE STOP LAMP REPLACEMENT

Fig 1: Rear Body Structure Stop Lamp



Courtesy of GENERAL MOTORS COMPANY

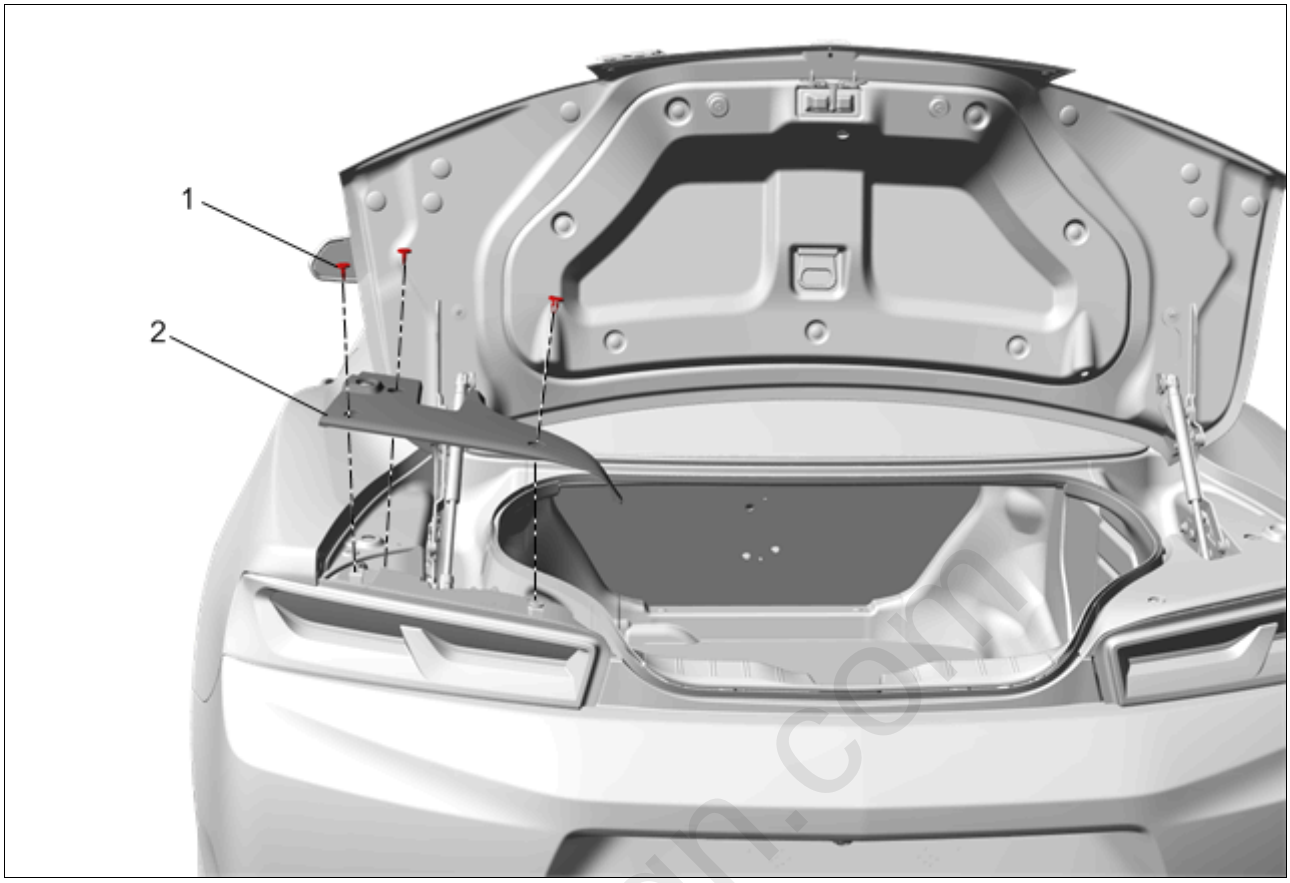
Callout	Component Name
Preliminary Procedures	

	1. Rear Body Structure Stop Lamp Trim Panel Replacement 2. Rear Compartment Side Trim Replacement - Left Side (Coupe) Rear Compartment Side Trim Replacement - Left Side (Convertible) , or Rear Compartment Side Trim Replacement - Right Side (Coupe)Rear Compartment Side Trim Replacement - Right Side (Convertible)
1	Rear Body Structure Stop Lamp Nut (Qty: 3) *CAUTION:* *Fastener Caution* **Tighten** 4.7 N.m (42 lb in)
2	Rear Body Structure Stop Lamp **Procedure** Disconnect the electrical connector.

REPAIR INSTRUCTIONS > REAR BODY STRUCTURE STOP LAMP TRIM PANEL REPLACEMENT

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Fig 1: Rear Body Structure Stop Lamp Trim Panel



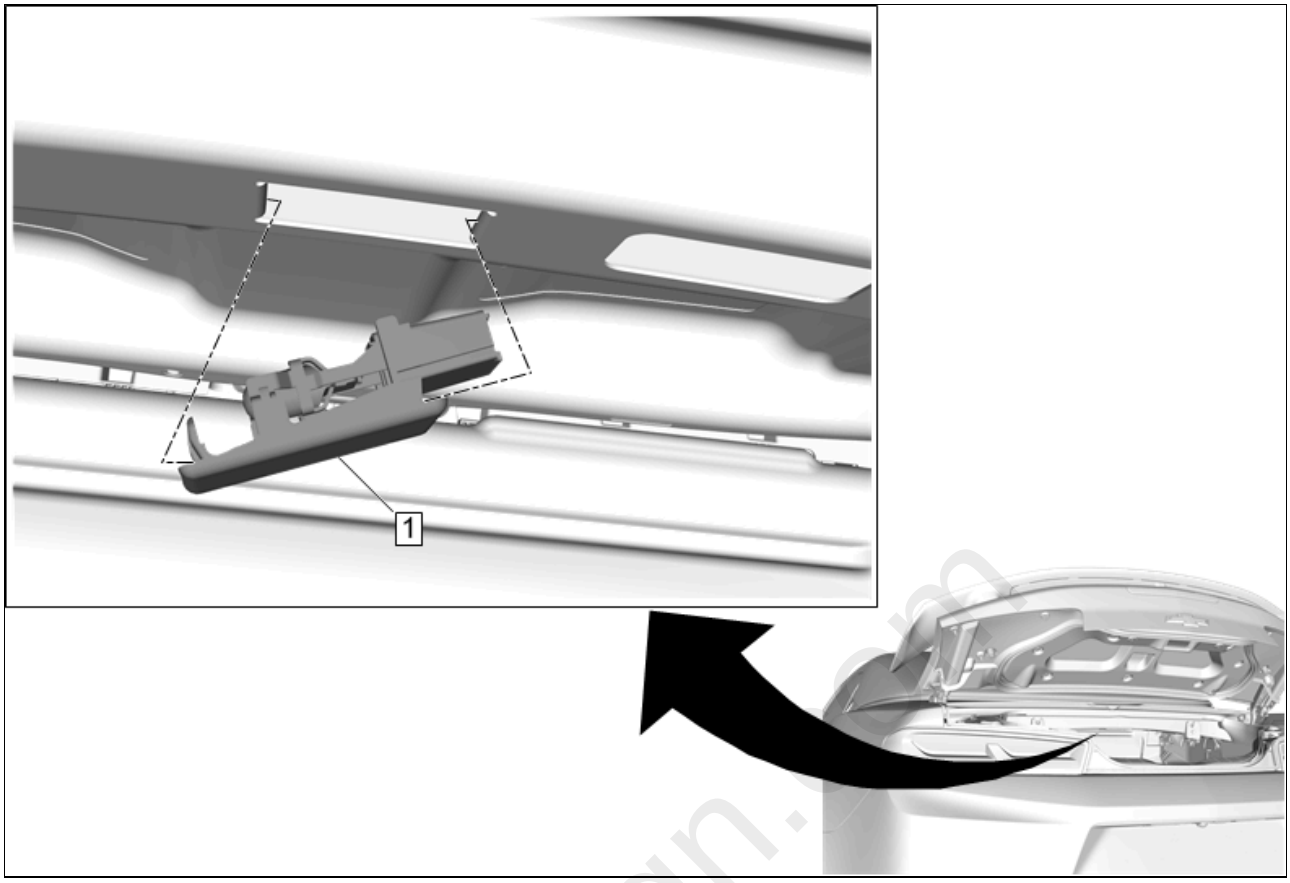
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Rear Body Structure Stop Lamp Trim Panel Retainer (Qty: 3)
2	Rear Body Structure Stop Lamp Trim Panel

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REPAIR INSTRUCTIONS > CARGO CENTER COURTESY LAMP REPLACEMENT

Fig 1: Cargo Center Courtesy Lamp

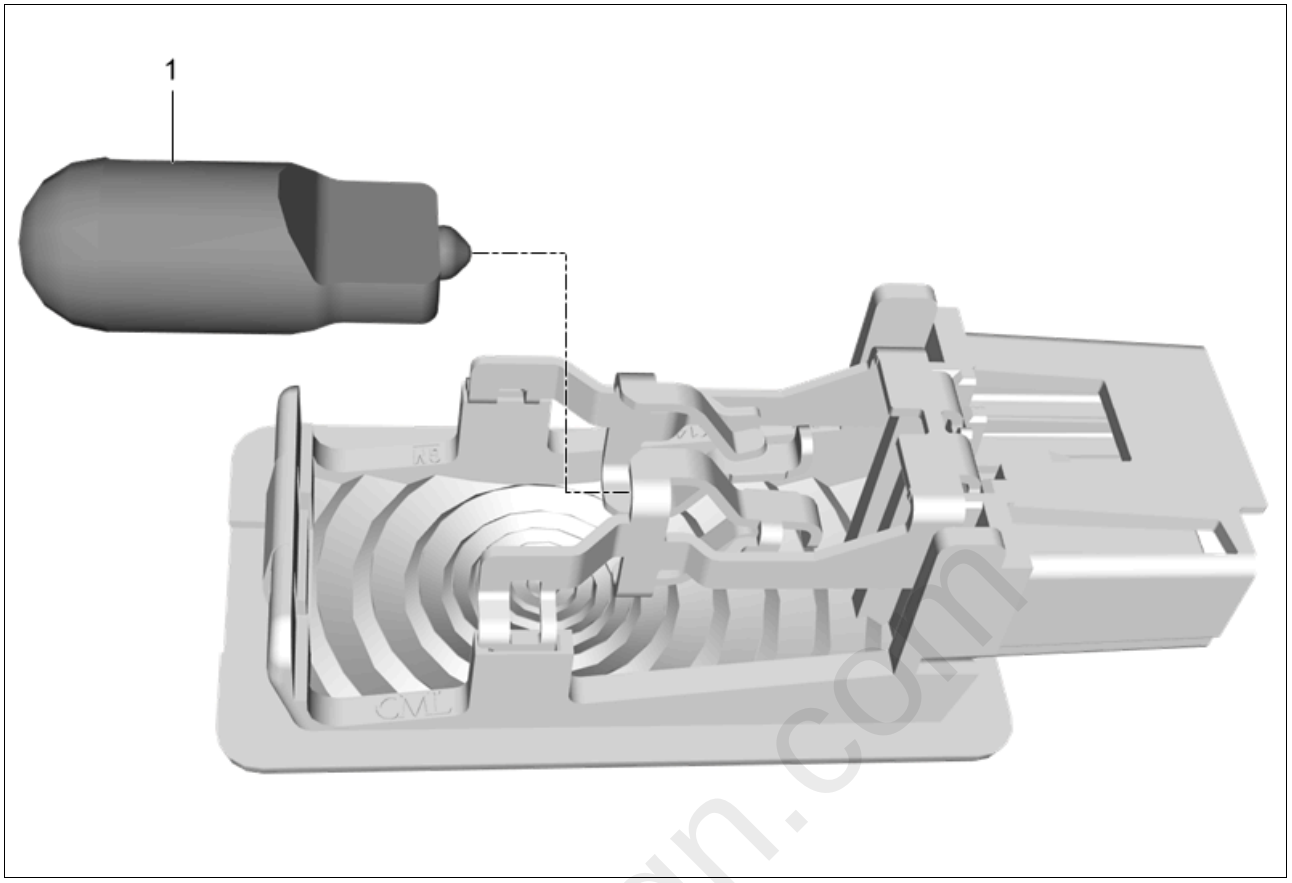


Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Open the rear compartment lid.	
1	Cargo Center Courtesy Lamp **Procedure** Release the retaining tabs.

