2007 ACCESSORIES & EQUIPMENT

Mirrors - Outlook

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Door Rearview Mirror Motor Screws	2 N.m	18 lb in
Door Rearview Mirror Nuts	4 N.m	35 lb in
Mirror Set Screw	2 N.m	18 lb in

SCHEMATIC AND ROUTING DIAGRAMS

INSIDE REARVIEW MIRROR SCHEMATICS

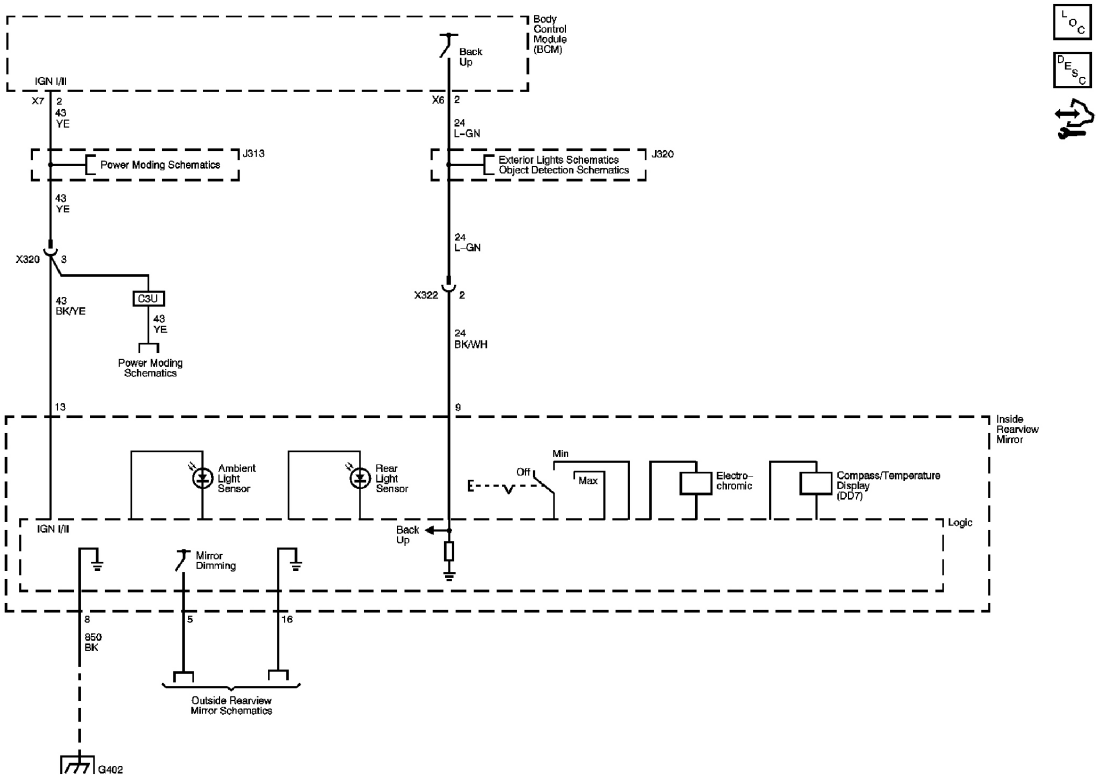

Fig. 1: Inside Rearview Mirror Schematic (DD7/DD8)

Courtesy of GENERAL MOTORS CORP.

OUTSIDE REARVIEW MIRROR SCHEMATICS

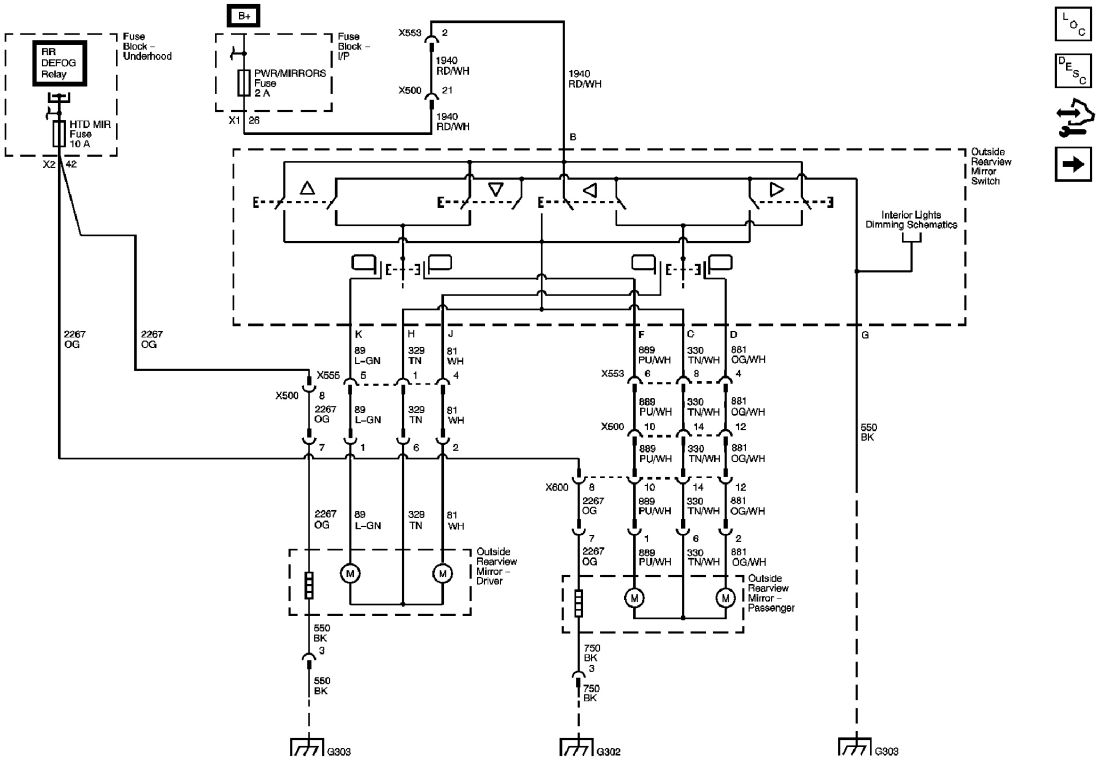

Fig. 2: Outside Rearview Mirror Schematic (DG6/DS3 + WDA/Z88)
Courtesy of GENERAL MOTORS CORP.

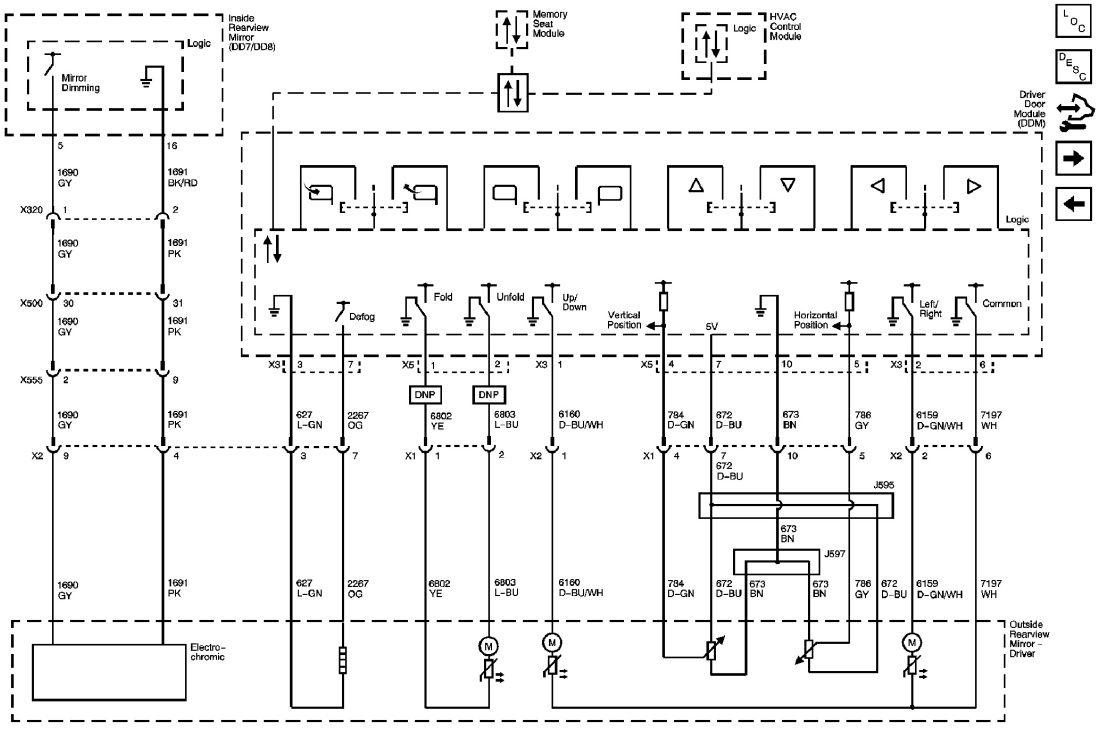

Fig. 3: Outside Rearview Mirror Schematic (Driver - A45)
Courtesy of GENERAL MOTORS CORP.

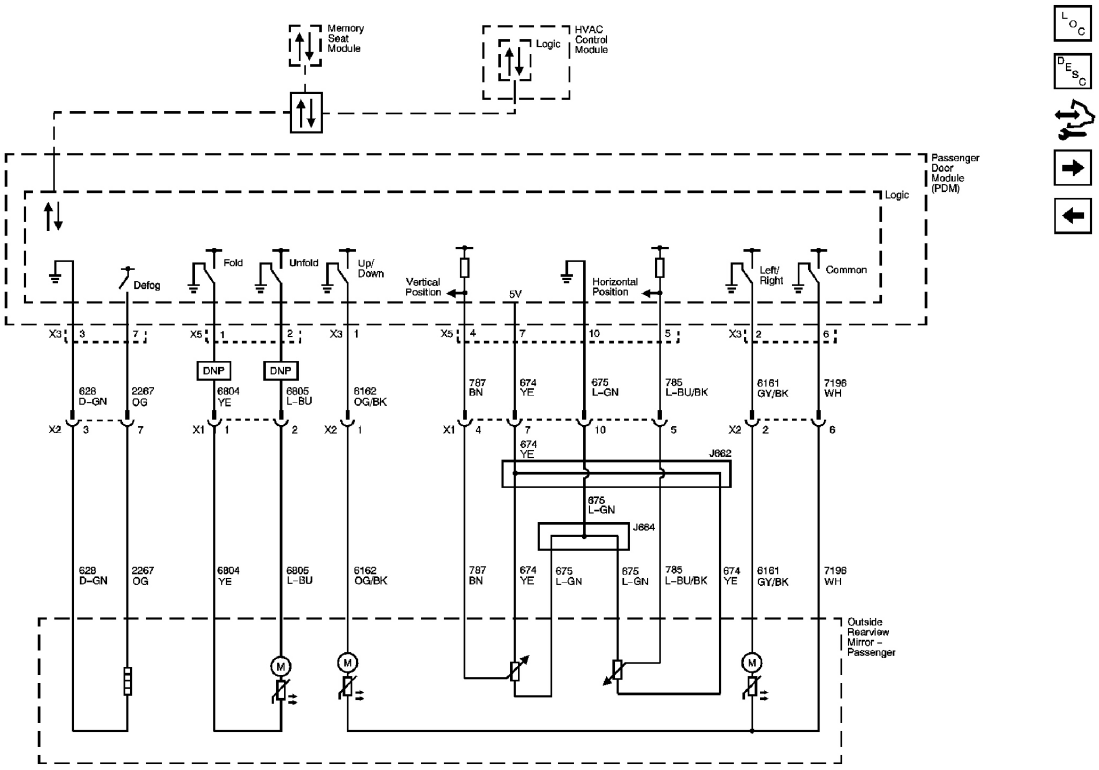

Fig. 4: Outside Rearview Mirror Schematic (Passenger - A45)
Courtesy of GENERAL MOTORS CORP.

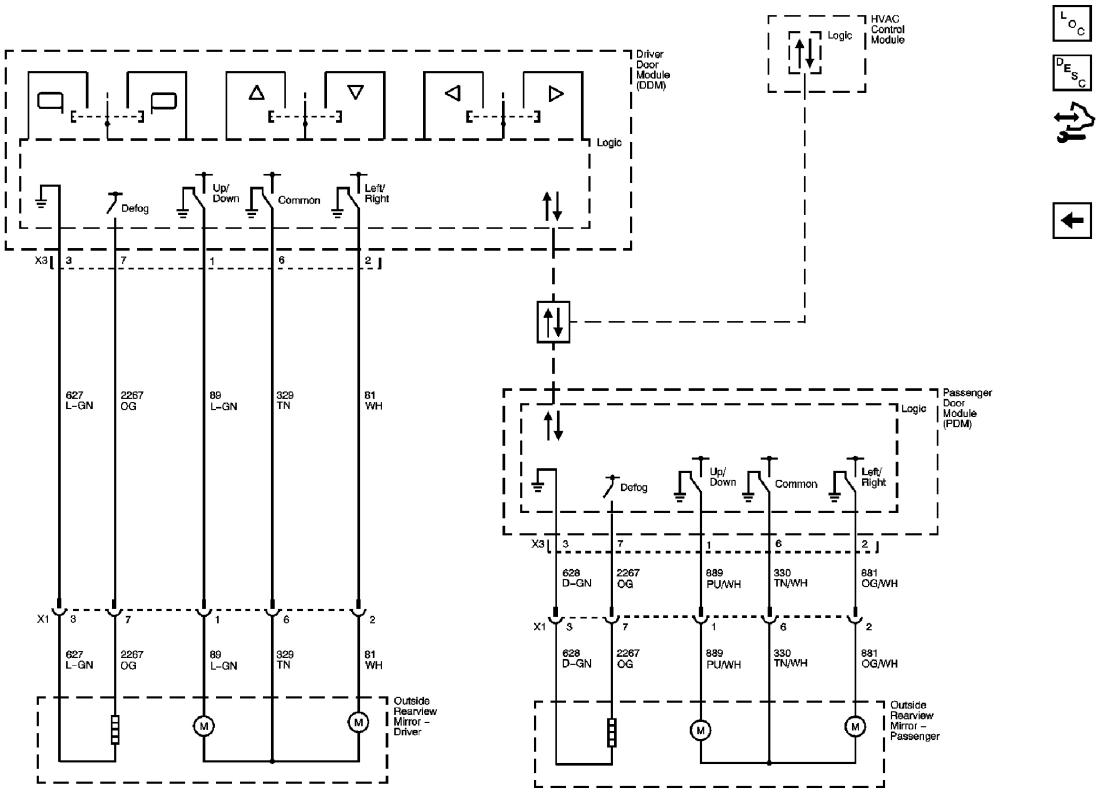

Fig. 5: Outside Rearview Mirror Schematic (W49)
Courtesy of GENERAL MOTORS CORP.

