2007 ACCESSORIES & EQUIPMENT

Vehicle Access - Avalanche, Escalade, Suburban, Tahoe & Yukon

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

Fastener Tightening Specifications

Application	Specification	
	Metric	English
Door Lock Screws	10 N.m	89 lb in
Door Striker Bolts	24 N.m	18 lb ft
Outside Door Handle Nuts	7 N.m	62 lb in
Side Door Inside Handle Bolt	2 N.m	18 lb in

SCHEMATIC AND ROUTING DIAGRAMS

DOOR LOCK SCHEMATICS

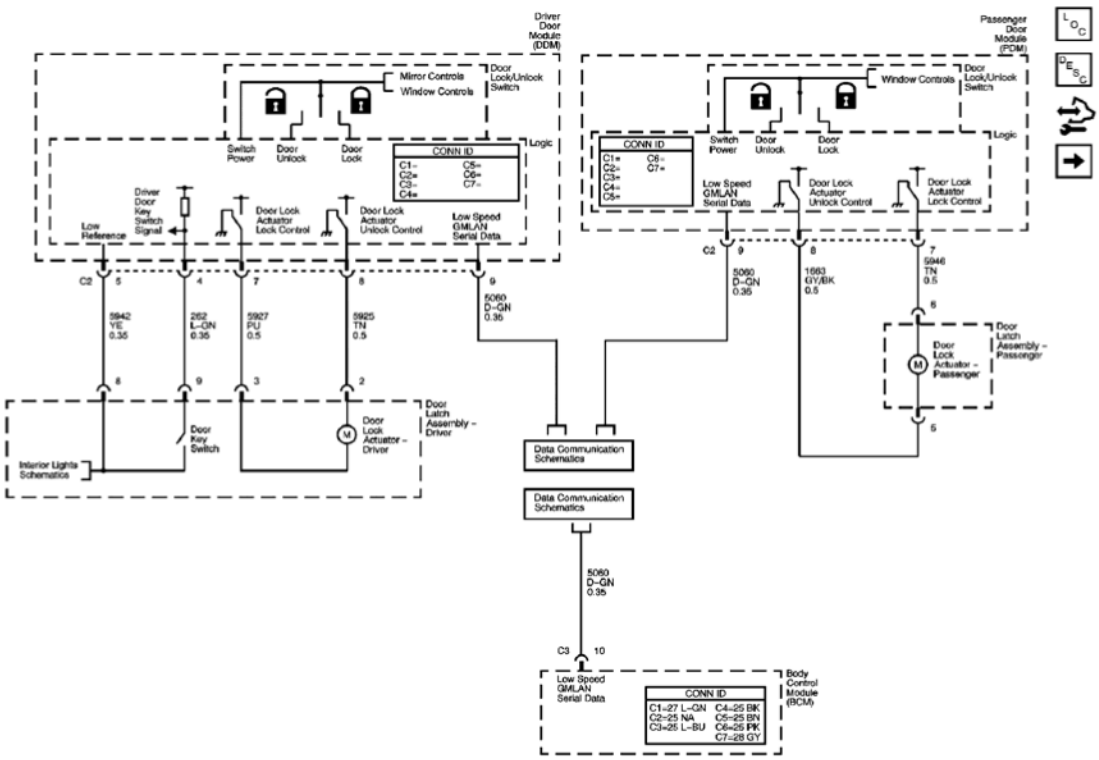


Fig. 1: Front Door Lock Schematic
Courtesy of GENERAL MOTORS CORP.