REPAIR INSTRUCTIONS > CARGO CENTER COURTESY LAMP BULB REPLACEMENT

Fig 1: Cargo Center Courtesy Lamp Bulb



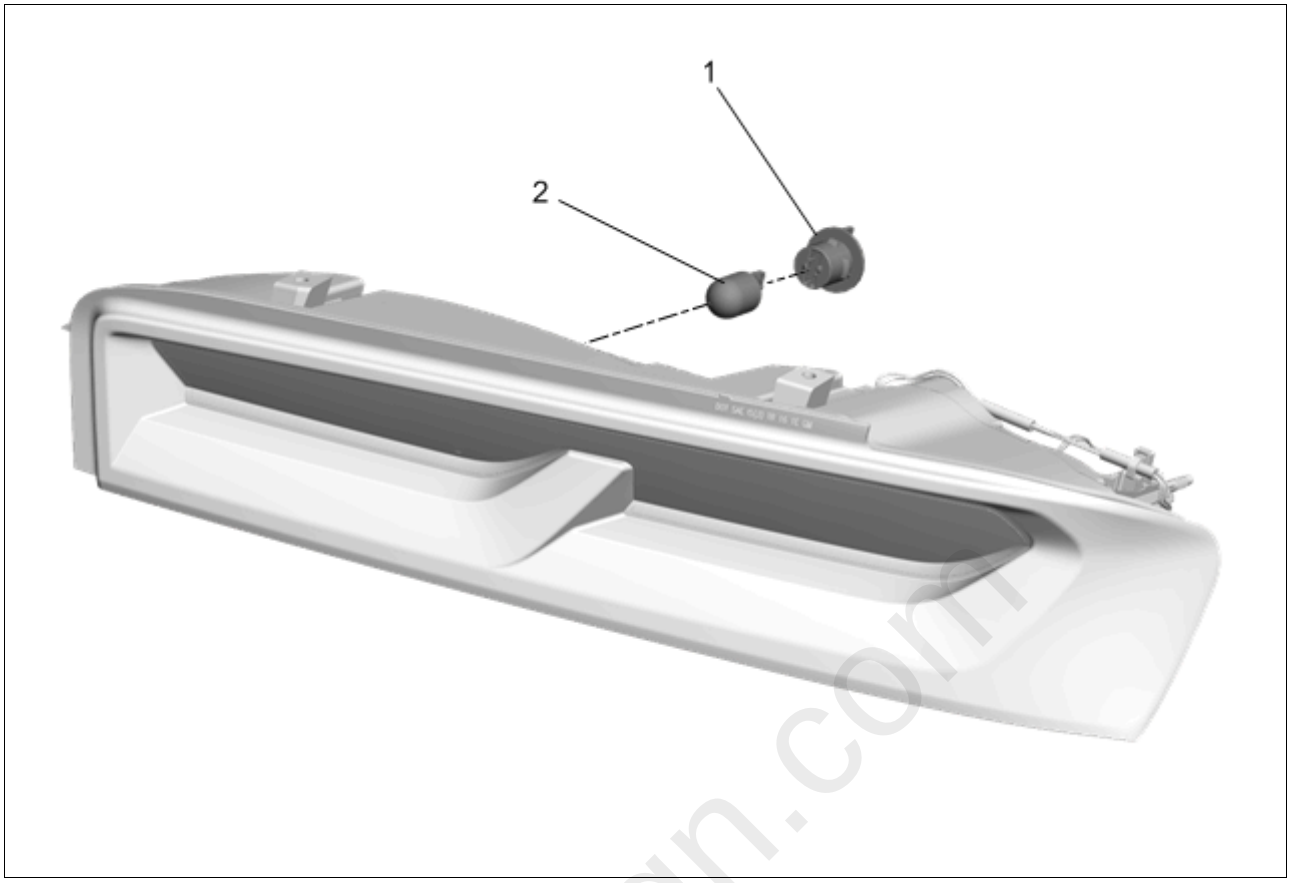
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Cargo Center Courtesy Lamp Replacement	
1	Cargo Center Courtesy Lamp Bulb

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REPAIR INSTRUCTIONS > BACKUP BULB REPLACEMENT

Fig 1: Backup Bulb



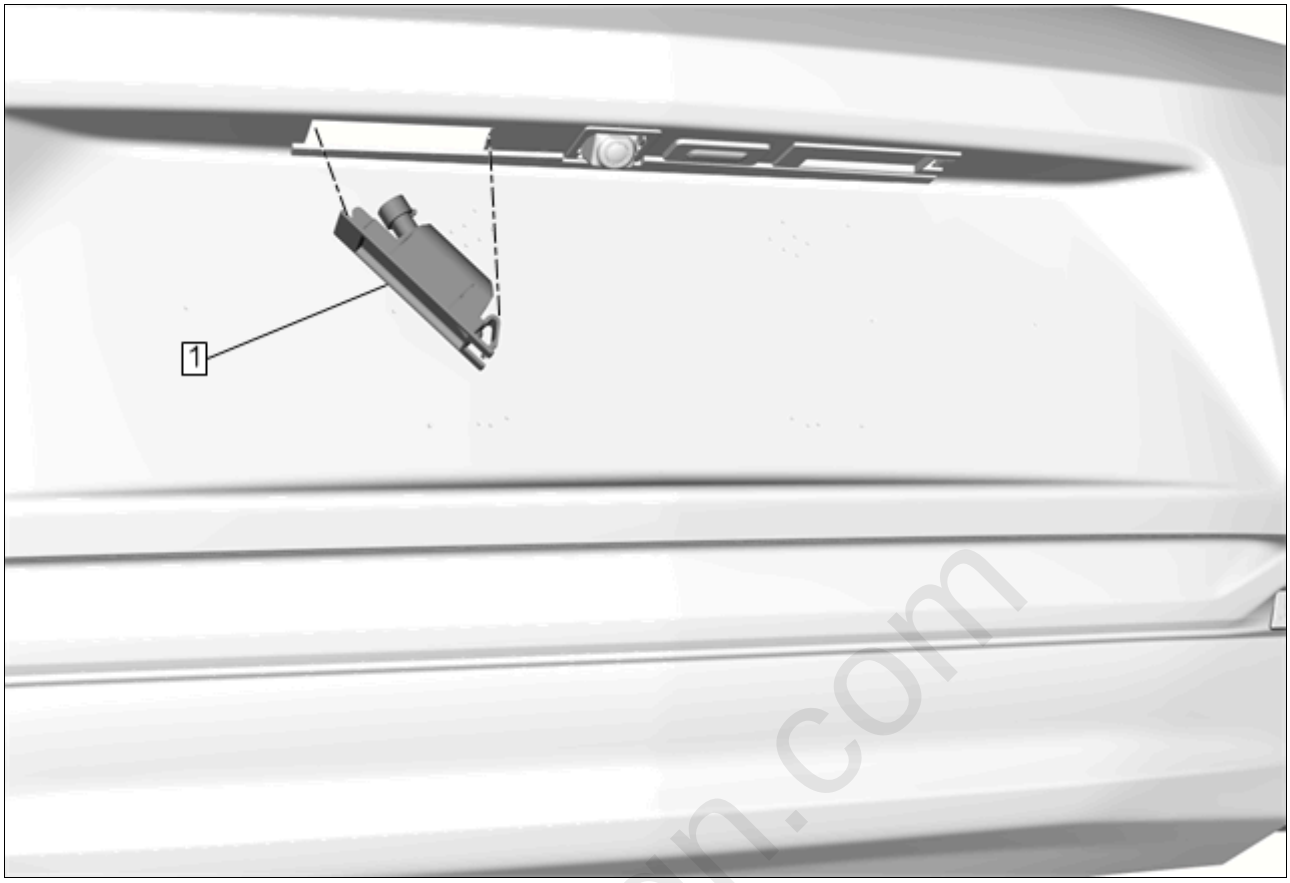
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Rear Body Structure Stop Lamp Replacement	
1	Backup Lamp Bulb Socket **Procedure** Rotate the bulb socket counter-clockwise and remove from the stop and tail lamp assembly.
2	Backup Lamp Bulb **Procedure** Pull the backup lamp bulb out of the backup lamp bulb socket.

REPAIR INSTRUCTIONS > REAR LICENSE PLATE LAMP REPLACEMENT

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Fig 1: Rear License Plate Lamp



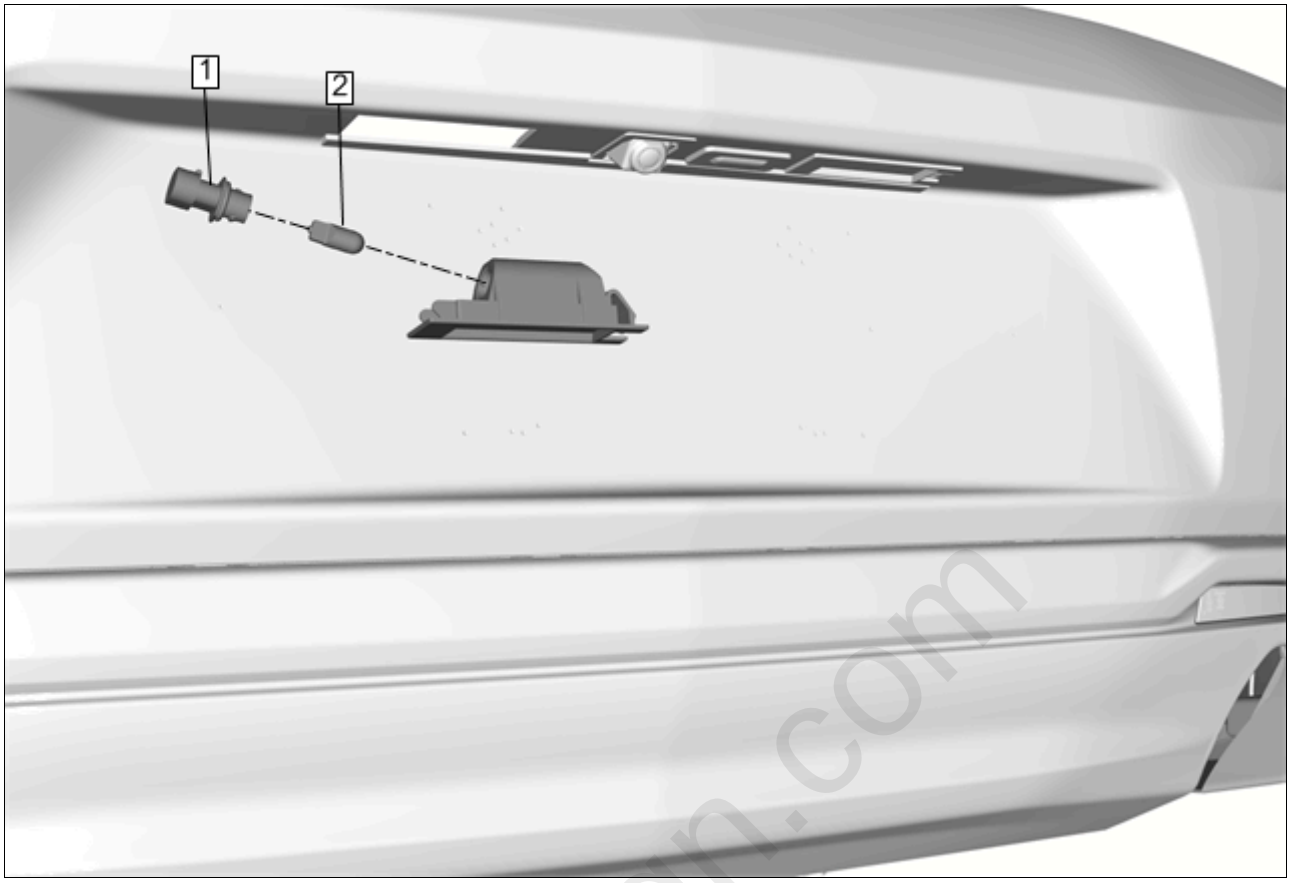
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Rear License Plate Lamp Procedure 1. Using a small flat-bladed tool, depress the inner license plate lamp tab and rotate downward to remove the lamp from the rear bumper fascia. 2. Disconnect the electrical connector.

REPAIR INSTRUCTIONS > REAR LICENSE PLATE LAMP BULB REPLACEMENT

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Fig 1: Rear License Plate Lamp Bulb



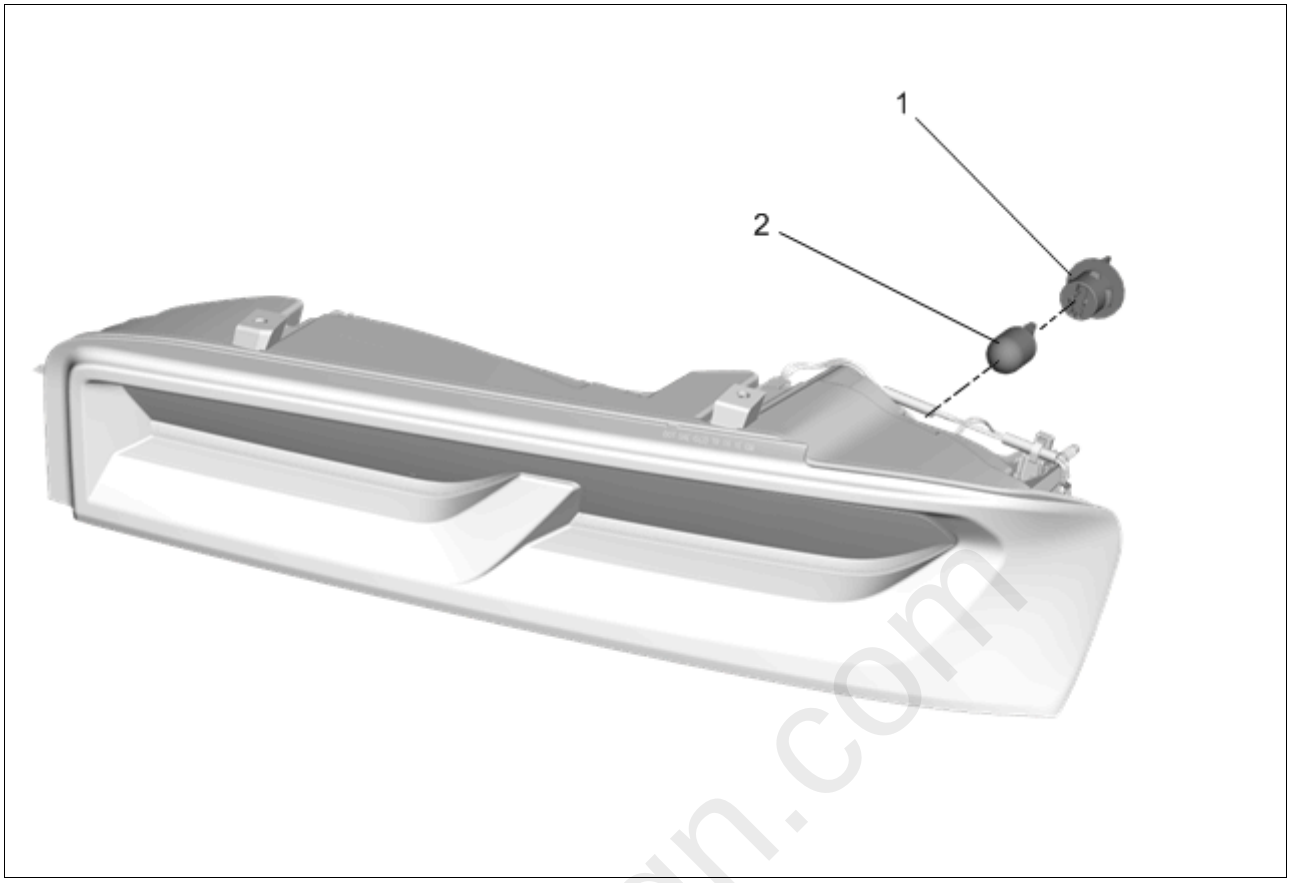
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Rear License Plate Lamp Replacement	
1	License Plate Lamp Socket **Procedure** Rotate the socket counterclockwise to remove from the license plate lamp.
2	Rear License Plate Lamp Bulb **Procedure** Pull the bulb out of the bulb socket.