COMPONENT LOCATOR

MIRROR COMPONENT VIEWS

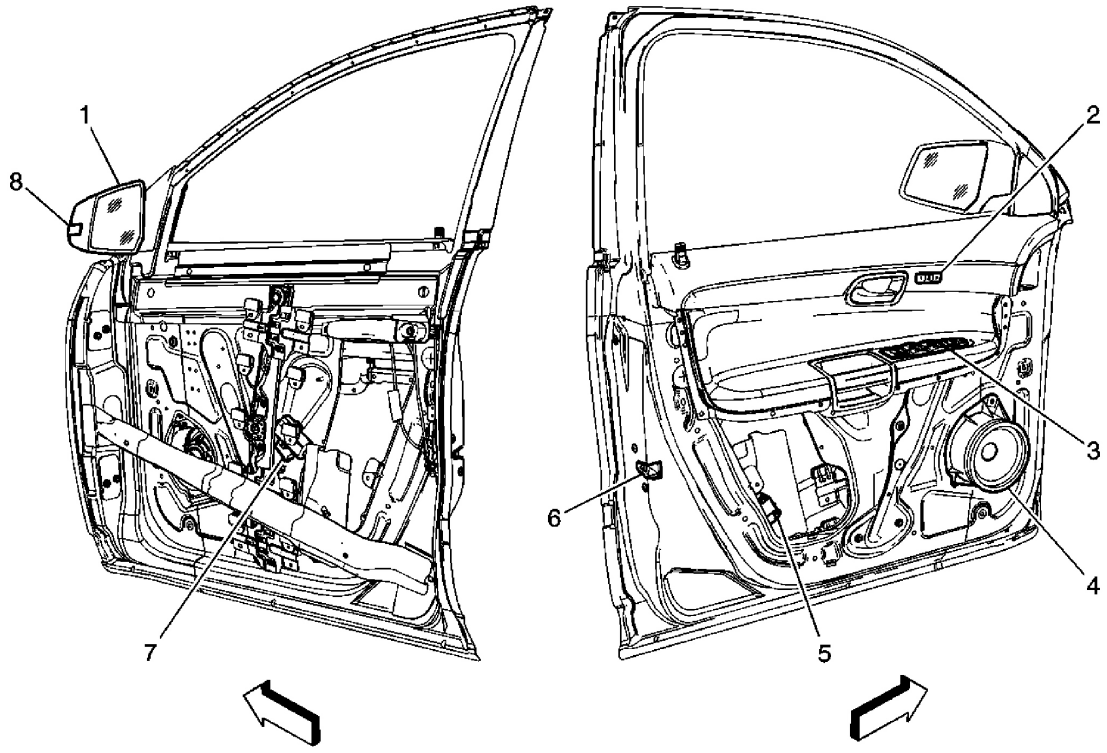

Fig. 6: Identifying Driver Door Components
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 6

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)

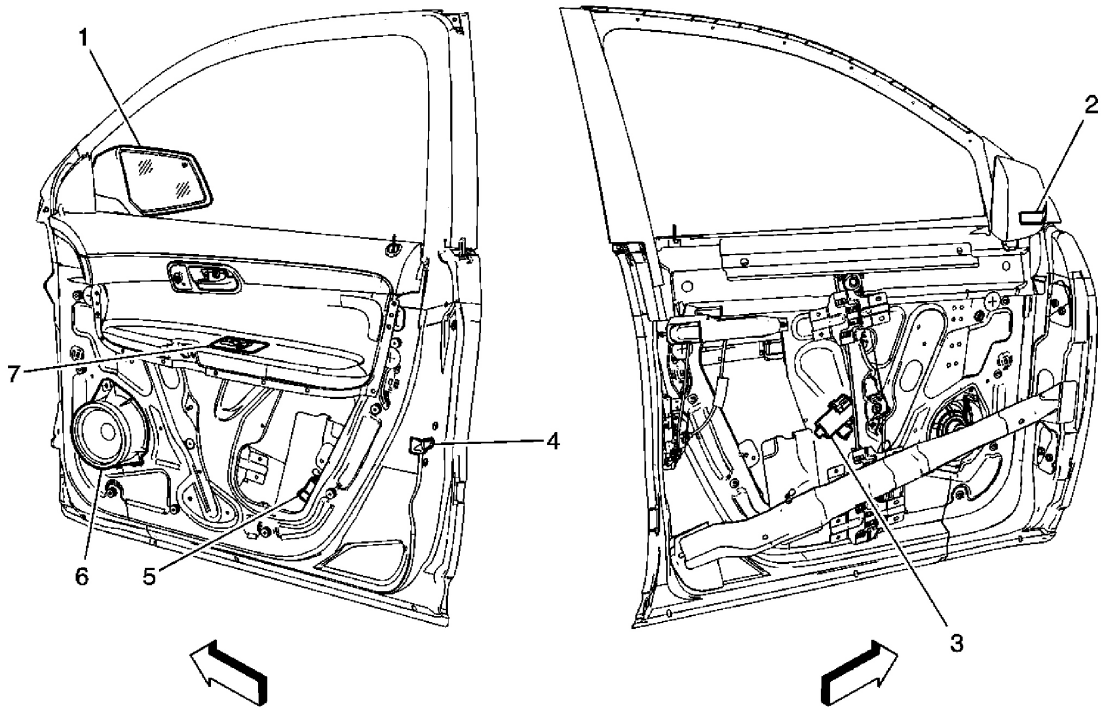

Fig. 7: Identifying Passenger Door Components
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 7

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)

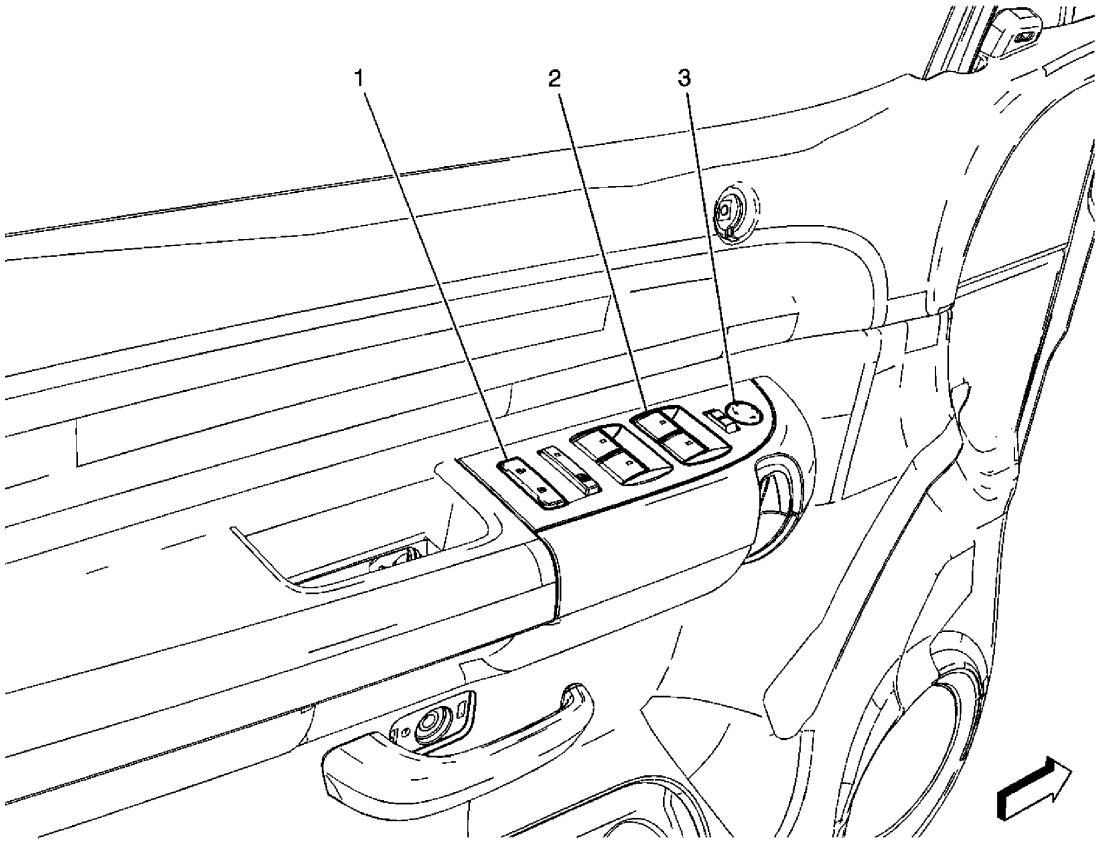

Fig. 8: Identifying Driver Door Switches (Without AXC Or AXE)
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 8

Callout	Component Name
1	Door Lock Switch - Driver
2	Window Switch - Driver
3	Outside Rearview Mirror Switch

MIRROR CONNECTOR END VIEWS

Inside Rearview Mirror

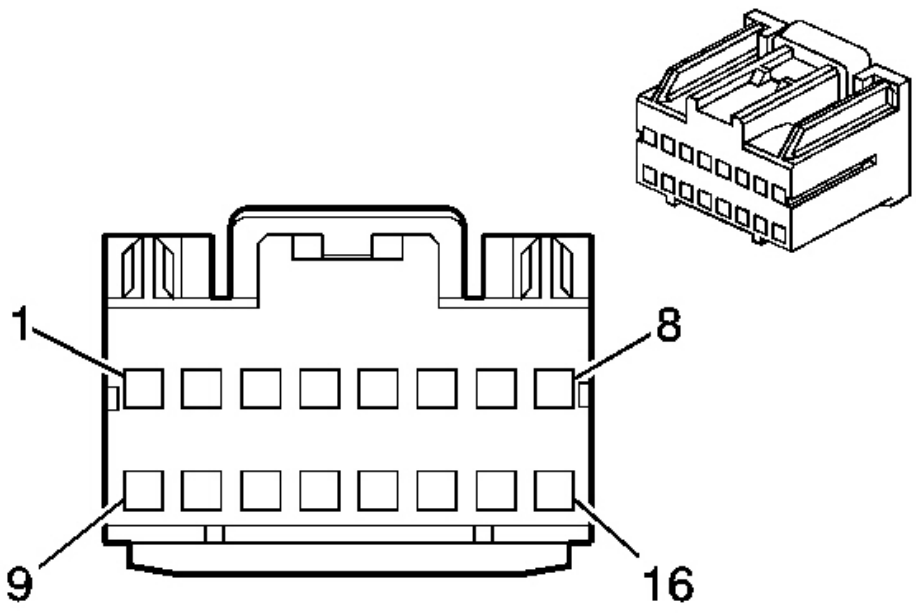

Fig. 9: Inside Rearview Mirror Connector End View
Courtesy of GENERAL MOTORS CORP.

Inside Rearview Mirror Connector Parts Information

Connector Part Information

- OEM: 917981-2
- Service: 15306351
- Description: 16-Way F 0.040/0.070 HYBRID I/O (BK)

Terminal Part Information

- Pins: 5, 13, 15, 16, 8, 9, 11, 12, 14
- Terminal/Tray: 175266-5/15
- Core/Insulation Crimp: Pins 5, 13, 15, 16 - J/J
- Core/Insulation Crimp: Pins 8, 9, 11, 12, 14 - K/K
- Release Tool/Test Probe: 15315247/J-35616-16 (L-GN)

Inside Rearview Mirror Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1-4	-	-	Not Used
5	0.35 GY	1690	Automatic Day/Night Mirror Signal (DNP)
6-7	-	-	Not Used
8	0.5 BK	850	Ground (UE1/DD7/DD8)
9	0.5 BK/WH	24	Backup Lamp Supply Voltage (DD8/DD7)
10	-	-	Not Used
11	0.5 BK/GN	2514	Keypad Signal (UE1)
12	0.5 BK/LG	2515	Keypad Supply Voltage (UE1)
13	0.35 BK/YE	43	Ignition I/II Voltage (DD7/DD8)
14	0.5 BK/GY	2516	Keypad Green LED Signal (UE1)
15	0.35 BN/WH	2517	Keypad Red LED Signal (UE1)
16	0.35 BK/RD	1691	Automatic Day/Night Mirror Low Reference (DNP)

Outside Rearview Mirror - Driver (WDA+DG6/DS3)

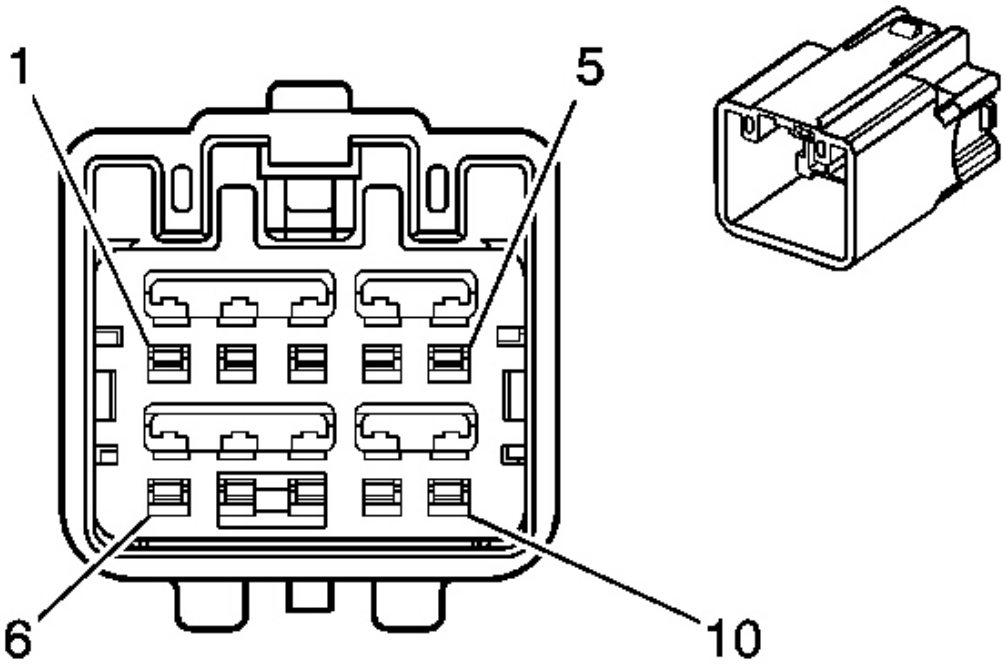

Fig. 10: Outside Rearview Mirror - Driver (WDA+DG6/DS3) Connector End View
Courtesy of GENERAL MOTORS CORP.

Outside Rearview Mirror - Driver (WDA+DG6/DS3) Connector Parts Information

Connector Part Information

- OEM: 7282-6455-40
- Service: 88988272
- Description: 10-Way M Kaizen YESC Series (L-GY)

Terminal Part Information

- Terminal/Tray: 7114-4100-08/9
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 15315247/J-35616-3 (GY)

Outside Rearview Mirror - Driver (WDA+DG6/DS3) Connector Terminal Identification

Pin	Wire	Circuit No.	Function

1	0.35 L-GN	89	Left Mirror Motor Down Control
2	0.35 WH	81	Driver Mirror Motor Right Control
3	0.35 BK	550	Ground
4	-	-	Not Used
5	0.5 L-BU/WH	1314	Left Turn Signal Indicator Lamp Supply Voltage (DS3)
6	0.35 TN	329	Driver Mirror Motor Supply Voltage
7	0.5 OG	2267	Mirror Heating Element Supply Voltage
8-9	-	-	Not Used
10	0.35 BK	550	Ground (DS3)

Outside Rearview Mirror - Driver (Z88+DG6/DS3)

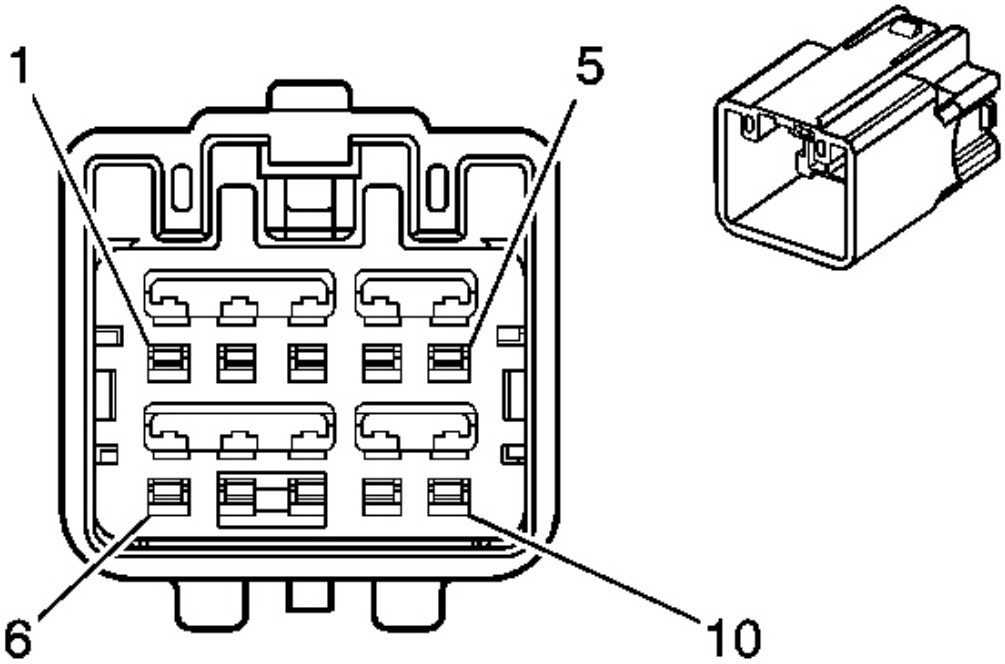

Fig. 11: Outside Rearview Mirror - Driver (Z88+DG6/DS3) Connector End View
Courtesy of GENERAL MOTORS CORP.