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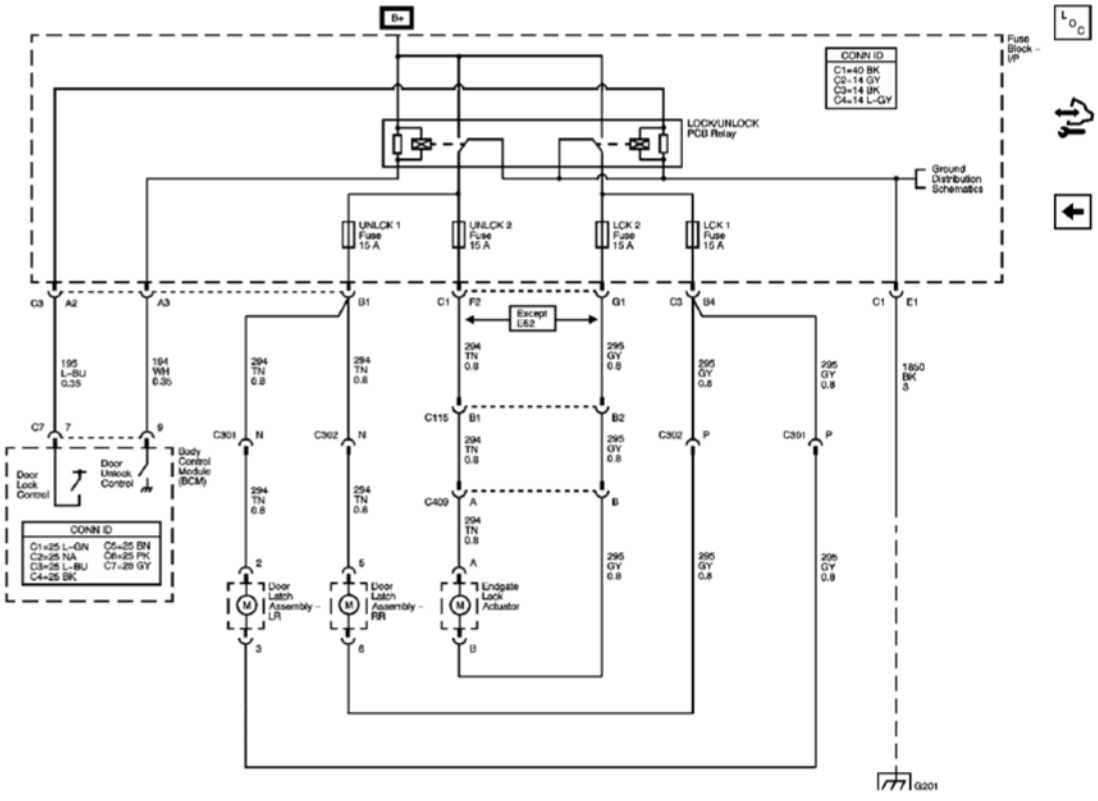


Fig. 2: Rear Door Lock Schematic
Courtesy of GENERAL MOTORS CORP.

