

2007 ACCESSORIES & EQUIPMENT

Lighting - Outlook

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

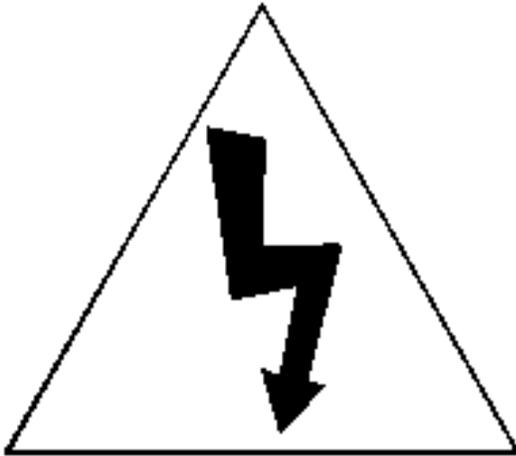
Application	Specification	
	Metric	English
Back Up Lamp Applique Nuts	6 N.m	53 lb in
Back Up Lamp Screws	2 N.m	18 lb in
Dome Lamp Housing Screws	2 N.m	18 lb in
DRL Lamp Assembly Screws	2 N.m	18 lb in
Fog Lamp Assembly Screws	2 N.m	18 lb in
Front Bumper Fascia Brace Screws	2 N.m	18 lb in
Front Turn Signal Lamp Assembly Nuts	9 N.m	80 lb in
Headlamp Bolts	9 N.m	80 lb in
Headlamp Capsule Ballast Screws	3 N.m	27 lb in
Park and Front Fog Lamp Bracket	2 N.m	18 lb in
License Lamp Screws	2 N.m	18 lb in
Sunroof DVD Lamp Housing Screw	2 N.m	18 lb in
Tail Lamp Screws	2.5 N.m	22 lb in

SCHEMATIC AND ROUTING DIAGRAMS

LIGHTING SYSTEMS SCHEMATIC ICONS

Lighting Systems Schematic Icons

Icon	Icon Definition
	<p>CAUTION: The high intensity discharge system produces high voltage and current. To reduce the risk of severe shocks and burns:</p> <ul style="list-style-type: none"> • 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.



CAUTION:

When performing service on or near the SIR components or the SIR wiring, the SIR system must be disabled. Refer to SIR DISABLING AND ENABLING . Failure to observe the correct procedure could cause deployment of the SIR components, personal injury or unnecessary SIR system repairs.

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HEADLIGHTS/DAYTIME RUNNING LIGHTS (DRL) SCHEMATICS

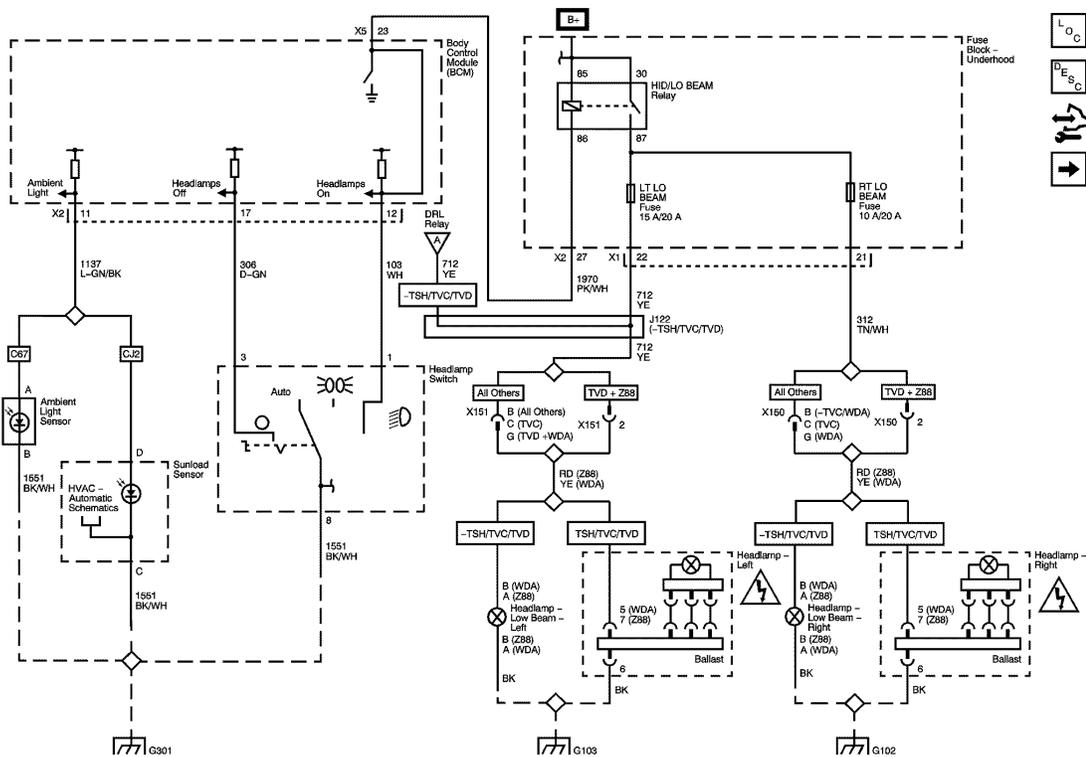


Fig. 1: Low Beams Schematic
Courtesy of GENERAL MOTORS CORP.

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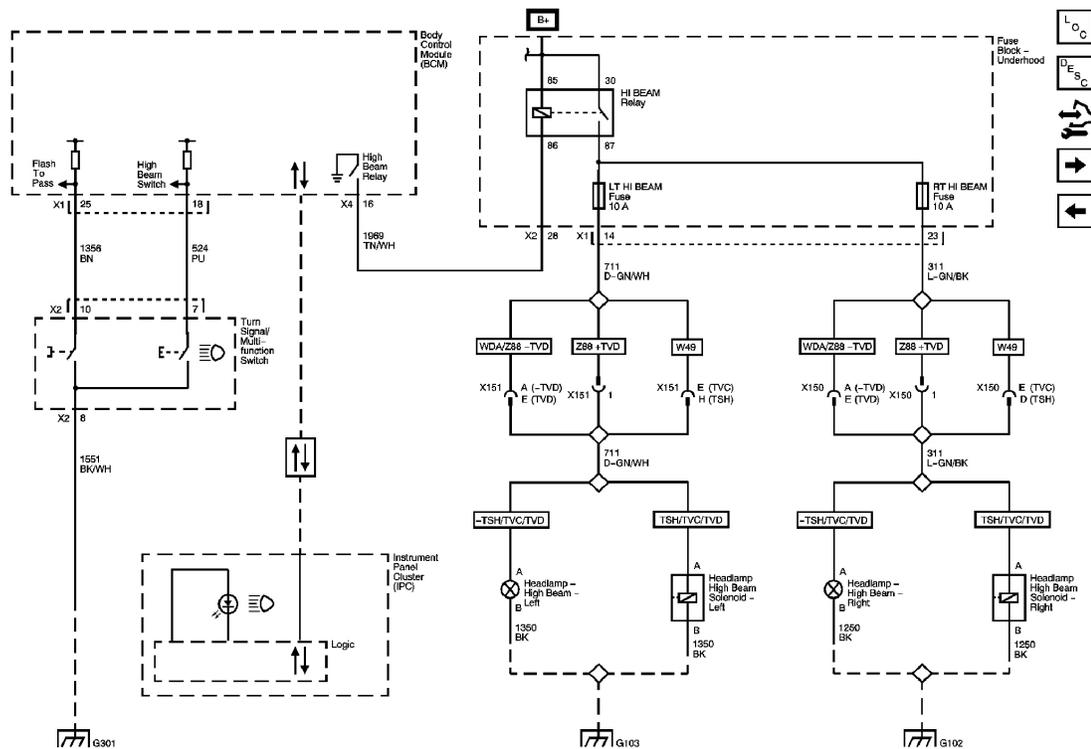


Fig. 2: High Beams Schematic
 Courtesy of GENERAL MOTORS CORP.

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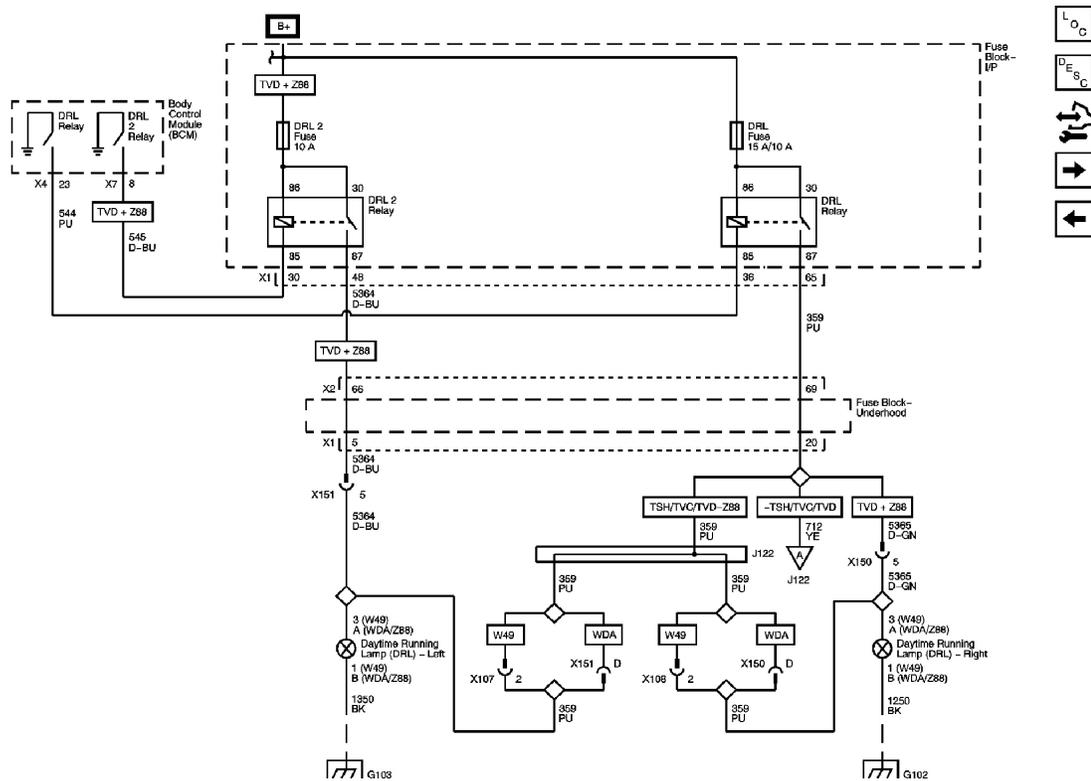


Fig. 3: DRL Schematic
 Courtesy of GENERAL MOTORS CORP.

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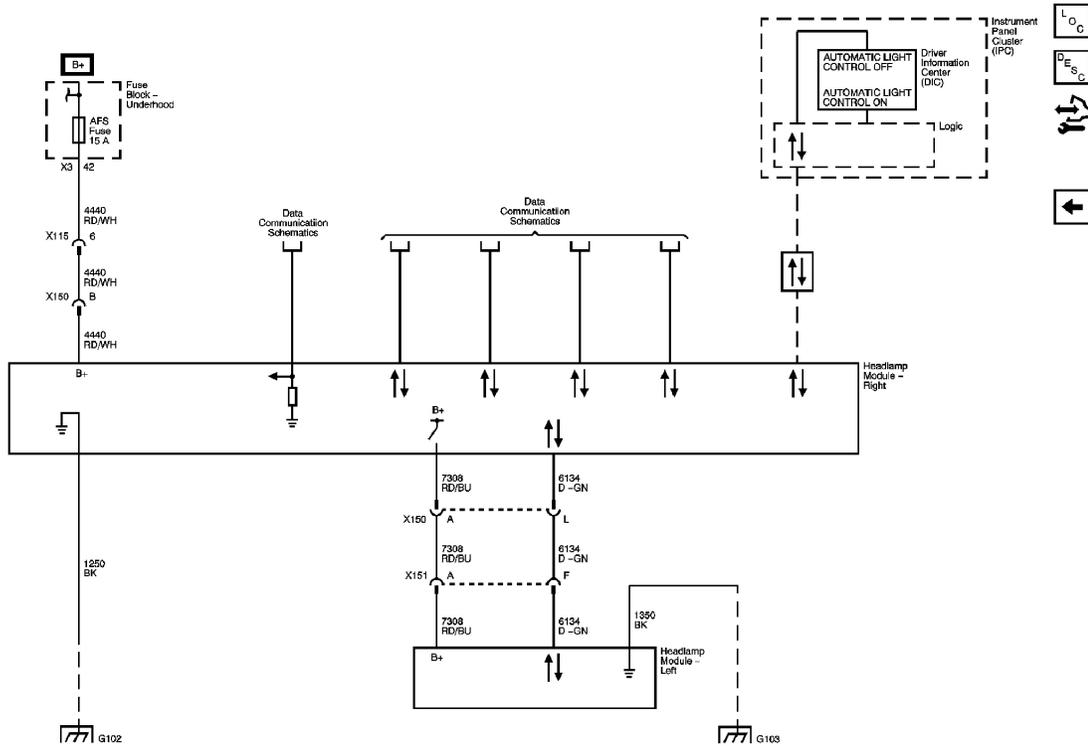


Fig. 4: Adaptive Forward Lighting System Schematic - TSH
Courtesy of GENERAL MOTORS CORP.

FOG LIGHTS SCHEMATICS

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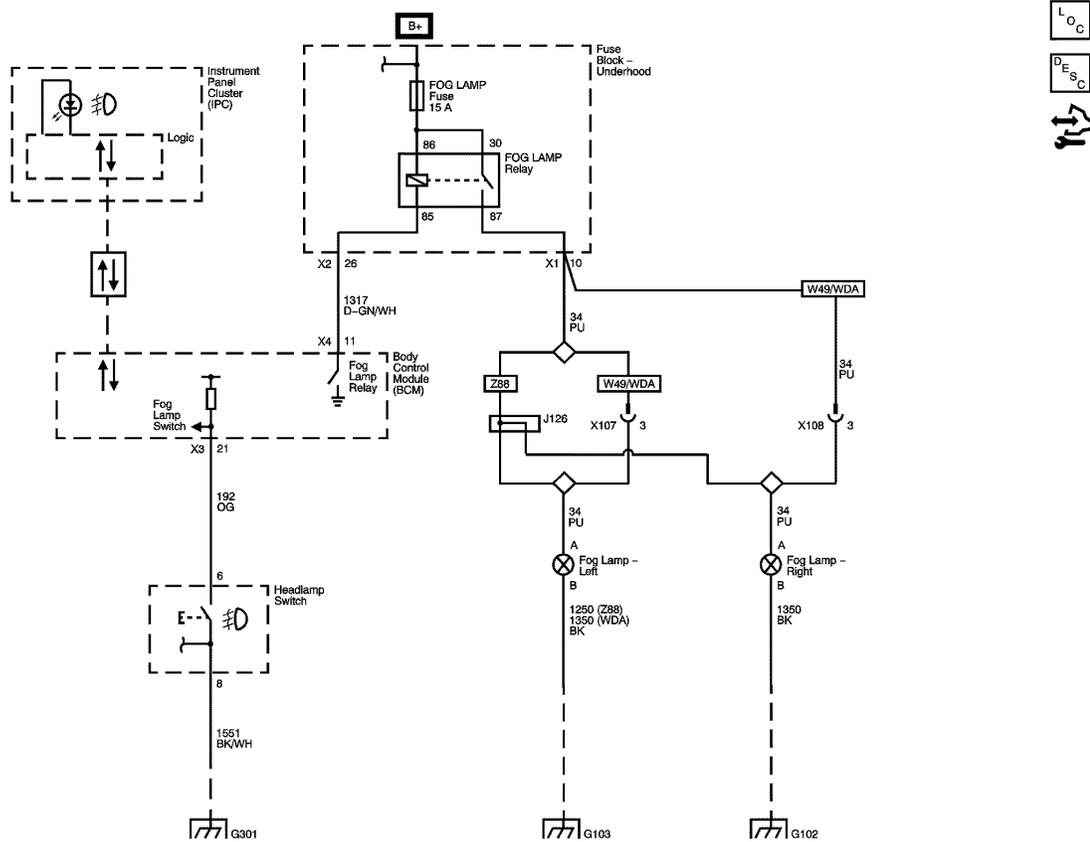


Fig. 5: Fog Lights Schematic - T96
Courtesy of GENERAL MOTORS CORP.

EXTERIOR LIGHTS SCHEMATICS

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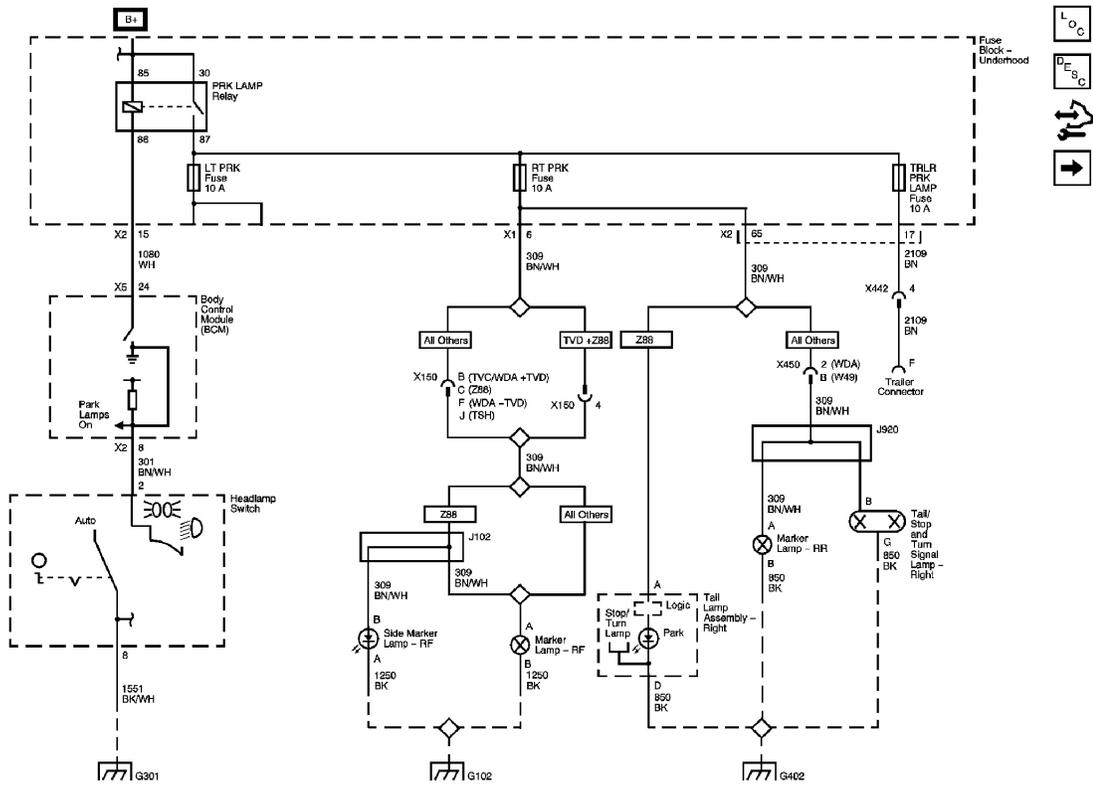


Fig. 6: Park Lamp Control & Right Park Lamps Schematic
Courtesy of GENERAL MOTORS CORP.

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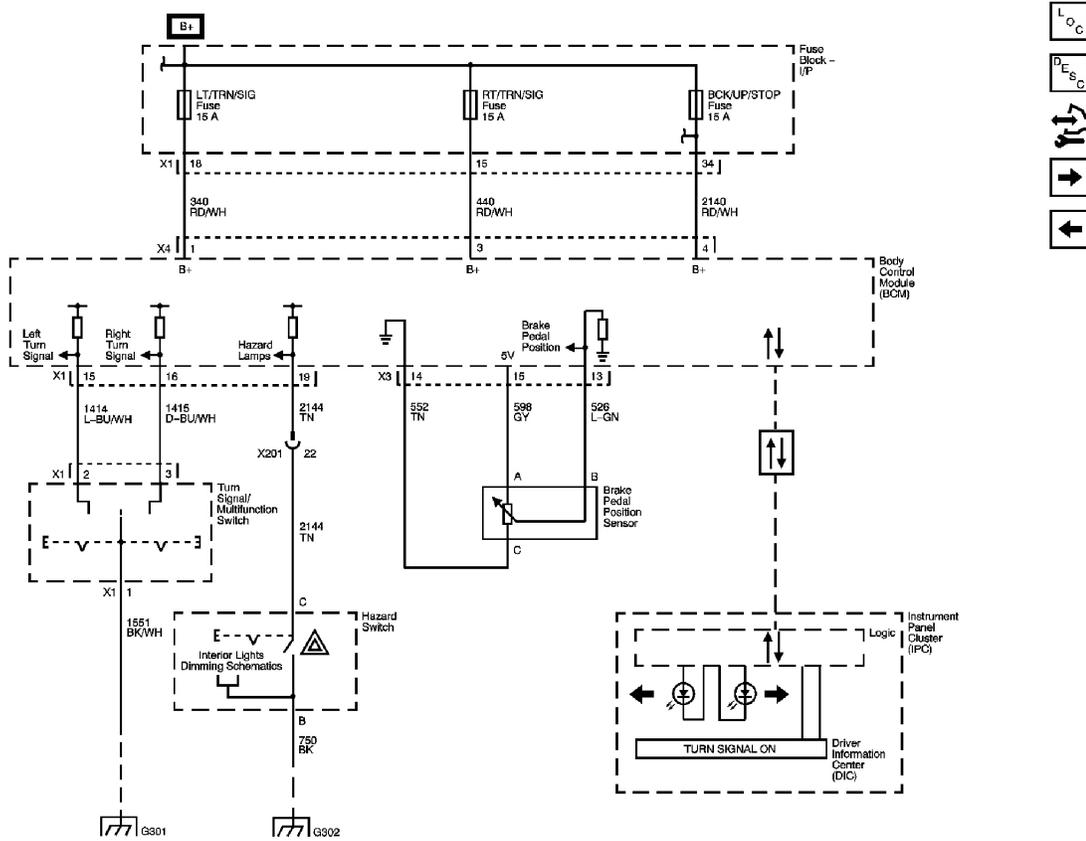


Fig. 8: Stop/Turn Signal Lamps Controls and Indicators Schematic
 Courtesy of GENERAL MOTORS CORP.

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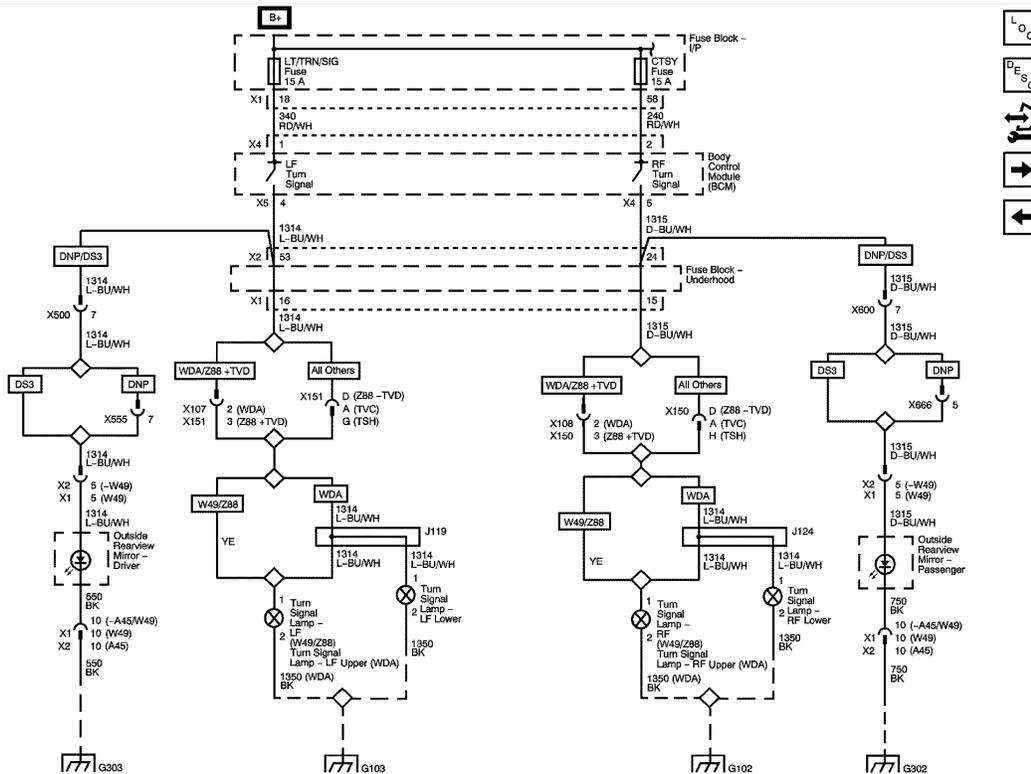


Fig. 9: Front Turn Lamps & Outside Mirrors Schematic
 Courtesy of GENERAL MOTORS CORP.

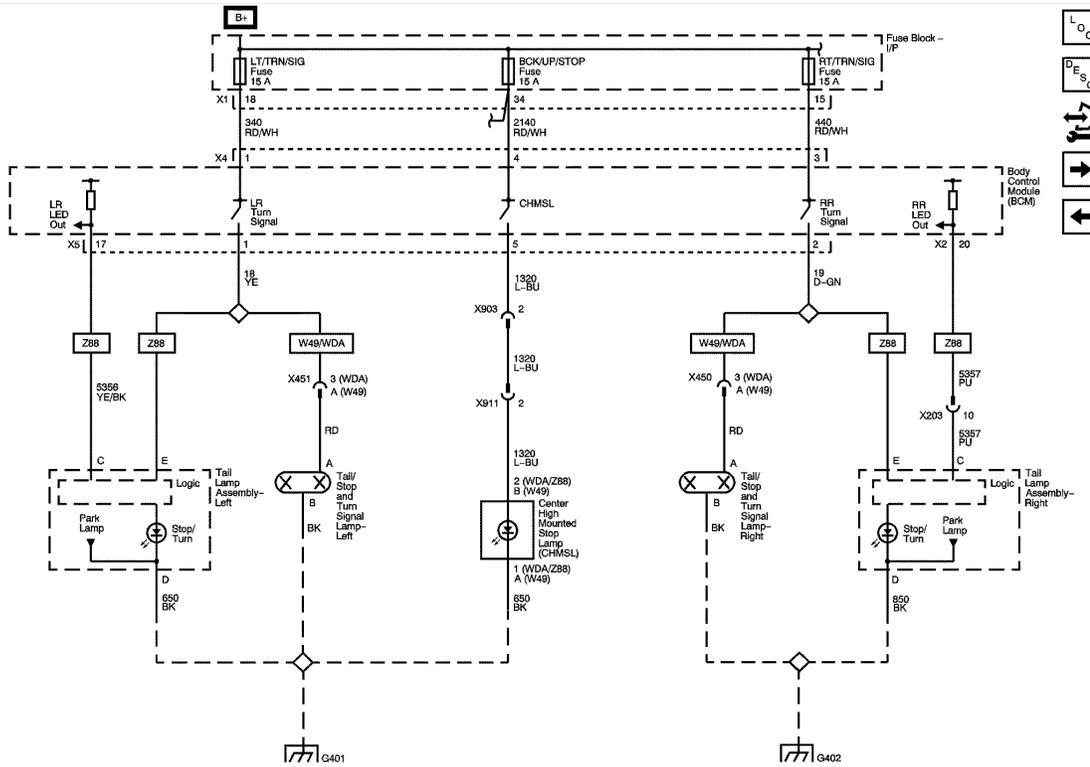


Fig. 10: Rear Turn/Stop Lamps & CHMSL Schematic
 Courtesy of GENERAL MOTORS CORP.

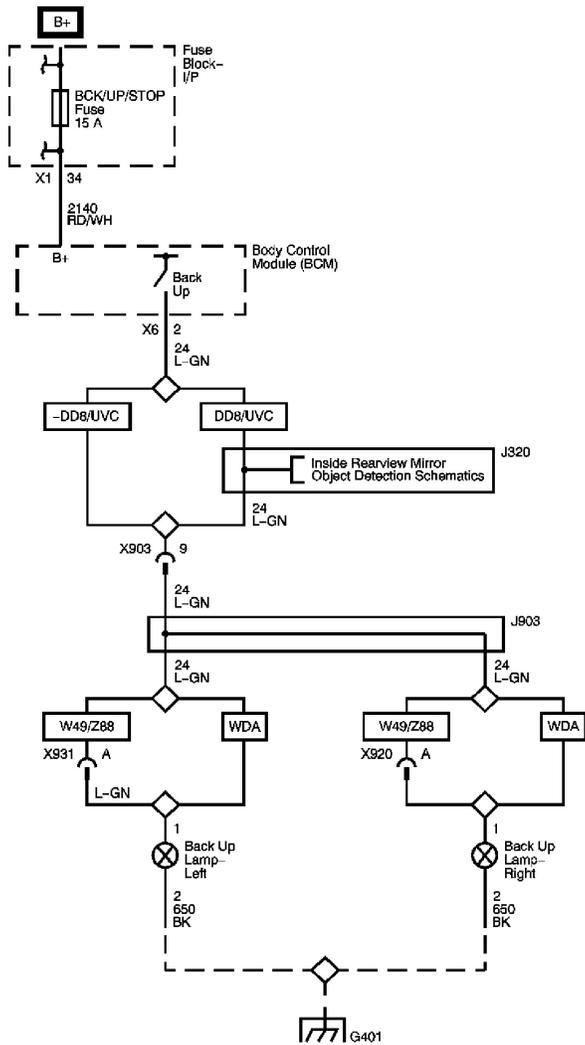


Fig. 11: Back Up Lamps Schematic
 Courtesy of GENERAL MOTORS CORP.

INTERIOR LIGHTS SCHEMATICS

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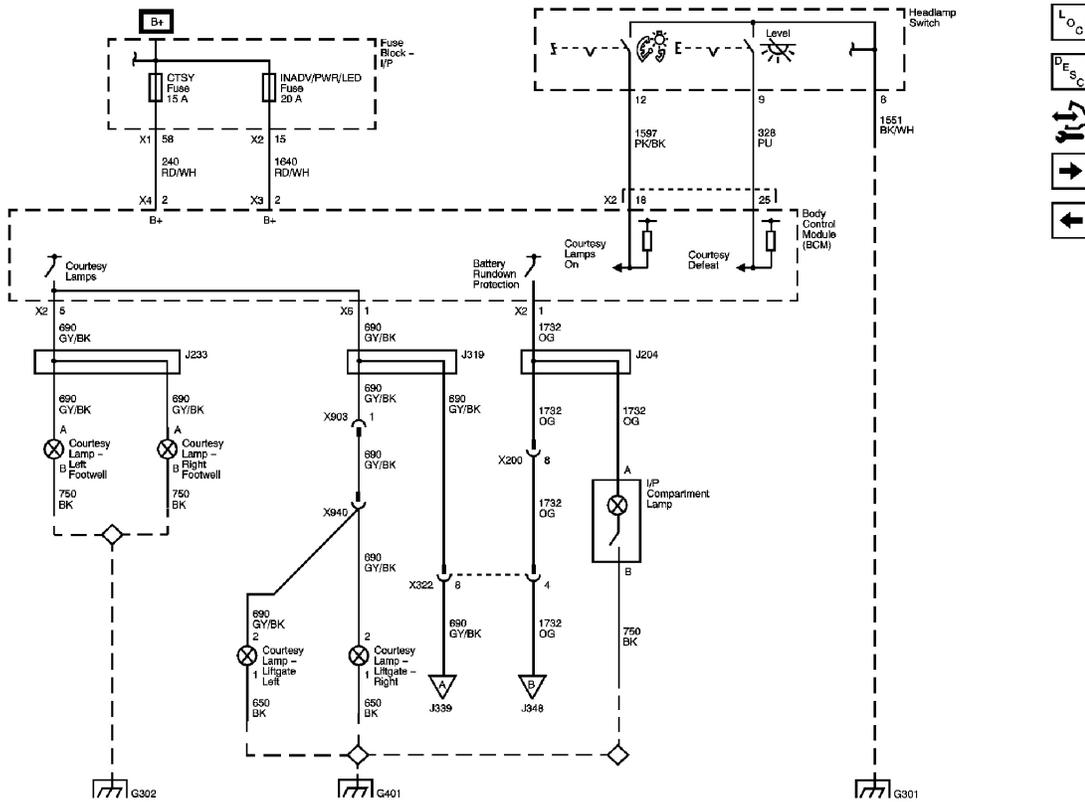


Fig. 13: Headlamp Switch and Power, I/P, Footwell & Liftgate Lamps Schematic
Courtesy of GENERAL MOTORS CORP.

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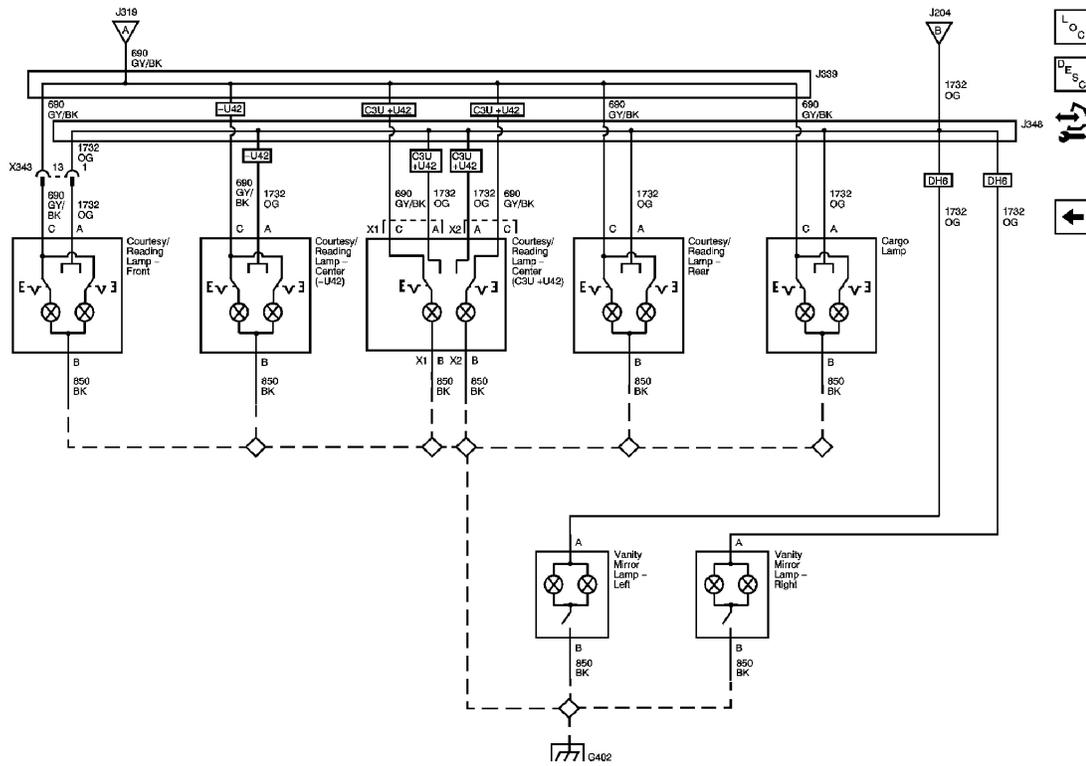


Fig. 14: Roof Schematic
Courtesy of GENERAL MOTORS CORP.

INTERIOR LIGHTS DIMMING SCHEMATICS

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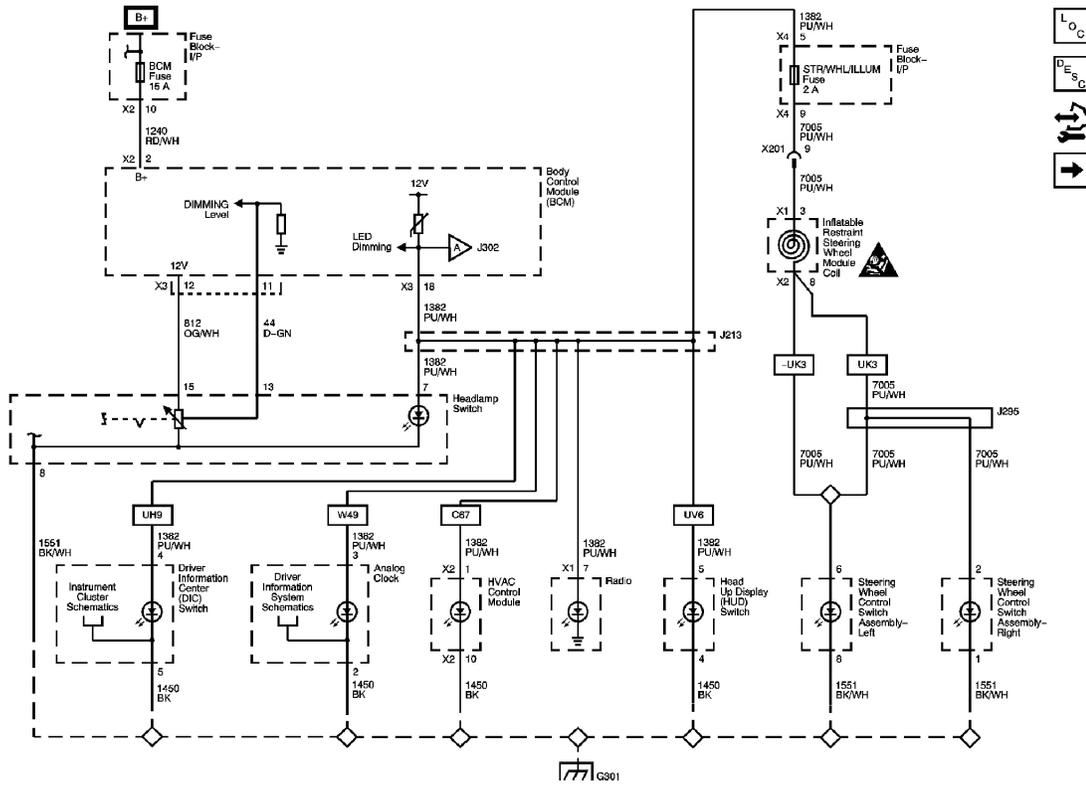


Fig. 15: Controls, I/P & Steering Wheel LEDs Schematic
 Courtesy of GENERAL MOTORS CORP.

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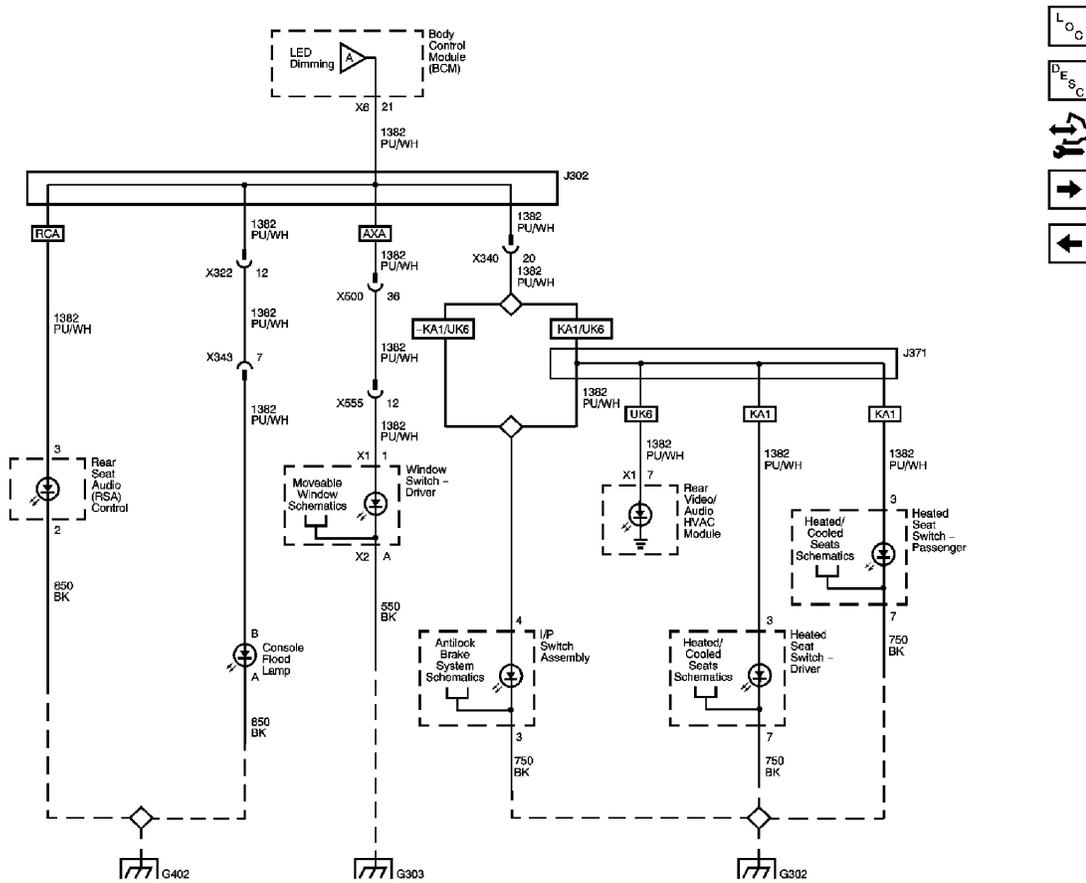


Fig. 16: Console & Driver Door LEDs Schematic
Courtesy of GENERAL MOTORS CORP.

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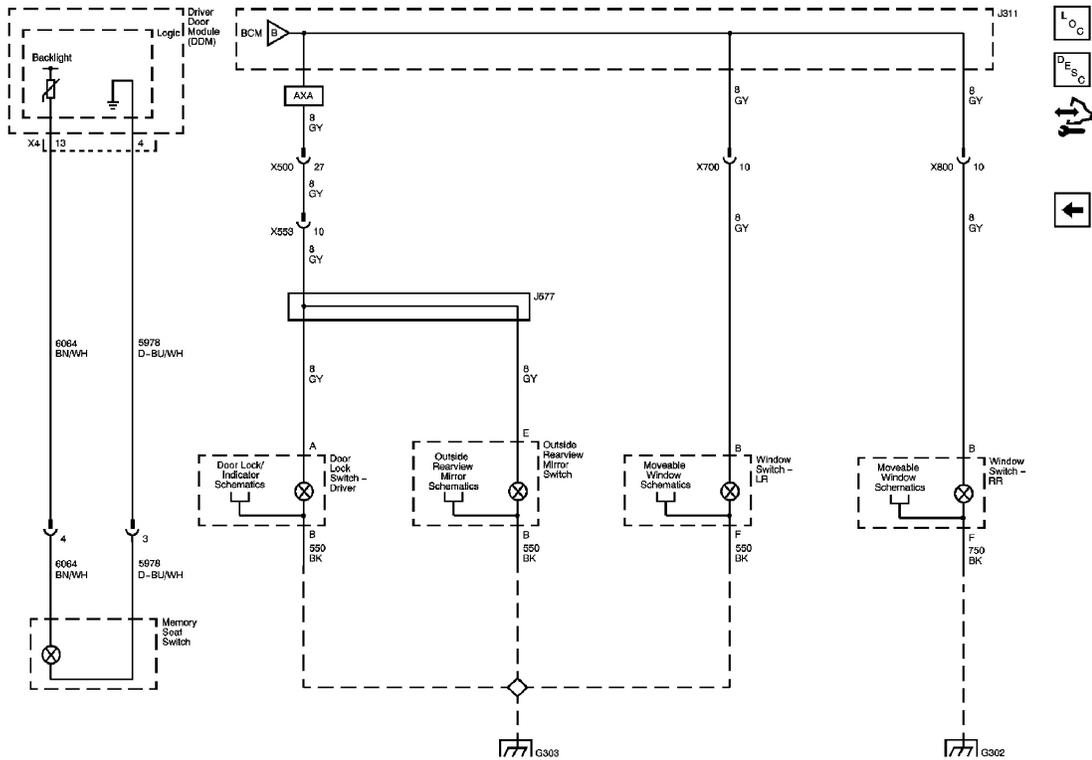


Fig. 18: Driver, Left Rear & Right Rear Door Lamps Schematic
Courtesy of GENERAL MOTORS CORP.

COMPONENT LOCATOR

LIGHTING SYSTEMS COMPONENT VIEWS

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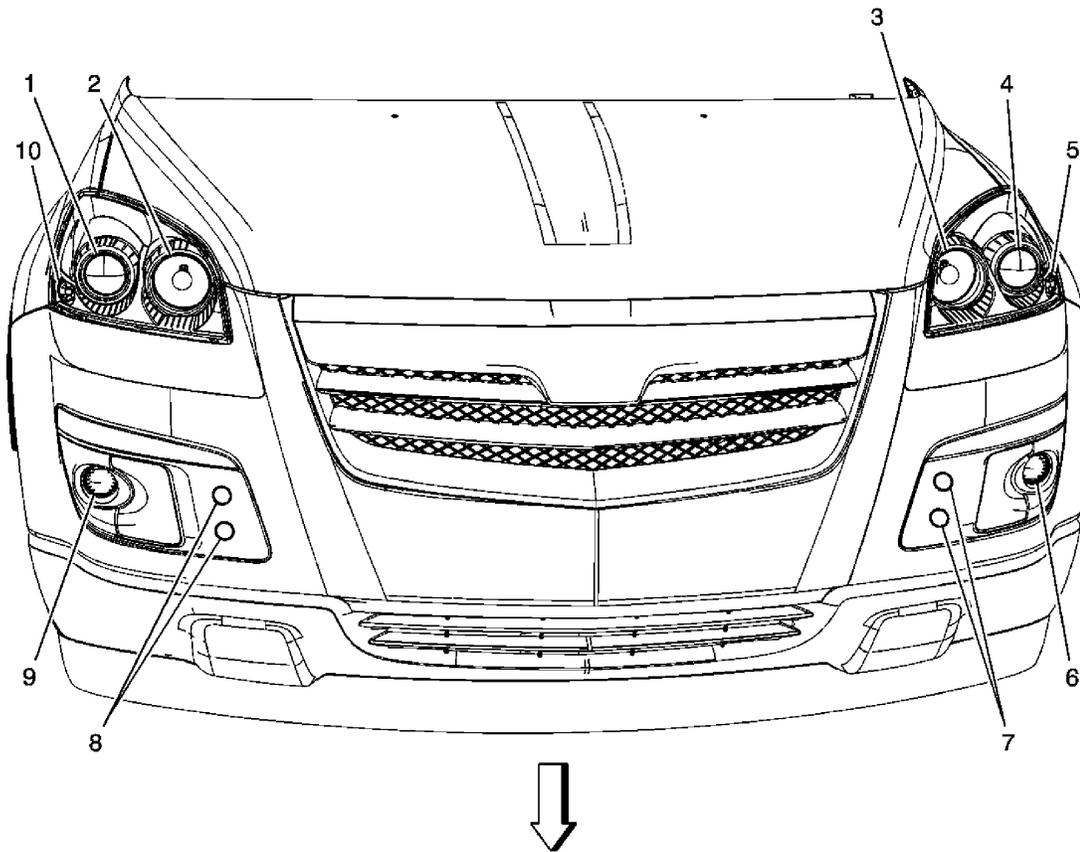


Fig. 19: View Of Front Lights (WDA)
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 19

Callout	Component Name
1	Headlamp - Low Beam - Right
2	Headlamp - High Beam - Right
3	Headlamp - High Beam - Left
4	Headlamp - Low Beam - Left
5	Marker Lamp - LF
6	Fog Lamp - Left
7	Fog Lamp - Right
8	Marker Lamp - RF

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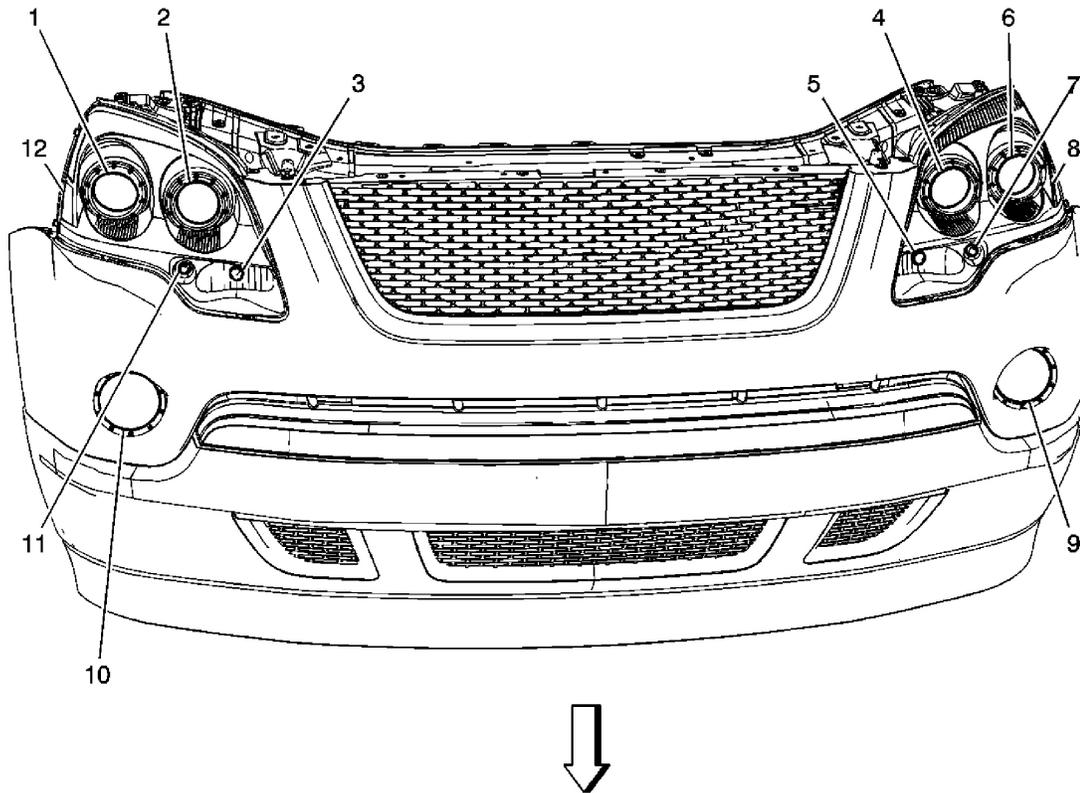


Fig. 20: Identifying Front Lights (Z88)
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 20

Callout	Component Name
1	Headlamp - Low Beam - Right
2	Headlamp - High Beam - Right
3	Turn Signal Lamp - RF
4	Headlamp - High Beam - Left
5	Turn Signal Lamp - LF
6	Headlamp - Low Beam - Left
7	Marker Lamp - LF
8	Fog Lamp - Left
9	Fog Lamp - Right
10	Marker Lamp - RF

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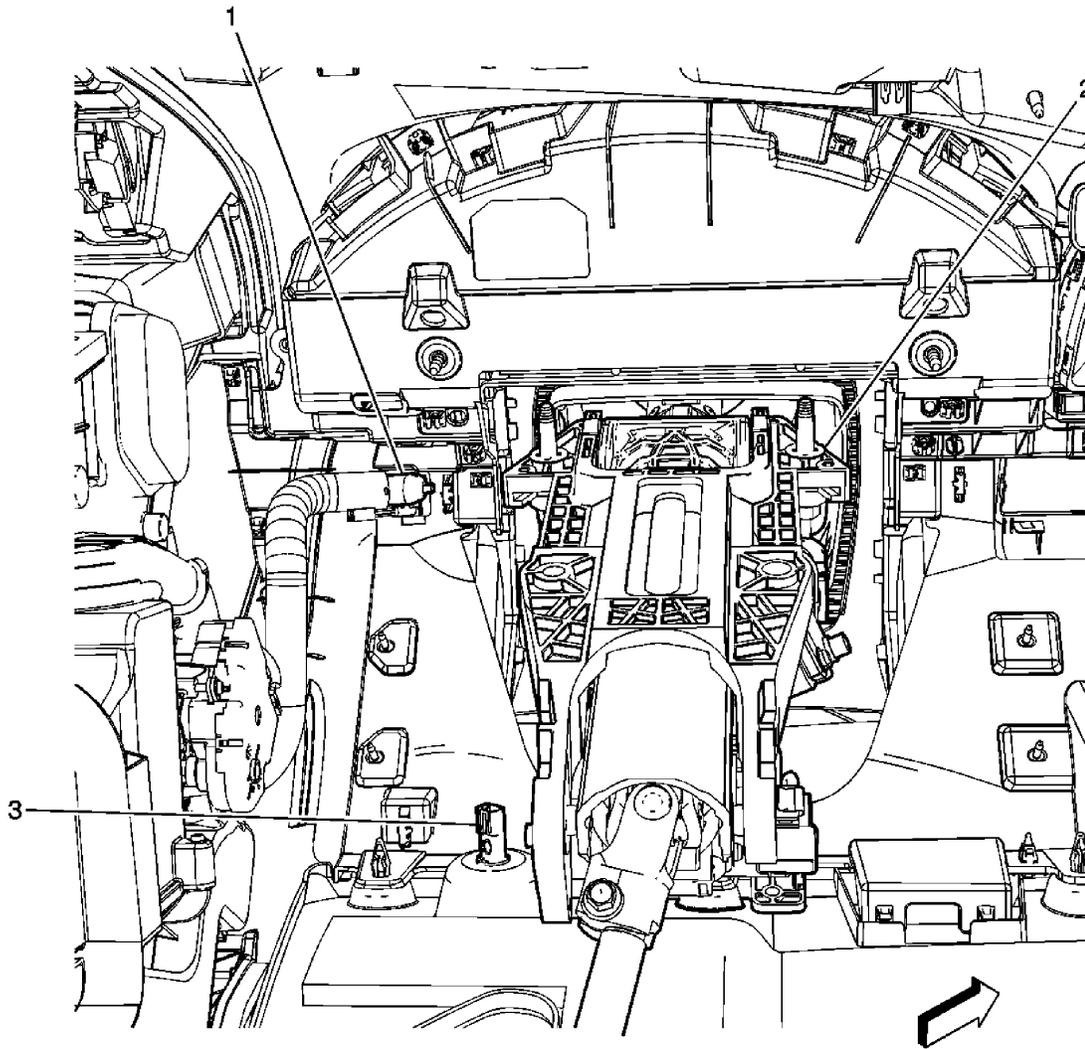


Fig. 21: View Near The Steering Column
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 21

Callout	Component Name
1	Ambient Air Temperature Sensor
2	Steering Column
3	Courtesy Lamp - Left Footwell

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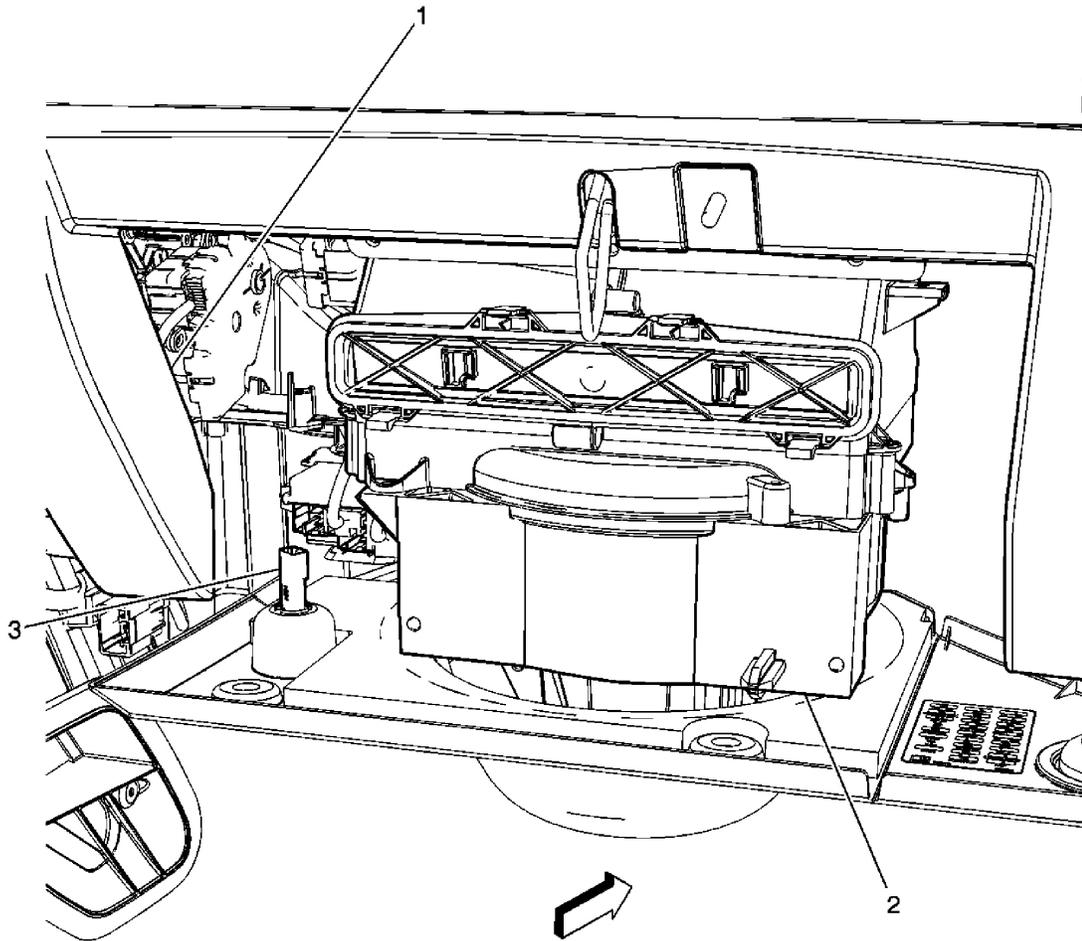


Fig. 22: Identifying Components Behind I/P Compartment
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 22

Callout	Component Name
1	I/P Trim
2	HVAC Module Assembly
3	Courtesy Lamp - Right Footwell

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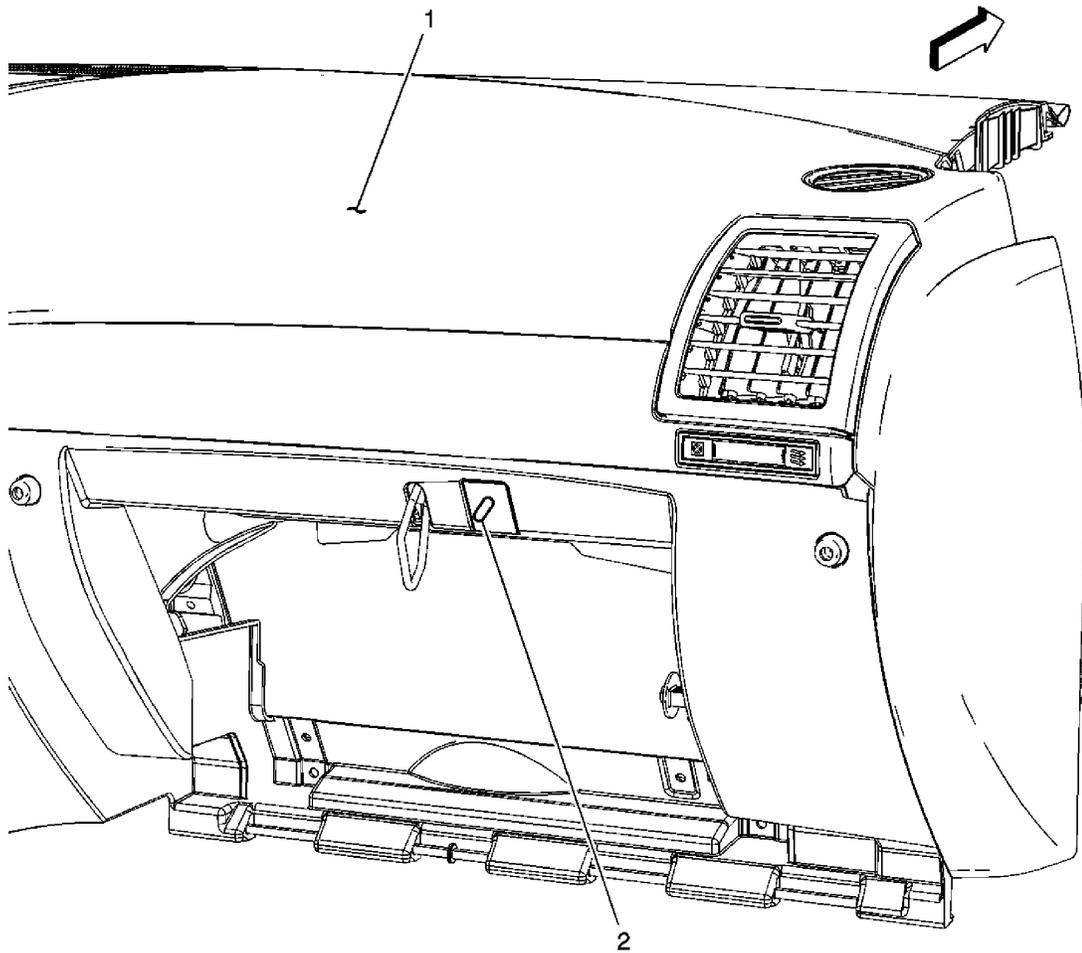


Fig. 23: View Of I/P Compartment Components
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 23

Callout	Component Name
1	I/P Trim
2	I/P Compartment Lamp

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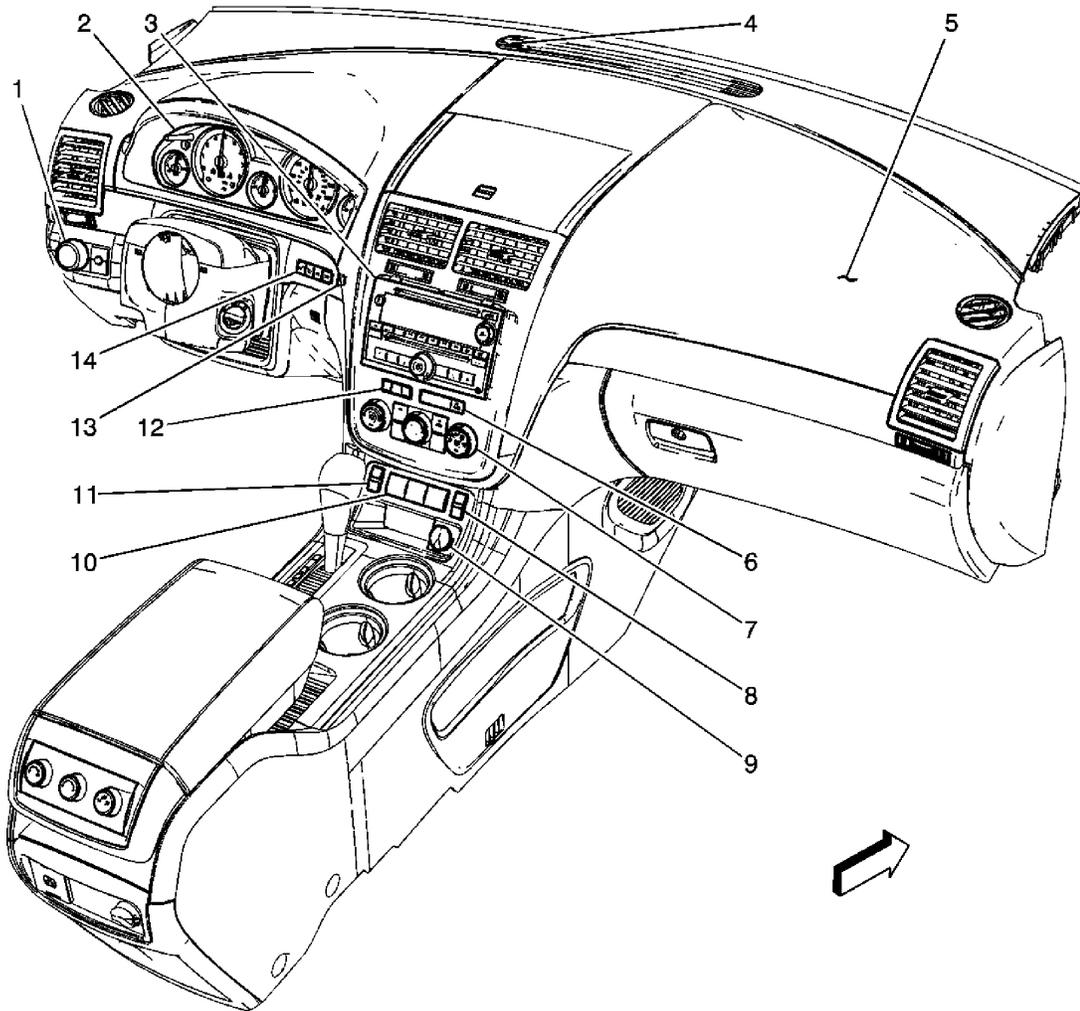


Fig. 24: Identifying I/P Components
 Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 24

Callout	Component Name
1	Headlamp Switch
2	Instrument Panel Cluster (IPC)
3	Radio
4	Sunload Sensor (CJ2)/Ambient Light Sensor (C67)
5	I/P Trim
6	Inflatable Restraint Passenger Air Bag ON/OFF Indicator
7	HVAC Control Module
8	Heated Seat Switch - Passenger (KA1)

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9	Auxiliary Power Outlet - I/P
10	I/P Switch Assembly
11	Heated Seat Switch - Driver (KA1)
12	Hazard Switch
13	Driver Information Center (DIC) Switch (UH9)

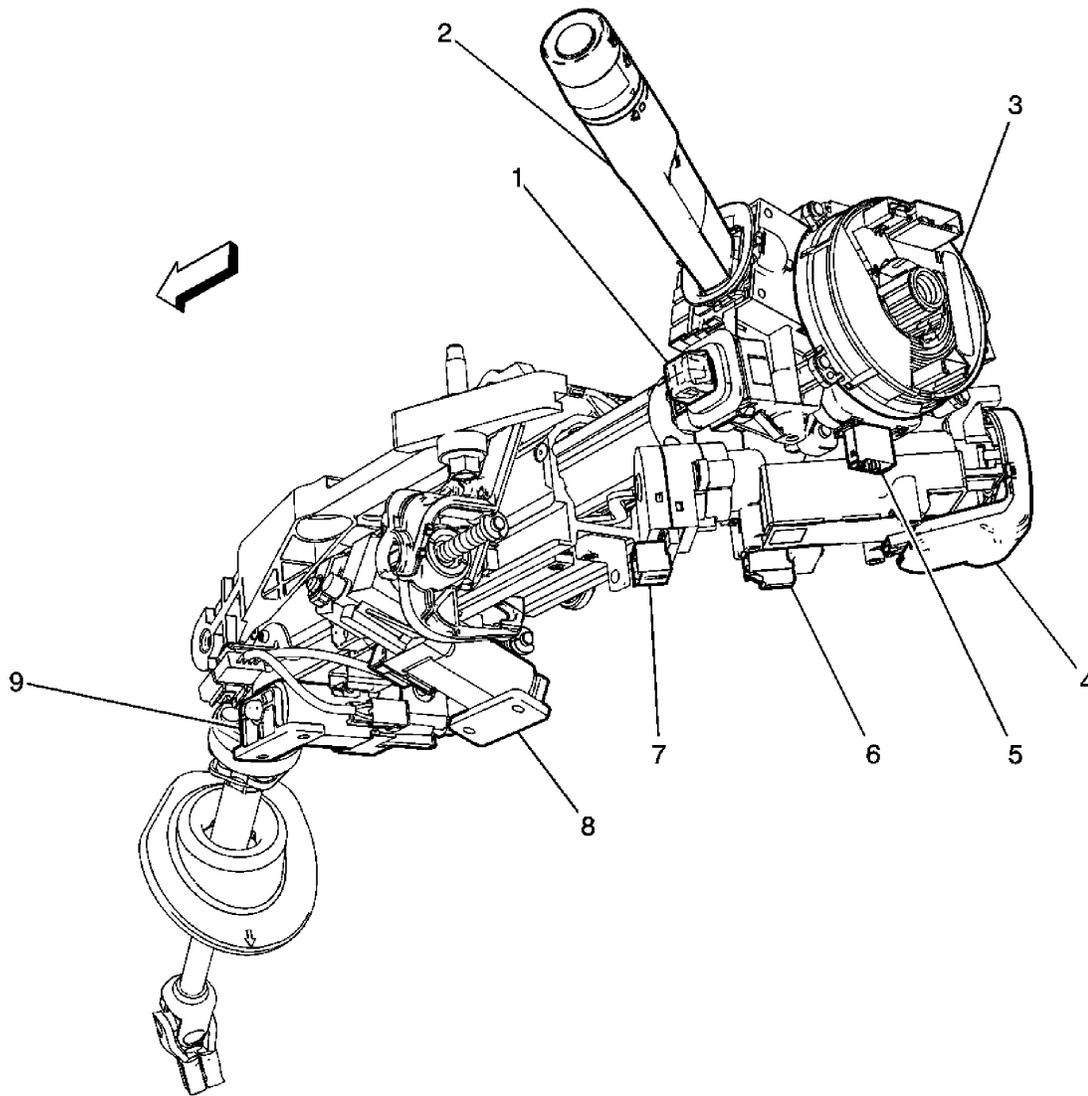


Fig. 25: Identifying Steering Column Components
 Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 25

Callout	Component Name

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1	Tilt/Telescope Switch (N38)
2	Turn Signal/Multifunction Switch
3	Inflatable Restraint Steering Wheel Module Coil
4	Theft Deterrent Control Module
5	Steering Wheel Speed Position Sensor
6	Ignition Lock Cylinder Control Actuator
7	Ignition Switch
8	Tilt Motor
9	Telescope Actuator

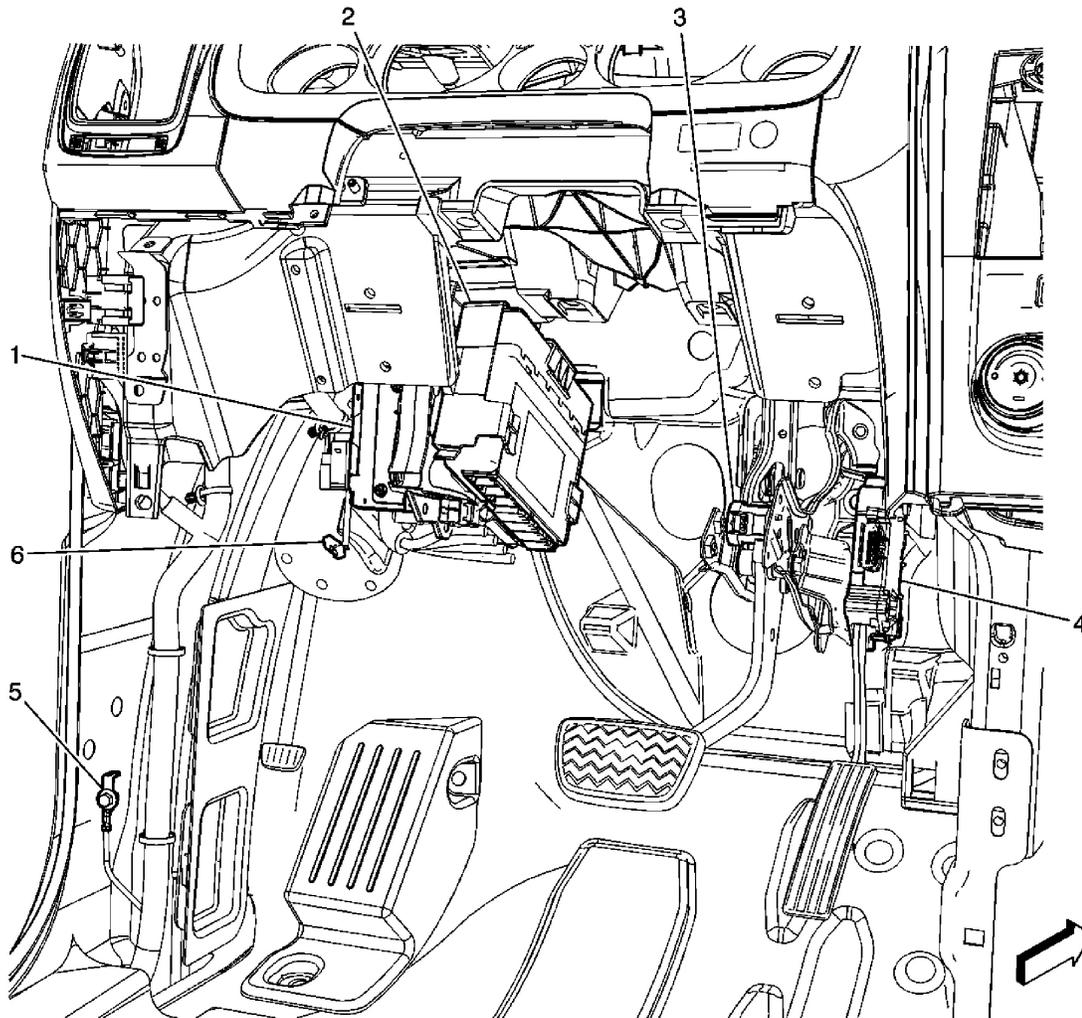


Fig. 26: View Below Drivers Side I/P
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 26

Callout	Component Name
1	Audio Amplifier (UQA/UQG/UQS)
2	Body Control Module (BCM)
3	Brake Pedal Position Sensor
4	Accelerator Pedal Position (APP) Sensor
5	G301