REPAIR INSTRUCTIONS > TAIL BULB REPLACEMENT

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Fig 1: Tail Bulb

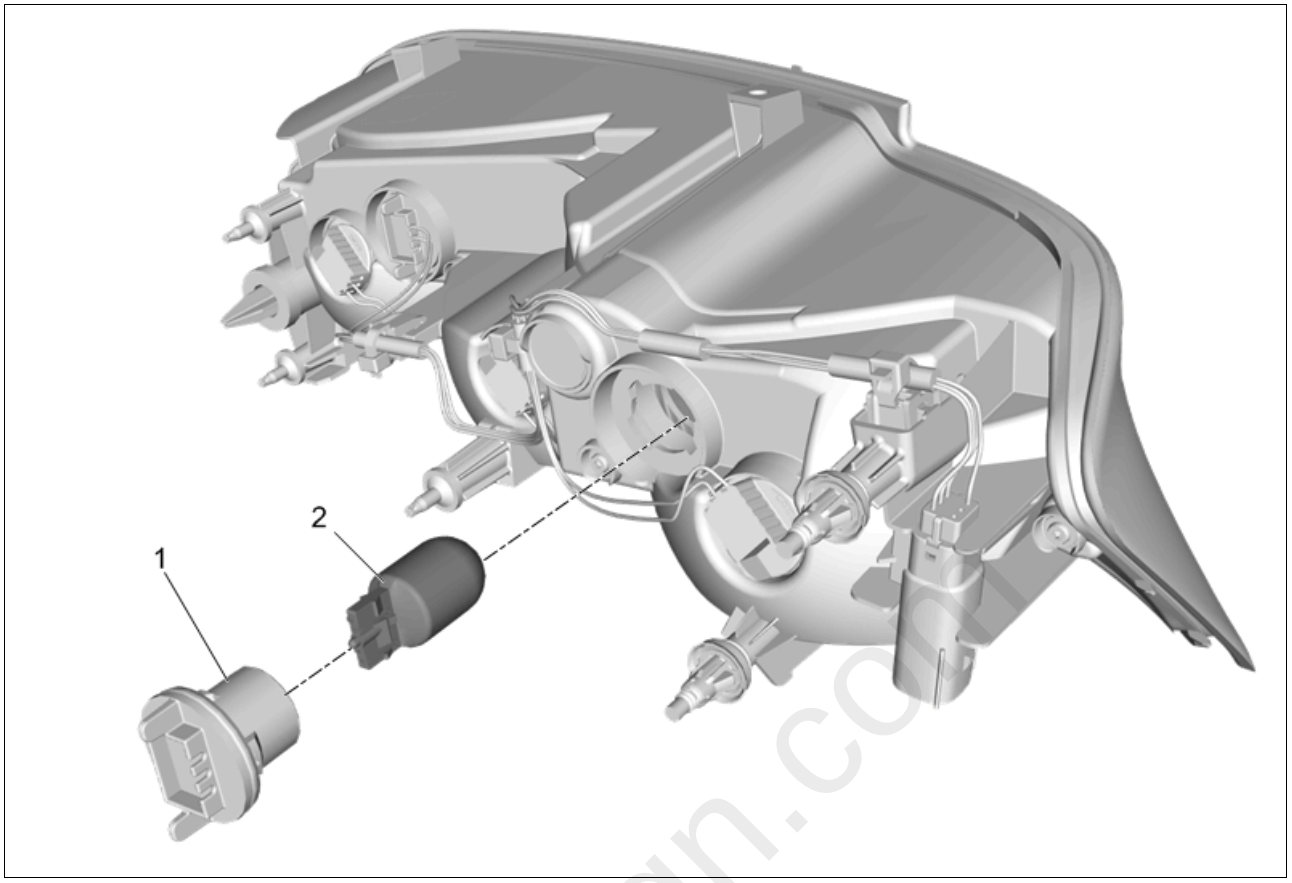


Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Rear Body Structure Stop Lamp Replacement	
1	Tail Lamp Socket (1) **Procedure** Rotate the bulb socket a quarter turn counterclockwise and remove.
2	Tail Bulb (2) **Procedure** Pull the bulb from the bulb socket.

REPAIR INSTRUCTIONS > STOP BULB REPLACEMENT

Fig 1: Stop Bulb



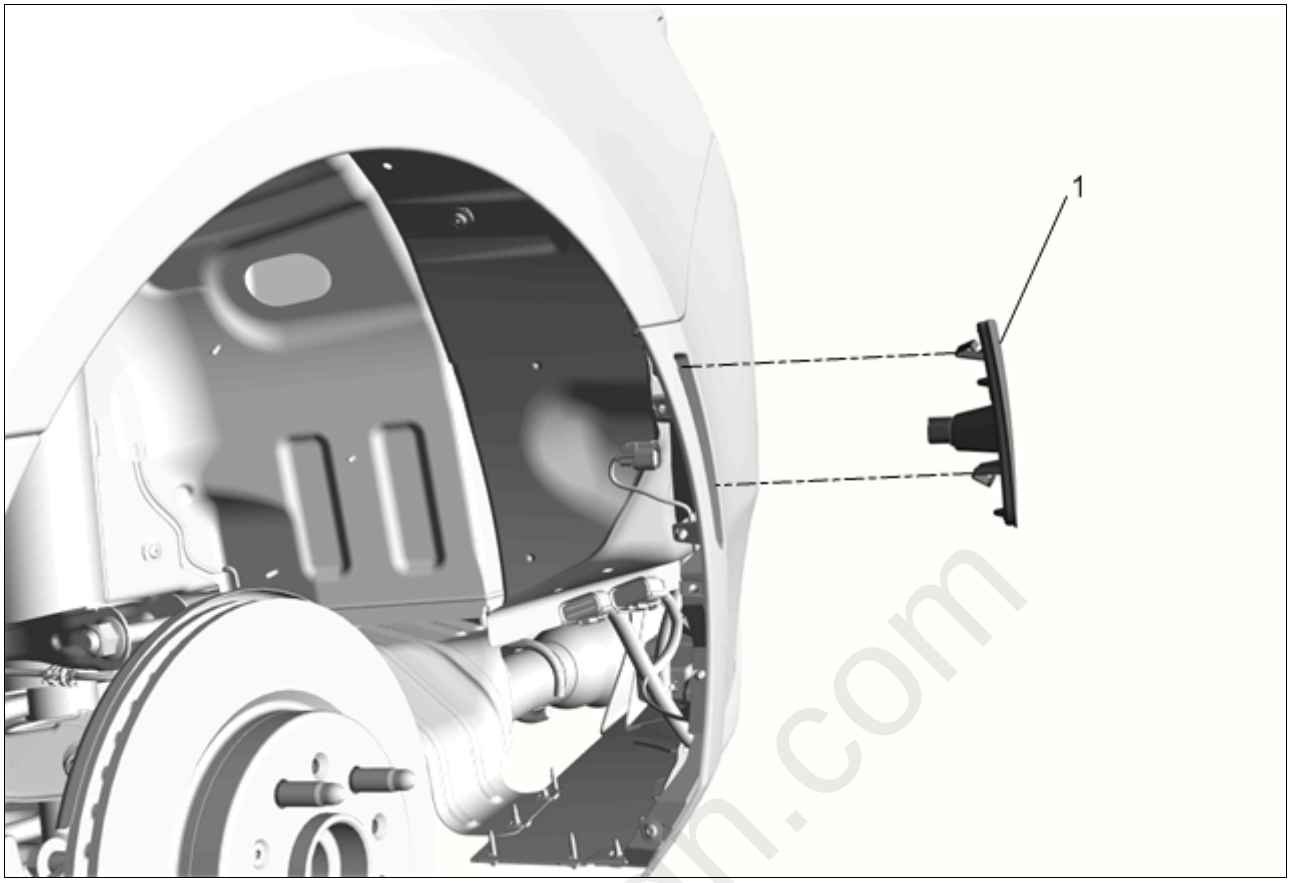
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Rear Body Structure Stop Lamp Replacement	
1	Stop Bulb Socket **Procedure** Rotate the bulb socket a quarter turn counterclockwise and remove.
2	Stop Bulb **Procedure** Pull the bulb from the bulb socket.

REPAIR INSTRUCTIONS > REAR FASCIA AUXILIARY SIGNAL LAMP REPLACEMENT

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Fig 1: Rear Fascia Auxiliary Signal Lamp



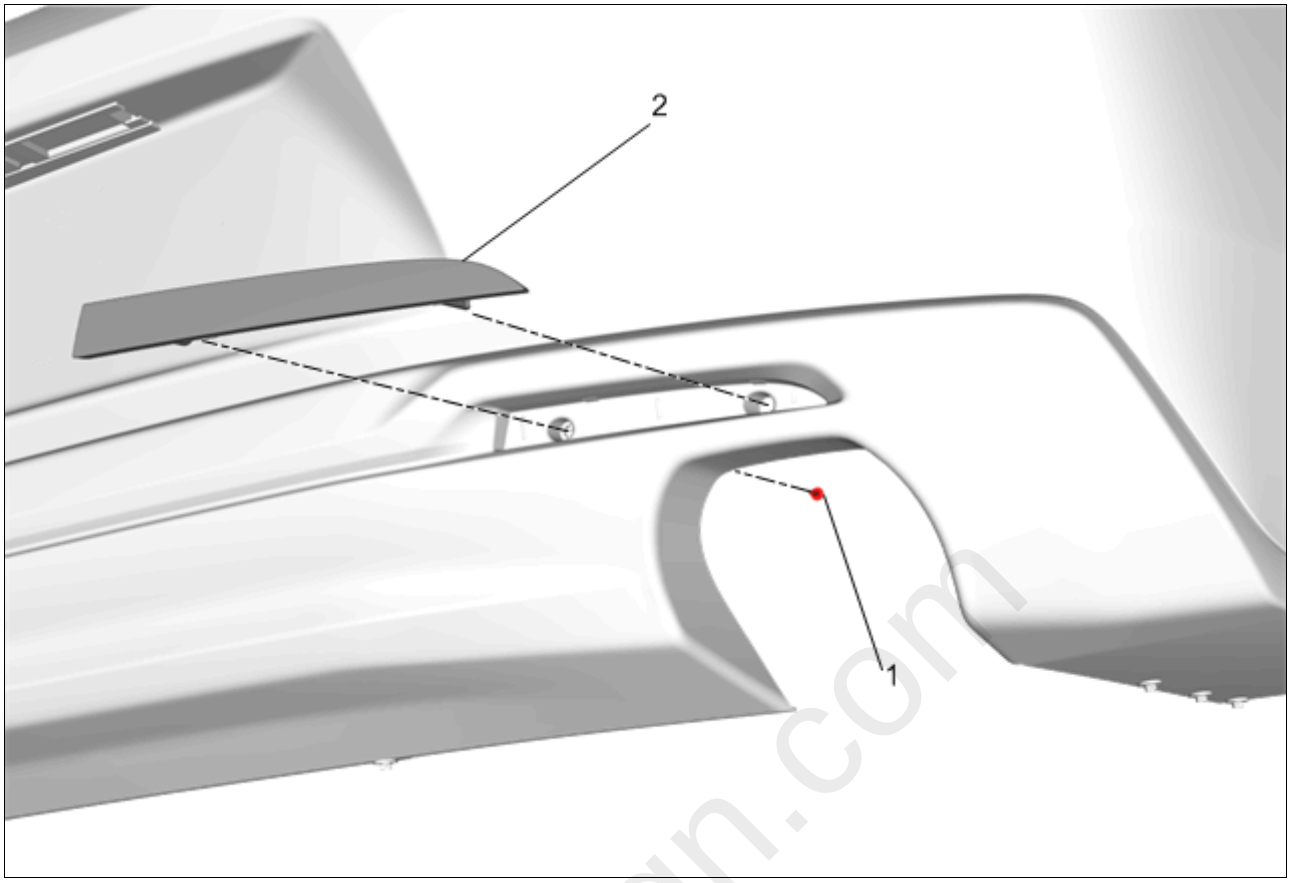
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Rear Wheelhouse Liner Replacement	
1	Rear Fascia Auxiliary Signal Lamp Procedure 1. Disconnect the electrical connector. 2. Compress the locking tabs and pull the rear fascia auxiliary signal lamp from the rear bumper fascia.