DOOR CONTROL MODULE SCHEMATICS

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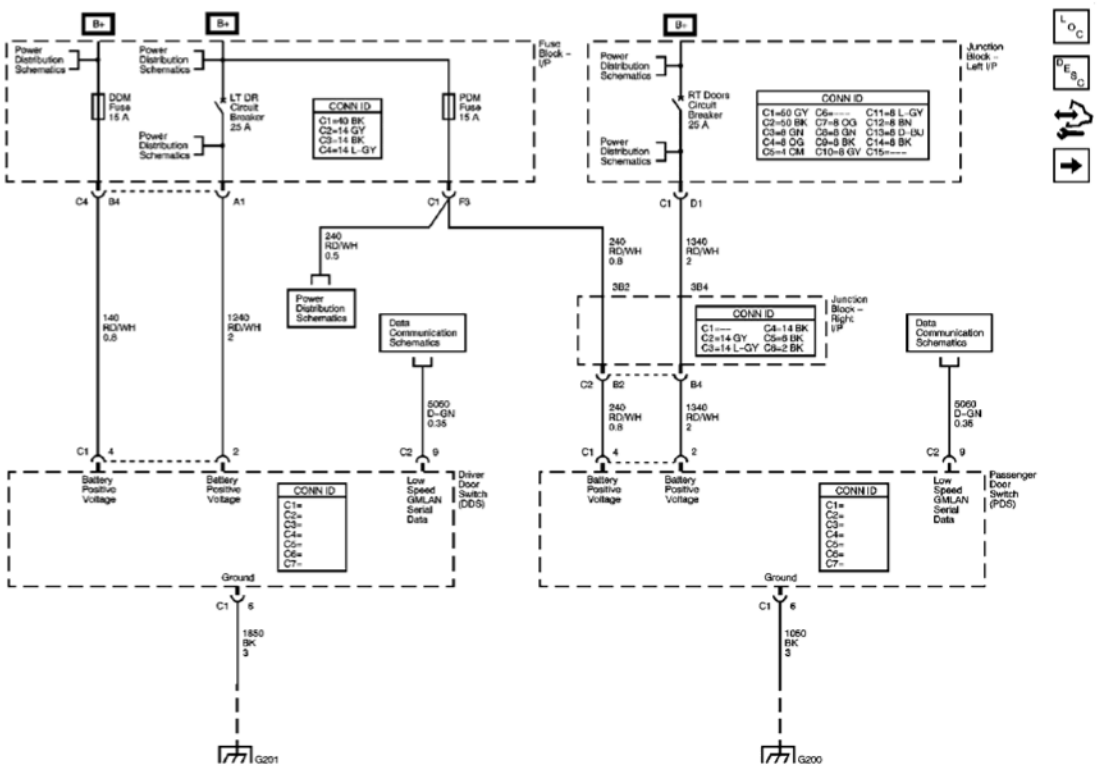


Fig. 3: Module Power, Ground, and Serial Data Schematic
Courtesy of GENERAL MOTORS CORP.

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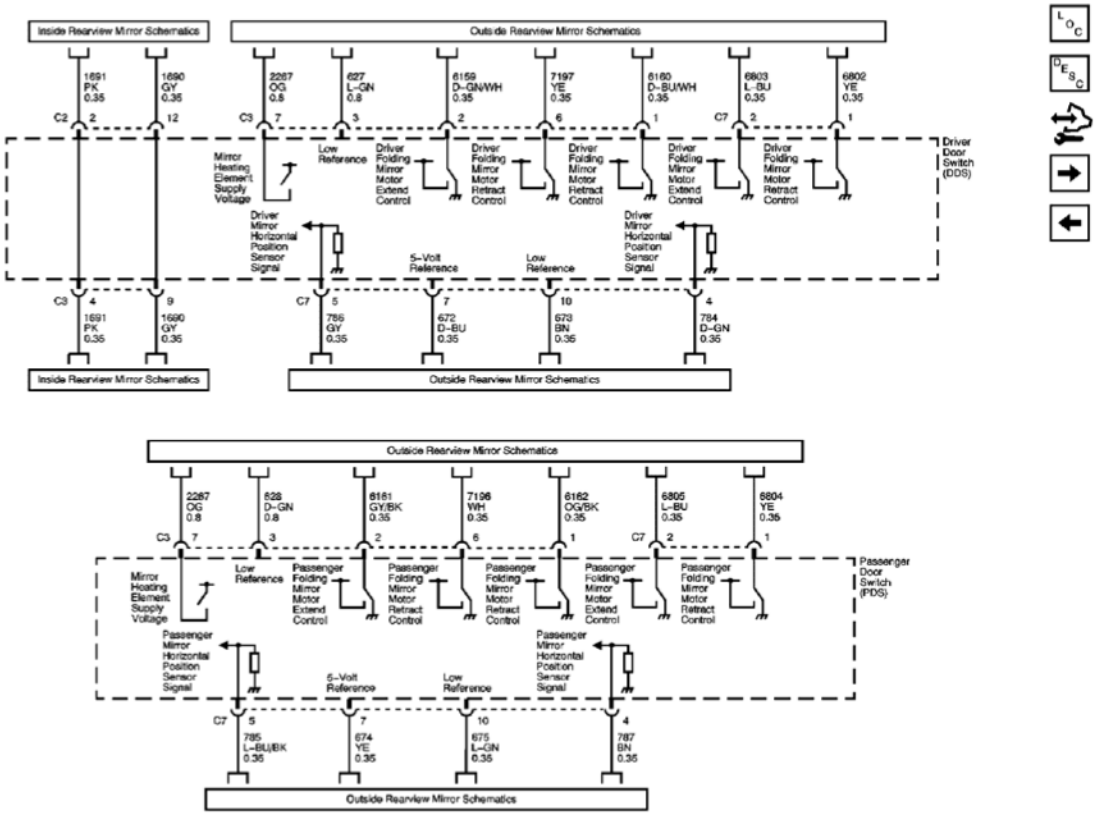