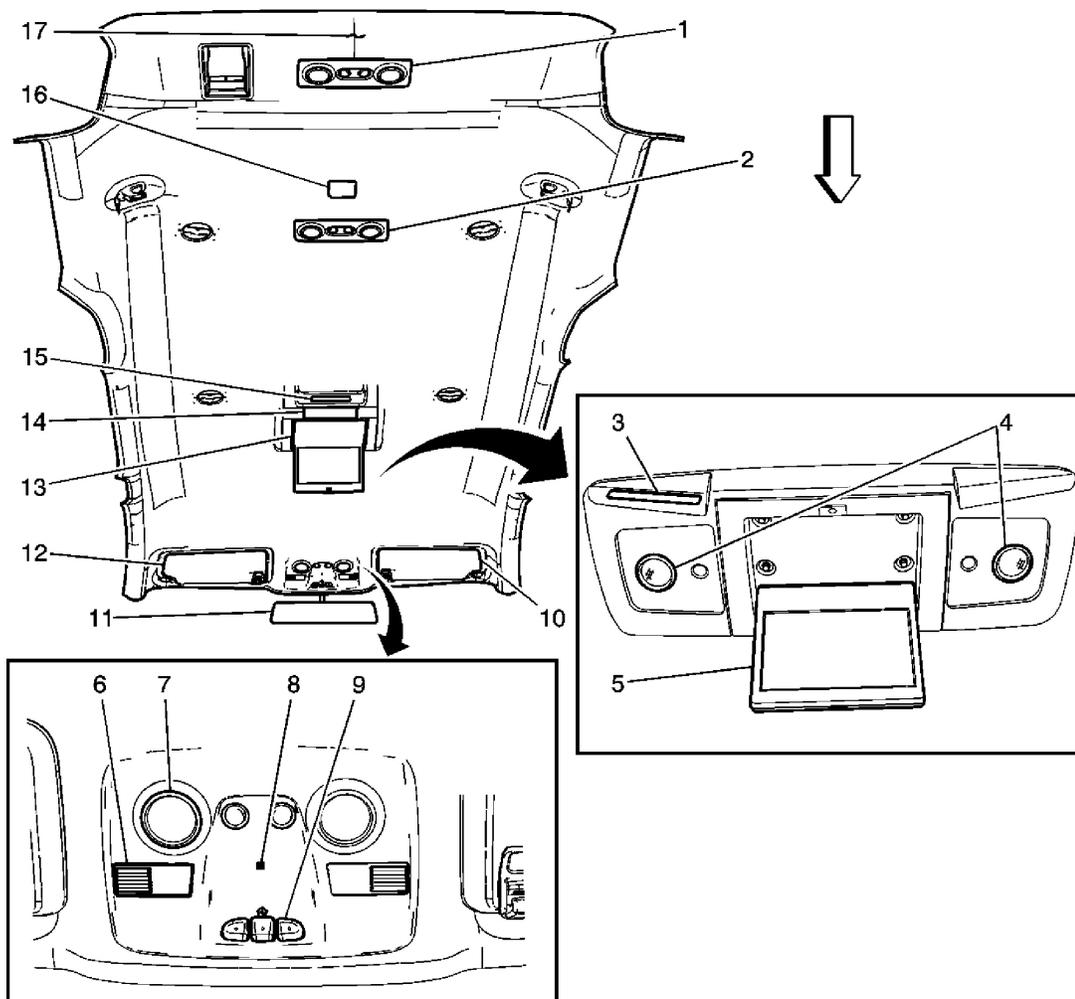


Fig. 27: Identifying Headliner Components
 Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 27

Callout	Component Name

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1	Courtesy/Reading Lamp - Rear
2	Courtesy/Reading Lamp Center
3	Courtesy/Reading Lamp - Front
4	Front Overhead Console Assembly
5	Garage Door Opener (UG1)
6	Cellular Microphone (UE1)
7	Digital Video Disc (DVD) Player (U42)

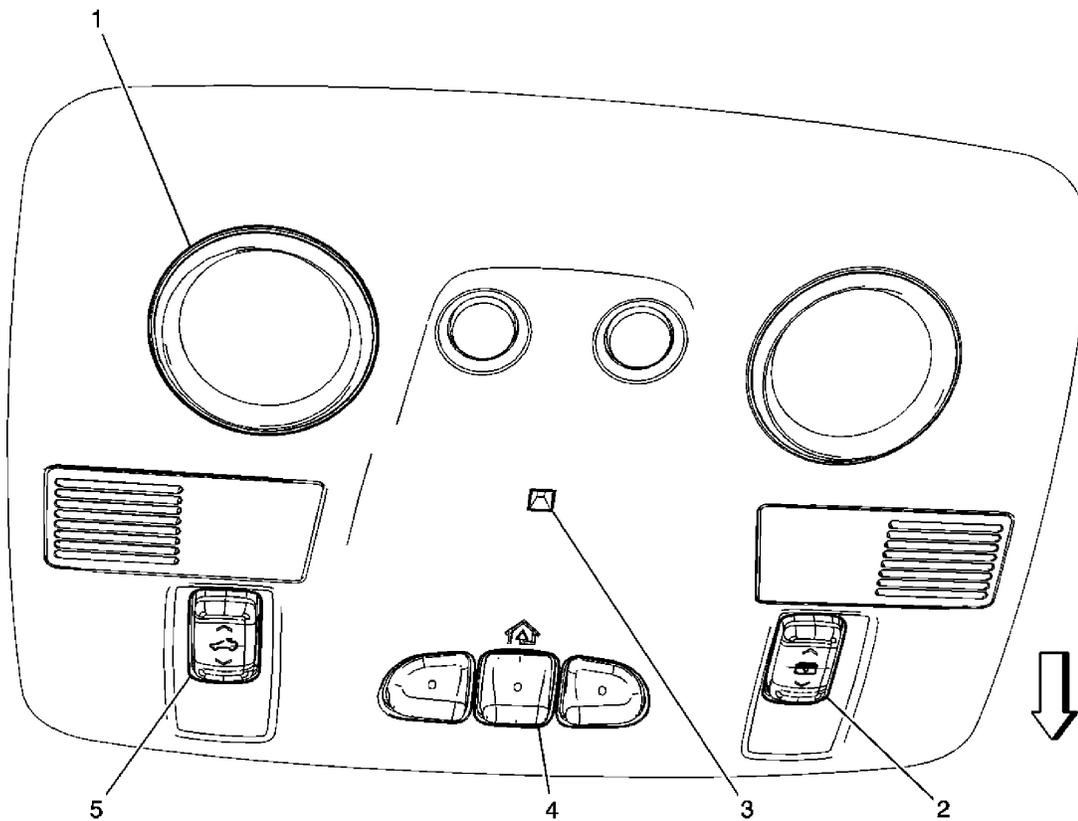


Fig. 28: View Of Overhead Console Components (C3U)
 Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 28

Callout	Component Name
1	Courtesy/Reading Lamp - Front
2	Sunroof Shade Switch (C3U)
3	Console Flood Lamp
4	Garage Door Opener (UG1)

5 | Sunroof Switch (C3U)

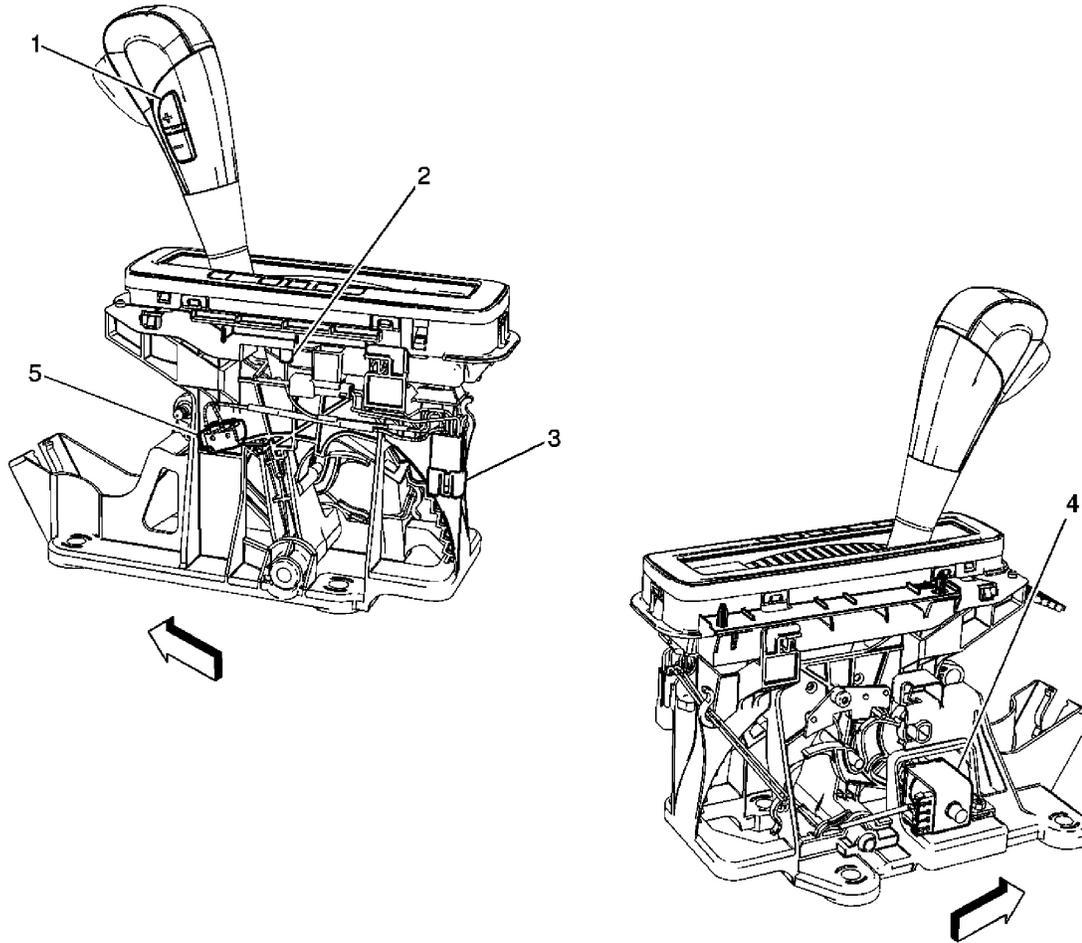


Fig. 29: Identifying Shifter Assembly
 Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 29

Callout	Component Name
1	Driver Shift Request Switch
2	PRNDL Lamp
3	X341
4	A/T Shift Lock Control Solenoid
5	Shift Lever Switch

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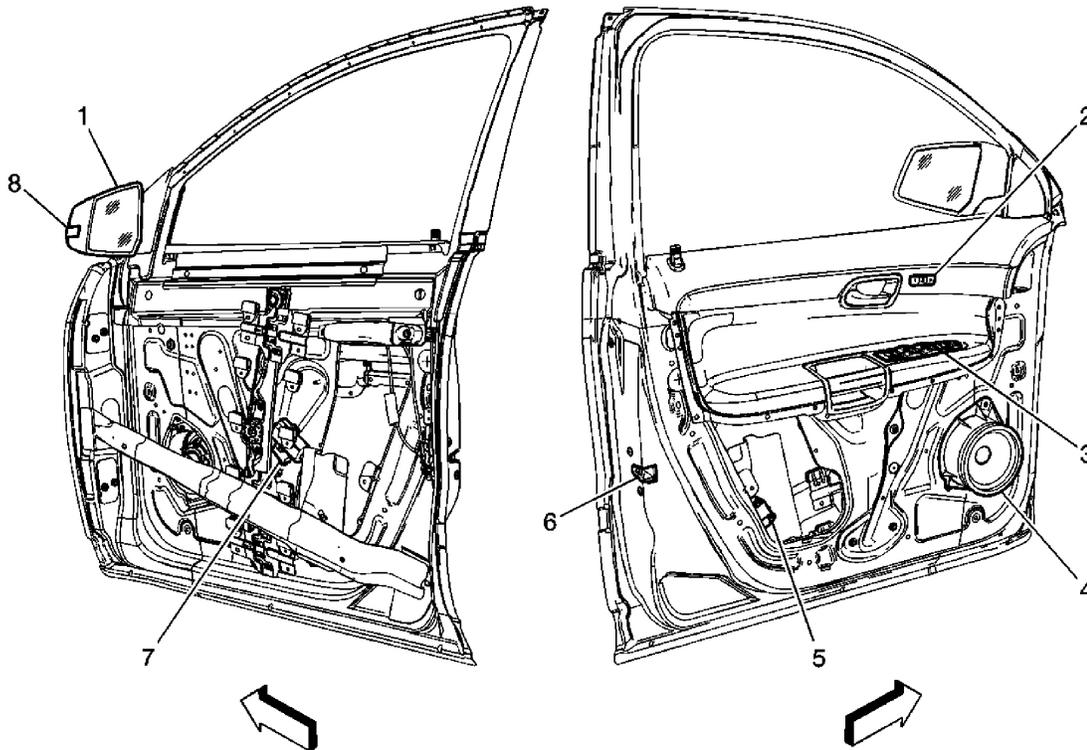


Fig. 30: Identifying Driver Door Components
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 30

Callout	Component Name
1	Outside Rearview Mirror - Driver
2	Memory Seat Switch (AG3)
3	Driver Door Module (DDM) (AXC/AXE)
4	Speaker - LF Door
5	Inflatable Restraint Side Impact Sensing Module (SISM) - Left
6	Door Latch Assembly - Driver
7	Window Motor - Driver
8	Turn Signal Lamp (Part of Outside Rearview)

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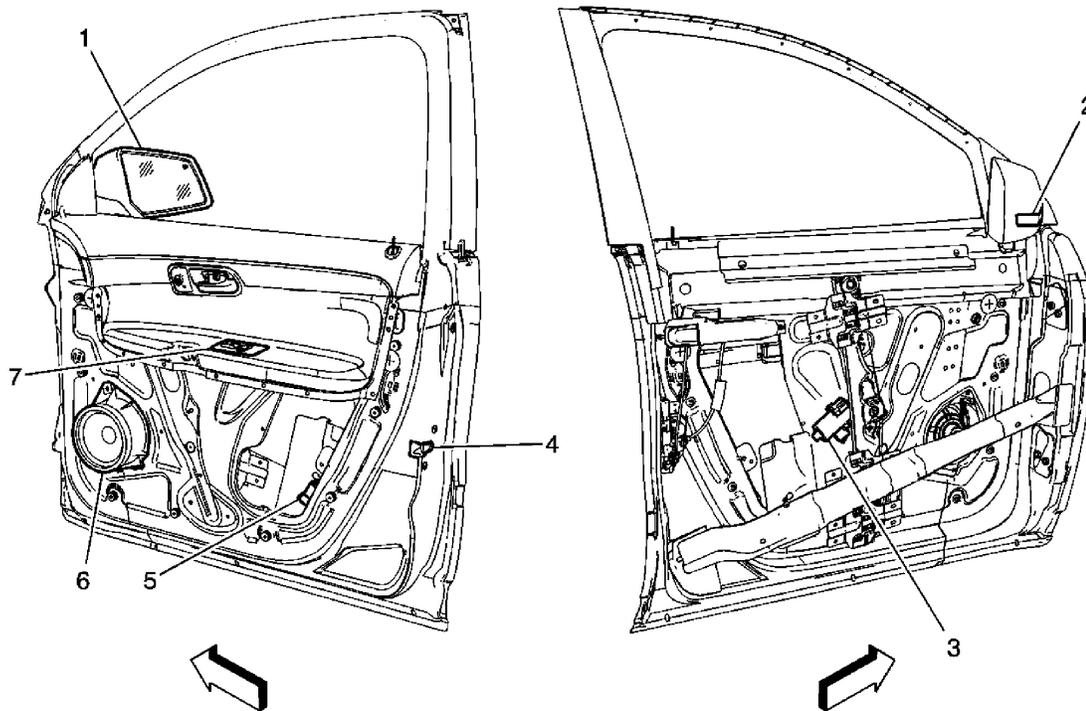


Fig. 31: Identifying Passenger Door Components
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 31

Callout	Component Name
1	Outside Rearview Mirror - Passenger
2	Turn Signal Lamp (Part of Outside Rearview Mirror)
3	Window Motor - Passenger
4	Door Latch Assembly - Passenger
5	Inflatable Restraint Side Impact Sensing Module (SISM) - Right
6	Speaker - RF Door
7	Window Switch - Passenger (AXA)

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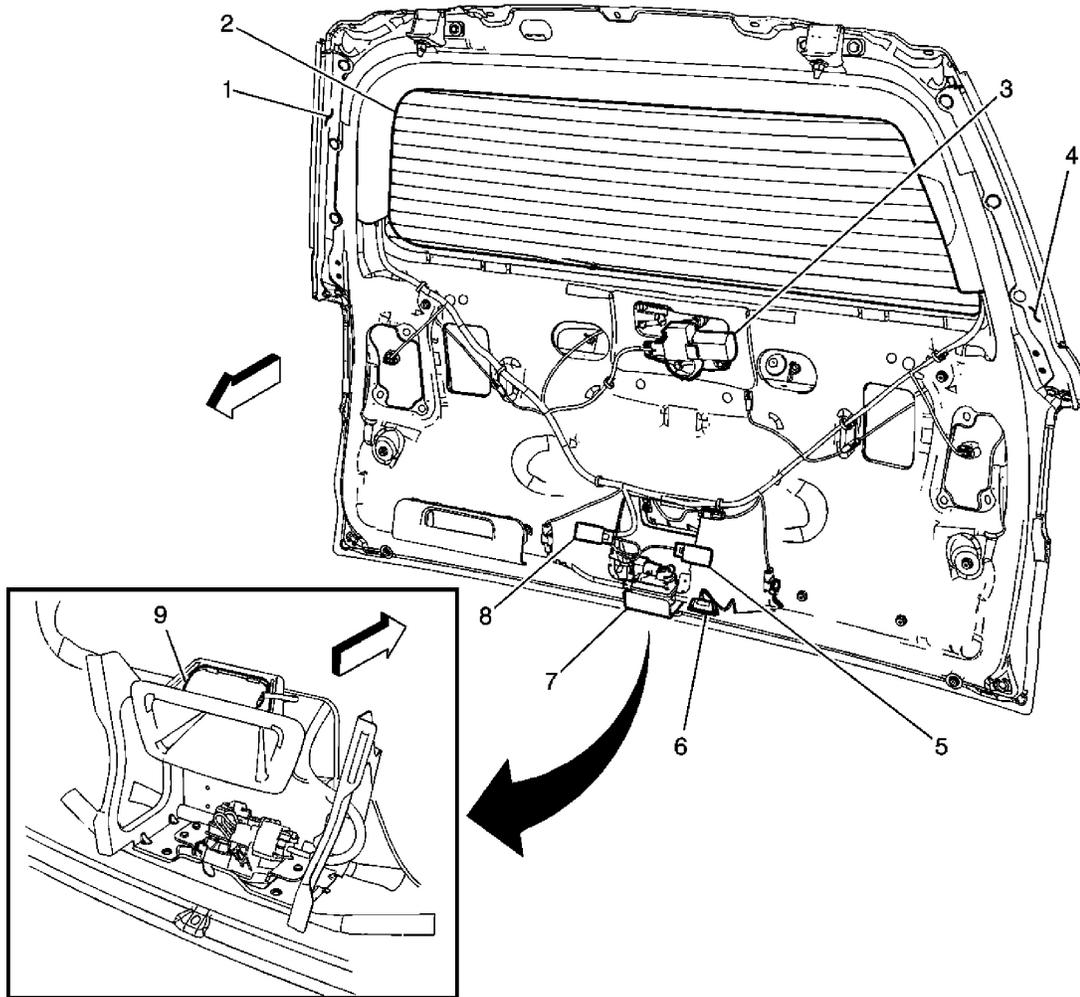


Fig. 32: Identifying Liftgate Components
 Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 32

Callout	Component Name
1	Liftgate Object Sensor - Right (E61)
2	Rear Window Defogger Grid
3	Rear Window Wiper Motor
4	Liftgate Object Sensor - Left (E61)
5	Courtesy Lamp - Liftgate - Left
6	Liftgate Switch - Interior (E61)
7	Liftgate Latch Assembly
8	Courtesy Lamp - Liftgate - Right

9 Liftgate Switch - Exterior (E61)

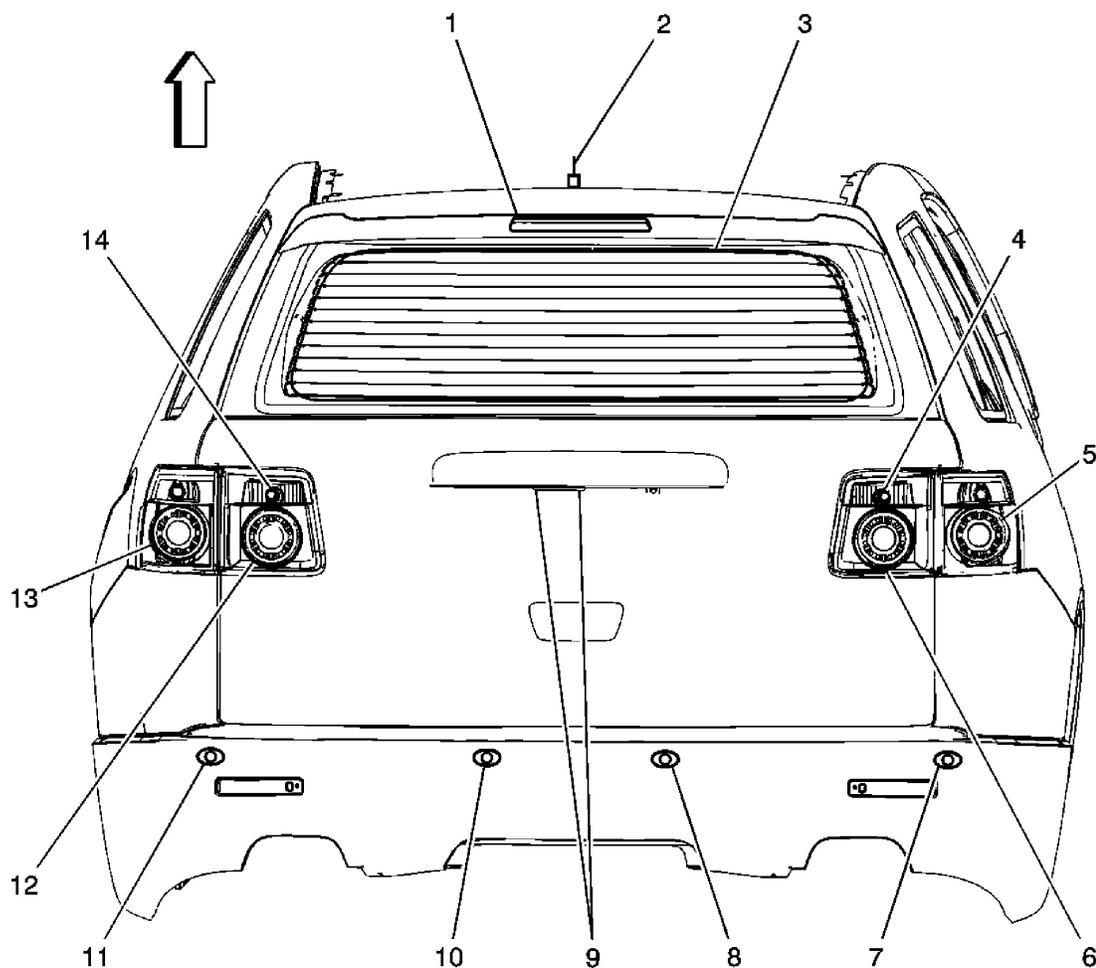


Fig. 33: Identifying Rear Exterior Lighting (Z88)
 Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 33

Callout	Component Name
1	Center High Mounted Stop Lamp (CHMSL)
2	Radio Antenna
3	Rear Window Defogger Grid
4	Back Up Lamp - Right
5	Tail Lamp Assembly - Right
6	Park Lamp - Right Rear
7	Object Sensor - Right Rear Corner (UD7)

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8	Object Sensor - Right Rear Middle (UD7)
9	License Lamp - Left/License Lamp - Right
10	Object Sensor - Left Rear Middle (UD7)
11	Object Sensor - Left Rear Corner (UD7)
12	Park Lamp - Left Rear
13) Tail Lamp Assembly - Left
14	Back Up Lamp - Left

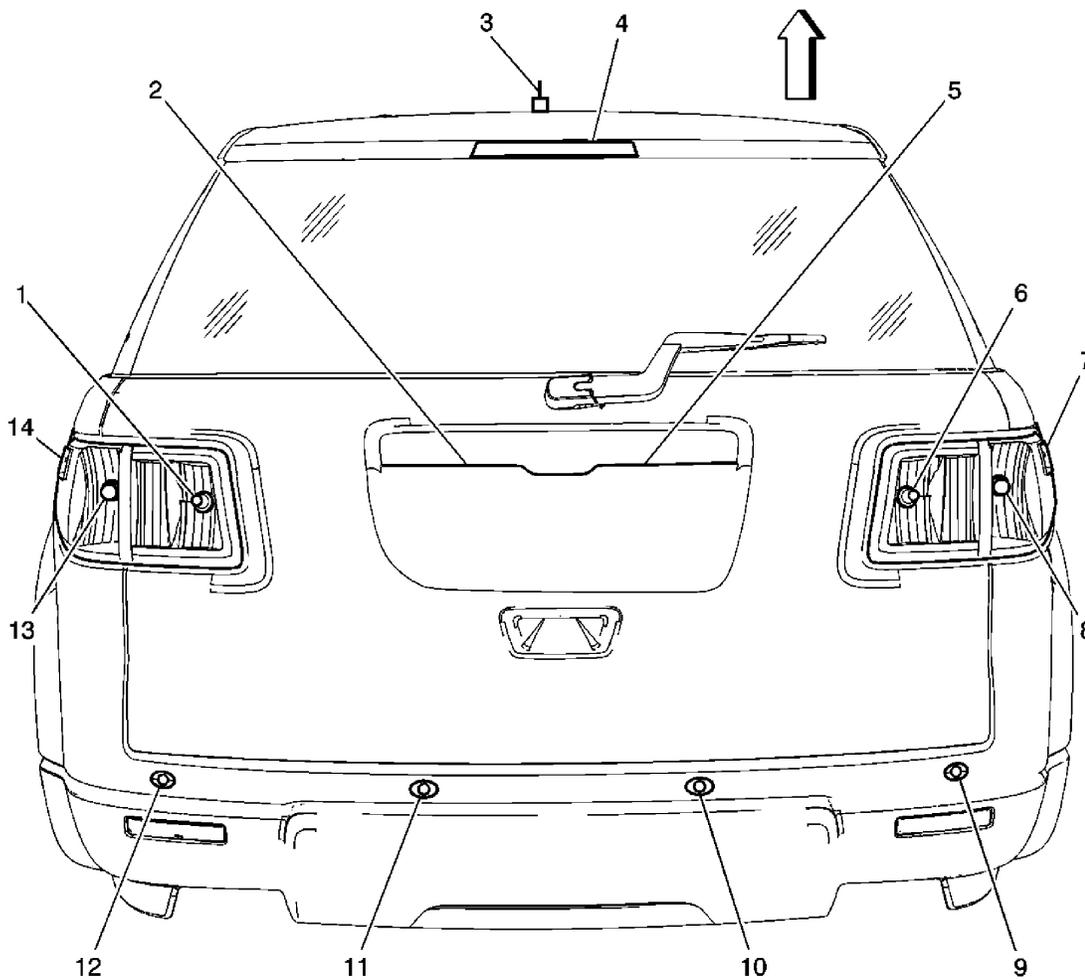


Fig. 34: Identifying Rear Of The Vehicle (W49/WDA)

Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 34

Callout	Component Name
1	Back Up Lamp - Left

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2	License Lamp - Left
3	Center High Mounted Stop Lamp (CHMSL)
4	License Lamp - Right
5	Backup Lamp - Right
6	Marker Lamp - RR
7	Tail/Stop and Turn Signal Lamp - Right
8	Object Sensor - RR Corner (UD7)
9	Object Sensor - RR Middle(UD7)
10	Object Sensor - LR Middle (UD7)
11	Object Sensor - LR Corner (UD7)
12	Tail/Stop and Turn Signal Lamp - Left
13	Marker Lamp - LR

LIGHTING SYSTEMS CONNECTOR END VIEWS

Ambient Light Sensor (WDA+C67)

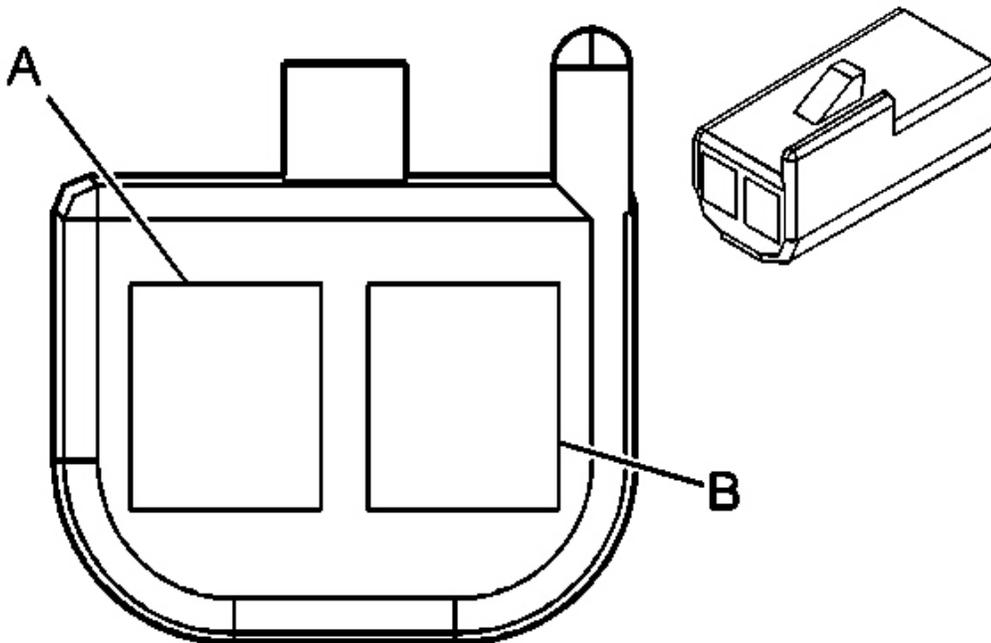


Fig. 35: Ambient Light Sensor (WDA+C67) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Ambient Light Sensor (WDA+C67) Connector Parts Information

Connector Part Information

- OEM: 12047662
- Service: 12085535
- Description: 2-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-14 (GN)

Ambient Light Sensor (WDA+C67) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.35 L-GN/BK	1137	DRL Ambient Light Sensor Signal
B	0.35 BK/WH	1551	Ground

Ambient Light Sensor (Z88+C67)

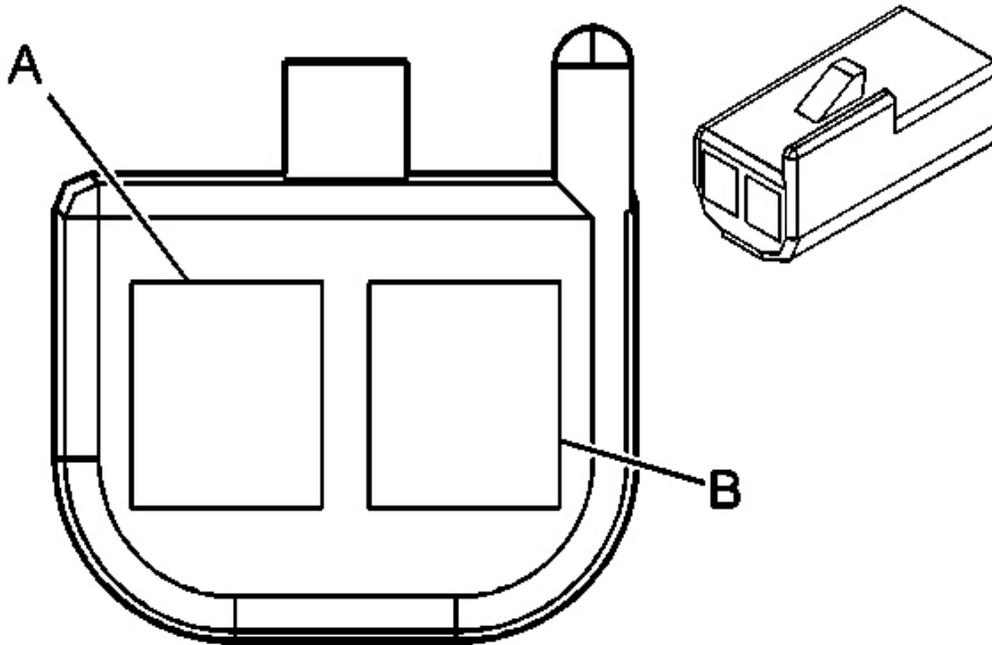


Fig. 36: Ambient Light Sensor (Z88+C67) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Ambient Light Sensor (Z88+C67) Connector Parts Information

Connector Part Information

- OEM: 12047662
- Service: 12085535
- Description: 2-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-14 (GN)

Ambient Light Sensor (Z88+C67) Connector Terminal Identification

Pin	Wire	Circuit No.	Function

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A	0.35 L-GN/BK	1137	DRL Ambient Light Sensor Signal
B	0.35 BK/WH	1551	Ground

Back Up Lamp - Left (WDA)

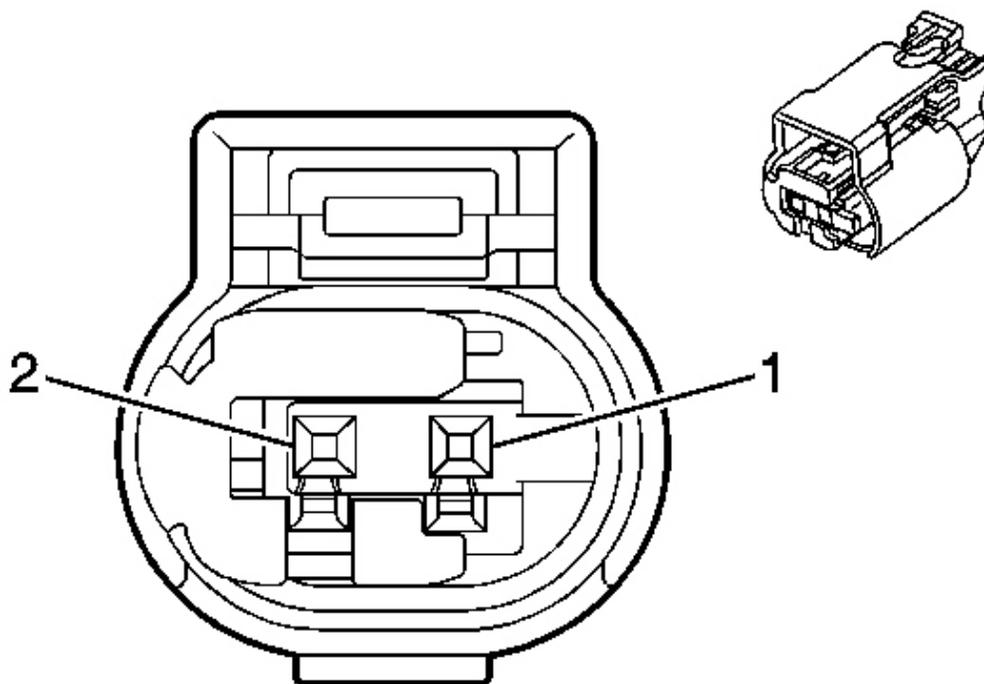


Fig. 37: Back Up Lamp - Left (WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Back Up Lamp - Left (WDA) Connector Parts Information

Connector Part Information

- OEM: 1-1438608-1
- Service: 19149296
- Description: 2-Way F MQS Series, Sealed (BK)

Terminal Part Information

- Terminal/Tray: 962885-5/15

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- Core/Insulation Crimp: 6/6
- Release Tool/Test Probe: 12094429/J-35616-64B (L-BU)

Back Up Lamp - Left (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.5 L-GN	24	Backup Lamp Supply Voltage
2	0.5 BK	650	Ground

Back Up Lamp - Left (Z88)

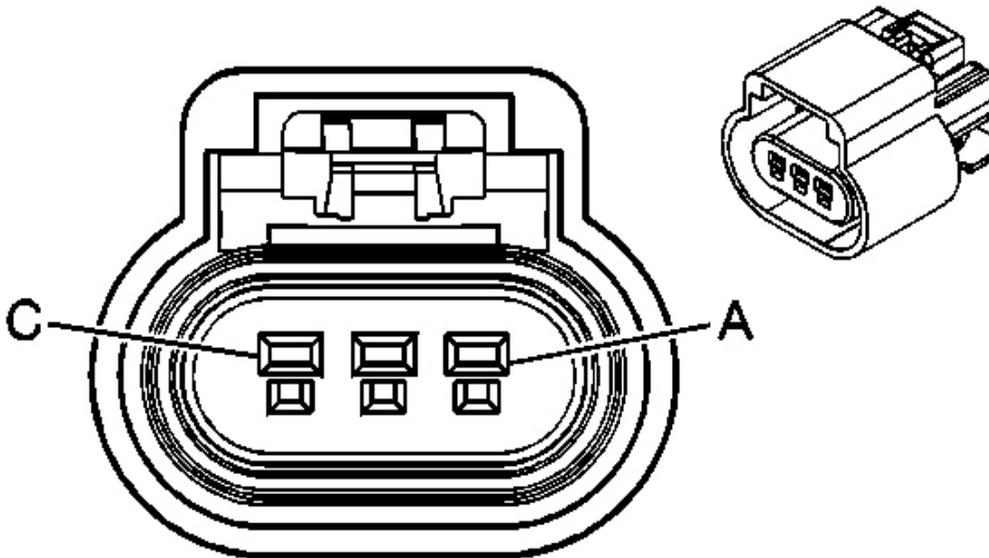


Fig. 38: Back Up Lamp - Left (Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

Back Up Lamp - Left (Z88) Connector Parts Information

Connector Part Information

- OEM: 15326808
- Service: See Catalog
- Description: 3-Way F GT 150 Series, Sealed (BK)

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Terminal Part Information

- Terminal/Tray: 12191819/8
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

Back Up Lamp - Left (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 L-GN	24	Backup Lamp Supply Voltage
B	0.5 PU	709	Left Park Lamp Supply Voltage
C	0.5 BK	650	Ground

Back Up Lamp - Right (WDA) Connector

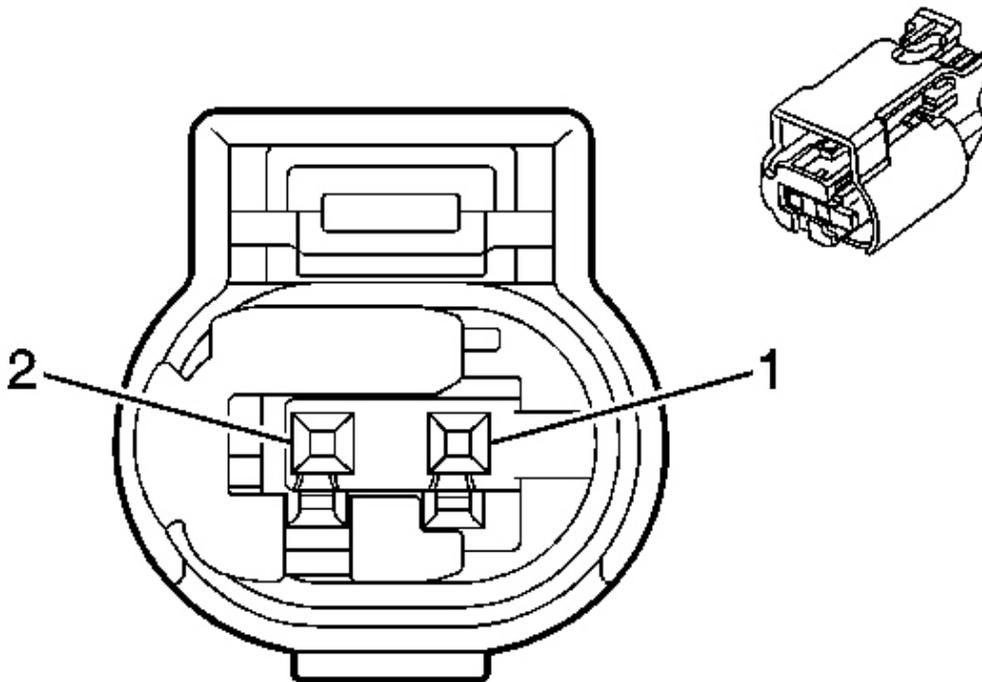


Fig. 39: Back Up Lamp - Right (WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

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Back Up Lamp - Right (WDA) Connector Parts Information

Connector Part Information

- OEM: 1-1438608-1
- Service: 19149296
- Description: 2-Way F MQS Series, Sealed (BK)

Terminal Part Information

- Terminal/Tray: 962885-5/15
- Core/Insulation Crimp: 6/6
- Release Tool/Test Probe: 12094429/J-35616-64B (L-BU)

Back Up Lamp - Right (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.5 L-GN	24	Backup Lamp Supply Voltage
2	0.5 BK	650	Ground

Back Up Lamp - Right (Z88)

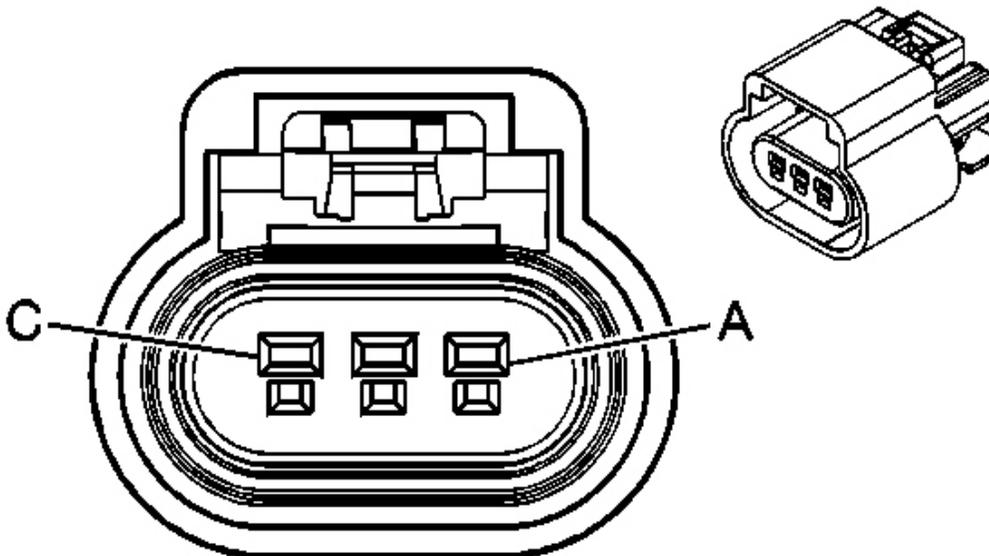


Fig. 40: Back Up Lamp - Right (Z88) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Back Up Lamp - Right (Z88) Connector Parts Information

Connector Part Information

- OEM: 15326808
- Service: See Catalog
- Description: 3-Way F GT 150 Series, Sealed (BK)

Terminal Part Information

- Terminal/Tray: 12191819/8
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

Back Up Lamp - Right (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 L-GN	24	Backup Lamp Supply Voltage
B	0.5 PU	709	Left Park Lamp Supply Voltage
C	0.5 BK	650	Ground

Brake Pedal Position Sensor (WDA)

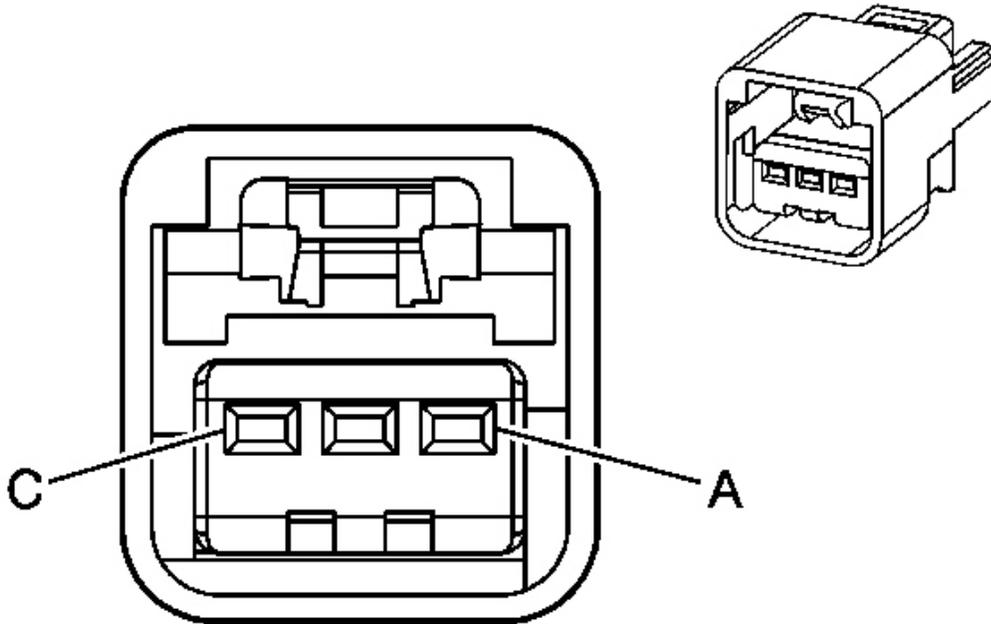


Fig. 41: Brake Pedal Position Sensor (WDA) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Brake Pedal Position Sensor (WDA) Connector Parts Information

Connector Part Information

- OEM: 15332132
- Service: 88953364
- Description: 3-Way F GT 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12191812/19
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

Brake Pedal Position Sensor (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function

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A	0.35 GY	598	5-Volt Reference
B	0.35 L-GN	526	Stop Lamp Switch Signal
C	0.35 TN	552	Low Reference

Brake Pedal Position Sensor (Z88)

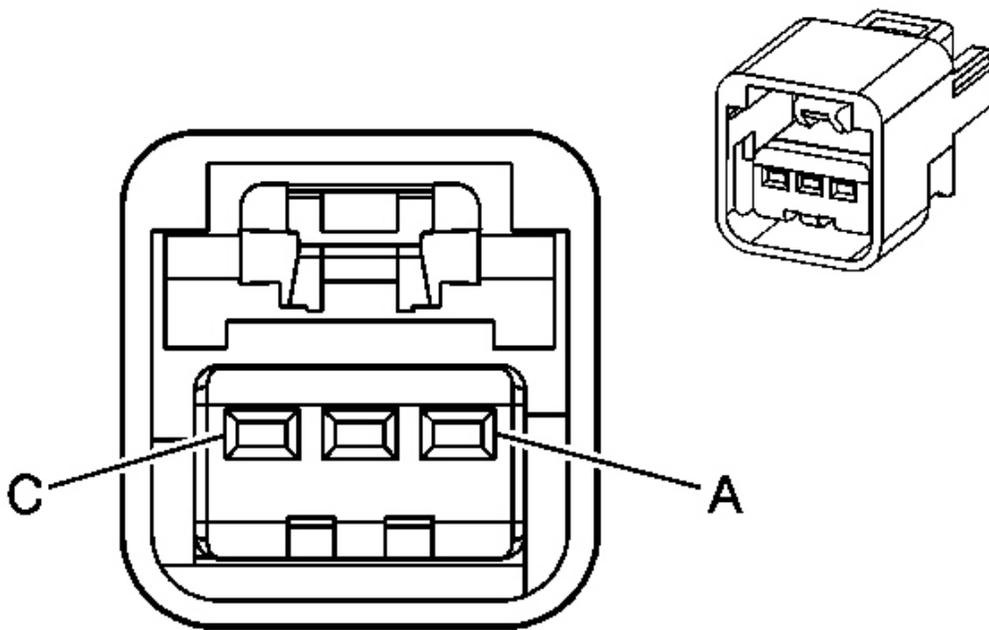


Fig. 42: Brake Pedal Position Sensor (Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

Brake Pedal Position Sensor (Z88) Connector Parts Information

Connector Part Information

- OEM: 15332132
- Service: 88953364
- Description: 3-Way F GT 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12191812/19

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- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

Brake Pedal Position Sensor (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.35 GY	598	5-Volt Reference
B	0.35 L-GN	526	Stop Lamp Switch Signal
C	0.35 TN	552	Low Reference

Cargo Lamp (WDA)

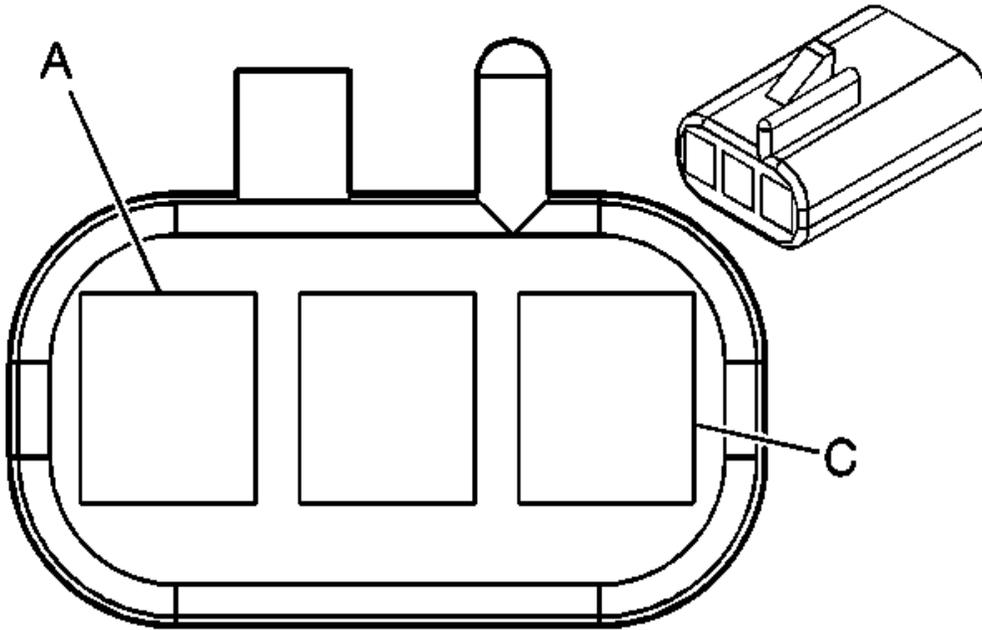


Fig. 43: Cargo Lamp (WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Cargo Lamp (WDA) Connector Parts Information

Connector Part Information

- OEM: 12047781
- Service: 12101864
- Description: 3-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

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- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-14 (GN)

Cargo Lamp (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 OG	1732	Courtesy Lamps Supply Voltage
B	0.5 BK	850	Ground
C	0.5 GY/BK	690	Courtesy Lamp High Control

Cargo Lamp (Z88)

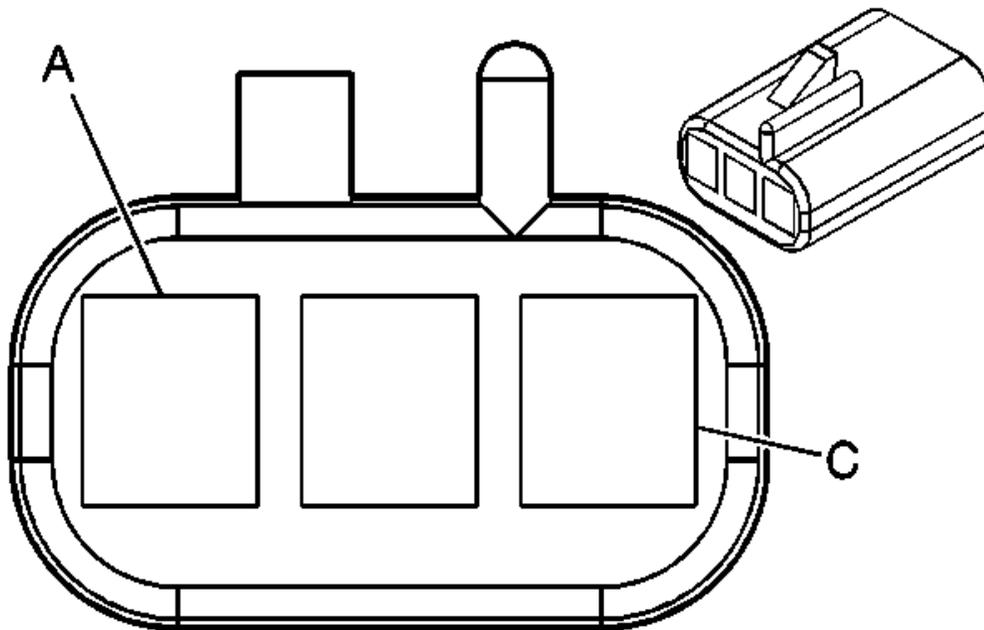


Fig. 44: Cargo Lamp (Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

Cargo Lamp (Z88) Connector Parts Information

Connector Part Information

- OEM: 12047781
- Service: 12101864
- Description: 3-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

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2007 ACCESSORIES & EQUIPMENT Lighting - Outlook

- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-14 (GN)

Cargo Lamp (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 OG	1732	Courtesy Lamps Supply Voltage
B	0.5 BK	850	Ground
C	0.5 GY/BK	690	Courtesy Lamp High Control

Center High Mounted Stop Lamp (CHMSL) (WDA/Z88)

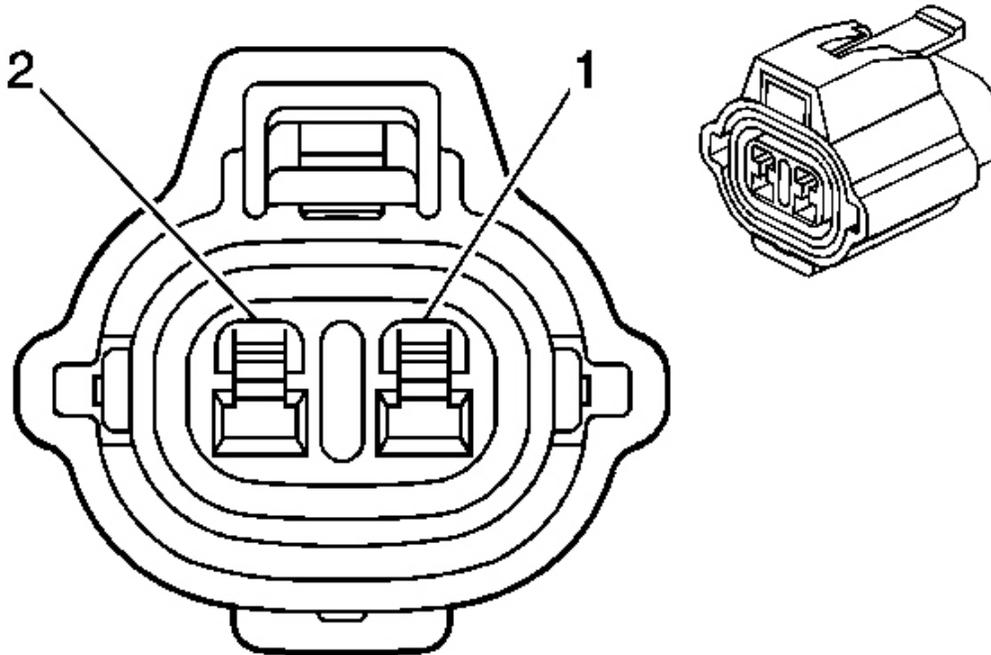


Fig. 45: Center High Mounted Stop Lamp (CHMSL) (WDA/Z88) Connector End View Courtesy of GENERAL MOTORS CORP.

Center High Mounted Stop Lamp (CHMSL) (WDA/Z88) Connector Parts Information

Connector Part Information

- OEM: 7223-1324
- Service: 88988460
- Description: 2-Way F 090 Series (NA)

Terminal Part Information

- Terminal/Tray: 7116-1420/11
- Core/Insulation Crimp: E/1
- Release Tool/Test Probe: 15315247/J-35616-18 (BK)

Center High Mounted Stop Lamp (CHMSL) (WDA/Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.5 BK	650	Ground
2	0.5 L-BU	1320	Stop Lamp Supply Voltage

Console Flood Lamp

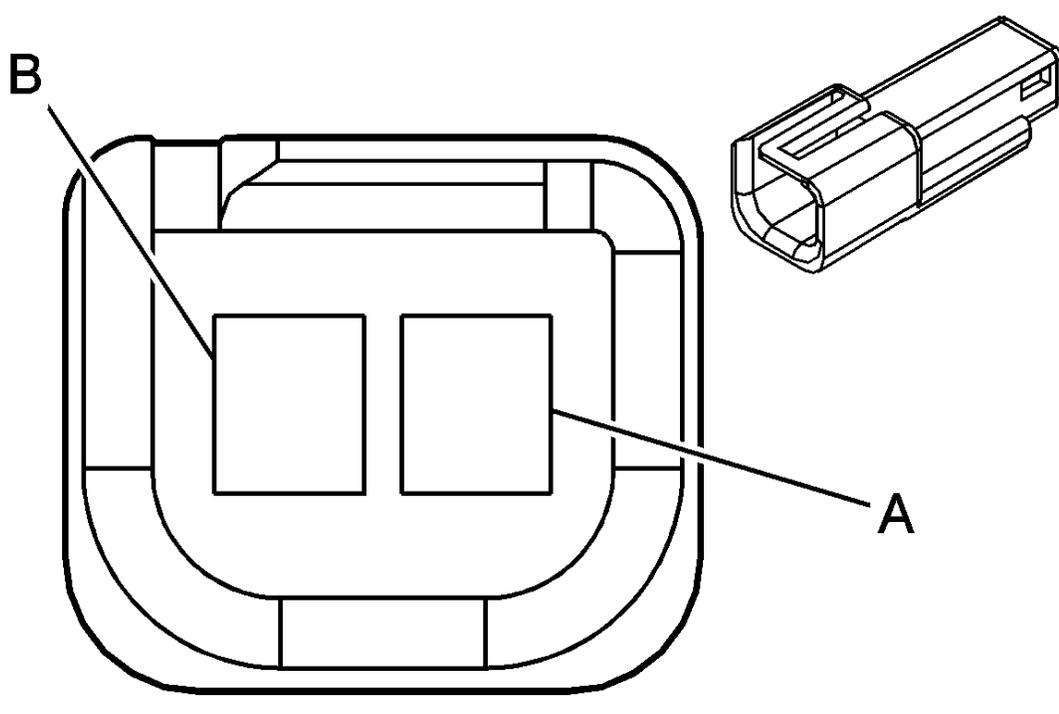


Fig. 46: Console Flood Lamp Connector End View
 Courtesy of GENERAL MOTORS CORP.

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Console Flood Lamp Connector Parts Information

Connector Part Information

- OEM: 12047663
- Service: 12085481
- Description: 2-Way M Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12047581/2
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-3 (GY)

Console Flood Lamp Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.35 BK	850	Ground
B	0.35 PU/WH	1382	LED Dimming Signal

Courtesy Lamp - Left Footwell (WDA)

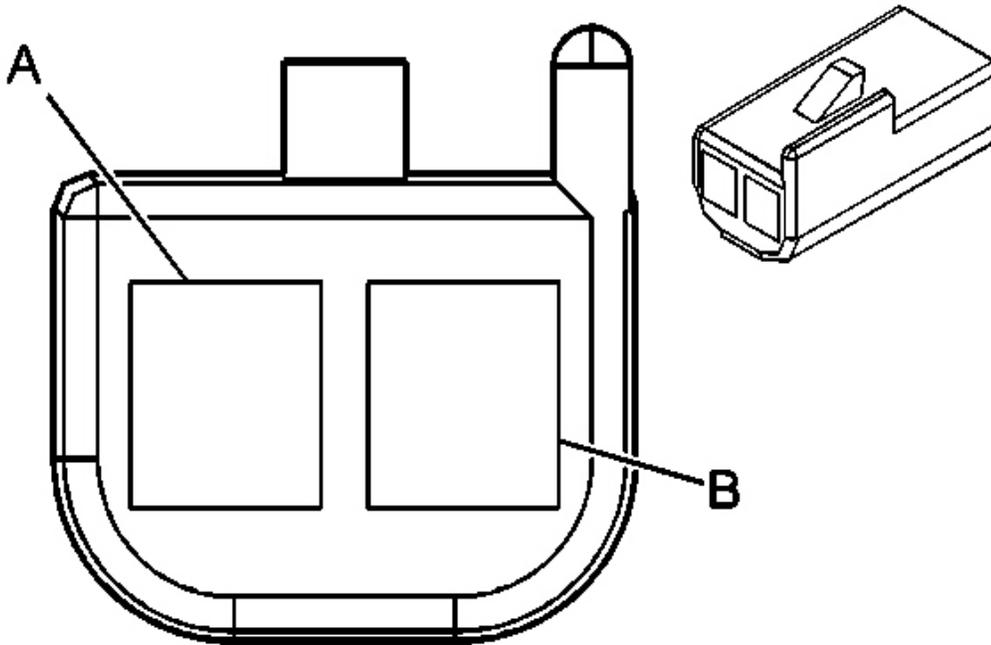


Fig. 47: Courtesy Lamp - Left Footwell (WDA) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Courtesy Lamp - Left Footwell (WDA) Connector Parts Information

Connector Part Information

- OEM: 12047662
- Service: 12085535
- Description: 2-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-14 (GN)

Courtesy Lamp - Left Footwell (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function

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A	0.5 GY/BK	690	Courtesy Lamp High Control
B	0.5 BK	750	Ground

Courtesy Lamp - Left Footwell (Z88)

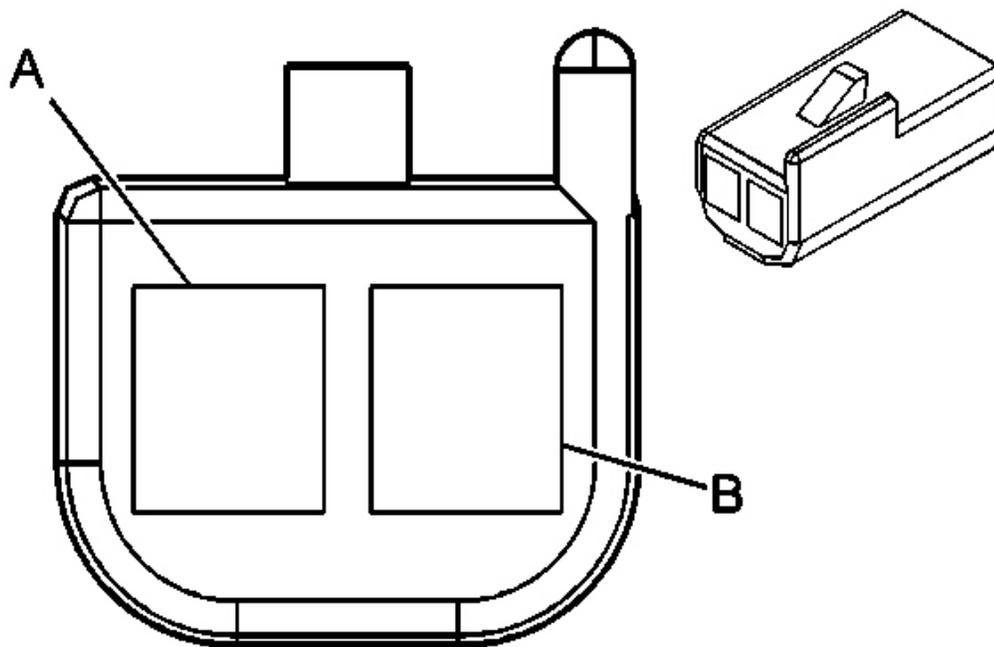


Fig. 48: Courtesy Lamp - Left Footwell (Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

Courtesy Lamp - Left Footwell (Z88) Connector Parts Information

Connector Part Information

- OEM: 12047662
- Service: 12085535
- Description: 2-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C

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- Release Tool/Test Probe: 12094429/J-35616-14 (GN)

Courtesy Lamp - Left Footwell (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 GY/BK	690	Courtesy Lamp High Control
B	0.5 BK	750	Ground

Courtesy Lamp - Liftgate - Left

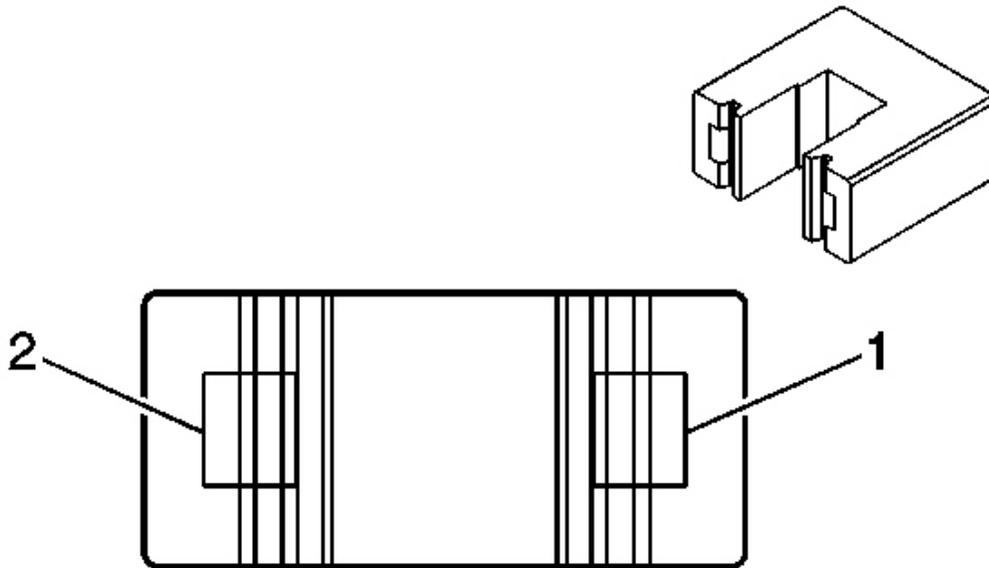


Fig. 49: Courtesy Lamp - Liftgate - Left Connector End View
Courtesy of GENERAL MOTORS CORP.

Courtesy Lamp - Liftgate - Left Connector Parts Information

Connector Part Information

- OEM: 12186713
- Service: See Catalog
- Description: 2-Way F Fast-on (BK)

Terminal Part Information

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- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Courtesy Lamp - Liftgate - Left Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.5 BK	650	Ground
2	0.5 GY/BK	690	Courtesy Lamp High Control

Courtesy Lamp - Liftgate - Right

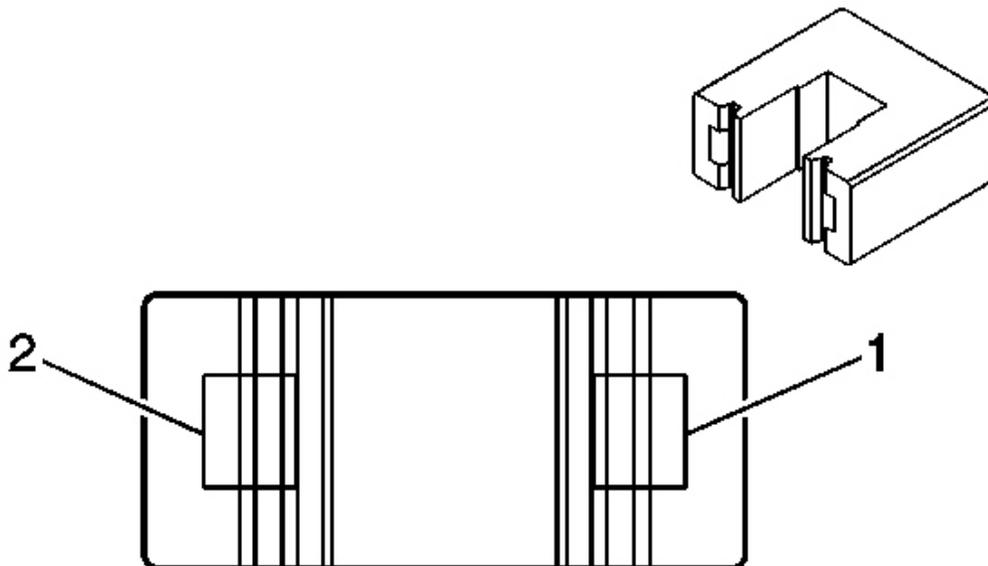


Fig. 50: Courtesy Lamp - Liftgate - Right Connector End View
Courtesy of GENERAL MOTORS CORP.

Courtesy Lamp - Liftgate - Right Connector Parts Information

Connector Part Information

- OEM: 12186713
- Service: See Catalog

- Description: 2-Way F Faston (BK)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Courtesy Lamp - Liftgate - Right Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.5 BK	650	Ground
2	0.5 GY/BK	690	Courtesy Lamp High Control

Courtesy Lamp - Right Footwell (WDA)

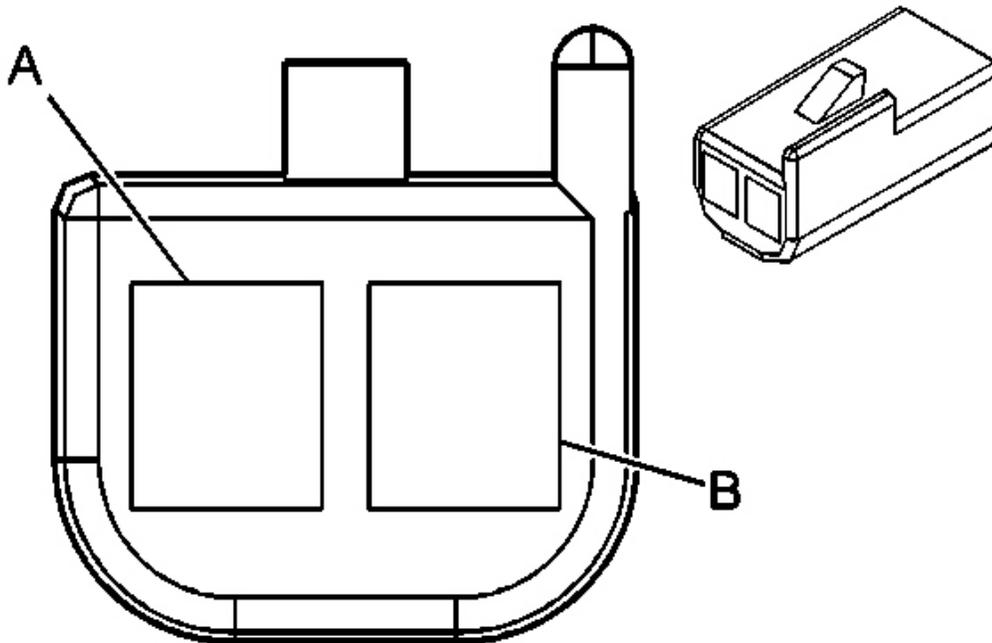


Fig. 51: Courtesy Lamp - Right Footwell (WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Courtesy Lamp - Right Footwell (WDA) Connector Parts Information

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Connector Part Information

- OEM: 12047662
- Service: 12085535
- Description: 2-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-14 (GN)

Courtesy Lamp - Right Footwell (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 GY/BK	690	Courtesy Lamp High Control
B	0.5 BK	750	Ground

Courtesy Lamp - Right Footwell (Z88)

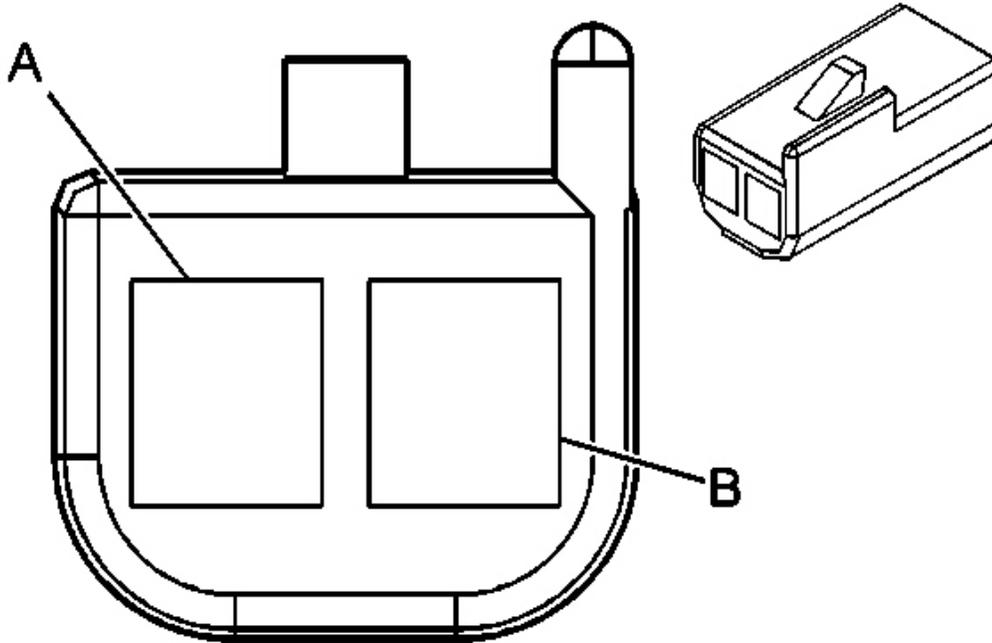


Fig. 52: Courtesy Lamp - Right Footwell (Z88) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Courtesy Lamp - Right Footwell (Z88) Connector Parts Information

Connector Part Information

- OEM: 12047662
- Service: 12085535
- Description: 2-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-14 (GN)

Courtesy Lamp - Right Footwell (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function

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A	0.5 GY/BK	690	Courtesy Lamp High Control
B	0.5 BK	750	Ground

Courtesy/Reading Lamp - Center (Z88+C3U-U42)

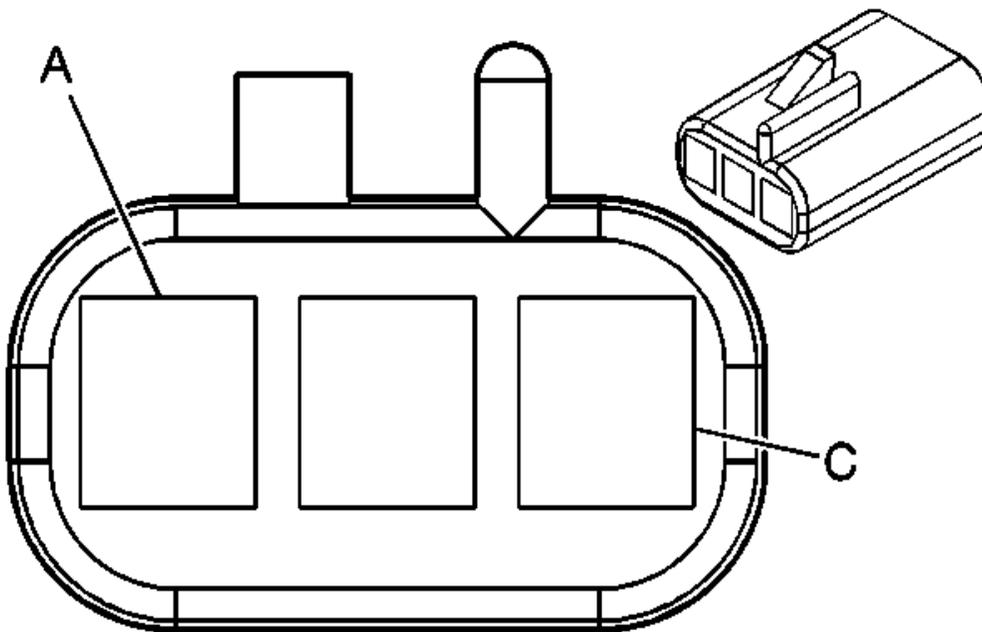


Fig. 53: Courtesy/Reading Lamp - Center (Z88+C3U-U42) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Courtesy/Reading Lamp - Center (Z88+C3U-U42) Connector Parts Information

Connector Part Information	
• OEM:	12047781
• Service:	12101864
• Description:	3-Way F Metri-Pack 150 Series (BK)
Terminal Part Information	
• Terminal/Tray:	12064971/5
• Core/Insulation Crimp:	E/C
• Release Tool/Test Probe:	12094429/J-35616-14 (GN)

Courtesy/Reading Lamp - Center (Z88+C3U-U42) Connector Terminal Identification

Pin	Wire	Circuit No.	Function

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A	0.5 OG	1732	Courtesy Lamps Supply Voltage
B	0.5 BK	850	Ground
C	0.5 GY/BK	690	Courtesy Lamp High Control

Courtesy/Reading Lamp - Center (-U42)

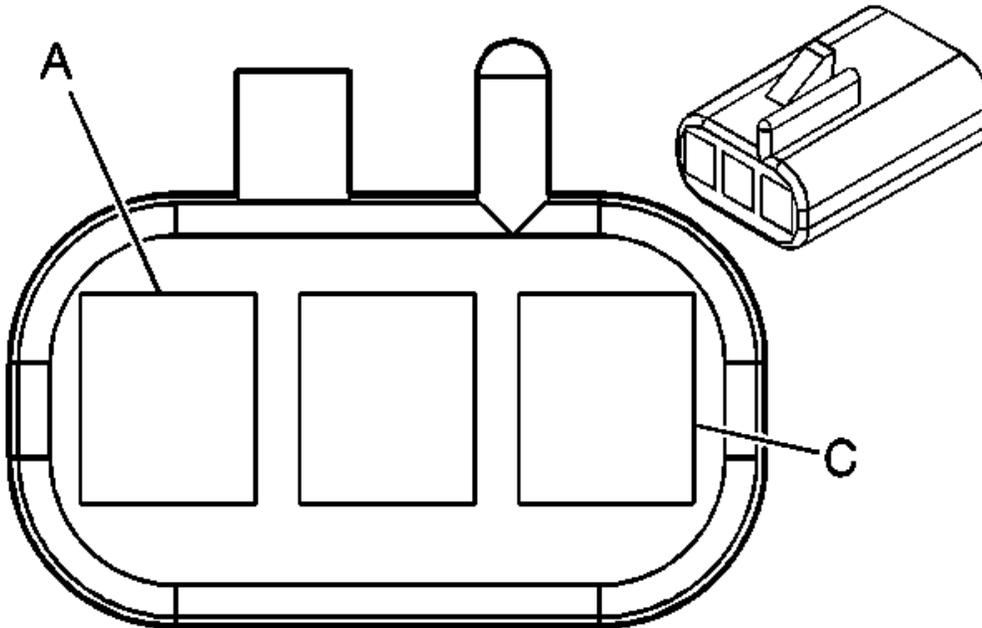


Fig. 54: Courtesy/Reading Lamp - Center (-U42) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Courtesy/Reading Lamp - Center (-U42) Connector Parts Information

<p>Connector Part Information</p> <ul style="list-style-type: none"> • OEM: 12047781 • Service: 12101864 • Description: 3-Way F Metri-Pack 150 Series (BK) <p>Terminal Part Information</p> <ul style="list-style-type: none"> • Terminal/Tray: 12064971/5 • Core/Insulation Crimp: E/C • Release Tool/Test Probe: 12094429/J-35616-14 (GN)

Courtesy/Reading Lamp - Center (-U42) Connector Terminal Identification

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2007 Saturn Outlook XE

2007 ACCESSORIES & EQUIPMENT Lighting - Outlook

Pin	Wire	Circuit No.	Function
A	0.5 OG	1732	Courtesy Lamps Supply Voltage
B	0.5 BK	850	Ground
C	0.5 GY/BK	690	Courtesy Lamp High Control

Courtesy/Reading Lamp - Center (Z88-U42)

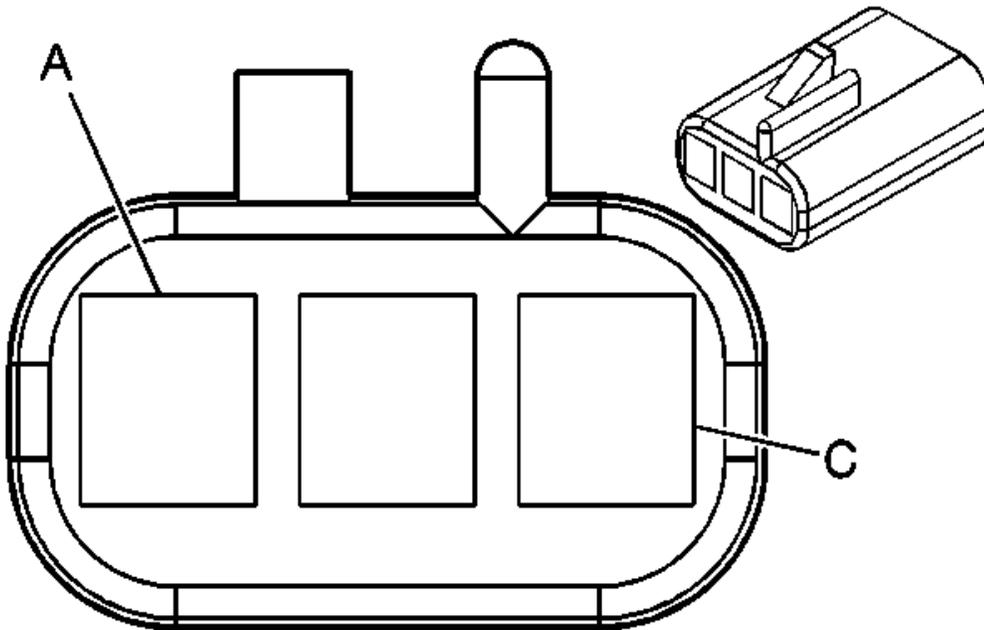


Fig. 55: Courtesy/Reading Lamp - Center (Z88-U42) Connector End View
Courtesy of GENERAL MOTORS CORP.