Outside Rearview Mirror - Driver (Z88+DG6/DS3) Connector Parts Information

Connector Part Information

- OEM: 7282-6455-40
- Service: 88988272
- Description: 10-Way M Kaizen YESC Series (L-GY)

Terminal Part Information

- Terminal/Tray: 7114-4100-08/9
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 15315247/J-35616-3 (GY)

Outside Rearview Mirror - Driver (Z88+DG6/DS3) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.35 L-GN	89	Left Mirror Motor Down Control
2	0.35 WH	81	Driver Mirror Motor Right Control
3	0.5 L-GN	627	Driver Mirror Heating Element Low Reference (DS3)
4	0.35 BK	550	Ground
5	0.35 OG	1314	Left Front Turn Signal Lamp Supply Voltage
6	0.35 TN	329	Driver Mirror Motor Supply Voltage
7	0.5 OG	2267	Mirror Heating Element Supply Voltage (DS3)
8-10	-	-	Not Used

Outside Rearview Mirror - Driver X1 (WDA+A45)

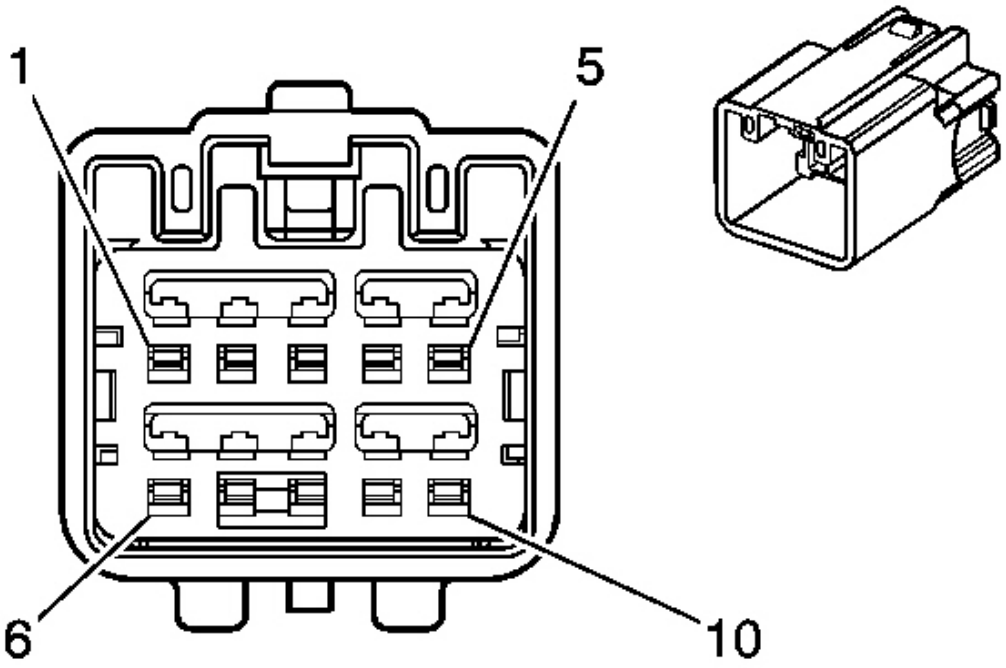

Fig. 12: Outside Rearview Mirror - Driver X1 (WDA+A45) Connector End View
Courtesy of GENERAL MOTORS CORP.

Outside Rearview Mirror - Driver X1 (WDA+A45) Connector Parts Information

Connector Part Information

- OEM: 7282-6455-40
- Service: 88988272
- Description: 10-Way M Kaizen YESC Series (L-GY)

Terminal Part Information

- Terminal/Tray: 7114-4100-08/9
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 15315247/J-35616-3 (GY)

Outside Rearview Mirror - Driver X1 (WDA+A45) Connector Terminal Identification

Pin	Wire	Circuit No.	Function

1	0.35 YE	6802	Left Extend/Fold Mirror Motor Extend Control (DNP)
2	0.35 L-BU	6803	Left Extend Mirror Motor Retract/Unfold Control (DNP)
3	-	-	Not Used
4	0.35 D-GN	784	Driver Mirror Vertical Position Sensor Signal (DNP/DS3)
5	0.35 GY	786	Driver Mirror Horizontal Position Sensor Signal (DNP/DS3)
6	-	-	Not Used
7	0.35 D-BU	672	5-Volt Reference (DNP/DS3)
8	0.35 PK	5853	Driver Side Object Detection LED Signal (UFT)
9	0.35 PK/BK	5855	Driver Side Object Detection LED Low Reference (UFT)
10	0.35 BN	673	Low Reference (DNP/DS3)

Outside Rearview Mirror - Driver X1 (Z88+A45)

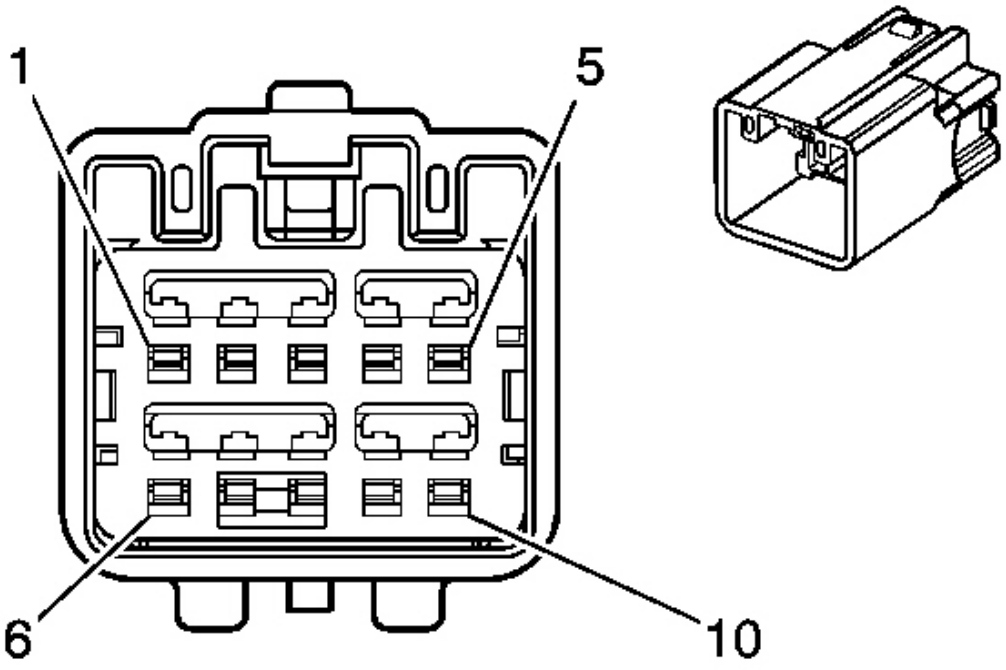

Fig. 13: Outside Rearview Mirror - Driver X1 (Z88+A45) Connector End View
Courtesy of GENERAL MOTORS CORP.

Outside Rearview Mirror - Driver X1 (Z88+A45) Connector Parts Information

Connector Part Information

- OEM: 7282-6455-40
- Service: 88988272
- Description: 10-Way M Kaizen YESC Series (L-GY)

Terminal Part Information

- Terminal/Tray: 7114-4100-08/9
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 15315247/J-35616-3 (GY)

Outside Rearview Mirror - Driver X1 (Z88+A45) Connector Terminal Identification

Pin	Wire	Circuit No.	Function

1	0.35 YE	6802	Left Extend/Fold Mirror Motor Extend Control (DNP)
2	0.35 L-BU	6803	Left Extend Mirror Motor Retract/Unfold Control (DNP)
3	-	-	Not Used
4	0.35 D-GN	784	Driver Mirror Vertical Position Sensor Signal (DNP)
5	0.35 GY	786	Driver Mirror Horizontal Position Sensor Signal (DNP)
6	-	-	Not Used
7	0.35 D-BU	672	5-Volt Reference (DNP)
8	0.35 PK	5853	Driver Side Object Detection LED Signal (UFT)
9	0.35 PK/BK	5855	Driver Side Object Detection LED Low Reference (UFT)
10	0.35 BN	673	Low Reference (DNP)

Outside Rearview Mirror - Driver X2 (WDA+A45)

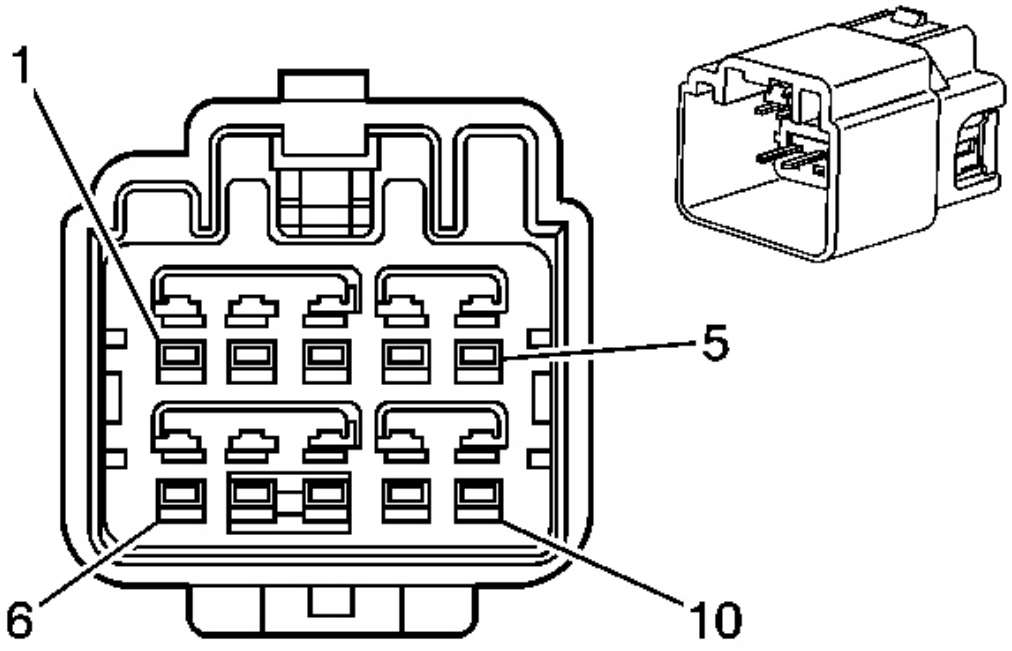

Fig. 14: Outside Rearview Mirror - Driver X2 (WDA+A45) Connector End View
Courtesy of GENERAL MOTORS CORP.

Outside Rearview Mirror - Driver X2 (WDA+A45) Connector Parts Information

Connector Part Information

- OEM: 7282-5683-60
- Service: See Catalog
- Description: 10-Way M YESC/USCAR Class III Series, Sealed (GN)

Terminal Part Information

- Terminal/Tray: 7114-4100-08/9
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 15315247/J-35616-3 (GY)

Outside Rearview Mirror - Driver X2 (WDA+A45) Connector Terminal Identification

Pin	Wire	Circuit No.	Function

1	0.35 D-BU/WH	6160	Left Mirror Vertical Position Control (DNP/DS3)
2	0.35 D-GN/WH	6159	Left Mirror Horizontal Position Control (DNP/DS3)
3	0.5 L-GN	627	Driver Mirror Heating Element Low Reference (A45+DNP/DS3)
4	0.35 PK	1691	Automatic Day/Night Mirror Low Reference (DNP)
5	0.5 L-BU/WH	1314	Left Turn Signal Indicator Lamp Supply Voltage (DNP/DS3)
6	0.35 WH	7197	Left Mirror Drive Motor Common (DNP/DS3)
7	0.5 OG	2267	Mirror Heating Element Supply Voltage (DNP/DS3)
8	-	-	Not Used
9	0.35 GY	1690	Automatic Day/Night Mirror Signal (DNP)
10	0.35 BK	550	Ground (DNP/DS3)

Outside Rearview Mirror - Driver X2 (Z88+A45)

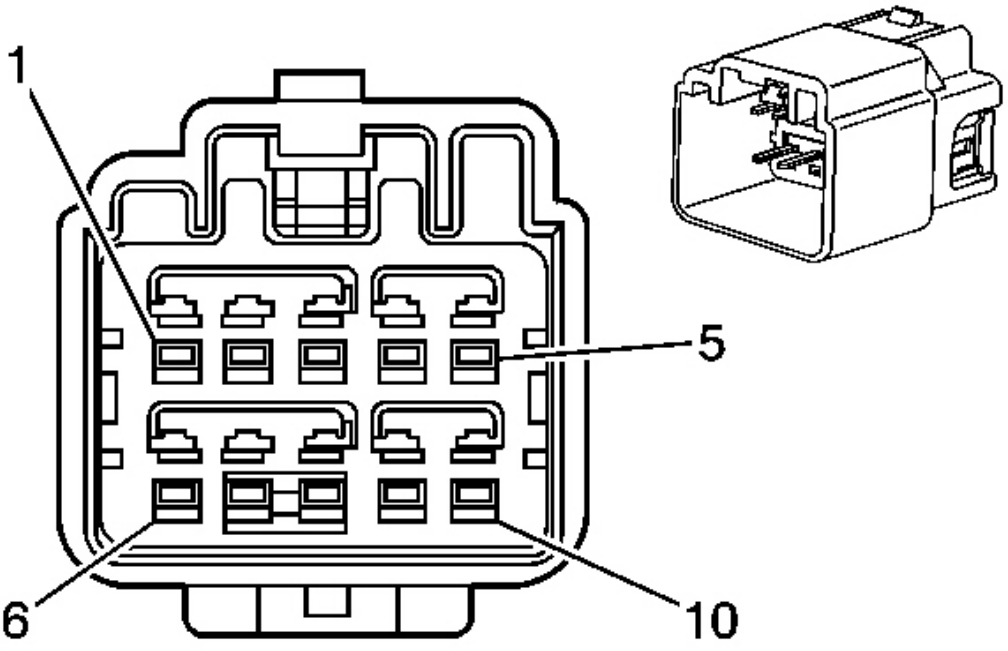

Fig. 15: Outside Rearview Mirror - Driver X2 (Z88+A45) Connector End View
Courtesy of GENERAL MOTORS CORP.