REPAIR INSTRUCTIONS > REAR FASCIA LOWER SIGNAL LAMP REPLACEMENT

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Fig 1: Rear Fascia Lower Signal Lamp



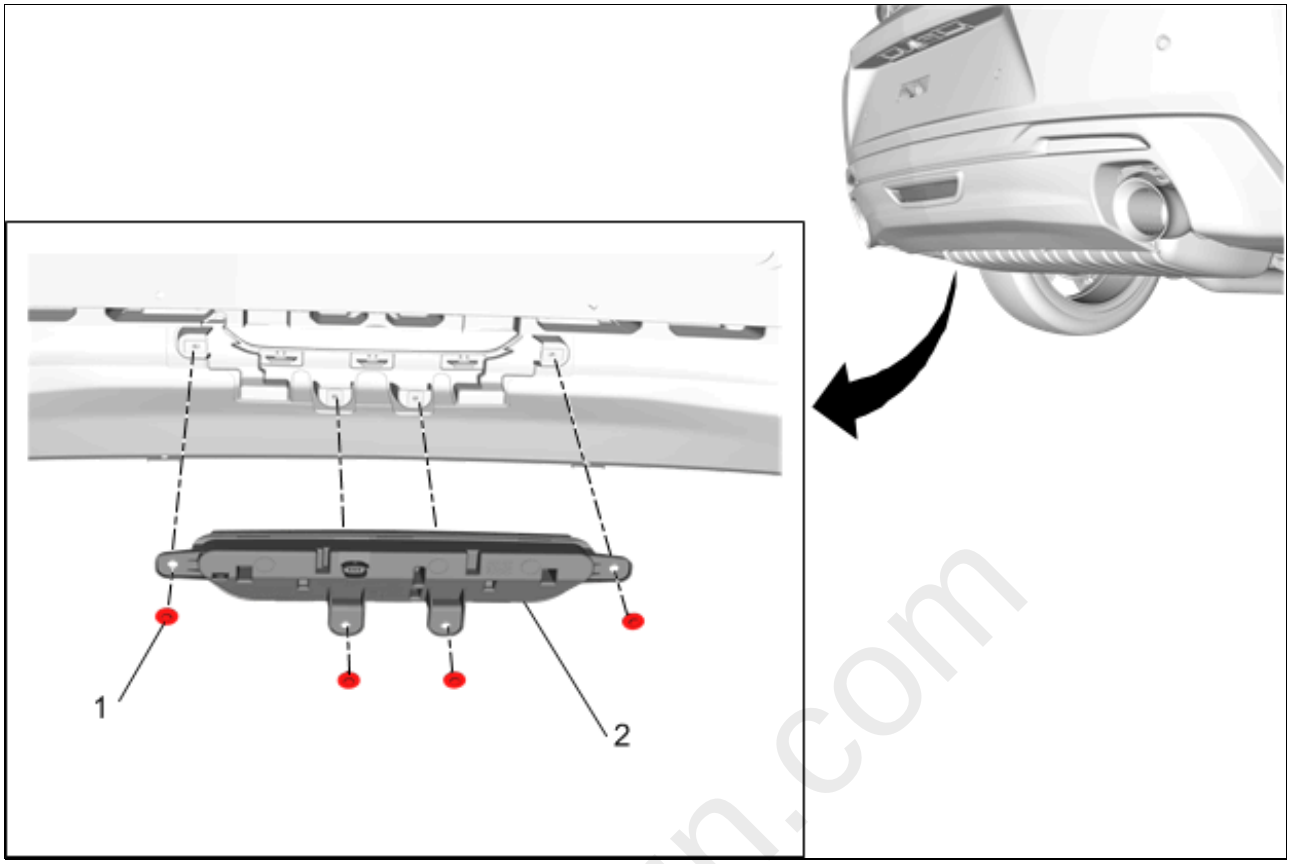
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Rear Bumper Fascia Replacement	
1	Rear Fascia Lower Signal Lamp Fastener *CAUTION:* *Refer to Fastener Caution .* **Tighten** 2.5 N.m (22 lb in)
2	Rear Fascia Lower Signal Lamp

REPAIR INSTRUCTIONS > REAR FASCIA LOWER SIGNAL LAMP REPLACEMENT (CENTER)

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Fig 1: Rear Fascia Lower Signal Lamp (Center)



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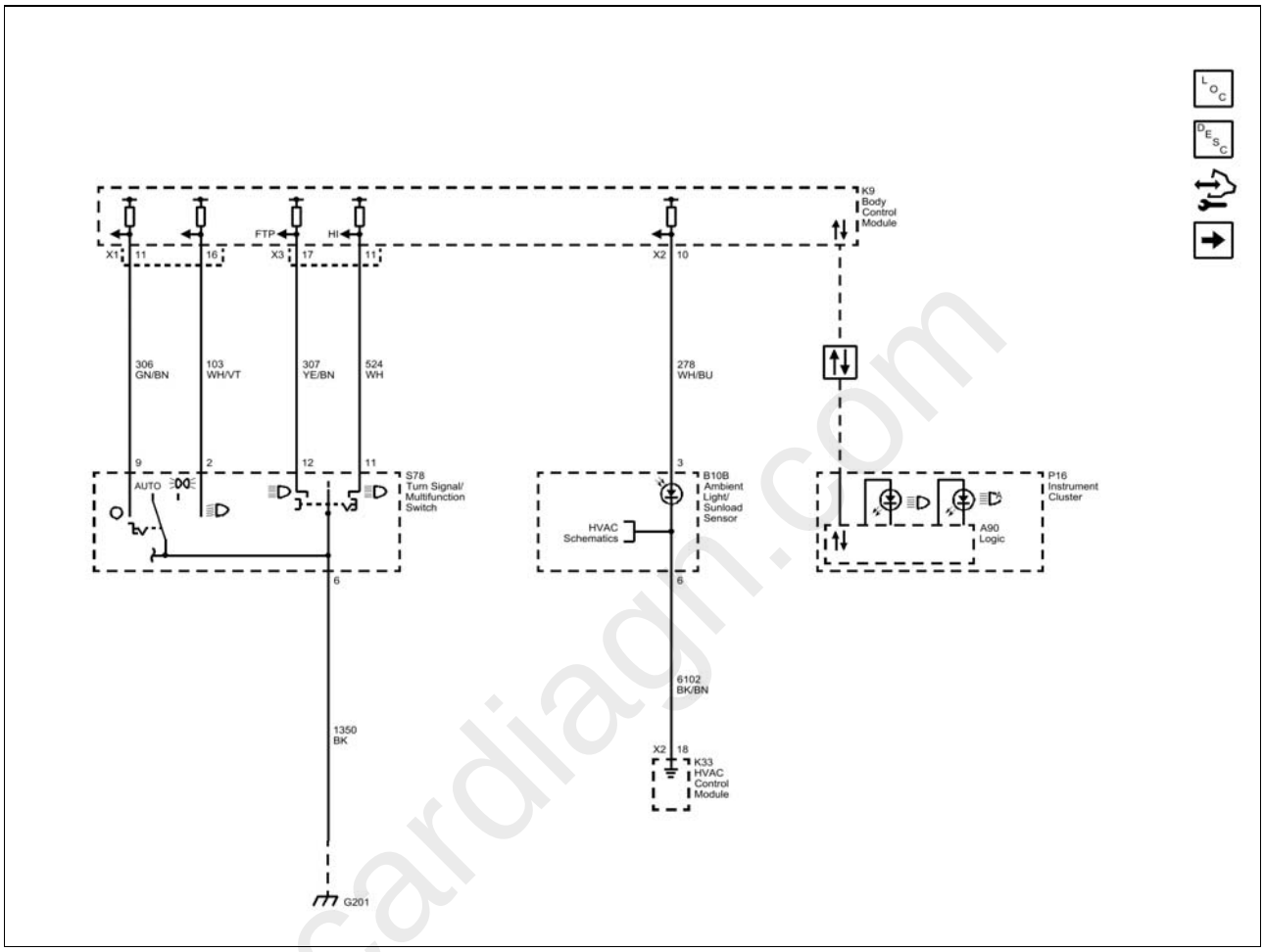
Callout	Component Name
1	Rear Fascia Lower Signal Lamp Fastener (Qty: 4) *CAUTION:* *Refer to Fastener Caution .* **Tighten** 2.5 N.m (22 lb in)
2	Rear Fascia Lower Signal Lamp

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Service Manual: LIGHTING SYSTEM - SCHEMATIC WIRING DIAGRAMS

SCHEMATIC AND WIRING DIAGRAMS > HEADLIGHTS/DAYTIME RUNNING LIGHTS (DRL) WIRING SCHEMATICS > CONTROLS AND INDICATORS

Fig 1: Controls and Indicators

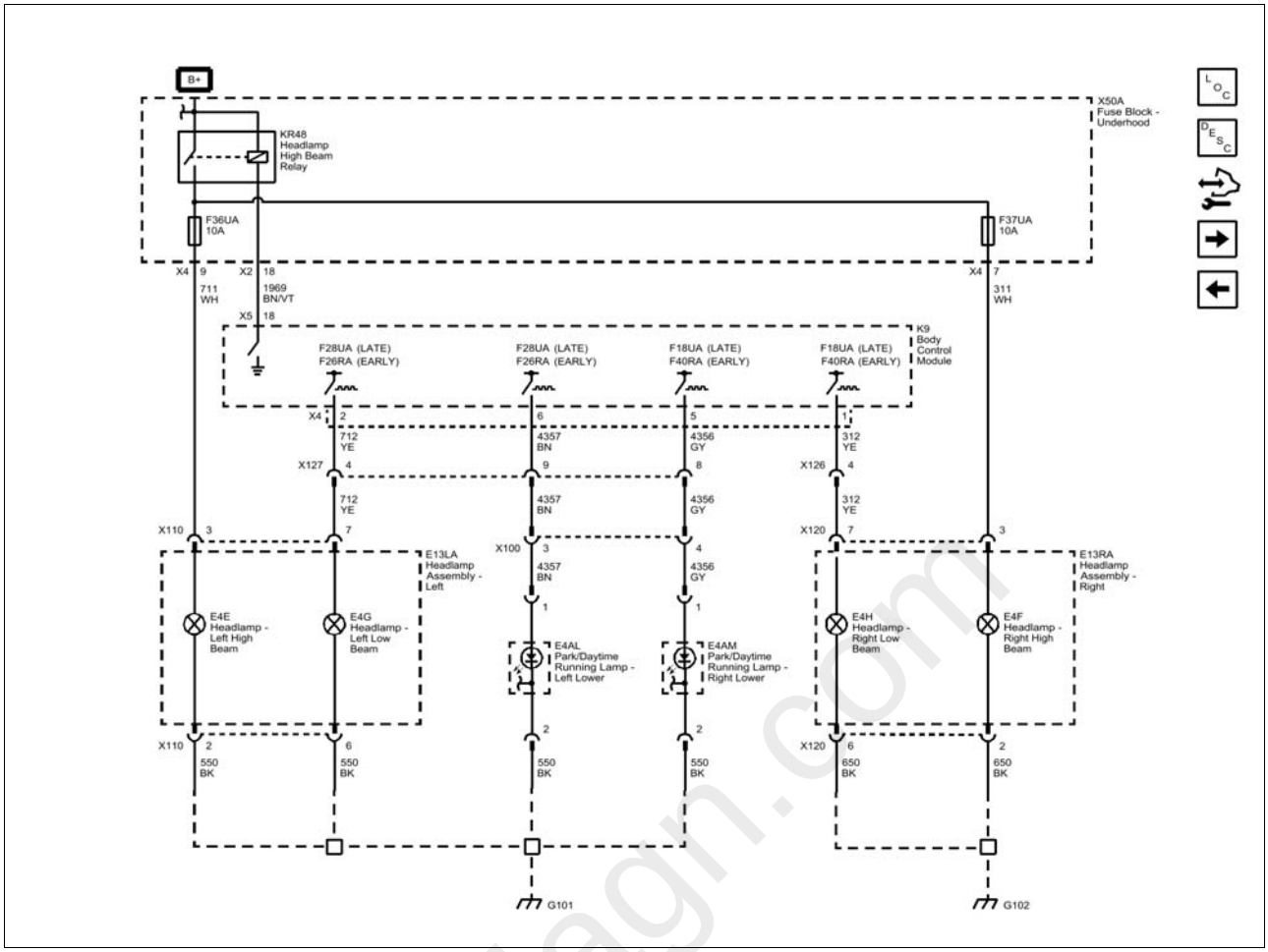


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SCHEMATIC AND WIRING DIAGRAMS > HEADLIGHTS/DAYTIME RUNNING LIGHTS (DRL) WIRING SCHEMATICS > HEADLAMPS AND DAYTIME RUNNING LAMPS (WITHOUT T4F)

Fig 1: Headlamps and Daytime Running Lamps (without T4F)

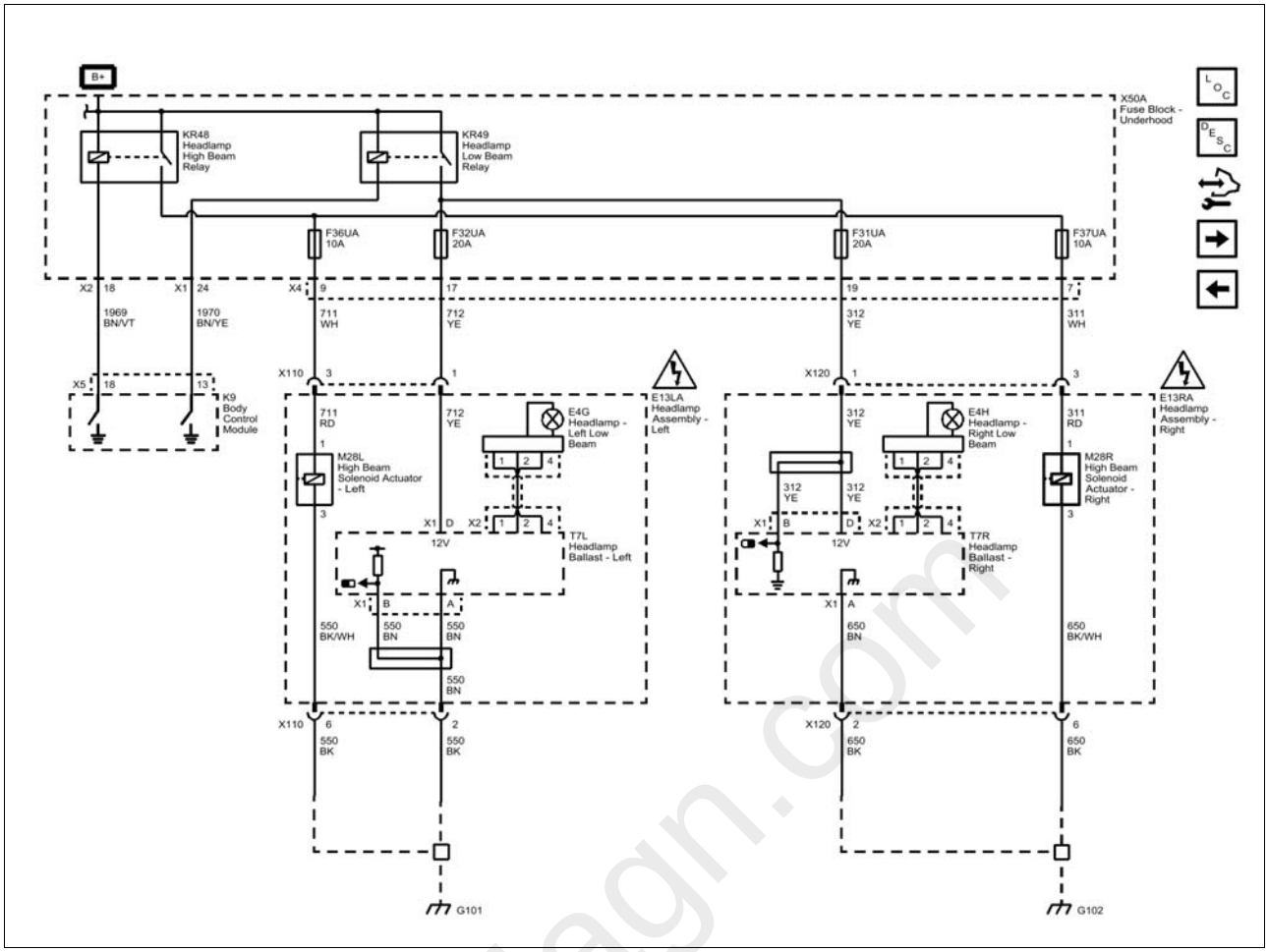


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SCHEMATIC AND WIRING DIAGRAMS > HEADLIGHTS/DAYTIME RUNNING LIGHTS (DRL) WIRING SCHEMATICS > HEADLAMPS (T4F)