Courtesy/Reading Lamp - Center (Z88-U42) Connector Parts Information

Connector Part Information

- OEM: 12047781
- Service: 12101864
- Description: 3-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-14 (GN)

Courtesy/Reading Lamp - Center (Z88-U42) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 OG	1732	Courtesy Lamps Supply Voltage
B	0.5 BK	850	Ground
C	0.5 GY/BK	690	Courtesy Lamp High Control

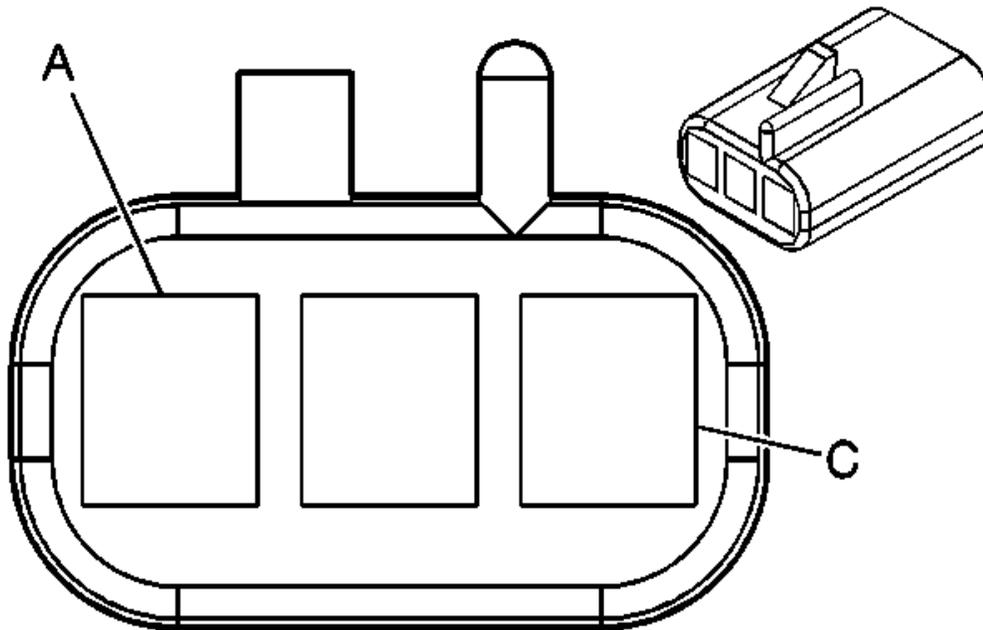
Courtesy/Reading Lamp - Center X1 (Z88+C3U+U42)

Fig. 56: Courtesy/Reading Lamp - Center X1 (Z88+C3U+U42) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Courtesy/Reading Lamp - Center X1 (Z88+C3U+U42) Connector Parts Information**Connector Part Information**

- OEM: 12047781
- Service: 12101864
- Description: 3-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-14 (GN)

2007 Saturn Outlook XE

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Courtesy/Reading Lamp - Center X1 (Z88+C3U+U42) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 OG	1732	Courtesy Lamps Supply Voltage
B	0.5 BK	850	Ground
C	0.5 GY/BK	690	Courtesy Lamp High Control

Courtesy/Reading Lamp - Center X2 (Z88+C3U+U42)

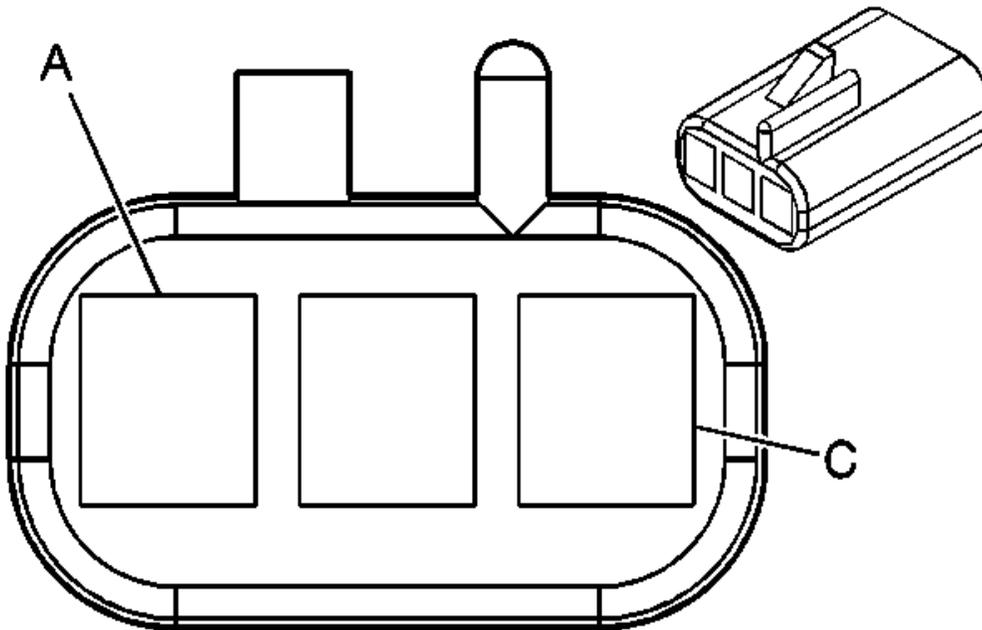


Fig. 57: Courtesy/Reading Lamp - Center X2 (Z88+C3U+U42) Connector End View
Courtesy of GENERAL MOTORS CORP.

Courtesy/Reading Lamp - Center X2 (Z88+C3U+U42) Connector Parts Information

Connector Part Information

- OEM: 12047781
- Service: 12101864
- Description: 3-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-14 (GN)

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Courtesy/Reading Lamp - Center X2 (Z88+C3U+U42) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 OG	1732	Courtesy Lamps Supply Voltage
B	0.5 BK	850	Ground
C	0.5 GY/BK	690	Courtesy Lamp High Control

Courtesy/Reading Lamp - Front

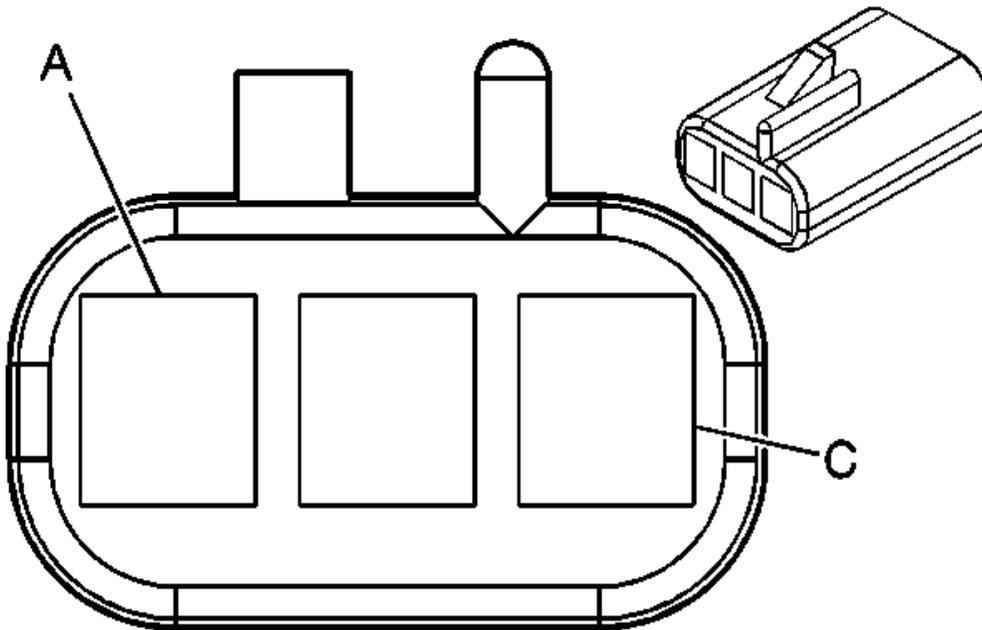


Fig. 58: Courtesy/Reading Lamp - Front Connector End View
Courtesy of GENERAL MOTORS CORP.

Courtesy/Reading Lamp - Front Connector Parts Information

Connector Part Information

- OEM: 12047781
- Service: 12101864
- Description: 3-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Pins: A, C
- Terminal/Tray: 12047767/2
- Core/Insulation Crimp: E/A

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- Release Tool/Test Probe: 12094429/J-35616-14 (GN)
- Pins: B
- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-14 (GN)

Courtesy/Reading Lamp - Front Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.8 OG	1732	Courtesy Lamps Supply Voltage
B	0.5 BK	850	Ground
C	0.8 GY/BK	690	Courtesy Lamp High Control

Courtesy/Reading Lamp - Rear

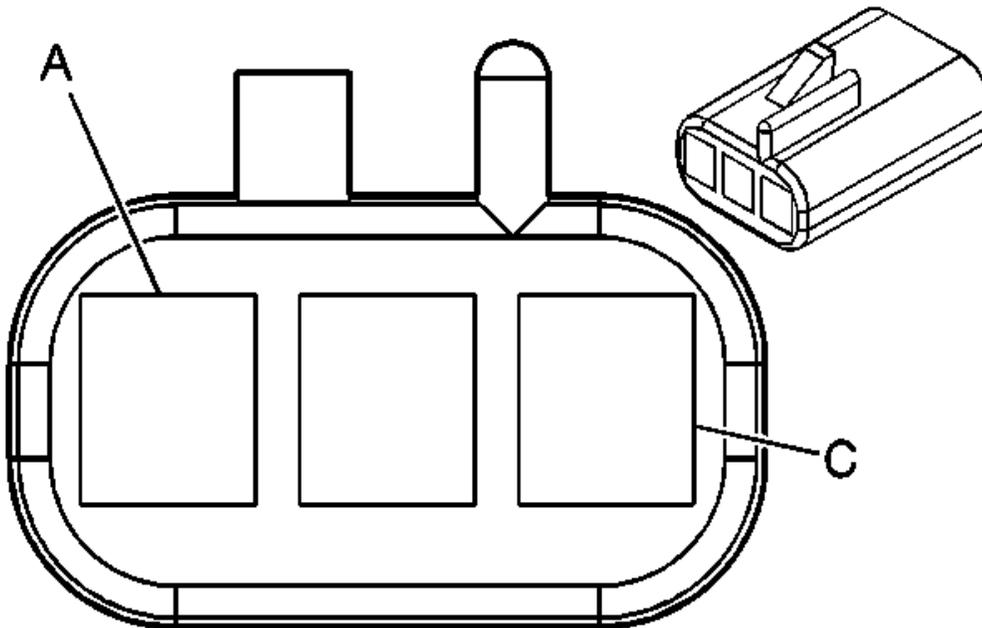


Fig. 59: Courtesy/Reading Lamp - Rear Connector End View
Courtesy of GENERAL MOTORS CORP.

Courtesy/Reading Lamp - Rear Connector Parts Information

Connector Part Information

- OEM: 12047781

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2007 ACCESSORIES & EQUIPMENT Lighting - Outlook

- Service: 12101864
- Description: 3-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-14 (GN)

Courtesy/Reading Lamp - Rear Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 OG	1732	Courtesy Lamps Supply Voltage
B	0.5 BK	850	Ground
C	0.5 GY/BK	690	Courtesy Lamp High Control

Courtesy/Reading Lamp - Rear (Z88+C3U)

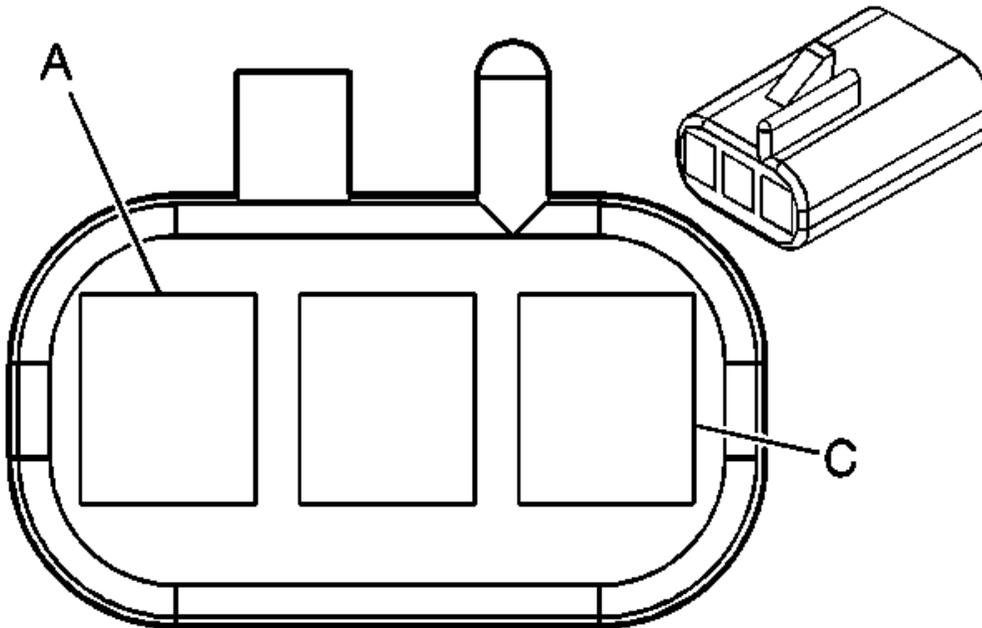


Fig. 60: Courtesy/Reading Lamp - Rear (Z88+C3U) Connector End View
Courtesy of GENERAL MOTORS CORP.

Courtesy/Reading Lamp - Rear (Z88+C3U) Connector Parts Information

Connector Part Information

2007 Saturn Outlook XE

2007 ACCESSORIES & EQUIPMENT Lighting - Outlook

- OEM: 12047781
- Service: 12101864
- Description: 3-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-14 (GN)

Courtesy/Reading Lamp - Rear (Z88+C3U) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 OG	1732	Courtesy Lamps Supply Voltage
B	0.5 BK	850	Ground
C	0.5 GY/BK	690	Courtesy Lamp High Control

Courtesy/Reading Lamp - Rear (Z88)

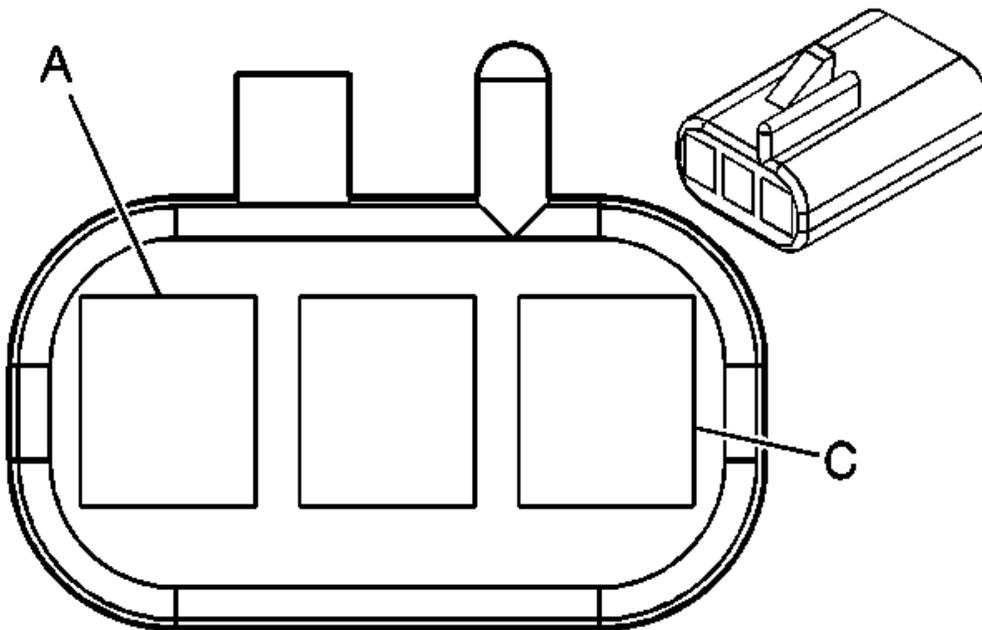


Fig. 61: Courtesy/Reading Lamp - Rear (Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

Courtesy/Reading Lamp - Rear (Z88) Connector Parts Information

Connector Part Information

2007 Saturn Outlook XE

2007 ACCESSORIES & EQUIPMENT Lighting - Outlook

- OEM: 12047781
- Service: 12101864
- Description: 3-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-14 (GN)

Courtesy/Reading Lamp - Rear (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 OG	1732	Courtesy Lamps Supply Voltage
B	0.5 BK	850	Ground
C	0.5 GY/BK	690	Courtesy Lamp High Control

Daytime Running Lamp (DRL) - Left (WDA+T61)

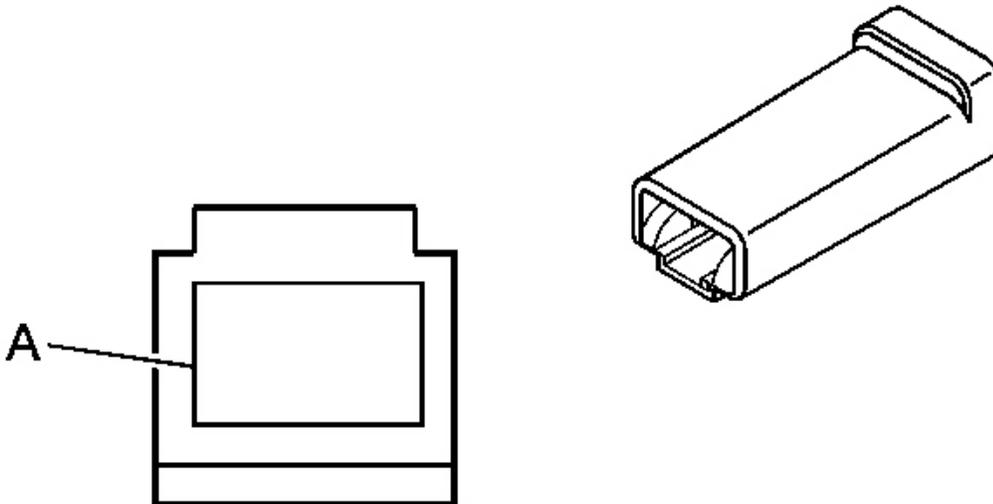


Fig. 62: Daytime Running Lamp (DRL) - Left (WDA+T61) Connector End View
Courtesy of GENERAL MOTORS CORP.

Daytime Running Lamp (DRL) - Left (WDA+T61) Connector Parts Information**Connector Part Information**

- OEM: 1-967644-1
- Service: See Catalog
- Description: 2-Way F TYCO Sealed (BK)

Terminal Part Information

- Pins: 1, 2
- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Daytime Running Lamp (DRL) - Left (WDA+T61) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.5 BK	-	Ground
2	0.5 PU	-	-

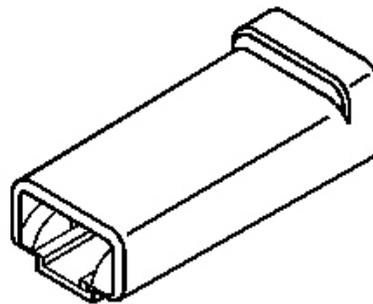
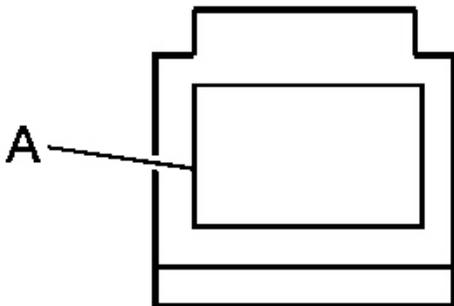
Daytime Running Lamp (DRL) - Left (Z88+T61)

Fig. 63: Daytime Running Lamp (DRL) - Left (Z88+T61) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Daytime Running Lamp (DRL) - Left (Z88+T61) Connector Parts Information

Connector Part Information

- OEM: 7900-1486-004
- Service: See Catalog
- Description: 3-Way F Lamp Socket Sealed

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Daytime Running Lamp (DRL) - Left (Z88+T61) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	.75 OG	-	-
2	-	-	Not Used
3	.75 BK	-	Ground

Daytime Running Lamp (DRL) - Right (WDA+T61)

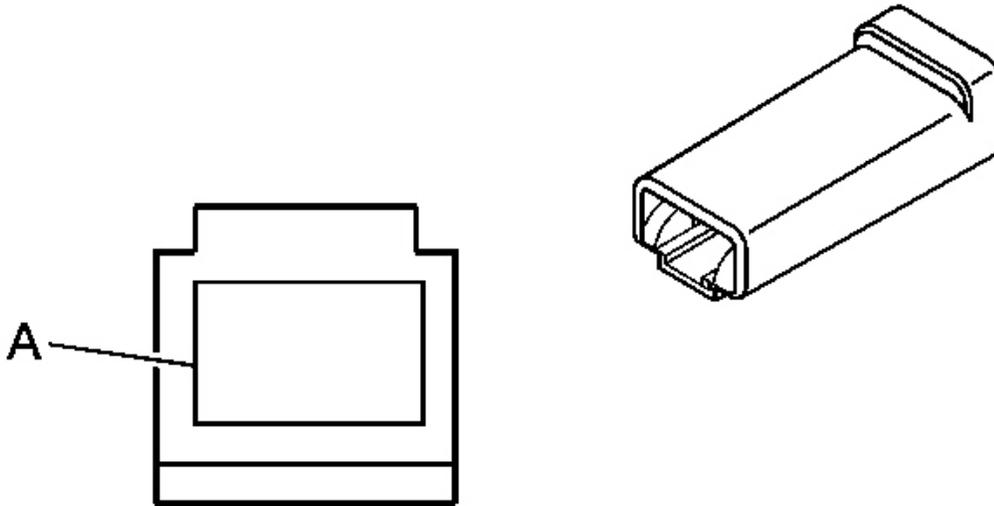


Fig. 64: Daytime Running Lamp (DRL) - Right (WDA+T61) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Daytime Running Lamp (DRL) - Right (WDA+T61) Connector Parts Information

Connector Part Information

- OEM: 1-967644-1
- Service: See Catalog
- Description: 2-Way F TYCO Sealed (BK)

Terminal Part Information

- Pins: 1, 2
- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Daytime Running Lamp (DRL) - Right (WDA+T61) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.5 BK	-	Ground
2	0.5 PU	-	-

Daytime Running Lamp (DRL) - Right (Z88+T61)

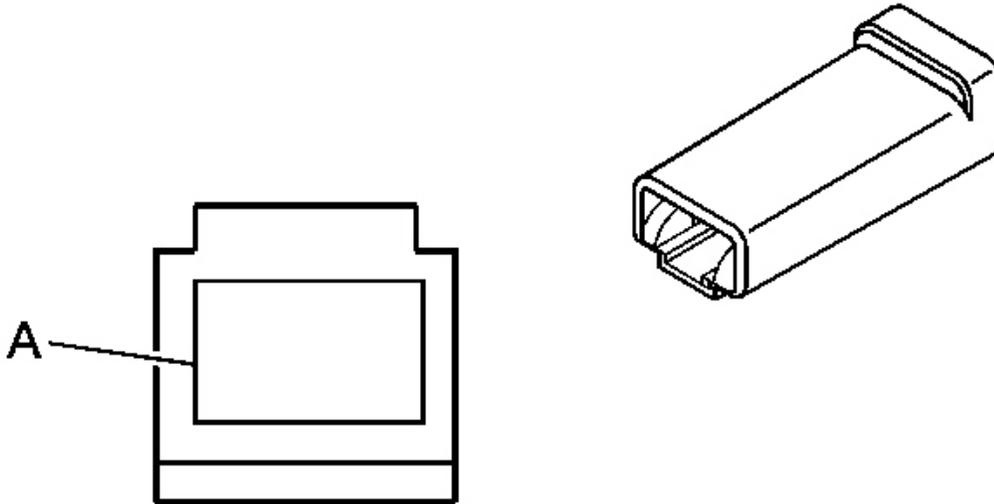


Fig. 65: Daytime Running Lamp (DRL) - Right (Z88+T61) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Daytime Running Lamp (DRL) - Right (Z88+T61) Connector Parts Information

Connector Part Information	
• OEM: 7900-1486-004	
• Service: See Catalog	
• Description: 3-Way F Lamp Socket Sealed (BK)	
Terminal Part Information	
• Terminal/Tray: See Terminal Repair Kit	
• Core/Insulation Crimp: See Terminal Repair Kit	
• Release Tool/Test Probe: See Terminal Repair Kit	

Daytime Running Lamp (DRL) - Right (Z88+T61) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	.75 OG	-	-
2	-	-	Not Used

3

.75 BK

-

Ground

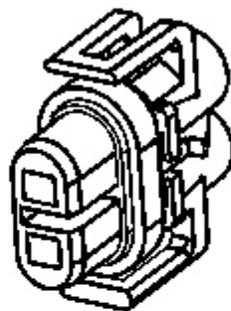
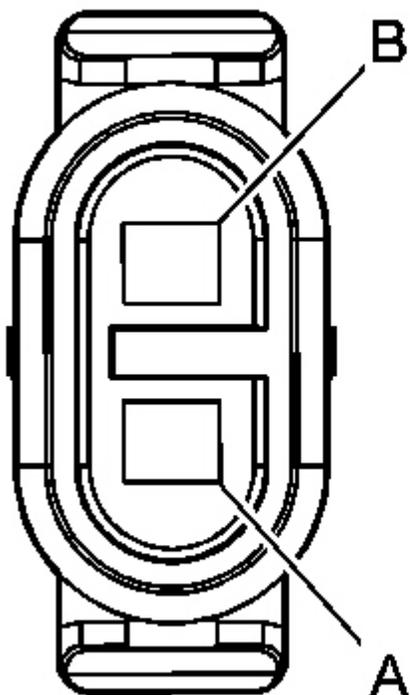
Fog Lamp - Left (W49/WDA)

Fig. 66: Fog Lamp - Left (W49/WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Fog Lamp - Left (W49/WDA) Connector Parts Information**Connector Part Information**

- OEM: 12124819
- Service: 12085498
- Description: 2-Way F Metri-Pack 280 Series, Sealed (BK)

Terminal Part Information

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- Terminal/Tray: 12077411/2
- Core/Insulation Crimp: 2/5
- Release Tool/Test Probe: 12094430/J-35616-4A (PU)

Fog Lamp - Left (W49/WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 PU	34	(T96)
B	0.5 BK	1350	Ground (T96)

Fog Lamp - Left (Z88)

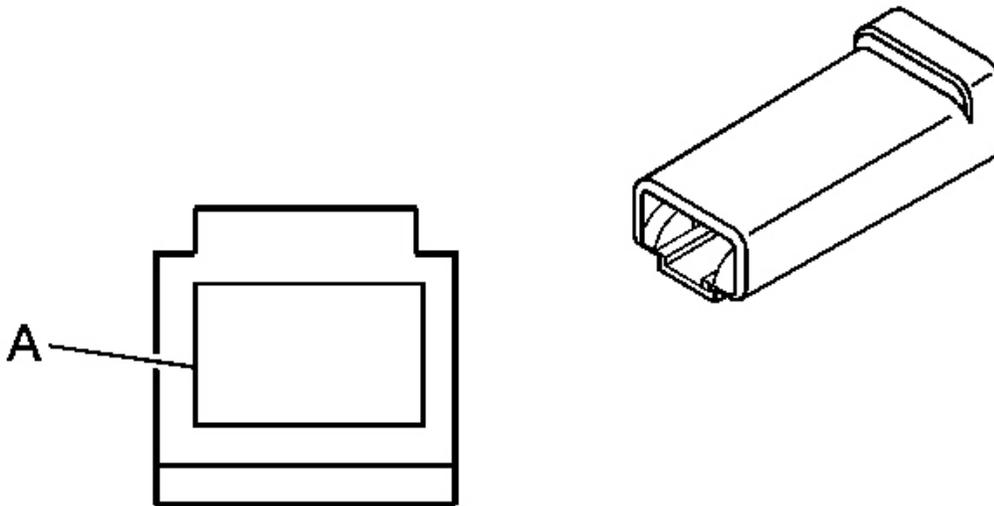


Fig. 67: Fog Lamp - Left (Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

Fog Lamp - Left (Z88) Connector Parts Information

Connector Part Information

- OEM: 13513272
- Service: See Catalog
- Description: 2-Way F GT 150 Series, Sealed (NA)

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Terminal Part Information

- Pins: A
- Terminal/Tray: 12191812/19
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

- Pins: B
- Terminal/Tray: 15496531/8
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

Fog Lamp - Left (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 PU	34	(T96)
B	0.35 BK	1250	Ground

Fog Lamp - Right (W49/WDA)

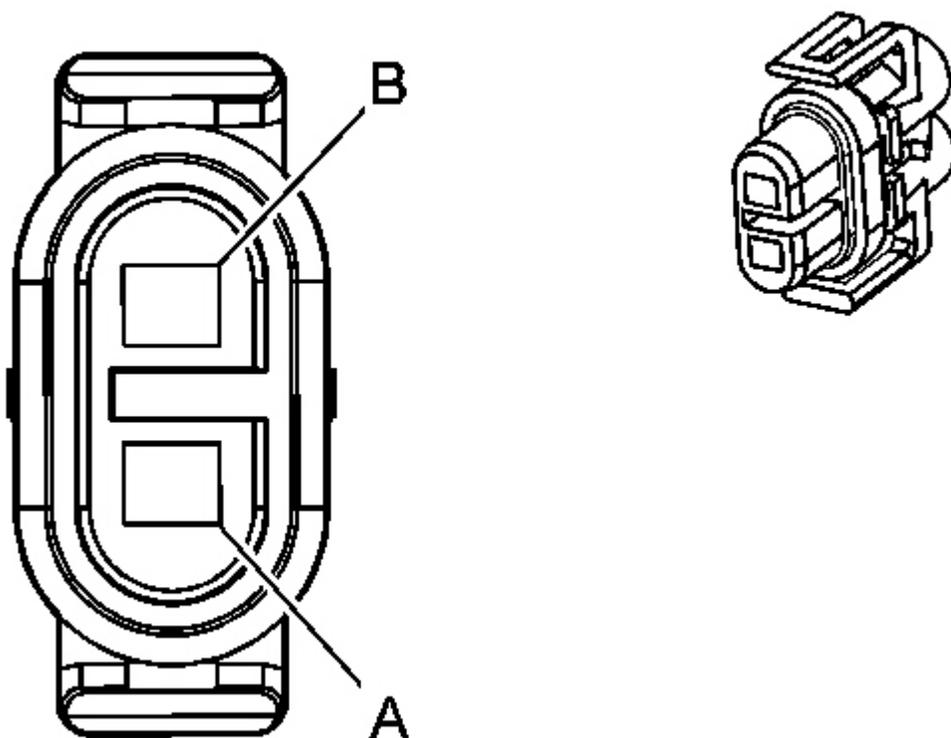


Fig. 68: Fog Lamp - Right (W49/WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Fog Lamp - Right (W49/WDA) Connector Parts Information

Connector Part Information

- OEM: 12124819
- Service: 12085498
- Description: 2-Way F Metri-Pack 280 Series, Sealed (BK)

Terminal Part Information

- Terminal/Tray: 12077411/2
- Core/Insulation Crimp: 2/5
- Release Tool/Test Probe: 12094430/J-35616-4A (PU)

Fog Lamp - Right (W49/WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 PU	34	(T96)
B	0.5 BK	1350	Ground (T96)

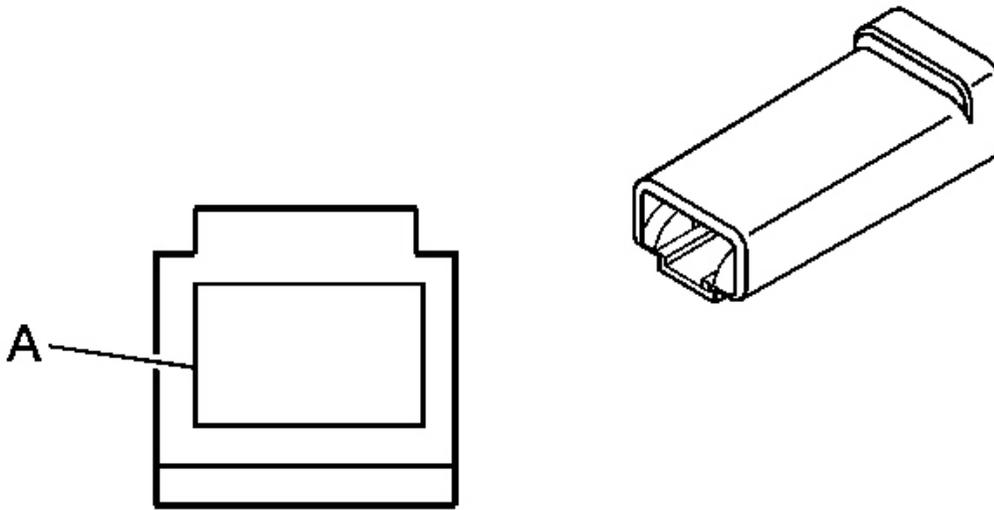
Fog Lamp - Right (Z88)

Fig. 69: Fog Lamp - Right (Z88) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Fog Lamp - Right (Z88) Connector Parts Information**Connector Part Information**

- OEM: 13513272
- Service: See Catalog
- Description: 2-Way F GT 150 Series, Sealed (NA)

Terminal Part Information

- Terminal/Tray: 15496531/8
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 15315247/J-35616-2A (GY)

Fog Lamp - Right (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 PU	34	(T96)
B	0.35 BK	1350	Ground

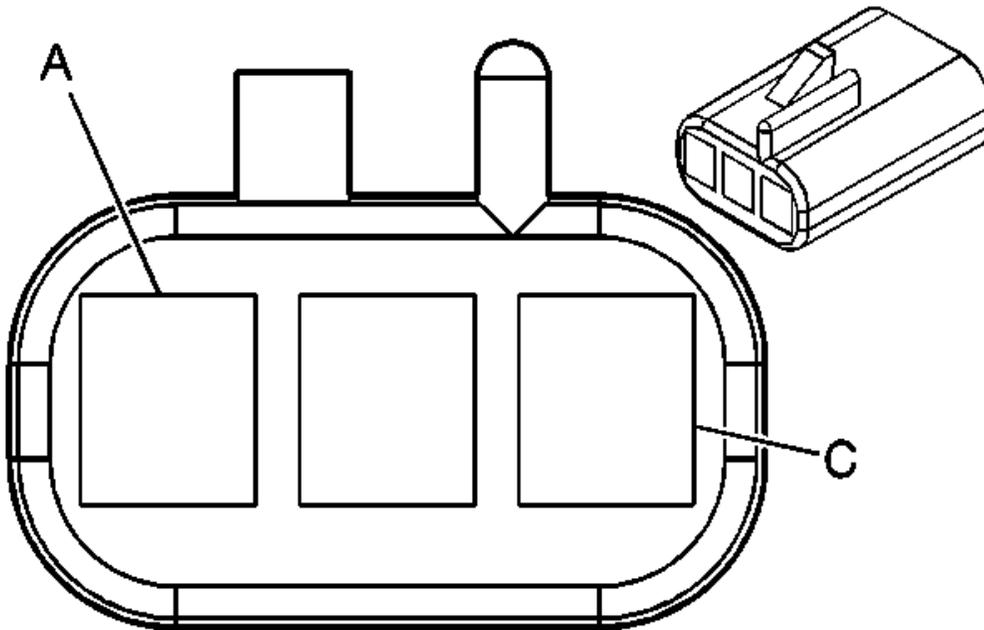
Hazard Switch (WDA)

Fig. 70: Hazard Switch (WDA) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Hazard Switch (WDA) Connector Parts Information**Connector Part Information**

- OEM: 12047781
- Service: 12101864
- Description: 3-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Pins: A
- Terminal/Tray: 12047767/2
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 12094429/J-35616-14 (GN)

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- Pins: B, C
- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-14 (GN)

Hazard Switch (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.8 GY	8	Instrument Panel Lamp Supply Voltage/Instrument Panel Lamps Dimmer Switch Signal
B	0.35 BK	750	Ground
C	0.35 TN	2144	Hazard Switch Signal

Hazard Switch (Z88)

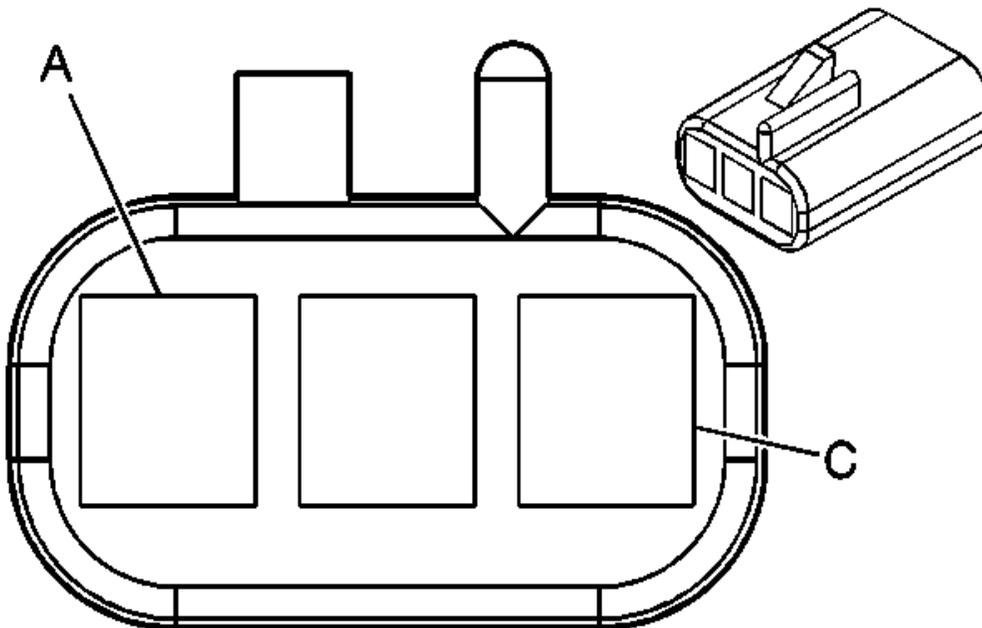


Fig. 71: Hazard Switch (Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

Hazard Switch (Z88) Connector Parts Information

Connector Part Information

- OEM: 12047781

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- Service: 12101864
- Description: 3-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Pins: A
- Terminal/Tray: 12047767/2
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 12094429/J-35616-14 (GN)

- Pins: B, C
- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-14 (GN)

Hazard Switch (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.8 GY	8	Instrument Panel Lamp Supply Voltage/Instrument Panel Lamps Dimmer Switch Signal
B	0.35 BK	750	Ground
C	0.35 TN	2144	Hazard Switch Signal

Headlamp Ballast - Left (WDA+TVD)

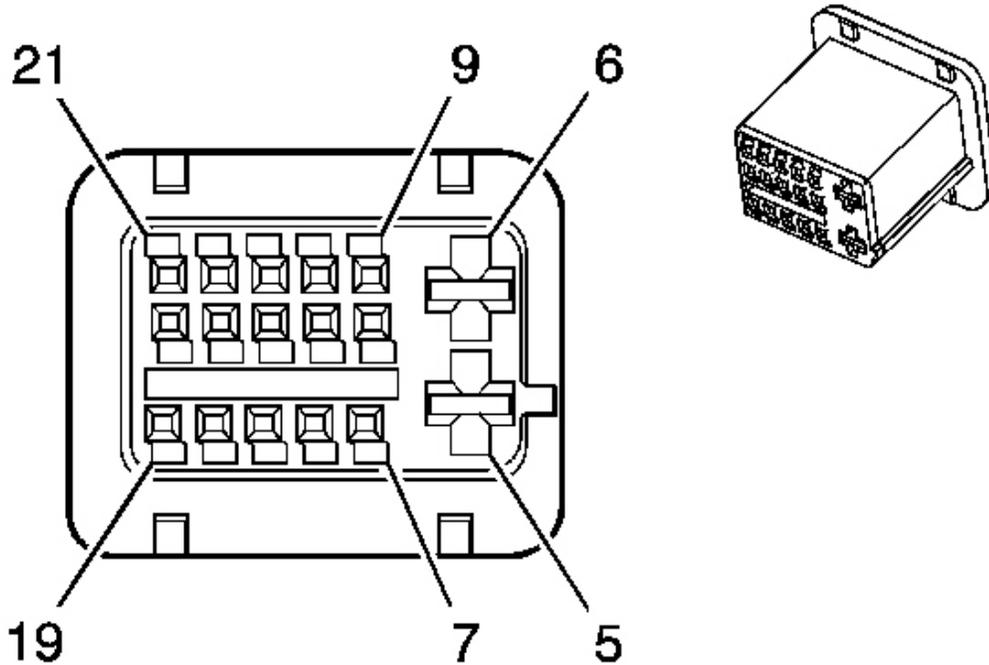


Fig. 72: Headlamp Ballast - Left (WDA+TVD) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Headlamp Ballast - Left (WDA+TVD) Connector Parts Information

Connector Part Information

- OEM: 0-1418889
- Service: See Catalog
- Description: 16-Way F (BK)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Headlamp Ballast - Left (WDA+TVD) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
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5	1 YE	712	-
6	1 BK	1350	Ground
7	-	-	Not Used
8	0.5 D-GN/WH	711	-
9	0.5 BK	1350	Ground
10-21	-	-	Not Used

Headlamp Ballast - Left (Z88+TVD)

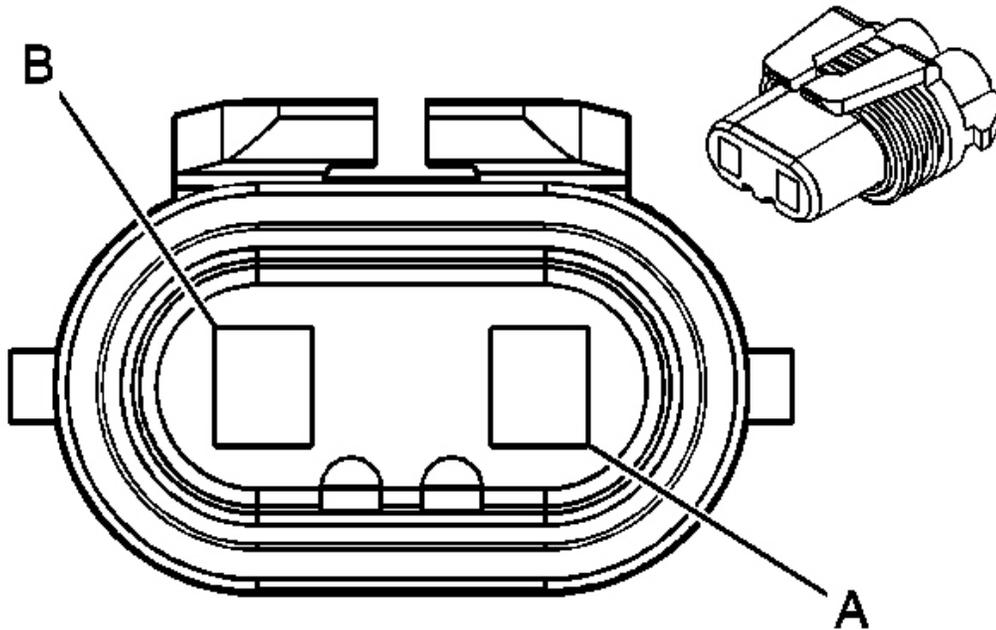


Fig. 73: Headlamp Ballast - Left (Z88+TVD) Connector End View
Courtesy of GENERAL MOTORS CORP.

Headlamp Ballast - Left (Z88+TVD) Connector Parts Information

Connector Part Information

- OEM: 12059183
- Service: 12101898
- Description: 2-Way F Metri-Pack 280 Series, Sealed (BK)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Headlamp Ballast - Left (Z88+TVD) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.8 BK	-	Ground
B	0.8 RD	-	-

Headlamp Ballast - Right (WDA+TVD)

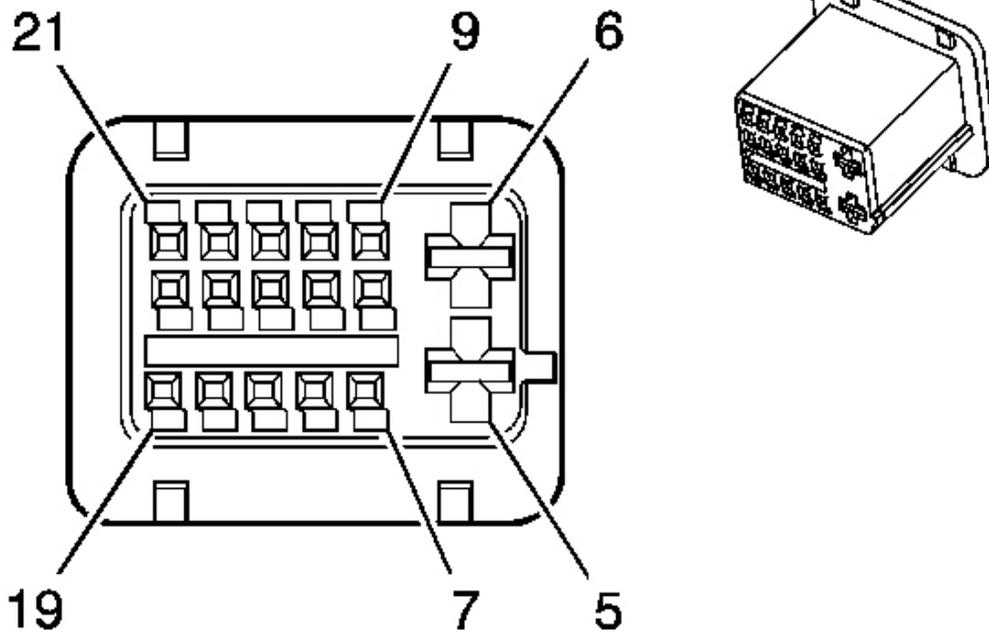


Fig. 74: Headlamp Ballast - Right (WDA+TVD) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Headlamp Ballast - Right (WDA+TVD) Connector Parts Information

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Connector Part Information

- OEM: 0-1418889
- Service: See Catalog
- Description: 16-Way F (BK)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Headlamp Ballast - Right (WDA+TVD) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
5	1 YE	712	-
6	1 BK	1350	Ground
7	-	-	Not Used
8	0.5 D-GN/WH	711	-
9	0.5 BK	1350	Ground
10-21	-	-	Not Used

Headlamp Ballast - Right (Z88+TVD)

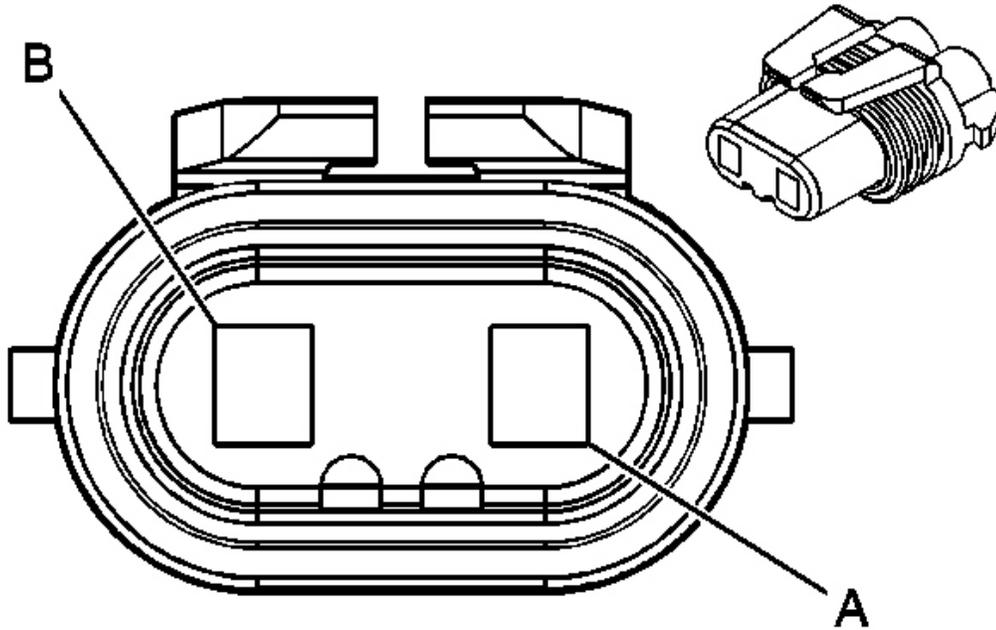


Fig. 75: Headlamp Ballast - Right (Z88+TVD) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Headlamp Ballast - Right (Z88+TVD) Connector Parts Information

Connector Part Information

- OEM: 12059183
- Service: 12101898
- Description: 2-Way F Metri-Pack 280 Series, Sealed (BK)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Headlamp Ballast - Right (Z88+TVD) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.8 BK	-	Ground

B

0.8 RD

-

-

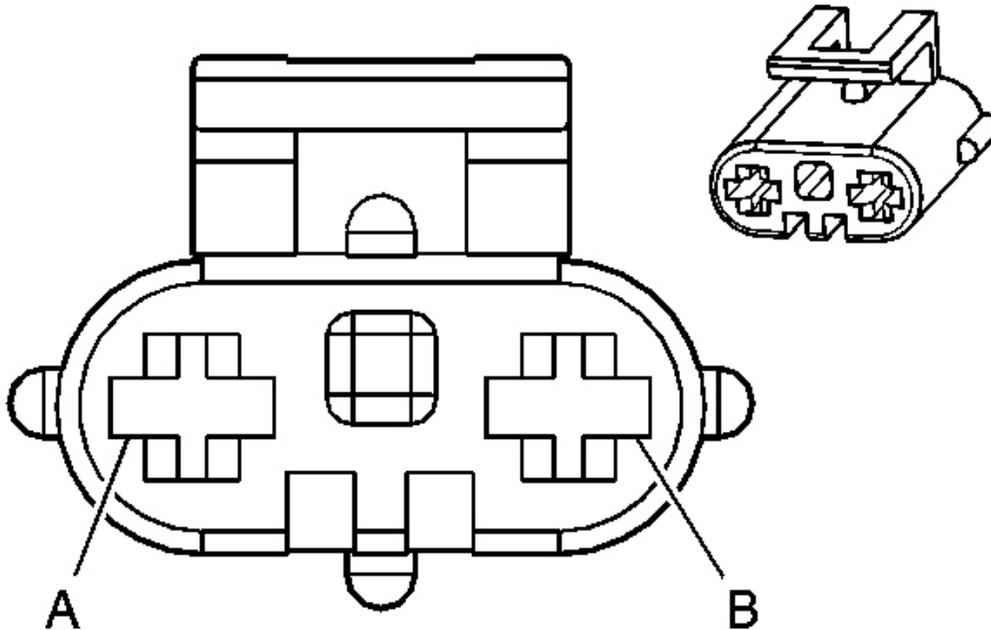
Headlamp - High Beam - Left (WDA-TVD)

Fig. 76: Headlamp - High Beam - Left (WDA-TVD) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Headlamp - High Beam - Left (WDA-TVD) Connector Parts Information

Connector Part Information

- OEM: 699707-1
- Service: See Catalog
- Description: 2-Way F Two-Position Receptacle Housing (BK)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

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Headlamp - High Beam - Left (WDA-TVD) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.5 BK	-	Ground
2	0.5 D-GN/WH	-	-

Headlamp - High Beam - Left (Z88-TVD)

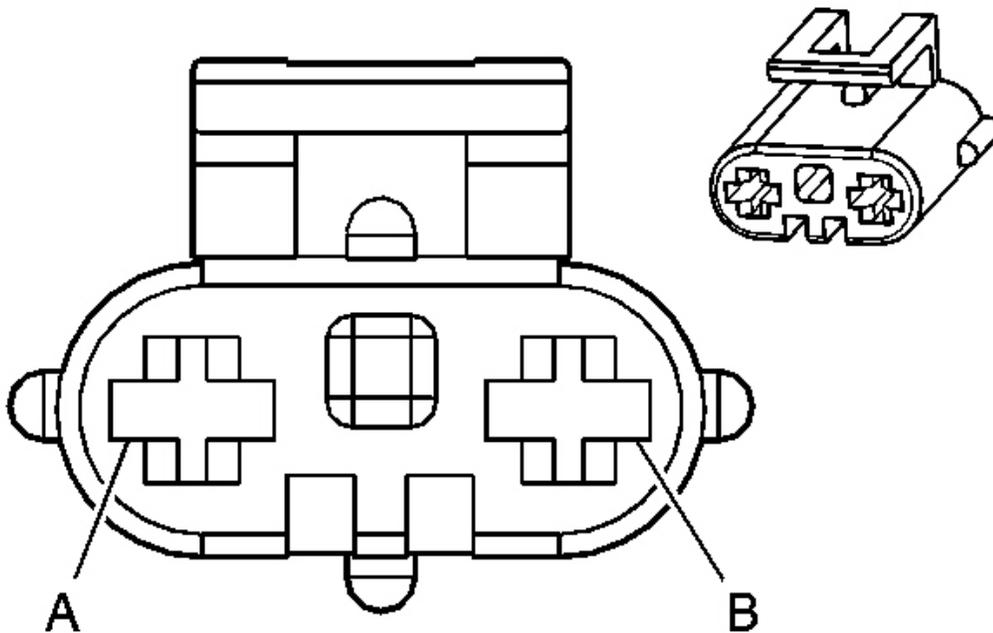


Fig. 77: Headlamp - High Beam - Left (Z88-TVD) Connector End View
Courtesy of GENERAL MOTORS CORP.

Headlamp - High Beam - Left (Z88-TVD) Connector Parts Information

Connector Part Information

- OEM:699707-1
- Service: See Catalog
- Description:2-Way F Two-Position Receptacle Housing (BK)

Terminal Part Information

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- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Headlamp - High Beam - Left (Z88-TVD) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.8 WH	711	-
B	0.8 BK	-	Ground

Headlamp - High Beam - Right (WDA-TVD)

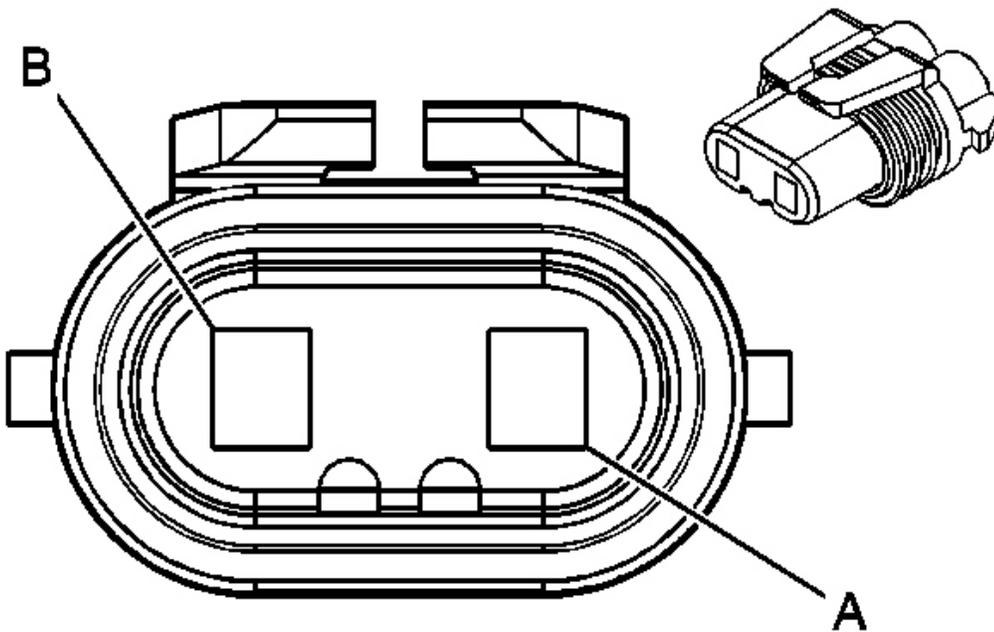


Fig. 78: Headlamp - High Beam - Right (WDA-TVD) Connector End View
Courtesy of GENERAL MOTORS CORP.

Headlamp - High Beam - Right (WDA-TVD) Connector Parts Information

Connector Part Information

- OEM: 12059183

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- Service: 12101898
- Description: 2-Way F Metri-Pack 280 Series, Sealed (BK)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Headlamp - High Beam - Right (WDA-TVD) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 L-GN/BK	311	-
B	0.5 BK	1250	Ground

Headlamp - High Beam - Right (Z88-TVD)

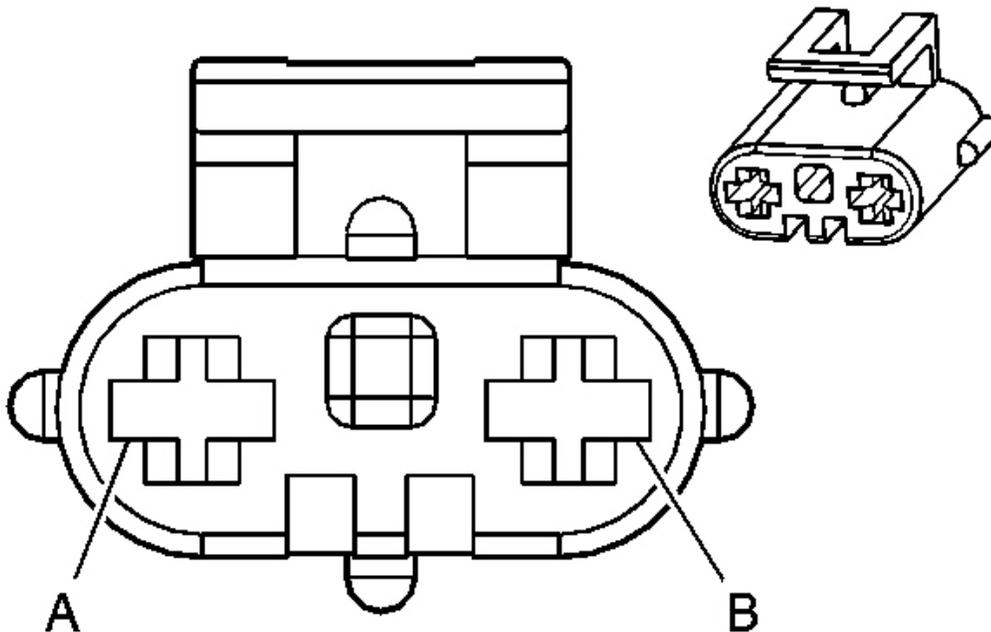


Fig. 79: Headlamp - High Beam - Right (Z88-TVD) Connector End View
Courtesy of GENERAL MOTORS CORP.

Headlamp - High Beam - Right (Z88-TVD) Connector Parts Information**Connector Part Information**

- OEM:699707-1
- Service: See Catalog
- Description:2-Way F Two-Position Receptacle Housing (BK)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Headlamp - High Beam - Right (Z88-TVD) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.8 WH	-	-
B	0.8 BK	-	Ground

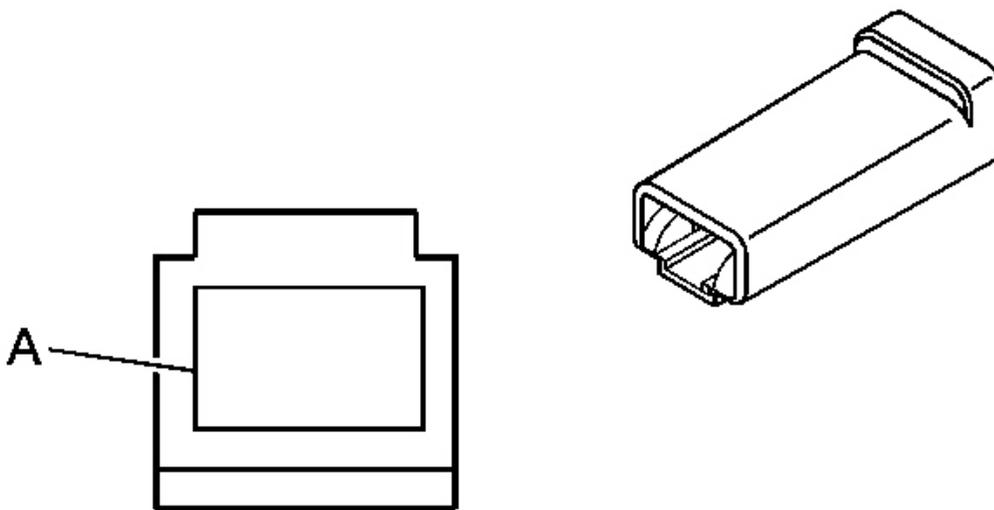
Headlamp High Beam Solenoid - Left (Z88+TVD)

Fig. 80: Headlamp High Beam Solenoid - Left (Z88+TVD) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Headlamp High Beam Solenoid - Left (Z88+TVD) Connector Parts Information

Connector Part Information

- OEM: 0-925014-1-2W
- Service: See Catalog
- Description: 2-Way F 2.8 Series (BK)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Headlamp High Beam Solenoid - Left (Z88+TVD) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
I	1.5 BK	-	Ground
II	1.5 WH	-	-

Headlamp High Beam Solenoid - Right (Z88+TVD)

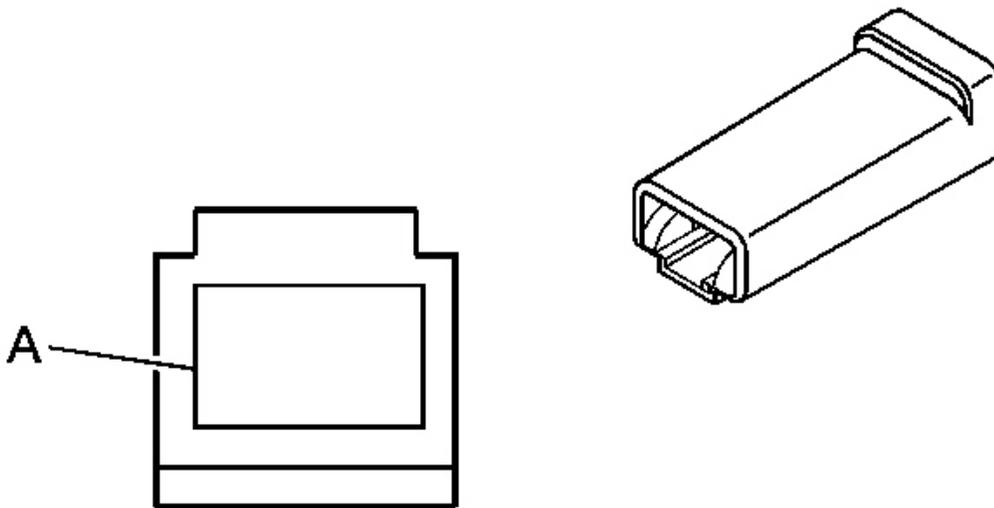


Fig. 81: Headlamp High Beam Solenoid - Right (Z88+TVD) Connector End View
 Courtesy of GENERAL MOTORS CORP.

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Headlamp High Beam Solenoid - Right (Z88+TVD) Connector Parts Information

Connector Part Information

- OEM: 0-925014-1-2W
- Service: See Catalog
- Description: 2-Way F 2.8 Series (BK)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Headlamp High Beam Solenoid - Right (Z88+TVD) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
I	1.5 BK	-	Ground
II	1.5 WH	-	-

Headlamp - Low Beam - Left (WDA-TVD)

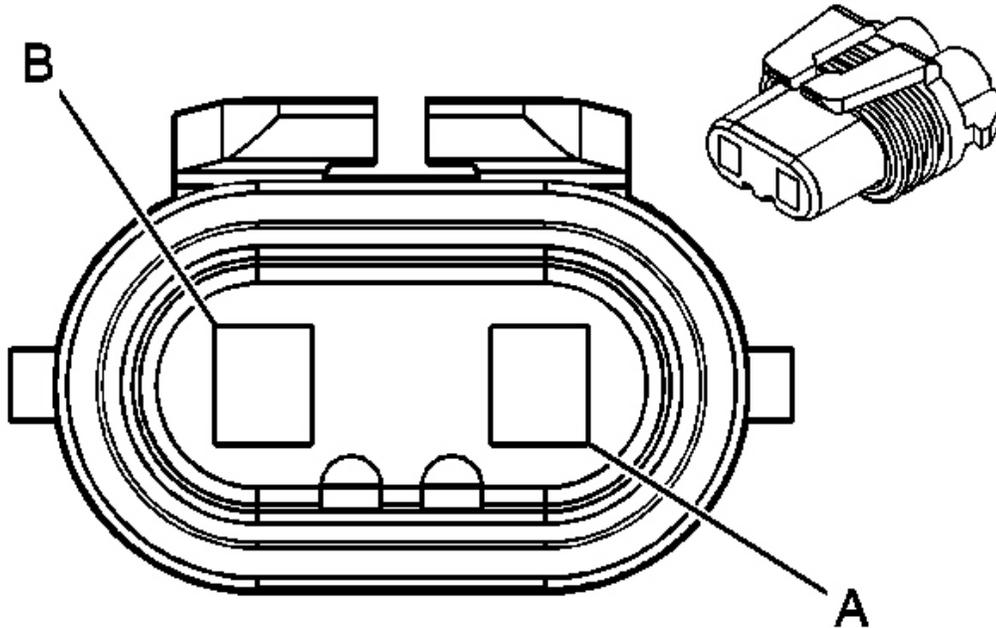


Fig. 82: Headlamp - Low Beam - Left (WDA-TVD) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Headlamp - Low Beam - Left (WDA-TVD) Connector Parts Information

Connector Part Information

- OEM: 12059183
- Service: 12101898
- Description: 2-Way F Metri-Pack 280 Series, Sealed (BK)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Headlamp - Low Beam - Left (WDA-TVD) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 YE	712	-

B

0.5 BK

1350

Ground

Headlamp - Low Beam - Left (Z88-TVD)

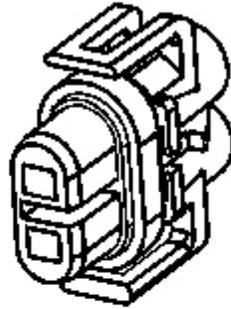
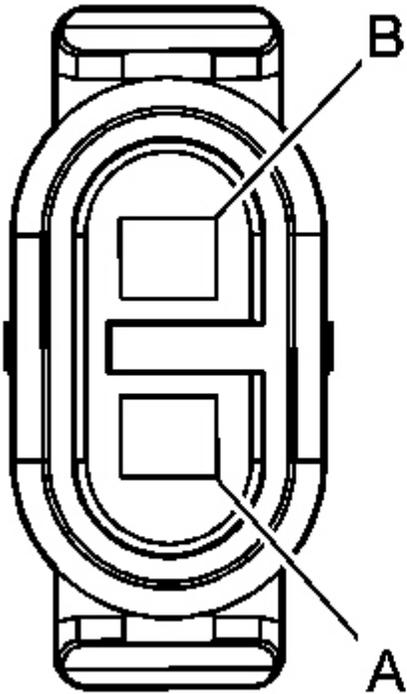


Fig. 83: Headlamp - Low Beam - Left (Z88-TVD) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Headlamp - Low Beam - Left (Z88-TVD) Connector Parts Information

Connector Part Information

- OEM: 92095787
- Service: See Catalog
- Description: 2-Way F H11 Lamp Socket

Terminal Part Information

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- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Headlamp - Low Beam - Left (Z88-TVD) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.8 YE	712	-
B	0.8 BK	1350	Ground

Headlamp - Low Beam - Right (WDA-TVD)

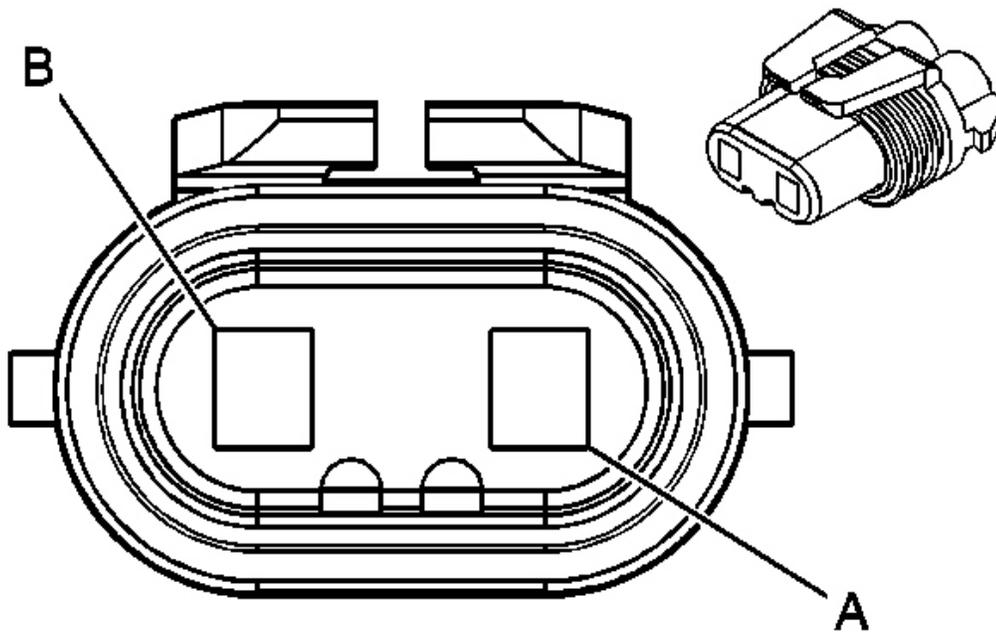


Fig. 84: Headlamp - Low Beam - Right (WDA-TVD) Connector End View
Courtesy of GENERAL MOTORS CORP.