Outside Rearview Mirror - Driver X2 (Z88+A45) Connector Parts Information

Connector Part Information

- OEM: 7282-5683-60
- Service: See Catalog
- Description: 10-Way M YESC/USCAR Class III Series, Sealed (GN)

Terminal Part Information

- Terminal/Tray: 7114-4100-08/9
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 15315247/J-35616-3 (GY)

Outside Rearview Mirror - Driver X2 (Z88+A45) Connector Terminal Identification

Pin	Wire	Circuit No.	Function

1	0.35 D-BU/WH	6160	Left Mirror Vertical Position Control (DNP)
2	0.35 D-GN/WH	6159	Left Mirror Horizontal Position Control (DNP)
3	0.5 L-GN	627	Driver Mirror Heating Element Low Reference (DNP)
4	0.35 PK	1691	Automatic Day/Night Mirror Low Reference (DNP)
5	0.5 L-BU/WH	1314	Left Turn Signal Indicator Lamp Supply Voltage (DNP)
6	0.35 WH	7197	Left Mirror Drive Motor Common (DNP)
7	0.5 OG	2267	Mirror Heating Element Supply Voltage (DNP)
8	-	-	Not Used
9	0.35 GY	1690	Automatic Day/Night Mirror Signal (DNP)
10	0.35 BK	550	Ground (DNP/DS3)

Outside Rearview Mirror - Passenger (DG6/DS3 + WDA/Z88)

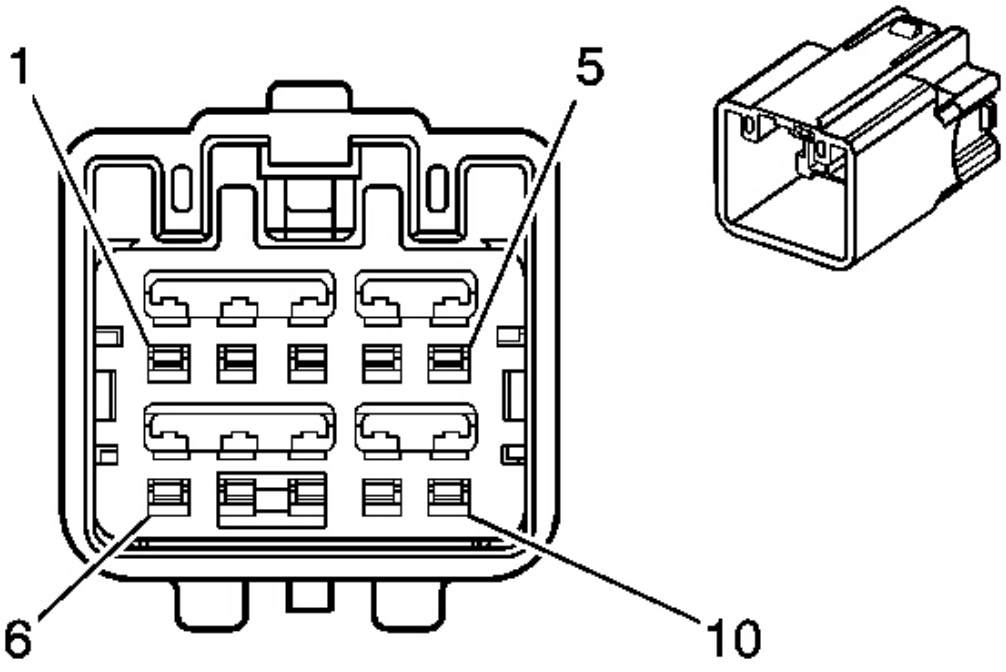

Fig. 16: Outside Rearview Mirror - Passenger (DG6/DS3 + WDA/Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

Outside Rearview Mirror - Passenger (DG6/DS3 + WDA/Z88) Connector Parts Information

Connector Part Information

- OEM: 7282-6455-40
- Service: 88988272
- Description: 10-Way M Kaizen YESC Series (L-GY)

Terminal Part Information

- Terminal/Tray: 7114-4100-08/9
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 15315247/J-35616-3 (GY)

Outside Rearview Mirror - Passenger (DG6/DS3 + WDA/Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.35 PU/WH	889	Passenger Mirror Motor Down Control (DG6/DS3)
2	0.35 OG/WH	881	Passenger Mirror Motor Right Control (DG6/DS3)
3	0.35 BK	750	Ground (DG6/DS3)
4	-	-	Not Used
5	0.5 D-BU/WH	1315	Right Turn Signal Indicator Lamp Supply Voltage (DS3)
6	0.35 TN/WH	330	Passenger Mirror Motor Supply Voltage (DG6/DS3)
7	0.5 OG	2267	Mirror Heating Element Supply Voltage (DG6/DS3)
8-9	-	-	Not Used
10	0.35 BK	750	Ground (DS3)

Outside Rearview Mirror - Passenger (DG6/DS3 + WDA/Z88)

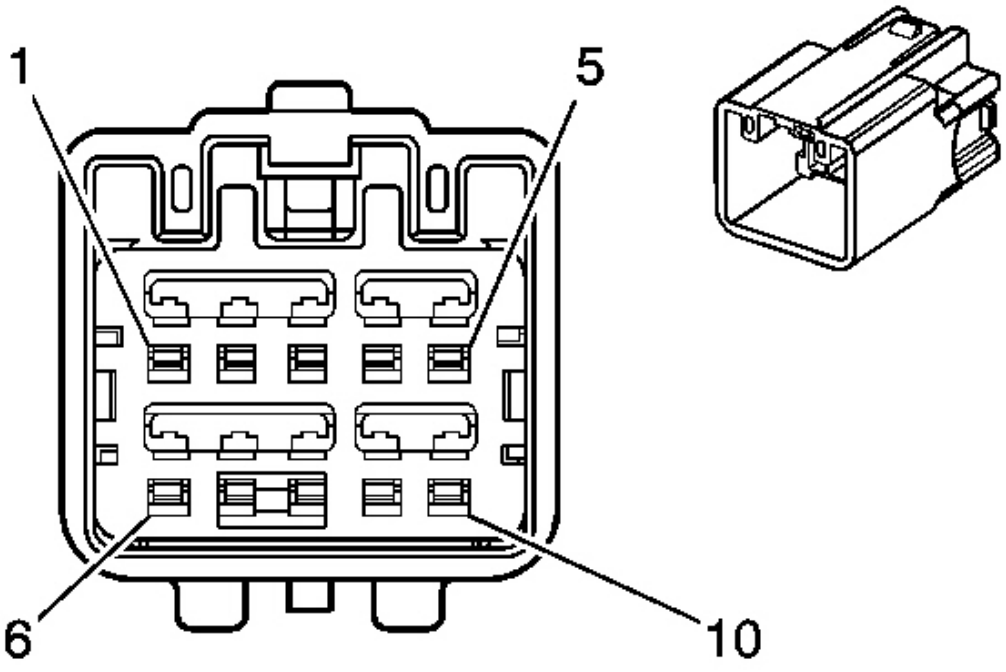

Fig. 17: Outside Rearview Mirror - Passenger (DG6/DS3 + WDA/Z88) Connector End View
Courtesy of GENERAL MOTORS CORP.

Outside Rearview Mirror - Passenger (DG6/DS3 + WDA/Z88) Connector Parts Information

Connector Part Information

- OEM: 7282-6455-40
- Service: 88988272
- Description: 10-Way M Kaizen YESC Series (L-GY)

Terminal Part Information

- Terminal/Tray: 7114-4100-08/9
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 15315247/J-35616-3 (GY)

Outside Rearview Mirror - Passenger (DG6/DS3 + WDA/Z88) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.35 PU/WH	889	Passenger Mirror Motor Down Control (DG6/DS3)
2	0.35 OG/WH	881	Passenger Mirror Motor Right Control (DG6/DS3)
3	0.35 TN/WH	330	Passenger Mirror Motor Supply Voltage (DG6/DS3)
4	0.35 BK	750	Ground (DG6/DS3)
5	0.5 OG	2267	Mirror Heating Element Supply Voltage (DG6/DS3)
6	0.5 D-BU/WH	1315	Right Turn Signal Indicator Lamp Supply Voltage (DS3)
7	0.35 BK	750	Ground (DS3)
8-10	-	-	Not Used

Outside Rearview Mirror - Passenger X1 (A45)

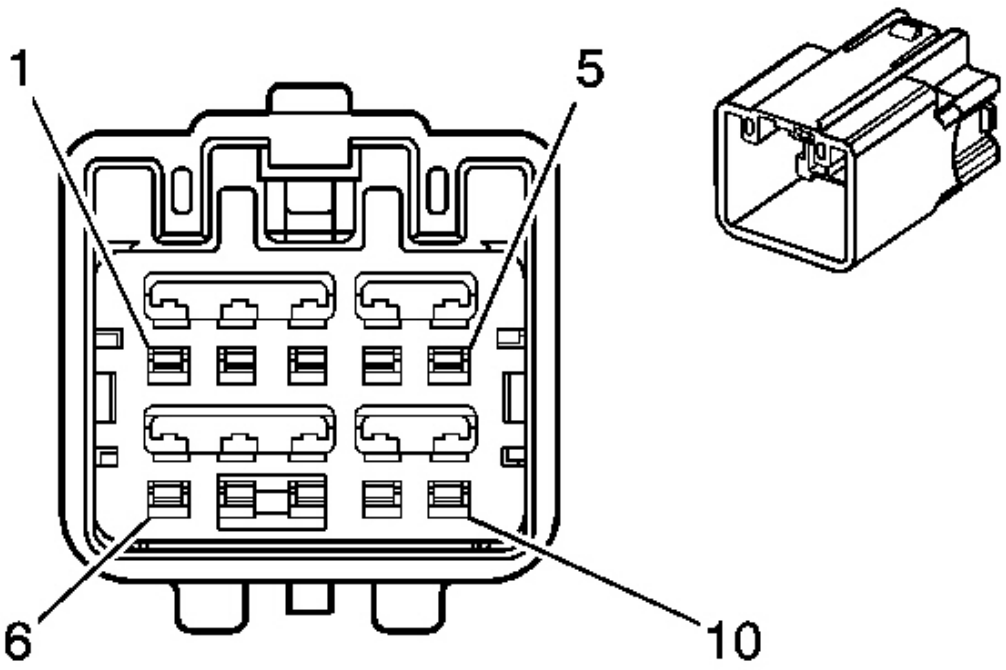

Fig. 18: Outside Rearview Mirror - Passenger X1 (A45) Connector End View
Courtesy of GENERAL MOTORS CORP.

Outside Rearview Mirror - Passenger X1 (A45) Connector Parts Information

Connector Part Information

- OEM: 7282-6455-40
- Service: 88988272
- Description: 10-Way M Kaizen YESC Series (L-GY)

Terminal Part Information

- Terminal/Tray: 7114-4100-08/9
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 15315247/J-35616-3 (GY)

Outside Rearview Mirror - Passenger X1 (A45) Connector Terminal Identification

Pin	Wire	Circuit No.	Function

1	0.35 YE	6804	Driver Mirror Motor Down Control (DNP)
2	0.35 L-BU	6805	Right Extend Motor Retract/Unfold Control (DNP)
3	-	-	Not Used
4	0.35 BN	787	Passenger Mirror Vertical Position Sensor Signal (DNP/DS3)
5	0.35 L-BU/BK	785	Passenger Mirror Horizontal Position Sensor Signal (DNP/DS3)
6	-	-	Not Used
7	0.35 YE	674	5-Volt Reference (DNP/DS3)
8	0.35 PK	5861	Passenger Side Object Detection LED Signal (UFT)
9	0.35 PK/BK	5862	Passenger Side Object Detection LED Low Reference (UFT)
10	0.35 L-GN	675	Low Reference (A45+DNP/DS3)

Outside Rearview Mirror - Passenger X1 (Z88+A45)

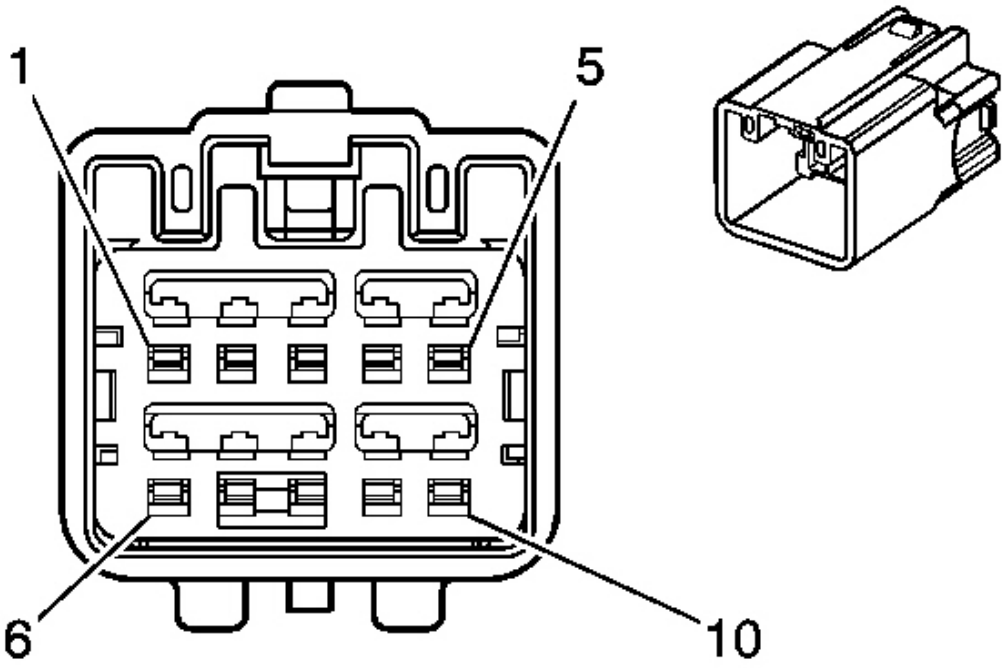

Fig. 19: Outside Rearview Mirror - Passenger X1 (Z88+A45) Connector End View
Courtesy of GENERAL MOTORS CORP.

Outside Rearview Mirror - Passenger X1 (Z88+A45) Connector Parts Information

Connector Part Information

- OEM: 7282-6455-40
- Service: 88988272
- Description: 10-Way M Kaizen YESC Series (L-GY)

Terminal Part Information

- Terminal/Tray: 7114-4100-08/9
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 15315247/J-35616-3 (GY)

Outside Rearview Mirror - Passenger X1 (Z88+A45) Connector Terminal Identification

Pin	Wire	Circuit No.	Function

1	0.35 YE	6804	Driver Mirror Motor Down Control (DNP)
2	0.35 L-BU	6805	Right Extend Motor Retract/Unfold Control (DNP)
3	-	-	Not Used
4	0.35 BN	787	Passenger Mirror Vertical Position Sensor Signal (DNP)
5	0.35 L-BU/BK	785	Passenger Mirror Horizontal Position Sensor Signal (DNP)
6	-	-	Not Used
7	0.35 YE	674	5-Volt Reference (DNP)
8	0.35 PK	5861	Passenger Side Object Detection LED Signal (UFT)
9	0.35 PK/BK	5862	Passenger Side Object Detection LED Low Reference (UFT)
10	0.35 L-GN	675	Low Reference (DNP)

Outside Rearview Mirror - Passenger X2 (A45)

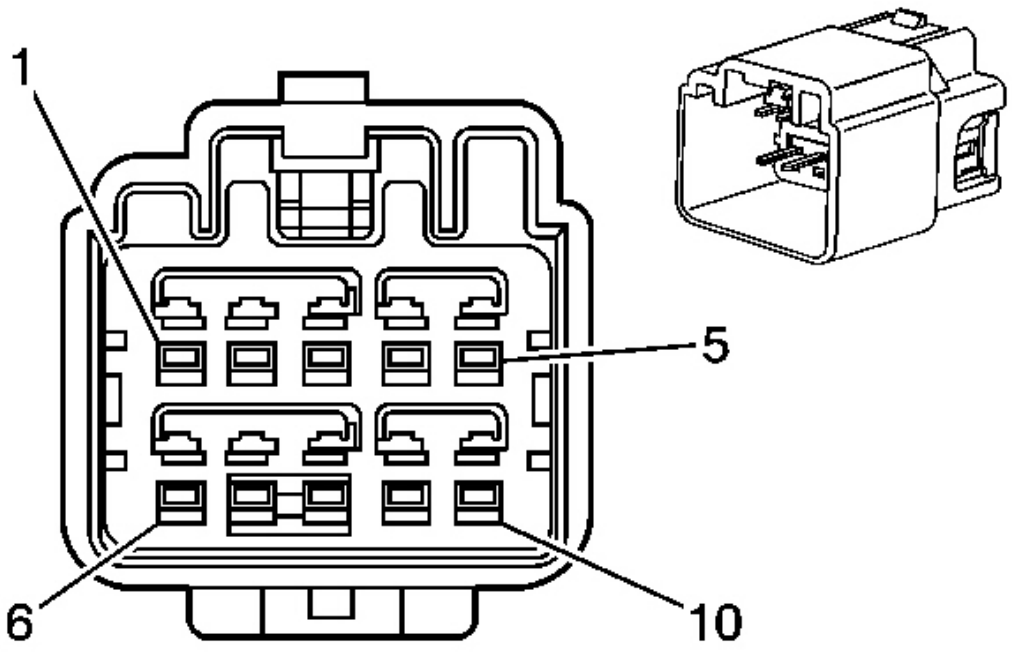

Fig. 20: Outside Rearview Mirror - Passenger X2 (A45) Connector End View
Courtesy of GENERAL MOTORS CORP.