Fig 1: Headlamps (T4F)

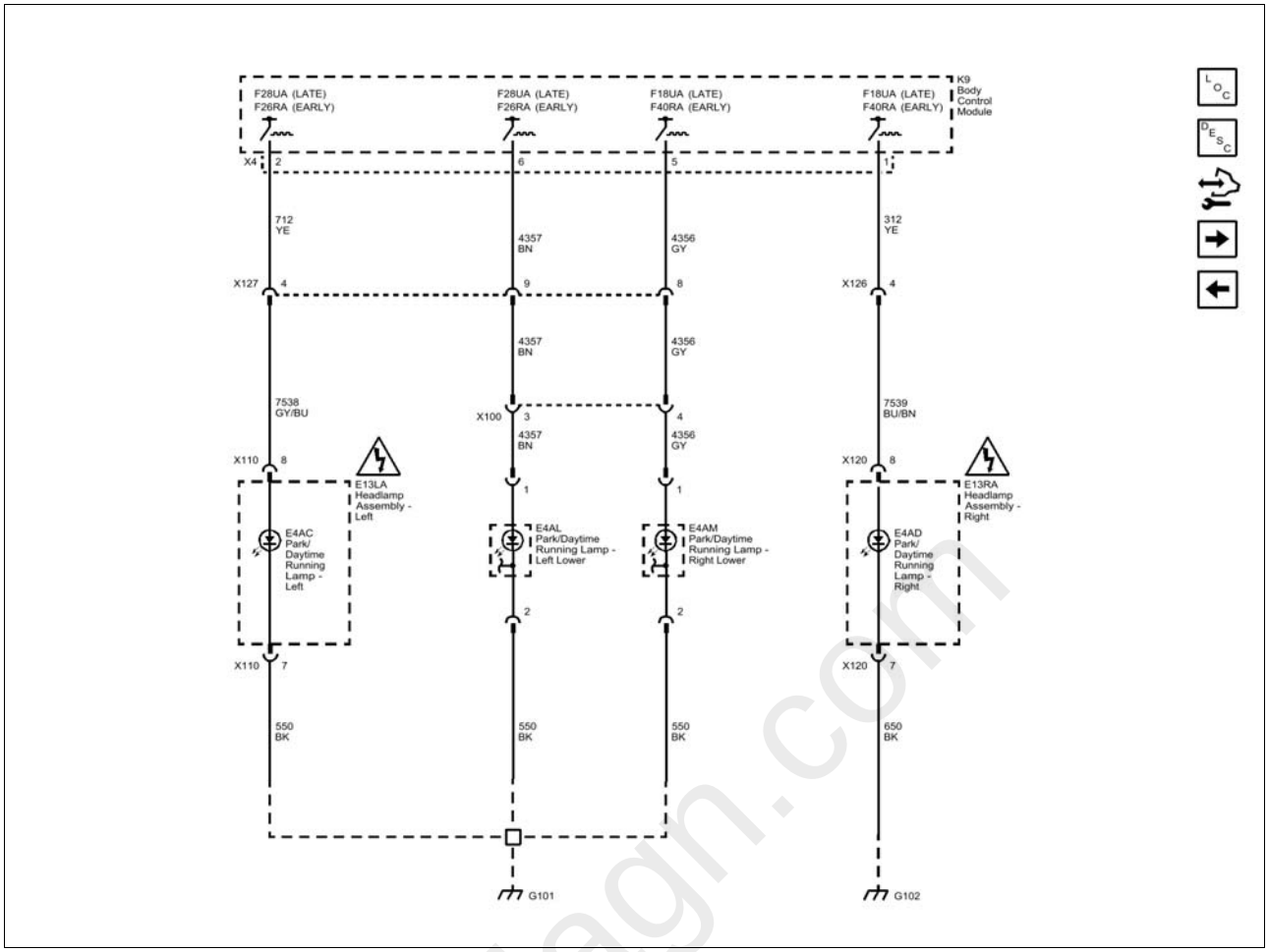


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SCHEMATIC AND WIRING DIAGRAMS > HEADLIGHTS/DAYTIME RUNNING LIGHTS (DRL) WIRING SCHEMATICS > DAYTIME RUNNING LIGHTS (T4F)

Fig 1: Daytime Running Lights (T4F)

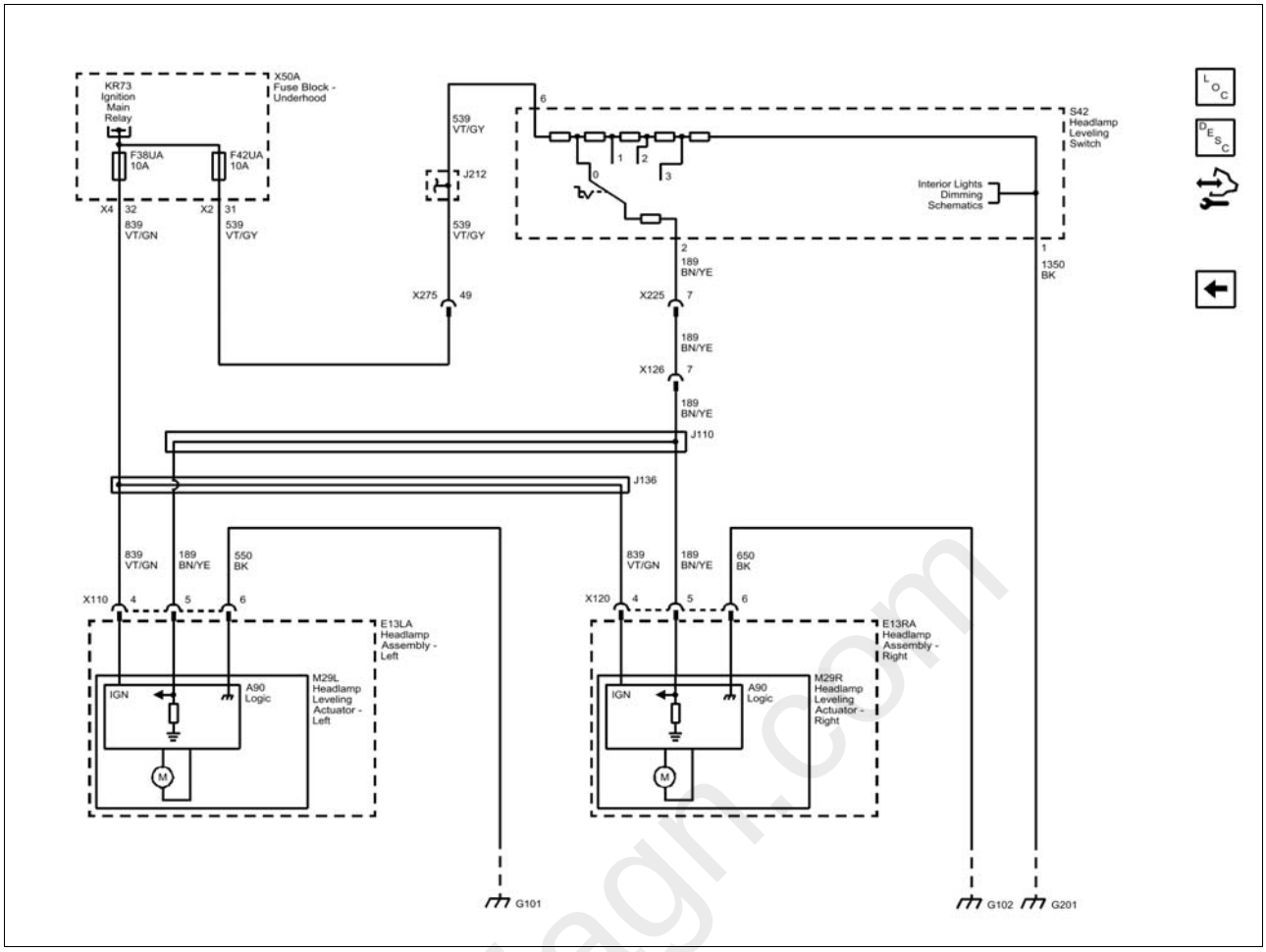


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SCHEMATIC AND WIRING DIAGRAMS > HEADLIGHTS/DAYTIME RUNNING LIGHTS (DRL) WIRING SCHEMATICS > MANUAL HEADLAMP LEVELING (TR6)

Fig 1: Manual Headlamp Leveling (TR6)

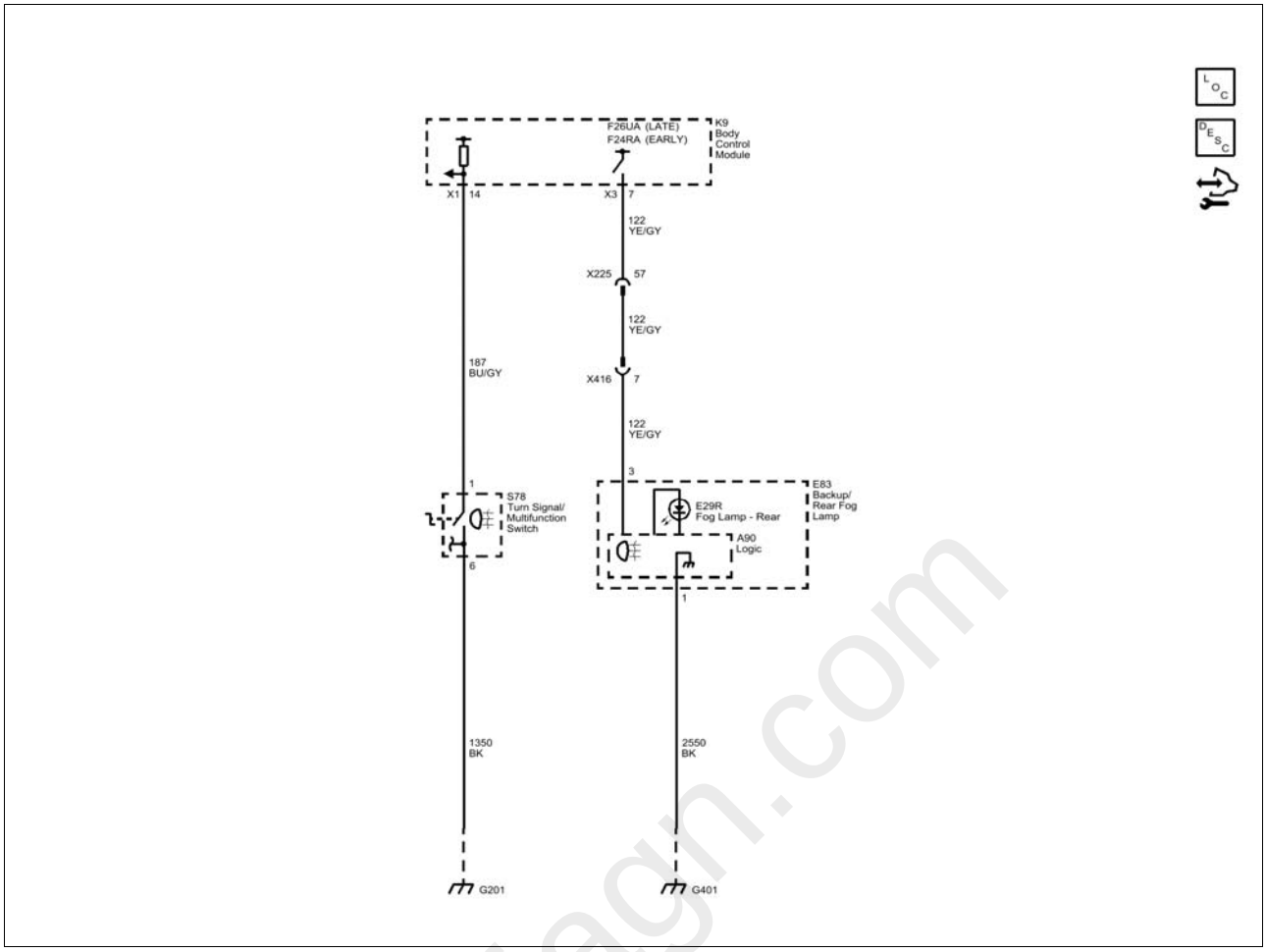


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SCHEMATIC AND WIRING DIAGRAMS > FOG LIGHTS WIRING SCHEMATICS > REAR FOG LIGHT (T79)

Fig 1: Rear Fog Light (T79)