Fig. 4: Outside Rearview Mirror References Schematic
Courtesy of GENERAL MOTORS CORP.

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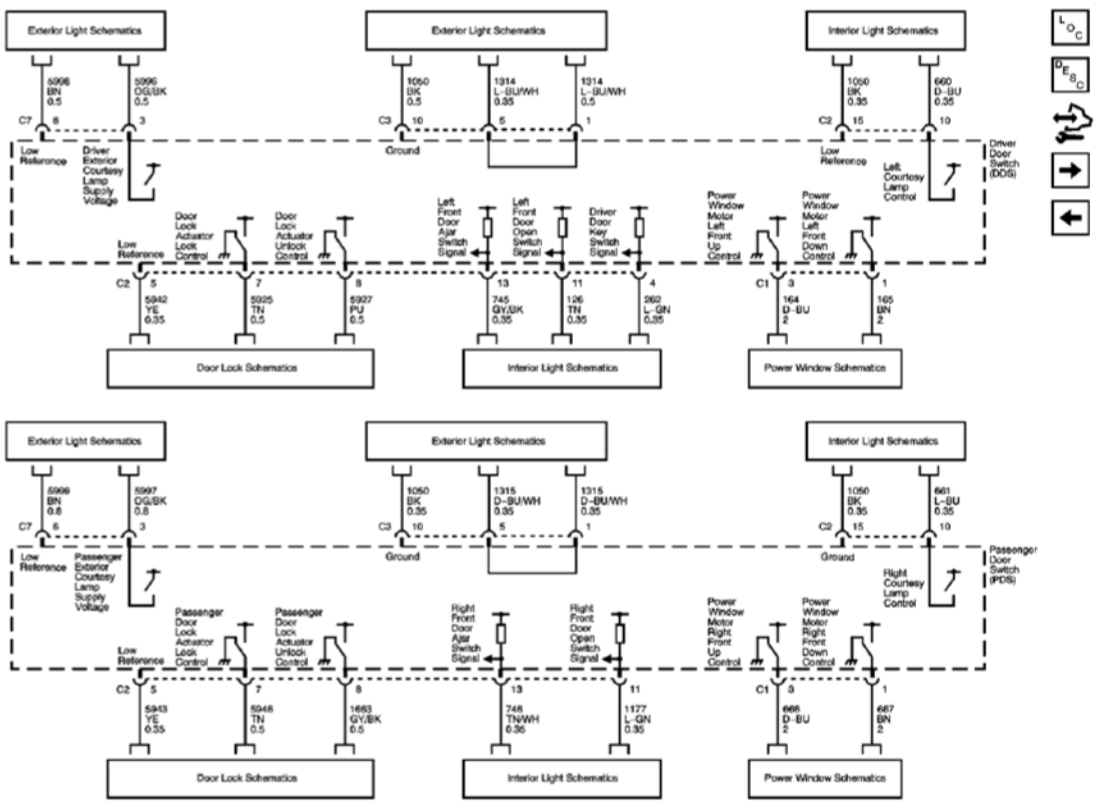


Fig. 5: Door Lock, Window, and Lighting System References Schematic
Courtesy of GENERAL MOTORS CORP.