Outside Rearview Mirror - Passenger X2 (A45) Connector Parts Information

Connector Part Information

- OEM: 7282-5683-60
- Service: See Catalog
- Description: 10-Way M YESC/USCAR Class III Series, Sealed (GN)

Terminal Part Information

- Terminal/Tray: 7114-4100-08/9
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 15315247/J-35616-3 (GY)

Outside Rearview Mirror - Passenger X2 (A45) Connector Terminal Identification

Pin	Wire	Circuit No.	Function

1	0.35 OG/BK	6162	Power Window Motor Right Front Up Control (A45+DNP/DS3)
2	0.35 GY/BK	6161	Right Mirror Horizontal Position Control (A45+DNP/DS3)
3	0.5 D-GN	628	Passenger Mirror Heating Element Low Reference (A45+DNP/DS3)
4	-	-	Not Used
5	0.5 D-BU/WH	1315	Right Turn Signal Indicator Lamp Supply Voltage (A45+DNP/DS3)
6	0.35 WH	7196	Right Mirror Drive Motor Common (A45+DNP/DS3)
7	0.5 OG	2267	Mirror Heating Element Supply Voltage (A45+DNP/DS3)
8-9	-	-	Not Used
10	0.35 BK	750	Ground (A45+DNP/DS3)

Outside Rearview Mirror - Passenger X2 (Z88+A45)

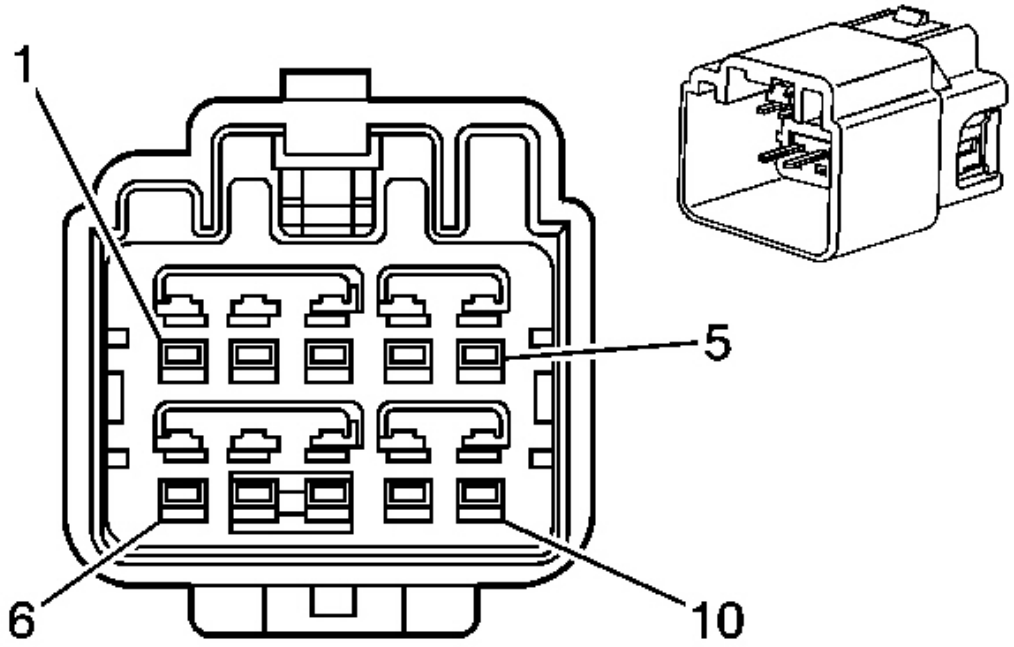

Fig. 21: Outside Rearview Mirror - Passenger X2 (Z88+A45) Connector End View
Courtesy of GENERAL MOTORS CORP.

Outside Rearview Mirror - Passenger X2 (Z88+A45) Connector Parts Information

Connector Part Information

- OEM: 7282-5683-60
- Service: See Catalog
- Description: 10-Way M YESC/USCAR Class III Series, Sealed (GN)

Terminal Part Information

- Terminal/Tray: 7114-4100-08/9
- Core/Insulation Crimp: E/C
- Release Tool/Test Probe: 15315247/J-35616-3 (GY)

Outside Rearview Mirror - Passenger X2 (Z88+A45) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
1	0.35 OG/BK	6162	Power Window Motor Right Front Up Control (DNP)
2	0.35 GY/BK	6161	Right Mirror Horizontal Position Control (DNP)
3	0.5 D-GN	628	Passenger Mirror Heating Element Low Reference (DNP)
4	-	-	Not Used
5	0.5 D-BU/WH	1315	Right Turn Signal Indicator Lamp Supply Voltage (DNP)
6	0.35 WH	7196	Right Mirror Drive Motor Common (DNP)
7	0.5 OG	2267	Mirror Heating Element Supply Voltage (DNP)
8-9	-	-	Not Used
10	0.35 BK	750	Ground (DNP)

Outside Rearview Mirror Switch (WDA+DG6/DS3)

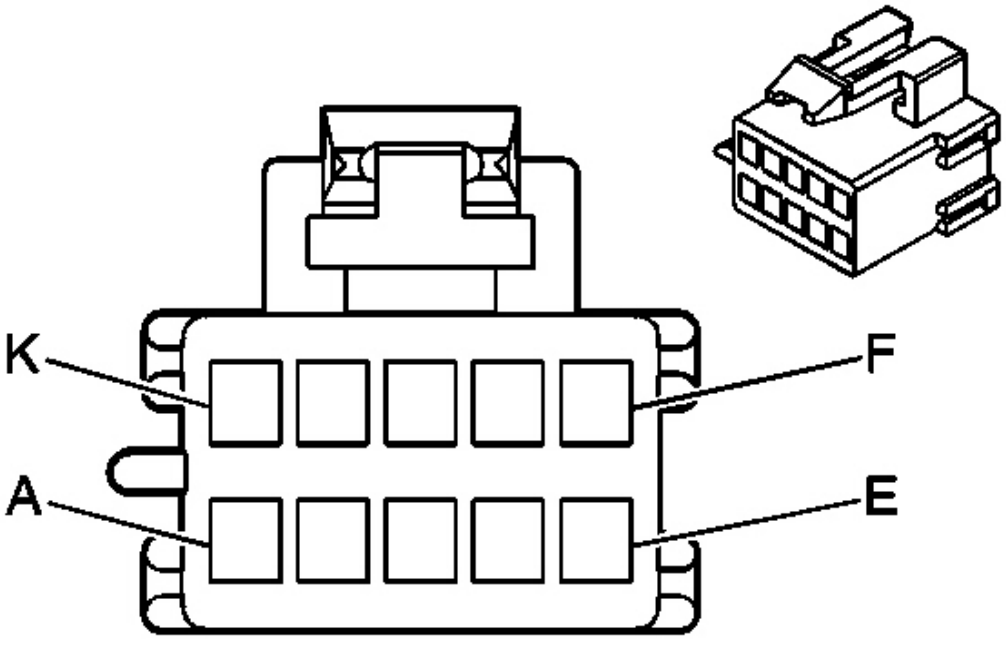

Fig. 22: Outside Rearview Mirror Switch (WDA+DG6/DS3) Connector End View
Courtesy of GENERAL MOTORS CORP.

Outside Rearview Mirror Switch (WDA+DG6/DS3) Connector Parts Information

Connector Part Information

- OEM: 12064769
- Service: 12101762
- Description: 10-Way F Metri-Pack 150 Series (NA)

Terminal Part Information

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

Outside Rearview Mirror Switch (WDA+DG6/DS3) Connector Terminal Identification

Pin	Wire	Circuit No.	Function

A	-	-	Not Used
B	0.5 RD/WH	1940	Battery Positive Voltage
C	0.35 TN/WH	330	Passenger Mirror Motor Supply Voltage
D	0.35 OG/WH	881	Passenger Mirror Motor Right Control
E	0.35 GY	8	Instrument Panel Lamp Supply Voltage
F	0.35 PU/WH	889	Passenger Mirror Motor Down Control
G	0.35 BK	550	Ground
H	0.35 TN	329	Driver Mirror Motor Supply Voltage
J	0.35 WH	81	Driver Mirror Motor Right Control
K	0.35 L-GN	89	Driver Mirror Motor Down Control

Outside Rearview Mirror Switch (Z88+DG6/DS3)

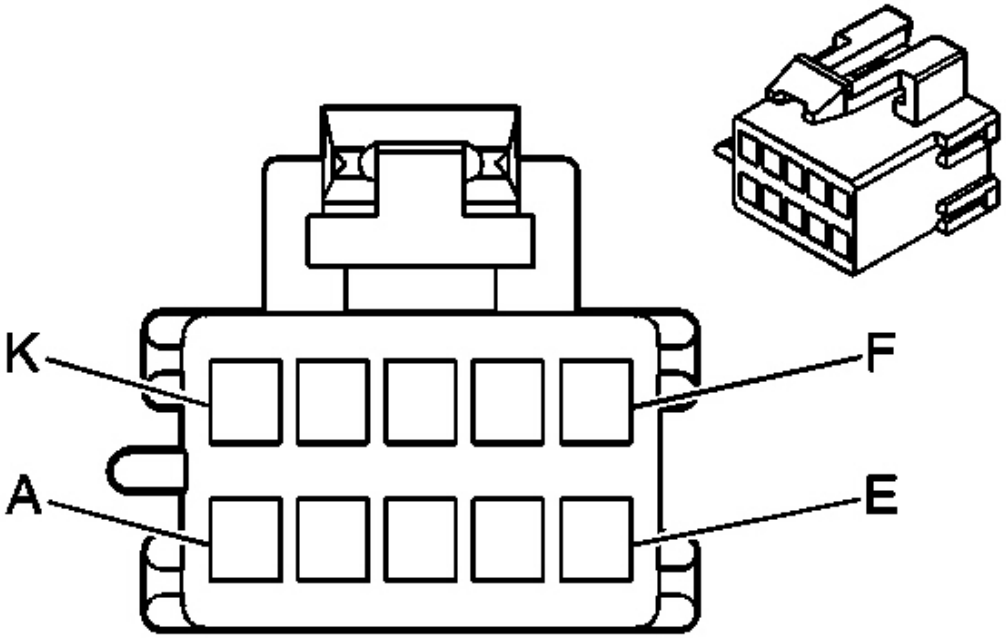

Fig. 23: Outside Rearview Mirror Switch (Z88+DG6/DS3) Connector End View
Courtesy of GENERAL MOTORS CORP.

Outside Rearview Mirror Switch (Z88+DG6/DS3) Connector Parts Information

Connector Part Information

- OEM: 12064769
- Service: 12101762
- Description: 10-Way F Metri-Pack 150 Series (NA)

Terminal Part Information

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

Outside Rearview Mirror Switch (Z88+DG6/DS3) Connector Terminal Identification

Pin	Wire	Circuit No.	Function
A	-	-	Not Used
B	0.5 RD/WH	1940	Battery Positive Voltage
C	0.35 TN/WH	330	Passenger Mirror Motor Supply Voltage
D	0.35 OG/WH	881	Passenger Mirror Motor Right Control
E	0.35 GY	8	Instrument Panel Lamp Supply Voltage
F	0.35 PU/WH	889	Passenger Mirror Motor Down Control
G	0.35 BK	550	Ground
H	0.35 TN	329	Driver Mirror Motor Supply Voltage
J	0.35 WH	81	Driver Mirror Motor Right Control
K	0.35 L-GN	89	Left Mirror Motor Down Control

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC STARTING POINT - MIRRORS

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.

SYMPTOMS - MIRRORS

Visual/Physical Inspection

An understanding of both the outside and automatic day-night mirror operation must be understood before reviewing the symptom tables. Refer to **Outside Mirror Description and Operation** and **Automatic Day-Night Mirror Description and Operation**.

- Inspect for aftermarket devices which could affect the operation of the automatic day-night feature of the inside rearview mirror. 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:

- **Power Mirrors Inoperative**
- **Heated Mirrors Inoperative**
- **Automatic Day-Night Mirrors Inoperative**

HEATED MIRRORS INOPERATIVE

Diagnostic Instructions

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

Circuit/System Description

The outside rearview mirrors heat during the defrost/defog cycles for the rear window. The heated mirrors are connected to the driver door module (DDM) and the Passenger Door Module

(PDM). The DDM and the PDM receive a GMLAN serial data message from the HVAC control module indicating the rear defogger has been activated. The DDM and PDM examine information from the body control module (BCM) to determine if vehicle conditions are correct for the heated mirrors function to be activated. If conditions are correct, the DDM and PDM will command there respective heated mirrors ON. For more detailed information concerning power mirror operation refer to **Outside Mirror Description and Operation**.

Reference Information

Schematic Reference

Outside Rearview Mirror Schematics

Connector End View Reference

Mirror Connector End Views

Electrical Information Reference

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

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the inoperative outside rearview mirror heater element.
2. Test for less than 1.0 ohm of resistance between the heater element ground circuit terminal 10 and ground.
    - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Connect a test lamp between the heater element control circuit and ground circuit terminals 3 and 7 connector X3.
4. Activate the inoperative mirror heater switch ON and OFF. The test lamp should turn ON and OFF when changing between the commanded states.
    - If the test lamp is always ON, test the control circuit terminal 7 for a short to voltage. If the circuit tests normal, replace the inoperative door control module.
    - If the test lamp is always OFF, test the control circuit terminal 7 for a short to ground or an open/high resistance. If the circuit tests normal, replace the inoperative door control module.