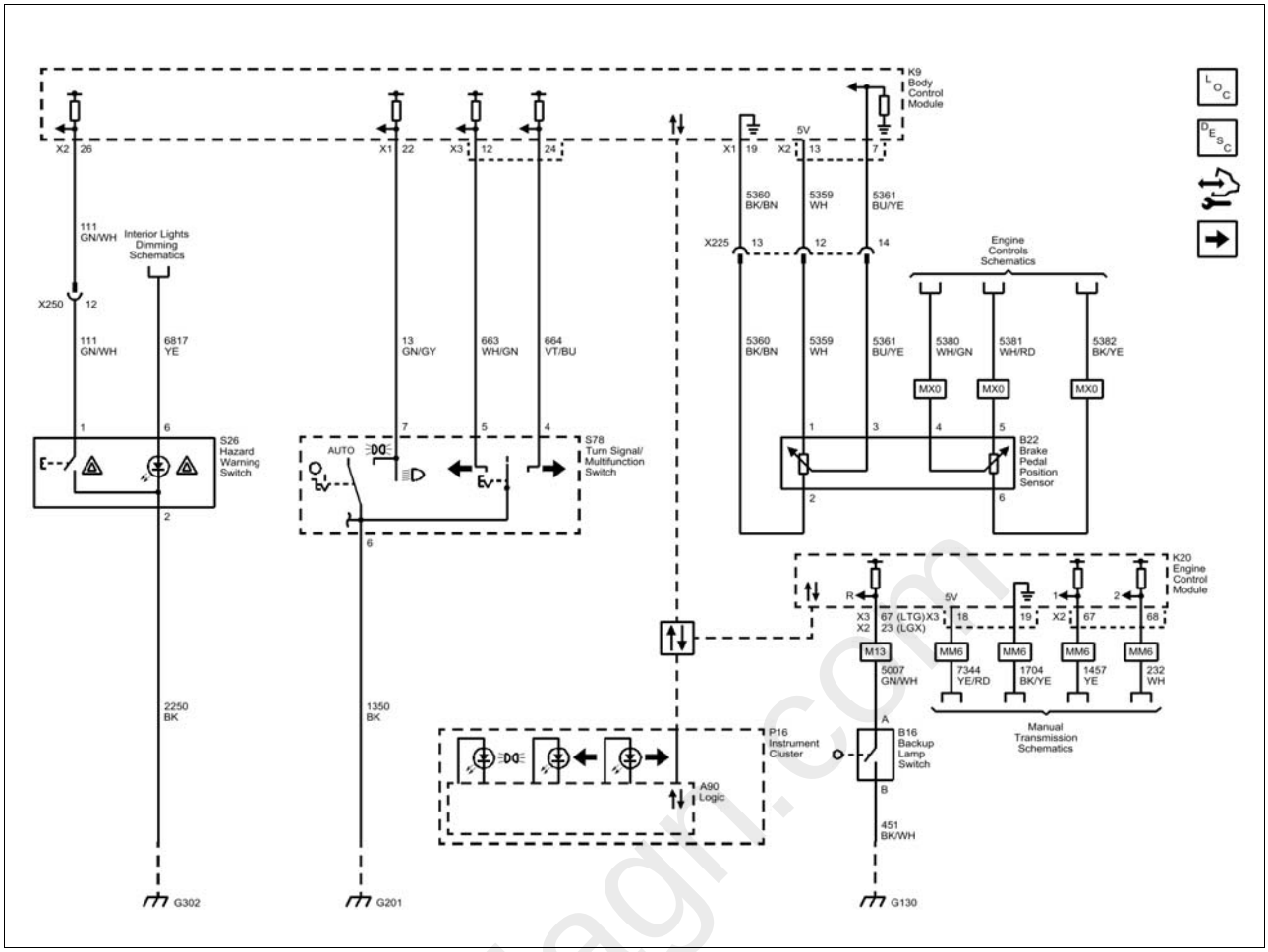


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SCHEMATIC AND WIRING DIAGRAMS > EXTERIOR LIGHTS WIRING SCHEMATICS > CONTROLS AND INDICATORS

Fig 1: Controls and Indicators

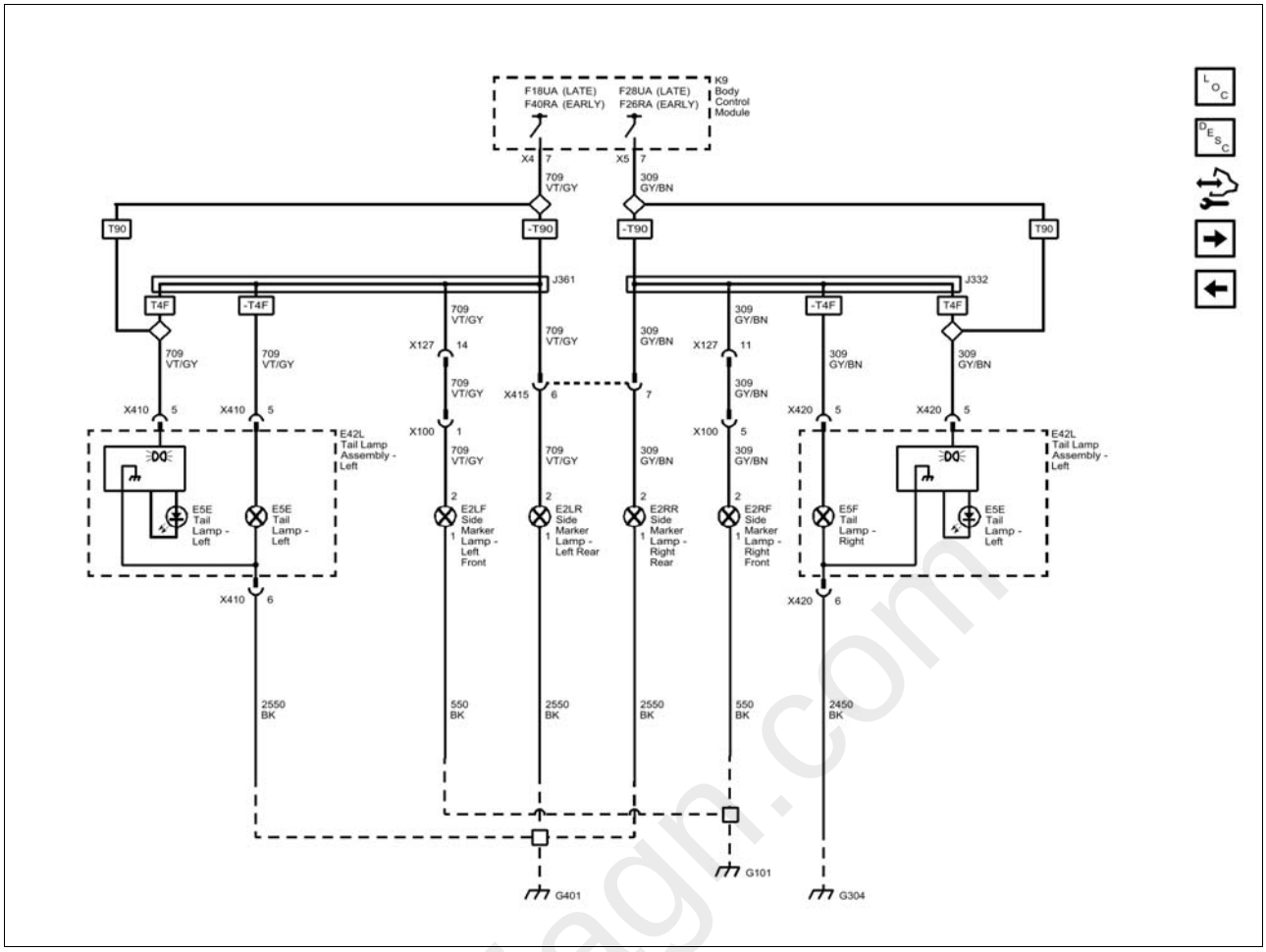


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SCHEMATIC AND WIRING DIAGRAMS > EXTERIOR LIGHTS WIRING SCHEMATICS > PARK/POSITION LAMPS

Fig 1: Park/Position Lamps

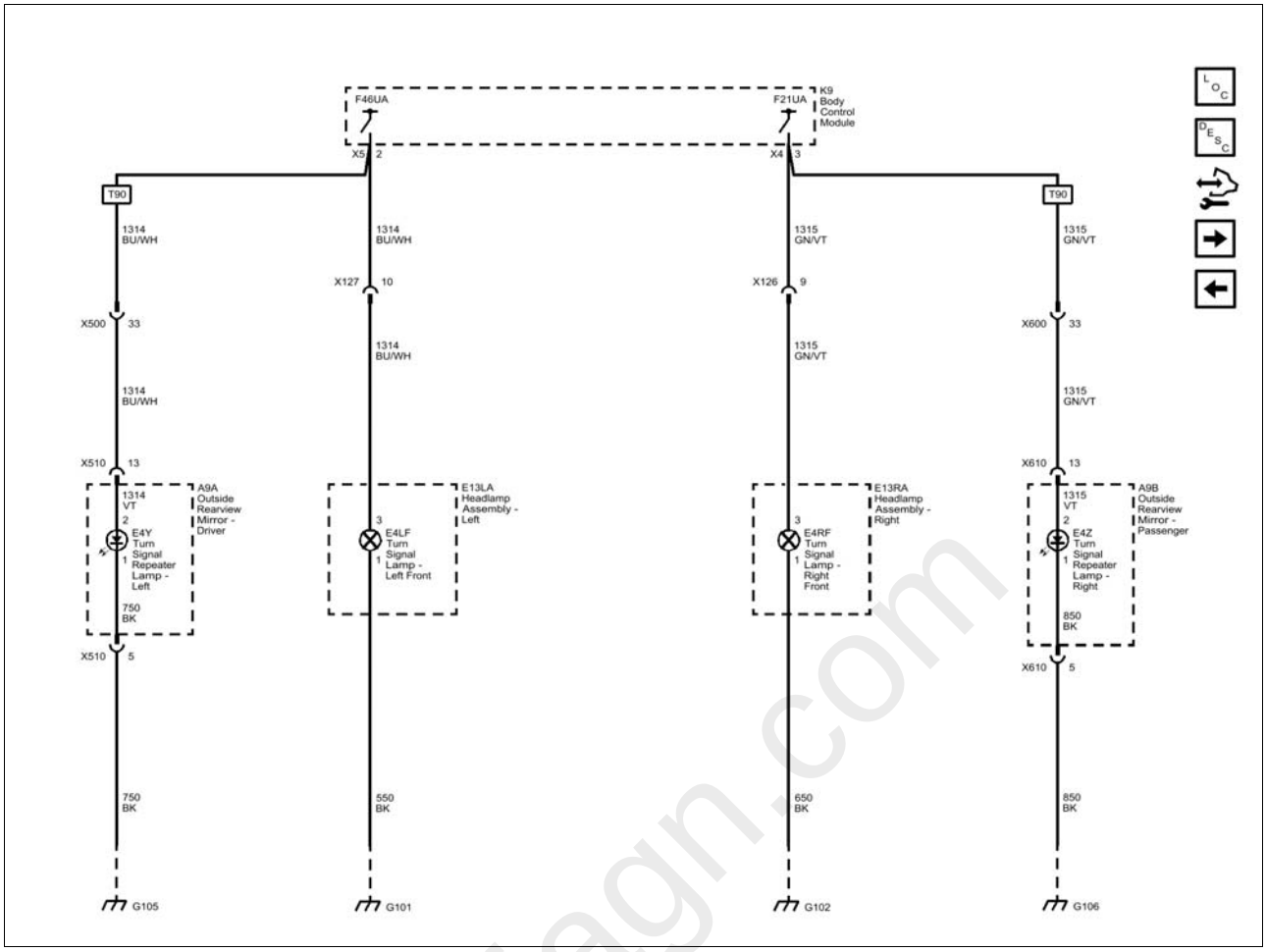


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SCHEMATIC AND WIRING DIAGRAMS > EXTERIOR LIGHTS WIRING SCHEMATICS > FRONT TURN SIGNAL AND REPEATER LAMPS

Fig 1: Front Turn Signal and Repeater Lamps

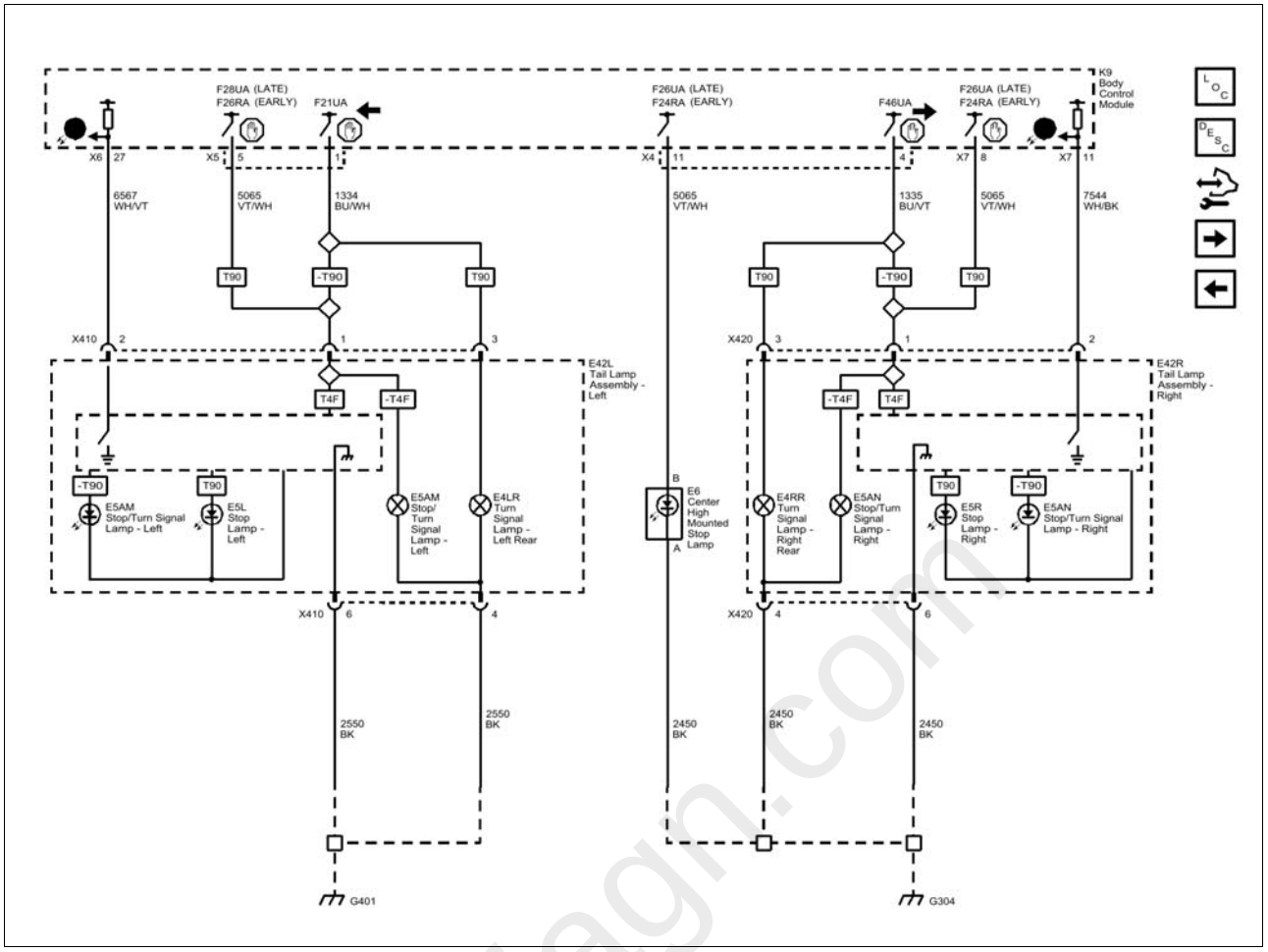


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SCHEMATIC AND WIRING DIAGRAMS > EXTERIOR LIGHTS WIRING SCHEMATICS > BRAKE AND TAIL LAMP ASSEMBLY LIGHTS