Headlamp - Low Beam - Right (WDA-TVD) Connector Parts Information

Connector Part Information

- OEM: 12059183

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- Service: 12101898
- Description: 2-Way F Metri-Pack 280 Series, Sealed (BK)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Headlamp - Low Beam - Right (WDA-TVD) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 TN/WH	312	-
B	0.5 BK	1250	Ground

Headlamp - Low Beam - Right (Z88-TVD)

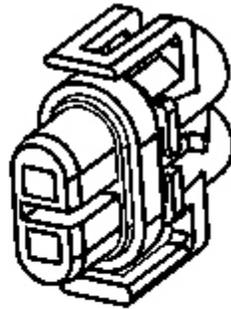
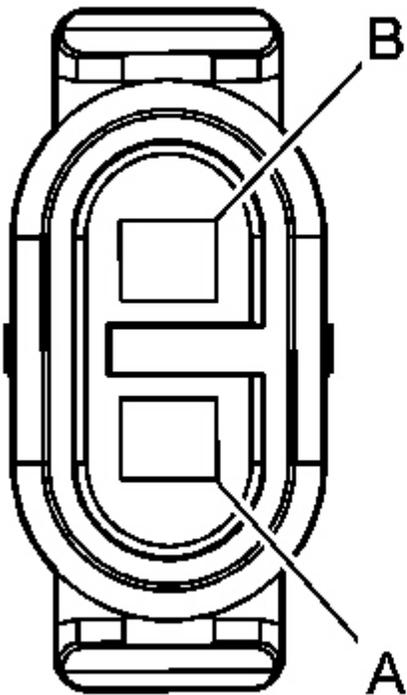


Fig. 85: Headlamp - Low Beam - Right (Z88-TVD) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Headlamp - Low Beam - Right (Z88-TVD) Connector Parts Information

Connector Part Information

- OEM: 92095787
- Service: See Catalog
- Description: 2-Way F H11 Lamp Socket

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Headlamp - Low Beam - Right (Z88-TVD) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.8 TN/WH	312	-
B	0.8 BK	1250	Ground

Headlamp Switch (WDA)

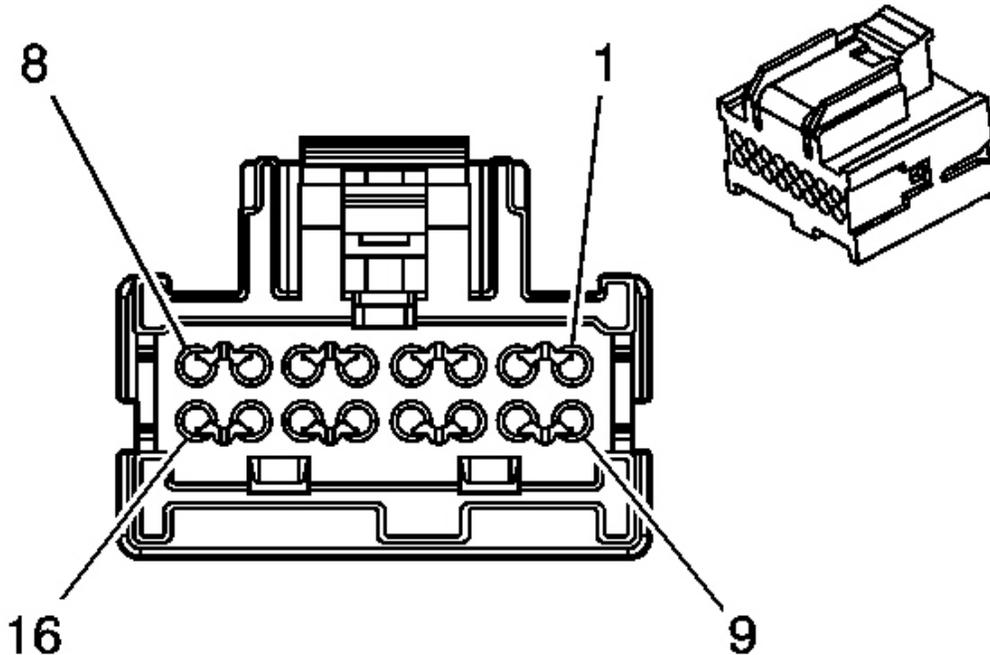


Fig. 86: Headlamp Switch (WDA) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Headlamp Switch (WDA) Connector Parts Information

Connector Part Information

- OEM: 15416970
- Service: See Catalog
- Description: 16-Way F Micro-Pack 64 Series (BK)

Terminal Part Information

- Terminal/Tray: 15359541/4
- Core/Insulation Crimp: M/M
- Release Tool/Test Probe: 15381651-2/J-35616-64B (L-BU)

Headlamp Switch (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function

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1	0.35 WH	103	Headlamp Switch Headlamps On Signal
2	0.35 BN/WH	301	Rear Park Lamps Supply Voltage
3	0.35 D-GN	306	Headlamp Switch Headlamps Off Signal
4-5	-	-	Not Used
6	0.35 OG	192	Fog Lamps Enable (T96)
7	0.35 PU/WH	1382	LED Dimming Signal
8	0.8 BK/WH	1551	Ground
9	0.35 PU	328	Interior Lamp Switch Signal
10	0.35 L-GN	6096	(XA7)
11	-	-	Not Used
12	0.35 PK/BK	1597	Courtesy Lamps Switch On Signal
13	0.35 D-GN	44	Instrument Panel Lamps Dimmer Switch Signal
14	-	-	Not Used
15	0.35 OG/WH	812	12-Volt Reference or IP Dimming Voltage Reference
16	-	-	Not Used

Headlamp Switch (Z88)

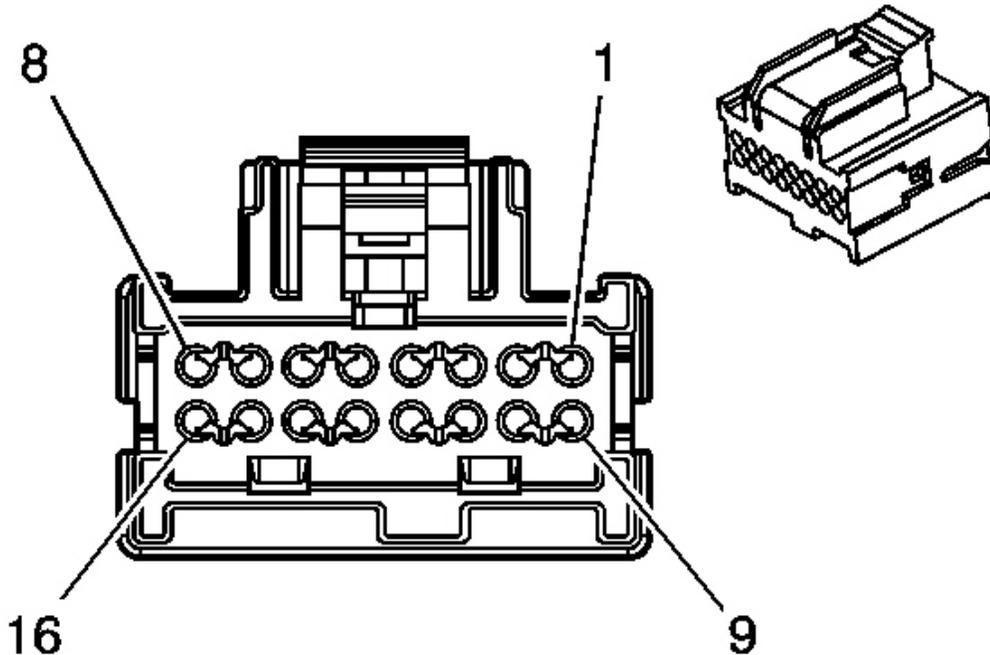


Fig. 87: Headlamp Switch (Z88) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Headlamp Switch (Z88) Connector Parts Information

Connector Part Information

- OEM: 15416970
- Service: See Catalog
- Description: 16-Way F Micro-Pack 64 Series (BK)

Terminal Part Information

- Terminal/Tray: 15359541/4
- Core/Insulation Crimp: M/M
- Release Tool/Test Probe: 15381651-2/J-35616-64B (L-BU)

Headlamp Switch (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function

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2007 ACCESSORIES & EQUIPMENT Lighting - Outlook

1	0.35 WH	103	Headlamp Switch Headlamps On Signal
2	0.35 BN/WH	301	Rear Park Lamps Supply Voltage
3	0.35 D-GN	306	Headlamp Switch Headlamps Off Signal
4-5	-	-	Not Used
6	0.35 OG	192	Fog Lamps Enable (T96)
7	0.35 PU/WH	1382	LED Dimming Signal
8	0.35 BK/WH	1551	Ground
9	0.35 PU	328	Interior Lamp Switch Signal
10	0.35 L-GN	6096	(XA7)
11	-	-	Not Used
12	0.35 PK/BK	1597	Courtesy Lamps Switch On Signal
13	0.35 D-GN	44	Instrument Panel Lamps Dimmer Switch Signal
14	-	-	Not Used
15	0.35 OG/WH	812	12-Volt Reference or IP Dimming Voltage Reference
16	-	-	Not Used

I/P Compartment Lamp (WDA)

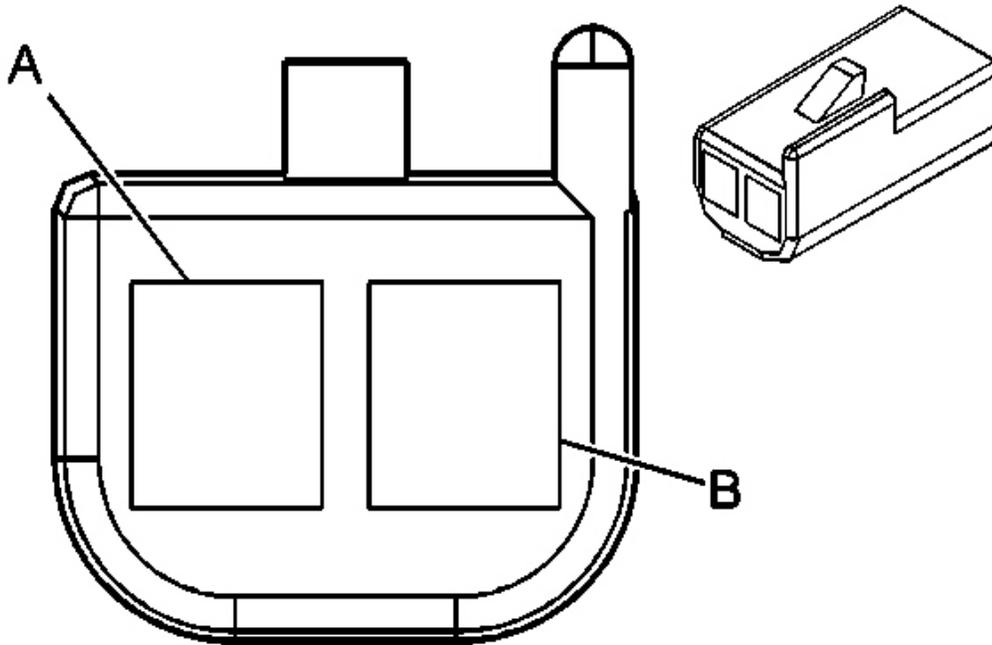


Fig. 88: I/P Compartment Lamp (WDA) Connector End View
 Courtesy of GENERAL MOTORS CORP.

I/P Compartment Lamp (WDA) Connector Parts Information

Connector Part Information

- OEM: 12047662
- Service: 12085535
- Description: 2-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-14 (GN)

I/P Compartment Lamp (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function

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A	0.5 OG	1732	Courtesy Lamps Supply Voltage
B	0.5 BK	750	Ground

I/P Compartment Lamp (Z88)

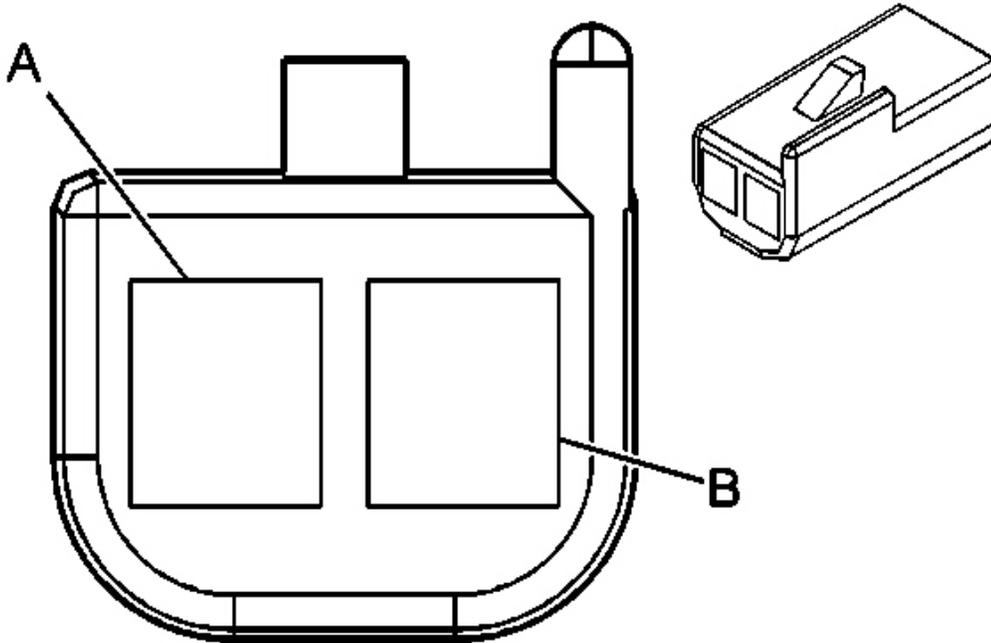


Fig. 89: I/P Compartment Lamp (Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

I/P Compartment Lamp (Z88) Connector Parts Information

Connector Part Information

- OEM: 12047662
- Service: 12085535
- Description: 2-Way F Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12064971/5
- Core/Insulation Crimp: E/C

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- Release Tool/Test Probe: 12094429/J-35616-14 (GN)

I/P Compartment Lamp (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 OG	1732	Courtesy Lamps Supply Voltage
B	0.5 BK	750	Ground

License Lamp - Left (WDA/Z88)

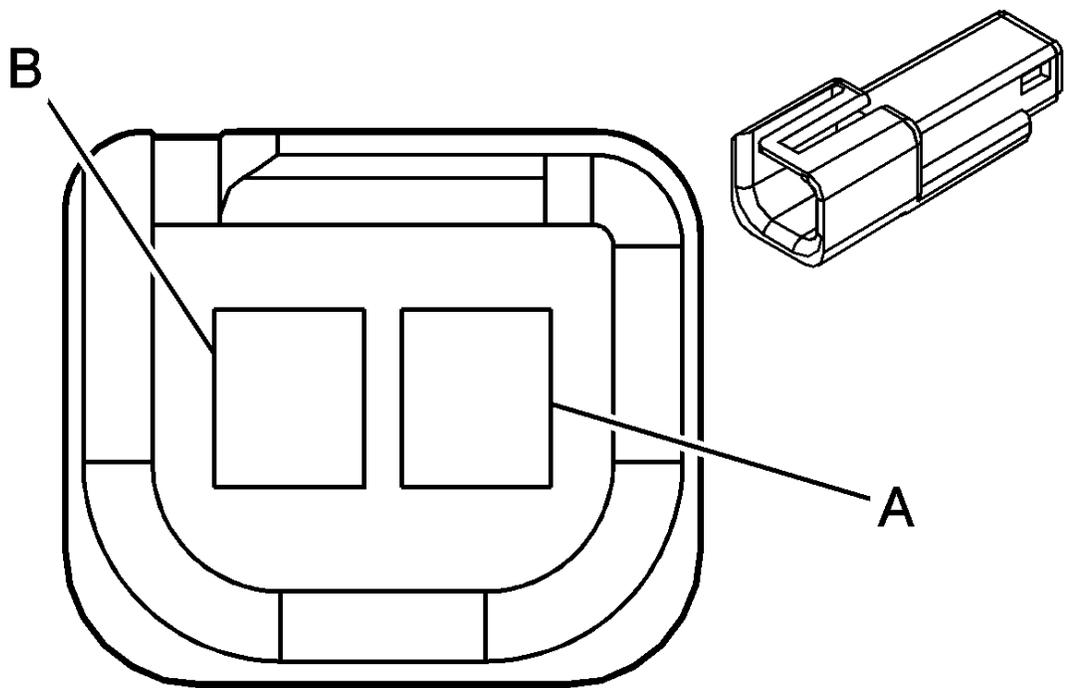


Fig. 90: License Lamp - Left (WDA/Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

License Lamp - Left (WDA/Z88) Connector Parts Information

Connector Part Information

- OEM: 12047663
- Service: 12085481
- Description: 2-Way M Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit

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- Release Tool/Test Probe: See Terminal Repair Kit

License Lamp - Left (WDA/Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 PU	709	-
B	0.5 BK	650	Ground

License Lamp - Right (WDA/Z88)

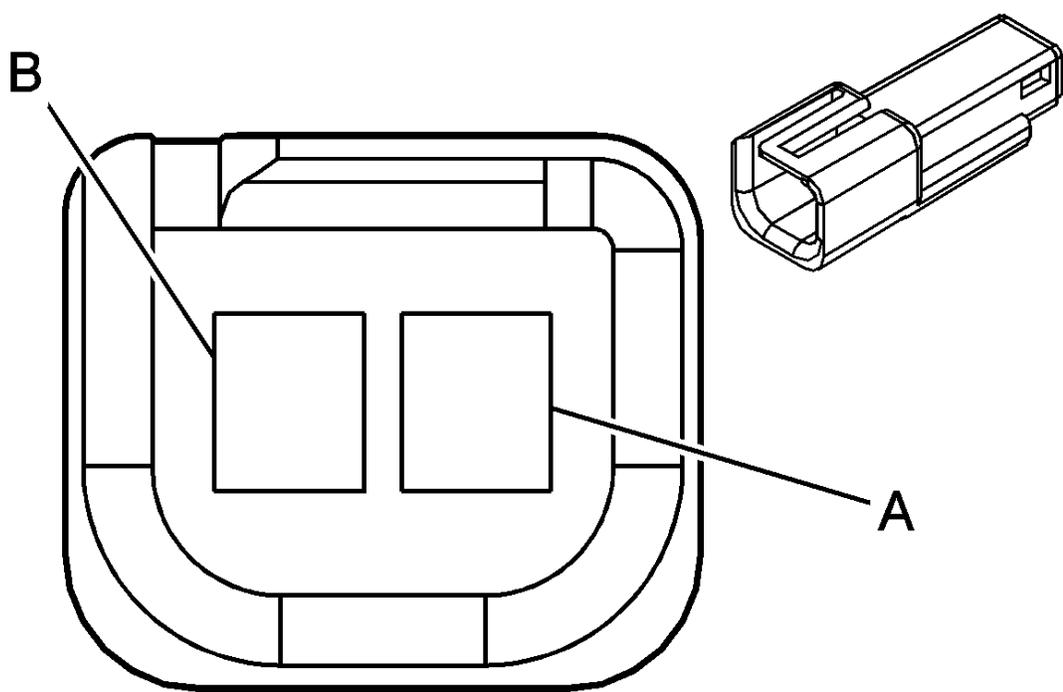


Fig. 91: License Lamp - Right (WDA/Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

License Lamp - Right (WDA/Z88) Connector Parts Information

Connector Part Information

- OEM: 12047663
- Service: 12085481
- Description: 2-Way M Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit

- Release Tool/Test Probe: See Terminal Repair Kit

License Lamp - Right (WDA/Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 PU	709	-
B	0.5 BK	650	Ground

Marker Lamp - LF (WDA)

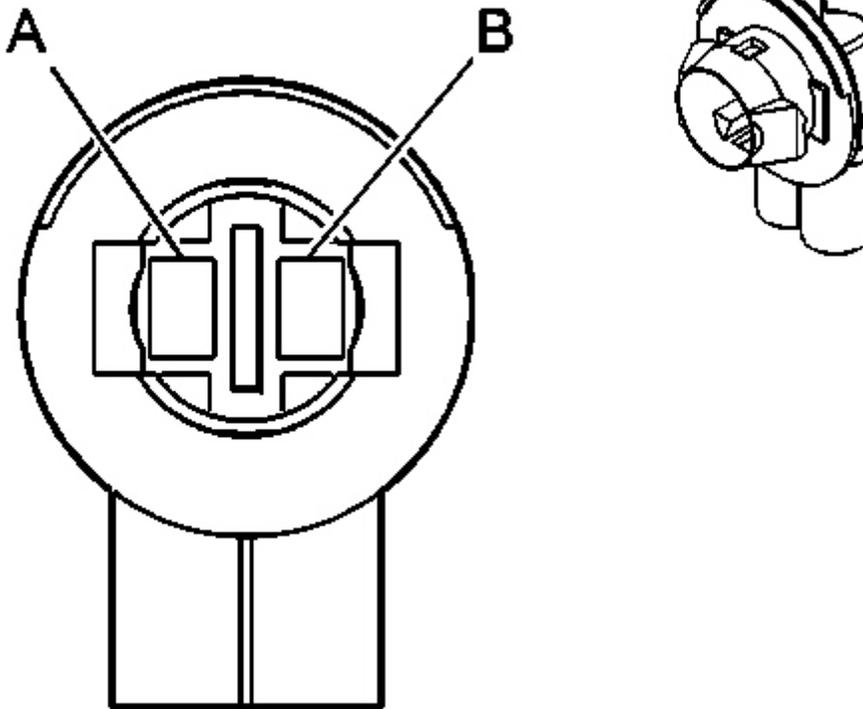


Fig. 92: Marker Lamp - LF (WDA) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Marker Lamp - LF (WDA) Connector Parts Information

Connector Part Information

- OEM: 12146418
- Service: See Catalog
- Description: 2-Way F Lamp Socket (L-GY)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Marker Lamp - LF (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 PU	709	-
B	0.5 BK	1350	Ground

Marker Lamp - LF (Z88)

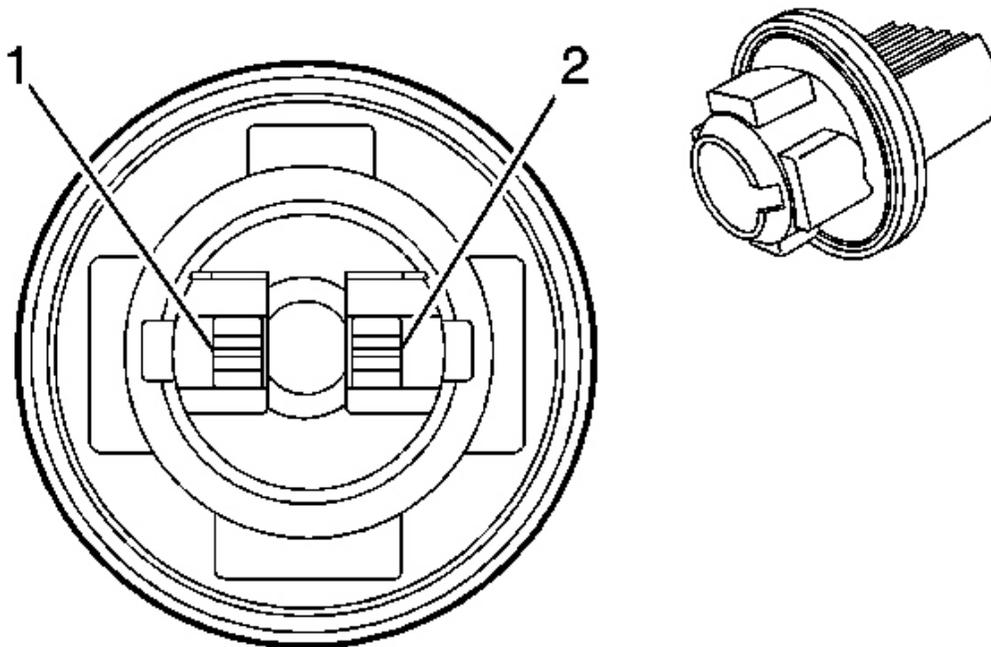


Fig. 93: Marker Lamp - LF (Z88) Connector End View

Courtesy of **GENERAL MOTORS CORP.**

Marker Lamp - LF (Z88) Connector Parts Information

Connector Part Information

- OEM: 10351681
- Service: See Catalog
- Description: 2-Way F Socket, Sealed (BK)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Marker Lamp - LF (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.8 PU	709	-
B	0.8 BK	1350	Ground

Marker Lamp - LR (WDA)

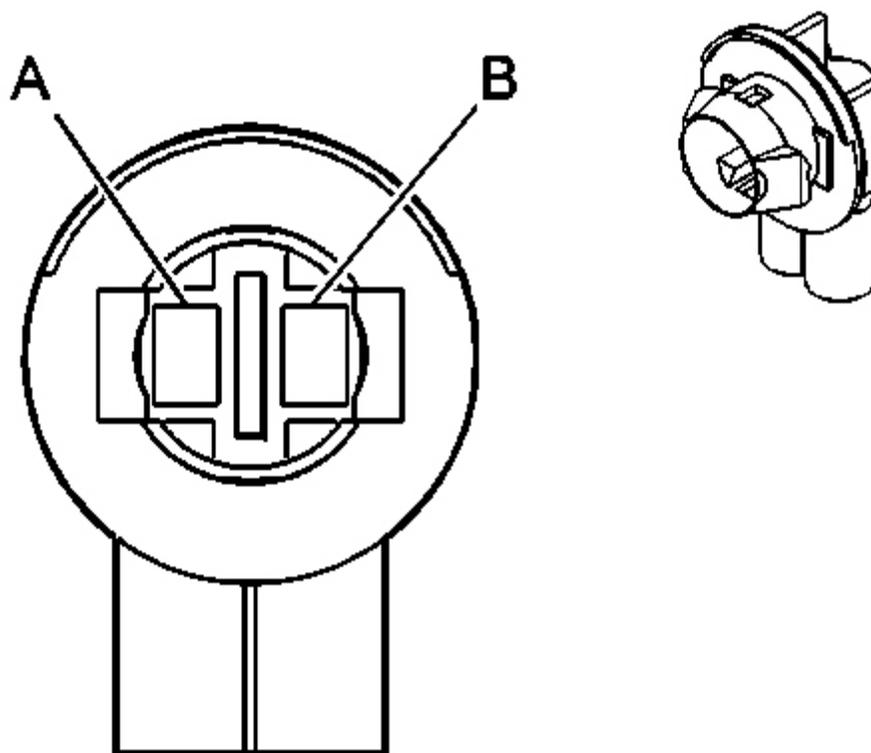


Fig. 94: Marker Lamp - LR (WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Marker Lamp - LR (WDA) Connector Parts Information

Connector Part Information

- OEM: 12146418
- Service: See Catalog
- Description: 2-Way F Lamp Socket (L-GY)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Marker Lamp - LR (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.8 PU	709	-
B	0.8 BK	650	Ground

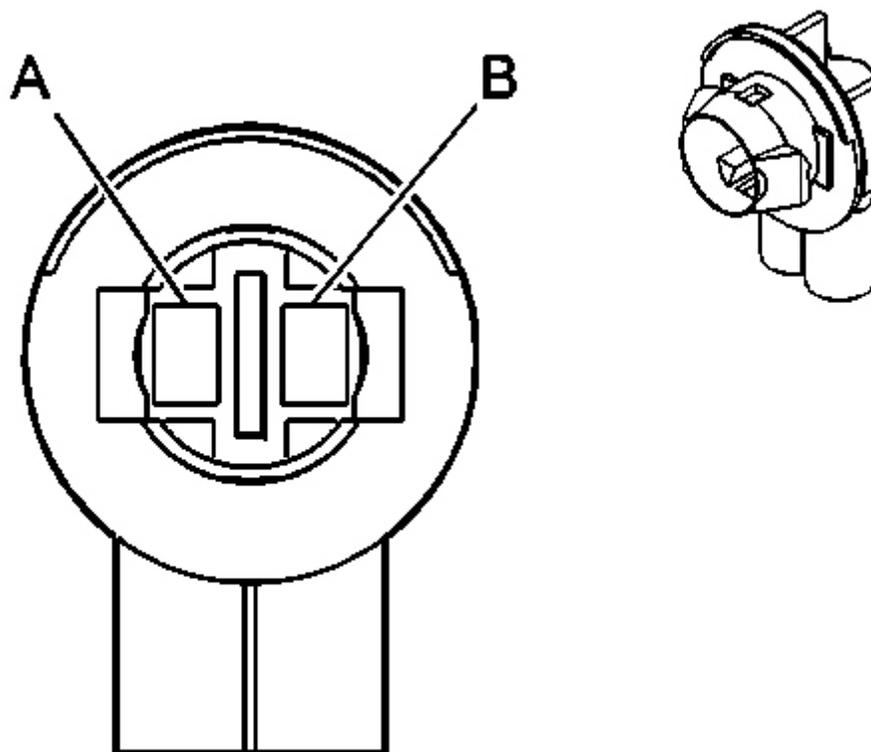
Marker Lamp - RF (WDA)

Fig. 95: Marker Lamp - RF (WDA) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Marker Lamp - RF (WDA) Connector Parts Information**Connector Part Information**

- OEM: 12146418
- Service: See Catalog

- Description: 2-Way F Lamp Socket (L-GY)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Marker Lamp - RF (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 BN/WH	309	-
B	0.5 BK	1250	Ground

Marker Lamp - RF (Z88)

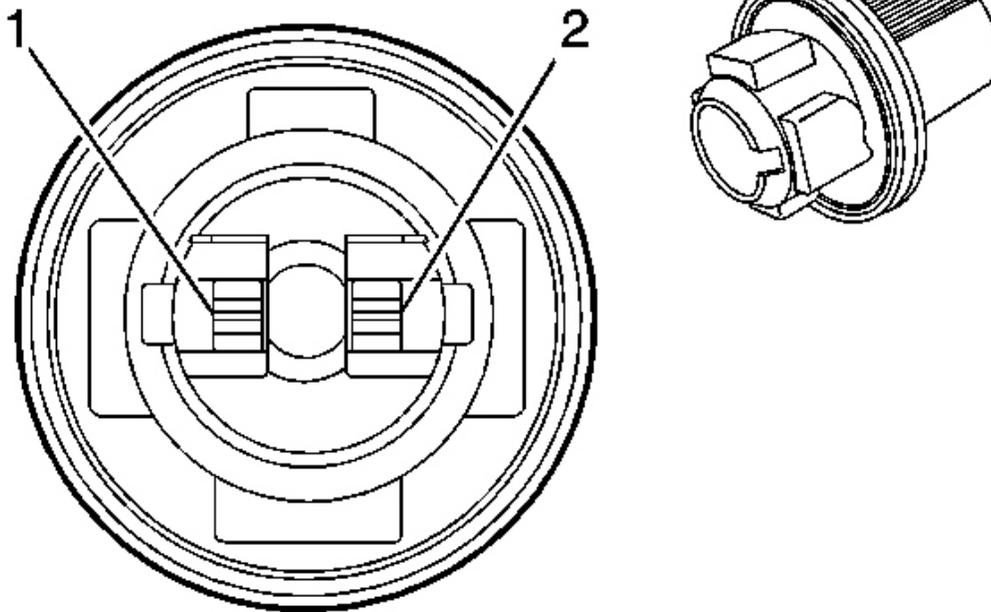


Fig. 96: Marker Lamp - RF (Z88) Connector End View
 Courtesy of GENERAL MOTORS CORP.

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Marker Lamp - RF (Z88) Connector Parts Information

Connector Part Information

- OEM: 10351681
- Service: See Catalog
- Description: 2-Way F Socket, Sealed (BK)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Marker Lamp - RF (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.8 BN/WH	309	-
B	0.8 BK	1250	Ground

Marker Lamp - RR (WDA)

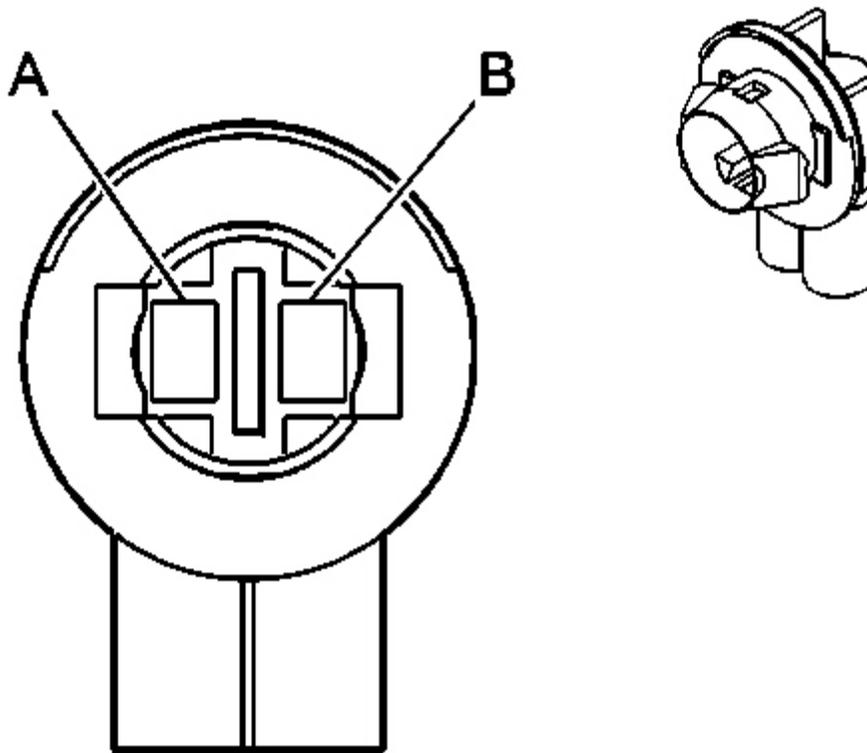


Fig. 97: Marker Lamp - RR (WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Marker Lamp - RR (WDA) Connector Parts Information

Connector Part Information

- OEM: 12146418
- Service: See Catalog
- Description: 2-Way F Lamp Socket (L-GY)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Marker Lamp - RR (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.8 BN/WH	309	-
B	0.8 BK	850	Ground

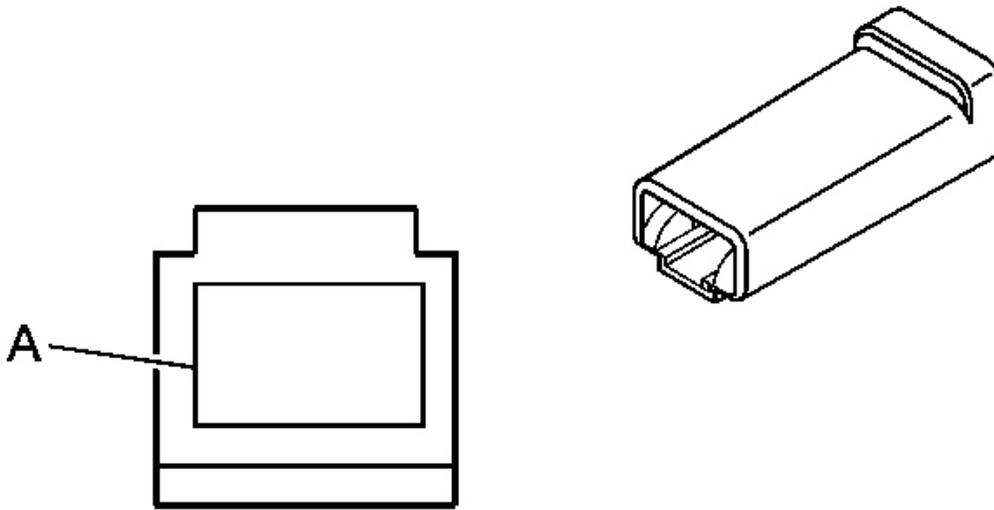
Park Lamp - LR (Z88)

Fig. 98: Park Lamp - LR (Z88) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Park Lamp - LR (Z88) Connector Parts Information**Connector Part Information**

- OEM: 104257-1
- Service: See Catalog
- Description: 2-Way F

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Park Lamp - LR (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	-	-	-
2	-	-	Ground

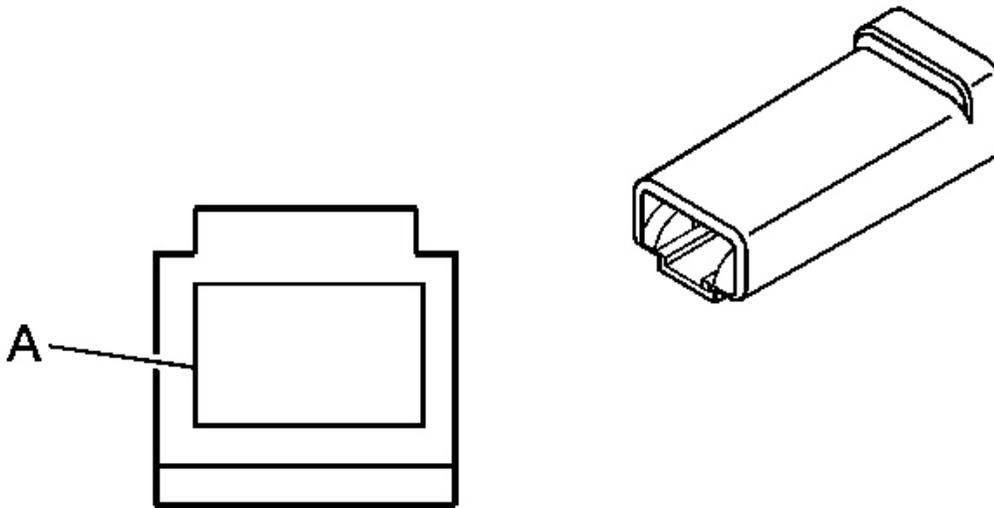
Park Lamp - RR (Z88)

Fig. 99: Park Lamp - RR (Z88) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Park Lamp - RR (Z88) Connector Parts Information**Connector Part Information**

- OEM: 104257-1
- Service: See Catalog
- Description: 2-Way F

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Park Lamp - RR (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	-	-	-
2	-	-	Ground

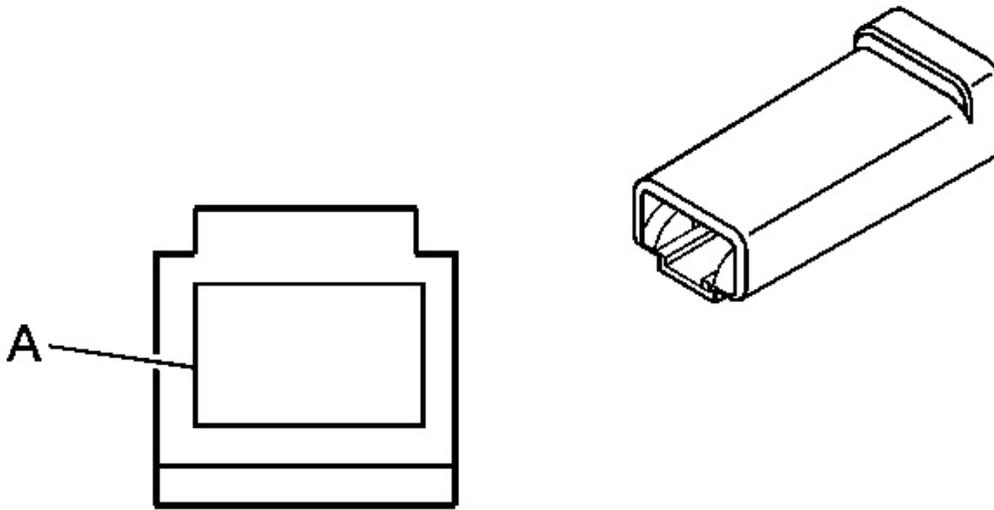
Side Marker Lamp - LF (Z88)

Fig. 100: Side Marker Lamp - LF (Z88) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Side Marker Lamp - LF (Z88) Connector Parts Information**Connector Part Information**

- -
- -
- -

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Side Marker Lamp - LF (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	-	-	-

Side Marker Lamp - RF (Z88)

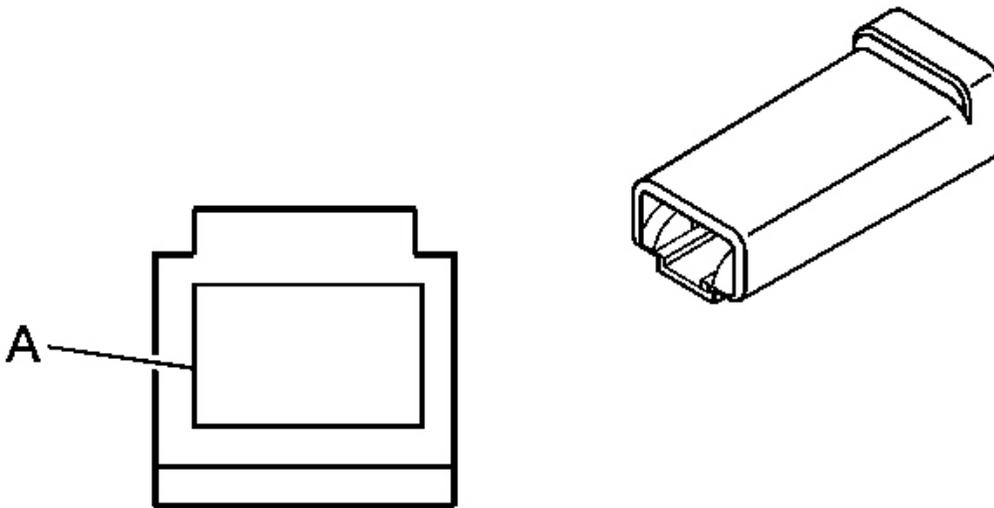


Fig. 101: Side Marker Lamp - RF (Z88) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Side Marker Lamp - RF (Z88) Connector Parts Information

Connector Part Information
<ul style="list-style-type: none"> • - • - • -
Terminal Part Information
<ul style="list-style-type: none"> • Terminal/Tray: See Terminal Repair Kit • Core/Insulation Crimp: See Terminal Repair Kit • Release Tool/Test Probe: See Terminal Repair Kit

Side Marker Lamp - RF (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	-	-	-

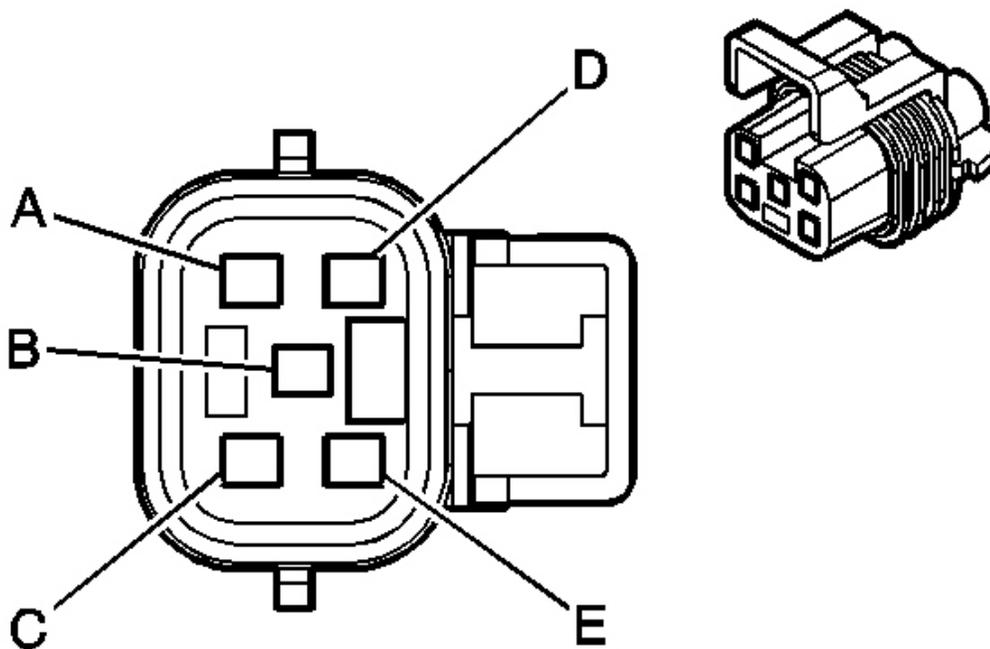
Tail Lamp Assembly - Left (Z88)

Fig. 102: Tail Lamp Assembly - Left (Z88) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Tail Lamp Assembly - Left (Z88) Connector Parts Information**Connector Part Information**

- OEM: 12124662
- Service: See Catalog
- Description: 5-Way F Metri-Pack 150 Series, Sealed (BN)

Terminal Part Information

- Terminal/Tray: 12048074/2

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- Core/Insulation Crimp: E/1
- Release Tool/Test Probe: 12094429/J-35616-14 (GN)

Tail Lamp Assembly - Left (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 PU	709	Left Park Lamp Supply Voltage
B	-	-	Not Used
C	0.5 YE/BK	5356	-
D	0.8 BK	650	Ground
E	0.8 YE	18	Left Rear Stop/Turn Lamp Supply Voltage

Tail Lamp Assembly - Left (Z88)

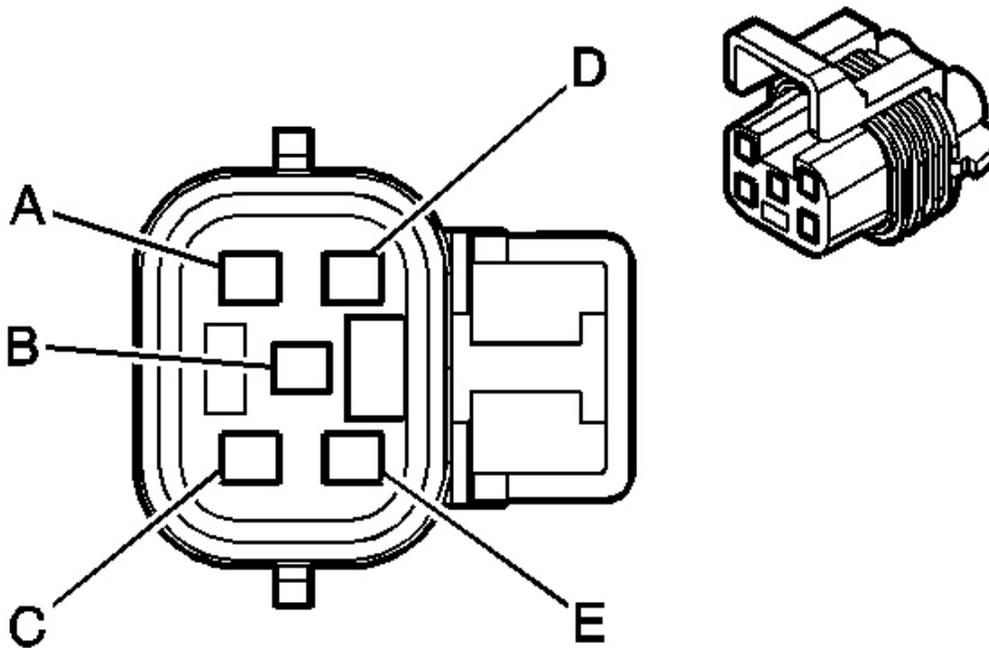


Fig. 103: Tail Lamp Assembly - Left (Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

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Tail Lamp Assembly - Left (Z88) Connector Parts Information

Connector Part Information

- OEM: 12124662
- Service: See Catalog
- Description: 5-Way F Metri-Pack 150 Series, Sealed (BN)

Terminal Part Information

- Terminal/Tray: 12048074/2
- Core/Insulation Crimp: E/1
- Release Tool/Test Probe: 12094429/J-35616-14 (GN)

Tail Lamp Assembly - Left (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 PU	709	Left Park Lamp Supply Voltage
B	-	-	Not Used
C	0.5 YE/BK	5356	-
D	0.8 BK	650	Ground
E	0.8 YE	18	Left Rear Stop/Turn Lamp Supply Voltage

Tail Lamp Assembly - Right (Z88)

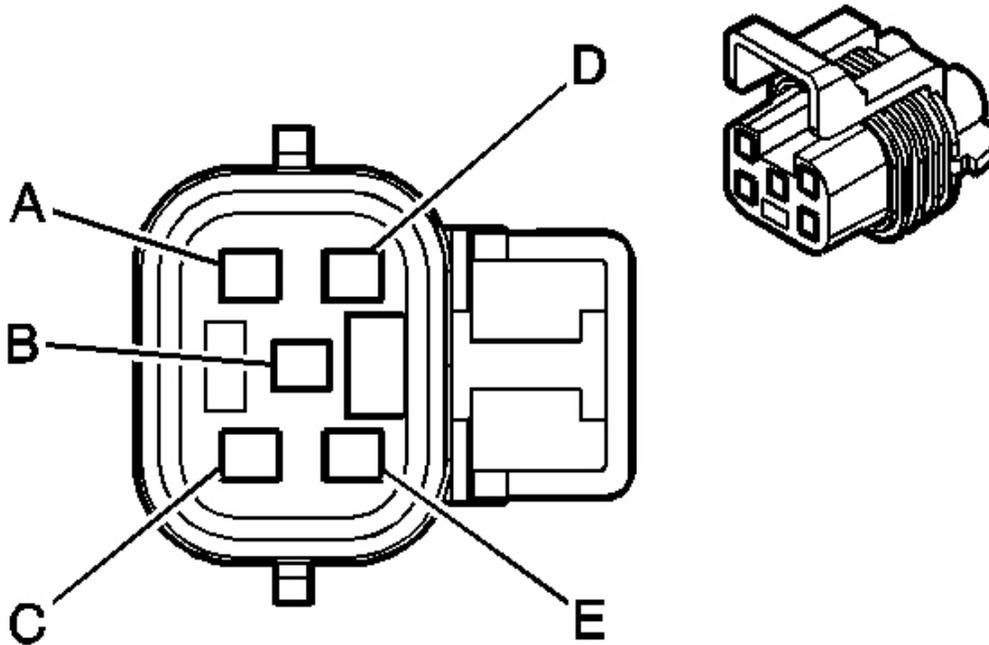


Fig. 104: Tail Lamp Assembly - Right (Z88) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Tail Lamp Assembly - Right (Z88) Connector Parts Information

Connector Part Information

- OEM: 12124662
- Service: See Catalog
- Description: 5-Way F Metri-Pack 150 Series, Sealed (BN)

Terminal Part Information

- Terminal/Tray: 12048074/2
- Core/Insulation Crimp: E/1
- Release Tool/Test Probe: 12094429/J-35616-14 (GN)

Tail Lamp Assembly - Right (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function

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A	0.5 BN/WH	309	Right Park Lamp Supply Voltage
B	-	-	Not Used
C	0.5 PU	5357	-
D	0.8 BK	850	Ground
E	0.8 D-GN	19	Right Rear Stop/Turn Lamp Supply Voltage

Tail Lamp Assembly - Right (Z88)

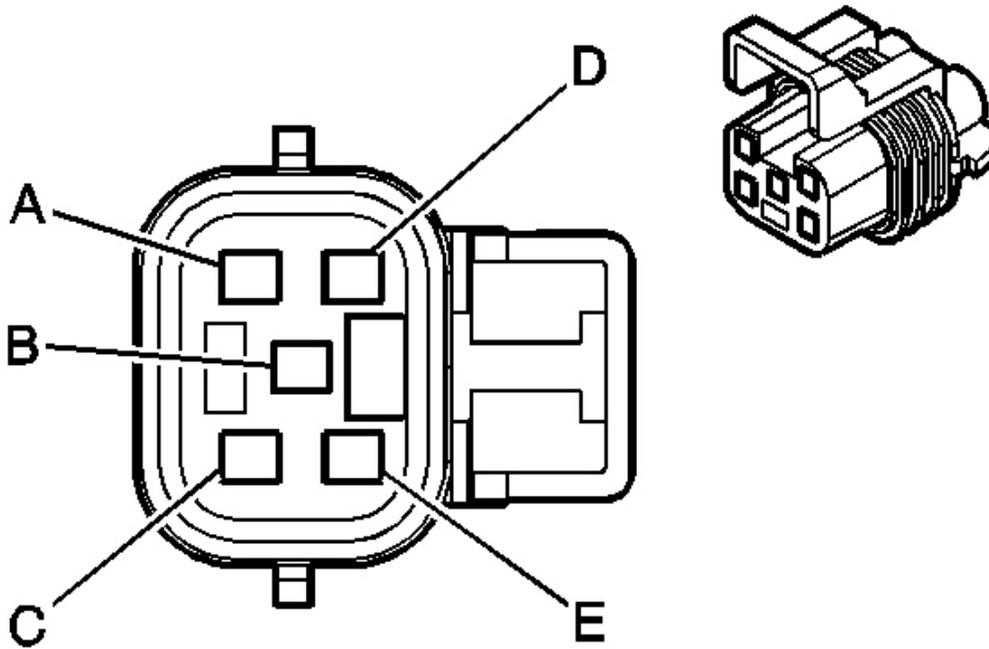


Fig. 105: Tail Lamp Assembly - Right (Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

Tail Lamp Assembly - Right (Z88) Connector Parts Information

Connector Part Information

- OEM: 12124662
- Service: See Catalog

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- Description: 5-Way F Metri-Pack 150 Series, Sealed (BN)

Terminal Part Information

- Terminal/Tray: 12048074/2
- Core/Insulation Crimp: E/1
- Release Tool/Test Probe: 12094429/J-35616-14 (GN)

Tail Lamp Assembly - Right (Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	0.5 BN/WH	309	Right Park Lamp Supply Voltage
B	-	-	Not Used
C	0.5 PU	5357	-
D	-	-	Not Used
E	0.8 D-GN	19	Right Rear Stop/Turn Lamp Supply Voltage

Tail/Stop and Turn Signal Lamp - Left (W49/WDA)

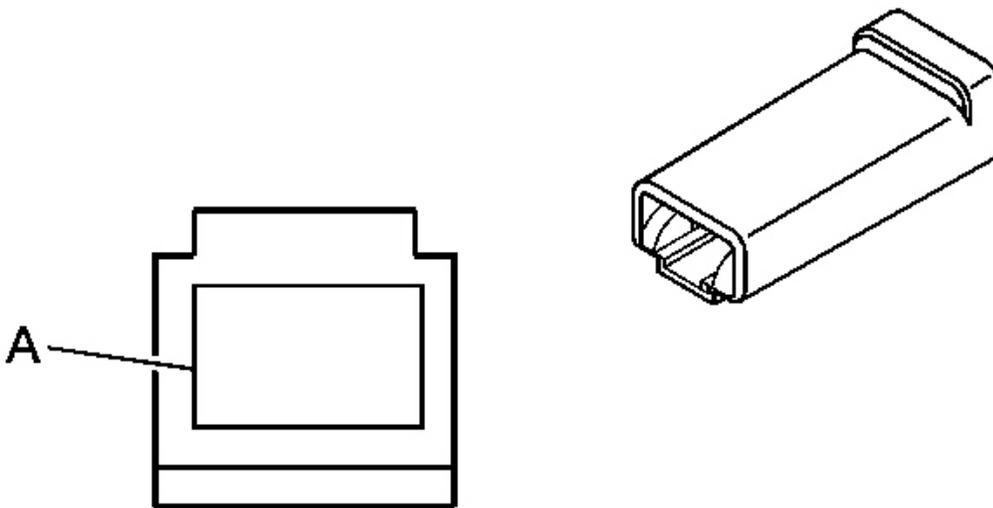


Fig. 106: Tail/Stop and Turn Signal Lamp - Left (W49/WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Tail/Stop and Turn Signal Lamp - Left (W49/WDA) Connector Parts Information

Connector Part Information

- OEM: 12450004
- Service: See Catalog
- Description: 3-Way

Terminal Part Information

- Terminal/Tray:
- Core/Insulation Crimp:
- Release Tool/Test Probe:

Tail/Stop and Turn Signal Lamp - Left (W49/WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	-	-	-

Tail/Stop and Turn Signal Lamp - Right (W49/WDA)

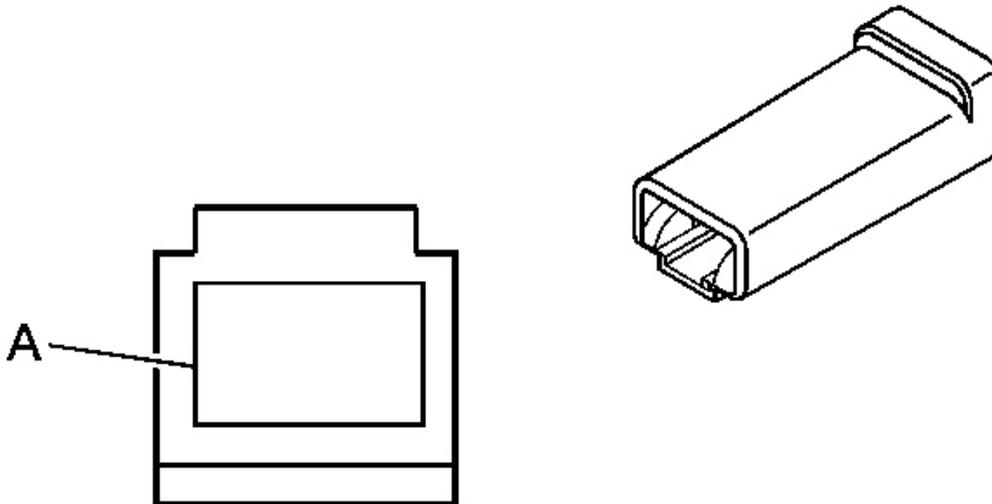


Fig. 107: Tail/Stop and Turn Signal Lamp - Right (W49/WDA) Connector End View
 Courtesy of GENERAL MOTORS CORP.

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Tail/Stop and Turn Signal Lamp - Right (W49/WDA) Connector Parts Information

Connector Part Information

- OEM: 12450004
- Service: See Catalog
- Description: 3-Way

Terminal Part Information

- Terminal/Tray:
- Core/Insulation Crimp:
- Release Tool/Test Probe:

Tail/Stop and Turn Signal Lamp - Right (W49/WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	-	-	-

Turn Signal Lamp - LF (Z88+TVD)

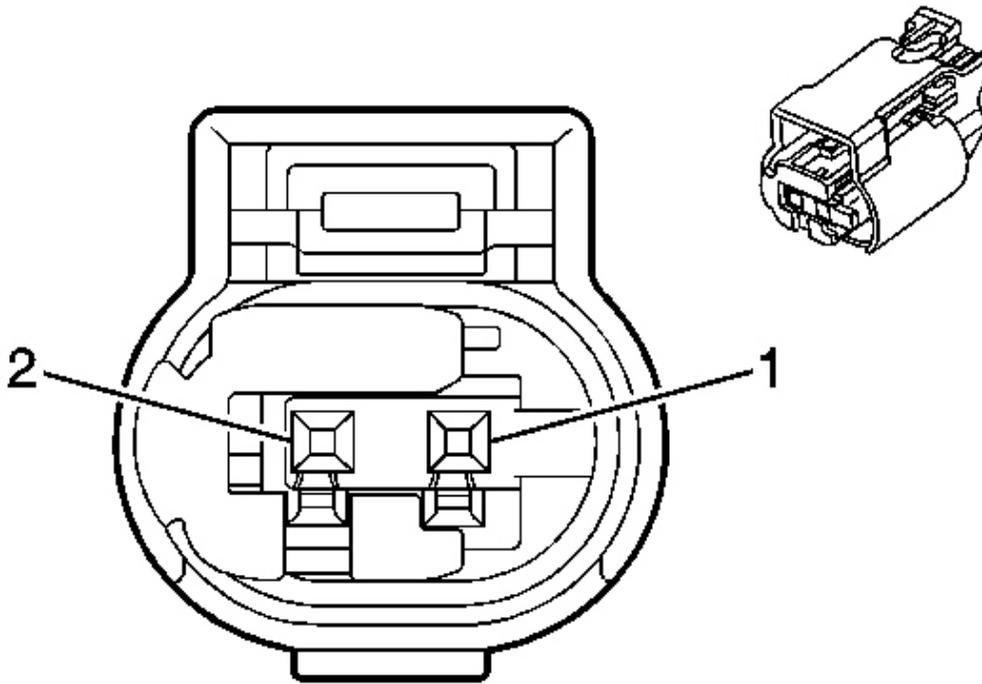


Fig. 108: Turn Signal Lamp - LF (Z88+TVD) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Turn Signal Lamp - LF (Z88+TVD) Connector Parts Information

Connector Part Information

- OEM: 1-1438608-3
- Service: See Catalog
- Description: 2-Way F MQS Series, Sealed (BU)

Terminal Part Information

- Terminal/Tray
- Core/Insulation Crimp:
- Release Tool/Test Probe:

Turn Signal Lamp - LF (Z88+TVD) Connector Terminal Identification

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Pin	Wire	Circuit No.	Function
A	-	-	-

Turn Signal Lamp - LF Upper (WDA)

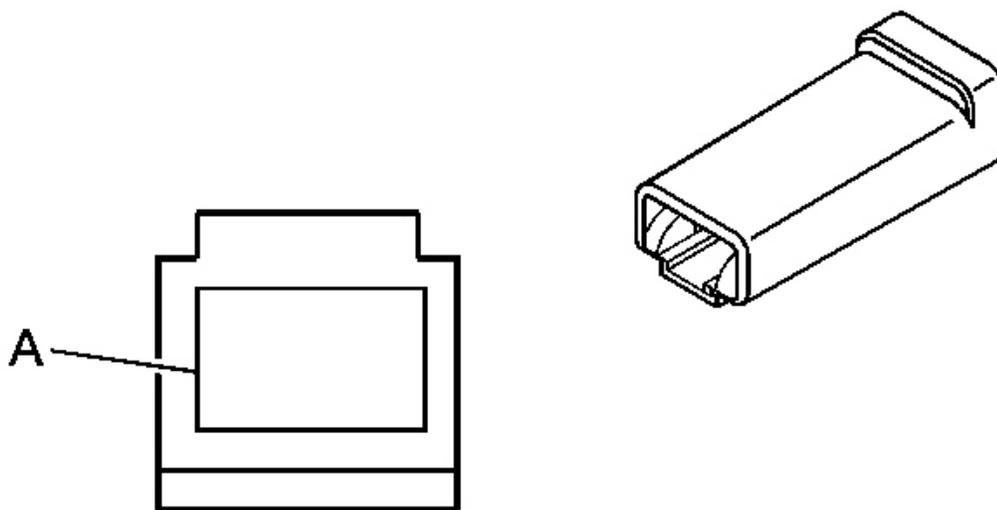


Fig. 109: Turn Signal Lamp - LF Upper (WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Turn Signal Lamp - LF Upper (WDA) Connector Parts Information

Connector Part Information

- -
- -
- -

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Turn Signal Lamp - LF Upper (WDA) Connector Terminal Identification

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Pin	Wire	Circuit No.	Function
A	-	-	-

Turn Signal Lamp - LF Lower (WDA)

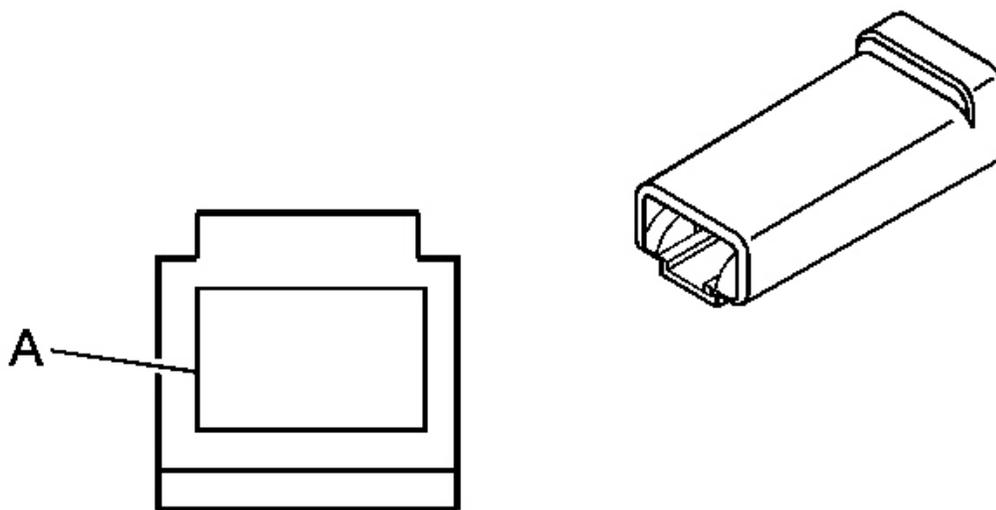


Fig. 110: Turn Signal Lamp - LF Lower (WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Turn Signal Lamp - LF Lower (WDA) Connector Parts Information

Connector Part Information

- -
- -
- -

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Turn Signal Lamp - LF Lower (WDA) Connector Terminal Identification

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2007 ACCESSORIES & EQUIPMENT Lighting - Outlook

Pin	Wire	Circuit No.	Function
A	-	-	-

Turn Signal Lamp - RF Upper (WDA)

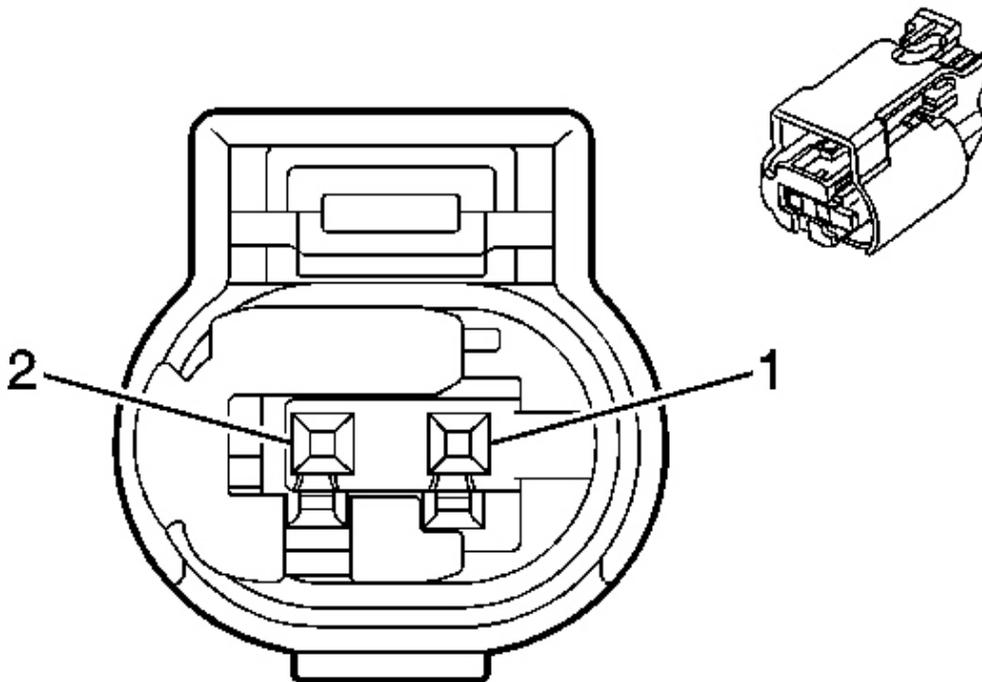


Fig. 111: Turn Signal Lamp - RF Upper (WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Turn Signal Lamp - RF Upper (WDA) Connector Parts Information

Connector Part Information

- OEM: 1-1438608-3
- Service: See Catalog
- Description: 2-Way F MQS Series, Sealed (BU)

Terminal Part Information

- Terminal/Tray: 962885-5/15

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- Core/Insulation Crimp: 6/6
- Release Tool/Test Probe: 12094429/J-35616-64B (L-BU)

Turn Signal Lamp - RF Upper (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.5 L-BU/WH	1314	Left Turn Signal Indicator Lamp Supply Voltage
2	0.5 BK	1350	Ground

Turn Signal Lamp - RF Lower (WDA)

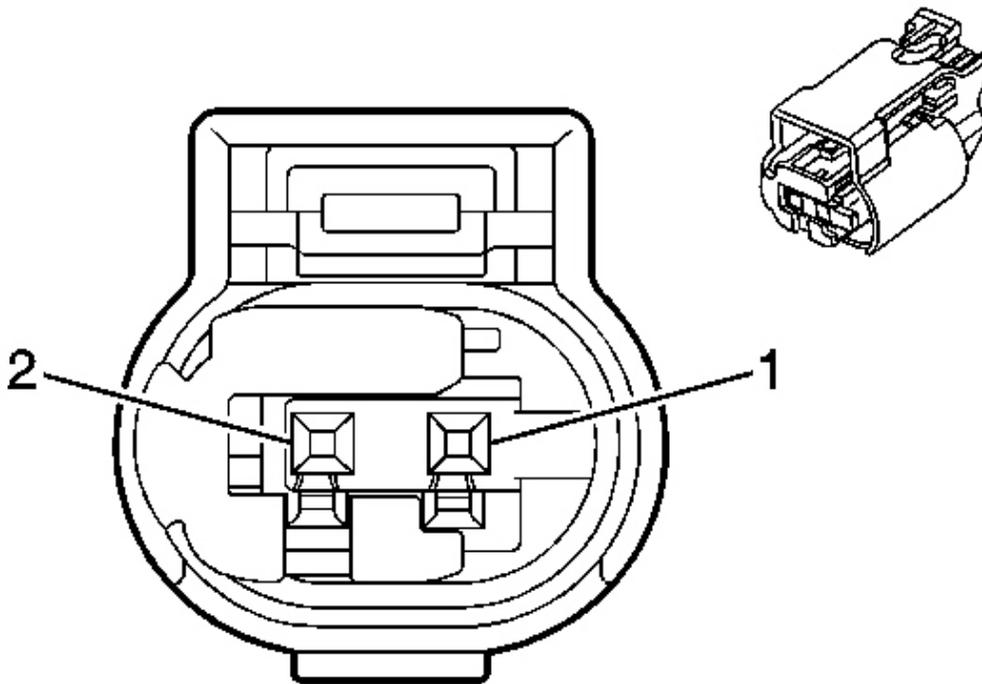


Fig. 112: Turn Signal Lamp - RF Lower (WDA) Connector End View
Courtesy of GENERAL MOTORS CORP.

Turn Signal Lamp - RF Lower (WDA) Connector Parts Information

Connector Part Information

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2007 ACCESSORIES & EQUIPMENT Lighting - Outlook

- OEM: 1-1438608-3
- Service: See Catalog
- Description: 2-Way F MQS Series, Sealed (BU)

Terminal Part Information

- Terminal/Tray: 962885-5/15
- Core/Insulation Crimp: 6/6
- Release Tool/Test Probe: 12094429/J-35616-64B (L-BU)

Turn Signal Lamp - RF Lower (WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.5 L-BU/WH	1314	Left Turn Signal Indicator Lamp Supply Voltage
2	0.5 BK	1350	Ground

Turn Signal Lamp - RF (Z88+TVD)

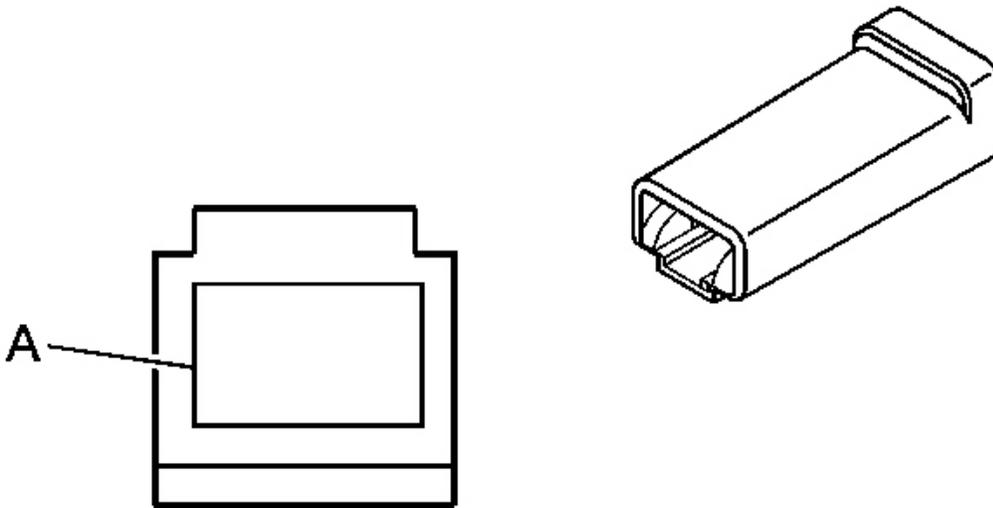


Fig. 113: Turn Signal Lamp - RF (Z88+TVD) Connector End View
Courtesy of GENERAL MOTORS CORP.