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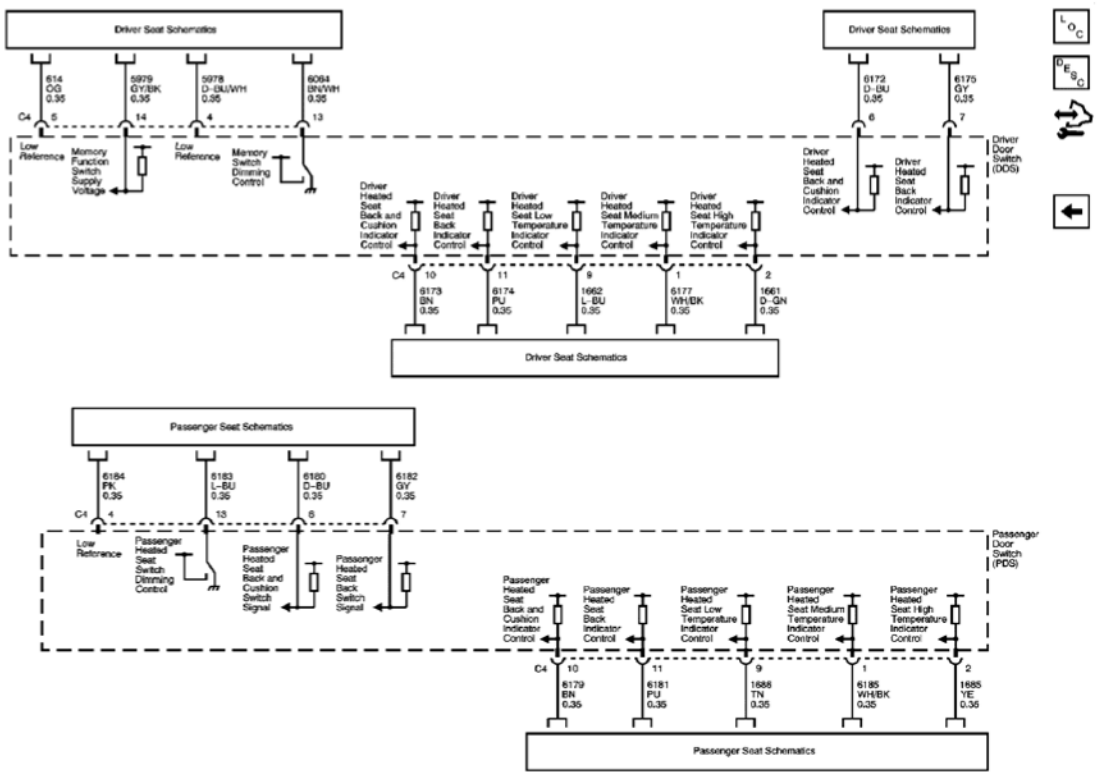


Fig. 6: Heated Seat References Schematic
Courtesy of GENERAL MOTORS CORP.