5. If all circuits test normal, test or replace the inoperative outside rearview mirror.

Repair Procedures

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

- **Outside Rearview Mirror Motor Replacement**
- **Power Mirror Replacement**
- **Control Module References** for DDM or PDM replacement, setup and programming

AUTOMATIC DAY-NIGHT MIRRORS INOPERATIVE

Diagnostic Instructions

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

Circuit/System Description

The automatic day/night feature of the driver outside rearview mirror is controlled by the inside rearview mirror. The inside rearview mirror supplies a signal and a low reference to the driver outside rearview mirror. The voltage on the signal circuit of the driver outside rearview mirror varies between 0.5-1.5 volts depending on light conditions present at the inside rearview mirror. At night, with the automatic day-night feature enabled, the driver outside rearview mirror will automatically darken with the inside rearview mirror to reduce the glare from the headlamps from behind. The voltage on the signal circuit of the driver outside rearview mirror will be near 1.5 volts. In daytime conditions, the mirrors are in the normal state. The voltage on the signal circuit of the driver outside rearview mirror may be less than or near 0.5 volts. For more detailed information concerning automatic day night mirror operation refer to **Automatic Day-Night Mirror Description and Operation**.

Diagnostic Aids

This diagnostic assumes that the vehicles backup lamps are operating within specifications. If the backup lamps are inoperative, diagnose the backup lamps system before continuing with this procedure.

Reference Information

Schematic Reference

- **Inside Rearview Mirror Schematics**
- **Outside Rearview Mirror Schematics**

Connector End View Reference

Mirror Connector End Views

Electrical Information Reference

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

Circuit/System Testing

1. Ignition OFF, disconnect the harness connector at the inside rearview mirror.
2. Ignition OFF, test for less than 1.0 ohm of resistance between the ground circuit terminal 8 and ground.
    - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Ignition ON, test for battery voltage between the ignition 1 voltage circuit terminal 13 and ground.
    - If less than the specified range, test the voltage circuit terminal 13 for a short to ground or an open/high resistance.
4. Transmission in REVERSE, test for battery voltage between the backup lamps supply voltage circuit terminal 9 and ground.
    - If less than the specified range, test the voltage circuit terminal 9 for a short to ground or an open/high resistance.
5. If all circuits test normal, test or replace the inside rearview mirror.

Repair Procedures

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

Rearview Mirror Replacement

POWER MIRROR FOLDING INOPERATIVE

Power Mirror Folding Inoperative

Step	Action	Yes	No
Schematic Reference: Outside Rearview Mirror Schematics			
1	Did you perform the Diagnostic System Check - Vehicle?	Go to **Step 2**	Go to **Diagnostic System Check - Vehicle**
2	Verify that the Power Mirrors - Folding Inoperative complaint is present. Does the power folding mirrors system operate as described in the Description and Operation?	Go to **Testing for Intermittent Conditions and Poor Connections**	Go to **Step 3**
3	1. Turn OFF the ignition 2. Disconnect the door module C5 harness connector from the door module associated with the inoperative mirror. 3. Connect a test lamp between the extend and retract circuits at the door module pins. 4. Turn ON the ignition, with the engine OFF. 5. Observe the test lamp, while momentarily pressing the fold switch. Does the test lamp illuminate each time the fold switch is momentarily pressed?	Go to **Step 4**	Go to **Step 7**
4	Test the folding mirror motor control circuits of the inoperative mirror for an open or a short to ground. Refer to **Circuit Testing** and **Wiring Repairs** . Did you find and correct the condition?	Go to **Step 11**	Go to **Step 5**
5	Test the folding mirror motor control circuits of the inoperative mirror for a short to battery voltage. Refer to **Circuit Testing** and **Wiring Repairs** . Did you find and correct the condition?	Go to **Step 11**	Go to **Step 6**
	Inspect for poor connections at the harness		

6	connector of the inoperative power mirror. Refer to **Testing for Intermittent Conditions and Poor Connections** and **Connector Repairs** . 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 door module associated with the inoperative mirror. Refer to **Testing for Intermittent Conditions and Poor Connections** and **Connector Repairs** . Did you find and correct the condition?	Go to **Step 11**	Go to **Step 8**
8	Inspect for poor connections at the harness connector of the driver door module (DDM) or passenger door module (PDM). Refer to **Testing for Intermittent Conditions and Poor Connections** and **Connector Repairs** . Did you find and correct the condition?	Go to **Step 11**	Go to **Step 10**
9	Replace the inoperative power mirror. Refer to **Power Mirror Replacement**. Did you complete the repair?	Go to **Step 11**	-
10	Replace the appropriate door module. Refer to **Control Module References** . Did you complete the repair?	Go to **Step 11**	-
11	Operate the system in order to verify the repair. Did you correct the condition?	System OK	Go to **Step 2**

POWER MIRRORS INOPERATIVE

Diagnostic Instructions

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

Circuit/System Description

The driver door module (DDM) and passenger door module (PDM) each provide motor control output functions for their respective mirrors. These output controls allow each door module to command their respective power mirrors in horizontal and vertical positions. The power mirror switch is integrated into DDM. When the DDM detects an active mirror command from the power mirror switch, the DDM will send a GMLAN serial data message to the PDM. Each door module will command there respective mirror motor in the appropriate direction by applying ground or voltage to the control circuit, depending on the desired mirror position. For more detailed information concerning power mirror operation refer to **Outside Mirror Description and Operation**.

Reference Information

Schematic Reference

Outside Rearview Mirror Schematics

Connector End View Reference

- **Mirror Connector End Views**
- **Vehicle Access Connector End Views**

Electrical Information Reference

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

Circuit/System Testing

1. Ignition ON, verify the mirror direction changes as the switch is activated. The mirror should change between UP, DOWN, LEFT, RIGHT.
    - If the function does not perform as specified, replace the DDM.
2. Ignition OFF, disconnect the appropriate outside rearview mirror driver or passenger harness connectors.
3. Ignition OFF, test for less than 1.0 ohm of resistance at each mirror motor control circuit between the outside rearview mirror driver or passenger harness connectors and ground.
    - If greater than the specified range, test the appropriate mirror motor control circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the appropriate door control module.

4. Connect a test lamp between mirror motor UP and DOWN control circuit terminal 1 connector X3 and ground circuit terminal 10 connector X5 of the PDM or DDM.
5. Command the appropriate mirror to the UP and DOWN positions. The test lamp should turn ON when commanding the UP and DOWN states.
    - If the test lamp remains OFF during either of the commands, test for a short to ground on the control circuit. If the circuit tests normal, replace the appropriate door control module.
6. Connect a test lamp between mirror motor LEFT and RIGHT control circuit terminal 1 connector X3 and ground circuit terminal 2.
7. Command the appropriate mirror to the LEFT and RIGHT positions. The test lamp should turn ON when commanding the LEFT and RIGHT states.
    - If the test lamp remains OFF during either of the commands, test for a short to ground on the control circuit. If the circuit tests normal, replace the appropriate door control module.
8. If all circuits test normal, test or replace the appropriate outside rearview mirror.

Repair Procedures

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

- **Power Mirror Replacement**
- **Outside Rearview Mirror Motor Replacement**
- **Control Module References** for DDM or PDM replacement, setup and programming

REPAIR INSTRUCTIONS

POWER MIRROR REPLACEMENT

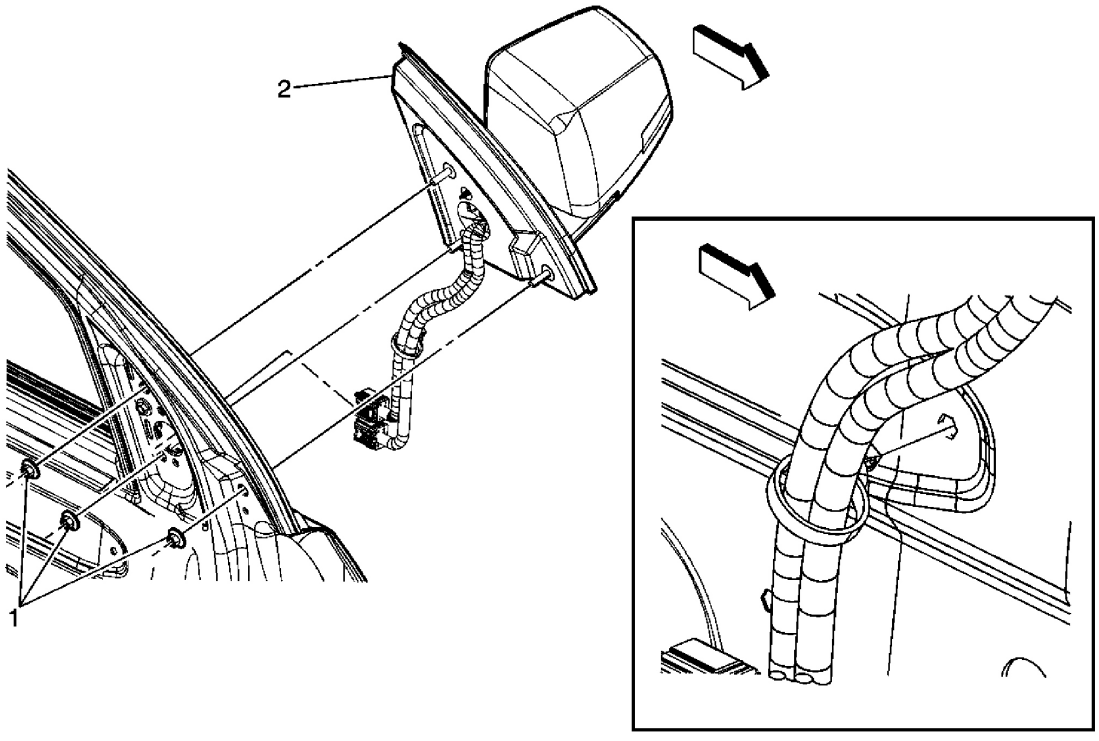

Fig. 24: Identifying Power Mirror
Courtesy of GENERAL MOTORS CORP.

Power Mirror Replacement

Callout	Component Name
Preliminary Procedure: Remove the door trim panel. Refer to **Front Side Door Trim Panel Replacement - Left Side** or **Front Side Door Trim Panel Replacement - Right Side** .	
1	Outside Rearview Mirror Nut (Qty: 3) **NOTE:** **Refer to Fastener Notice .** **Tip:** Disconnect the electrical connector. **Tighten:** 4 N.m (35 lb in)
2	Outside Rearview Mirror

OUTSIDE REARVIEW MIRROR MOTOR REPLACEMENT

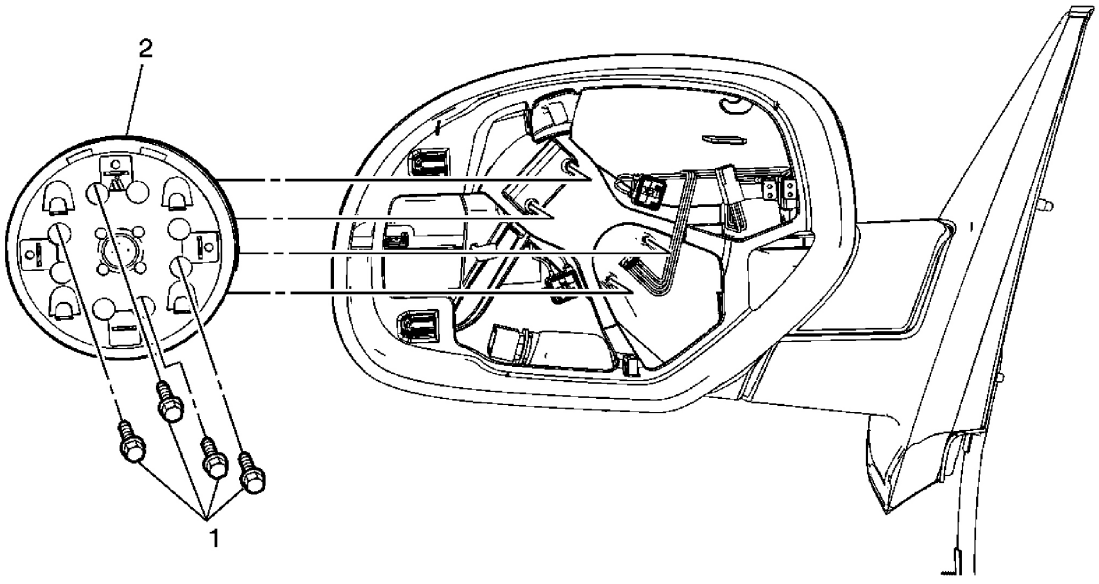

Fig. 25: View Of Outside Rearview Mirror Motor
Courtesy of GENERAL MOTORS CORP.

Outside Rearview Mirror Motor Replacement

Callout	Component Name
Preliminary Procedure: Remove the mirror face. Refer to **Mirror Face Replacement**.	
1	Outside Rearview Mirror Motor Screws (Qty: 4) **NOTE:** **Refer to Fastener Notice .** **Procedure:** Disconnect the electrical connector. **Tighten:** 2 N.m (18 lb in)
2	Outside Rearview Mirror Motor

MIRROR FACE REPLACEMENT

Removal Procedure

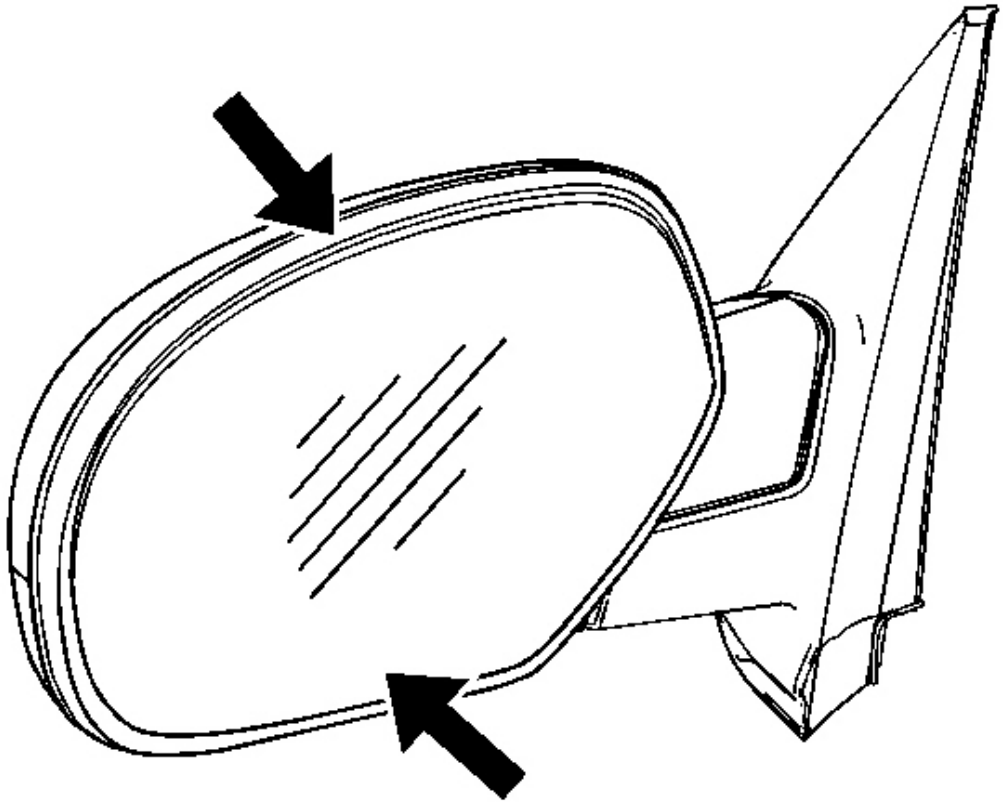

Fig. 26: Identifying Outside Rearview Mirror Glass
Courtesy of GENERAL MOTORS CORP.

CAUTION: Approved safety glasses and gloves should be worn when performing this procedure to reduce the chance of personal injury.

NOTE: When servicing electrochromic glass that is broken or if glass breaks during servicing, be cautious not to spill electrochromic fluid onto vehicle. Doing so will cause damage to the vehicle.