Turn Signal Lamp - RF (Z88+TVD) Connector Parts Information

Connector Part Information

- -
- -
- -

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Turn Signal Lamp - RF (Z88+TVD) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	-	-	-

Turn Signal Lamp - RF Lower (WDA)

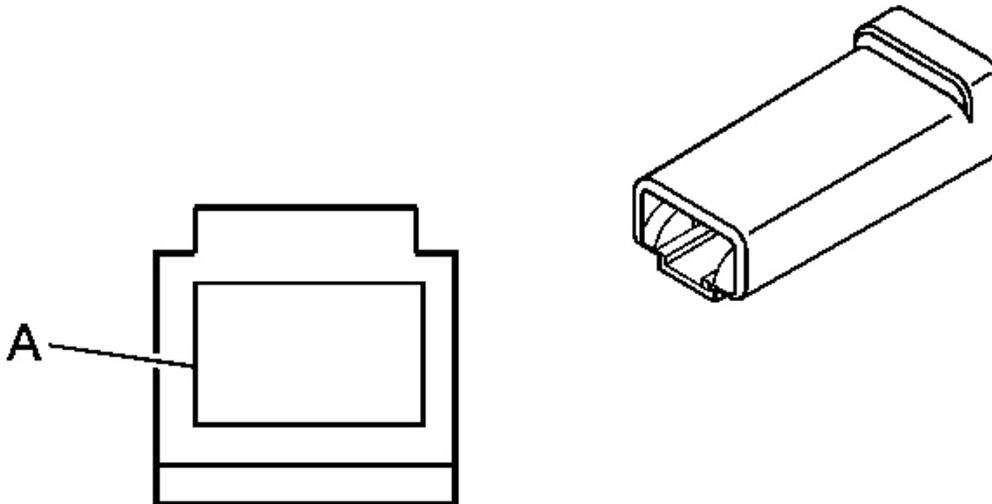


Fig. 114: Turn Signal Lamp - RF Lower (WDA) Connector End View
 Courtesy of GENERAL MOTORS CORP.

Turn Signal Lamp - RF Lower (WDA) Connector Parts Information

Connector Part Information

- OEM: 1-1438608-3
- Service: See Catalog
- Description: 2-Way F MQS Series, Sealed (BU)

Terminal Part Information

- Terminal/Tray: See Terminal Repair Kit
- Core/Insulation Crimp: See Terminal Repair Kit
- Release Tool/Test Probe: See Terminal Repair Kit

Tail/Stop and Turn Signal Lamp - Left (W49/WDA) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	-	-	-

Turn Signal/Multifunction Switch X1

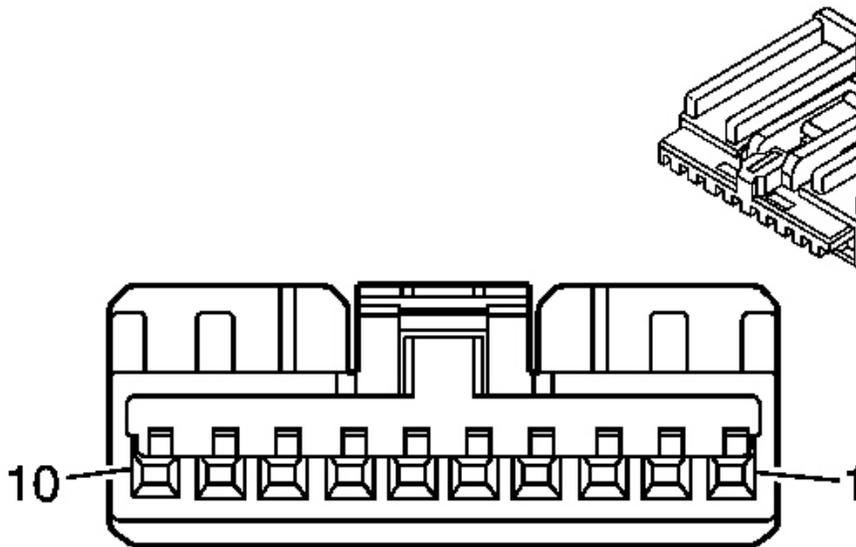


Fig. 115: Turn Signal/Multifunction Switch X1 Connector End View
 Courtesy of GENERAL MOTORS CORP.

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Turn Signal/Multifunction Switch X1 Connector Parts Information**Connector Part Information**

- OEM: AIT2PB101FS
- Service: See Catalog
- Description: 10-Way F

Terminal Part Information

- Terminal/Tray: 7116-4618-02/14
- Core/Insulation Crimp: P/P
- Release Tool/Test Probe: J-38125-215/J-35616-64B (L-BU)

Turn Signal/Multifunction Switch X1 Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.35 BK/WH	1551	Ground
2	0.35 L-BU/WH	1414	Left Turn Signal Switch Signal
3	0.35 D-BU/WH	1415	Right Turn Signal Switch Signal
4	0.35 WH	2283	Rear Wiper/Washer Switch Supply Voltage
5	0.5 GY	391	Rear Window Wiper Switch Signal
6	0.5 L-GN	2270	Rear Window Washer Relay Control
7	0.35 TN/BK	6009	-
8	0.35 PK	94	Platforms Windshield Washer Switch Signal (XA7)
	0.35 PK	94	Platforms Windshield Washer Switch Signal (-XA7)
9	0.35 L-GN	1715	Windshield Wiper Switch High Signal
10	0.35 L-BU	1714	Windshield Wiper Switch Low Signal

Turn Signal/Multifunction Switch X2

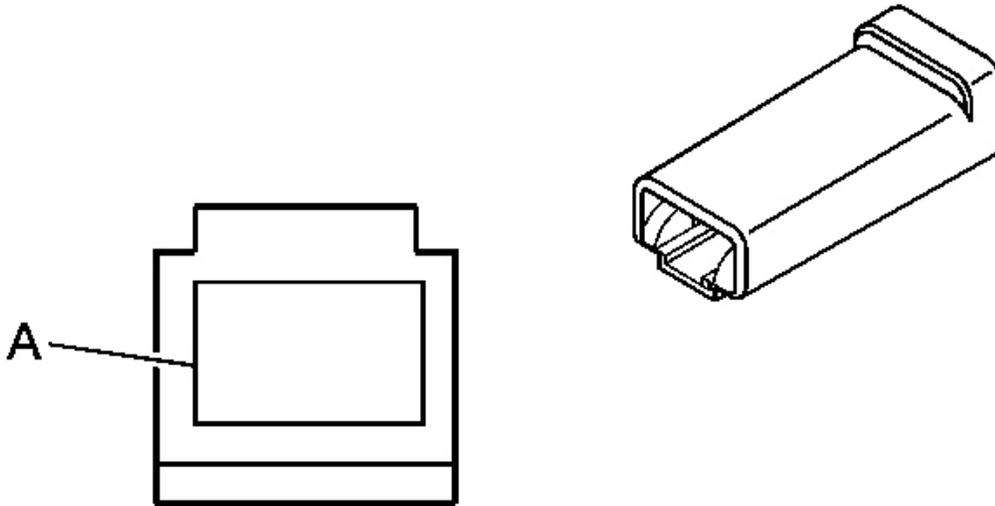


Fig. 116: Turn Signal/Multifunction Switch X2 Connector End View
 Courtesy of GENERAL MOTORS CORP.

Turn Signal/Multifunction Switch X2 Connector Parts Information

Connector Part Information

- OEM: AIT2PB101BH
- Service: See Catalog
- Description: 10-Way JST

Terminal Part Information

- Terminal/Tray: 7116-4618-02/14
- Core/Insulation Crimp: P/P
- Release Tool/Test Probe: J-38125-215/J-35616-64B (L-BU)

Turn Signal/Multifunction Switch X2 Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1-6	-	-	Not Used
7	0.35 PU	524	Headlamp Dimmer Switch High Beam Signal

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8	0.35 BK/WH	1551	Ground
9	-	-	Not Used
10	0.35 BN	1356	Flash To Pass Switch Signal

Vanity Mirror Lamp - Left (WDA+DH6)

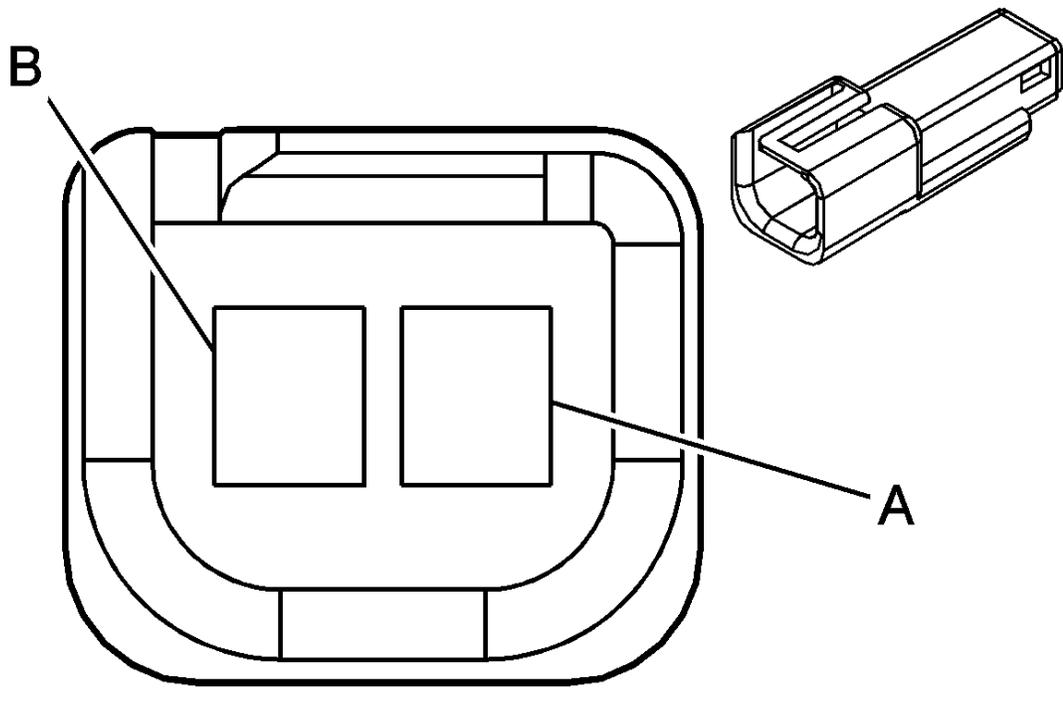


Fig. 117: Vanity Mirror Lamp - Left (WDA+DH6) Connector End View
Courtesy of GENERAL MOTORS CORP.

Vanity Mirror Lamp - Left (WDA+DH6) Connector Parts Information

Connector Part Information

- OEM: 12047663
- Service: 12085481
- Description: 2-Way M Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12047581/2
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-3 (GY)

Vanity Mirror Lamp - Left (WDA+DH6) Connector Terminal Identification

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Pin	Wire	Circuit No.	Function
A	0.5 OG	1732	Courtesy Lamps Supply Voltage
B	0.5 BK	850	Ground

Vanity Mirror Lamp - Left (Z88+DH6)

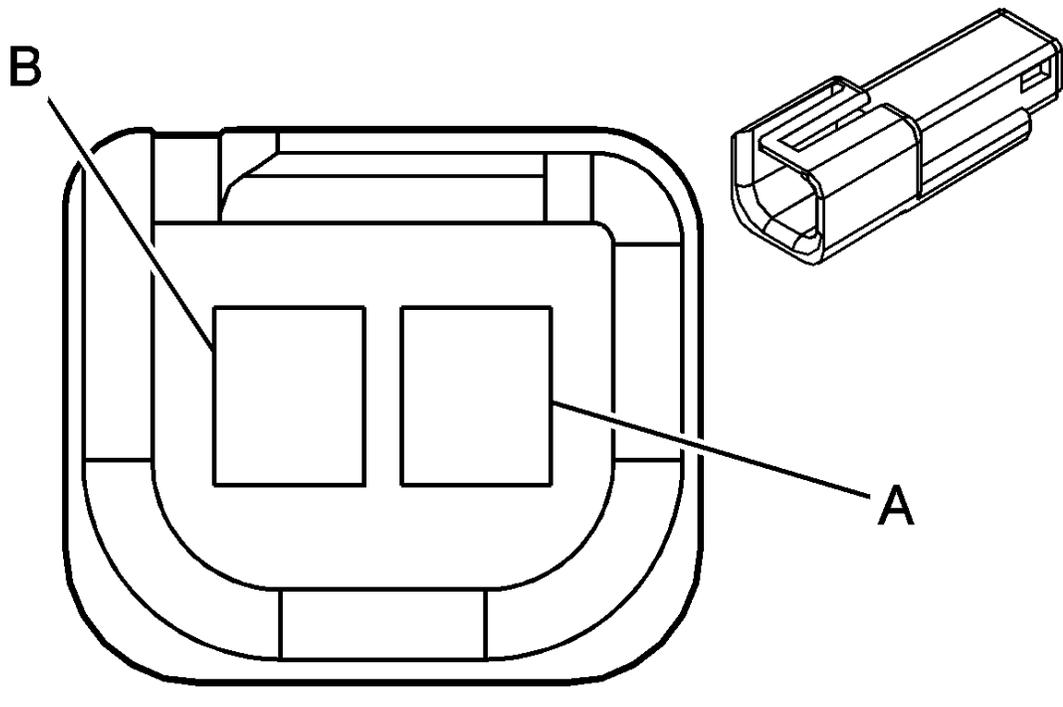


Fig. 118: Vanity Mirror Lamp - Left (Z88+DH6) Connector End View
Courtesy of GENERAL MOTORS CORP.

Vanity Mirror Lamp - Left (Z88+DH6) Connector Parts Information

Connector Part Information

- OEM: 12047663
- Service: 12085481
- Description: 2-Way M Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12047581/2
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-3 (GY)

Vanity Mirror Lamp - Left (Z88+DH6) Connector Terminal Identification

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Pin	Wire	Circuit No.	Function
A	0.5 OG	1732	Courtesy Lamps Supply Voltage
B	0.5 BK	850	Ground

Vanity Mirror Lamp - Right (WDA+DH6)

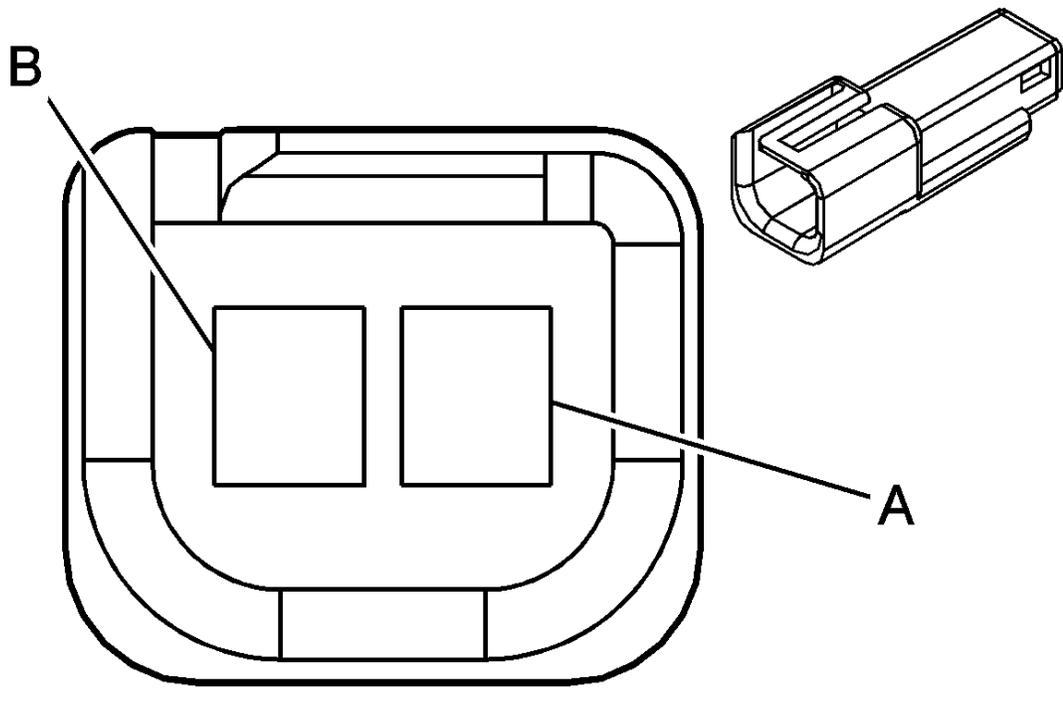


Fig. 119: Vanity Mirror Lamp - Right (WDA+DH6) Connector End View
Courtesy of GENERAL MOTORS CORP.

Vanity Mirror Lamp - Right (WDA+DH6) Connector Parts Information

Connector Part Information

- OEM: 12047663
- Service: 12085481
- Description: 2-Way M Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12047581/2
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-3 (GY)

Vanity Mirror Lamp - Right (WDA+DH6) Connector Terminal Identification

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Pin	Wire	Circuit No.	Function
A	0.5 OG	1732	Courtesy Lamps Supply Voltage
B	0.5 BK	850	Ground

Vanity Mirror Lamp - Right (Z88+DH6)

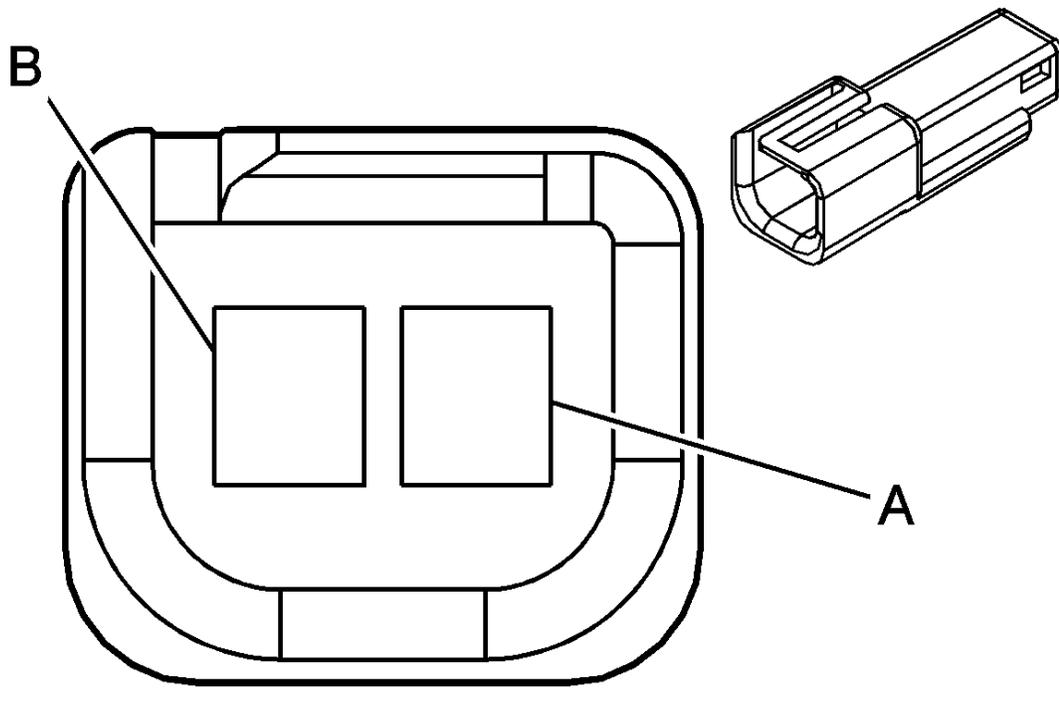


Fig. 120: Vanity Mirror Lamp - Right (Z88+DH6) Connector End View
Courtesy of GENERAL MOTORS CORP.

Vanity Mirror Lamp - Right (Z88+DH6) Connector Parts Information

Connector Part Information

- OEM: 12047663
- Service: 12085481
- Description: 2-Way M Metri-Pack 150 Series (BK)

Terminal Part Information

- Terminal/Tray: 12047581/2
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 12094429/J-35616-3 (GY)

Vanity Mirror Lamp - Right (Z88+DH6) Connector Terminal Identification

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Pin	Wire	Circuit No.	Function
A	0.5 OG	1732	Courtesy Lamps Supply Voltage
B	0.5 BK	850	Ground

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

DTC	Description
<u>DTC B257A</u>	Headlamp Switch Input Signal Mismatch
<u>DTC B1395</u>	Voltage Below Threshold
<u>DTC B1397</u>	Dimming Reference Voltage Circuit Low
<u>DTC B1480</u>	Battery Rundown Protection Circuit
<u>DTC B2530</u>	Front Fog Lamp Control Circuit
<u>DTC B2545</u>	Backup Lamps Circuit
<u>DTC B2555</u>	Passenger Compartment Lamp Control Circuit
<u>DTC B2575</u>	Headlamp Control Circuit
<u>DTC B2580</u>	(Left or generic) Headlamp High Beam Control Circuit
<u>DTC B2585</u>	Headlamp Control Circuit
<u>DTC B2600</u>	Daytime Running Lamp Control Circuit
<u>DTC B2610</u>	Passenger Compartment Dimming 1 (cluster, etc.) Circuit
<u>DTC B2615</u>	Passenger Compartment Dimming 2 Circuit
<u>DTC B2625</u>	Display Dimming Pulse Width Modulation (PWM) Output Circuit
<u>DTC B2645</u>	Ambient Light Sensor Circuit Voltage Above Or Below Threshold
<u>DTC B2652</u>	Passenger Compartment Dimming 3
<u>DTC B3445</u>	Stop Lamp Circuit
<u>DTC B3600</u>	Voltage Below Threshold
<u>DTC C0277 or DTC C0890</u>	Brake Pedal Position Sensor And/Or Circuit Concern(s)
<u>DTC C0297</u>	Brake Applied Output Circuit
<u>DTC P0572</u>	Brake Switch Circuit 1 Low Voltage
<u>DTC P0573</u>	Brake Switch Circuit 1 High Voltage
<u>DTC P0703</u>	Brake Switch Circuit 2

DTC P1574

Stop Lamp Switch Circuit

DIAGNOSTIC STARTING POINT - LIGHTING SYSTEMS

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

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

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

SCAN TOOL OUTPUT CONTROLS**Body Control Module (BCM)**

Scan Tool Output Control	Additional Menu Selection	Description
Backup Lamps	Special Functions	The BCM actuates the backup lamps when you select ON. The backup lamps should illuminate until commanded OFF.
DRL	Special Functions	The BCM actuates the Daytime Running Lamps when you select ON. The headlamps should illuminate until commanded OFF.
Courtesy Lamp	Special Functions	The BCM actuates the interior lamp control you select ON. The foot well and courtesy lamps should illuminate until commanded OFF.
Low Beam Lamp	Special Functions	The BCM actuates the low beam headlamps when you select ON. The headlamps should illuminate until commanded OFF
High Beam Lamp	Special Functions	The BCM actuates the high beam headlamps when you select ON. The headlamps should illuminate until commanded OFF
Incandescent Dimming	Special Functions	The BCM activates or deactivates the Incandescent Dimming when commanded ON or OFF.
LED Dimming	Special Functions	The BCM activates or deactivates the LED Dimming when commanded ON or OFF.
		The BCM actuates the park lamp relay when you

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Parking Lamps	Special Functions	select ON. The park lamps should illuminate until commanded OFF.
Front Fog Lamps	Special Functions	The BCM actuates the fog lamps when you select ON. The front fog lamps should illuminate until commanded OFF.
RF Turn Signal	Special Functions	The BCM actuates the right front turn signal when you select ON. The right front turn signal should remain on until commanded OFF.
LF Turn Signal	Special Functions	The BCM actuates the left front turn signal when you select ON. The left front turn signal should remain on until commanded OFF.
LR Turn Signal	Special Functions	The BCM actuates the left rear turn signal when you select ON. The left rear turn signal should remain on until commanded OFF.
RR Turn Signal	Special Functions	The BCM actuates the right rear turn signal when you select ON. The right rear turn signal should remain on until commanded OFF.

SCAN TOOL DATA LIST

Body Control Module (BCM)

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Operating Conditions: Ignition ON/Engine OFF/Doors, Trunk and Hood Closed/No Switches ON/Vehicle in PARK or NEUTRAL			
Auto Headlamp Disable	BCM	Inactive/Active	Inactive
Ambient Light Status	BCM	Day/Night/Unknown/Invalid	Varies with light level
Ambient Light Sensor	BCM	Volts	Varies
Backup Lamps	BCM	Off/On	Off
DRL Relay Command	BCM	Off/On	Varies with light level
Flash to Pass Switch	BCM	Inactive/Active	Inactive
Front Fog Lamp Relay Command	BCM	Off/On	Off
Front Fog Lamp Switch	BCM	Inactive/Active	Inactive
Hazard Lamp Switch	BCM	Inactive/Active	Inactive

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Headlamp OFF Switch	BCM	Off/On	On
Headlamp Switch	BCM	Inactive/Active	Inactive
High Beam Relay Command	BCM	Off/On	Off
High Beam Select Switch	BCM	Inactive/Active	Inactive
Left Turn Signal Switch	BCM	Inactive/Active	Inactive
LF Turn Signal	BCM	Off/On	Off
LR Turn Signal	BCM	Off/On	Off
Low Beam Relay Command	BCM	Off/On	Off
Park Lamp Relay Cmd	BCM	Off/On	Off
Park Lamp Switch	BCM	Off/On	Off
Right Turn Signal Switch	BCM	Inactive/Active	Inactive
RF Turn Signal	BCM	Off/On	Off
RR Turn Signal	BCM	Off/On	Off
Stop Lamp Switch Status	BCM	Counts	Varies
Stop Lamp Relay Command	BCM	Off/On	Off

SCAN TOOL DATA DEFINITIONS

BCM Scan Tool Data Definitions

The BCM Scan Tool Data Definitions contains a brief description of all Lighting System related BCM parameters available on the scan tool.

Brake Pedal Data List

Stop Lamp Relay Command

The scan tool displays ON/OFF. When the BCM detects the stop lamps are applied, the scan tool will display ON.

BCM Data List

Stop Lamp Switch Status

The scan tool displays volts (counts). The voltage level (counts) varies as the brakes are applied.

BCM Inputs

Ambient Light Sensor C67-HVAC Manually equipped vehicles only

The Ambient Light sensor inputs the light level status to the BCM. The daylight light levels are Day/Night/Unknown/Invalid.

Ambient Light Sensor C67-HVAC Manually equipped vehicles only

The Ambient Light Sensor defines the light level to a voltage between 0 to 5 volts.

Flash to Pass

The scan tool displays Active/Inactive. When the multifunction switch is placed on the FTP position, the scan tool will display Active.

Front Fog Lamp Switch

The scan tool displays Active/Inactive. When the fog lamp switch is placed in the ON position, the scan tool will display Active.

Hazard Lamp Switch

The scan tool displays Active/Inactive. When the hazard switch is placed in the ON position, the scan tool will display ON.

Headlamp Switch

The scan tool displays Active/Inactive. When the headlamp switch is placed in the ON position, the scan tool will display ON.

Headlamp OFF Switch

The scan tool displays ON/OFF. When the headlamp switch is placed in the OFF position, the scan tool will display ON.

High Beam Select Switch

The scan tool displays ON/OFF. When the headlamp dimmer switch is placed in the HIGH position, the scan tool will display ON.

Left Turn Signal Switch

The scan tool displays Inactive/Active. When the turn signal switch is placed in the LEFT turn position, the scan tool will display Active.

Left Front Turn Signal

The scan tool displays ON/OFF. When the left front turn signal is placed in the ON position, the scan tool will display ON.

Left Rear Turn Signal

The scan tool displays ON/OFF. When the left rear turn signal is placed in the ON position, the scan tool will display ON.

Low Beam Relay Command

The scan tool displays ON/OFF. When the headlamp dimmer switch is placed in the LOW position, the scan tool will display ON.

Park Lamp Relay Command

The scan tool displays ON/OFF. When the headlamp switch is in the PARK position, the scan tool will display ON.

Park Lamp Switch

The scan tool displays ON/OFF. When the headlamp switch is in the PARK position, the scan tool will display ON.

Right Turn Signal Switch

The scan tool displays Inactive/Active. When the turn signal switch is placed in the right turn position, the scan tool will display Active.

BCM Outputs

Backup Lamps

The scan tool displays ON/OFF. This output of the BCM is displayed as ON when the backup lamps are turned ON.

DRL Relay Command

The scan tool displays ON/OFF. This output of the BCM is displayed as ON when the DRL lamps are turned ON.

Front Fog Lamp Relay Command

The scan tool displays ON/OFF. This output of the BCM is displayed as ON when the fog lamps are turned ON.

High Beam Relay Command

The scan tool displays ON/OFF. When the turn signal multi-function switch is placed in the High Beam position, the scan tool will display ON.

LF Turn Signal Lamp

The scan tool displays ON/OFF. This output of the BCM is displayed as ON when the left front turn signal is turned ON.

LR Turn Signal Lamp

The scan tool displays ON/OFF. This output of the BCM is displayed as ON when the left rear turn signal is turned ON.

Low Beam Relay Command

The scan tool displays ON/OFF. This output of the BCM is displayed as ON when the low beam headlamps are turned ON.

Park Lamp Relay

The scan tool displays ON/OFF. This output of the BCM is displayed as ON when the park lamps are turned ON.

RF Turn Signal

The scan tool displays ON/OFF. This output of the BCM is displayed as ON when the right front turn signal is turned ON.

RR Turn Signal

The scan tool displays ON/OFF. This output of the BCM is displayed as ON when the right rear turn signal is turned ON.

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Diagnostic Instructions

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

DTC Descriptor

DTC B257A 00

Headlamp Switch Input Signal Mismatch

Diagnostic Fault Information

DTC B257A

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Headlamp Switch Off	B257A 00	B257A 00	B257A 00	-
Park Lamp Switch On	B257A 00	B2057A 00	B257A 00	-
Headlamp Switch On	1	2	B2575 00	-
Headlamp Ground	-	B257A 00	2	-

1. Headlamps Always On - Low or High Beam
2. Headlamps Inoperative - Low Beam

Circuit/System Description

When the headlamp switch is in the OFF position, the body control module (BCM) receives a ground signal through the headlamp switch OFF circuit and an open signal on the park lamp ON circuit. When the headlamp switch is in the PARK or HEAD position, the BCM receives an open signal through the headlamp switch OFF circuit and a ground signal through the park lamp ON circuit.

Conditions for Running the DTC

The ignition is ON.

Conditions for Setting the DTC

The BCM receives an unexpected signal along either the headlamp switch OFF circuit or the park lamp ON circuit.

Action Taken When the DTC Sets

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

Conditions for Clearing the DTC

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

Reference Information

Schematic Reference

Headlights/Daytime Running Lights (DRL) Schematics

Connector End View Reference

Lighting Systems Connector End Views

Electrical Information Reference

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

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

Ignition ON, headlamp switch to PARK, just the park lamps should illuminate.

Circuit/System Testing

1. Headlamp switch to OFF, disconnect the BCM connector C2.
2. Ignition to ON, connect a test lamp between the headlamp OFF switch circuit and the positive battery terminal. Verify the test lamp illuminates.
 - If the test lamp does not illuminate:

- Test for a short to voltage or an open in the headlamp OFF switch circuit.
 - Test for an open in the headlamp ground circuit.
 - If the circuit/connections test normal replace the headlamp switch.
3. Headlamp switch to PARK, verify the test lamp is not illuminated.
 - If the test lamp illuminates, test for a short to ground in the headlamp OFF switch circuit. If the circuit/connections test normal, replace the headlamp switch.
 4. Headlamp switch to PARK, connect a test lamp between the park lamp switch ON circuit and the positive battery terminal. Verify the test lamp illuminates.
 - If the test lamp does not illuminate, test for a short to voltage or an open in the park lamp switch ON circuit. If the circuit/connections test normal, replace the headlamp switch.
 5. Headlamp switch to OFF, verify the test lamp does not illuminate.
 - If the test lamp does illuminate, test for a short to ground in the park lamp switch ON circuit. If the circuit/connections test normal, replace the headlamp switch.
 6. If all circuit/connections test normal, replace the BCM.

Repair Procedures

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

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

DTC B1395

Diagnostic Instructions

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

DTC Descriptors

DTC B1395 03

Voltage Below Threshold

DTC B1395 07

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Voltage Above Threshold

Diagnostic Fault Information

DTC B1395

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

Circuit/System Description

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

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

Conditions for Running the DTC

The ignition is ON.

Conditions for Setting the DTC

B1395 03

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

B1395 07

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

B3600 03

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

Action Taken When the DTC Sets

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

Conditions for Clearing the DTC

- The conditions for setting the DTC are no longer present.
- A history DTC clears after 100 malfunction-free ignition cycles.
- The BCM receives the clear code command from the scan tool.

Reference Information

Schematic Reference

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

Connector End View Reference

Lighting Systems Connector End Views

Electrical Information Reference

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

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

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

Circuit/System Testing

1. Clear the DTC.
2. Use a scan tool to monitor the Dimming Control Reference Signal data parameter in the BCM data list.
 - If less than 0.33 volt, test the I/P dimming voltage reference circuit for a short to ground or an open/high resistance and test the stop lamp signal circuit for a short to ground. If the circuit/connections test normal, replace the BCM.
 - If greater than 4.97 volts, test the I/P dimming voltage reference circuit for a short to voltage. If the circuit/connections test normal, replace the BCM.
3. If the voltage is correct and all circuits/connections test normal, replace the headlamp switch.

Repair Procedures

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

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

DTC B1397**Circuit Description**

The body control module (BCM) controls the dimming operation of the interior lamps. The BCM applies a 12-volt reference signal to the instrument panel (I/P) dimming switch. When you move the I/P dimming switch, the BCM uses this varying voltage signal in order to apply a pulse width modulation (PWM) voltage which controls the brightness of the interior illumination lamps.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC B1397 Dimming Reference Voltage Circuit Low

Conditions for Running the DTC

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- Voltage supplied to the module is in the normal operating range, approximately 9-16 volts.
- The interior lamps must be ON.

Conditions for Setting the DTC

- The BCM detects a short to ground or an open in the dimming reference voltage circuit.
- The condition is present for longer than 3 ms.

Action Taken When the DTC Sets

The BCM stores DTC B1397 in memory.

Conditions for Clearing the MIL/DTC

- A current DTC B1397 clears when the BCM no longer detects an open or a short to ground in the dimming reference voltage circuit.
- A history DTC B1397 clears after 100 consecutive ignition cycles.

Diagnostic Aids

- If the DTC B1397 is a history DTC, the fault may be intermittent. Refer to **Testing for Intermittent Conditions and Poor Connections** .
- An intermittent short to ground or an open in the following locations may cause an intermittent malfunction to occur:
 - The dimming reference voltage circuit
 - The I/P dimming switch
 - The BCM

Test Description

The numbers below refer to the step numbers on the diagnostic table.

- 2:** This step verifies that the BCM is providing reference voltage to the headlamp switch.
- 3:** This step tests the dimming return circuit for a high resistance or an open.

DTC B1397

Step	Action	Values	Yes	No
Schematic Reference: <u>Interior Lights Dimming Schematics</u>				
Connector End View Reference: <u>Master Electrical Component List</u>				
	Did you perform the Diagnostic			Go to

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1	System Check - Vehicle?	-	Go to Step 2	<u>Diagnostic System Check - Vehicle</u>
2	<ol style="list-style-type: none"> 1. Disconnect the headlamp switch. 2. Turn ON the ignition, with the engine OFF. 3. Measure the voltage from the dimming reference voltage circuit. <p>Does the voltage measure near the specified value?</p>	12 V	Go to Step 3	Go to Step 4
3	<p>Inspect the dimming return circuit for a high resistance or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .</p> <p>Did you find and correct the condition?</p>	-	Go to Step 7	Go to Step 6
4	<p>Inspect the dimming reference voltage circuit for a high resistance, an open or a short to ground. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .</p> <p>Did you find and correct the condition?</p>	-	Go to Step 7	Go to Step 5
5	<p>Replace the body control module (BCM). Refer to <u>Control Module References</u> for replacement, setup and programming.</p> <p>Did you complete the replacement?</p>	-	Go to Step 7	-
6	<p>Replace the headlamp switch. Refer to <u>Headlamp Switch Replacement</u>.</p> <p>Did you complete the replacement?</p>	-	Go to Step 7	-
	<ol style="list-style-type: none"> 1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the 			

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7	Conditions for Running the DTC as specified in the supporting text.	-		
	Does the DTC reset?		Go to Step 2	System OK

DTC B1480

Circuit Description

The body control module (BCM) supplies battery positive voltage to the individually controlled lamps. In the event that any of these lamps were to remain illuminated for more than 20 minutes with the ignition switch in the OFF position, the BCM will deactivate the inadvertent power supply voltage circuit to prevent a total battery discharge condition.

Voltage for the inadvertent power supply voltage circuit is from the INADV/PWR/LED 20 amp fuse in the instrument panel (I/P) fuse block directly through the BCM to this circuit.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC B1480 Battery Rundown Protection Circuit

Conditions for Running the DTC

The battery voltage must be between 9-16 volts.

Conditions for Setting the DTC

- The inadvertent power supply voltage circuit is shorted to ground for more than 1 second.
- There is a loss of the instrument panel fuse block INADV/PWR/LED 20 amp fuse battery supply voltage to the BCM for 1 second while one or more of the lamps in the inadvertent power circuit has been activated.

Action Taken When the DTC Sets

The lamps on the inadvertent power supply voltage circuit will not operate.

Conditions for Clearing the MIL/DTC

- This DTC will clear on current status after the condition for setting the fault is corrected.
- A history DTC will clear after 100 consecutive ignition cycles without a fault present.

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- History and current DTCs can be cleared using a scan tool.

Diagnostic Aids

- Perform a visual inspection for loose or poor connections at all related components. Refer to **Testing for Intermittent Conditions and Poor Connections** .
- A short to ground in the inadvertent power supply voltage circuit or the battery positive voltage circuit will cause the INADV/PWR/LED 20 amp fuse to open.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

3: This step determines if the problem exists in the wiring or the BCM.

5: After replacement of the BCM you must calibrate the new module for proper operation.

DTC B1480

Step	Action	Yes	No
Schematic Reference: <u>Interior Lights Schematics</u> Connector End View Reference: <u>Lighting Systems Connector End Views</u> or <u>Data Communication Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	Inspect the INADV/PWR/LED 20 amp fuse in the instrument panel (I/P) fuse block. Is the fuse open?	Go to Step 3	Go to Step 4
3	Test the inadvertent power supply voltage circuit and the INADV/PWR/LED 20 amp fuse battery supply voltage to the body control module (BCM) for a short to ground. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 6	Go to Step 4
4	Inspect for poor connections at the harness connector of the BCM. Refer to <u>Testing for Intermittent Conditions and Poor</u>		

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	Connections and Connector Repairs . Did you find and correct the condition?	Go to Step 6	Go to Step 5
5	Replace the BCM. Refer to Control Module References . Did you complete the replacement?	Go to Step 6	-
6	<ol style="list-style-type: none"> 1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. 		
	Does the DTC reset?	Go to Step 2	System OK

DTC B2530

Diagnostic Instructions

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

DTC Descriptor

DTC B2530 00

Front Fog Lamp Control Circuit

Diagnostic Fault Information

DTC B2530

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Front Fog Lamp Relay Control Circuit	1	2	B2530 00	-
<ol style="list-style-type: none"> 1. Fog Lamps Always On 2. Fog Lamps Inoperative 				

Circuit/System Description

Voltage is applied at all times to the fog lamp relay. When the fog lamp switch is placed in the

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

Conditions for Running the DTC

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

Conditions for Setting the DTC

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

Action Taken When the DTC Sets

The front fog lamps do not illuminate.

Conditions for Clearing the DTC

- The conditions for setting the DTC are no longer present.
- A history DTC clears after 100 malfunction-free ignition cycles.
- The BCM receives the clear code command from the scan tool.

Reference Information**Schematic Reference****Fog Lights Schematics****Connector End View Reference****Lighting Systems Connector End Views****Electrical Information Reference**

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

Scan Tool Reference

- Scan Tool Output Controls
- Scan Tool Data List
- Scan Tool Data Definitions

Circuit/System Verification

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

Circuit/System Testing

1. Ignition OFF, remove the fog lamp relay in the underhood fuse block.
 2. Ignition ON, test for voltage at the relay control circuit terminal of the underhood fuse block.
 - If voltage is present, test the control circuit for a short to voltage. If all circuits/connections test normal, replace the fog lamp relay.
- If voltage is not present, replace the BCM.

Repair Procedures

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

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

DTC B2545

Diagnostic Instructions

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

DTC Descriptor

DTC B2545 00

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Backup Lamps Circuit

Diagnostic Fault Information

DTC B2545

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

Circuit/System Description

When the PRNDL is placed in the REVERSE position, a signal is sent to the body control module (BCM). The BCM then applies voltage through the backup lamps driver circuit to the Back up lamp ground located in the inside rearview mirror. The Back up lamps are also directly grounded through G401.

Conditions for Running the DTC

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

Conditions for Setting the DTC

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

Action Taken When the DTC Sets

The backup lamps do not illuminate.

Conditions for Clearing the DTC

- The conditions for setting the DTC are no longer present.
- A history DTC clears after 100 malfunction-free ignition cycles.
- The BCM receives the clear code command from the scan tool.

Reference Information

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

Lighting Systems Connector End Views

Electrical Information Reference

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

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

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

Circuit/System Testing

1. Ignition OFF, disconnect the instrument panel (I/P) fuse block connector X1 34, inside rearview mirror.
2. Ignition OFF, disconnect the BCM harness connector X6 and test for a ground signal at the connector terminal 2.
 - If the circuit exhibits a ground signal, repair the short to ground in the control circuit.
3. Reconnect the inside rearview mirror and test the BCM harness connector X1, terminal 34 again for ground.
 - If the circuit now exhibits a ground signal of 20 ohms or less, replace the inside rearview mirror.
4. Reconnect the I/P fuse block connector and test the BCM harness connector X1, terminal 34 again for ground.
 - If the circuit now exhibits a ground signal of 20 ohms or less, replace the I/P fuse block.

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- If the circuit does not exhibit a ground, replace the BCM.

Repair Procedures

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

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

DTC B2555

Diagnostic Instructions

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

DTC Descriptors

DTC B2555 00

Passenger Compartment Lamp Control Circuit

Diagnostic Fault Information

DTC B2555

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Left Courtesy Lamp Control Circuit	B2555 00	1	B2555 00	-
Right Courtesy Lamp Control Circuit	B2555 00	1	B2555 00	-
1. Courtesy Lamps Inoperative				

Circuit/System Description

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

control circuits illuminating the door courtesy lamps. The driver door and passenger door switches also provide ground to the lamps.

Conditions for Running the DTC

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

Conditions for Setting the DTC

- DTC B2555 00 will set when the driver or passenger door switch detects a short to voltage in the courtesy lamp control circuit.
- DTC B2555 00 will set when the driver or passenger door switch detects a short to ground in the courtesy lamp control circuit.

Action Taken When the DTC Sets

DTC B2555 00 is present, when a short to ground or short to voltage on the courtesy lamp control circuit is present.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- A scan tool CLEAR DTCs command is issued for that switch module.
- A history DTC will clear once 100 consecutive malfunction-free ignition cycles have occurred.

Reference Information**Schematic Reference****Interior Lights Schematics****Connector End View Reference****Lighting Systems Connector End Views****Electrical Information Reference**

- **Circuit Testing**
- **Connector Repairs**

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

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Testing

1. Disconnect the driver or passenger door harness connector X2 terminal 11 as applicable.
2. Connect a test lamp between the courtesy lamp control circuit terminal 5 or 1 at the BCM connector and ground.
 - If the test lamp illuminates, locate and repair a short to voltage in the courtesy lamp control circuit.
 - If the test lamp does not illuminate, locate and repair a short to ground in the courtesy lamp control circuit.
3. If circuits test OK, replace the driver or passenger door switch as applicable.

Repair Procedures

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

Control Module References for driver or passenger door switch located within the driver or passenger door module replacement, setup and programming.

DTC B2575

Diagnostic Instructions

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

DTC Descriptor

DTC 2575 00

Headlamp Control Circuit

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Diagnostic Fault Information

DTC B2575

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

Circuit/System Description

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

Conditions for Running the DTCs

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

Condition for Setting the DTC

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

Action Taken When the DTC Sets

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

Conditions for Clearing the DTC

- The conditions for setting the DTC are no longer present.
- A history DTC clears after 100 malfunction-free ignition cycles.
- The BCM receives the clear code command from the scan tool.

Reference Information

Schematic Reference

Headlights/Daytime Running Lights (DRL) Schematics

Connector End View Reference

Lighting Systems Connector End Views

Electrical Information Reference

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

Scan Tool Reference

- Scan Tool Output Controls
- Scan Tool Data List
- Scan Tool Data Definitions

Circuit/System Verification

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

Circuit/System Testing

1. Ignition OFF, remove the low beam relay in the underhood fuse block.
 2. Ignition ON, test for voltage at the relay control circuit terminal X2 terminal 27 of the underhood fuse block.
 - If voltage is present, test the control circuit for a short to voltage. If all circuits/connections test normal, replace the low beam relay.
- If voltage is not present, replace the BCM.

Repair Procedures

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

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

Circuit Description

When the body control module (BCM) receives a ground signal from the multifunction high beam or flash to pass (FTP) switch commanding to illuminate the high beam headlamps, the BCM will energize the high beam relay by grounding the high beam relay control circuit.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC B2580 (Left or generic) Headlamp High Beam Control Circuit

Conditions for Running the DTC

The battery voltage must be between 9-16 volts.

Conditions for Setting the DTC

- When the BCM receives a high beam headlamp OFF command and the high beam headlamp relay control circuit is shorted to ground
- When the BCM receives a high beam headlamp ON command and the high beam headlamp relay control circuit is shorted to voltage or open
- When the high beam relay coil side is open or the battery positive voltage to the high beam relay is open

Action Taken When the DTC Sets

The high beam headlamps will not operate or will remain always on.

Conditions for Clearing the MIL/DTC

- This DTC will clear on current status after the condition for setting the fault is corrected.
- A history DTC will clear after 100 consecutive ignition cycles without a fault present.
- History and current DTCs can be cleared using a scan tool.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

- 2:** Listen for an audible click when the high beam relay operates. Command both the ON and OFF states. Repeat the commands as necessary.
- 3:** This step tests for voltage at the coil side of the high beam relay.

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- 4:** This step verifies that the BCM is providing ground to the high beam relay.
- 5:** This step tests if ground is constantly being applied to the high beam relay.
- 6:** This step tests if there is opposing voltage present or an open high beam relay control circuit, including the relay coil side.
- 12:** After replacement of the BCM you must calibrate the new module for proper operation.

DTC B2580

Step	Action	Yes	No
Schematic Reference: <u>Headlights/Daytime Running Lights (DRL) Schematics</u>			
Connector End View Reference: <u>Lighting Systems Connector End Views</u> or <u>Data Communication Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	<ol style="list-style-type: none"> 1. Turn ON the ignition, with the engine OFF. 2. Place the headlamp switch in the ON position. 3. Place the headlamp dimmer switch in the high beam position. 4. Place the headlamp switch in the OFF position. Does the high beam headlamps operate as expected?	Go to <u>Testing for Intermittent Conditions and Poor Connections</u>	Go to Step 3
3	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect the high beam relay. 3. Turn ON the ignition, with the engine OFF. 4. Connect a test lamp between the control circuit of the headlamp high beam relay and a good ground. Does the test lamp illuminate?	Go to Step 4	Go to Step 10
	<ol style="list-style-type: none"> 1. Connect a test lamp between the 		

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4	<p>control circuit of the high beam relay and the battery positive voltage circuit of the high beam relay.</p> <p>2. While observing the test lamp, place the headlamp switch in the ON position and then the OFF position.</p> <p>Does the test lamp turn ON and OFF with each cycle of the switch?</p>	Go to Step 8	Go to Step 5
5	<p>Does the test lamp remain illuminated with each cycle of the switch?</p>	Go to Step 7	Go to Step 6
6	<p>Test the control circuit of the high beam relay for a short to voltage or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .</p> <p>Did you find and correct the condition?</p>	Go to Step 13	Go to Step 9
7	<p>Test the control circuit of the high beam relay for a short to ground. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .</p> <p>Did you find and correct the condition?</p>	Go to Step 13	Go to Step 9
8	<p>Inspect for poor connections at the high beam relay. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .</p> <p>Did you find and correct the condition?</p>	Go to Step 13	Go to Step 11
9	<p>Inspect for poor connections at the harness connector of the body control module (BCM). Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .</p> <p>Did you find and correct the condition?</p>	Go to Step 13	Go to Step 12
10	<p>Repair the battery positive voltage circuit of the high beam relay. Refer to <u>Wiring Repairs</u> .</p> <p>Did you complete the repair?</p>	Go to Step 13	-
11	<p>Replace the high beam relay. Refer to <u>Relay Replacement (Attached to Wire Harness)</u> or <u>Relay Replacement (Within an Electrical Center)</u> .</p> <p>Did you complete the replacement?</p>	Go to Step 13	-

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12	Replace the BCM. Refer to <u>Control Module References</u> . Did you complete the replacement?	Go to Step 13	-
13	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. Does the DTC reset?	Go to Step 2	System OK

DTC B2585

Diagnostic Instructions

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

DTC Descriptor

DTC B2585

Park Lamp Circuit

Diagnostic Fault Information

DTC B2585

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Parklamp Relay Control Circuit	B 2585 00	B 2585 00	-	-
Parklamp Relay Supply Voltage	1	1	-	-
Parklamp Switch Signal Circuit	1	1	-	-
Body Control Circuit	1	1	-	-
1. Parklamps Inoperative				

Circuit/System Description

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The body control module (BCM) turns ON the park lamp relay when the ambient light sensor senses a dark condition. Battery positive voltage is supplied to the park lamp relay at all times through the PARK Left or PARK Right fuse. The BCM grounds the park lamp relay control circuit in order to activate the relay. With the park lamp relay activated voltage is supplied to the park lamp supply voltage circuit illuminating the park lamps, license lamps, marker lamps and signaling the BCM.

Conditions for Running the DTC

- The ignition switch is in the RUN position.
- The ambient light sensor senses a dark condition, automatic lamp control (ALC) park lamps ON or the headlamp switch is in the park or head ON position.

Conditions for Setting the DTC

- The park lamp relay control circuit in open.
- The park lamp supply voltage circuit is open between the instrument panel Underhood fuse block and the BCM for 5 seconds.
- The park lamp supply voltage circuit is shorted to ground.
- The park lamp relay is stuck in the OPEN position.

Action Taken When the DTC Sets

- The park lamps will operate properly if the park lamp supply voltage circuit is open between the Underhood fuse block and the BCM.
- The park lamps will not illuminate if the relay is stuck open or the LT PRK or RT PRK fuse in the Underhood fuse block is open.

Conditions for Clearing the DTC

- 100 consecutive ignition cycles have been recorded without the DTC being detected.
- Using a scan tool can clear the DTC.

Diagnostic Aids

- The BCM controls voltage to the park lamps.
- The BCM monitors the parklamp switch signal circuit for power to engage the park lamps.

Reference Information

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

Lighting Systems Connector End Views

Electrical Information Reference

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

Scan Tool Reference

- **Scan Tool Data Definitions**
- **Scan Tool Data List**
- **Scan Tool Output Controls**

Circuit/System Verification

Ignition ON, command the park lamps ON and OFF with a scan tool, observe the operation of park lamps. The park lamps should turn ON and OFF with each command.

Circuit/System Testing

1. Ignition OFF, disconnect the parklamp relay.
2. Ignition ON, verify the parklamp is deactivated.
 - If the parklamp is still activated, repair the relay switch control circuit terminal 87 for a short to voltage.
3. Verify that a test lamp illuminates between the relay coil voltage supply circuit terminal 85 and ground.
 - If the test lamp does not illuminate, repair the voltage supply circuit for a short to ground or an open/high resistance. If the voltage supply circuit fuse is open, test the relay switch control circuit for a short to ground. If the circuit tests normal, test or replace the parklamp relay.
4. Connect a 10-amp fused jumper wire between the relay switch voltage supply circuit terminal 30 and the relay switch control circuit. Verify the park lamps are activated.
 - If the park lamps are not activated, test the relay switch control circuit for an

open/high resistance. If the circuit tests normal, replace the BCM.

5. Connect a test lamp between the relay coil control circuit terminal 86 and the relay coil voltage supply circuit terminal 85.
6. Command the parklamp relay ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp remains ON all the time, test for a short to ground on the relay coil control circuit terminal 86. If the circuit tests normal, replace the BCM.
 - If the test lamp remains OFF all the time, test for a short to voltage or an open/high resistance on the relay coil control circuit terminal 86. If the circuit tests normal, replace the BCM.
7. If all circuits test normal, test or replace the parklamp relay.

Component Testing

Relay Test

1. Ignition OFF, disconnect the parklamp relay.
2. Test for 65 to 95 ohms of resistance between terminals 85 and 86.
 - If the resistance is not within the specified range, replace the relay.
3. Test for infinite resistance between the following terminals:
 - 30 and 86
 - 30 and 87
 - 30 and 85
 - 85 and 87
 - If less than infinite resistance, replace the relay.
4. Test for less than 2 ohms of resistance between terminals 30 and 87.
 - If greater than 2 ohms, replace the relay.
5. Install a 10-amp fused jumper wire between relay terminal 85 and 12 volts. Install a jumper wire between relay terminal 86 and ground. Measure for less than 2 ohms of resistance between terminals 30 and 87.
 - If greater than 2 ohms, replace the relay.

Repair Procedures

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

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

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- **Relay Replacement (Attached to Wire Harness)** or **Relay Replacement (Within an Electrical Center)**

DTC B2600

Diagnostic Instructions

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

DTC Descriptor

DTC B2600 00

Daytime Running Lamp Control Circuit

Diagnostic Fault Information

DTC B2600

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
DRL Relay Control Circuit	1	2	B2600 00	-
1. Daytime Running Lamps (DRL) Always On 2. Daytime Running Lamps (DRL) Inoperative				

Circuit/System Description

The daytime running lamps (DRL) are controlled by the body control module (BCM). The BCM grounds the DRL or DRL 2 relay control circuit in order to energize the DRL relay coil. The DRL or DRL 2 relay then sends voltage to the dedicated DRL or low beam headlamps.

Conditions for Running the DTCs

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

Conditions for Setting the DTC

The DRL relay control circuit is shorted to voltage.

Action Taken When the DTC Sets

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

Conditions for Clearing the DTC

- The conditions for setting the DTC are no longer present.
- A history DTC clears after 100 malfunction-free ignition cycles.
- The BCM receives the clear code command from the scan tool.

Reference Information

Schematic Reference

Headlights/Daytime Running Lights (DRL) Schematics

Connector End View Reference

Lighting Systems Connector End Views

Electrical Information Reference

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

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

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

Circuit/System Testing

1. Ignition OFF, disconnect the BCM connector X4 or X7.
2. Ignition ON, test for voltage at the BCM harness connector terminal 23 or 8.
 - If voltage is present, test the control circuit for a short to voltage. If all circuits/connections test normal, replace the I/P fuse block.
 - If voltage is not present, replace the BCM.

Repair Procedures

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

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

DTC B2610**Circuit Description**

The body control module (BCM) receives a variable voltage signal from the instrument panel (I/P) dimmer switch requesting to illuminate the illumination lamps to a desired intensity. When this occurs, the BCM directly sends a variable voltage based on the I/P dimmer switch position on the instrument panel lamps dimming supply voltage circuit, instrument panel lamps dimming control circuit and the LED dimming signal circuit.

Voltage for the instrument panel lamps dimming supply voltage circuit, instrument panel lamps dimming control circuit and the LED dimming signal circuits is from the INADV/PWR/LED 20 A fuse in the instrument panel fuse block directly through the BCM to these circuits.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC B2610 Passenger Compartment Dimming 1 (cluster, etc.) Circuit

Conditions for Running the DTC

The battery voltage must be between 9-16 volts.

Conditions for Setting the DTC

- The instrument panel lamps dimming control circuit is open, shorted to ground or shorted to

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voltage.

- The instrument panel lamps dimming supply voltage circuit is open, shorted to ground or shorted to voltage.
- There is a loss of the instrument panel fuse block INADV/PWR/LED 20 A fuse battery supply voltage to the BCM for 1 second.

Action Taken When the DTC Sets

The illumination lamps will not operate or are always ON.

Conditions for Clearing the MIL/DTC

- This DTC will clear on current status after the condition for setting the fault is corrected.
- A history DTC will clear after 100 consecutive ignition cycles without a fault present.
- History and current DTCs can be cleared using a scan tool.

Diagnostic Aids

- Perform a visual inspection for loose or poor connections at all related components. Refer to **Testing for Intermittent Conditions and Poor Connections** .
- A short to ground in the following circuits will cause the INADV/PWR/LED 20 A fuse to open:
 - The instrument panel lamps dimming control.
 - Battery positive voltage from the instrument panel fuse block INADV/PWR/LED 20 A fuse.
- An open in the INADV/PWR/LED 20 A fuse will cause the BCM to set the following DTCS:
 - B2610
 - B2625

Test Description

The numbers below refer to the step numbers on the diagnostic table.

5: This step determines if the problem exists in the headlamp switch or the BCM.

10: After replacement of the BCM you must calibrate the new module for proper operation.

DTC B2610

Step	Action	Yes	No

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Schematic Reference: Interior Lights Dimming Schematics
Connector End View Reference: Lighting Systems Connector End Views or Data Communication Connector End Views

1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	Is the INADV/PWR/LED 20 A fuse in the instrument panel fuse block open?	Go to Step 3	Go to Step 4
3	Test the instrument panel lamps dimming control circuit for a short to ground. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 11	Go to Step 8
4	Test the instrument panel lamps dimming supply voltage circuit and the instrument panel lamps dimming control circuit for an open, high resistance, short to voltage or short to ground. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 11	Go to Step 5
5	<ol style="list-style-type: none"> 1. Ensure that the headlamp switch is in the on position. 2. Ensure that the instrument panel dimmer switch is the full bright position. 3. With the headlamp switch still connected, connect a test lamp between the instrument panel lamps dimming control circuit and the ground circuit of the headlamp switch connector. <p>Does the test lamp illuminate?</p>	Go to Step 6	Go to Step 7
6	Inspect for poor connections at the harness connector of the headlamp switch. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> .		

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	Did you find and correct the condition?	Go to Step 11	Go to Step 9
7	Inspect for poor connections at the harness connector of the body control module (BCM). Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> . Did you find and correct the condition?	Go to Step 11	Go to Step 10
8	Repair the battery positive voltage circuit of the BCM from the INADV/PWR/LED 20 A fuse in the instrument panel fuse block. Refer to <u>Wiring Repairs</u> . Did you complete the repair?	Go to Step 11	-
9	Replace the headlamp and panel dimmer switch. Refer to <u>Headlamp Switch Replacement</u> . Did you complete the replacement?	Go to Step 11	-
10	Replace the BCM. Refer to <u>Control Module References</u> for BCM replacement, setup and programming. Did you complete the replacement?	Go to Step 11	-
11	<ol style="list-style-type: none"> 1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. Does the DTC reset?	Go to Step 2	System OK

DTC B2615

Diagnostic Instructions

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

DTC Descriptors

DTC B2615 00

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Passenger Compartment Dimming 2 Circuit

Diagnostic Fault Information

DTC B2615

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

Circuit/System Description

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

Conditions for Running the DTC

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

Conditions for Setting the DTC

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

Action Taken When the DTC Sets

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

Conditions for Clearing the DTC

- The conditions for setting the DTC are no longer present.
- A history DTC clears after 100 malfunction-free ignition cycles.
- The BCM receives the clear code command from the scan tool.

Reference Information

Schematic Reference

Interior Lights Schematics

Connector End View Reference

Lighting Systems Connector End Views

Electrical Information Reference

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

Scan Tool Reference

- Scan Tool Output Controls
- Scan Tool Data List
- Scan Tool Data Definitions

Circuit/System Verification

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

Circuit/System Testing

1. Ignition OFF, disconnect all the courtesy lamps voltage supply circuit lamp components on the circuit.
2. Verify that DTC B2615 00 does not reset.
 - If the DTC resets, test for a short to voltage, short to ground or an open in the courtesy lamps supply voltage circuit. If the circuit/connections test normal, replace the BCM, driver door switch and passenger door switch as applicable.
3. Reconnect each component one at a time and test for DTC B2615 00.
 - If the DTC resets, replace that particular component.
 - If the DTC does not reset, replace the BCM.

Repair Procedures

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

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

DTC B2625**Circuit Description**

The body control module (BCM) receives a variable voltage signal from the instrument panel (I/P) dimmer switch requesting to illuminate the dimming lamps to a desired intensity. When this occurs, the BCM directly sends a pulse width modulated (PWM) voltage based on the I/P dimmer switch position on the LED dimming supply circuit, instrument panel lamps dimming control circuit and the instrument panel lamps dimming supply voltage circuit.

Voltage for the LED dimming supply circuit, instrument panel lamps dimming control circuit and the instrument panel lamps dimming supply voltage circuit is from the INADV/PWR/LED 20A fuse in the I/P fuse block directly through the BCM to these circuits.

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC B2625 Display Dimming Pulse Width Modulation (PWM) Output Circuit

Conditions for Running the DTC

The battery voltage must be between 9-16 volts.

Conditions for Setting the DTC

- The instrument panel lamps dimming control circuit is shorted to ground.
- The LED dimming supply circuit is shorted to ground.
- There is a loss of the I/P fuse block INADV/PWR/LED 20A fuse battery supply voltage to the BCM for 1 second.

Action Taken When the DTC Sets

All dimming lamps will not illuminate or the control switch ON/OFF indicators will not illuminate.

Conditions for Clearing the MIL/DTC

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- This DTC will clear on current status after the condition for setting the fault is corrected.
- A history DTC will clear after 100 consecutive ignition cycles without a fault present.
- History and current DTCs can be cleared using a scan tool.

Diagnostic Aids

- Perform a visual inspection for loose or poor connections at all related components. Refer to **Testing for Intermittent Conditions and Poor Connections** .
- A short to ground in the following circuits will cause the INADV/PWR/LED 20A fuse to open.
 - The instrument panel lamps dimming control.
 - Battery positive voltage from the I/P fuse block INADV/PWR/LED 20A fuse.
- An open in the INADV/PWR/LED 20A fuse will cause the BCM to set the following DTC:
 - B2610
 - B2625

Test Description

The number below refers to the step number on the diagnostic table.

4: After replacement of the BCM you must calibrate the new module for proper operation.

DTC B2625

Step	Action	Yes	No
Schematic Reference: <u>Interior Lights Dimming Schematics</u> Connector End View Reference: <u>Lighting Systems Connector End Views</u> or <u>Data Communication Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	Test the following circuits for a short to ground: <ul style="list-style-type: none">• Instrument panel lamps dimming control• LED dimming supply• Battery positive voltage circuit of		

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	body control module (BCM) from the INADV/PWR/LED 20A fuse		
	Did you find and correct the condition?	Go to Step 5	Go to Step 3
3	Inspect for poor connections at the harness connector of the BCM. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> . Did you find and correct the condition?	Go to Step 5	Go to Step 4
4	Replace the BCM. Refer to <u>Control Module References</u> . Did you complete the replacement?	Go to Step 5	-
5	<ol style="list-style-type: none"> 1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. 		
	Does the DTC reset?	Go to Step 2	System OK

DTC B2645

Circuit Description

The body control module (BCM) monitors the ambient light sensor signal circuit in order to determine if the daytime running lights (DRL) or the auto headlights (ALC) should be turned ON in the AUTO mode. When the BCM senses the ambient light sensor signal voltage is between 1.75-4.9 volts, either the DRL will be commanded ON or the ALC will be commanded ON depending upon the amount of light received by the sensor.

DTC Descriptors

This diagnostic procedure supports the following DTCs:

- DTC B2645 03 Ambient Light Sensor Circuit voltage below threshold
- DTC B2645 07 Ambient Light Sensor Circuit voltage above threshold

Conditions for Running the DTC

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The system voltage must be between 9-16 volts.

Conditions for Setting the DTC

- DTC B2645 03 When the ambient light sensor signal voltage is less than 1.75 volts.
- DTC B2645 07 When the ambient light sensor signal voltage is more than 4.9 volts.

Action Taken When the DTC Sets

The ALC will remain ON in any ambient light state.

Conditions for Clearing the MIL/DTC

- This DTC will clear immediately after the condition for setting the fault is corrected.
- A history DTC will clear after 100 consecutive ignition cycles without a fault present.
- Use a scan tool in order to clear history and current DTCs.

Test Description

The numbers below refer to the step numbers on the diagnostic table.

2: This step verifies that the value displayed is within the specified range.

3: This step tests for the proper operation of the circuit in the high voltage range.

4: This step tests for the proper operation of the circuit in the low voltage range. If the fuse in the jumper opens when you perform this test, the signal circuit is shorted to voltage.

DTC B2645

Step	Action	Value(s)	Yes	No
Schematic Reference: <u>Headlights/Daytime Running Lights (DRL) Schematics</u> Connector End View Reference: <u>Lighting Systems Connector End Views</u> or <u>Data Communication Connector End Views</u>				
1	Did you perform the Diagnostic System Check - Vehicle?	-	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
	1. Install a scan tool. 2. Turn ON the ignition, with the engine OFF.			

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2	<p>3. With a scan tool, observe the ambient light sensor parameter in the body control module (BCM) data list.</p> <p>Does the scan tool indicate that the ambient light sensor parameter is within the specified range?</p>	1.75-4.9 V	<p>Go to <u>Testing for Intermittent Conditions and Poor Connections</u></p>	<p>Go to Step 3</p>
3	<p>1. Turn OFF the ignition.</p> <p>2. Disconnect the ambient light sensor.</p> <p>3. Turn ON the ignition, with the engine OFF.</p> <p>4. With a scan tool, observe the ambient light sensor parameter.</p> <p>Does the scan tool indicate that the ambient light sensor parameter is greater than the specified value?</p>	4.9 V	<p>Go to Step 4</p>	<p>Go to Step 5</p>
4	<p>1. Turn OFF the ignition.</p> <p>2. Connect a 3-amp fused jumper wire between the ambient light sensor low reference circuit and the ambient light sensor signal circuit at the ambient light sensor harness connector.</p> <p>3. Turn ON the ignition, with the engine OFF.</p> <p>4. With a scan tool, observe the ambient light sensor parameter.</p> <p>Does the scan tool indicate that the ambient light sensor parameter is less than the specified value?</p>	1.75 V	<p>Go to Step 6</p>	<p>Go to Step 7</p>
	<p>Test the ambient light sensor signal circuit for a short to ground. Refer</p>			

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5	to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	-	Go to Step 13	Go to Step 10
6	Test the ambient light sensor low reference circuit for a short to ground. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	-	Go to Step 13	Go to Step 9
7	Test the ambient light sensor signal circuit for a short to voltage, a high resistance or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	-	Go to Step 13	Go to Step 8
8	Test the ambient light sensor low reference circuit for a short to voltage, a high resistance or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	-	Go to Step 13	Go to Step 10
9	Inspect for poor connections at the harness connector of the ambient light sensor. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> . Did you find and correct the condition?	-	Go to Step 13	Go to Step 11
10	Inspect for poor connections at the harness connector of the BCM. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> . Did you find and correct the	-		Go to Step

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	condition?		Go to Step 13	12
11	Replace the ambient light sensor. Refer to <u>Daytime Running Lamp (DRL) Ambient Light Sensor Replacement (Without UV6)</u> . Did you complete the replacement?	-	Go to Step 13	-
12	Replace the BCM. Refer to <u>Control Module References</u> for BCM replacement, setup and programming. Did you complete the replacement?	-	Go to Step 13	-
13	1. Use the scan tool in order to clear the DTCs. 2. Operate the vehicle within the Conditions for Running the DTC as specified in the supporting text. Does the DTC reset?	-	Go to Step 2	System OK

DTC B2652

Diagnostic Instructions

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

DTC Descriptor

DTC B2652 00

Passenger Compartment Dimming 3

Diagnostic Fault Information

DTC B2652

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Instrument Panel Lamps				

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Dimming Control	B2652 00	B2652 00	B2652 00	-
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Circuit/System Description

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

Conditions for Running the DTC

The ignition is ON.

Conditions for Setting the DTC

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

Action Taken When the DTC Sets

The I/P lamps are not illuminated.

Conditions for Clearing the DTC

- The conditions for setting the DTC are no longer present.
- A history DTC clears after 100 malfunction-free ignition cycles.
- The BCM receives the clear code command from the scan tool.

Reference Information

Schematic Reference

Interior Lights Dimming Schematics

Connector End View Reference

Lighting Systems Connector End Views

Electrical Information Reference

- Circuit Testing

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

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

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

Circuit/System Testing

1. Ignition OFF, park lamps OFF, disconnect all of the lamp components on the I/P lamp dimming control circuit. Verify DTC B2652 00 does not set.
 - If the DTC resets, test for a short to voltage, short to ground or an open in the I/P lamp dimming control circuit and for an open in the dimmer switch 5-volt reference circuit. If the circuit/connections test normal, replace the BCM.
 2. Reconnect each component one at a time and test for the DTC B2652 00.
 - If the DTC resets, replace that particular component.
- If the DTC does not reset, replace the BCM.

Repair Procedures

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

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

DTC B3445

Diagnostic Instructions

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

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

DTC Descriptor

DTC B3445 00

Stop Lamp Circuit

Diagnostic Fault Information

DTC B3445

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

Circuit/System Description

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

Conditions for Running the DTC

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

Conditions for Setting the DTC

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

Action Taken When the DTC Sets

The stop lamps do not illuminate.

Conditions for Clearing the DTC

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

- The BCM receives the clear code command from the scan tool.

Reference Information

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

Lighting Systems Connector End Views

Electrical Information Reference

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

Scan Tool Reference

- Scan Tool Output Controls
- Scan Tool Data List
- Scan Tool Data Definitions

Circuit/System Verification

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

Circuit/System Testing

1. Disconnect the stop lamps and test the individual stop lamp assemblies for internal shorts between all terminals.
 - If a short between terminals is found, replace the stop lamp socket or circuit board as applicable.
2. Test the stop lamp supply voltage circuit for a short to ground.
 - If all circuits/connections test normal, replace the BCM.

Repair Procedures

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

- **Tail Lamp Bulb Replacement**
- **Control Module References** for BCM replacement, setup and programming

DTC B3600

Diagnostic Instructions

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

DTC Descriptors

DTC B3600 03

Voltage Below Threshold

DTC B3600 07

Voltage Above Threshold

Diagnostic Fault Information

DTC B3600

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

Circuit/System Description

Voltage for the interior backlighting components is supplied from the body control module (BCM). The BCM applies a voltage reference through the 12-volt reference circuit to the headlamp and panel dimmer switch. When the dimming switch is placed in the desired position, the dimmed voltage setting is applied from the headlamp and panel dimmer switch through the

instrument panel (I/P) lamp dimmer switch signal circuit to the BCM. The BCM then applies the dimmed voltage to the lamp supply voltage circuits and they are dimmed to the correct level.

Conditions for Running the DTC

The ignition is ON.

Conditions for Setting the DTC

B3600 03

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

B3600 07

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

Action Taken When the DTC Sets

The I/P lamps are not illuminated.

Conditions for Clearing the DTC

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

Reference Information

Schematic Reference

Interior Lights Dimming Schematics

Connector End View Reference

Lighting Systems Connector End Views

Electrical Information Reference

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

Scan Tool Reference

- Scan Tool Output Controls
- Scan Tool Data List
- Scan Tool Data Definitions

Circuit/System Verification

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

Circuit/System Testing

1. Ignition ON and clear the DTC. Use the scan tool Incandescent Dimming output control to adjust the dimming level of the I/P lamps from low to high.
 - If the lamps cannot be controlled with the scan tool, replace the BCM.
2. Monitor the Dimming Control Signal voltage parameter in the scan tool BCM data list while adjusting the dimmer switch from high to low.
3. If the voltage is above 4.97 volts, test for a short to voltage in the I/P lamp dimmer switch signal circuit.
 - If the circuit/connections test normal, replace the headlamp and panel dimmer switch.
4. If the voltage drops below 0.10 volt, test for a short to ground, open or high resistance in the I/P lamp dimmer switch signal circuit.
 - If the circuit/connections test normal, replace the headlamp and panel dimmer switch.

Repair Procedures

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

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

DTC C0277 OR DTC C0890

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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DTC Descriptors

DTC C0277 06

Brake Pedal Position Sensor Circuit Short to Ground or Open

DTC C0277 07

Brake Pedal Position Sensor Circuit Voltage Above Threshold

DTC C0277 09

Brake Pedal Position Sensor Circuit Rate of Change Above Threshold

DTC C0277 4B

Brake Pedal Position Sensor Calibration Not Learned

DTC C0890 03

Voltage Below Threshold

DTC C0890 07

Voltage Above Threshold

Diagnostic Fault Information

DTC C0277 or DTC C0890

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Brake pedal position sensor circuit	C0277 06	C0277 06	C0277 07	C0277 09 C0277 4B
Brake pedal position sensor 5-volt reference	C0890 03	C0890 03	C0890 07	C0890 03 C0890 07
Brake pedal position sensor low reference	C0890 03	C0890 03	C0890 07	C0890 03 C0890 07

Circuit/System Description

The body control module (BCM) applies a ground through the brake pedal position sensor (BPPS) low reference circuit to the BPPS. The BCM supplies a 5-volt reference through the

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brake sensor reference voltage circuit to the BPPS. When the brake pedal is being applied, the BPPS then sends a variable voltage through the brake sensor signal circuit to the BCM.

Conditions for Running the DTC

The ignition is ON.

Conditions for Setting the DTC

C0277 06

The BCM detects an open or a short to ground on the BPPS circuit.

C0277 07

The BCM detects short to voltage on the BPPS circuit.

C0277 09

The BCM detects the BPPS reading is erroneous.

C0277 4B

The BCM detect that the BPPS is not calibrated.

C0890 03

The BCM detects a voltage that is lower than 5 volts on the BPPS 5-volt reference circuit.

C0890 07

The BCM detects a voltage that is greater than 5 volts on the BPPS 5-volt reference circuit.

Action Taken When the DTC Sets

The stop lamps will not function correctly.

Conditions for Clearing the DTC

The BCM clears these codes from current when the fault is removed from the system.