RELEASE SYSTEMS SCHEMATICS

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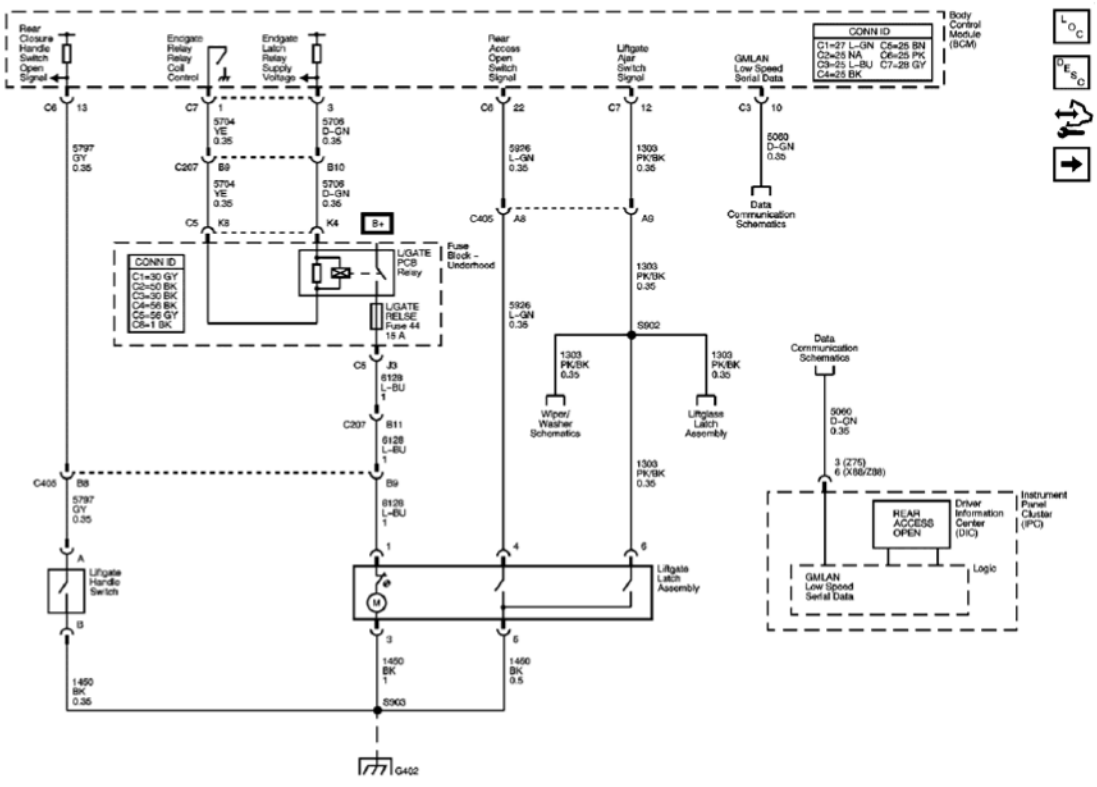


Fig. 7: Liftgate Schematic - E52 Except E61
Courtesy of GENERAL MOTORS CORP.

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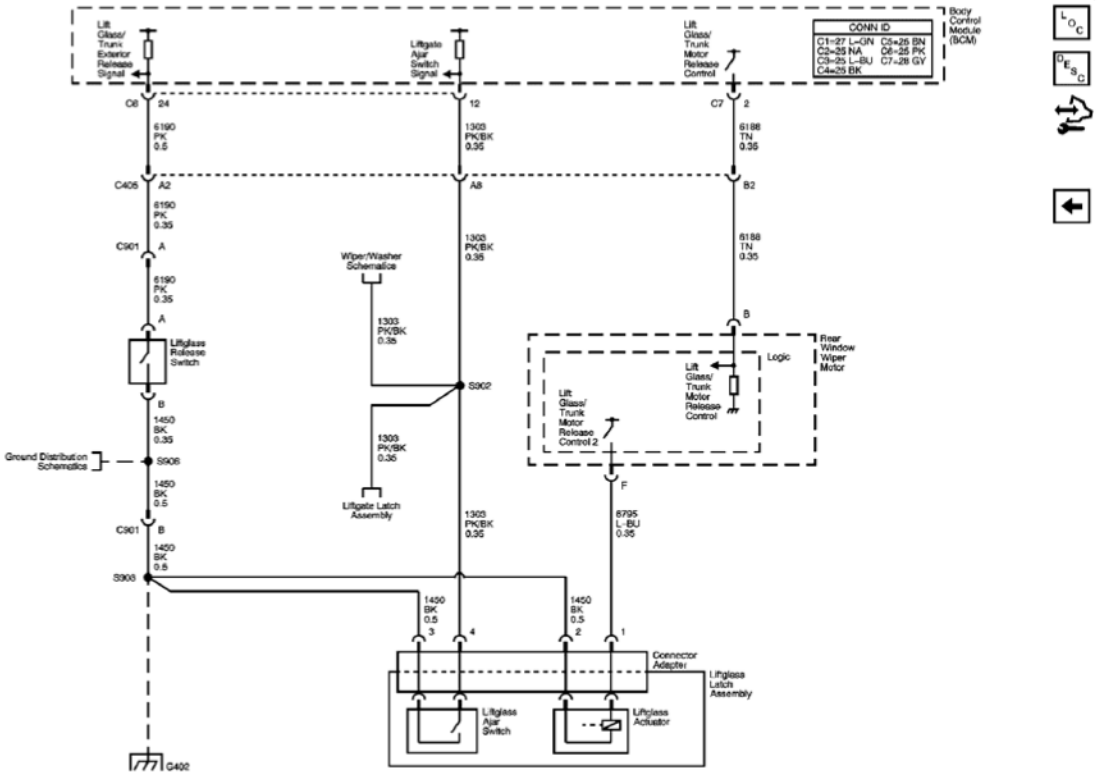