Fig 1: Brake and Tail Lamp Assembly Lights

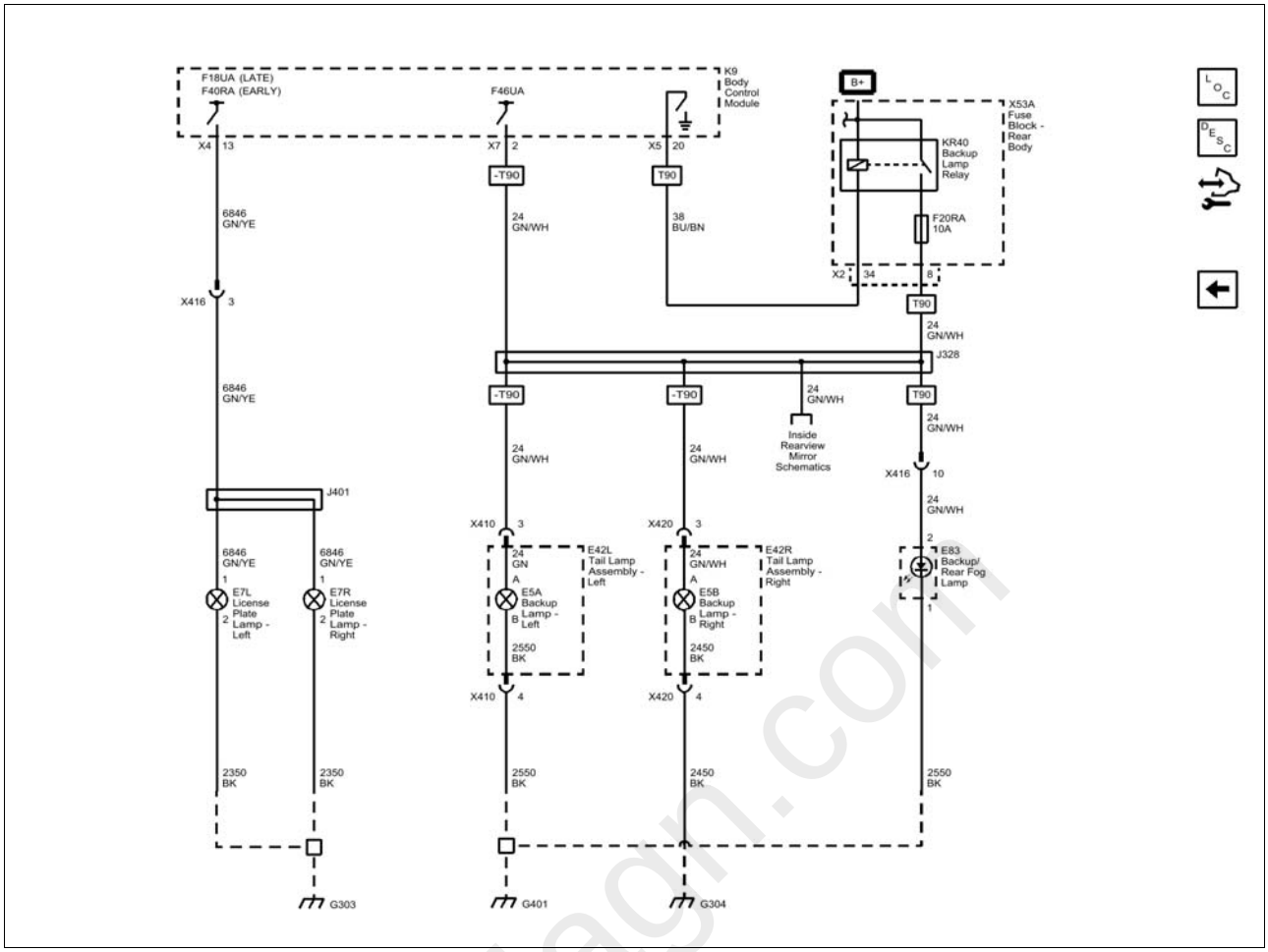


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SCHEMATIC AND WIRING DIAGRAMS > EXTERIOR LIGHTS WIRING SCHEMATICS > BACKUP AND LICENSE LAMPS

Fig 1: Backup and License Lamps

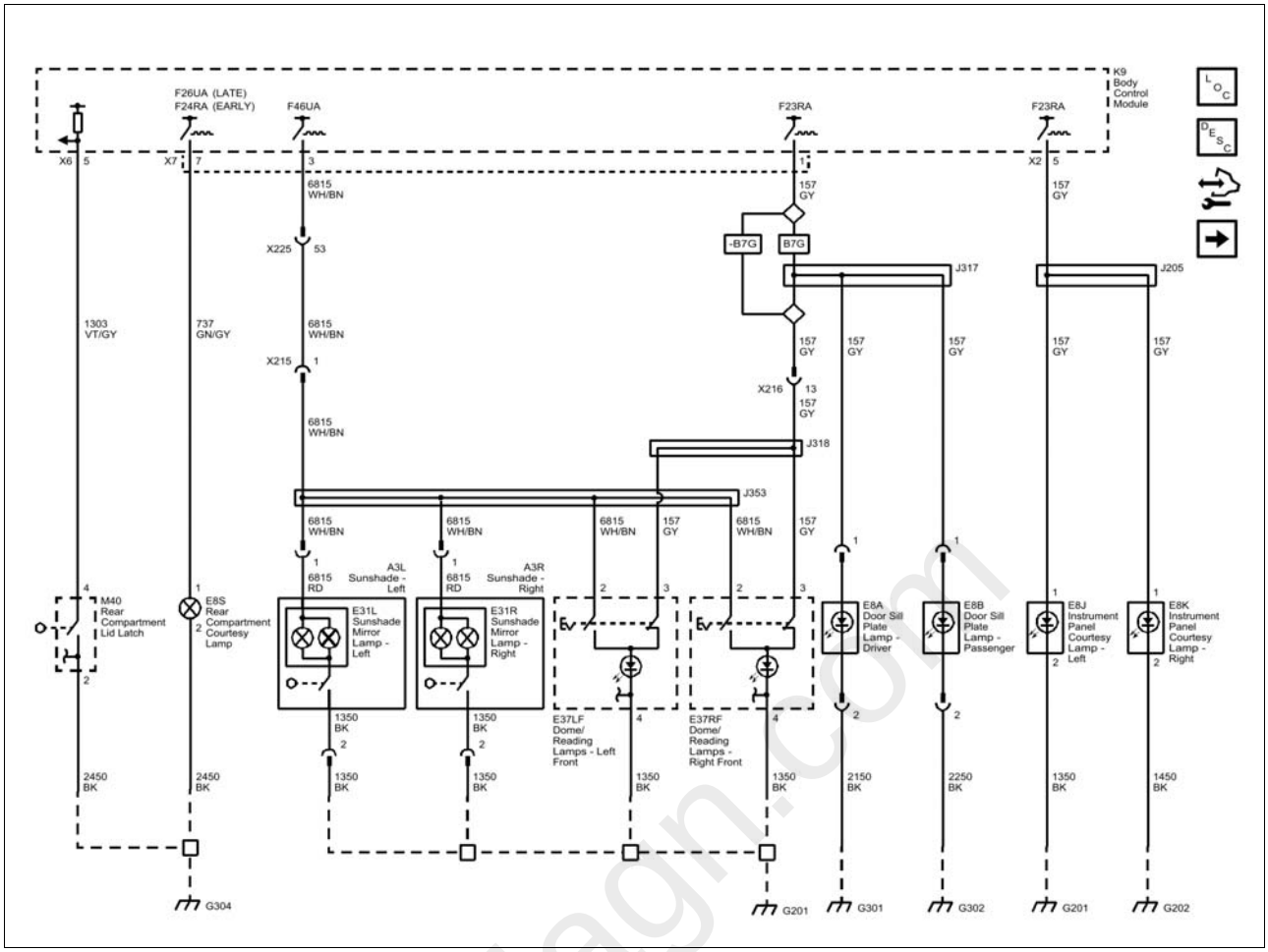


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SCHEMATIC AND WIRING DIAGRAMS > INTERIOR LIGHTS WIRING SCHEMATICS > COURTESY LAMPS

Fig 1: Courtesy Lamps

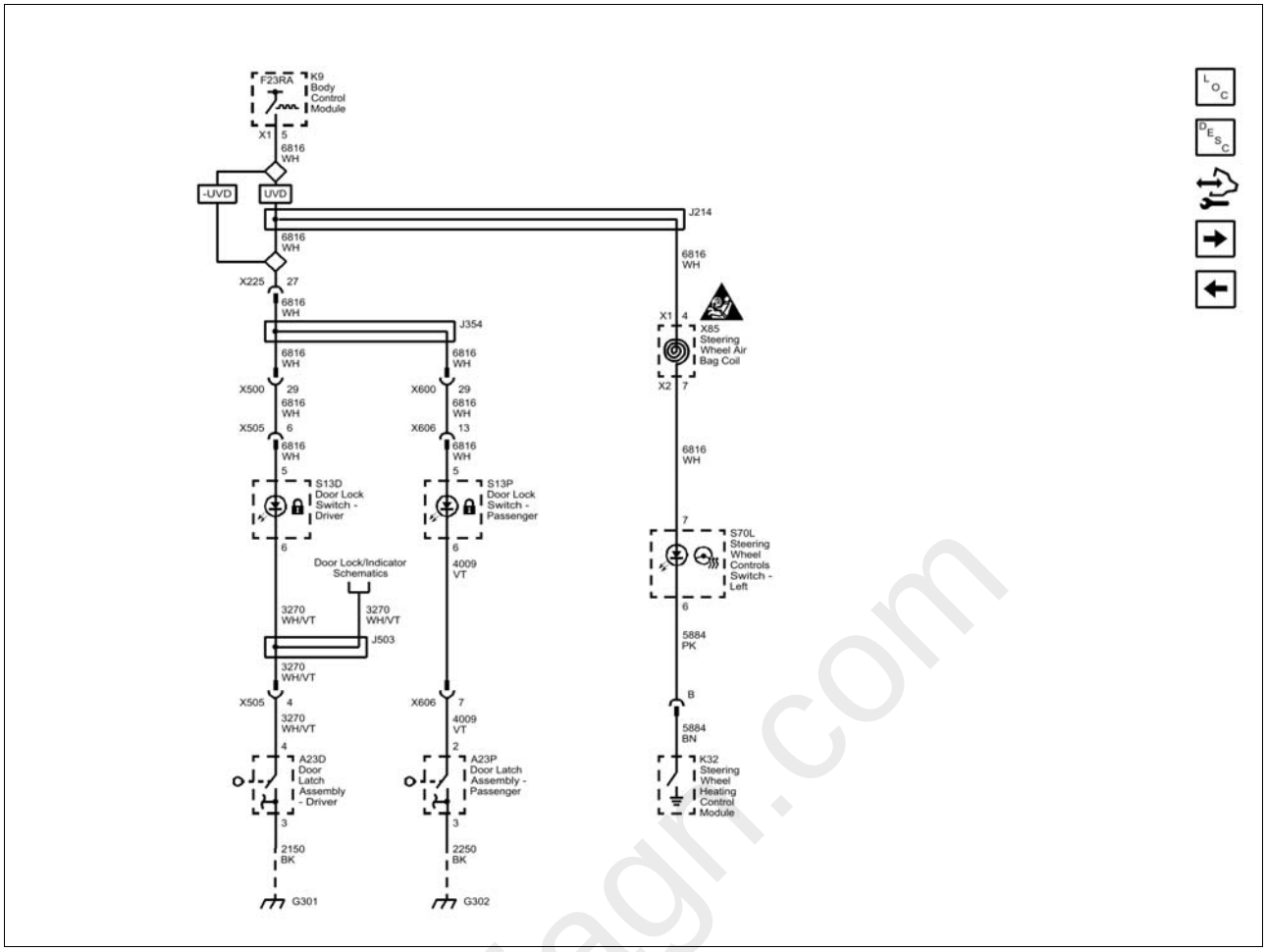


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SCHEMATIC AND WIRING DIAGRAMS > INTERIOR LIGHTS WIRING SCHEMATICS > INDICATOR LAMPS

Fig 1: Indicator Lamps

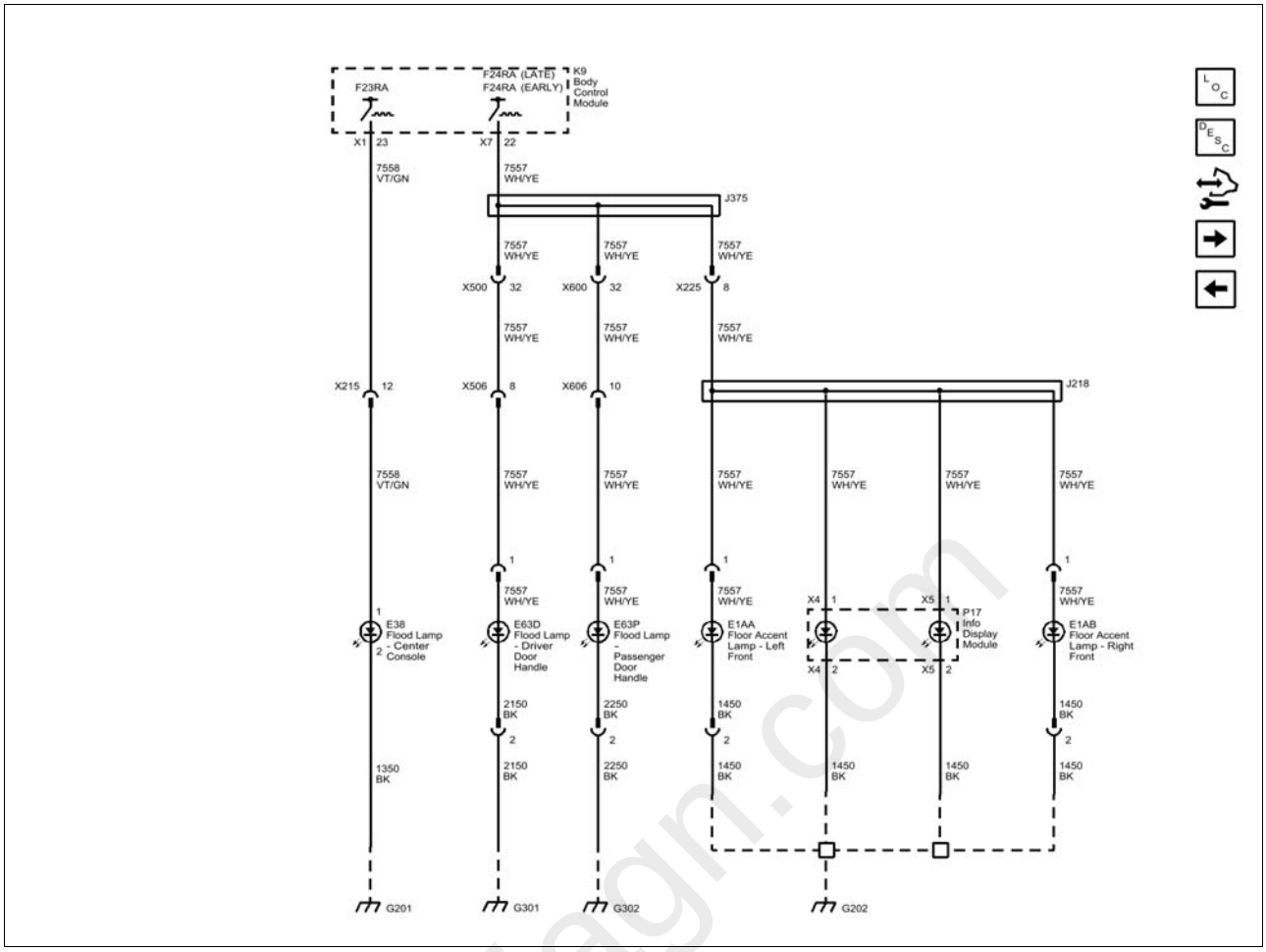


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SCHEMATIC AND WIRING DIAGRAMS > INTERIOR LIGHTS WIRING SCHEMATICS > FLOOD LAMPS AND ACCENT LAMPS (-C70)