Diagnostic Aids

If DTC C0277 4B is set, perform the BPPS calibration. If the DTC resets, then perform the circuit/system testing.

Reference Information

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

Lighting Systems Connector End Views

Electrical Information Reference

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

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Verification

Ignition ON, press and release the brake pedal. The stop lamps should illuminate then go out.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the BPPS.
2. Connect a DMM between the BPPS 5-volt reference circuit and the negative terminal of the battery.
3. Ignition ON, test for 4.7-5.2 volts.
 - If less than 4.7 volts, test the BPPS 5-volt reference circuit for a short to ground or an open/high resistance. If the circuit/connections test normal, replace the BCM.
 - If greater than 5.2 volts, test the BPPS 5-volt reference circuit for a short to voltage. If the circuit/connections test normal, replace the BCM.
4. Connect a DMM between the BPPS low reference circuit and the negative terminal of the battery.

5. Ignition ON, test for less than 0.1 volt.
 - If greater than 0.1 volt, test the BPPS low reference circuit for a short to voltage or an open/high resistance. If the circuit/connections test normal, replace the BCM.
6. Disconnect the DMM. Install a scan tool. Install a 3-amp fused jumper wire between the BPPS circuit and the BPPS 5-volt reference circuit.
7. Verify the scan tool brake pedal position sensor parameter is between 4.7-5.2 volts
 - If less then 4.7 volts, test the BPPS circuit for a short to ground or an open/high resistance. If the circuit/connections test normal, replace the BCM.
 - If greater than 5.2 volts, test the BPPS circuit for a short to voltage. If the circuit/connections test normal, replace the BCM.
8. If the voltage is correct and all circuits/connections test normal, replace the BPPS.

Repair Procedures

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

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

DTC C0297

Diagnostic Instructions

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

DTC Descriptor

DTC C0297 00

Brake Applied Output Circuit

Diagnostic Fault Information

DTC C0297

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

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Center High Mounted Stop Lamp (CHMSL) Control	B3445 00	1	1	-
Brake Position Sensor Signal	C0277 06	C0277 06	C0277 07	C0277 09
Stop Lamp Switch Signal	C0297 00	C0297 00	C0297 00	-
Brake Position Sensor 5-Volt Reference	C0890 03	C0890 03	C0890 07	-
Brake Position Sensor Low Reference	-	C0277 06	C0277 07	-
Left Rear Stop/Turn Lamp Supply Voltage	1	1	1	-
Right Rear Stop/Turn Lamp Supply Voltage	1	1	1	-
Center High Mounted Stop Lamp (CHMSL) Ground	-	1	1	-
Left Rear Stop/Turn Lamp Ground	-	1	1	-
Right Rear Stop/Turn Lamp Ground	-	1	1	-
1-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-volt 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, transmission control module (TCM), engine control module (ECM) and center high mounted stop lamp (CHMSL) control circuit. For more detailed information concerning stop lamp operation refer to **Exterior Lighting Systems Description and Operation**.

Conditions for Running the DTC

Battery voltage must be between 9-16 volts.

Conditions for Setting the DTC

DTC C0297 00 will set when the BCM detects a short to ground, short to voltage or an open/high resistance in the stop lamp switch signal circuit.

Actions Taken When the DTC Sets

- The BCM stores the DTC to memory.
- The Service Vehicle Soon indicator is commanded ON.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- You issue a scan tool CLEAR DTCs command.
- A history DTC will clear once 40 malfunction-free ignition cycles have occurred.

Diagnostic Aids

IMPORTANT: The stop lamps will not illuminate unless the ignition is in the ON position. For more detailed information concerning stop lamp operation, refer to Exterior Lighting Systems Description and Operation.

Verify that the brake pedal position sensor is properly calibrated.

Reference Information

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

Lighting Systems Connector End Views

Electrical Information Reference

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

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the BCM.
2. Connect a test lamp between the stop lamp switch signal circuit and ground.
3. Ignition ON, command the stop lamps ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the signal circuit for a short to voltage. If the circuit tests normal, replace the BCM.
 - If the test lamp is always OFF, test the signal circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
4. Ignition OFF, connect a test lamp between the stop lamp switch signal circuit and the connector terminal at the BCM.
5. Ignition ON, command the stop lamps ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamps does not operate as described, replace the BCM.
6. Ignition OFF, reconnect the BCM harness connector.
7. Disconnect the harness connector at the TCM.
8. Connect a test lamp between the stop lamp switch signal circuit and ground.
9. Ignition ON, command the stop lamps ON and OFF with a scan tool. The test lamp should turn ON and OFF when changing between the commanded states.
 - If the test lamp is always ON, test the signal circuit for a short to voltage. If the circuit tests normal, replace the BCM.
 - If the test lamp is always OFF, test the signal circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
10. If all circuits test normal, replace the TCM.

Repair Procedures

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

- **Brake Pedal Position Sensor Calibration**
- **Brake Pedal Position Sensor Replacement**

- **Control Module References** for BCM, ECM or TCM replacement, setup and programming

DTC P0572**Diagnostic Instructions**

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

DTC Descriptor**DTC P0572**

Brake Switch Circuit 1 Low Voltage

Diagnostic Fault Information**DTC P0572**

Circuit	Short to Ground	Open or High Resistance	Short to Voltage	Signal Performance
Stop Lamp Switch Signal	P0572	P0573	P0573	-

Circuit/System Description

The brake pedal position sensor (BPP) is used to sense the action of the driver application of the brake pedal. The BPP provides an analog voltage signal that will increase as the brake pedal is applied. The BPP receives a low reference signal and a 5-volt reference voltage from the body control module (BCM) when the driver applies the brakes. When the variable signal reaches a voltage threshold indicating the brakes have been applied, the BCM will apply battery voltage to the stop/turn signal voltage supply circuit to illuminate the stop lamps and the center high mounted stop lamp (CHMSL). The BCM also sends a BPP signal to the engine control module (ECM) as well as a serial data message to indicate the application of the brake pedal.

Conditions for Running the DTC

- The ignition is ON.
- Battery voltage is greater than 11.5 volts.

Conditions for Setting the DTC

The ECM detects a short to ground on the stop lamp switch signal circuit when the serial data message from the BCM indicates the brakes are applied.

Action Taken When the DTC Sets

- The ECM stores the DTC to memory.
- The ECM will record the operating conditions at the time the diagnostic failed. The ECM stores this information in Failure Records.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- You issue a scan tool CLEAR DTCs command.
- A history DTC will clear once 40 malfunction-free ignition cycles have occurred.

Diagnostic Aids

Verify that the BPP is properly calibrated.

Reference Information

Schematic Reference

Exterior Lights Schematics

Connector End View Reference

Lighting Systems Connector End Views

Electrical Information Reference

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

Scan Tool Reference

- **Scan Tool Output Controls**
- **Scan Tool Data List**
- **Scan Tool Data Definitions**

Circuit/System Testing

1. With a scan tool, recalibrate the BPP, clear all DTCs and operate the vehicle within the Conditions for Running the DTC.
 - If DTC P0572 resets as current, test the stop lamp switch signal circuit for a short to ground.
2. If circuits test OK, replace the ECM.

Repair Procedures

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

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

DTC P0573**Diagnostic Instructions**

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

DTC Descriptor**DTC P0573**

Brake Switch Circuit 1 High Voltage

Diagnostic Fault Information**DTC P0573**

Circuit	Short to Ground	Open or High Resistance	Short to Voltage	Signal Performance
Stop Lamp Switch Signal	P0572	P0573	P0573	-

Circuit/System Description

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

applied. The BPP receives a low reference signal and a 5-volt reference voltage from the body control module (BCM) when the driver applies the brakes. When the variable signal reaches a voltage threshold indicating the brakes have been applied, the BCM will apply battery voltage to the stop/turn signal voltage supply circuit to illuminate the stop lamps and the center high mounted stop lamp (CHMSL). The BCM also sends a BPP signal to the engine control module (ECM) as well as a serial data message to indicate the application of the brake pedal.

Conditions for Running the DTC

- The ignition is ON.
- Battery voltage is greater than 11.5 volts.

Conditions for Setting the DTC

The ECM detects an open or short to voltage on the stop lamp switch signal circuit when the serial data message from the BCM indicates the brakes are applied.

Action Taken When the DTC Sets

- The ECM stores the DTC to memory.
- The ECM will record the operating conditions at the time the diagnostic failed. The ECM stores this information in Failure Records.

Conditions for Clearing the DTC

- The condition responsible for setting the DTC no longer exists.
- You issue a scan tool CLEAR DTCs command.
- A history DTC will clear once 40 malfunction-free ignition cycles have occurred.

Diagnostic Aids

Verify that the BPP is properly calibrated.

Reference Information**Schematic Reference****Exterior Lights Schematics****Connector End View Reference****Lighting Systems Connector End Views**

Electrical Information Reference

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

Scan Tool Reference

- Scan Tool Output Controls
- Scan Tool Data List
- Scan Tool Data Definitions

Circuit/System Testing

1. With a scan tool, recalibrate the BPP, clear all DTCs and operate the vehicle within the Conditions for Running the DTC.
 - If DTC P0573 resets as current, test the stop lamp switch signal circuit for an open or short to voltage.
2. If circuits test OK, replace the ECM.

Repair Procedures

Perform the Diagnostic Repair Verification after completing the diagnostic procedure.

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

DTC P0703

Diagnostic Instructions

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

DTC Descriptor

DTC P0703 00

Brake Switch Circuit 2

Circuit/System Description

The body control module (BCM) monitors the stop lamp switch, mounted on the brake pedal. The BCM sends a GMLAN serial data message to the powertrain control module (PCM) indicating the status of the stop lamp switch.

Conditions for Running the DTC

The engine is ON.

Conditions for Setting the DTC

- The PCM receives an invalid brake pedal status GMLAN serial data message from the BCM.
- This diagnostic runs continuously.

Action Taken When the DTC Sets

- The Cruise Control System is disabled.
- The PCM stores the DTC information into memory when this diagnostic runs and fails.
- The malfunction indicator lamp (MIL) will not illuminate.
- All of the scan tool cruise control function switch parameters are set to Off.
- The PCM records the operating conditions at the time the diagnostic fails. The PCM stores this information in the Failure Records.

Conditions for Clearing the DTC

- A last test failed or the current DTC, clears when the diagnostic runs and does not fail.
- A history DTC clears after 40 consecutive warm-up cycles, if failures are not reported by this or any other emission related diagnostic.
- Use the scan tool in order to clear the DTC.

Diagnostic Aids

- If a BCM has been replaced, the brake pedal position (BPP) sensor must be calibrated. Refer to **Brake Pedal Position Sensor Calibration**.
- Repair any Brake System related DTCs before performing this diagnostic table.
- This DTC may be stored as a history DTC without affecting the operation of the PCM. If stored only as a history DTC and not retrieved as a current DTC, do not replace the BCM or

PCM.

- If this DTC is retrieved as both a current and a history DTC, replace the PCM.
- For an intermittent condition, refer to **Testing for Intermittent Conditions and Poor Connections** .

Reference Information

Schematic Reference

Cruise Control Schematics

Connector End View Reference

Data Communication Connector End Views

Electrical Information Reference

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

Circuit/System Verification

Ignition ON, observe for proper operation of the brake system including the brake lights. Refer to **Exterior Lighting Systems Description and Operation**.

Circuit/System Testing

IMPORTANT: Fix any Brake System related DTCs or symptoms before using this diagnostic.

Note: This DTC may be stored as a history DTC without affecting the operation of the PCM. Do not replace the BCM or PCM if this DTC is stored only as a history DTC and is not retrieved as a current DTC.

1. Ignition ON, perform the brake pedal position (BPP) sensor calibration procedure and verify the BPP is calibrated properly. Refer to **Brake Pedal Position Sensor Calibration**.
 - If the BPP will not calibrate properly, replace the BPP.
2. Cycle the ignition, apply and release the brake pedal. Using a scan tool, check for DTC

P0703 in the PCM.

- If DTC P0703 sets as current in the PCM, replace the PCM.
- If DTC P0703 does not set in the PCM, the system is OK.

Repair Procedures

- Perform the **Diagnostic Repair Verification** after completing the diagnostic procedure.
- **Control Module References** for PCM replacement, setup and programming
- **Brake Pedal Position Sensor Replacement**

DTC P1574

Diagnostic Instructions

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

DTC Descriptor

DTC P1574 00

Stop Lamp Switch Circuit

Circuit/System Description

The stop lamp switch signal circuit is a direct hardwire input to the transmission control module (TCM) from the body control module (BCM). The TCM module monitors the stop lamp signal circuit in order to detect when the brake pedal has been applied. When the brake pedal is pressed, the BCM sends a High Speed GM LAN message to the engine control module (ECM) indicating that the brake pedal has been applied. The BCM also sends a high voltage signal on the stop lamp signal circuit to the TCM module. The TCM module sends a universal asynchronous receiver transmitter low speed GM LAN message to the ECM indicating that a brake pedal application has occurred. The ECM will compare the GM LAN Low speed and GM LAN High Speed data message in order to confirm that both serial data messages match.

Conditions for Running the DTC

- DTC P0573 is not set.
- The engine speed is greater than 700 RPM.
- The traction control system or the antilock brake system are not active and have not failed.

- The vehicle speed is greater than 48 km/h (30 mph) in order to enable the diagnostic.

Conditions for Setting the DTC

- The vehicle speed decreases by at least 4.2 km/h (2.6 mph) within 0.25 seconds.
- The TAC module does not detect a voltage signal on the Brake Pedal Position (BPP) signal circuit.
- The ECM does not detect a Brake Pedal Position Sensor (BPP) transition.

Action Taken When the DTC Sets

- The Cruise Control System is disabled.
- The ECM stores the DTC information into memory when the diagnostic runs and fails.
- The malfunction indicator lamp (MIL) will not illuminate.
- The ECM records the operating conditions at the time the diagnostic fails. The ECM stores this information in the Failure Records.

Conditions for Clearing the DTC

- A last test failed or the current DTC, clears when the diagnostic runs and does not fail.
- A history DTC clears after 40 consecutive warm-up cycles, if failures are not reported by this or any other emission related diagnostic.
- Use a scan tool in order to clear the DTC.

Diagnostic Aids

IMPORTANT: Repair any brake system related DTCs before performing this diagnostic.

In order to avoid a misdiagnosis, perform the following:

- If a BCM has been replaced, the brake pedal position (BPP) sensor must be calibrated. Refer to **Brake Pedal Position Sensor Calibration**.
- Inspect for proper operation of the stop lamps. Refer to **Exterior Lighting Systems Description and Operation**.
- For an intermittent condition, refer to **Testing for Intermittent Conditions and Poor Connections**.

Reference Information

Schematic Reference

Cruise Control Schematics

Connector End View Reference

Lighting Systems Connector End Views

Electrical Information Reference

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

Scan Tool Reference

Scan Tool Data List

Circuit/System Verification

Ignition ON, observe the Brake Pedal Position parameter in the ECM while applying and releasing the brake pedal. The reading should change between Applied/Released and all brake lights should turn on and off accordingly.

Circuit/System Testing

IMPORTANT: Fix any Brake System related DTCs or symptoms before using this diagnostic.

1. Ignition ON, perform the brake pedal position (BPP) sensor calibration procedure and verify the BPP is calibrated properly. Refer to Brake Pedal Position Sensor Calibration.
 - If the BPP sensor will not calibrate properly, replace the BPP sensor.
 2. Ignition ON, apply the brake pedal and observe the BPP sensor parameter.
 - If the parameter reads Applied, refer to Stop Lamps Always On. If the stop lamps operate normal, replace the ECM.
- If the parameter reads Released, test the BPP sensor signal circuit for an open/high resistance or short to ground. If circuit tests normal, replace the ECM.

Repair Procedures

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

- **Brake Pedal Position Sensor Replacement**
- **Control Module References** ECM replacement, setup and programming

SYMPTOMS - LIGHTING SYSTEMS

IMPORTANT: The following steps must be completed before doing the Symptom tables.

1. Perform the **Diagnostic System Check - Vehicle** .
 - No DTCs are set.
 - The control modules can communicate via the serial data link.
2. Review the system operation in order to familiarize yourself with the system functions. Refer to **Exterior Lighting Systems Description and Operation** or **Interior Lighting Systems Description and Operation**.

Visual/Physical Inspection

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

Intermittent

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

Symptom List

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

- **Automatic Lamp Control Inoperative**
- **Backup Lamps Inoperative**
- **Courtesy Lamps Always On**
- **Courtesy Lamps Inoperative**

- Daytime Running Lamps (DRL) Inoperative
- Hazard Lamps Always On
- Hazard Lamps Inoperative
- High Mount Stop Lamp Inoperative
- Headlamp Low or High Beams Always On
- Headlamps Inoperative - High Beams
- Headlamps Inoperative - Low Beams
- Headlamps Flash to Pass Inoperative
- Illuminated Entry Lamps Inoperative
- Interior Backlighting Does Not Dim
- Interior Backlighting Inoperative
- Park, License and Tail Lamps Always On
- Park, License and Tail Lamps Inoperative
- Reading Lamp(s) Always On
- Stop Lamps Always On
- Stop Lamps Inoperative
- Turn Signal Lamps and/or Indicators Always On or Flashing
- Turn Signal Lamps and/or Indicators Inoperative
- Vanity Mirror Lamp(s) Always On
- Vanity Mirror Lamp(s) Inoperative

AUTOMATIC LAMP CONTROL INOPERATIVE

Automatic Lamp Control Inoperative

Step	Action	Yes	No
Schematic Reference: <u>Headlights/Daytime Running Lights (DRL) Schematics</u>			
Connector End View Reference: <u>Lighting Systems Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
	1. Cover the ambient light sensor. 2. Place the headlamp switch in the OFF position.		

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2	<p>3. Turn ON the ignition, with the engine OFF.</p> <p>4. Wait 20 seconds.</p> <p>Do the headlamps and park lamps illuminate?</p>	<p>Go to <u>Testing for Intermittent Conditions and Poor Connections</u></p>	<p>Go to Step 3</p>
3	<p>Are both the headlamps and park lamps inoperative in the AUTO position?</p>	<p>Go to Step 4</p>	<p>Go to Step 5</p>
4	<p>1. Connect a scan tool.</p> <p>2. Observe the ambient light sensor parameter in the Exterior Lighting data list.</p> <p>Is the parameter 3.66 volts or greater?</p>	<p>Go to Step 20</p>	<p>Go to Step 19</p>
5	<p>Are only the headlamps inoperative in the AUTO position?</p>	<p>Go to Step 6</p>	<p>Go to Step 11</p>
6	<p>Do the headlamps operate properly when the headlamp switch is placed in the headlamp ON position?</p>	<p>Go to Step 7</p>	<p>Go to <u>Headlamps Inoperative - Low Beams</u></p>
7	<p>1. Disconnect the headlamp relay.</p> <p>2. Connect a 15-amp fused jumper wire between the headlamp switch signal circuit of the headlamp HID/LO BEAM relay and a good ground.</p> <p>Do the headlamps illuminate?</p>	<p>Go to Step 8</p>	<p>Go to Step 16</p>
8	<p>Probe the headlamp relay control circuit of the HID/LO BEAM relay with a test lamp that is connected to a good ground.</p> <p>Does the test lamp illuminate?</p>	<p>Go to Step 9</p>	<p>Go to Step 17</p>
9	<p>Connect a test lamp between the HID/LO BEAM relay control circuit of the headlamp relay and the coil side ground circuit of the headlamp relay.</p> <p>Does the test lamp illuminate?</p>	<p>Go to Step 10</p>	<p>Go to Step 24</p>
	<p>Connect a test lamp between the HID/LO BEAM headlamp relay control circuit of</p>		

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10	the headlamp relay and the switch side ground circuit of the headlamp relay. Does the test lamp illuminate?	Go to Step 21	Go to Step 24
11	Do the park lamps operate properly when the headlamp switch is placed in the PARK position?	Go to Step 12	Go to <u>Park, License and Tail Lamps Inoperative</u>
12	<ol style="list-style-type: none"> 1. Disconnect the PRK LAMP relay. 2. Probe the switch side battery positive voltage circuit of the PRK LAMP relay with a test lamp that is connected to a good ground. Does the test lamp illuminate?	Go to Step 13	Go to Step 19
13	<ol style="list-style-type: none"> 1. Disconnect the PRK LAMP relay. 2. Probe the coil side battery positive voltage circuit of the PRK LAMP relay with a test lamp that is connected to a good ground. Does the test lamp illuminate?	Go to Step 14	Go to Step 19
14	Connect a test lamp between the switch side battery positive voltage circuit of the PRK LAMP relay and the control circuit of the PRK LAMP relay. Does the test lamp illuminate?	Go to Step 15	Go to Step 19
15	Connect a 15-amp fused jumper wire between the switch side battery positive voltage circuit of the PRKLAMP relay and the park lamp supply voltage circuit of the PRK LAMP relay. Do the park lamps illuminate?	Go to Step 22	Go to Step 18
16	Test for an open or high resistance in the headlamp switch signal circuit. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 29	Go to Step 23
	Test for the following in the HID/LO BEAM headlamp low beam relay control		

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17	<p>circuit:</p> <ul style="list-style-type: none"> • An open • A high resistance • A short to ground <p>Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?</p>	Go to Step 29	Go to Step 19
18	<p>Test for the following in the park lamp supply voltage circuit:</p> <ul style="list-style-type: none"> • An open • A high resistance • A short to ground <p>Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?</p>	Go to Step 29	Go to Step 19
19	<p>Inspect for poor connections at the harness connector of the body control module (BCM). Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> . Did you find and correct the condition?</p>	Go to Step 29	Go to Step 25
20	<p>Inspect for poor connections at the harness connector of the ambient light sensor. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> . Did you find and correct the condition?</p>	Go to Step 29	Go to Step 26
21	<p>Inspect for poor connections at the HID/LO BEAM headlamp relay. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> .</p>		

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	Did you find and correct the condition?	Go to Step 29	Go to Step 27
22	Inspect for poor connections at the PRK LAMP relay. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> . Did you find and correct the condition?	Go to Step 29	Go to Step 27
23	Inspect for poor connections at the harness connector of the headlamp switch. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> . Did you find and correct the condition?	Go to Step 29	Go to Step 28
24	Repair an open or high resistance in the ground circuit of the headlamp relay. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you complete the repair?	Go to Step 29	-
25	Replace the BCM. Refer to <u>Control Module References</u> for BCM replacement, setup and programming. Did you complete the replacement?	Go to Step 29	-
26	Replace the ambient light sensor. Refer to <u>Daytime Running Lamp (DRL) Ambient Light Sensor Replacement (Without UV6)</u> . Did you complete the replacement?	Go to Step 29	-
27	Replace the appropriate relay. Refer to <u>Relay Replacement (Attached to Wire Harness)</u> or <u>Relay Replacement (Within an Electrical Center)</u> Did you complete the replacement?	Go to Step 29	-
28	Replace the headlamp switch. Refer to <u>Turn Signal Multifunction Switch Replacement</u> . Did you complete the replacement?	Go to Step 29	-
29	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

BACKUP LAMPS INOPERATIVE

Backup Lamps Inoperative

Step	Action	Yes	No
Schematic Reference: <u>Exterior Lights Schematics</u>			
Connector End View Reference: <u>Lighting Systems Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	Verify that the backup lamps are inoperative. Do the backup lamps operate normally?	Go to <u>Testing for Intermittent Conditions and Poor Connections</u>	Go to Step 3
3	Is only one backup lamp inoperative?	Go to Step 5	Go to Step 4
4	Use the scan tool to check if there are any codes set in the current or history Powertrain DTC Information. Are any codes present?	Go to <u>Diagnostic System Check - Vehicle</u>	Go to Step 6
5	Test the backup lamp supply voltage and ground circuit for an open or high resistance. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct a condition?	Go to Step 10	Go to Step 8
6	Test the following circuits for an open, high resistance or a short to ground. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . <ul style="list-style-type: none"> • backup lamp supply voltage • backup lamp control circuit from the BCM Connector X 8 terminal 2. Did you find and correct a condition?	Go to Step 10	Go to Step 7
7	Inspect for poor connections at the harness connector of the body control module (BCM). Refer to <u>Circuit Testing</u> and		

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	Wiring Repairs . Did you find and correct the condition?	Go to Step 10	Go to Step 9
8	Replace the affected backup lamp bulb. Refer to <u>Tail Lamp Bulb Replacement.</u> Did you complete the replacement?	Go to Step 10	-
9	Replace the BCM. Refer to <u>Control Module References</u> for BCM replacement, setup and programming. Did you complete the replacement?	Go to Step 10	-
10	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 3

COURTESY LAMPS ALWAYS ON

Courtesy Lamps Always On

Step	Action	Yes	No
Schematic Reference: <u>Interior Lights Schematics</u> Connector End View Reference: <u>Lighting Systems Connector End Views, Master Electrical Component List</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	Verify that the courtesy/dome lamps are always ON. Do the courtesy/dome lamps operate normally?	Go to <u>Testing for Intermittent Conditions and Poor Connections</u>	Go to Step 3
3	Test for a short to voltage on the courtesy lamp supply voltage circuit. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs .</u> Did you find and correct the condition?	Go to Step 13	Go to Step 4
	<ol style="list-style-type: none"> 1. Ensure that the instrument panel lamp dimmer switch is in the minimum brightness position. 2. Inspect for the following related body control module (BCM), driver 		

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4	<p>door switch and passenger door switch data parameters. Refer to <u>Scan Tool Data List</u> and <u>Scan Tool Data Definitions</u> for typical values and definitions:</p> <ul style="list-style-type: none"> • Interior Lights Command • Interior Lights Dimmed Command • ALC Headlamp Status • Driver Door Ajar Sw. • Passenger Door Ajar Sw. <p>Was a problem found?</p>	Go to Step 5	Go to Step 9
5	<p>Disconnect and test the switches of the affected input circuit for proper continuity in the open and closed positions. Refer to <u>Testing for Continuity</u> .</p> <p>Is continuity correct in both positions?</p>	Go to Step 6	Go to Step 7
6	<p>Test the signal circuits of the affected input switches for a short to ground. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .</p> <p>Did you find and correct the condition?</p>	Go to Step 13	Go to Step 8
7	<p>Inspect for poor connections at the harness connector of the affected switch. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> .</p> <p>Did you find and correct the condition?</p>	Go to Step 13	Go to Step 10
8	<p>Inspect for poor connections at the harness connector of the module in the affected circuit. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> .</p> <p>Did you find and correct the condition?</p>	Go to Step 13	Go to Step 11
9	<p>Inspect for poor connections at the harness connector of the BCM. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> .</p>		

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	Did you find and correct the condition?	Go to Step 13	Go to Step 12
10	Replace the malfunctioning switch in the affected circuit. Did you complete the replacement?	Go to Step 13	-
11	Replace the module in the affected circuit. Refer to Control Module References for replacement, setup and programming. Did you complete the replacement?	Go to Step 13	-
12	Replace the BCM. Refer to Control Module References for BCM replacement, setup and programming. Did you complete the replacement?	Go to Step 13	-
13	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 3

COURTESY LAMPS INOPERATIVE

Diagnostic Instructions

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

Diagnostic Fault Information

Courtesy Lamps Inoperative

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Door Ajar Switch Voltage Supply Circuit	1	2	-	-
Dome Lamp Switch	1	2	-	-
BCM	1	2	2	-
Door Ajar Switch	1	2	2	-
1. Courtesy Lamps Always ON 2. Courtesy Lamps Inoperative				

Circuit/System Description

The courtesy lamps are controlled by the body control module (BCM). Inputs from the dome lamp switch and the door ajar switches are monitored by the BCM. When a door ajar switch is closed the BCM supplies the ground for the courtesy lamps or the dome lamp switch is turned to the ON position. The BCM also supplies the voltage for the courtesy lamps.

Diagnostic Aids

- Check for the proper operation of the courtesy lamp bulbs.
- Check the position of the dome lamp switch.

Reference Information**Schematic Reference****Interior Lights Schematics****Electrical Information Reference**

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

Scan Tool Reference

- **Scan Tool Data Definitions**
- **Scan Tool Data List**
- **Scan Tool Output Controls**

Circuit/System Verification

Ignition ON, observe the Scan Tool Door Lamp Command parameter while OPENING and CLOSING the drive door. The reading should change between OFF and ON.

Circuit/System Testing**Dome Lamp Switch Circuit Testing**

1. Ignition OFF, disconnect the harness connector at the dome lamp switch.
2. Ignition OFF, test for less than 1 ohm of resistance between the ground circuit and ground.
 - If greater than 1 ohm, test the ground circuit for an open/high resistance.

3. Verify the scan tool door lamp command parameter is OFF.
 - If the dome lamp command is not OFF, test the signal circuit for a short to ground. If the circuit tests normal, replace the BCM.
4. Install a 3-amp fused jumper wire between the voltage supply circuit and ground. Verify the Scan Tool Dome Lamp Command parameter is ON.
 - If the dome lamp command is not ON, test the signal circuit of the dome lamp switch for a short to voltage or an open/high resistance. If circuit tests normal, replace the BCM.
5. Install a 3-amp fused jumper wire between the voltage supply circuit and door signal circuit. Verify the Scan Tool Dome Lamp Command parameter is ON when a door is in the open position.
 - If the dome lamp command is not ON, test the signal circuit of the dome lamp switch for a short to voltage or an open/high resistance. If circuit tests normal, replace the BCM.
6. If all circuits test normal, test or replace the dome lamp switch.

Door Ajar Switch Circuit Testing

IMPORTANT: This test can be performed on any of the door ajar switches.

1. Ignition OFF, disconnect the harness connector at the inoperative door ajar switch.
2. Ignition OFF, test for less than 1 ohm of resistance between the ground circuit and ground.
 - If greater than 1 ohm, test the ground circuit for an open/high resistance.
3. Verify the scan tool dome lamp command parameter is OFF.
 - If the dome lamp command is not OFF, test the signal circuit for a short to ground. If the circuit tests normal, replace the BCM.
4. Install a 3-amp fused jumper wire between the voltage supply circuit and ground. Verify the scan tool dome lamp command parameter is ON.
 - If the dome lamp is not ON, test the signal circuit of the door ajar switch for a short to voltage or an open/high resistance. If circuit tests normal, replace the BCM.
5. If all circuits test normal, test or replace the door ajar switch.

Component Testing

Dome Lamp Switch Testing

1. Ignition OFF, disconnect the harness connector at the dome lamp switch.
2. Test for infinite resistance between the three signal terminals with the switch being in the

opposite position and the voltage supply terminal.

- If less than infinite resistance, replace the dome lamp switch.
- 3. Test for less than 2 ohms between each of the signal terminals with the switch in the appropriate position and the voltage supply terminal.
 - If greater than 2.1 ohms, replace the dome lamp switch.

Door Ajar Switch Testing

IMPORTANT: This test can be performed on any of the door ajar switches

1. Ignition OFF, disconnect the harness connector at the door ajar switch.
2. Test for infinite resistance between the signal terminal and the voltage supply terminal with the switch in the open position.
 - If less than infinite resistance, replace the door ajar switch.
3. Test for less than 1 ohms between the signal terminal and the voltage supply terminal with the switch in the closed position.
 - If greater than 1 ohms, replace the door ajar switch.

Repair Procedures

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

- **Front Side Door Latch Replacement**
- **Rear Side Door Latch Replacement**
- **Control Module References** for BCM replacement, setup and programming

DAYTIME RUNNING LAMPS (DRL) INOPERATIVE

Diagnostic Instructions

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

Diagnostic Fault Information

Daytime Running Lamps (DRL) Inoperative

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

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Ambient Light Sensor Signal	1	1	-	-
Ambient Light Sensor Low Reference Signal Circuits	-	1	1	-
DRL Ambient Light Sensor	1	1	1	-
1. DRL Inoperative				

Conditions for Running the DTC

The low beam headlamps operate at reduced intensity when in daytime running lamps (DRL) mode. The body control module (BCM) receives a signal from the ambient light sensor indicating a low or high ambient outside light level. Under daylight conditions the BCM grounds the DRL relay control circuit energizing the DRL control relay. The now closed relay supplies ground directly to the low beam headlamps now illuminate with reduced intensity. The DRL relay is ground at G203. Any time the headlamps are illuminated the DRL will not illuminate. Manual park lamps do not effect DRL operation.

Diagnostic Aids

- A short to ground or open/high resistance in the ambient light sensor circuit
- The ambient light sensor with an open/high resistance within it

Reference Information

Schematic Reference

Interior Lights Schematics

Electrical Information Reference

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

Scan Tool Reference

- Scan Tool Data Definitions

- **Scan Tool Data List**
- **Scan Tool Output Controls**

Circuit/System Verification

Ignition ON, the headlamp switch in the AUTO position. Observes the headlamps, the headlamps should be ON.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the (DRL) ambient light sensor.
2. Ignition OFF, test for less than 1 ohm of resistance between the low reference circuit and ground.
 - If greater than 1 ohm, test the low reference circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the BCM.
3. Ignition ON, test for 4.8-5.2 volts between the 5-volt reference circuit and ground.
 - If less than 4.8 volts, test the 5-volt reference circuit for a short to ground or an open/high resistance. If the circuit tests normal, replace the BCM.
 - If greater than 5.2 volts, test the 5-volt reference circuit for a short to voltage. If the circuit tests normal, replace the BCM.
4. If all circuits test normal, test or replace the DRL ambient light sensor.

Component Testing

1. Ignition OFF, disconnect the harness connector at the DRL ambient light sensor.
2. Sweep the sensor through the entire range while monitoring the resistance between the signal terminal and the low reference terminal. The resistance should vary between 13-23 M ohms without any spikes or dropouts.
 - If the resistance is not within the specified range or is erratic, replace the DRL ambient light sensor.

Repair Procedures

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

- **Daytime Running Lamp (DRL) Ambient Light Sensor Replacement (Without UV6)**
- **Control Module References** for BCM replacement, setup and programming

HAZARD LAMPS ALWAYS ON

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Hazard Lamps Always On

Step	Action	Yes	No
Schematic Reference: <u>Exterior Lights Schematics</u>			
Connector End View Reference: <u>Lighting Systems Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	Turn OFF the hazard flashers. Does the system operate normally?	Go to <u>Testing for Electrical Intermittents</u>	Go to Step 3
3	With a scan tool, monitor the Hazard Lamp Switch data parameter in the Body Control Module (BCM) data list while pressing the switch several times. Does the scan tool always display Active?	Go to Step 4	Go to Step 6
4	Test the hazard switch signal circuit for a short to ground. Refer to <u>Circuit Testing and Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 9	Go to Step 5
5	Inspect for poor connections at the harness connector of the multifunction switch. Refer to <u>Circuit Testing and Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 9	Go to Step 7
6	Inspect for poor connections at the harness connector of the BCM. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> . Did you find and correct the condition?	Go to Step 9	Go to Step 8
7	Replace the multifunction switch. Refer to <u>Turn Signal Multifunction Switch Replacement</u> . Did you complete the replacement?	Go to Step 9	-
8	Replace the BCM. Refer to <u>Control Module References</u> for replacement, setup and programming. Did you complete the replacement?	Go to Step 9	-

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9	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 3
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HAZARD LAMPS INOPERATIVE

Hazard Lamps Inoperative

Step	Action	Yes	No
Schematic Reference: <u>Exterior Lights Schematics</u> Connector End View Reference: <u>Master Electrical Component List</u> . DEFINITION: Use this chart if either the front or rear hazard lamps are inoperative.			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	Place the hazard switch to the ON position. Do the hazard lamps turn ON?	Go to <u>Testing for Intermittent Conditions and Poor Connections</u>	Go to Step 3
3	1. Disconnect the hazard switch. Refer to <u>Hazard Warning Switch Replacement</u> . 2. Install a jumper between the hazard switch signal circuit and the ground circuit. Do the hazard lamps illuminate?	Go to Step 6	Go to Step 4
4	Using a test lamp connected to battery positive voltage, probe the ground circuit of the hazard switch. Does the test lamp illuminate?	Go to Step 5	Go to Step 8
5	Test the hazard warning switch signal circuit for an open, poor connection or a short to battery positive. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 11	Go to Step 7
	Inspect for poor connections at the hazard		

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6	switch. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> . Did you find and correct the condition?	Go to Step 11	Go to Step 9
7	Inspect for poor connections body control module (BCM). Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> . Did you find and correct the condition?	Go to Step 11	Go to Step 10
8	Repair a poor connection, an open or a short to battery positive voltage in the hazard warning switch ground circuit. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you complete the repair?	Go to Step 11	-
9	Replace the BCM. Refer to <u>Control Module References</u> for BCM replacement, setup and programming. Did you complete the replacement?	Go to Step 11	-
10	Replace the hazard warning switch. Refer to <u>Hazard Warning Switch Replacement</u> . Is the repair complete?	Go to Step 11	-
11	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 3

HIGH MOUNT STOP LAMP INOPERATIVE

High Mount Stop Lamp Inoperative

Step	Action	Values	Yes	No
1	Inspect the stoplamps. Do the stop lamps work?	-	Go to Step 3	Go to Step 2
2	Repair the stoplamps before completing this diagnostic table. Does the CHMSL work after the stoplamps have been repaired?	-	System OK	Go to Step 3
	1. Remove the CHMSL lamp			

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3	<p>bulb. Refer to <u>High Mount Stop Lamp Replacement.</u></p> <p>2. Visually and physically inspect the CHMSL lamp bulb.</p> <p>Is the lamp bulb defective?</p>	-	Go to Step 4	Go to Step 5
4	<p>Replace the CHMSL lamp bulb. Refer to <u>High Mount Stop Lamp Replacement.</u></p> <p>Is the repair complete?</p>	-	System OK	-
5	<p>1. Disconnect the CHMSL connector.</p> <p>2. Use an ohmmeter to measure the resistance between ground and the BK wire in the CHMSL connector.</p> <p>Is the resistance equal to the specified value?</p>	0 ohms	Go to Step 7	Go to Step 6
6	<p>Repair the open circuit between ground and the BK wire in the CHMSL connector.</p> <p>Is the repair complete?</p>	-	System OK	-
7	<p>Repair the open circuit between the stoplamp switch and the CHMSL.</p> <p>Is the repair complete?</p>	-	System OK	-

HEADLAMP LOW OR HIGH BEAMS ALWAYS ON

Headlamp Low or High Beams Always On

Step	Action	Yes	No
<p>Schematic Reference: <u>Headlights/Daytime Running Lights (DRL) Schematics</u> Connector End View Reference: <u>Lighting Systems Connector End Views</u></p>			
1	<p>Did you perform the Diagnostic System Check - Vehicle?</p>	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
	<p>Place the headlamp switch in the OFF</p>	Go to Testing	

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2	<p>position. Do the high and low beam headlamps operate normally?</p>	<u>for Intermittent Conditions and Poor Connections</u>	Go to Step 3
3	Are only the high beam headlamps always ON?	Go to Step 4	Go to Step 8
4	<p>Disconnect the turn signal multifunction headlamp dimmer switch. Do the high beam headlamps remain ON?</p>	Go to Step 5	Go to Step 10
5	<p>Test the following circuits for a short to ground as applicable. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .</p> <ul style="list-style-type: none"> • The headlamp dimmer switch signal • The headlamp switch flash to pass (FTP) signal <p>Did you find and correct a condition?</p>	Go to Step 18	Go to Step 6
6	<p>Remove the HI HEADLAMP-LT and HI HEADLAMP-RT fuses from the underhood fuse block. Do the high beam headlamps remain ON?</p>	Go to Step 12	Go to Step 7
7	<p>With a scan tool, monitor the High Beam Relay Command data parameter in the body control module (BCM) data list. Does the scan tool display On?</p>	Go to Step 11	Go to Step 15
8	<p>Remove the LO Beam- LT and LO Beam- RT fuses from the underhood fuse block. Do the low beam headlamps remain always ON?</p>	Go to Step 13	Go to Step 9
9	<p>With a scan tool, monitor the Low Beam Relay Command data parameter in the body control module (BCM) data list. Does the scan tool display On?</p>	Go to Step 11	Go to Step 16
10	Inspect for poor connections at the harness connector of the turn signal multifunction headlamp dimmer switch. Refer to		

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	<u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 18	Go to Step 17
11	Inspect for poor connections at the harness connector of the body control module (BCM). Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 18	Go to Step 14
12	Repair the short to voltage in the right or left high beam headlamp supply voltage circuit. Refer to <u>Wiring Repairs</u> . Did you find and correct a condition?	Go to Step 18	-
13	Repair the short to voltage in the right or left low beam headlamp supply voltage circuit. Refer to <u>Wiring Repairs</u> . Did you find and correct a condition?	Go to Step 18	-
14	Replace the BCM. Refer to <u>Control Module References</u> for replacement, setup and programming. Did you complete the replacement?	Go to Step 18	-
15	Replace the underhood fuse block. Refer to <u>Underhood Electrical Center or Junction Block Replacement</u> . Did you complete the repair?	Go to Step 18	-
16	Replace the underhood fuse block. Refer to <u>Underhood Electrical Center or Junction Block Replacement</u> . Did you complete the repair?	Go to Step 18	-
17	Replace the turn signal multifunction headlamp dimmer switch. Refer to <u>Turn Signal Multifunction Switch Replacement</u> . Did you complete the repair?	Go to Step 18	-
18	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 3

HEADLAMPS INOPERATIVE - HIGH BEAMS

Headlamps Inoperative - High Beams

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Step	Action	Yes	No
Schematic Reference: <u>Headlights/Daytime Running Lights (DRL) Schematics</u> Connector End View Reference: <u>Lighting Systems Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	1. Place the headlamp switch in the ON position. 2. Place the turn signal multi function dimmer switch in the high beam position. Do the high beam headlamps operate normally?	Go to <u>Testing for Intermittent Conditions and Poor Connections</u>	Go to Step 3
3	Is only one high beam headlamp inoperative?	Go to Step 4	Go to Step 5
4	Test the high beam headlamp supply voltage circuit for high resistance, an open or a short to ground. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 15	Go to Step 8
5	1. Place the headlamp switch in the head lamp position. 2. Place the turn signal multi function headlamp dimmer switch in the high beam position. 3. With a scan tool, monitor the High Beam Relay Command data parameter in the body control module (BCM) data list. Does the scan tool display On?	Go to Step 13	Go to Step 6
6	Test the headlamp turn signal multi function dimmer switch signal and ground circuits for an open or high resistance. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .		

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	Did you find and correct a condition?	Go to Step 15	Go to Step 7
7	<p>1. Place the headlamp switch in the head lamp position.</p> <p>2. Connect a fused jumper from ground to the turn signal multi function headlamp dimmer switch signal terminal of the turn signal multi function headlamp dimmer switch connector.</p>		
	Do the high beam headlamps illuminate?	Go to Step 9	Go to Step 10
8	<p>Inspect for poor connections at the harness connector of the inoperative bulb. Refer to Circuit Testing and Wiring Repairs .</p> <p>Did you find and correct the condition?</p>	Go to Step 15	Go to Step 11
9	<p>Inspect for poor connections at the harness connector of the turn signal multi function headlamp dimmer switch. Refer to Circuit Testing and Wiring Repairs .</p> <p>Did you find and correct the condition?</p>	Go to Step 15	Go to Step 14
10	<p>Inspect for poor connections at the harness connector of the body control module (BCM). Refer to Circuit Testing and Wiring Repairs .</p> <p>Did you find and correct the condition?</p>	Go to Step 15	Go to Step 12
11	<p>Replace the high beam bulb. Refer to Headlamp Replacement.</p> <p>Did you complete the replacement?</p>	Go to Step 15	-
12	<p>Replace the BCM. Refer to Control Module References for BCM replacement, setup and programming.</p> <p>Did you complete the replacement?</p>	Go to Step 15	-
13	<p>Replace the underhood fuse block. Refer to Underhood Electrical Center or Junction Block Replacement .</p> <p>Did you complete the replacement?</p>	Go to Step 15	-
	<p>Replace the turn signal multi function headlamp dimmer switch. Refer to Turn</p>		

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14	<u>Signal Multifunction Switch Replacement</u> Did you complete the repair?	Go to Step 15	-
15	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 3

HEADLAMPS INOPERATIVE - LOW BEAMS

Headlamps Inoperative - Low Beams

Step	Action	Yes	No
<p>CAUTION: The high intensity discharge system produces high voltage and current. To reduce the risk of severe shocks and burns:</p> <ul style="list-style-type: none"> • 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. 			
<p>Schematic Reference: <u>Headlights/Daytime Running Lights (DRL)</u> Schematics Connector End View Reference: <u>Lighting Systems Connector End Views</u></p>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	<ol style="list-style-type: none"> Place the headlamp switch in the ON position. Place the turn signal multi function dimmer switch in the low beam position. <p>Do the low beam headlamps operate normally?</p>	Go to <u>Testing for Intermittent Conditions and Poor Connections</u>	Go to Step 3
3	Is only one low beam headlamp inoperative?	Go to Step 4	Go to Step 8
	<ol style="list-style-type: none"> Disconnect the forward lamps harness connector from the inoperative headlamp ballast. Ensure that the headlamp switch is in 		

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4	<p>the head lamp position.</p> <p>3. Ensure that the headlamp turn signal multi function dimmer switch is in the LOW BEAM position.</p> <p>4. Test the battery positive voltage circuit of the inoperative headlamp before the ballast connector for high resistance, an open or a short to ground. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .</p>		
	<p>Did you find and correct the condition?</p>	Go to Step 19	Go to Step 5
5	<p>Test the headlamp low beam supply voltage circuit of the inoperative headlamp before the ballast connector for high resistance, an open or a short to ground. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .</p>		
	<p>Did you find and correct the condition?</p>	Go to Step 19	Go to Step 6
6	<p>Test the ground circuit of the inoperative headlamp before the ballast connector for high resistance or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .</p>		
	<p>Did you find and correct the condition?</p>	Go to Step 19	Go to Step 7
7	<p>Install a known good headlamp bulb. Refer to <u>Headlamp Bulb Replacement (Non HID)</u> or <u>Headlamp Bulb Replacement (HID)</u>.</p>		
	<p>Does the lamp operate properly?</p>	Go to Step 19	Go to Step 12
8	<p>1. Place the headlamp switch in the head lamp position.</p> <p>2. Place the turn signal multi function headlamp dimmer switch in the low beam position.</p> <p>3. With a scan tool, monitor the Low Beam Relay Command data parameter in the body control module (BCM) data list.</p>		

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	Does the scan tool display On?	Go to Step 17	Go to Step 9
9	<ol style="list-style-type: none"> 1. Disconnect the multifunction switch. 2. Place the headlamp switch in the head lamp position. 		
	Do the low beam headlamps illuminate?	Go to Step 13	Go to Step 10
10	Test the turn signal multi function headlamp dimmer switch signal circuit for a short to ground. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .		
	Did you find and correct the condition?	Go to Step 19	Go to Step 11
11	Test the turn signal multi function headlamp switch flash to pass signal circuit for a short to ground. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .		
	Did you find and correct the condition?	Go to Step 19	Go to Step 14
12	Inspect for poor connections at the harness connector of the ballast. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .		
	Did you find and correct the condition?	Go to Step 19	Go to Step 15
13	Inspect for poor connections at the harness connector of the turn signal multi function headlamp dimmer switch. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .		
	Did you find and correct the condition?	Go to Step 19	Go to Step 18
14	Inspect for poor connections at the harness connector of the body control module (BCM). Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .		
	Did you find and correct the condition?	Go to Step 19	Go to Step 16
15	Replace the headlamp ballast. Refer to <u>Headlamp Replacement</u> or <u>Headlamp Bulb Replacement (Non HID)</u> or <u>Headlamp Bulb Replacement (HID)</u> .		
	Did you complete the replacement?	Go to Step 19	-
16	Replace the BCM. Refer to <u>Control Module References</u> for BCM replacement, setup and programming.		

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	Did you complete the replacement?	Go to Step 19	-
17	Replace the underhood fuse block. Refer to <u>Underhood Electrical Center or Junction Block Replacement</u> .		
	Did you complete the replacement?	Go to Step 19	-
18	Replace the headlamp dimmer switch. Refer to <u>Turn Signal Multifunction Switch Replacement</u> .		
	Did you complete the repair?	Go to Step 19	-
19	Operate the system in order to verify the repair.		
	Did you correct the condition?	System OK	Go to Step 3

HEADLAMPS FLASH TO PASS INOPERATIVE

Headlamps Flash to Pass Inoperative

Step	Action	Yes	No
Schematic Reference: <u>Headlights/Daytime Running Lights (DRL) Schematics</u>			
Connector End View Reference: <u>Lighting Systems Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	<ol style="list-style-type: none"> 1. Place the headlamp switch in the ON position. 2. Place the dimmer switch in the low beam position. 3. Turn ON the flash to pass switch. Do the high beam headlamps illuminate momentarily?	Go to <u>Testing for Intermittent Conditions and Poor Connections</u>	Go to Step 3
3	<ol style="list-style-type: none"> 1. Place the headlamp switch in the ON position. 2. Connect a fused jumper from ground to the turn signal multi function switch flash to pass signal circuit terminal of the headlamp dimmer 		

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	switch connector. Do the high beam headlamps illuminate?	Go to Step 6	Go to Step 4
4	Test the turn signal multifunction switch flash to pass signal circuit for high resistance or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 9	Go to Step 5
5	Inspect for poor connections at the harness connector of the body control module (BCM). Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> . Did you find and correct the condition?	Go to Step 9	Go to Step 7
6	Inspect for poor connections at the harness connector of the dimmer switch. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> . Did you find and correct the condition?	Go to Step 9	Go to Step 8
7	Replace the BCM. Refer to <u>Control Module References</u> for replacement, setup and programming. Did you complete the replacement?	Go to Step 9	-
8	Replace the turn signal multi function dimmer switch. Refer to <u>Turn Signal Multifunction Switch Replacement</u> . Did you complete the repair?	Go to Step 9	-
9	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 3

ILLUMINATED ENTRY LAMPS INOPERATIVE

Illuminated Entry Lamps Inoperative

Step	Action	Yes	No
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Schematic Reference: Interior Lights Schematics
Connector End View Reference: Master Electrical Component List

DEFINITION: Courtesy lamps are inoperative from the key fob.

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1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Lock all of the vehicle doors. 3. Close all of the vehicle doors. 4. Wait 20 seconds. 5. Press the unlock button on the remote keyless entry transmitter. <p>Do the courtesy lamps illuminate?</p>	Go to <u>Testing for Intermittent Conditions and Poor Connections</u>	Go to Step 3
3	Does the driver door unlock?	Go to Step 4	Go to <u>Symptoms - Remote Functions</u>
4	Replace the body control module (BCM). Refer to <u>Control Module References</u> for replacement, setup and programming. Did you complete the replacement?	Go to Step 5	-
5	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 3

INTERIOR BACKLIGHTING DOES NOT DIM

Interior Backlighting Does Not Dim

Step	Action	Yes	No
Schematic Reference: <u>Interior Lights Dimming Schematics</u>			
Connector End View Reference: <u>Lighting Systems Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	Verify that the interior backlighting does not dim. Does the interior backlighting operate normally?	Go to <u>Testing for Intermittent Conditions and</u>	

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		<u>Poor Connections</u>	Go to Step 3
3	Use the scan tool output controls to operate the interior backlighting. Can you control the dimming level of an activated control switch indicator with the scan tool?	Go to Step 4	Go to Step 5
4	Test for an open, high resistance, short to voltage or short to ground in the following circuits. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . <ul style="list-style-type: none"> • The 12-volt reference • The instrument panel lamp dimmer switch signal • The indicator dimming control • The instrument panel lamp dimming control Did you find and correct a condition?	Go to Step 10	Go to Step 6
5	Test for a short to voltage in the LED dimming circuit. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct a condition?	Go to Step 10	Go to Step 7
6	Inspect for poor connections at the harness connector of the headlamp switch. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 10	Go to Step 8
7	Inspect for poor connections at the harness connector of the body control module (BCM). Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 10	Go to Step 9
8	Replace the headlamp switch. Refer to <u>Headlamp Switch Replacement</u> . Did you complete the replacement?	Go to Step 10	-
	Replace the BCM. Refer to <u>Control</u>		

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9	Module References for BCM replacement, setup and programming. Did you complete the replacement?	Go to Step 10	-
10	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 3

INTERIOR BACKLIGHTING INOPERATIVE

Interior Backlighting Inoperative

Step	Action	Yes	No
Schematic Reference: <u>Interior Lights Dimming Schematics</u>			
Connector End View Reference: <u>Lighting Systems Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	Verify that the interior backlighting is inoperative. Does the interior backlighting operate normally?	Go to <u>Testing for Intermittent Conditions and Poor Connections</u>	Go to Step 3
3	Are all of the interior backlighting lamps inoperative?	Go to Step 5	Go to Step 4
4	Test for an open or high resistance in the following circuits of the inoperative lamp. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . <ul style="list-style-type: none"> • The instrument panel lamps dimming control • The LED dimming supply • The indicator dimming control • The ground 		
	Did you find and correct a condition?	Go to Step 13	Go to Step 8
5	Are any of the body control module supply		

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	voltage fuses open?	Go to Step 6	Go to Step 7
6	Test the affected battery positive voltage supply circuit to the body control module (BCM) for a short to ground. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 13	Go to Step 10
7	Test for a short to ground, open or high resistance in one of the following circuits. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . <ul style="list-style-type: none"> • The instrument panel lamps dimming control • The LED dimming supply • The indicator dimming control • The headlamp and panel dimmer 12-volt reference • The headlamp and panel dimmer instrument panel lamps dimmer switch signal • The headlamp and panel dimmer switch ground Did you find and correct the condition?	Go to Step 13	Go to Step 9
8	Inspect for poor connections at the harness connector of the affected lamp. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 13	Go to Step 11
9	Inspect for poor connections at the harness connector of the body control module. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 13	Go to Step 12
	Repair the short to ground in one of the following circuits. Refer to <u>Wiring Repairs</u> .		

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10	<ul style="list-style-type: none"> • The instrument panel lamps dimming control • The LED dimming supply • The indicator dimming control • The headlamp and panel dimmer 12 volt reference <p>Did you complete the repair?</p>	Go to Step 13	-
11	<p>Replace the affected lamp or internal lamp component.</p> <p>Did you complete the replacement?</p>	Go to Step 13	-
12	<p>Replace the BCM. Refer to <u>Control Module References</u> for BCM replacement, setup and programming.</p> <p>Did you complete the replacement?</p>	Go to Step 13	-
13	<p>Operate the system in order to verify the repair.</p> <p>Did you correct the condition?</p>	System OK	Go to Step 3

PARK, LICENSE AND TAIL LAMPS ALWAYS ON

Park, License and Tail Lamps Always On

Step	Action	Yes	No
<p>Schematic Reference: <u>Exterior Lights Schematics</u> Connector End View Reference: <u>Lighting Systems Connector End Views</u></p>			
1	<p>Did you perform the Diagnostic System Check - Vehicle?</p>	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	<p>Verify that the park, license and tail lamps are always ON.</p> <p>Do the park, license and tail lamps operate normally?</p>	Go to <u>Testing for Intermittent Conditions and Poor Connections</u>	Go to Step 3
3	<p>Remove and reinstall each park lamp fuse one at a time.</p> <p>Do all of the park lamps turn OFF when a</p>		

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	particular fuse is removed?	Go to Step 9	Go to Step 4
4	<ol style="list-style-type: none"> 1. Ensure that the headlamp switch is in the AUTO position and there is sufficient light to the ambient light sensor. 2. With a scan tool, monitor the Park Lamp Relay Command in the body control module (BCM) data list. 		
	Does the scan tool display Off?	Go to Step 5	Go to Step 10
5	Use the scan tool to check the body control module (BCM) park lamp switch input data.		
	Does the scan tool display Inactive?	Go to Step 8	Go to Step 6
6	Test for a short to ground in the park lamp switch signal circuit. Refer to <u>Circuit Testing Wiring Repairs</u> .		
	Did you find and correct the condition?	Go to Step 13	Go to Step 7
7	Inspect for poor connections at the harness connector of the headlamp switch. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .		
	Did you find and correct the condition?	Go to Step 13	Go to Step 11
8	Inspect for poor connections at the harness connector of the BCM. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .		
	Did you find and correct the condition?	Go to Step 13	Go to Step 12
9	Repair the short to voltage in the affected park lamp supply voltage circuit. Refer to <u>Wiring Repairs</u> .		
	Did you complete the repair?	Go to Step 13	-
10	Replace the underhood fuse block. Refer to <u>Underhood Electrical Center or Junction Block Replacement</u> .		
	Did you complete the repair?	Go to Step 13	-
11	Replace the headlamp switch. Refer to <u>Headlamp Switch Replacement</u> .		
	Did you complete the repair?	Go to Step 13	-
	Replace the BCM. Refer to <u>Control</u>		

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12	Module References for replacement, setup and programming. Did you complete the replacement?	Go to Step 13	-
13	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 3

PARK, LICENSE AND TAIL LAMPS INOPERATIVE

Park, License and Tail Lamps Inoperative

Step	Action	Yes	No
Schematic Reference: <u>Exterior Lights Schematics</u>			
Connector End View Reference: <u>Lighting Systems Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	Verify that the park, license and tail lamps are inoperative. Do the park, license and tail lamps operate normally?	Go to <u>Testing for Intermittent Conditions and Poor Connections</u>	Go to Step 3
3	Are all park, license and tail lamps inoperative?	Go to Step 6	Go to Step 4
4	Test the supply circuit of the inoperative lamp for high resistance or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 15	Go to Step 5
5	Test the ground circuit of the inoperative lamp for high resistance or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 15	Go to Step 11
6	<ol style="list-style-type: none"> Ensure that the headlamp switch is in the ON position. With a scan tool, monitor the Park Lamp Relay Command in the body control module (BCM) data list. 		

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	Does the scan tool display On?	Go to Step 12	Go to Step 7
7	Use the scan tool to monitor the body control module (BCM) park lamp switch input data. Does the scan tool display Active?	Go to Step 10	Go to Step 8
8	Test for an open or high resistance in the park lamp switch signal circuit. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 15	Go to Step 9
9	Inspect for poor connections at the harness connector of the headlamp switch. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 15	Go to Step 13
10	Inspect for poor connections at the harness connector of the BCM. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 15	Go to Step 14
11	Replace the inoperative bulb. <ul style="list-style-type: none"> • <u>Park/Turn Signal Lamp Bulb Replacement</u> • <u>License Lamp Bulb Replacement</u> • <u>Tail Lamp Bulb Replacement</u> Did you complete the replacement?	Go to Step 15	-
12	Replace the underhood fuse block. Refer to <u>Underhood Electrical Center or Junction Block Replacement</u> . Did you complete the repair?	Go to Step 15	-
13	Replace the headlamp switch. Refer to <u>Headlamp Switch Replacement</u> . Did you complete the repair?	Go to Step 15	-
14	Replace the BCM. Refer to <u>Control Module References</u> for replacement, setup and programming. Did you complete the replacement?	Go to Step 15	-
	Operate the system in order to verify the		

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15	repair. Did you correct the condition?	System OK	Go to Step 3
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READING LAMP(S) ALWAYS ON

Reading Lamp(s) Always On

Step	Action	Yes	No
Schematic Reference: <u>Interior Lights Schematics</u>			
Connector End View Reference: <u>Master Electrical Component List</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	1. Close all of the doors. 2. Turn ON the ignition, with the engine OFF. 3. Place the appropriate reading lamp switch in the OFF position. Does the reading lamp remain illuminated?	Go to Step 3	Go to <u>Testing for Intermittent Conditions and Poor Connections</u>
3	Replace the appropriate reading lamp. Refer to <u>Reading Lamp Bulb Replacement</u> or <u>Reading Lamp Replacement</u> . Did you complete the replacement?	Go to Step 4	-
4	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

READING LAMP(S) INOPERATIVE

Diagnostic Instructions

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

Diagnostic Fault Information

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Reading Lamp(s) Inoperative

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Reading Lamp Voltage Supply Circuit	1	1	-	-
Reading Lamp Ground Supply Circuit	-	1	1	-
Reading Lamp Assembly	1, 2	1	1, 2	-
1. Reading Lamp Inoperative 2. Reading Lamp Always ON				

Circuit/System Description

When the roof rail reading lamps switches are in the OFF position, the body control module (BCM) supplies the roof rail reading lamps park lamps with voltage and ground. The BCM maintains voltage and ground for a set amount of time for the illuminated entry option. When the roof rail reading lamp switch is in the ON position the BCM only supplies the voltage for the roof rail lamps

Diagnostic Aids

A short to ground, a short to voltage or an open in the following location may cause a malfunction to occur:

- The reading lamp switch supply circuit
- The reading lamp switch ground circuit
- The reading lamp switch

Reference Information

Schematic Reference

Interior Lights Schematics

Connector End View

Lighting Systems Connector End Views

Electrical Information Reference

- **Circuit Testing**

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

Scan Tool Reference

- **Scan Tool Data Definitions**
- **Scan Tool Data List**
- **Scan Tool Output Controls**

Circuit/System Verification

Ignition ON, turn the reading lamps ON by turning the switch on the reading lamps to the ON position. The reading lamps should turn ON.

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the reading lamp switch.
2. Test for less than 1.0 ohm of resistance between the ON circuit and ground.
 - If greater than 1.0 ohm, test the ON circuit for an open/high resistance.
3. Install a test lamp between the signal circuit and ground. Verify the test lamp turns ON.
 - If the test lamp does not turn ON, test the signal circuit of the reading lamp switch for a short to ground or an open/high resistance.
4. If all circuits test normal, test or replace the reading lamp assembly or the reading lamp bulb.

Component Testing

Reading Lamp Assembly Testing

1. Ignition OFF, disconnect the harness connector at the reading lamp assembly.
2. Test for less than 2.0 ohms between the signal terminal and the ON terminal with the switch in the ON position.
 - If greater than 2.0 ohms, replace the reading lamp assembly.

Reading Lamp, Light Bulb Testing

1. Ignition OFF, remove the reading lamp bulb.
2. Test for 1.0 to 4.5 ohms of resistance between the control terminal and the voltage supply

terminal of the reading lamp bulb.

- o If the resistance is not within the specified range, replace the reading lamp bulb.

Repair Procedures

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

Reading Lamp Bulb Replacement

STOP LAMPS ALWAYS ON

Stop Lamps Always On

Step	Action	Yes	No
Schematic Reference: <u>Exterior Lights Schematics</u>			
Connector End View Reference: <u>Master Electrical Component List</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	1. Turn ON the ignition, with the engine OFF. 2. Press and release the brake pedal. 3. Observe the stop lamps. Are the stop lamps illuminated?	Go to Step 3	Go to <u>Testing for Intermittent Conditions and Poor Connections</u>
3	Using a scan tool, observe the BPPS Sensor Voltage parameter. Does the scan tool indicate more than 1 volt?	Go to Step 4	Go to Step 5
4	1. Recalibrate the brake pedal position sensor. Refer to <u>Brake Pedal Position Sensor Calibration</u> . 2. Press and release the brake pedal. 3. Observe the BPPS Sensor Voltage parameter. Does the scan tool indicate more than 1 volt?	Go to Step 6	Go to Step 9

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5	Inspect for poor connections at the body control module (BCM). Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> . Did you find and correct the condition?	Go to Step 7	-
6	Inspect for poor connections at the brake pedal position sensor. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> . Did you find and correct the condition?	Go to Step 8	-
7	Replace the BCM. Refer to <u>Control Module References</u> for BCM replacement, setup and programming. Did you complete the replacement?	Go to Step 9	-
8	Replace the brake pedal position sensor. Refer to <u>Brake Pedal Position Sensor Replacement</u> . Did you complete the replacement?	Go to Step 9	-
9	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

STOP LAMPS INOPERATIVE

Stop Lamps Inoperative

Step	Action	Yes	No
Schematic Reference: <u>Exterior Lights Schematics</u>			
Connector End View Reference: <u>Lighting Systems Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	Observe the stop lamps while pressing the brake pedal. Does the system operate normally?	Go to <u>Testing for Electrical Intermittents</u>	Go to Step 3
3	Are all the stop lamps inoperative?	Go to Step 6	Go to Step 4
	Test the supply voltage circuit of the inoperative lamp for high resistance, an		

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4	<p>open or a short to ground. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .</p> <p>Did you find and correct the condition?</p>	Go to Step 12	Go to Step 5
5	<p>Test the ground circuit of the inoperative lamp for high resistance or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .</p> <p>Did you find and correct the condition?</p>	Go to Step 12	Go to Step 8
6	<p>Test the 5 volt signal circuit of the brake pedal position sensor for high resistance, an open or a short to ground. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .</p> <p>Did you find and correct the condition?</p>	Go to Step 12	Go to Step 7
7	<p>Test the following circuits for a short to ground, high resistance or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> .</p> <ul style="list-style-type: none"> • The stop lamp supply voltage • The CHMSL supply voltage <p>Did you find and correct the condition?</p>	Go to Step 12	Go to Step 9
8	<p>Inspect for poor connections at the harness connector of the bulb or high mount stop lamp. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> .</p> <p>Did you find and correct the condition?</p>	Go to Step 12	Go to Step 10
9	<p>Inspect for poor connections at the harness connector of the Sensor. Refer to <u>Testing for Intermittent Conditions and Poor Connections</u> and <u>Connector Repairs</u> .</p> <p>Did you find and correct the condition?</p>	Go to Step 12	Go to Step 11
10	<p>Replace the stop lamp. Refer to <u>Tail Lamp Bulb Replacement</u> or <u>High Mount Stop Lamp Replacement</u>.</p> <p>Did you complete the replacement?</p>	Go to Step 12	-
	<p>IMPORTANT: A calibration of the Brake Pedal Position</p>		

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11	<p>Sensor needs to be performed upon replacement. Refer to <u>Brake Pedal Position Sensor Calibration</u>.</p> <p>Replace the brake pedal position sensor. Refer to <u>Brake Pedal Position Sensor Replacement</u>. Did you complete the replacement?</p>	Go to Step 12	-
12	<p>Operate the system in order to verify the repair. Did you correct the condition?</p>	System OK	Go to Step 3

TURN SIGNAL LAMPS AND/OR INDICATORS ALWAYS ON OR FLASHING

Turn Signal Lamps and/or Indicators Always On or Flashing

Step	Action	Yes	No
<p>Schematic Reference: <u>Exterior Lights Schematics</u> Connector End View Reference: <u>Master Electrical Component List</u></p>			
1	<p>Did you perform the Diagnostic System Check - Vehicle?</p>	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	<p>1. Turn the ignition to the ON position, with the engine OFF. 2. Activate the right and left turn signal lamps.</p> <p>Do the turn signal lamps and indicators operate properly?</p>	Go to <u>Testing for Intermittent Conditions and Poor Connections</u>	Go to Step 3
3	<p>1. Place the turn signal switch in the OFF position. 2. Place the hazard warning switch in the OFF position.</p> <p>Are only the turn signal indicators always ON?</p>	Go to Step 11	Go to Step 4
4	<p>Are all 4 of the turn signals lamps flashing?</p>	Go to <u>Hazard Lamps Always</u>	

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		On	Go to Step 5
5	Is only one lamp on at all times?	Go to Step 6	Go to Step 7
6	Test for a short to battery positive voltage in the turn signal voltage circuit. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 12	Go to Step 9
7	Disconnect the multifunction turn signal switch. Do the turn signal lamps turn OFF?	Go to Step 10	Go to Step 8
8	Test for a short to ground in the either turn signal switch signal circuit. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 12	Go to Step 9
9	Replace the body control module (BCM), driver door switch or passenger door switch as applicable. Refer to <u>Control Module References</u> for replacement, setup and programming. Did you complete the replacement?	Go to Step 12	-
10	Replace the multifunction turn signal switch. Refer to <u>Turn Signal Multifunction Switch Replacement</u> . Did you complete the replacement?	Go to Step 12	-
11	Replace the instrument panel cluster (IPC). Refer to <u>Instrument Cluster Replacement</u> . Did you complete the repair?	Go to Step 12	-
12	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

TURN SIGNAL LAMPS AND/OR INDICATORS INOPERATIVE

Diagnostic Instructions

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

Diagnostic Fault Information**Turn Signal Lamps and/or Indicators Inoperative**

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Turn Signal Ground Circuit	1	1	-	-
Turn Signal Switch	1	1	-	-
1. Turn Signal Lamps and/or Indicators Inoperative				

Circuit/System Description

Voltage runs through the left and right turn signal fuses of the instrument panel I/P fuse block, then through the body control module (BCM), before reaching the turn signal multifunction switch. When the turn signal switch is engaged, the switch closes and supplies voltage to the front and rear park/turn signal lamps.

Diagnostic Aids

- An open/high resistance or a short to ground in the turn signal multifunction switch would cause the turn signal lamps to become inoperative.
- This vehicle is not equipped with a turn signal relay.

Reference Information**Schematic Reference****Exterior Lights Schematics****Connector End View Reference****Displays and Gages Connector End Views****Electrical Information Reference**

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

Scan Tool Reference

- **Scan Tool Data Definitions**
- **Scan Tool Data List**
- **Scan Tool Output Controls**

Circuit/System Verification

Ignition ON, observe right or left turn signal while engaging the turn signal multifunction switch in the appropriate position. The selected bulbs should illuminate.

Circuit/System Testing**Turn Signal Multifunction Switch Circuit Testing**

1. Ignition OFF, disconnect the harness connector at the turn signal multifunction switch.
2. Ignition ON, install a test lamp between the turn signal voltage supply circuit and ground. The test lamp should flash ON and OFF.
 - If the test lamp does not flash, test the voltage supply circuit for a short to ground or an open/high resistance.
3. Install a 3-amp fused jumper wire between the voltage supply circuit and the turn signal circuit. Verify that the proper turn signal lamps are ON.
 - If the turn signals are not ON, test the signal circuit of the turn signal multifunction switch for a short to voltage, short to ground or an open/high resistance.
4. If all circuits test normal, test or replace the turn signal multifunction switch.

Park/Turn Signal/Turn Signal Indicator Circuit Testing

1. Ignition OFF, remove the inoperative light bulb.
2. Test for less than 1.0 ohm of resistance between the ground circuit and ground.
 - If greater than 1.0 ohm, test the ground circuit for an open/high resistance.
3. Connect a test lamp between the control circuit and the ground circuit.
4. Ignition ON, turn ON the appropriate turn signal, the test lamp should flash.
 - If the test lamp remains ON all the time, test for a short to voltage on the control circuit. If the circuit tests normal, test or replace the BCM.
 - If the test lamp remains OFF all the time, test for a short to ground or an open/high resistance on the control circuit. If the circuit tests normal, test or replace the turn signal multifunction switch.
5. If all circuits test normal, test or replace the light bulb.

Instrument Panel (I/P) Circuit Testing

1. Ignition OFF, disconnect the harness connector at the I/P.
2. Test for less than 1.0 ohm of resistance between the ground circuit and ground.
 - If greater than 1.0 ohm, test the ground circuit for an open/high resistance.
3. Connect a test lamp between the control circuit and the ground circuit.
4. Ignition ON, turn ON the appropriate turn signal. The test lamp should flash.
 - If the test lamp remains ON all the time, test for a short to voltage on the control circuit. If the circuit tests normal, test or replace the BCM.
 - If the test lamp remains OFF all the time, test for a short to ground or an open/high resistance on the control circuit. If the circuit tests normal, test or replace the turn signal multifunction switch.
5. If all circuits test normal, replace the I/P.

Component Testing

Turn Signal Switch Testing

1. Ignition OFF, disconnect the harness connector at the turn signal multifunction switch.
2. Test for infinite resistance between the signal terminals C2 pins G and H and the voltage supply terminal C1 pin 3 with the turn signal multifunction switch in the open position.
 - If less than infinite resistance, replace the turn signal multifunction switch.
3. Test for less than 1.5 ohms between the signal terminals C2 pins G and H and the voltage supply terminal C1 pin 3 with the switch in the closed position.
 - If greater than 1.5 ohms, replace the turn signal multifunction switch.

Park/Turn Signal/Turn Signal Indicator Bulb Testing

1. Ignition OFF, remove the appropriate light bulb.
2. Test for less than 4.5 ohms between the two terminals 1 and 2 on the light bulb.
 - If greater than 4.5 ohms, replace the light bulb.

Repair Procedures

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

- **Park/Turn Signal Lamp Bulb Replacement**
- **Turn Signal Multifunction Switch Replacement**
- **Control Module References** for BCM replacement, setup and programming
- **Instrument Cluster Replacement**

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VANITY MIRROR LAMP(S) ALWAYS ON

Vanity Mirror Lamp(s) Always On

Step	Action	Yes	No
Schematic Reference: <u>Interior Lights Schematics</u>			
Connector End View Reference: <u>Master Electrical Component List</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	Close the vanity mirror cover. Are the vanity mirror lamps off?	Go to <u>Testing for Electrical Intermittents</u>	Go to Step 3
3	Replace the sunshade. Refer to <u>Sunshade Replacement</u> . Did you complete the replacement?	Go to Step 4	-
4	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 2

VANITY MIRROR LAMP(S) INOPERATIVE

Vanity Mirror Lamp(s) Inoperative

Step	Action	Yes	No
Schematic Reference: <u>Interior Lights Schematics</u>			
Connector End View Reference: <u>Lighting Systems Connector End Views</u> or <u>Data Communication Connector End Views</u>			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to Step 2	Go to <u>Diagnostic System Check - Vehicle</u>
2	Turn ON the vanity mirror lamp. Does the system operate normally?	Go to <u>Testing for Electrical Intermittents</u>	Go to Step 3
3	Are all of the reading, visor and instrument panel (I/P) compartment lamps inoperative?	Go to Step 4	Go to Step 6
4	Is the INADV/PWR/LED Fuse in the I/P		

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	fuse block open?	Go to Step 5	Go to Step 6
5	Test the battery positive voltage circuit of the body control module (BCM) for a short to ground. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 12	Go to Step 9
6	Test the inadvertent power supply voltage circuit of the vanity lamp for a short to ground, high resistance or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 12	Go to Step 7
7	Test the ground circuit of the vanity lamp for high resistance or an open. Refer to <u>Circuit Testing</u> and <u>Wiring Repairs</u> . Did you find and correct the condition?	Go to Step 12	Go to Step 8
8	Inspect the inoperative bulb for an open filament. Is the bulb OK?	Go to Step 11	Go to Step 10
9	Repair the inadvertent power supply voltage circuit for a short to ground. Refer to <u>Wiring Repairs</u> . Did you complete the repair?	Go to Step 12	-
10	Replace the inoperative bulb. Did you complete the replacement?	Go to Step 12	-
11	Replace the sunshade. Refer to <u>Sunshade Replacement</u> . Did you complete the replacement?	Go to Step 12	-
12	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to Step 3

REPAIR INSTRUCTIONS

BRAKE PEDAL POSITION SENSOR CALIBRATION

Calibration Criteria

The brake pedal position sensor (BPPS) receives a low reference signal and a 5-volt reference

signal from the BCM. Whenever the brake pedal is applied, the BPPS applies a variable voltage signal to the BCM through the stop lamp switch signal circuit. The BPPS calibration must be performed after the BPPS or body control module (BCM) have been serviced. The calibration procedure will set BPPS home value. This value is used by the BCM to determine the action of the driver applying the brake system and to provide this information to the vehicle subsystems via the communication bus.