1. Position the mirror face outward on a angle with the mirror housing.

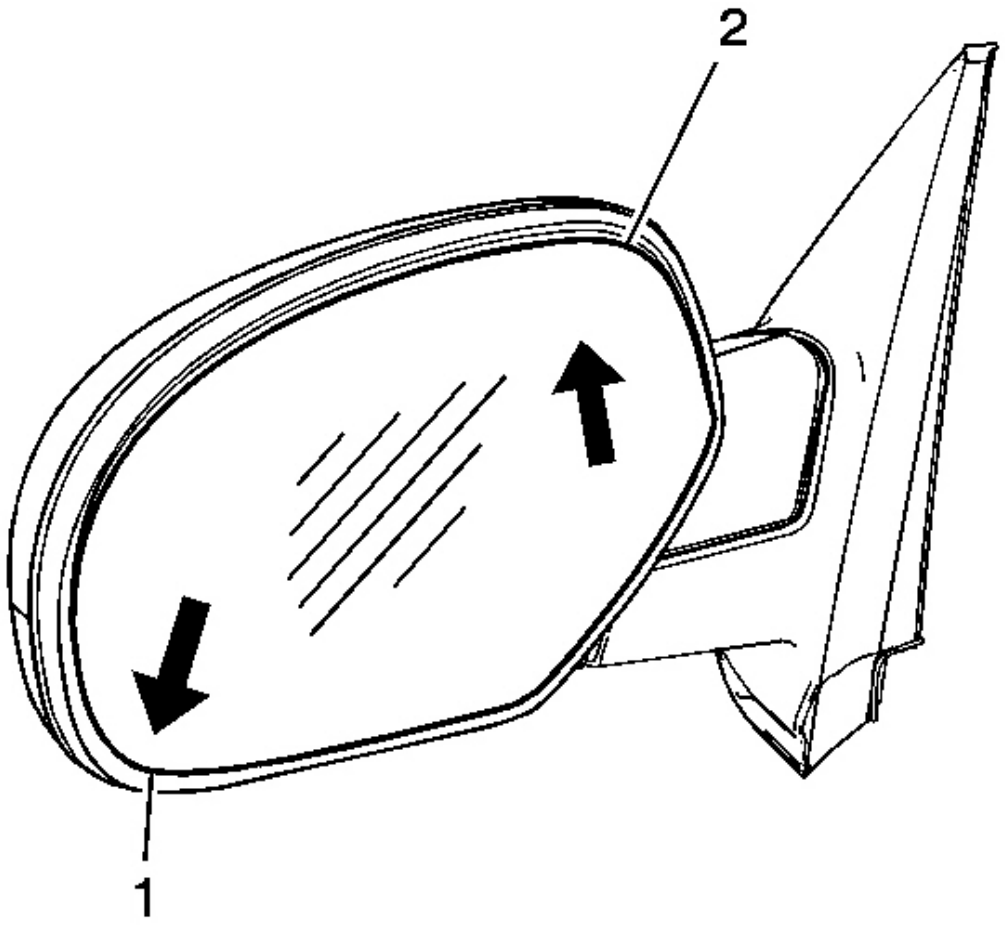

Fig. 27: Identifying Bottom Outboard Corner And Top Inboard Edge Corner
Courtesy of GENERAL MOTORS CORP.

2. Remove the mirror face as follows:
    1. Position the hand in the center of the mirror face.
    2. Apply light pressure.
    3. Push upward releasing the motor retainers from the mirror back.
    4. Holding the mirror face, disconnect the electrical connectors from the back of the mirror.

Installation Procedure

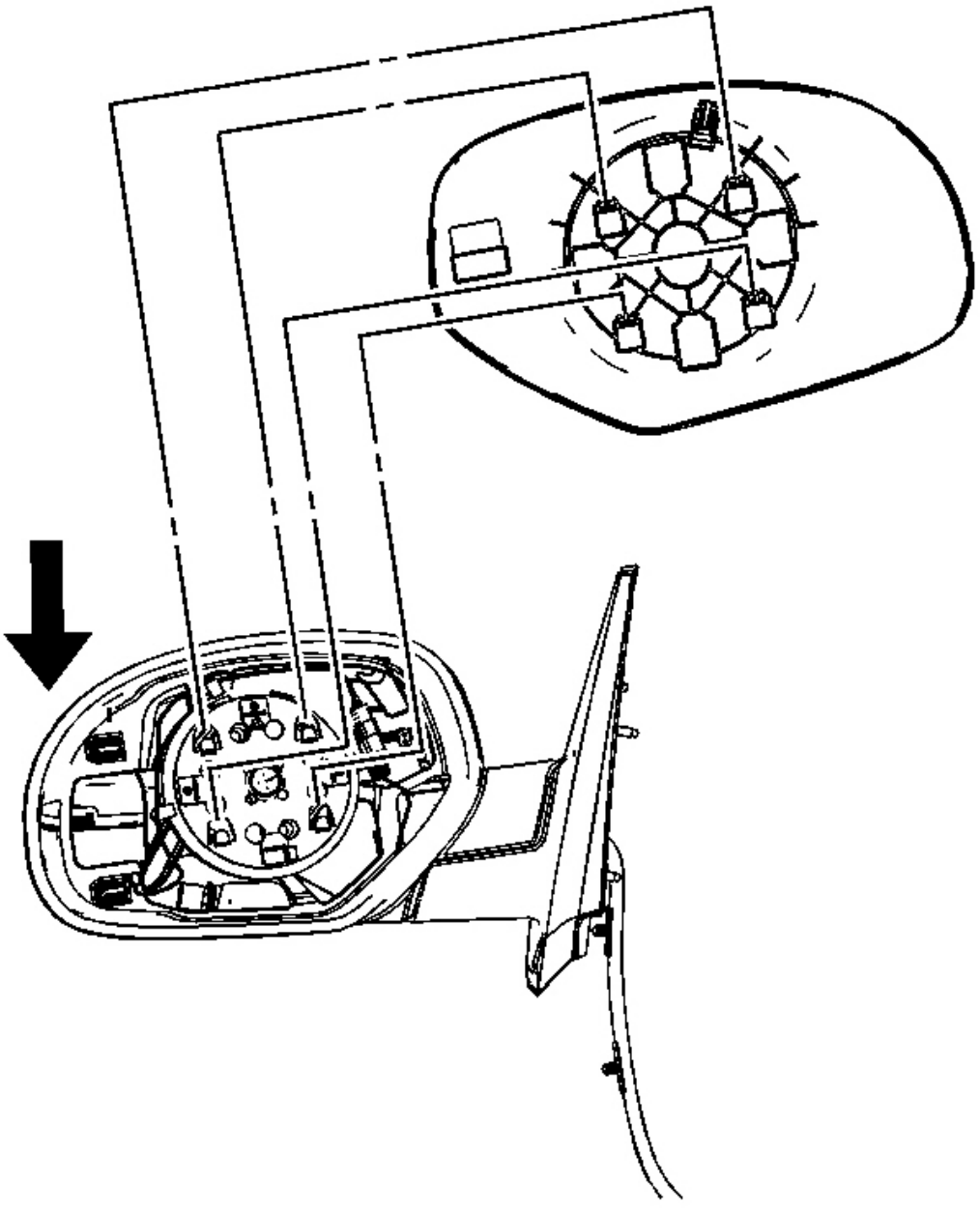

Fig. 28: Positioning Mirror Face On Mirror Housing
Courtesy of GENERAL MOTORS CORP.

1. Position the mirror face on a angle to the mirror housing.

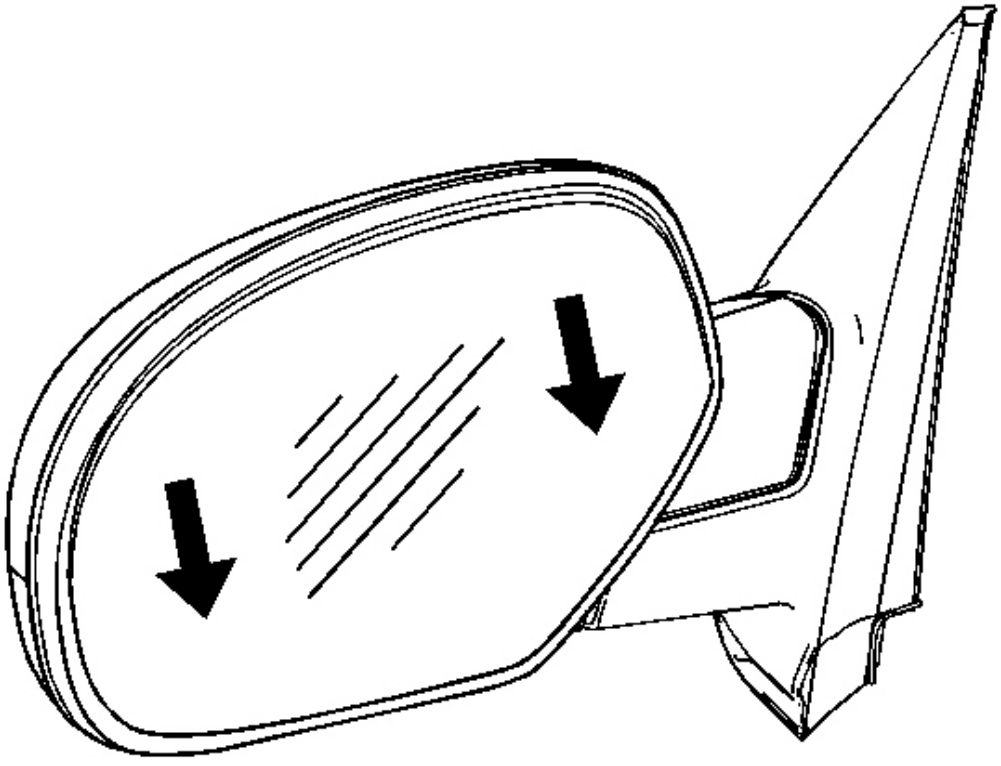

Fig. 29: Pushing Downward And Inward To Lock Glass In Place
Courtesy of GENERAL MOTORS CORP.

2. Install the mirror face as follows:
    1. Holding the mirror face, connect the electrical connectors to the back of the mirror.
    2. Position the mirror face to the motor retainer tabs.
    3. Position the hand in the center of the mirror face.
    4. Apply light pressure to the face.
    5. Push downward and inward to lock in place.
    6. Inspect the mirror face for proper operation.

REARVIEW MIRROR REPLACEMENT

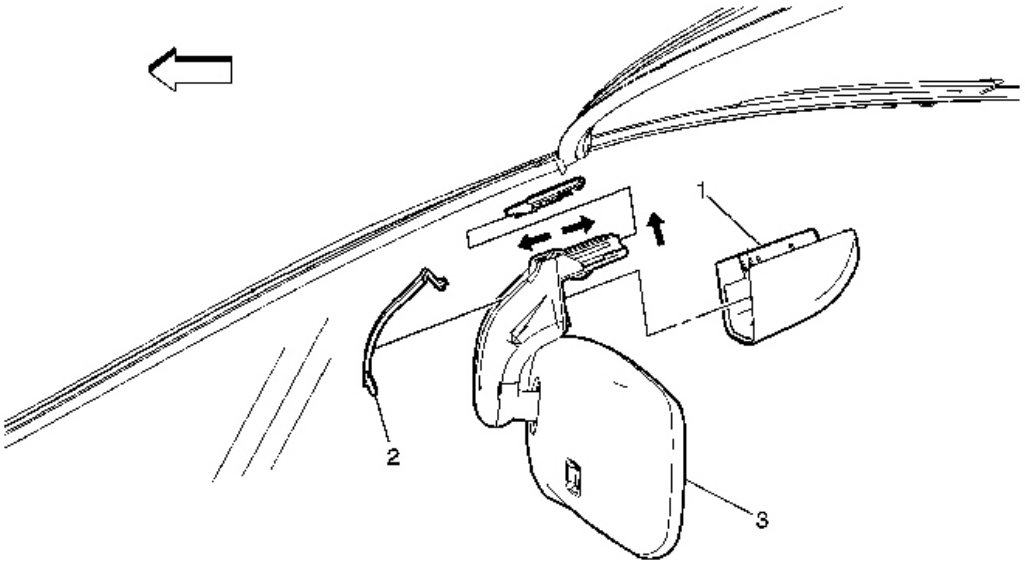

Fig. 30: Identifying Inside Rearview Mirror
Courtesy of GENERAL MOTORS CORP.

Rearview Mirror Replacement

Callout	Component Name
1	Rearview Mirror Screw **NOTE:** **Refer to Fastener Notice .** **Tip:** Do Not remove the set screw completely from the mirror base. **Tighten:** 2 N.m (18 lb in)
2	Rearview Mirror **Procedures** 1. Remove the wiring harness cover if equipped. 2. Remove the mirror from the mounting pad. 3. Disconnect the wiring harness from the rearview mirror.

REARVIEW MIRROR SUPPORT INSTALLATION

Tools Required

- Inside Mirror Adhesive Kit GM P/N 1052369 (Canadian P/N 993362) or equivalent
- Safety Razor or Utility Knife

Installation Procedure

1. Determine the location of the mirror mounting base by marking the outside of the windshield with a marking pencil where the base was previously located. If it is not clear where the base was mounted, use the following steps to determine where the base should be installed:

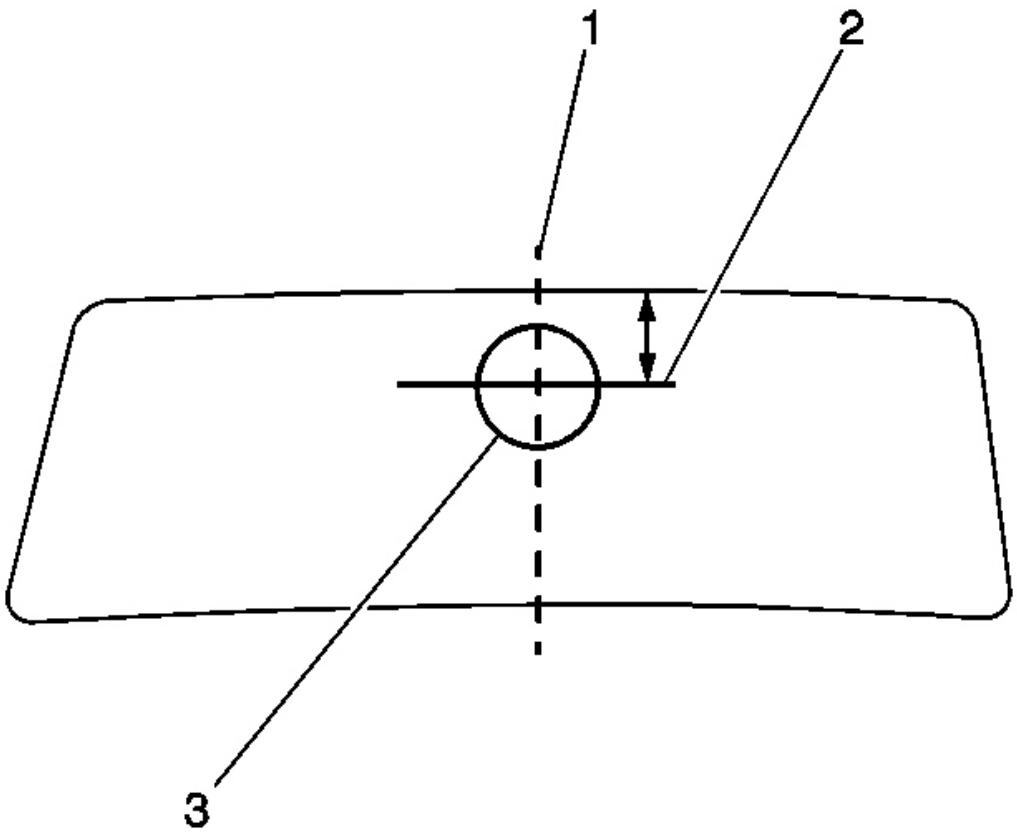

Fig. 31: Identifying Mirror Mounting Base Location

Courtesy of GENERAL MOTORS CORP.