Fig 1: Flood Lamps and Accent Lamps (-C70)

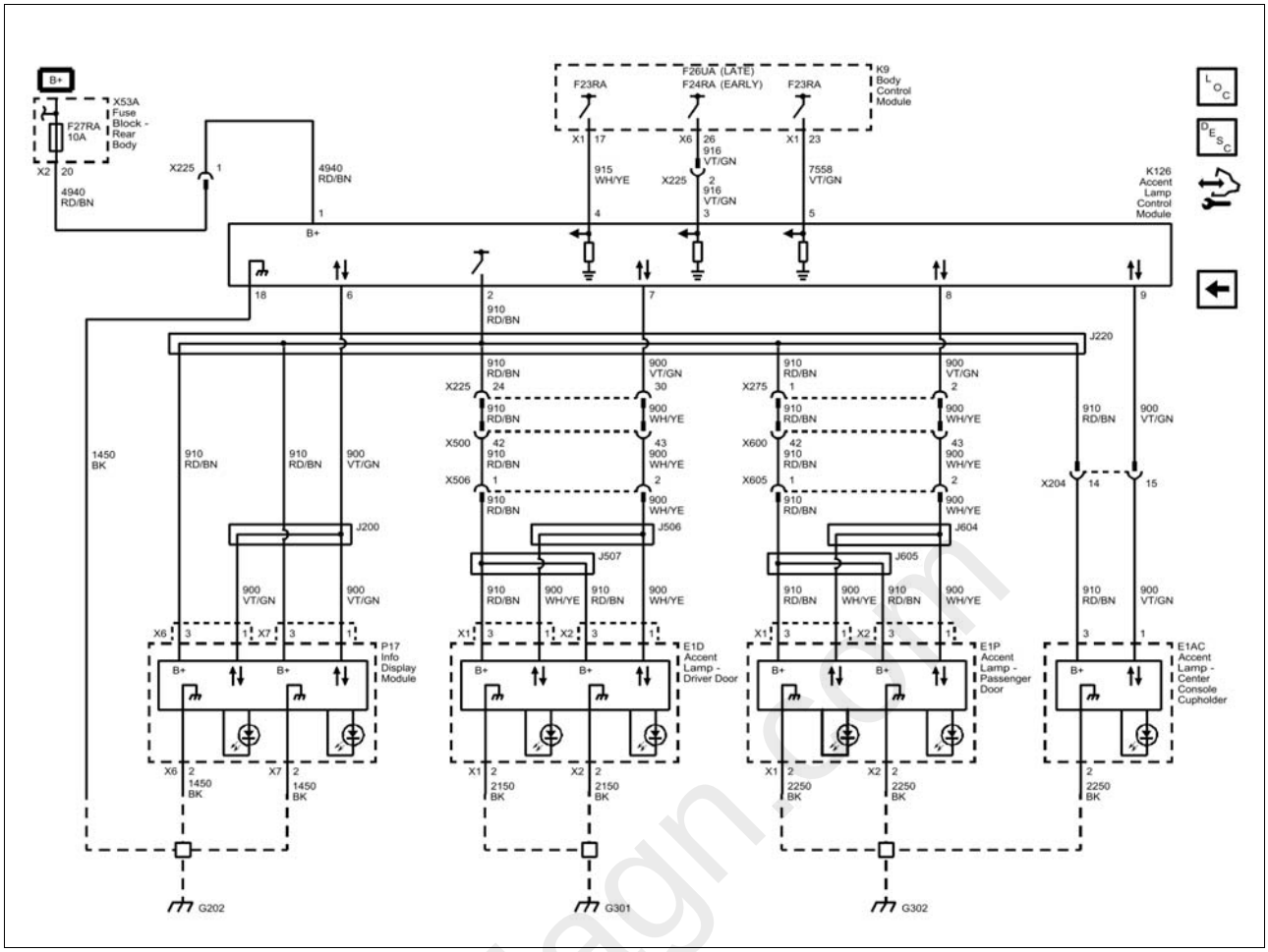


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SCHEMATIC AND WIRING DIAGRAMS > INTERIOR LIGHTS WIRING SCHEMATICS > ACCENT LAMPS (C70)

Fig 1: Accent Lamps (C70)

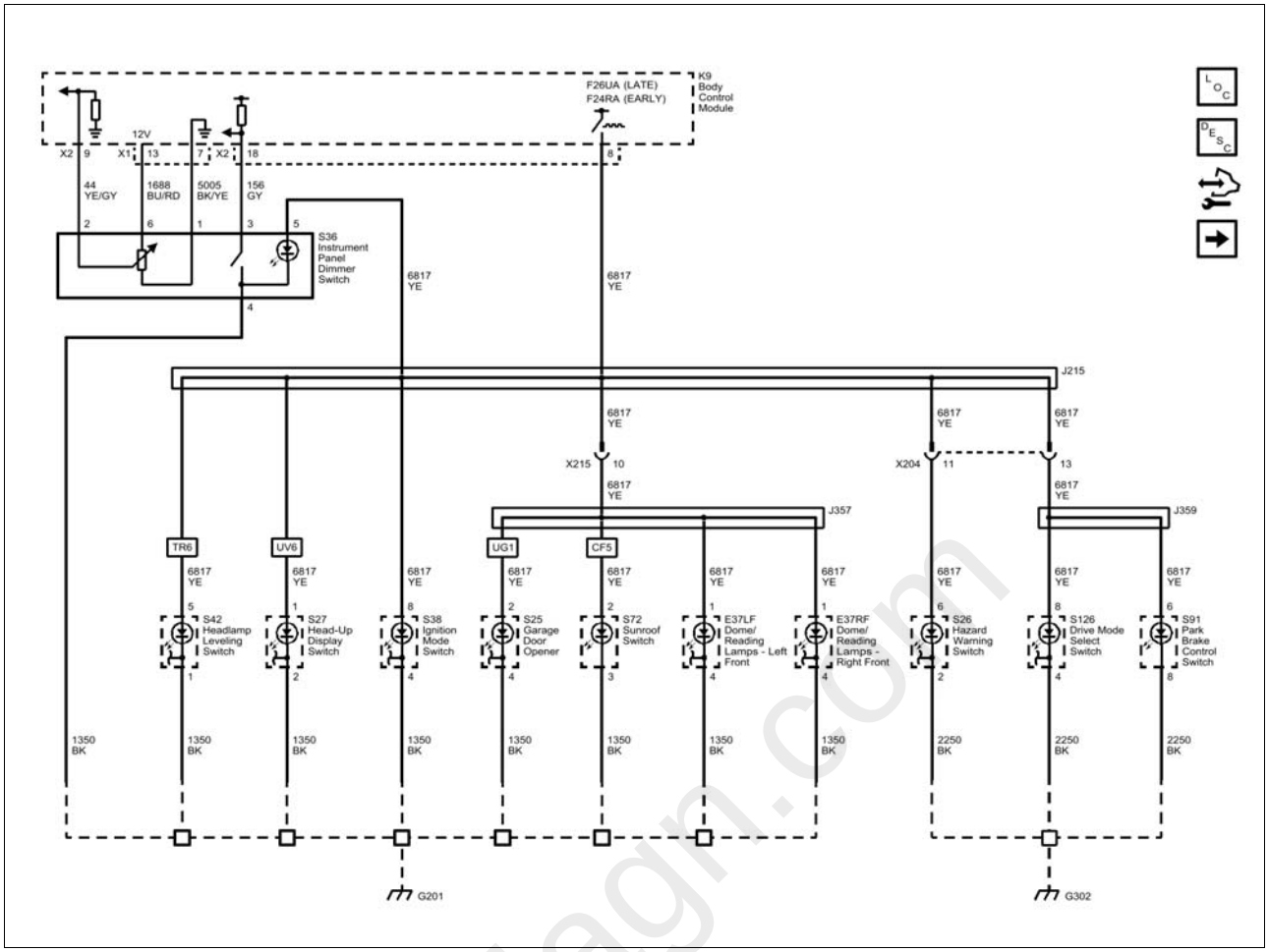


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SCHEMATIC AND WIRING DIAGRAMS > INTERIOR LIGHTS DIMMING WIRING SCHEMATICS > INSTRUMENT PANEL AND ROOF SWITCH BACKLIGHTING AND CONTROL

Fig 1: Instrument Panel and Roof Switch Backlighting and Control

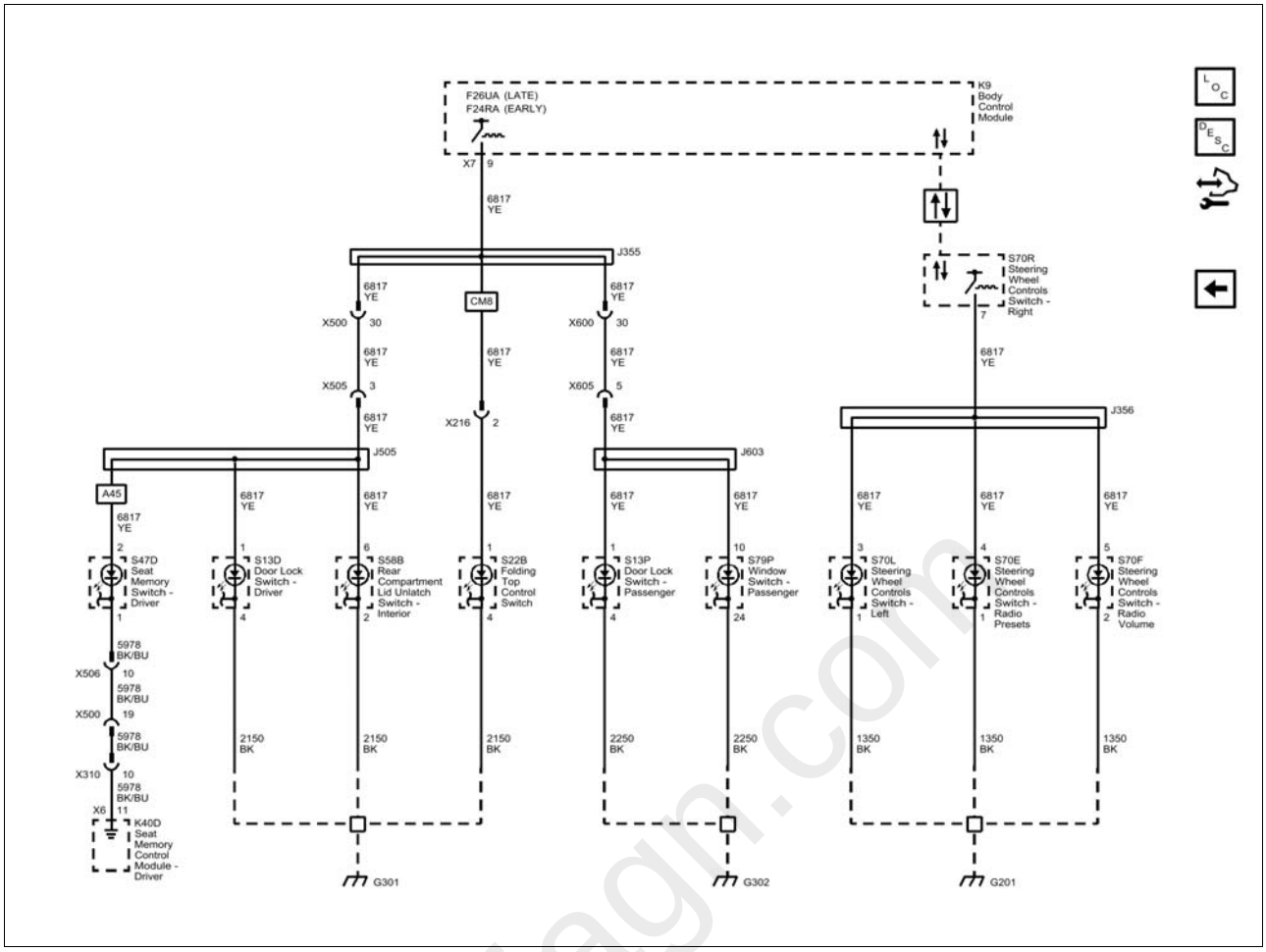


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SCHEMATIC AND WIRING DIAGRAMS > INTERIOR LIGHTS DIMMING WIRING SCHEMATICS > STEERING WHEEL AND DOOR SWITCH BACKLIGHTING

Fig 1: Steering Wheel and Door Switch Backlighting



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