Calibration Procedure

- Install a scan tool.
- Turn ON the ignition, with the engine OFF.
- Select Diagnostics.
- Select the year.
- Select the vehicle type.
- Select BCM.
- Select Module Setup.
- Select the BPPS calibration procedure and follow the directions displayed on the screen.

BRAKE PEDAL POSITION SENSOR REPLACEMENT

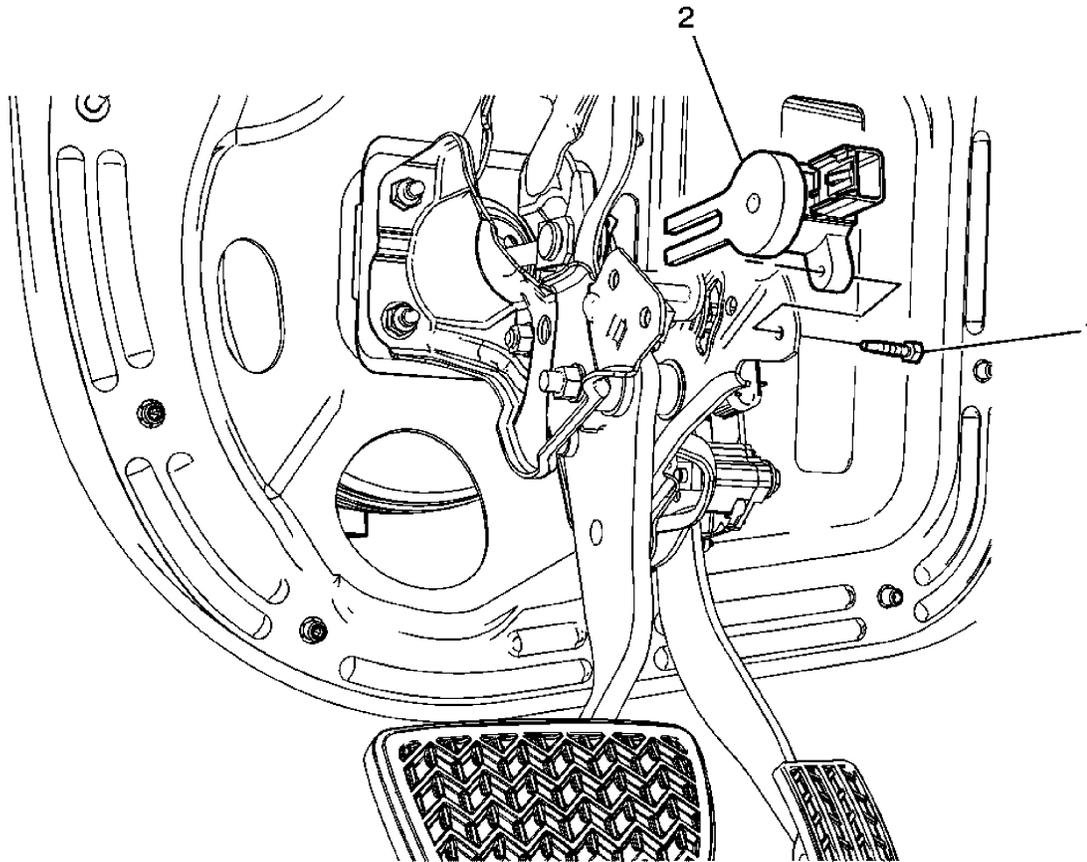


Fig. 121: Identifying Brake Pedal Position Sensor
 Courtesy of GENERAL MOTORS CORP.

Brake Pedal Position Sensor Replacement

Callout	Component Name
<p>Preliminary Procedure: Remove the left instrument panel insulator panel. Refer to <u>Instrument Panel Insulator Panel Replacement - Left Side</u> .</p>	
<p>1</p>	<p>Brake Pedal Position Sensor Bolt</p> <p>NOTE: Refer to <u>Fastener Notice</u> .</p> <p>Tighten: 3 N.m (27 lb in)</p>
	<p>Brake Pedal Position Sensor</p> <p>Procedure</p>

2

1. Disconnect the brake pedal position sensor electrical connector.
2. After the installation is complete, calibrate the brake pedal position sensor. Refer to **Brake Pedal Position Sensor Calibration**.

HEADLAMP SWITCH REPLACEMENT

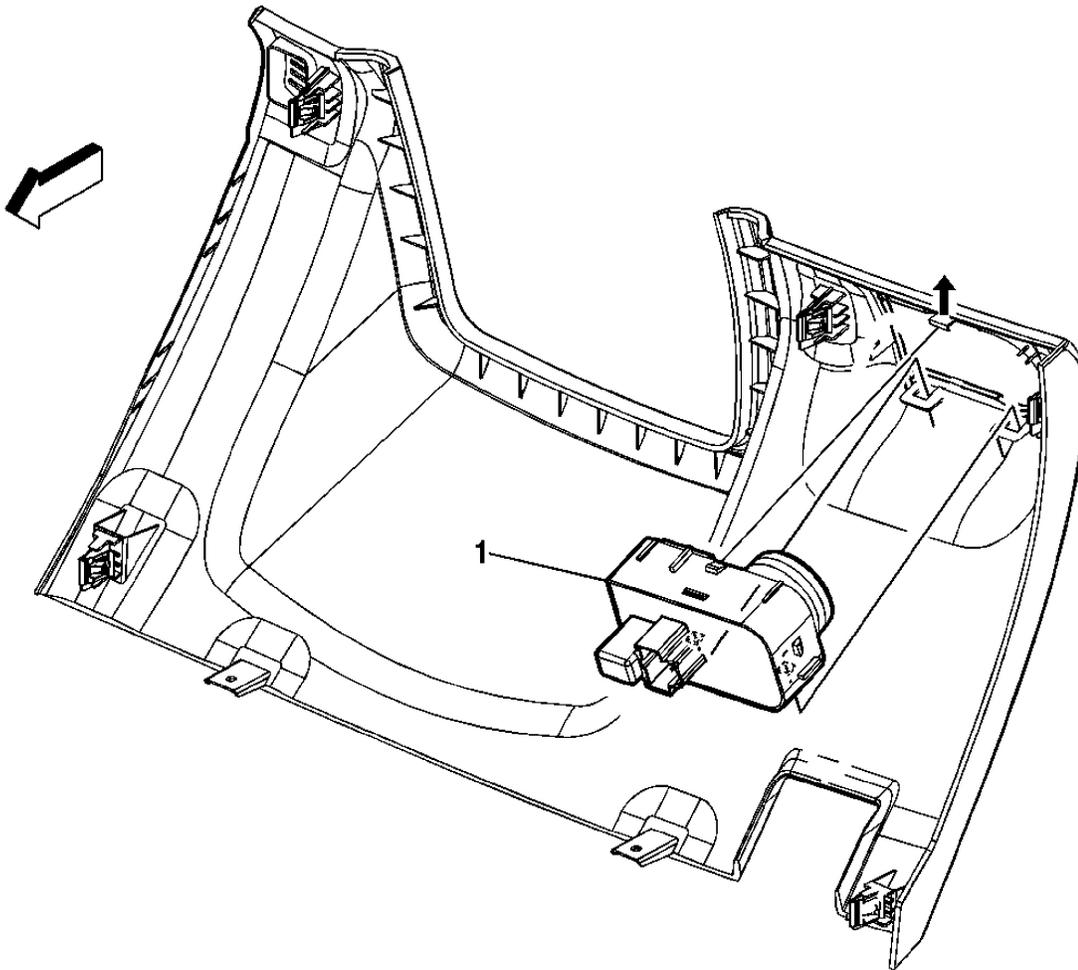


Fig. 122: View Of Headlamp Switch
 Courtesy of GENERAL MOTORS CORP.

Headlamp Switch Replacement

Callout	Component Name
Preliminary Procedure:	
Remove the knee bolster panel. Refer to <u>Knee Bolster Replacement</u> .	
1	Headlamp Switch Assembly

FOG LAMP SWITCH REPLACEMENT

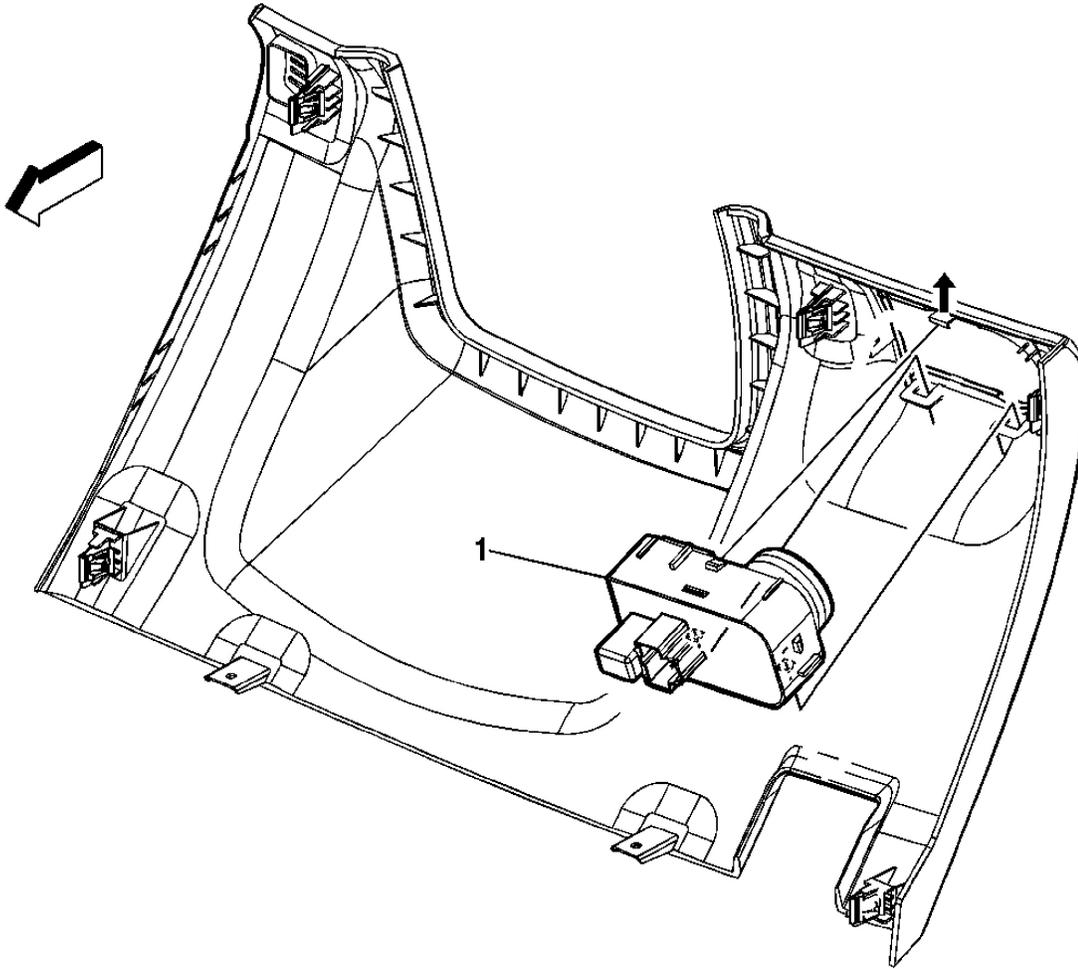


Fig. 123: Identifying Fog Lamp Switch
 Courtesy of GENERAL MOTORS CORP.

Fog Lamp Switch Replacement

Callout	Component Name
Preliminary Procedure: Remove the knee bolster panel. Refer to <u>Knee Bolster Replacement</u> .	
1	Headlamp Switch Assembly

HAZARD WARNING SWITCH REPLACEMENT

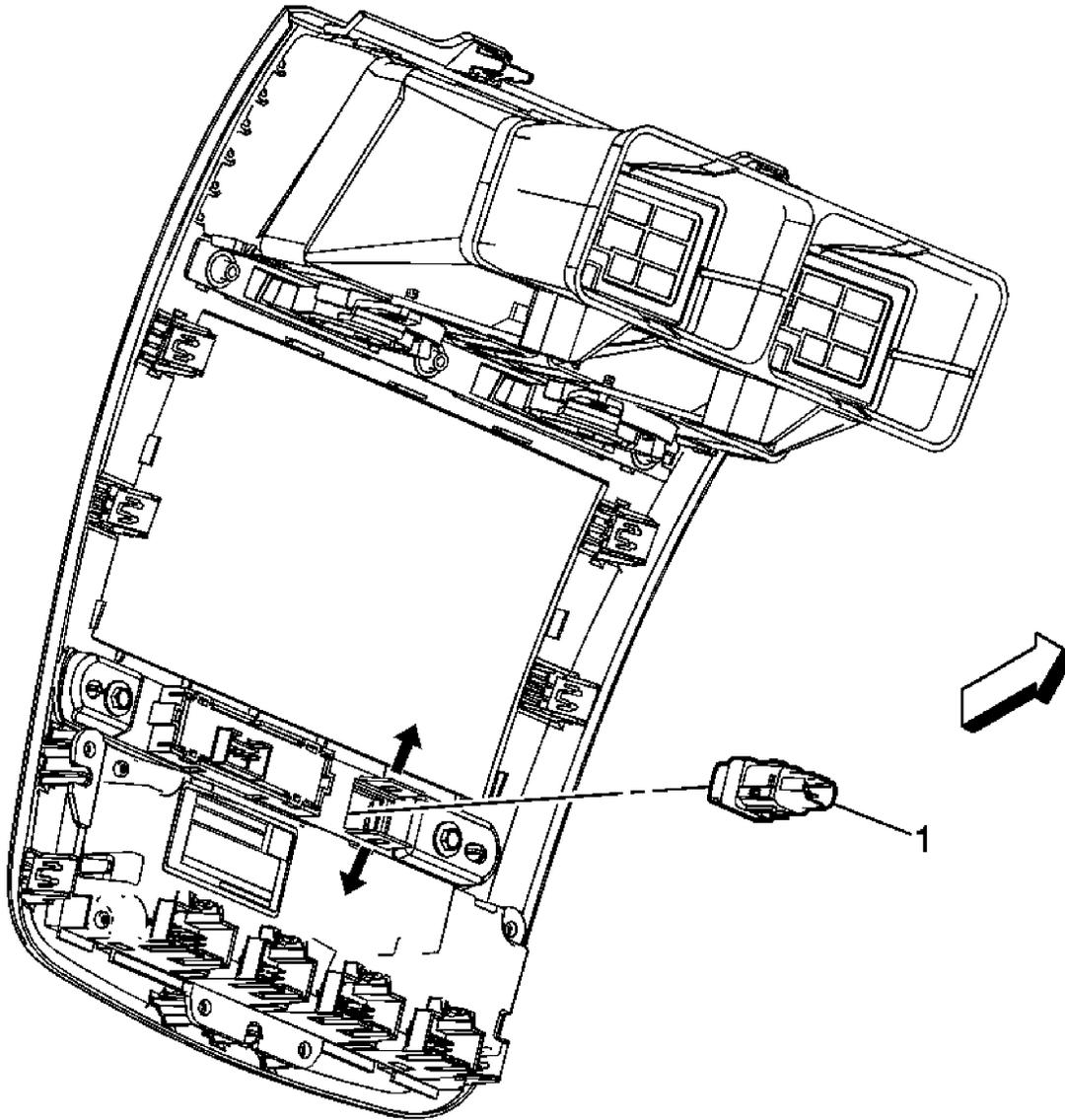


Fig. 124: Identifying Hazard Warning Switch
 Courtesy of GENERAL MOTORS CORP.

Hazard Warning Switch Replacement

Callout	Component Name
Preliminary Procedure: Remove the instrument panel accessory trim plate. Refer to <u>Instrument Panel Accessory Trim Plate Replacement</u> .	
1	Hazard Warning Switch Assembly Procedure: Disconnect the electrical connector.

DAYTIME RUNNING LAMP (DRL) AMBIENT LIGHT SENSOR REPLACEMENT (WITHOUT UV6 UV6)

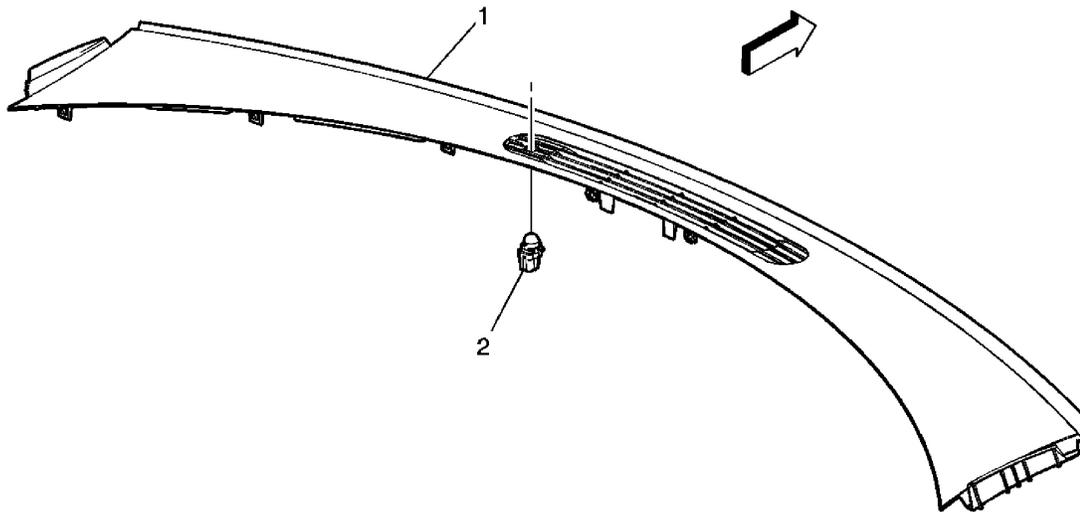


Fig. 125: Identifying Daytime Running Lamp (DRL) Ambient Light Sensor (Without UV6)

Courtesy of GENERAL MOTORS CORP.

Daytime Running Lamp (DRL) Ambient Light Sensor Replacement (Without UV6)

Callout	Component Name
1	Instrument Panel Upper Trim Panel Refer to <u>Instrument Panel Upper Trim Panel with Windshield Defroster Nozzle Grille Replacement</u> .
2	Headlamp Auto Control Ambient Light Sensor Assembly Procedure 1. Twist and pull down to remove. 2. Disconnect electrical connector.

READING LAMP BULB REPLACEMENT

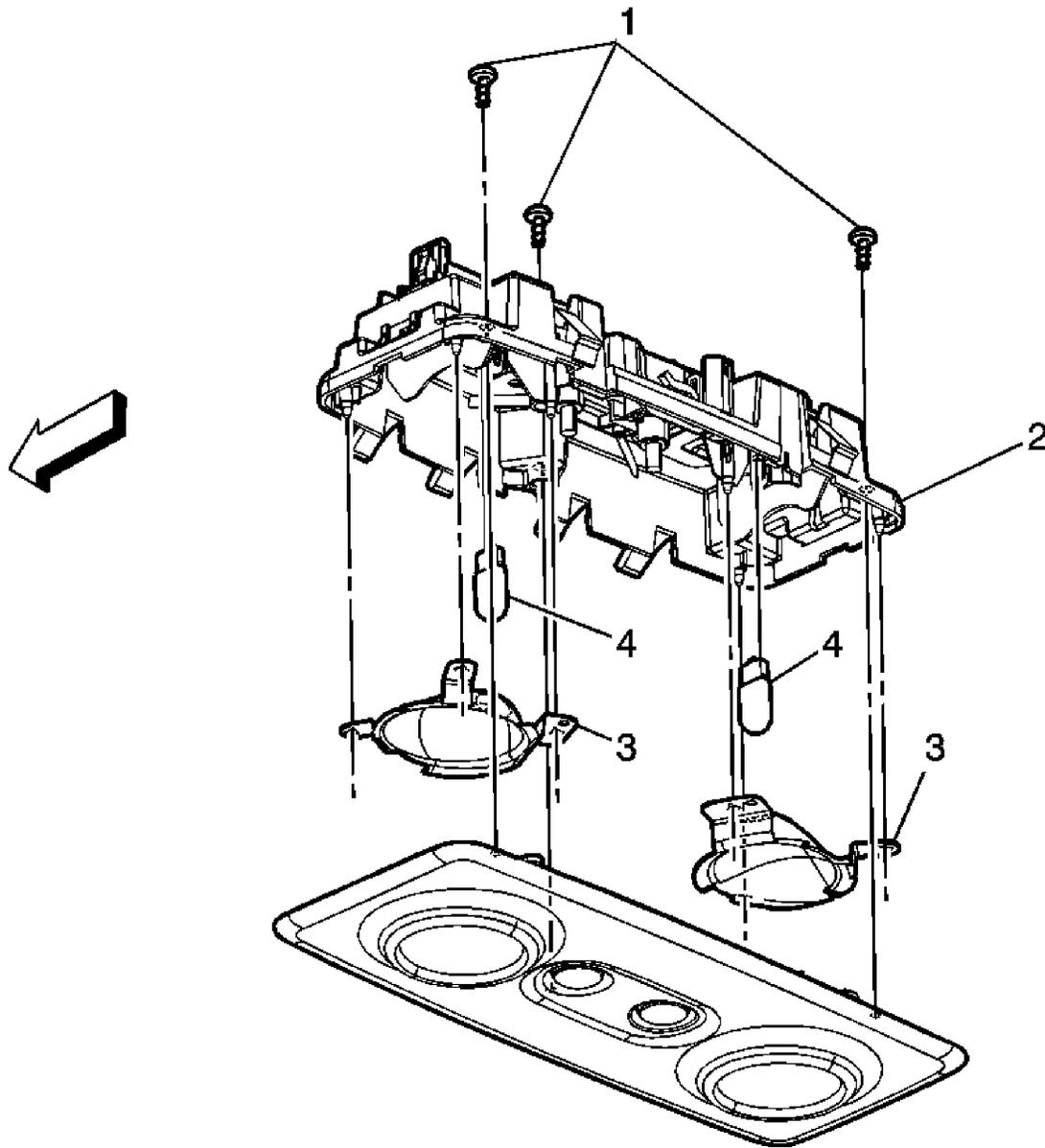


Fig. 126: Locating Reading Lamp Bulb
 Courtesy of GENERAL MOTORS CORP.

Reading Lamp Bulb Replacement

Callout	Component Name
Preliminary Procedure: Remove the reading lamp assembly. Refer to Reading Lamp Replacement .	
	Dome Lamp Housing Screw (Qty: 3)

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1	NOTE: Refer to <u>Fastener Notice</u> . Tighten: 2 N.m (18 lb in)
2	Dome Lamp Housing
3	Dome Reading Reflector (Qty: 2)
4	Reading Lamp Bulb (Qty: 2)

READING LAMP REPLACEMENT

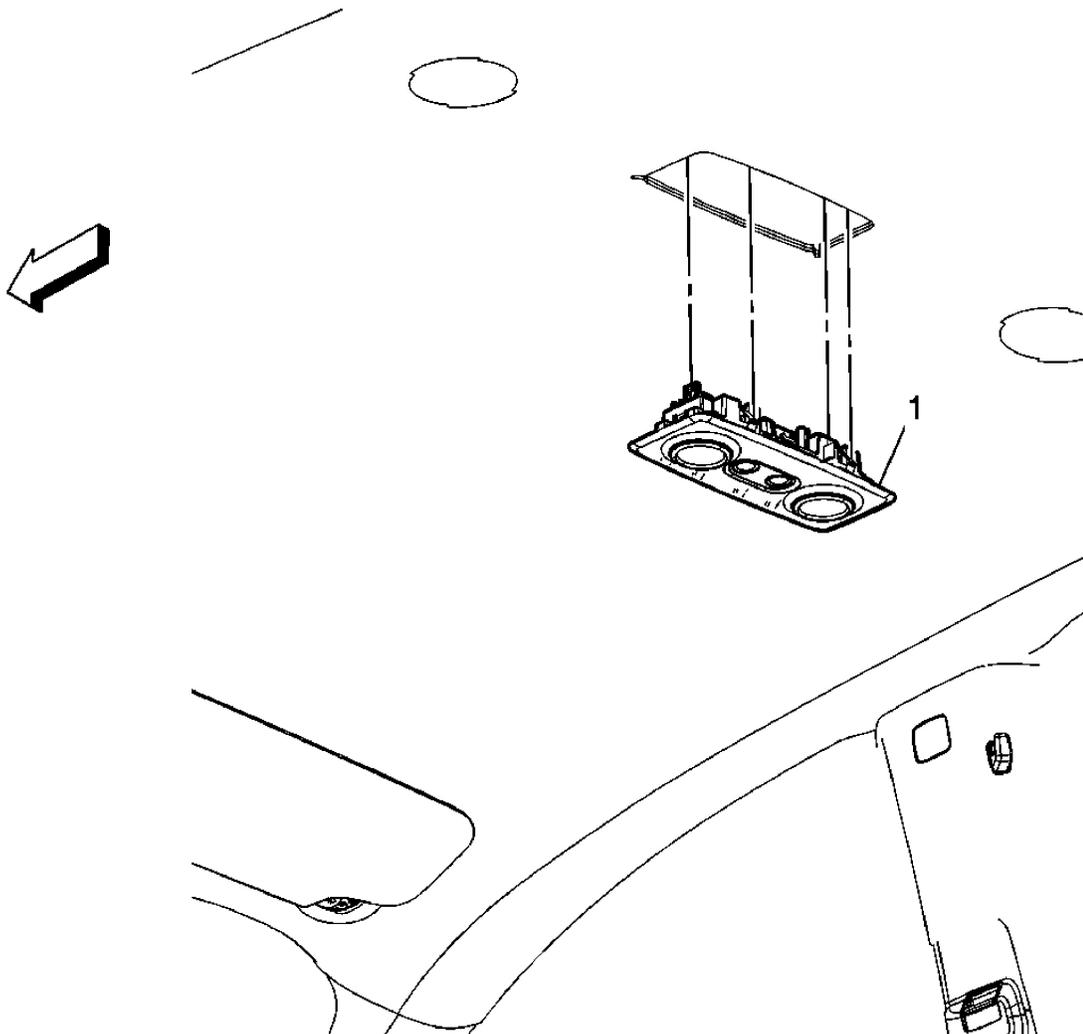


Fig. 127: View Of Reading Lamp
Courtesy of GENERAL MOTORS CORP.

Reading Lamp Replacement

Callout	Component Name
1	<p data-bbox="342 316 1458 369">Reading Lamp Assembly</p> <p data-bbox="342 401 1458 454">Procedure</p> <ol data-bbox="342 479 1458 714" style="list-style-type: none"><li data-bbox="342 479 1458 569">1. Carefully use a plastic flat bladed tool and release the clips retaining the reading lamp assembly to the headliner.<li data-bbox="342 575 1458 666">2. Grasp the reading lamp assembly and pull downward to disengage the retainers securing the reading lamp assembly to the vehicle.<li data-bbox="342 672 1458 714">3. Disconnect the electrical connectors.

DOME AND READING LAMP BULB REPLACEMENT

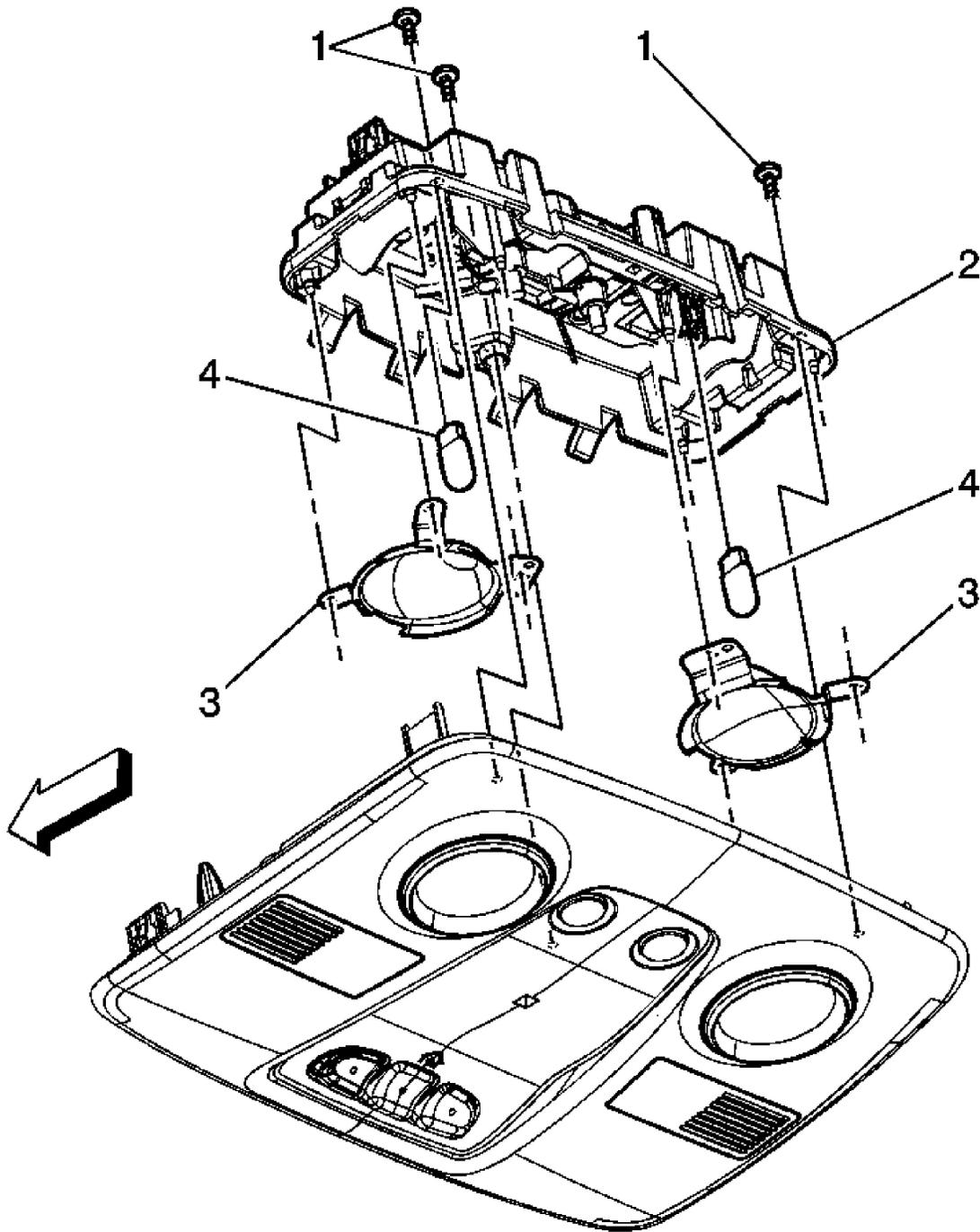


Fig. 128: Identifying Dome And Reading Lamp Bulbs
 Courtesy of GENERAL MOTORS CORP.

Dome and Reading Lamp Bulb Replacement

Callout	Component Name

Preliminary Procedure:

Remove the overhead console assembly. Refer to **Roof Console Replacement** .

1	Dome Lamp Housing Screw (Qty: 3) NOTE: Refer to Fastener Notice . Tighten: 2 N.m (18 lb in)
2	Dome Lamp Housing
3	Dome Reading Reflector (Qty: 2)
4	Reading Lamp Bulb (Qty: 2)

INSTRUMENT PANEL COURTESY LAMP BULB REPLACEMENT - LEFT SIDE

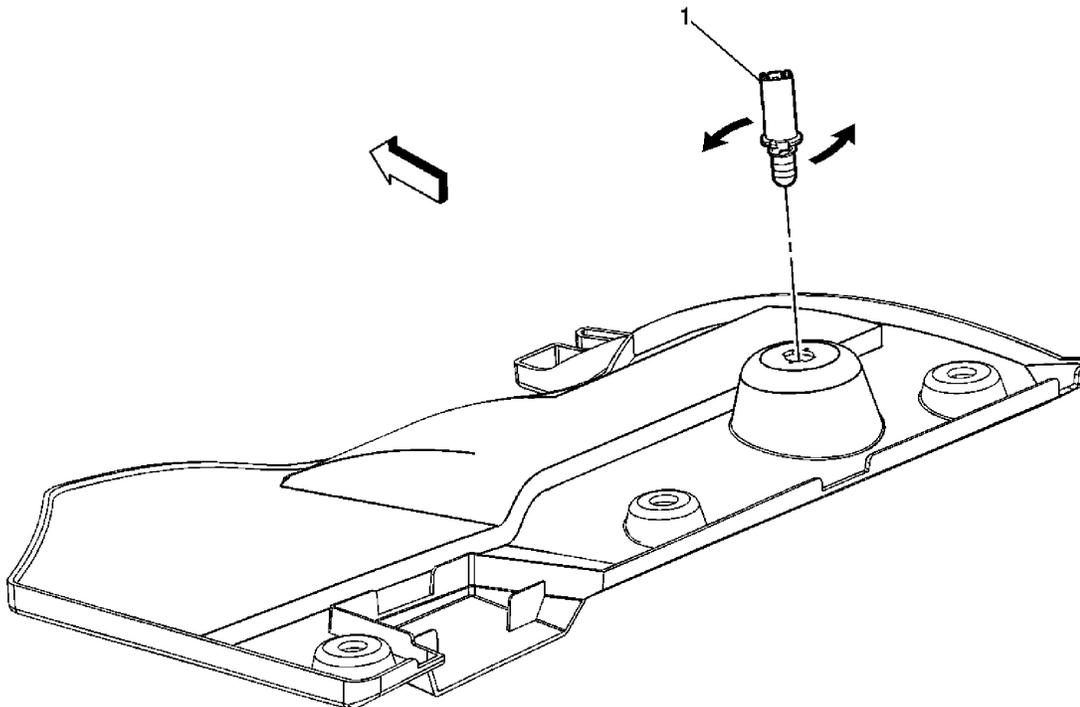


Fig. 129: View Of Instrument Panel Courtesy Lamp Bulb - Left Side
 Courtesy of GENERAL MOTORS CORP.

Instrument Panel Courtesy Lamp Bulb Replacement - Left Side

Callout	Component Name
Preliminary Procedure:	
Remove the instrument panel insulator panel. Refer to Instrument Panel Insulator Panel	

Replacement - Left Side .

1	Courtesy Lamp Assembly Procedure: Carefully twist to release the bulb assembly.
---	--

INSTRUMENT PANEL COURTESY LAMP BULB REPLACEMENT - RIGHT SIDE

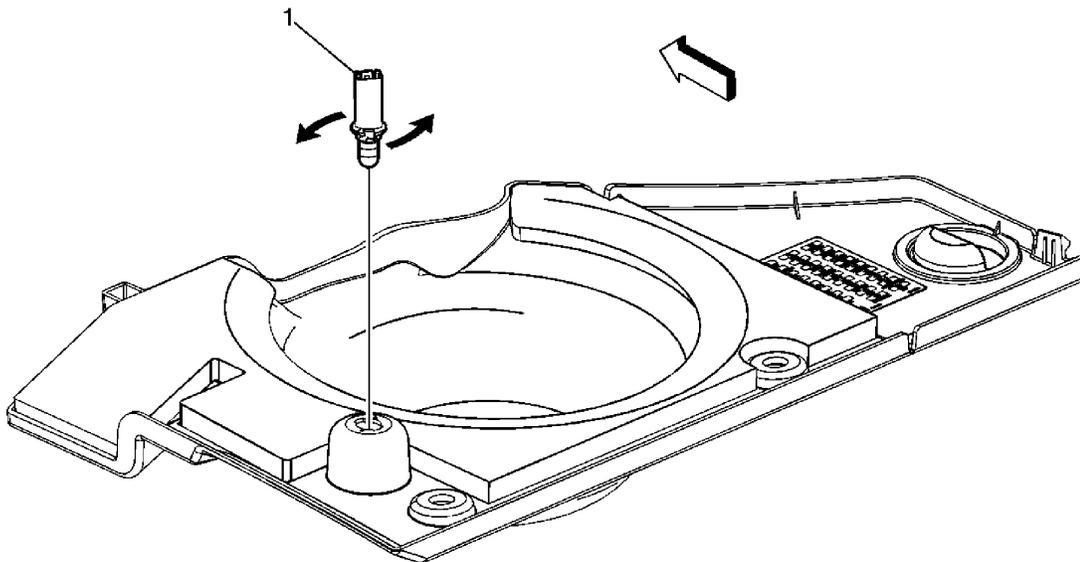


Fig. 130: View Of Instrument Panel Courtesy Lamp Bulb - Right Side
 Courtesy of GENERAL MOTORS CORP.

Instrument Panel Courtesy Lamp Bulb Replacement - Right Side

Callout	Component Name
Preliminary Procedure: Remove the instrument panel insulator panel. Refer to <u>Instrument Panel Insulator Panel Replacement - Right Side</u> .	
1	Courtesy Lamp Assembly Procedure: Carefully twist to release the bulb assembly.

OVERHEAD CONSOLE READING LAMP AND BULB REPLACEMENT (U42)

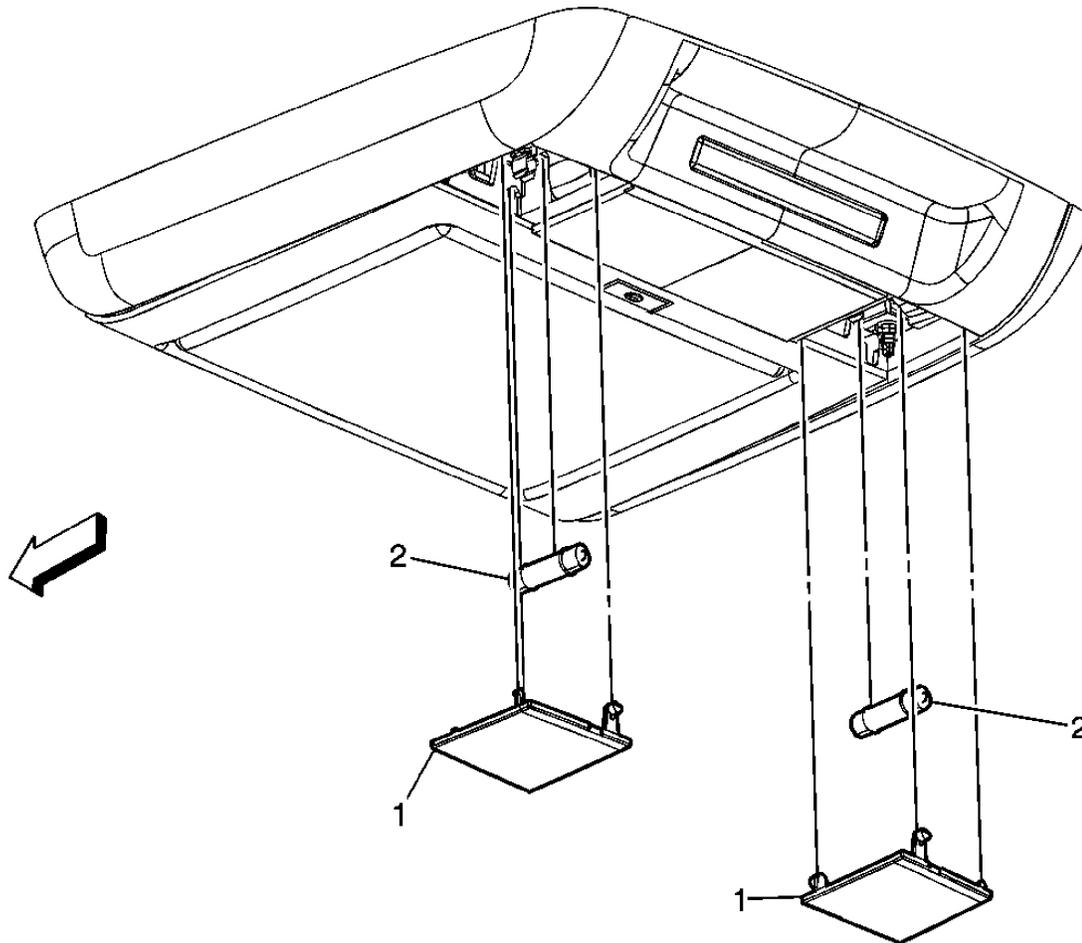


Fig. 131: Locating Overhead Console Reading Lamp & Bulb (U42)
 Courtesy of GENERAL MOTORS CORP.

Overhead Console Reading Lamp and Bulb Replacement (U42)

Callout	Component Name
1	Video Player Remote Control Sensor Lens (Qty: 2) Procedure: Carefully use a plastic flat bladed tool and release the tabs retaining the lens to the roof console assembly.
2	Reading Lamp Bulb (Qty: 2)

OVERHEAD CONSOLE READING LAMP AND BULB REPLACEMENT (U42/C3U)

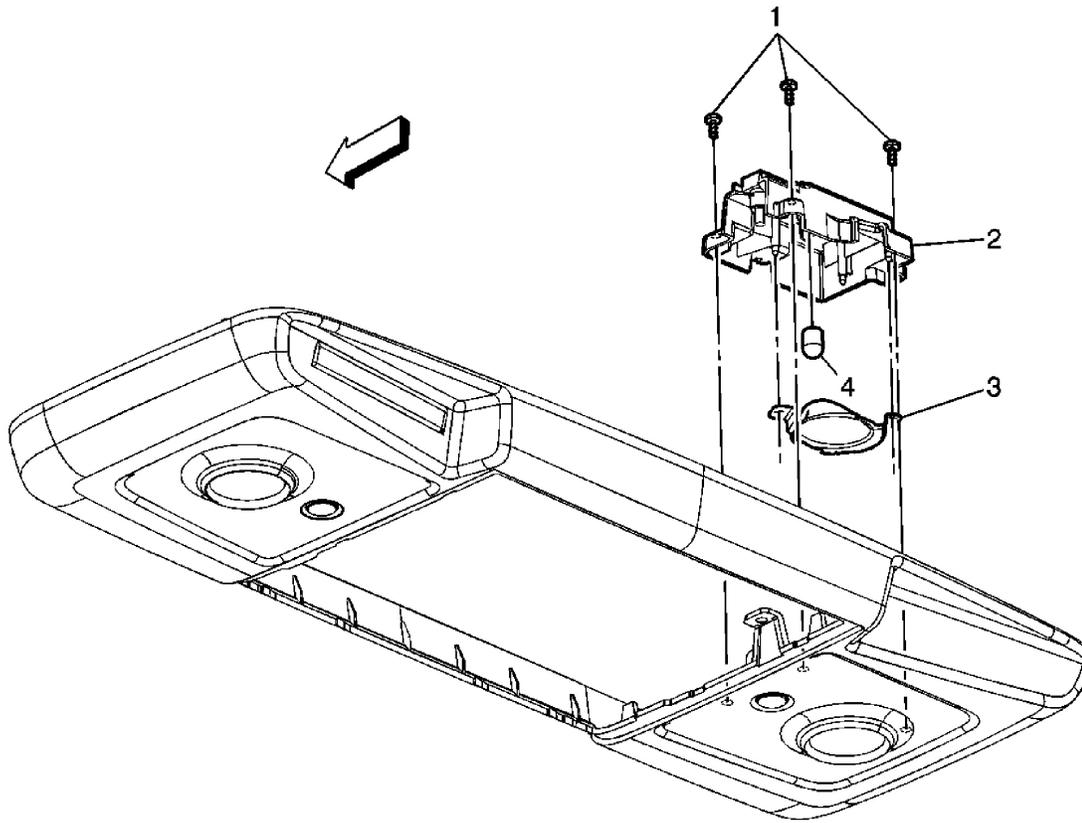


Fig. 132: Identifying Overhead Console Reading Lamp & Bulb (U42/C3U)
 Courtesy of GENERAL MOTORS CORP.

Overhead Console Reading Lamp and Bulb Replacement (U42/C3U)

Callout	Component Name
Preliminary Procedure: Remove the rear roof console. Refer to <u>Roof Rear Console Replacement</u> .	
1	Sunroof DVD Lamp Housing Screw (Qty: 6) NOTE: Refer to <u>Fastener Notice</u> . Tighten: 2 N.m (18 lb in)
2	Sunroof DVD Lamp Housing (Qty: 2)
3	Sunroof DVD Lamp Reflector (Qty: 2)
4	Reading Lamp Bulb (Qty: 2)

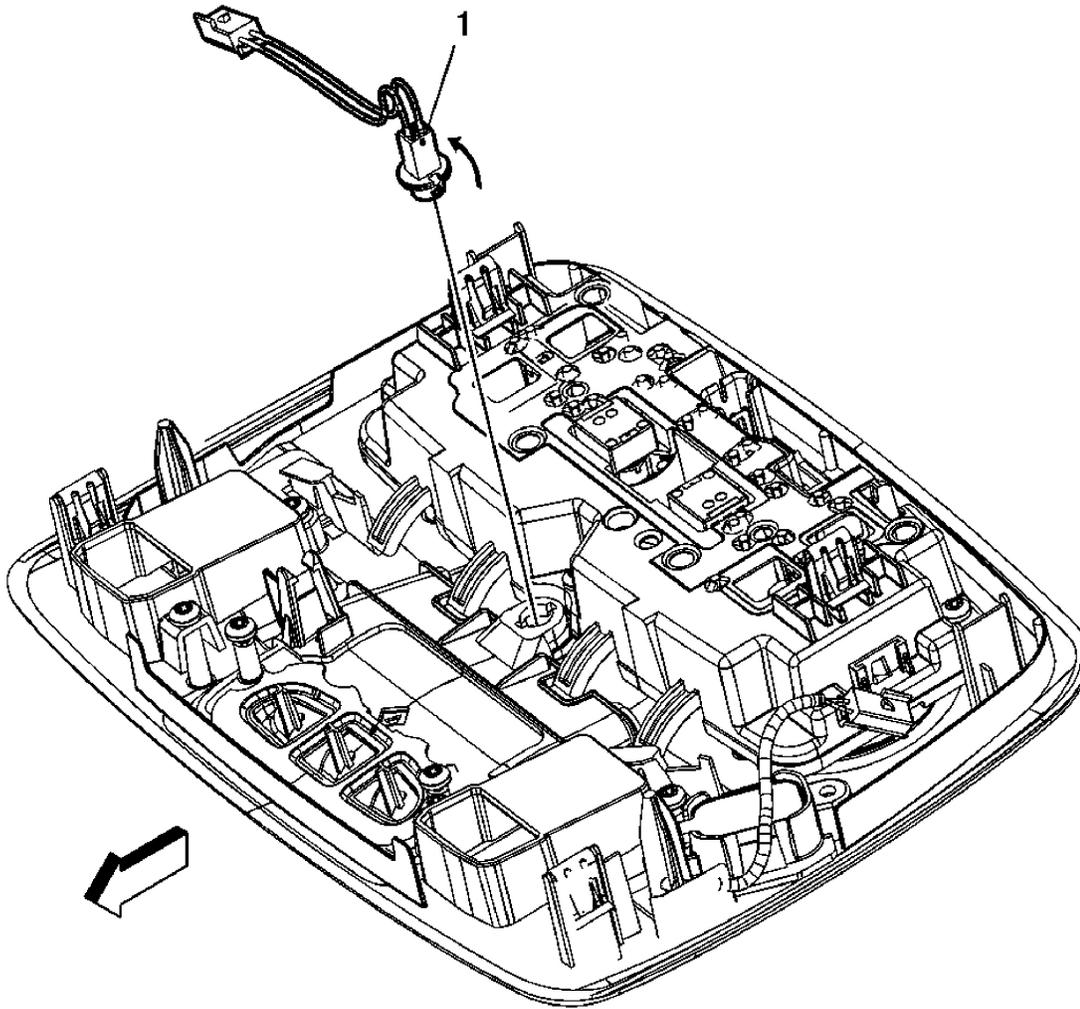


Fig. 133: View Of Luminescent Lamp - Roof Console
 Courtesy of GENERAL MOTORS CORP.

Luminescent Lamp Replacement - Roof Console

Callout	Component Name
Preliminary Procedure: Remove the overhead console assembly. Refer to Roof Console Replacement .	
1	Luminescent Lamp Assembly Procedure 1. Disconnect the electrical connector. 2. Turn to release the lamp assembly from the overhead console.

VANITY MIRROR LAMP BULB REPLACEMENT

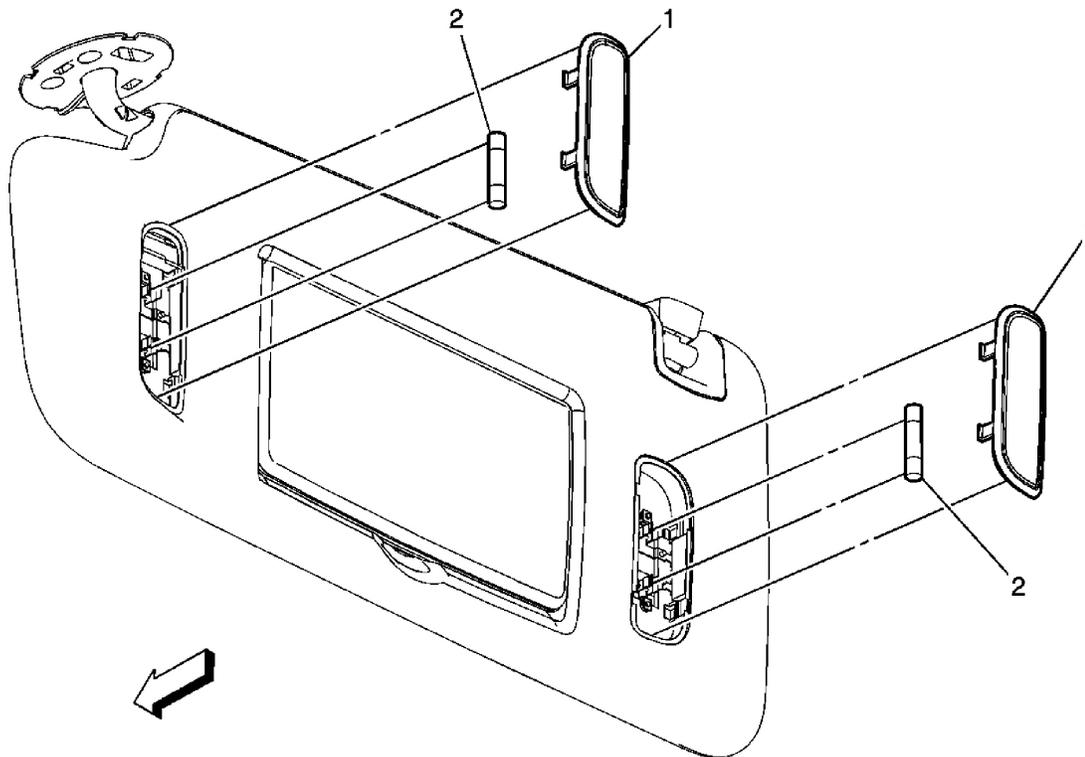


Fig. 134: View Of Vanity Mirror Lamp Bulb
 Courtesy of GENERAL MOTORS CORP.

Vanity Mirror Lamp Bulb Replacement

Callout	Component Name
1	Sunshade Illuminated Mirror Lamp Lens Procedure: Carefully use a flat bladed tool and release the tabs retaining the lamp lens to the sunshade assembly.
2	Sunshade Illuminated Mirror Lamp Bulb

HEADLAMP REPLACEMENT

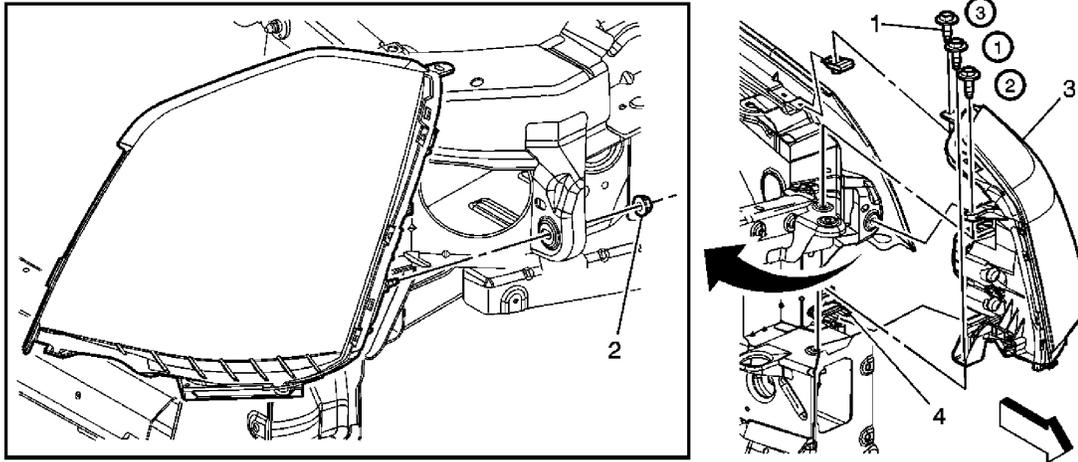


Fig. 135: Identifying Headlamp - High Intensity Discharge (HID)
 Courtesy of GENERAL MOTORS CORP.

Headlamp Replacement

Callout	Component Name
Preliminary Procedure: Remove the front bumper fascia. Refer to <u>Front Bumper Fascia Replacement</u> .	
1	Headlamp Assembly Bolt (Qty: 3) NOTE: Refer to <u>Fastener Notice</u> . Tip: Tighten the fasteners in sequence as shown. Tighten: 6 N.m (53 lb in)
2	Headlamp Assembly Nut Tighten: 6 N.m (53 lb in)
3	Headlamp Assembly Tip: Pull outward on the housing in order to disconnect the electrical connection at the lower rear edge of the lamp.
4	Electrical Harness Connector Tip: Disconnect the electrical connector from the headlamp assembly.

HIGH INTENSITY DISCHARGE HEADLAMP BALLAST REPLACEMENT

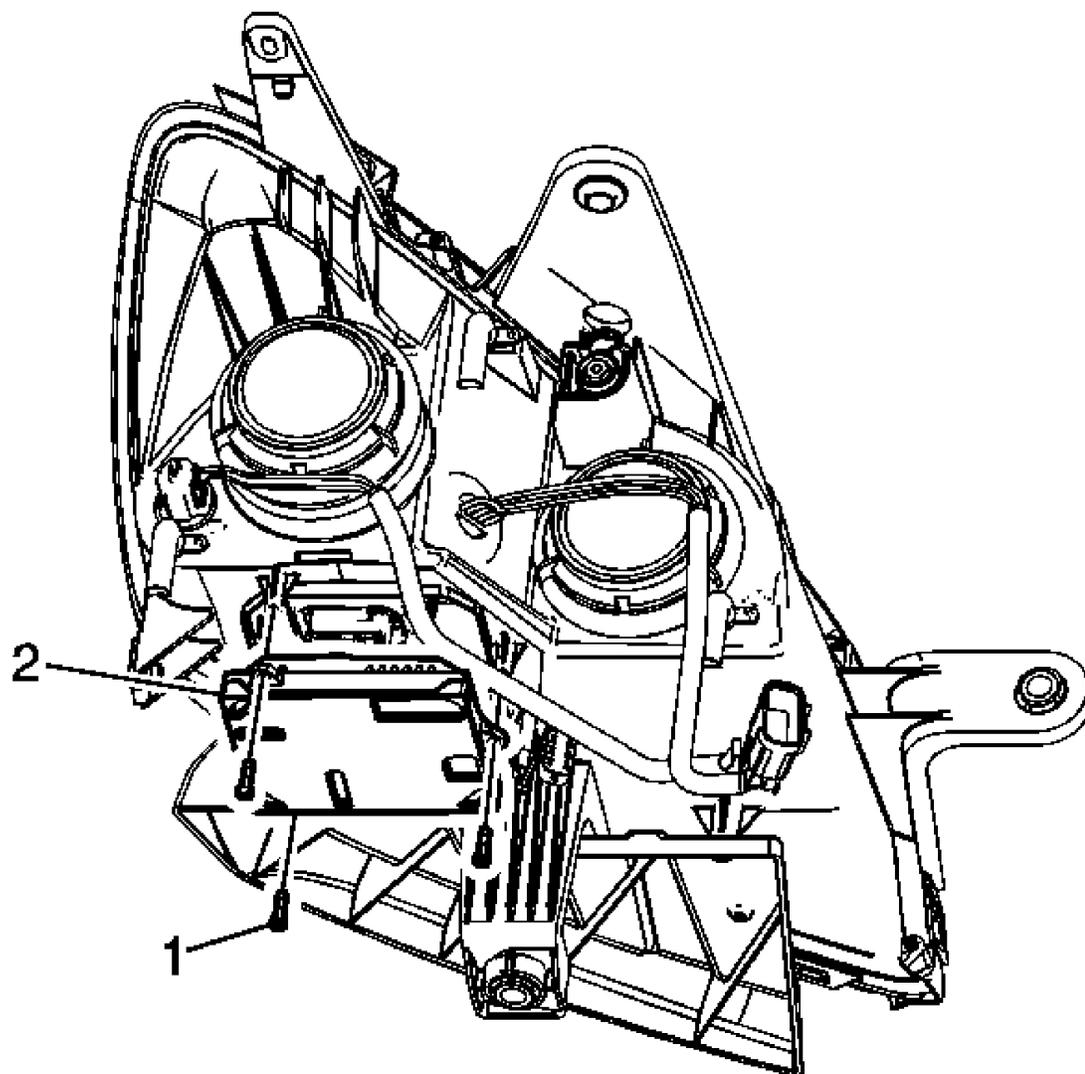


Fig. 136: Identifying High Intensity Discharge Headlamp Ballast
 Courtesy of GENERAL MOTORS CORP.

High Intensity Discharge Headlamp Ballast Replacement

Callout	Component Name
Preliminary Procedure: Remove the headlamp capsule. Refer to <u>Headlamp Capsule Replacement</u> .	
	Headlamp Capsule Ballast Screw (Qty: 3) CAUTION: The high intensity discharge system produces high voltage and current. To reduce the risk of severe shocks and burns:

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1	<ul style="list-style-type: none"> • 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. <p>NOTE: Refer to <u>Fastener Notice</u> .</p> <p>Tighten: 3 N.m (27 lb in)</p>
2	Headlamp Ballast

HEADLAMP BULB REPLACEMENT (NON HID)

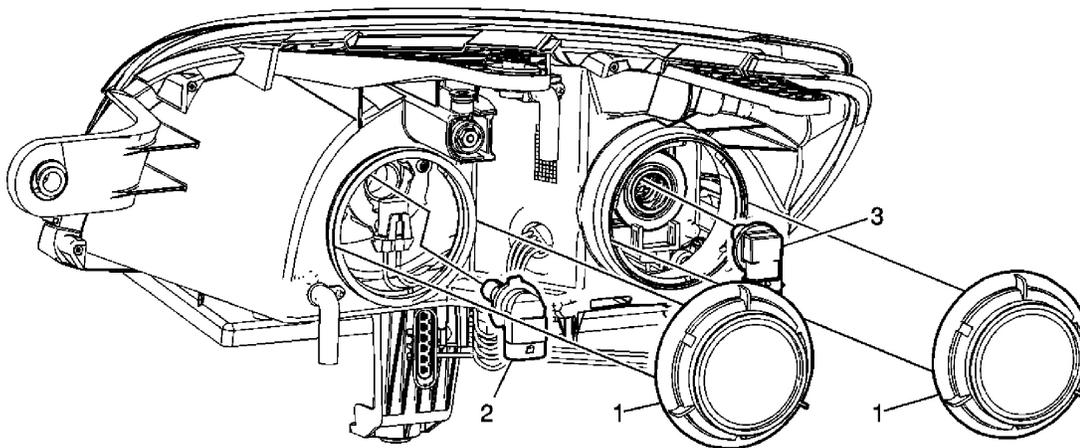


Fig. 137: Identifying Headlamp Bulb (Non HID)

Courtesy of GENERAL MOTORS CORP.

Headlamp Bulb Replacement (Non HID)

Callout	Component Name
<p>Procedure: Remove the headlamp assembly. Refer to <u>Headlamp Replacement</u>.</p>	
1	Headlamp Bulb Accessory Covers (Qty: 2)
2	<p>Headlamp Bulb Assembly (High Beam)</p> <p>CAUTION: Refer to <u>Halogen Bulb Caution</u> .</p>

Tip: Disconnect the electrical connectors and remove the bulbs.

3 Headlamp Bulb Assembly (Low Beam)

HEADLAMP BULB REPLACEMENT (HID)

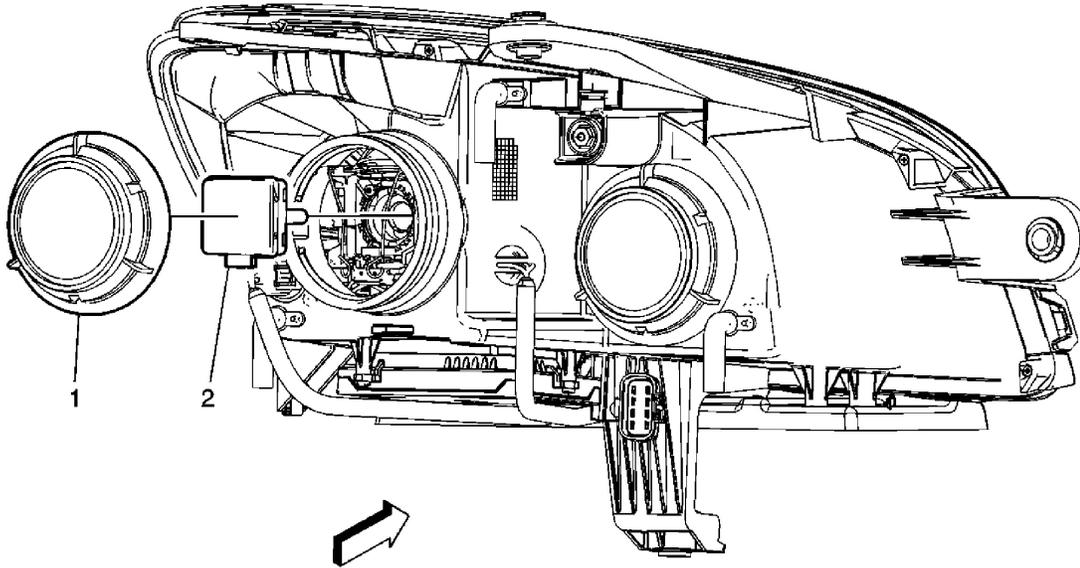


Fig. 138: Identifying Headlamp Bulb (HID)
 Courtesy of GENERAL MOTORS CORP.

Headlamp Bulb Replacement (HID)

Callout	Component Name
Procedure: Remove the headlamp assembly. Refer to Headlamp Replacement .	
1	Headlamp Bulb Accessory Cover Tip: Rotate the cover counter-clockwise and remove.
2	Headlamp Bulb Procedure: Release the wire clip from the bulb and disconnect the electrical connector in order to remove the bulb from the lamp assembly.

HEADLAMP CAPSULE REPLACEMENT

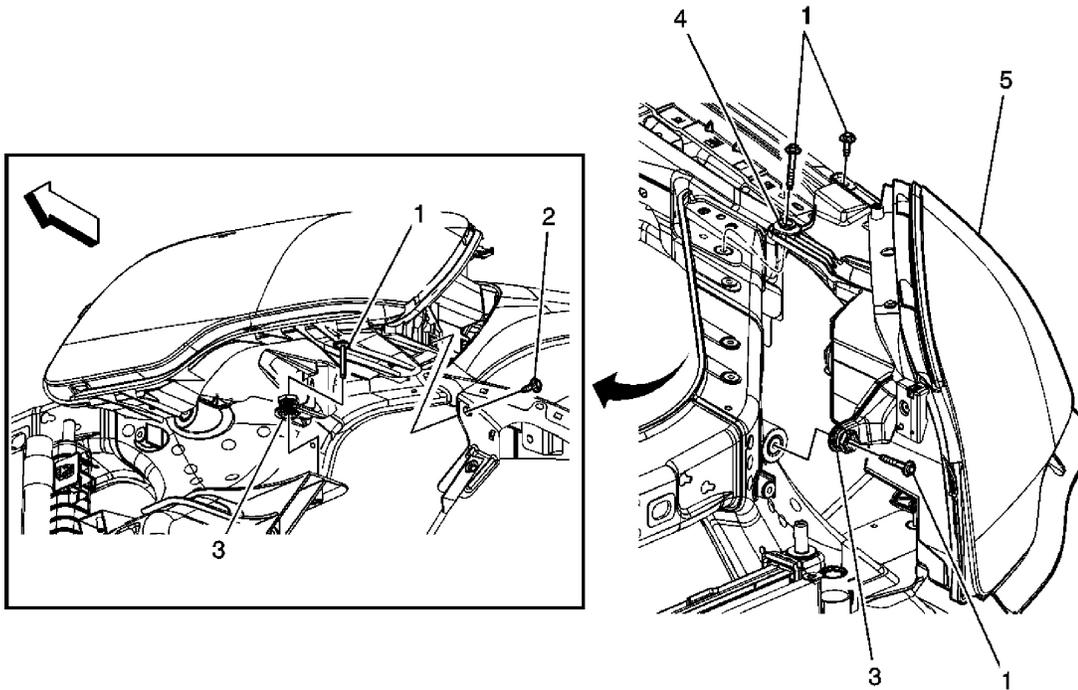


Fig. 139: Identifying Headlamp Capsule
 Courtesy of GENERAL MOTORS CORP.

Headlamp Capsule Replacement

Callout	Component Name
<p>Preliminary Procedure: Remove the front bumper fascia. Refer to <u>Front Bumper Fascia Replacement</u> .</p>	
<p>1</p>	<p>Headlamp Assembly Bolts (Qty: 4)</p> <p>CAUTION: 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.</p> <p>CAUTION: The high intensity discharge system produces high voltage and current. To reduce the risk of severe shocks and burns:</p> <ul style="list-style-type: none"> ● 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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	NOTE: Refer to <u>Fastener Notice</u> . Tighten: 6 N.m (53 lb in)
2	Fender Brace to Headlamp Screw Tighten: 6 N.m (53 lb in)
3	Headlamp Adjuster Nut
4	Headlamp Vertical Adjuster Bolt Bushing
5	Headlamp Capsule Assembly Tip: Disconnect the forward lamp harness electrical connector from the headlamp prior to removing the headlamp assembly from the vehicle.

HEADLAMP AIMING

The vehicle has a visual optical headlamp aiming system. The aim has been preset at the factory and should need no further adjustment

However, If the vehicle is damaged in an accident, the headlamp aim may be affected and adjustment may be necessary.

If oncoming vehicles flash their high beams at you, this may also mean the vertical aim needs to be adjusted.

It is recommended that the vehicle is taken to your dealer for service if the headlamps need to be re-aimed. It is possible however, to re-aim the headlamps as described in the following procedure.

The vehicle should be properly prepared as follows:

- The vehicle should be placed so the headlamps are 25 ft (7.6 m) from a light colored wall or other flat surface.
- The vehicle must have all four tires on a perfectly level surface which is level all the way to the wall or other flat surface.
- The vehicle should be placed so it is perpendicular to the wall or other flat surface.
- The vehicle should not have any snow, ice or mud on it.
- The vehicle should be fully assembled and all other work stopped while headlamp aiming is being done.

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- The vehicle should be normally loaded with a full tank of fuel and one person or 160 lbs (75 kg) on the driver seat.
- Tires should be properly inflated.

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

1. To adjust the vertical aim on the headlamps, close the hood and complete the following:
2. Find the aim dots on the lens of the lamp assembly.
3. Measure the distance from the ground to the aim dot on the lamp with the hood in the closed position. Record the distance.
4. At the wall or other flat surface, measure from the ground upward the recorded distance and draw or tape a horizontal line the width of the vehicle.

NOTE: Do not cover a headlamp to improve beam cut-off when aiming. Covering a headlamp may cause excessive heat build-up which may cause damage to the headlamp.

5. Turn on the low-beam headlamps and place a piece of cardboard or equivalent in front of the headlamp not being aimed. This should allow only the beam of light from the headlamp being aimed to be seen on the flat surface.

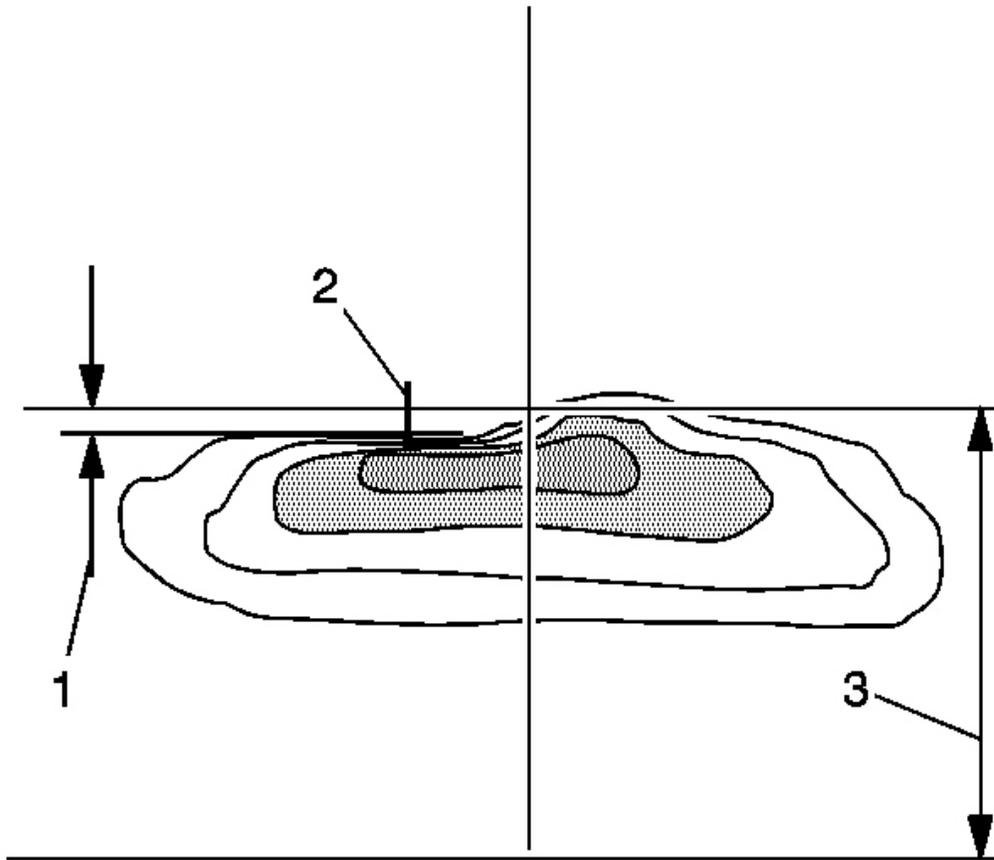


Fig. 140: Measuring Headlamp Horizontal Axis
Courtesy of GENERAL MOTORS CORP.

6. Adjust the vertical headlamp adjustment screw until the Hot Spot (Center of mass of the Bright Area) is set at 8.0 inches (2) below the headlamp horizontal axis (1) within +/- 2 inches when measured at 25 feet.

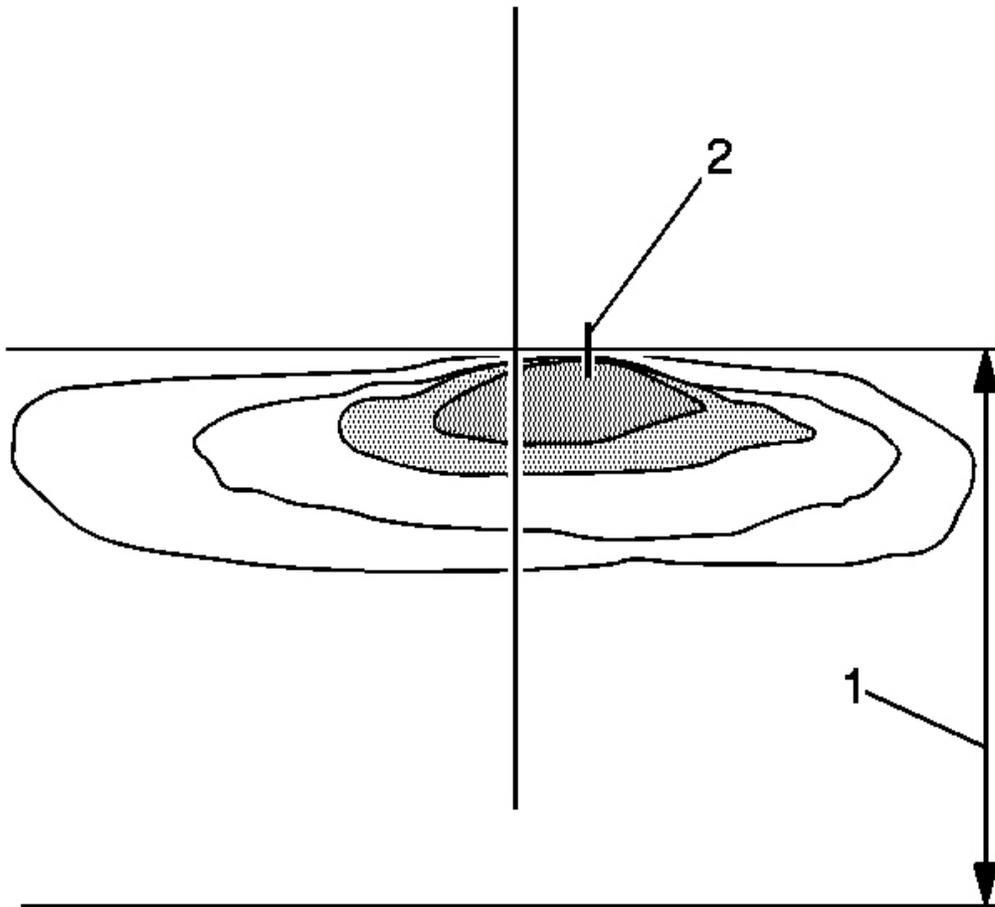


Fig. 141: Measuring Horizontal & vertical Axis
Courtesy of GENERAL MOTORS CORP.