1. Using a measuring tape, measure the distance between the windshield pillars from the base of the shade line.
2. Using a marking pencil, halfway between the windshield pillars, draw a centerline (1) on the windshield from the roof panel to the windshield base.
3. Draw a perpendicular line intersecting the centerline (2) at that location.

   The top center of the mirror mounting base will be at the intersection of these lines.

2. Scrape the inside windshield glass thoroughly with a safety razor or utility knife in order to remove all old adhesive.
3. If reinstalling the original mounting base, place the mirror mounting base in a suitable holding device, such as a vice.
4. Scrape the mirror mounting base thoroughly with a safety razor or utility knife in order to remove all old adhesive.
5. Clean the inside windshield glass and the mounting surface of the mirror mounting base thoroughly with a clean cloth saturated with naphtha or a 50/50 mixture (by volume) of clean water and isopropyl alcohol.

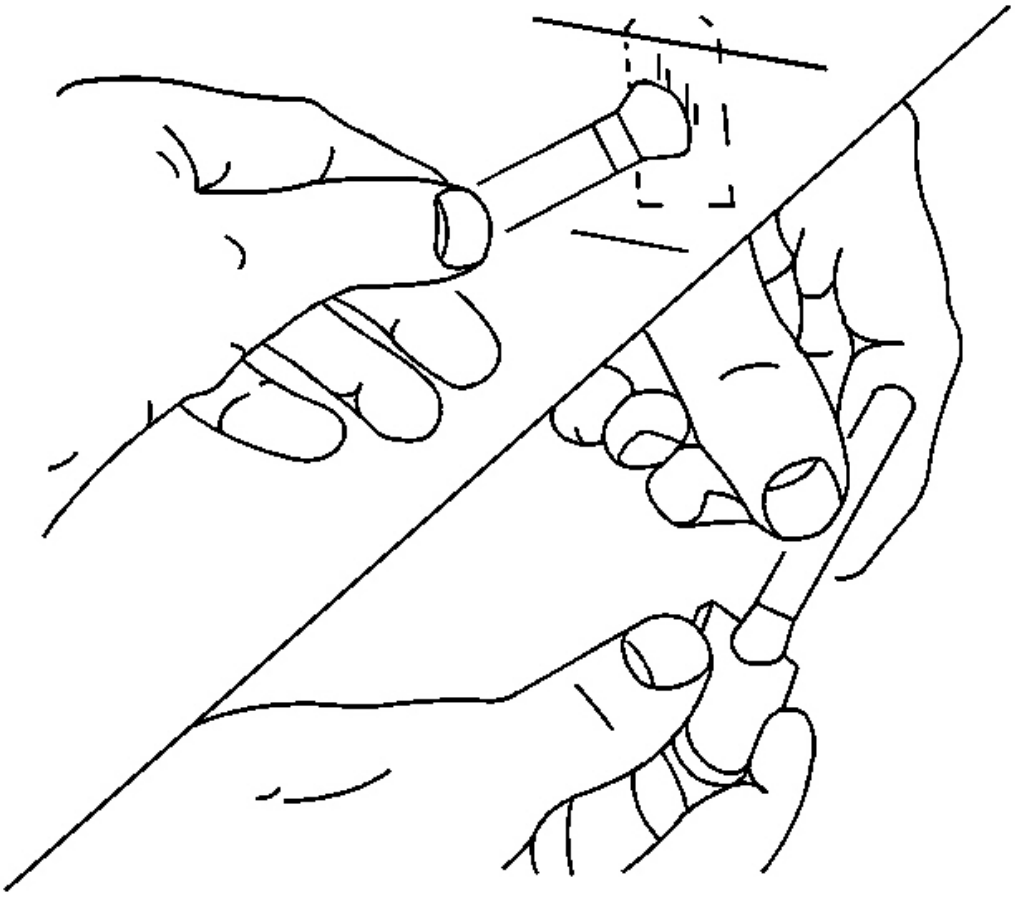

Fig. 32: Applying Adhesive To Mirror Base & Window
Courtesy of GENERAL MOTORS CORP.

6. Use Inside Mirror Adhesive Kit GM P/N 1052369, (Canadian P/N 993362) or equivalent to apply a small amount of activator to the mounting surface of the mirror mounting base.
7. Apply a small amount of activator to the windshield where the mounting base is to be installed.
8. Allow the activator to dry 5 minutes.

IMPORTANT: Do not touch the mounting surface of the mirror mounting base or the glass.

9. Apply 1 drop of adhesive to the center of the mirror mounting base.

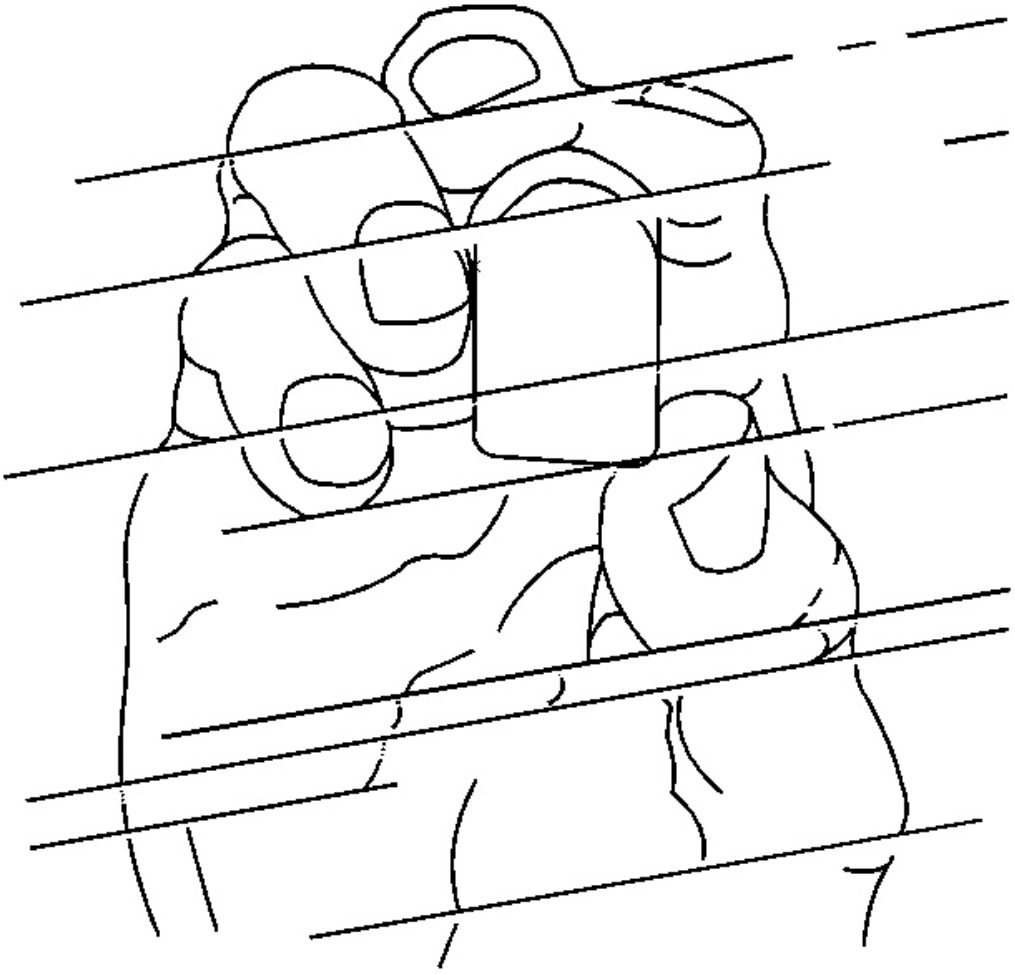

Fig. 33: Identifying Mirror Mounting Base
Courtesy of GENERAL MOTORS CORP.

10. Immediately apply the mounting base to the windshield, ensuring that the mounting base aligns correctly to the marks made on the outside of the windshield.
11. Hold the mounting base firmly in place for 1 minute.
12. Allow the adhesive to set for 15 minutes.
13. Install the mirror to the mirror mounting base and fasten, if necessary.

14. Connect the electrical connector and install the wire cover, if equipped.

DESCRIPTION AND OPERATION

OUTSIDE MIRROR DESCRIPTION AND OPERATION

Outside Rearview Mirror System Components

The power outside rearview mirror system consists of the following components:

- Driver door switch assembly (DDSA)-GMLAN device that contains the mirror select, fold and direction switches.
- Driver door module (DDM)-GMLAN device that controls the mirror horizontal and vertical motors. Supplies a 5 volt and low reference to the mirror position sensors, interprets and stores their positions.
- Passenger front door module (PDM)-GMLAN device that controls the mirror horizontal, vertical and fold motors. Supplies a 5 volt and low reference to the mirror position sensors, interprets and stores their positions.
- Remote control door lock receiver (RCDLR)-GMLAN device that provides driver identification information to the DDM and PDM for memory recalls.
- Base or navigation radio-GMLAN device that provides driver identification setup and recall information to the DDM and PDM.
- Driver outside mirror-contains horizontal, vertical and fold mirror motors, heating elements, auto dimming and also horizontal and vertical position sensors if equipped.
- Passenger outside mirror-contains horizontal, vertical and fold mirror motors, heating elements, auto dimming and also horizontal and vertical position sensors if equipped.
- HTD MIR 10 A fuse
- PWR/MIRRORS 2A fuse

Outside Rearview Mirror Controls

For non memory mirrors, the outside rearview mirrors are controlled by the Driver Door Switch Assembly (DDSA) which contains the mirror control switches. The DDSA decodes mirror control switch activations while the door modules apply battery voltage and ground to their respective mirror motors to move the mirrors to the desired positions.

For memory mirror applications, the mirrors can be controlled as outlined above or by any of the following:

- A keyless entry unlock transmission-which will position the mirrors, among other features, to predetermined positions for up to two different drivers.
- A passive keyless entry command-upon opening the driver door, to predetermined positions for up to two different drivers.
- A memory recall activation through the radio.
- A voice activation memory recall through the navigation radio.

Outside Rearview Mirror Operation

The mirror select switch is used to select the mirror to be adjusted. The mirror direction switch is used to control the mirror in a specific direction. These are both direct inputs to the DDSA. The DDSA reports the activation of these switches to the DDM and PDM via the GMLAN serial data circuit.

The DDM and PDM upon receipt of the GMLAN message, will provide battery voltage and ground to the appropriate mirror motor control circuits to move the mirror glass. The DDM and PDM will reverse the polarity of the voltage and ground it applies to the mirror motor control circuits in order to run the motor in opposite directions.

Outside Rearview Mirror Memory Operation

Mirror position is determined by both horizontal and vertical position sensors in each of the power mirrors. The DDM and PDM supplies a reference voltage and a low reference to these sensors and determines mirror position through the horizontal and vertical position signal circuits. The position sensors, which are potentiometer type sensors, are attached to the corresponding position motor of each mirror and provide constant information, in the form of feedback voltage to the associated door module to indicate the vertical and horizontal position of the mirror. When mirror positions are programmed into the personalization package, the front door modules store the positions indicated by the feedback voltages of the position sensors. When a memory recall is requested, the door modules compare the feedback voltages indicated by the current mirror positions to the stored feedback voltages. The door modules then move the mirrors until the current feedback voltages match the stored feedback voltage levels.

Outside Rearview Mirror Tilt in Reverse Operation

The DDM and PDM communicate with the Instrument Panel Cluster (IPC) over the GMLAN serial data circuit. When the gear selector is shifted to reverse, the PCM transmits this status via a GMLAN message to the IPC. The IPC then transmits the reverse status message to the DDM and PDM, which apply voltage and ground to the vertical motors of the outside rearview mirrors to tilt the mirror faces down 7 degrees. This allows the driver to see the curb while parallel parking. When the gear selector is shifted out of reverse, the DDM and PDM will control the vertical

mirror motors to return the mirror faces to their previous positions.

Outside Rearview Mirror Defrost Operation

The outside rearview mirrors heat during the rear window defogger cycles for the rear window. The heated mirrors are connected to the DDM and PDM. The DDM and the PDM receive a GMLAN serial data message from the HVAC control module indicating that the rear window defogger switch has been activated. If conditions are correct, the DDM and PDM will apply battery voltage to the outside rearview mirror heating element supply circuits and ground to the return circuits. Under certain voltage conditions the Instrument Panel Module (IPM) may send a message to the DDM and PDM to conserve voltage and the heated mirrors may be cycled ON and OFF until operating conditions improve. For more information about the rear window defogger system refer to **Rear Window Defogger Description and Operation** .

Outside Rearview Mirror Power Folding Operation

The operator may simultaneously retract both mirrors to a fully folded position, in which they are closely tucked in and parallel to the front door windows or simultaneously extend both mirrors to the fully unfolded position for normal driving.

For this feature, the DDSA has an additional power folding mirror switch built into it and each mirror contains an additional power folding mirror motor. When the switch is activated to fold mirrors, the switch contacts close, the DDSA interprets the signal input and sends the command on to the DDM and PDM. The DDM and PDM each apply battery voltage and ground to the appropriate circuits of their respective power folding motor in order to retract the mirrors. When the switch is activated to unfold the mirrors, the door modules reverse the polarity of the voltage and ground applied to the reversible folding motors to move both mirrors to the fully extended position.

The power folding mirror switch is a one position momentarily switch. Each press will activate the mirrors in the opposite direction.

AUTOMATIC DAY-NIGHT MIRROR DESCRIPTION AND OPERATION

Inside Rearview Mirror with Automatic Day-Night System Operation

The inside rearview mirror consist of 2 photocell sensors. The headlight sensor, located on the front of the mirror is used to determine light conditions present at the mirror face from sources behind the vehicle. The ambient light sensor, located on the rear of the mirror is used to determine exterior light conditions present at the mirror. At night, with the automatic day-night feature enabled, the inside rearview mirror will automatically darken to reduce glare from headlamps behind the vehicle.

In daytime conditions, the mirror operates at a normal, clear state due to the high exterior light conditions that are indicated by the ambient light sensor. When the vehicles gear selector is placed in the REVERSE position, backup lamp voltage is supplied as an input to the inside rearview mirror. In night time conditions only, the inside rearview mirror monitors the backup lamp voltage to disable the automatic day-night feature. This allows the inside rearview mirror face to gradually change to a normal, clear state and allow the driver to see objects in the mirror clearly when backing up.

Driver Outside Rearview Mirror with Automatic Day-Night System Operation

The automatic day-night feature of the driver outside rearview mirror is controlled by the inside rearview mirror. The inside rearview mirror supplies a signal and low reference to the driver outside rearview mirror. At night, with the automatic day-night feature enabled, the driver outside rearview mirror will automatically darken with the inside rearview mirror to reduce glare from headlamps behind the vehicle. Refer to **Outside Mirror Description and Operation** for further description and operation of the driver outside rearview mirror.

Inside Rearview Mirror with Automatic Day-Night Switch Operation

The ON/OFF switch is used to enable/disable the automatic day-night feature of the inside rearview mirror. To enable the automatic day-night feature, turn the ignition ON and depress the ON/OFF switch. A green indicator will illuminate on the inside rearview mirror when the automatic day-night feature is enabled. To disable the automatic day-night feature depress the ON/OFF switch.