7. Adjust the vertical headlamp adjustment screw until the Right Gradient Line (Cutoff Line) is set at the Horizontal Axis within +/- 2.0 inches (2) measured at 25 feet.
8. Repeat steps 6 and 7 for the opposite headlamp.

FRONT FOG LAMP REPLACEMENT

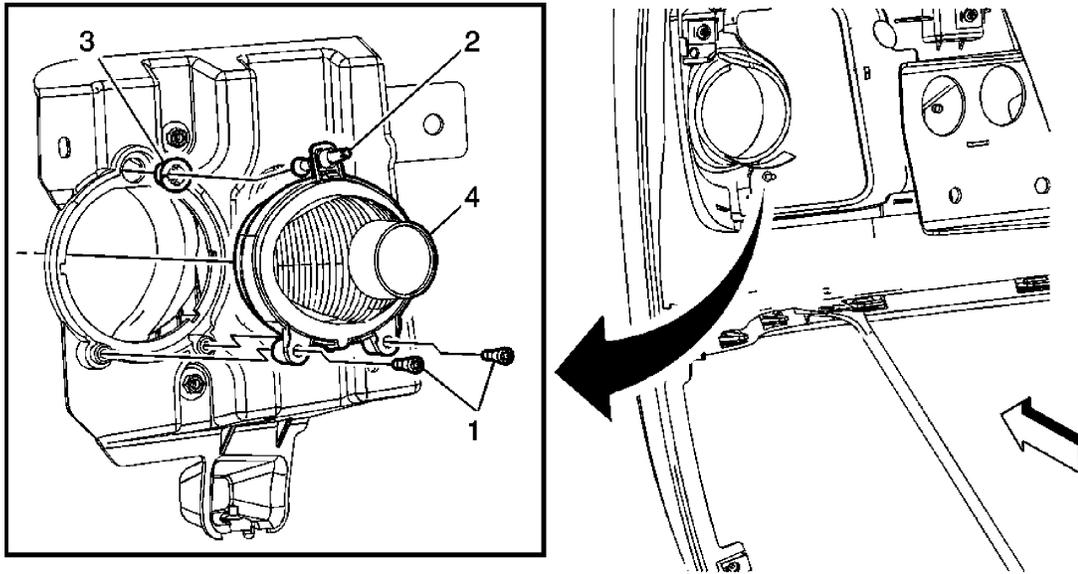


Fig. 142: View Of Front Fog Lamp
 Courtesy of GENERAL MOTORS CORP.

Front Fog Lamp Replacement

Callout	Component Name
<p>Preliminary Procedure: Remove the park and turn signal lamp bracket assembly. Refer to <u>Parking and Turn Signal Lamp Bracket Replacement</u>.</p>	
<p>1</p>	<p>Front Fog Lamp Assembly Screw (Qty: 2)</p> <p>NOTE: Refer to <u>Fastener Notice</u> .</p> <p>Tighten: 2.0 N.m (18 lb in)</p>
<p>2</p>	<p>Front Fog Lamp Adjuster Screw</p> <p>Tip: Count the reverse turns of the adjuster screw in order to have the same number of turns upon re-assembly.</p> <p>Procedure: Aim the fog lamps after the park and turn signal lamp bracket has been re-installed. Refer to <u>Fog Lamp Aiming</u>.</p>
<p>3</p>	<p>Front Fog Lamp Adjuster Screw Retainer</p> <p>Tip: Ensure the retainer is fully seated into the park and turn signal lamp bracket prior to installing the adjuster screw.</p>
	<p>Front Fog Lamp Assembly</p>

4

CAUTION:
Refer to Halogen Bulb Caution .

Tip: Transfer the fog lamp bulb as needed.

FRONT FOG LAMP BULB REPLACEMENT

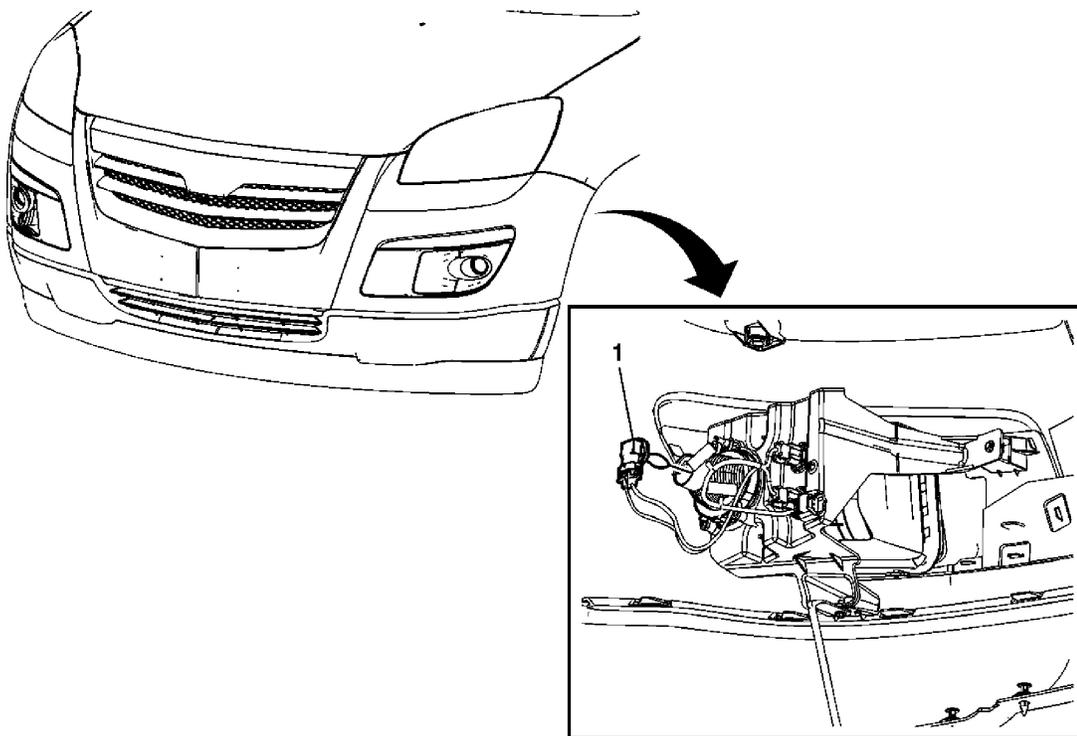


Fig. 143: Identifying Front Fog Lamp Bulb
Courtesy of GENERAL MOTORS CORP.

Front Fog Lamp Bulb Replacement

Callout	Component Name
Preliminary Procedures	
<ol style="list-style-type: none"> 1. Remove the front wheelhouse liner in order to access the fog lamp bulb. Refer to <u>Front Wheelhouse Liner Replacement (Front)</u> or <u>Front Wheelhouse Liner Replacement (Rear)</u> . 2. Disconnect the fog lamp bulb socket electrical connectors. 	

1

Front Fog Lamp Bulb (Qty: 2)

Tip: Rotate the bulb sockets and remove.

FRONT FOG LAMP COVER REPLACEMENT

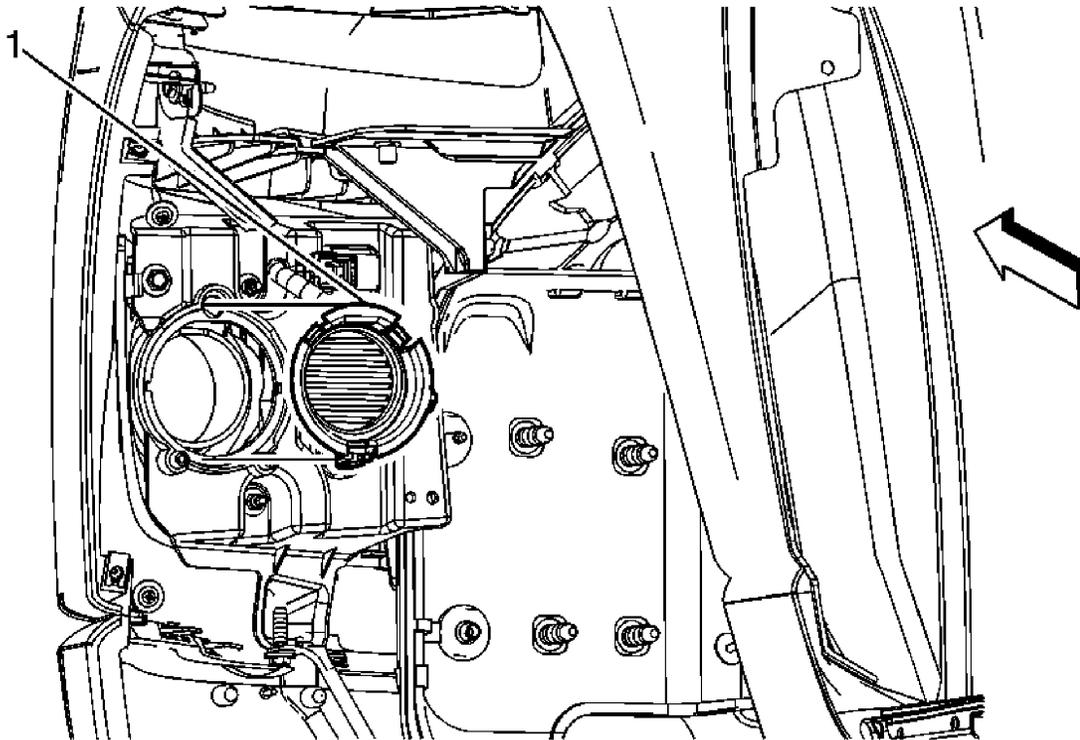


Fig. 144: Identifying Front Fog Lamp Cover
 Courtesy of GENERAL MOTORS CORP.

Front Fog Lamp Cover Replacement

Callout	Component Name
<p>Preliminary Procedure: Remove the wheelhouse liner in order to access the fog lamp cover. Refer to Front Wheelhouse Liner Replacement (Front) or Front Wheelhouse Liner Replacement (Rear) .</p>	
<p>1</p>	<p>Fog Lamp Bulb Cover Procedure: Rotate the bulb cover one quarter turn in order to remove the cover from inside the front bumper fascia.</p>

FOG LAMP AIMING

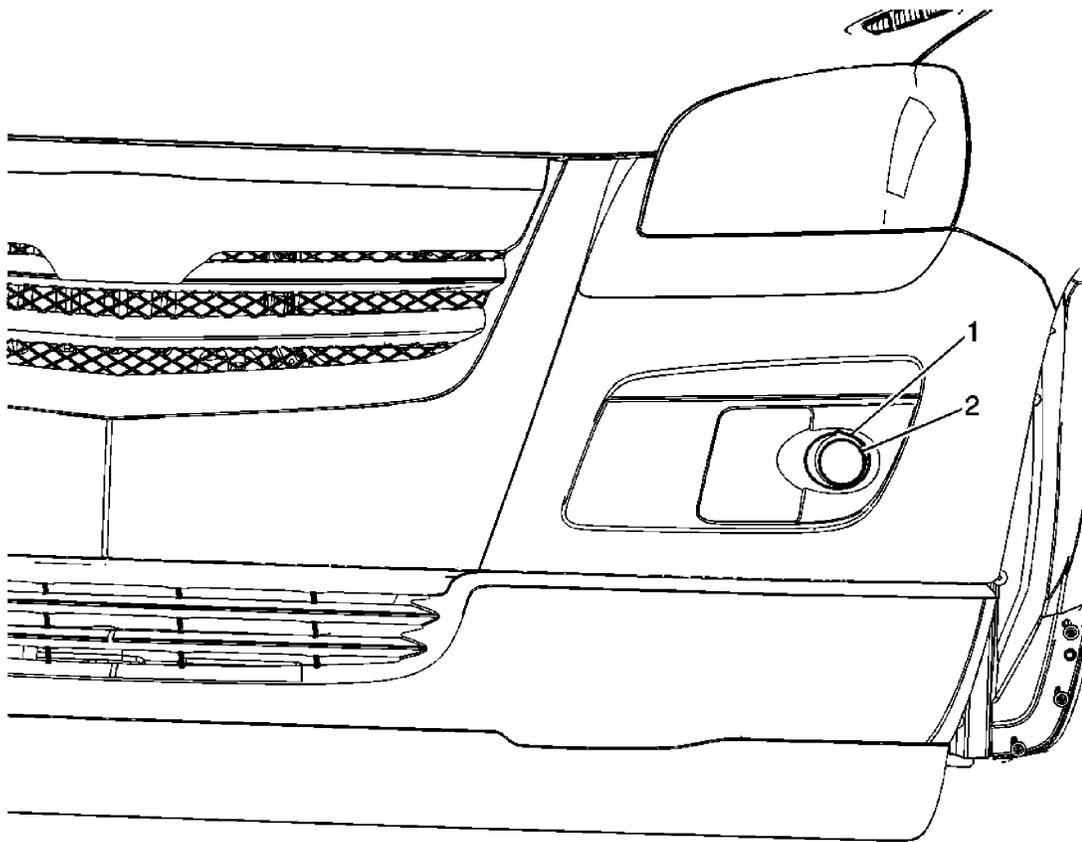


Fig. 145: View Of Fog Lamp & Adjuster Screws
 Courtesy of GENERAL MOTORS CORP.

Fog Lamp Aiming

Callout	Component Name
Preliminary Procedures	
<ol style="list-style-type: none"> 1. Completely assemble all of the components on the vehicle. 2. Place the vehicle on a level surface. 3. Stop all work on the vehicle that could affect the ride height of the vehicle. 4. Close all doors and verify that the luggage compartment is empty. 5. Stabilize the suspension. 6. Ensure the fuel level is full. 7. Ensure the tires are inflated to proper specification, see the tire placard, inside edge of the driver's door. 8. Ensure that the driver or a similar weight, approximately 75kg (165 lbs) is in the 	

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driver seat.

9. Park the vehicle 7.6 m (25 ft) away from the target screen.
10. Measure from the center of the fog lamp to the ground line. Using this measurement, mark the horizontal centerline of the fog lamp line on the target screen directly in front of the vehicle.
11. Turn on the fog lamps.
12. The top of the fog lamp beam image on the target screen should be 102 mm (4 in) below the center of the fog lamp lens height.
13. Adjust the fog lamp beam as required using the adjusting screw just above the fog lamp lens, exterior side of the vehicle.
14. Turn off the fog lamps after adjustment has been achieved.

1	<p>Adjuster Screw</p> <p>Procedure: Minimal turning of the adjuster screw will achieve maximum adjustment results on the screen.</p> <p>Tip: Horizontal aim is not adjustable on this vehicle. Vertical aiming is accomplished by using the adjuster screw located at the top of the fog lamp from the exterior of the lower outer grille.</p>
2	<p>Fog Lamp Projector Lens</p> <p>Procedure: Measure from the centerline of the lens to the ground line to achieve the target screen horizontal line for projector adjustment.</p>

DAYTIME RUNNING LAMP BULB REPLACEMENT

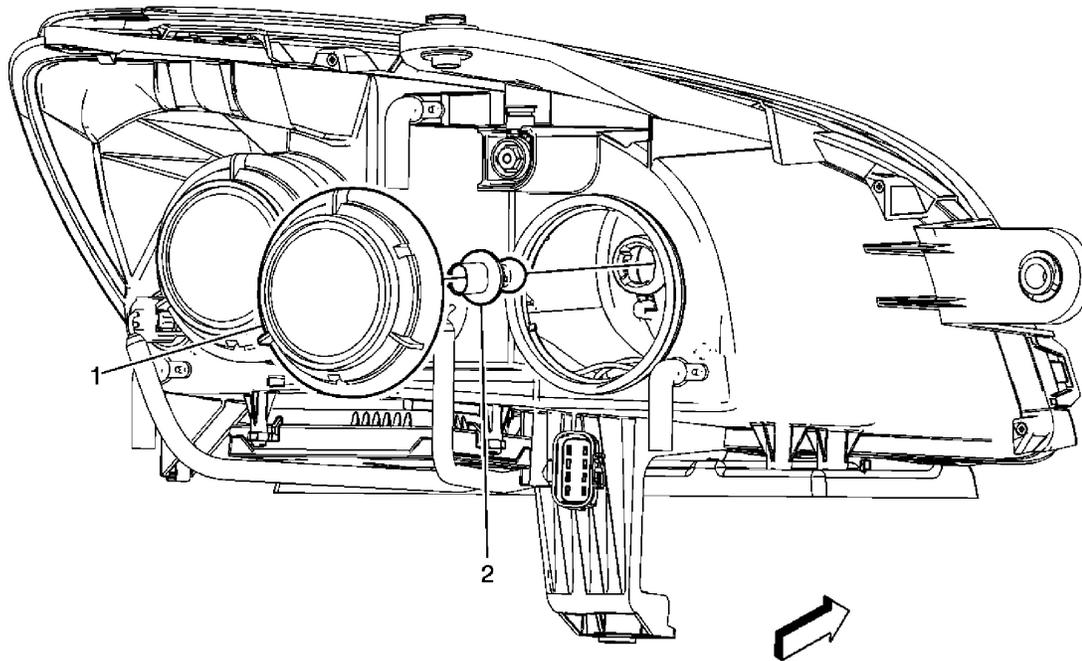


Fig. 146: View Of Daytime Running Lamp Bulb
 Courtesy of GENERAL MOTORS CORP.

Daytime Running Lamp Bulb Replacement

Callout	Component Name
Preliminary Procedure: Remove the headlamp capsule from the vehicle. Refer to <u>Headlamp Capsule Replacement</u> .	
1	Headlamp Bulb Accessory Cover Procedure: Rotate the bulb cover counterclockwise from the headlamp capsule and remove.
2	Daytime Running Lamp Bulb CAUTION: Refer to <u>Halogen Bulb Caution</u> . Procedure: Rotate the bulb socket and disconnect the electrical connector from the bulb socket.

SIDE MARKER LAMP BULB REPLACEMENT (NON HID)

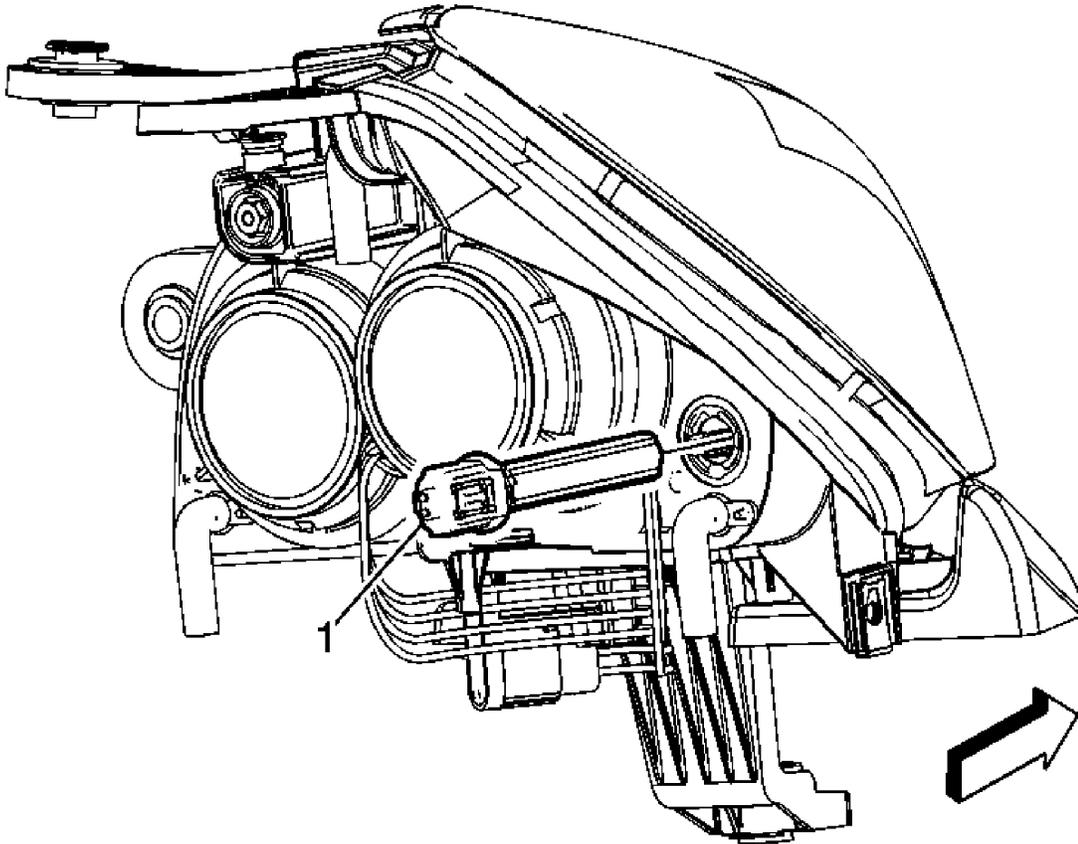


Fig. 147: View Of Side Marker Lamp Bulb (Non HID)
 Courtesy of GENERAL MOTORS CORP.

Side Marker Lamp Bulb Replacement (Non HID)

Callout	Component Name
Preliminary Procedures	
1. Remove the front bumper fascia. Refer to <u>Front Bumper Fascia Replacement</u> . 2. Remove the headlamp assembly. Refer to <u>Headlamp Replacement</u> .	
1	Front Side Marker Lamp Bulb Tip: Rotate the lamp socket and remove the bulb.

SIDE MARKER LAMP BULB REPLACEMENT (HID)

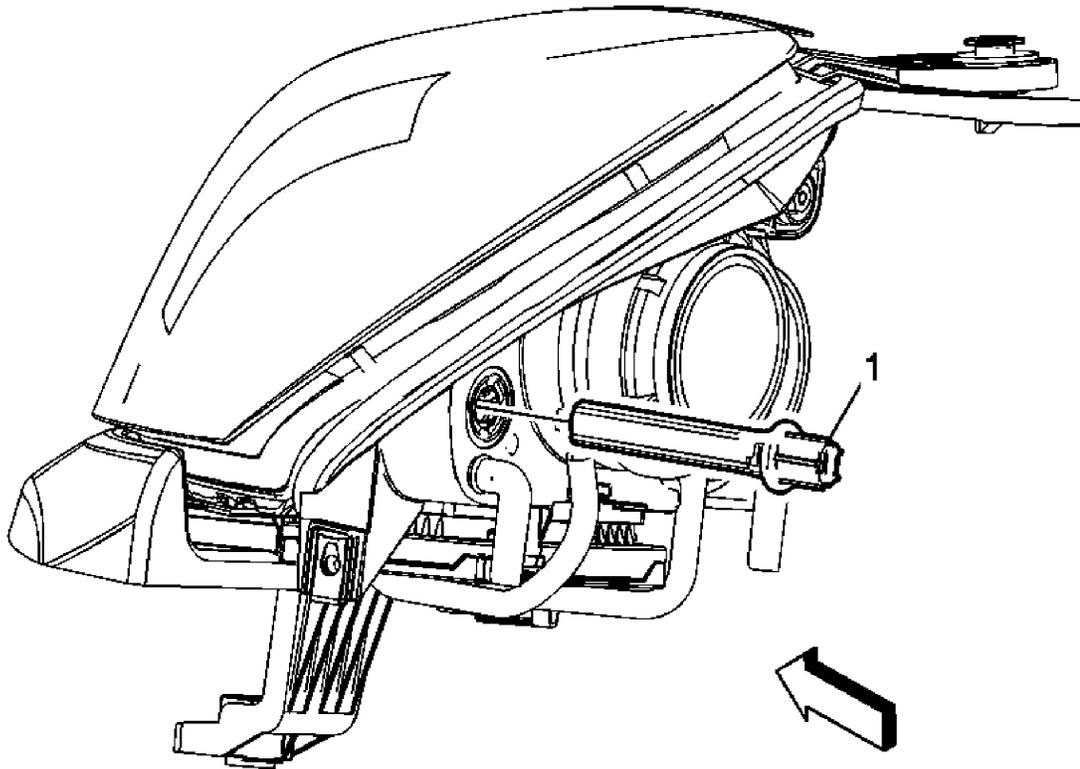


Fig. 148: View Of Side Marker Lamp Bulb (HID)
 Courtesy of GENERAL MOTORS CORP.

Side Marker Lamp Bulb Replacement (HID)

Callout	Component Name
Preliminary Procedures	
1. Remove the front bumper fascia. Refer to Front Bumper Fascia Replacement .	
2. Remove the headlamp assembly. Refer to Headlamp Replacement .	
1	Front Side Marker Lamp Bulb Procedure: Rotate the lamp socket and remove the bulb.

REAR SIDE MARKER LAMP BULB REPLACEMENT

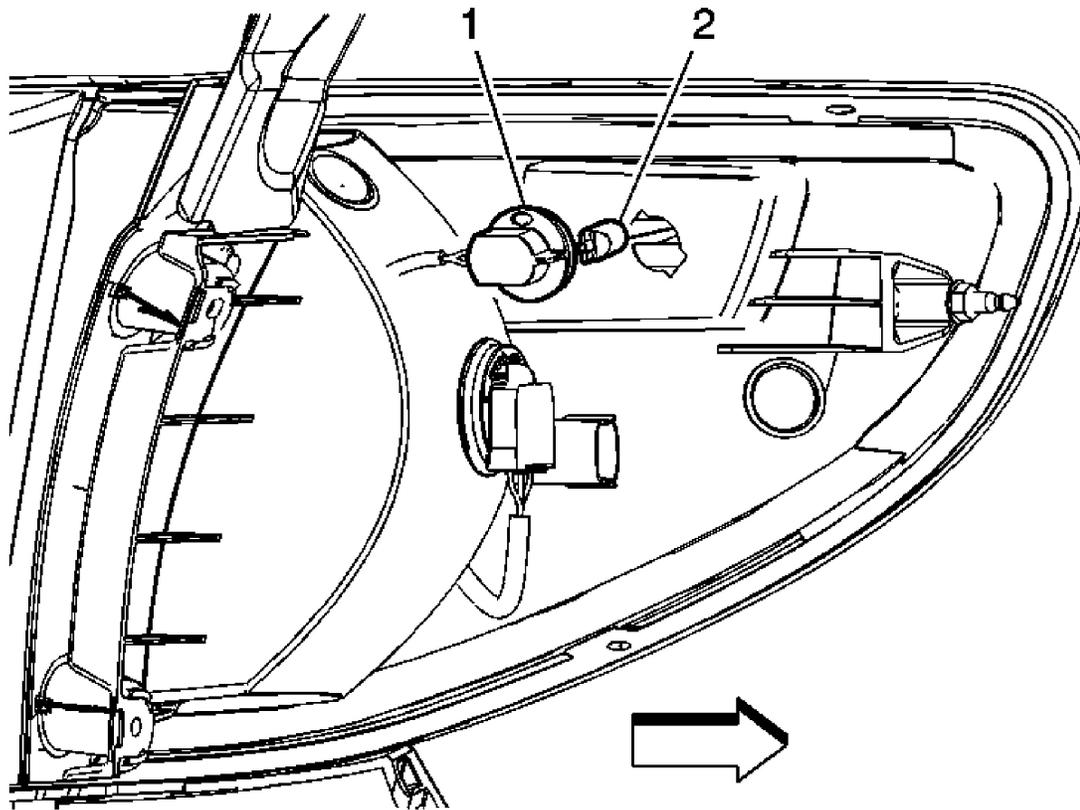


Fig. 149: Identifying Rear Side Marker Lamp Bulb
 Courtesy of GENERAL MOTORS CORP.

Rear Side Marker Lamp Bulb Replacement

Callout	Component Name
Preliminary Procedure: Remove the tail lamp assembly. Refer to Tail Lamp Replacement .	
1	Rear Side Marker Lamp Bulb Socket Tip: Rotate one quarter turn to release the socket from the tail lamp assembly.
2	Rear Side Marker Lamp Bulb

PARK/TURN SIGNAL LAMP REPLACEMENT

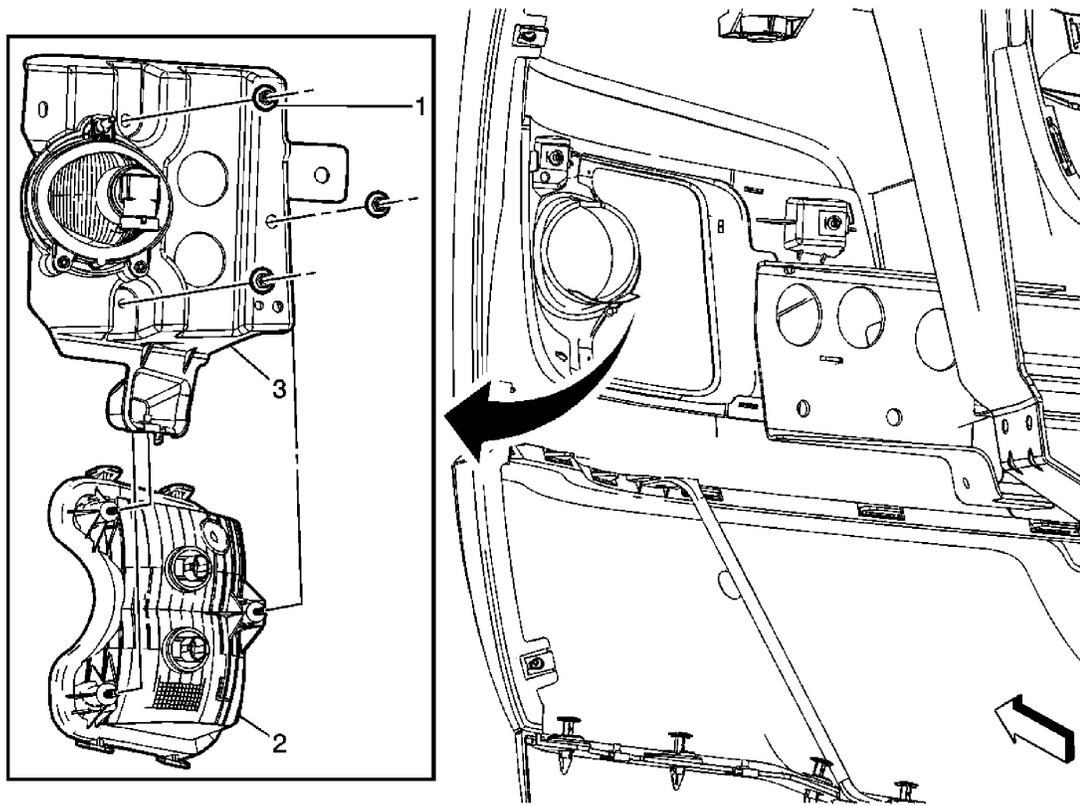


Fig. 150: Identifying Park/Turn Signal Lamp
 Courtesy of GENERAL MOTORS CORP.

Park/Turn Signal Lamp Replacement

Callout	Component Name
<p>Preliminary Procedure: Remove the front park, turn and fog lamp assembly bracket. Refer to <u>Park/Turn Signal Lamp Replacement</u>.</p>	
<p>1</p>	<p>Front Turn Signal Lamp Assembly Nut (Qty: 3)</p> <p>NOTE: Refer to <u>Fastener Notice</u> .</p> <p>Tighten: 9.0 N.m (80 lb in)</p>
<p>2</p>	<p>Front Turn Signal Lamp Assembly</p> <p>Tip: Transfer the park turn bulbs as needed.</p>
<p>3</p>	<p>Front Turn Signal Lamp Assembly Bracket</p> <p>Procedure:</p>

Check and adjust the fog lamp aim after the turn signal lamp bracket assembly has been re-installed. Refer to **Fog Lamp Aiming**.

PARK/TURN SIGNAL LAMP BULB REPLACEMENT

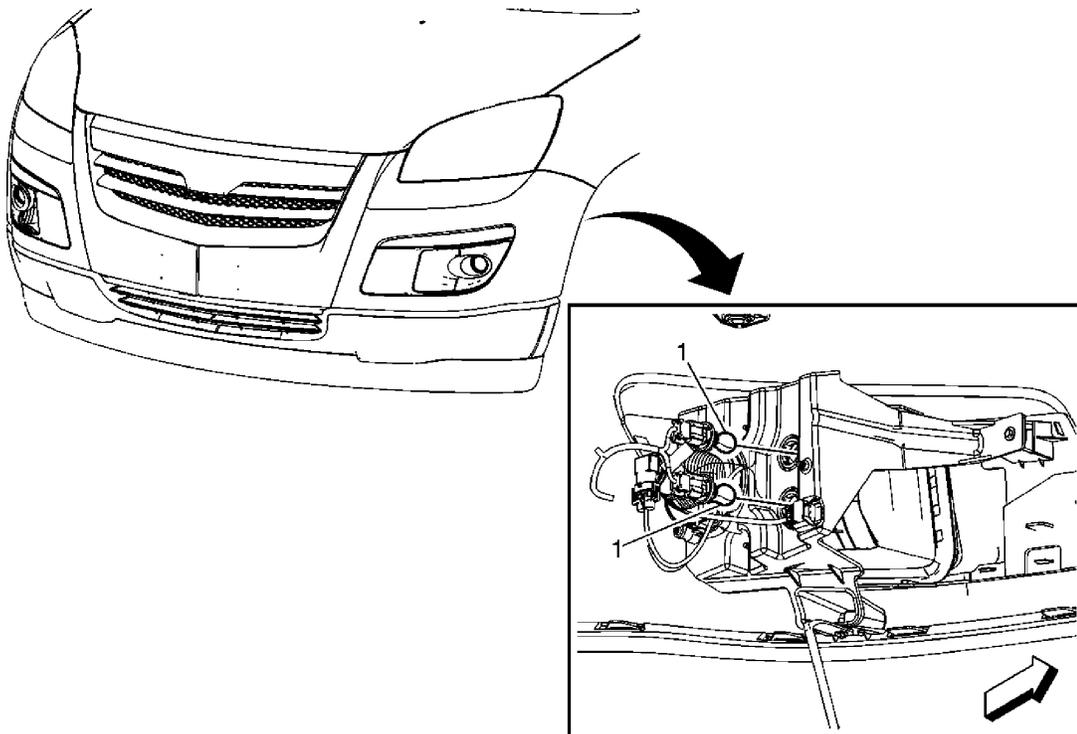


Fig. 151: Identifying Park/Turn Signal Lamp Bulb
 Courtesy of GENERAL MOTORS CORP.

Park/Turn Signal Lamp Bulb Replacement

Callout	Component Name
Preliminary Procedures	
<ol style="list-style-type: none"> 1. Remove the front wheelhouse liner in order to access the front turn signal bulbs. Refer to Front Wheelhouse Liner Replacement (Front) or Front Wheelhouse Liner Replacement (Rear) . 2. Disconnect the front turn signal bulb sockets from the park, turn lamp assembly bracket. 	
1	Turn Signal Bulb (Qty: 2) Procedure: Pull the bulbs straight from the lamp sockets.

PARKING AND TURN SIGNAL LAMP BRACKET REPLACEMENT

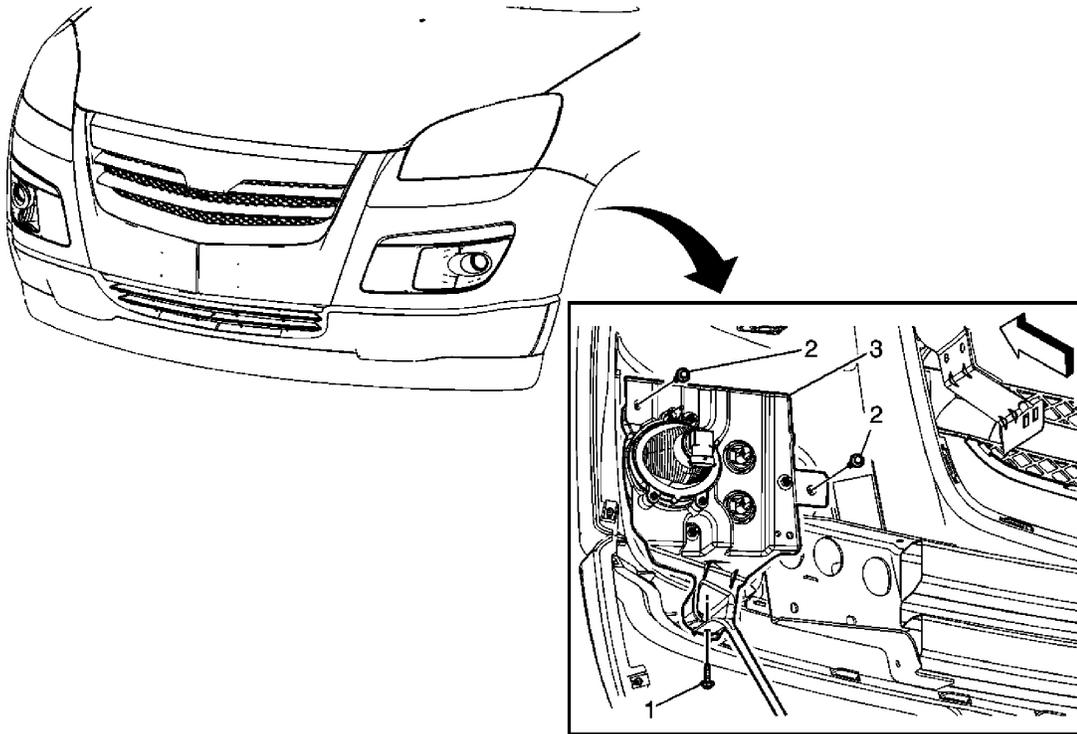


Fig. 152: Identifying Parking and Turn Signal Lamp Bracket
 Courtesy of GENERAL MOTORS CORP.

Parking and Turn Signal Lamp Bracket Replacement

Callout	Component Name
Preliminary Procedures	
1. Remove the wheelhouse liner. Refer to Front Wheelhouse Liner Replacement (Front) or Front Wheelhouse Liner Replacement (Rear) . 2. Disconnect the main electrical harness connector at the park and front fog lamp bracket assembly.	
1	Front Bumper Fascia Brace Screw NOTE: Refer to Fastener Notice . Tighten: 2 N.m (18 lb in)
	Park and Front Fog Lamp Bracket Screws (Qty: 2)

2	<p>Tighten: 2 N.m (18 lb in)</p> <p>Park and Front Fog Lamp Bracket</p>
3	<p>Procedure</p> <ul style="list-style-type: none"> • Remove the bracket assembly from the front end upper tie bar support. • Remove and transfer the park turn signal lamp assembly. Refer to <u>Park/Turn Signal Lamp Replacement</u>. • Remove and transfer the fog lamp assembly, (if equipped). Refer to <u>Front Fog Lamp Replacement</u>. • Remove and transfer the electrical jumper harness.

HIGH MOUNT STOP LAMP REPLACEMENT

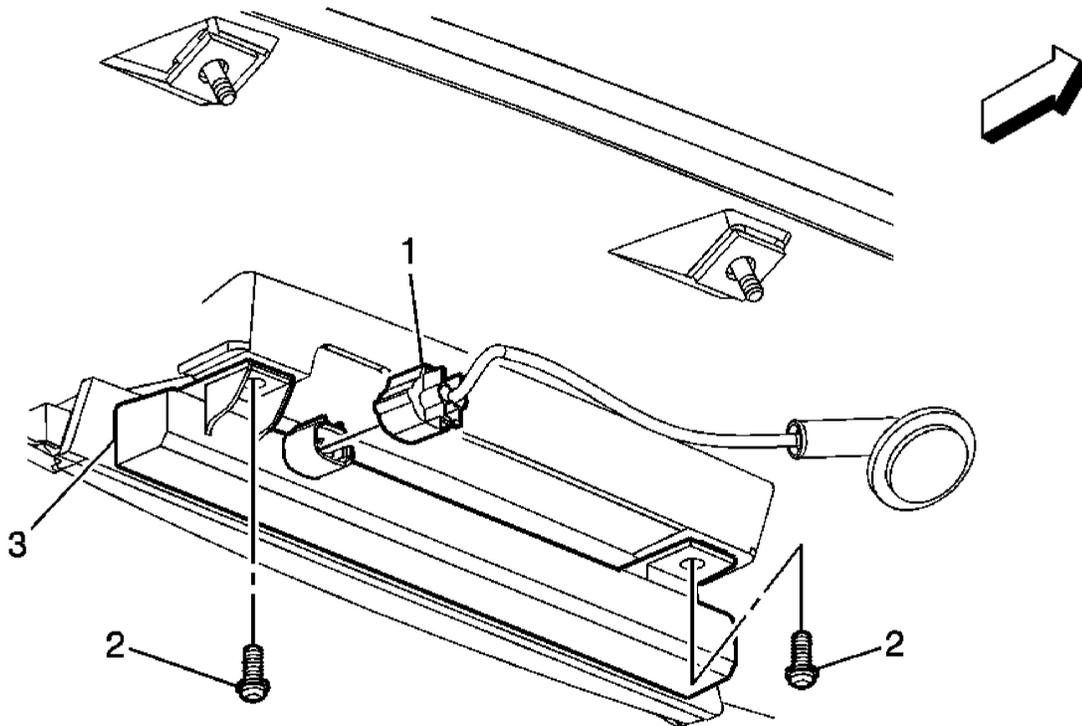


Fig. 153: View Of High Mount Stop Lamp
 Courtesy of GENERAL MOTORS CORP.

High Mount Stop Lamp Replacement

Callout	Component Name
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Preliminary Procedures

1. Open the liftgate.
2. Remove the interior liftgate garnish molding. Refer to **Liftgate Garnish Molding Replacement (without RPO E61)** or **Liftgate Garnish Molding Replacement (with RPO E61)** .
3. Remove the rear spoiler in order to access the high mounted stop lamp. Refer to **Rear Spoiler Replacement** .

1	High Mounted Stop Lamp Electrical Connector
2	High Mounted Stop Lamp Bolts (Qty: 2) NOTE: Refer to <u>Fastener Notice</u> . Tighten: 2 N.m (18 lb in)
3	High Mount Stop Lamp Assembly Procedure: Remove the high mounted stop lamp from the bottom side of the rear spoiler.

BACKUP LAMP REPLACEMENT

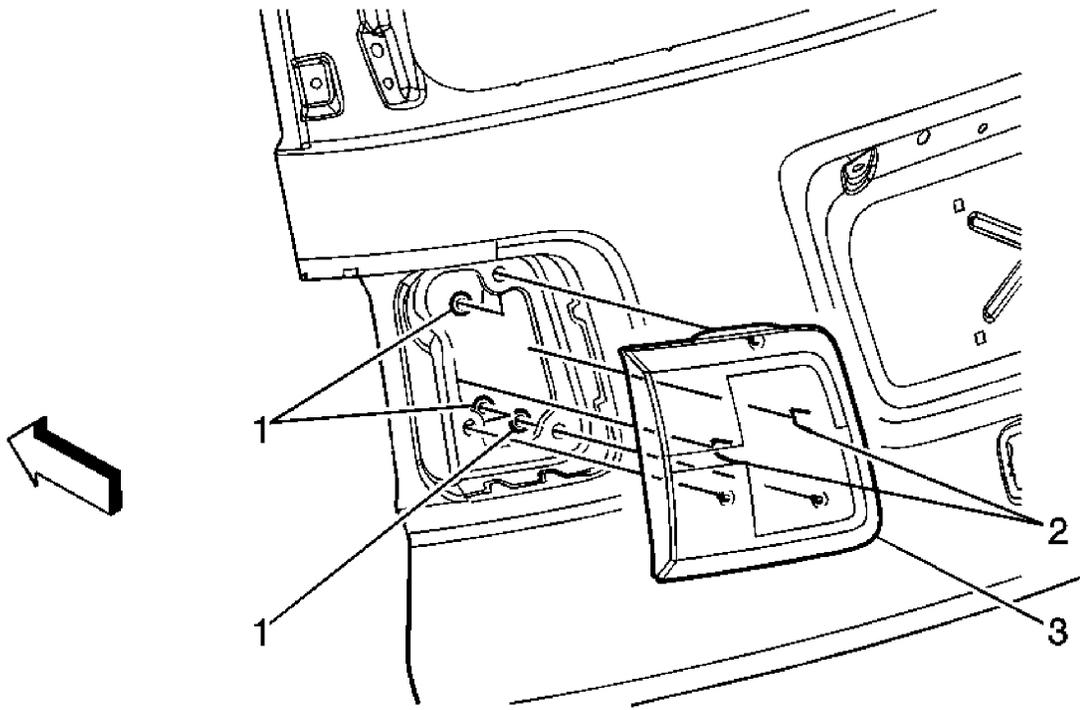


Fig. 154: View Of Backup Lamp
 Courtesy of GENERAL MOTORS CORP.

Backup Lamp Replacement

Callout	Component Name
Preliminary Procedure: Remove the lift gate interior trim panel. Refer to <u>Liftgate Trim Panel Replacement</u>	
1	Back Up Lamp Applique Nuts (Qty: 3) NOTE: Refer to <u>Fastener Notice</u> . Tighten: 6 N.m (53 lb in)
2	Integral Clips (Qty: 2)
3	Back Up Lamp Applique Assembly Tip: Disconnect the bulb socket from the applique.

BACKUP LAMP BULB REPLACEMENT

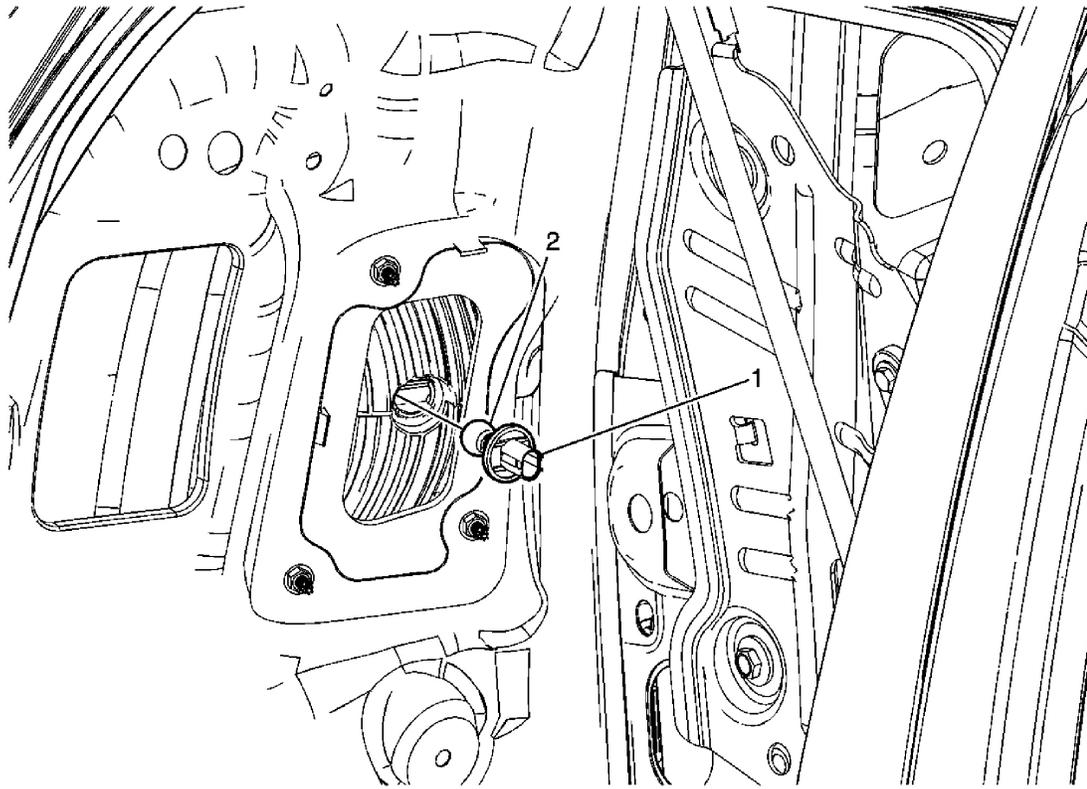


Fig. 155: View Of Backup Lamp Bulb
 Courtesy of GENERAL MOTORS CORP.

Backup Lamp Bulb Replacement

Callout	Component Name
Preliminary Procedure: Remove the lift gate interior trim panel. Refer to <u>Liftgate Trim Panel Replacement</u> .	
1	Back Up Lamp Socket Procedure: Rotate and remove the socket from the lamp assembly.
2	Back Up Lamp Bulb Tip: Remove the bulb and discard.

REAR LICENSE LAMP REPLACEMENT

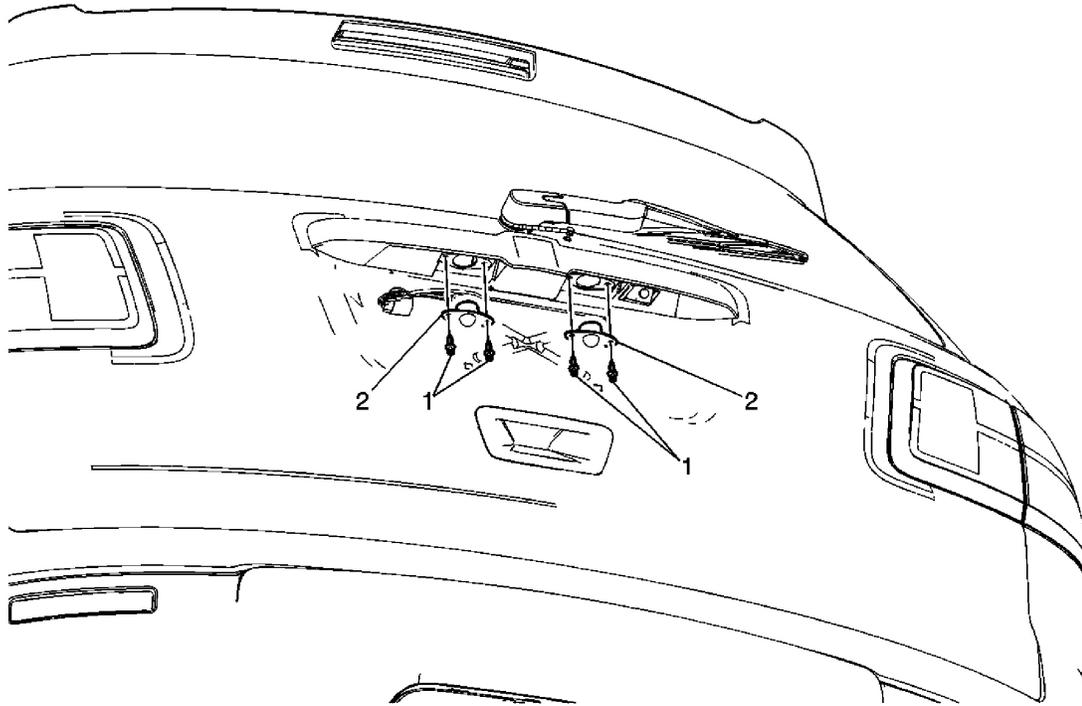


Fig. 156: View Of Rear License Lamp
 Courtesy of GENERAL MOTORS CORP.

Rear License Lamp Replacement

Callout	Component Name
1	Rear License Plate Lamp Screw (Qty: 4) NOTE: Refer to Fastener Notice . Tighten: 2 N.m (18 lb in)
2	Rear License Plate Lamp (Qty: 2) Procedure: Pull the lamps downward and disconnect the bulb sockets from the lamps.

LICENSE LAMP BULB REPLACEMENT

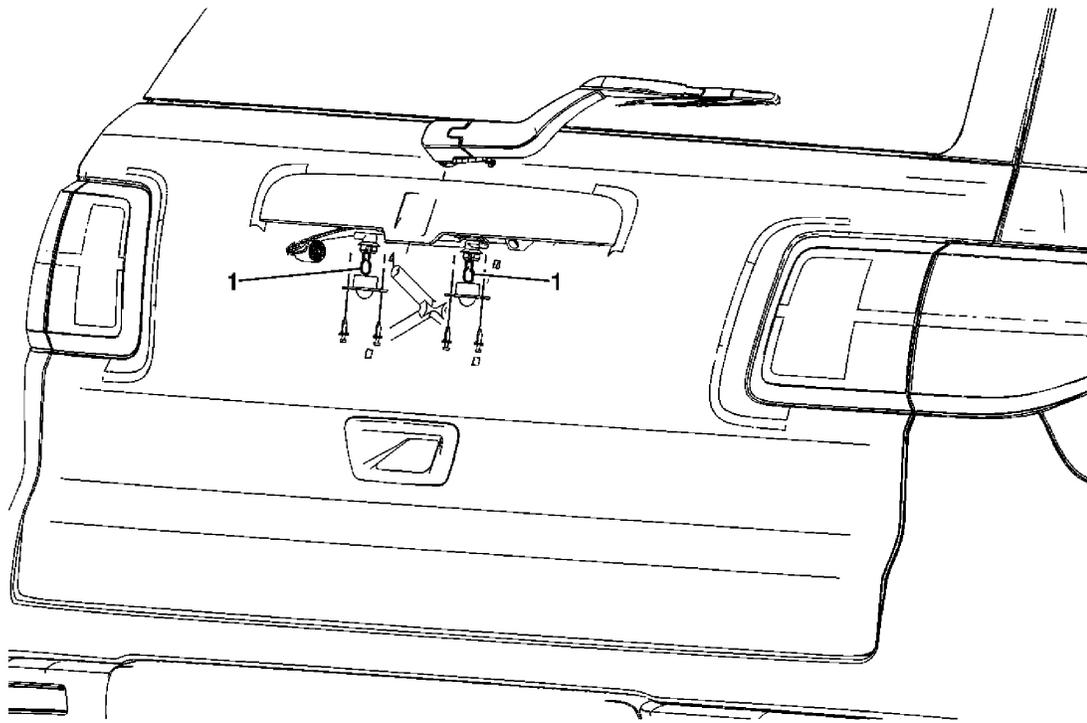


Fig. 157: View Of Rear License Lamp Bulb
 Courtesy of GENERAL MOTORS CORP.

License Lamp Bulb Replacement

Callout	Component Name
Preliminary Procedure:	
Remove the rear license plate lamps. Refer to Rear License Lamp Replacement .	
1	Rear License Plate Lamp Bulbs (Qty: 2) Procedure: Pull the bulbs straight from the lamp sockets.

TAIL LAMP REPLACEMENT

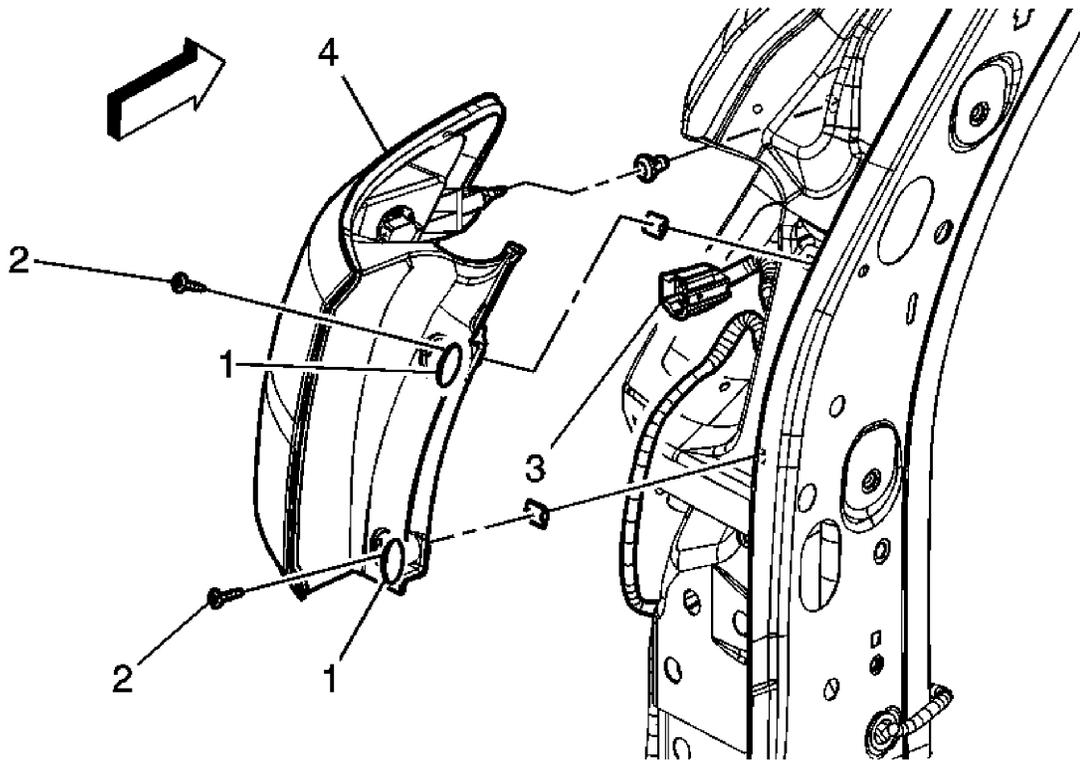


Fig. 158: View Of Tail Lamp
 Courtesy of GENERAL MOTORS CORP.

Tail Lamp Replacement

Callout	Component Name
Preliminary Procedure: Open the lift gate in order to access the tail lamp access hole covers.	
1	Tail Lamp Access Hole Covers (Qty: 2) Tip: Use a small flat bladed tool in order to remove the covers.
2	Tail Lamp Screws (Qty: 2) NOTE: Refer to <u>Fastener Notice</u> . Tighten: 3 N.m (27 lb in)
3	Tail Lamp Wiring Harness Connector Tip: Disconnect the harness prior to removing the lamp assembly.
4	Tail Lamp Assembly Tip: Transfer the turn signal and side marker lamp bulbs as needed.

TAIL LAMP BULB REPLACEMENT

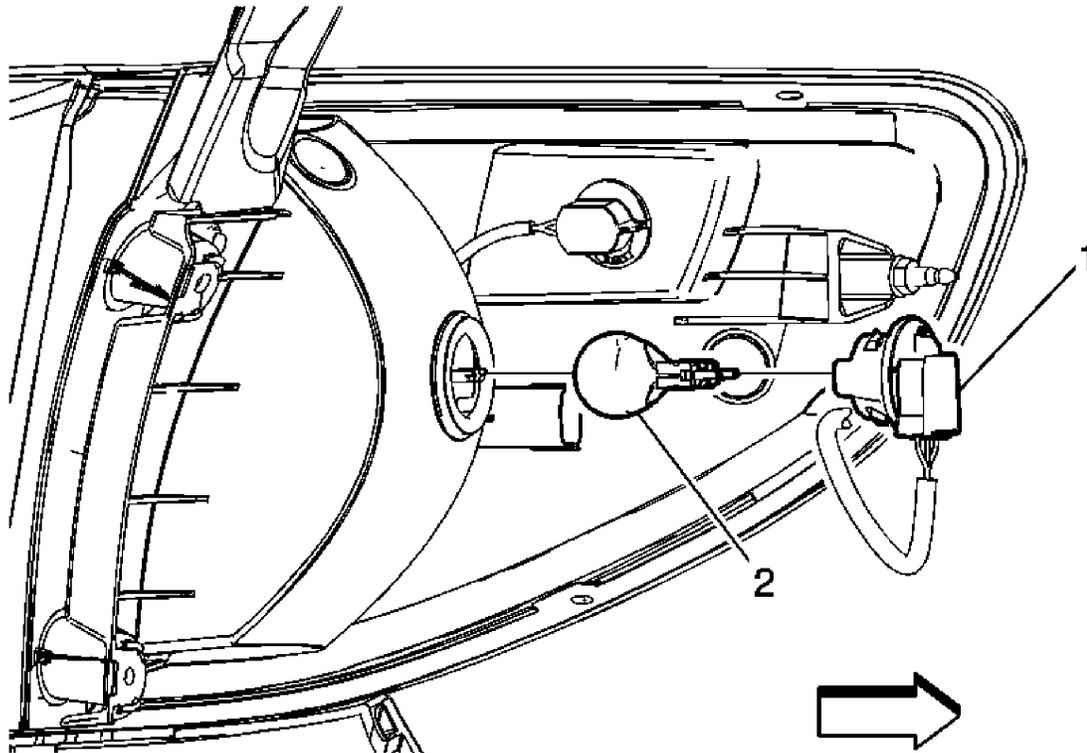


Fig. 159: View Of Tail Lamp Bulb
 Courtesy of GENERAL MOTORS CORP.

Tail Lamp Bulb Replacement

Callout	Component Name
Procedure: Remove the tail lamp assembly. Refer to <u>Tail Lamp Replacement</u> .	
1	Stop, Tail, Turn Signal Lamp Bulb Socket Procedure: Rotate and remove the lamp socket from the tail lamp housing.
2	Stop, Tail, Turn Signal Lamp Bulb Tip: Pull the bulb straight from the lamp socket.

REAR LIFTGATE LAMP REPLACEMENT

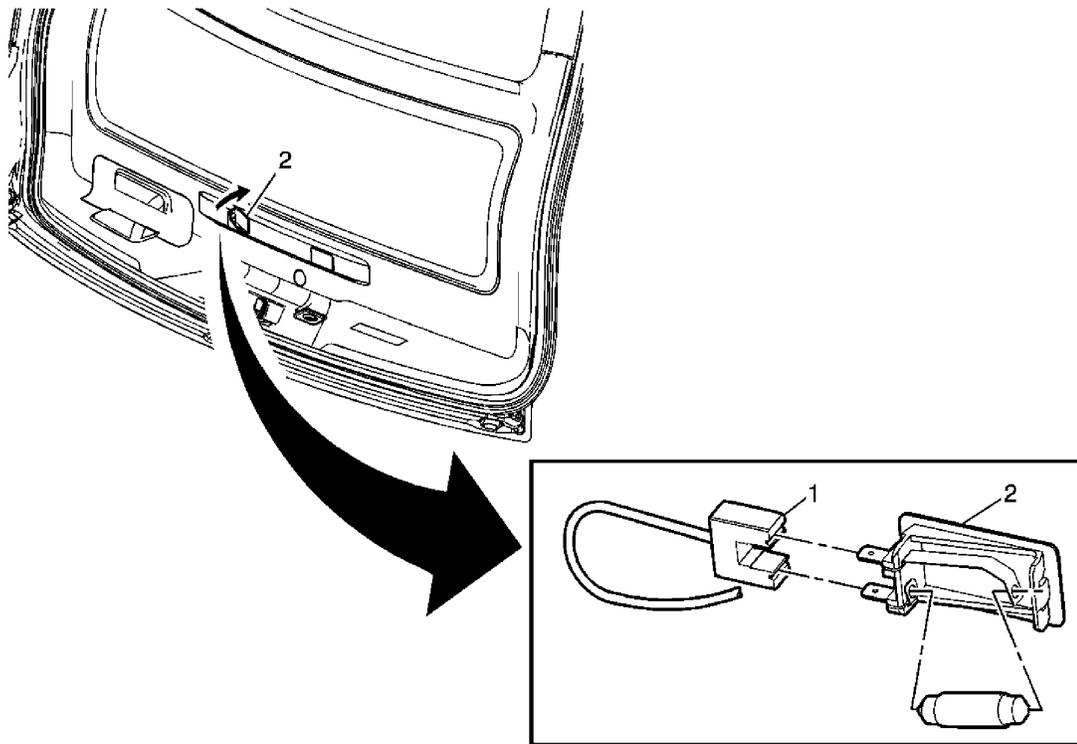


Fig. 160: Identifying Rear Liftgate Lamp
 Courtesy of GENERAL MOTORS CORP.

Rear Liftgate Lamp Replacement

Callout	Component Name
1	Liftgate Jumper Wiring Harness Assembly
2	Liftgate Courtesy Lamp Assembly
	Procedure
	<ol style="list-style-type: none"> 1. Carefully use a plastic flat-bladed tool and release the tab retaining the lamp lens to the Liftgate assembly. 2. Disconnect the electrical connection.

DESCRIPTION AND OPERATION

EXTERIOR LIGHTING SYSTEMS DESCRIPTION AND OPERATION

Exterior Lamps

The exterior lighting system consists of the following lamps:

- The headlamps
- The daytime running lamps (DRL)
- The front fog lamps
- The park, tail and marker lamps
- The turn signal lamps
- The stop lamps
- The backup lamps

The cargo lamp on the vehicle exterior is supplied voltage by the courtesy lamp supply voltage circuit and will only operate while the courtesy lamps are illuminated. This circuit is diagnosed as part of the interior courtesy lamp lighting system. Refer to **Interior Lighting Systems Description and Operation**.

Headlamps

Major components of this system are the body control module (BCM), headlamp relay, beam select relay, ambient light sensor, headlamp and panel dimmer switch, turn signal/multifunction switch, park brake switch and the low and high beam headlamps.

The headlamps may be turned ON in 3 different ways. First, when the driver places the headlamp switch in the ON position, normal operation occurs. Second, when the headlamp switch is placed in the AUTO position, automatic lamp control (ALC) operation occurs. During ALC control, the headlamps will be OFF in daylight conditions or in low/high beam operation in low light conditions. Third is in Wiper Activated Headlamp (WAH) mode. Only when the wiper system is activated while the vehicle is in gear, the wiper blades have completed at least 3 cycles and then a 35 second time period expires, will the BCM switch from daytime running lamps (DRL) mode to headlamp mode during daylight conditions. When the gearshift lever is placed in the PARK or NEUTRAL position or if the wipers are turned OFF, normal manual or ALC operation will resume after approximately 60 seconds.

The headlamp relay receives battery positive voltage directly from the battery. The BCM supplies a ground signal to the headlamp relay for normal headlight operation. The BCM also supplies voltage to the beam select relay coil for high beam headlight operation. When the driver places the headlamp switch in the ON position and the dimmer switch is in the low beam position, the headlamp relay supplies current flow through the left and right low beam headlamp fuses to both low and high beam headlamps. Both low beam headlights are grounded through the beam select relay. When activated, the dimmer switch sends a ground signal to the BCM in the high beam position and a momentary ground signal in the flash-to-pass (FTP) position from G106. The BCM then energizes the beam select relay which switches the headlamp grounds from the low beam

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headlight bulbs to the high beam headlight bulbs illuminating the high beam headlights. With the headlights in the low beam position, the high beams may be momentarily turned ON or flashed by activating the FTP portion of the switch.

The instrument panel cluster (IPC) illuminates the high beam indicator when the BCM detects that the high beams are requested. The IPC receives a class 2 message from the BCM requesting illumination.

The Headlamps On at Exit and Perimeter Lighting modes can be adjusted using the steering wheel controls to select the desired function as displayed in the driver information center (DIC). The Headlamps On at Exit selection will allow the driver to customize the period of time that the headlamps remain illuminated upon exiting the vehicle. This period can be adjusted from 0-180 seconds. The Perimeter Lighting feature allows the driver to select if they desire the headlamps and backup lamps to illuminate when the door UNLOCK button on the key fob is activated. This feature can be turned ON or OFF by using the DIC steering wheel control buttons.

Daytime Running Lamps (DRL)

The ambient light sensor is a light sensitive transistor that varies its voltage signal to the body control module (BCM) in response to changes to the outside (ambient) light level. When the BCM receives this signal, it will either turn ON the daytime running lamps (DRL) or the headlamps for auto headlamp operation. Any function or condition that turns ON the headlights will cancel the DRL operation. With the headlight switch in the AUTO position, the headlights will either be turned ON or OFF, after an approximate 8 second delay depending on whether daylight or low light conditions are sensed. The DRL will operate when the ignition switch is in the RUN position, the headlamp and panel dimmer switch is in the AUTO position, the gear selector is not in the PARK position and the parking brake is released. When these conditions have been met and the ambient light sensor indicates daytime conditions, the DRL will illuminate.

DRL operation can be temporarily disabled by momentarily placing the headlamp switch in the OFF position. This will cancel DRL operation until the switch is momentarily placed in the OFF position again or until the next ignition key cycle occurs. Canadian requirements prohibit disabling DRL operation therefore the Canadian export vehicles are not equipped with the DRL defeat feature.

Fog Lamps

With both the ignition switch in the RUN position and the park lamps or low beam head lamps ON, the fog lights will illuminate when the driver presses the fog lamp switch. The FOG LP fuse in the underhood fuse block supplies battery positive voltage to the fog lamp relay. With the headlamp switch is in either the park or headlamp position and the fog lamp switch is pressed, the

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body control module (BCM) will energize the fog lamp relay control circuit. The current flow is from the fog lamp relay to both front fog lamps and to ground G103 or G102. The state of the fog lamps, either ON or OFF, will remain the same until the fog lamp switch is pressed again or the ignition switch is cycled OFF and ON. Fog lamp operation will be cancelled whenever the park lamps are turned OFF or the high beam headlights have been selected.

Park, Tail, Marker, License and Clearance Lamps

The park, tail, marker and license lamps are turned ON when the headlamp switch is placed in the PARK or ON position or anytime the headlights are requested. The underhood fuse block supplies battery positive voltage to both the park lamp relay switch contacts and the park lamp coil circuit. The body control module (BCM) provides a ground or control circuit to the park lamp relay coil circuit. When the park lamps are requested ON, the BCM energizes the park lamp relay. Current flow is from the park lamp relay to the individual park lamp circuit fuses and to their respective park, tail, marker and license lamps. The front park, marker, tail and license lamps are grounded at G102. If the driver places the headlight switch in the ON position after the ignition switch has been turned OFF, the park, tail, marker and license lamps will remain ON until turned OFF or the battery runs dead.

Turn Signal Lamps

The LT/TRN/SIG and RT/TRN/SIG fuses in the I/P fuse block supplies battery positive voltage to the body control module (BCM). When the turn signal switch is placed in either the left or right position, a signal is sent to the BCM to illuminate the desired turn signal lamps. The BCM has an internal flasher that sends an ON-OFF voltage signal to either the left or right turn signals and their instrument panel cluster (IPC) indicator. When the hazard switch is pressed, a separate ground signal is sent to the BCM to activate and flash all turn signal lamps including both IPC turn indicators. The front and rear turn signals are grounded at G401.

The IPC illuminates the TURN SIGNAL ON indicator in the driver information center (DIC) when the IPC determines that the turn signal is active for more than 1.2 km (0.75 mi). The BCM sends a class 2 message to the radio in order to activate the audible warning.

Stop Lamps

The BACKUP/STOP fuse in the underhood fuse block supplies battery positive voltage to the normally open stop lamp switch. When the driver presses the brake pedal, the switch contacts close and battery positive voltage is supplied to the stop lamps and center high mounted stop lamp (CHMSL) which are grounded at G401.

Backup Lamps

The BACKUP/STOP fuse in the underhood fuse block supplies battery positive voltage to the normally open park/neutral position (PNP) switch of a vehicle equipped with an automatic transmission or the backup lamp switch if equipped with a manual transmission. When the driver places the gear selector lever in the REVERSE position, the switch closes and the current flow is from the switch to the backup lamps. The backup lamps are grounded at G401.

INTERIOR LIGHTING SYSTEMS DESCRIPTION AND OPERATION

Interior Lamps

The interior lamps consist of 2 groups, those which can dim from the instrument panel (I/P) dimmer switch and those that can not dim.

Courtesy/Illuminated Entry Lamps

The following lamps may be manually turned ON by placing the interior lamp switch in the ON position or by opening a door while the switch is in the AUTO position.

- The dome lamp
- The liftgate lamps
- Courtesy/map lights

The courtesy lamp supply voltage circuit of the body control module (BCM) supplies battery positive voltage to the dome lamp, the liftgate lamps and the map lamps. When any door is opened, the door jamb switch contacts close providing a door open input to the BCM. The BCM then provides a ground to the interior lamps with the switch in the AUTO position. The interior lamps receive a ground at G401 with the switch in the ON position.

IMPORTANT: If the liftgate is opened after all the modules go to sleep, the dome light will not come on. The liftgate ajar switch input to the BCM will not wake up the BCM once it has gone to sleep, so the dome light will not come on. Once the BCM gets an input to wake it up, from remote keyless entry (RKE) or a door handle, the dome light will turn on when the liftgate is opened.

If the driver inadvertently leaves any interior lamp ON, the BCM will turn it OFF after a 20 minute time-out.

The courtesy lamps will turn OFF immediately if the ignition switch is turned to the ON position or approximately 20 seconds after all doors are closed.

Keyless Entry Interior Illumination

When the body control module (BCM) receives a door unlock command from the remote keyless entry (RKE) transmitter, the BCM will flash the park lamps several times, illuminate the courtesy and park lamps and illuminate the low beam headlamps at low intensity. The lamps will remain on until the ignition key is turned from the OFF position, a RKE door lock command is received or after an approximate 20 second delay.

Interior Lamps Dimming

This group includes lamps which may dim. This group may use a combination of vacuum fluorescent (VF) illumination and incandescent lamps.

- HVAC control module, head assembly
- Rear HVAC control module, head assembly
- Radio
- Rear seat Audio
- The instrument panel cluster (IPC)
- The PRNDL lamp, with the exception of the current gear select position
- Power window switches
- Various switches

When the ignition switch is turned to the ON position, the VF display, radio, turns ON at maximum brightness. When the park lamps are ON, all incandescent back lighting turn ON at the dimming level indicated by the instrument panel (I/P) dimmer switch. At the same time all VF displays dim to match the indicated dimming level. When the headlamp switch is placed in the PARK position, the park lamp supply voltage circuit provides an input to the body control module (BCM). The BCM then supplies voltage to the I/P dimmer switch through the I/P dimming lamps control circuit. The setting of the I/P dimmer switch determines the amount of voltage that the I/P dimmer switch supplies to the BCM through the I/P dimming lamps low reference circuit. The BCM then sends a pulse width modulation (PWM) voltage to all the interior lamps. All the VF and incandescent back lighting lamps are provided a specific voltage and are then grounded. When the headlight switch is turned to the park lamp or headlamp position, all incandescent back lighting turn ON at the dimming level indicated by the I/P dimmer switch. When the I/P dimmer switch is moved from MIN to MAX, all VF displays, as well as all incandescent back lighting respond from minimum intensity to maximum brightness in response to the I/P dimmer switch.

Inadvertent Power

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The body control module (BCM) used in this vehicle controls the lighting system through circuits that enable the interior lamps. The BCM opens these enabling circuits shortly after the ignition switch is turned OFF with no lamp switch activity. If the ignition switch is turned to any position other than OFF or if a lamp switch is activated during this period, the timer will reset itself.