Fig. 8: Liftglass Schematic - E52 Except E61
Courtesy of GENERAL MOTORS CORP.

LIFT GATE SCHEMATICS

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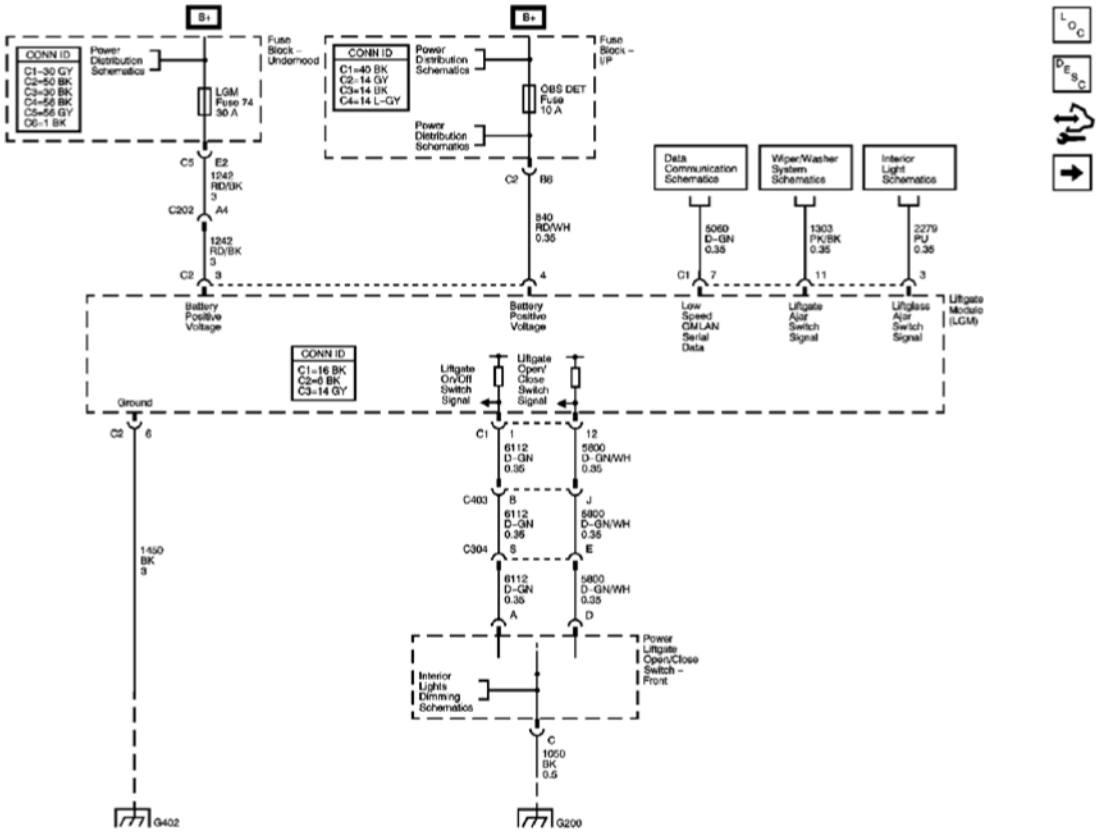


Fig. 9: Module Power, Ground, Serial Data, and Front Switch Schematic
Courtesy of GENERAL MOTORS CORP.

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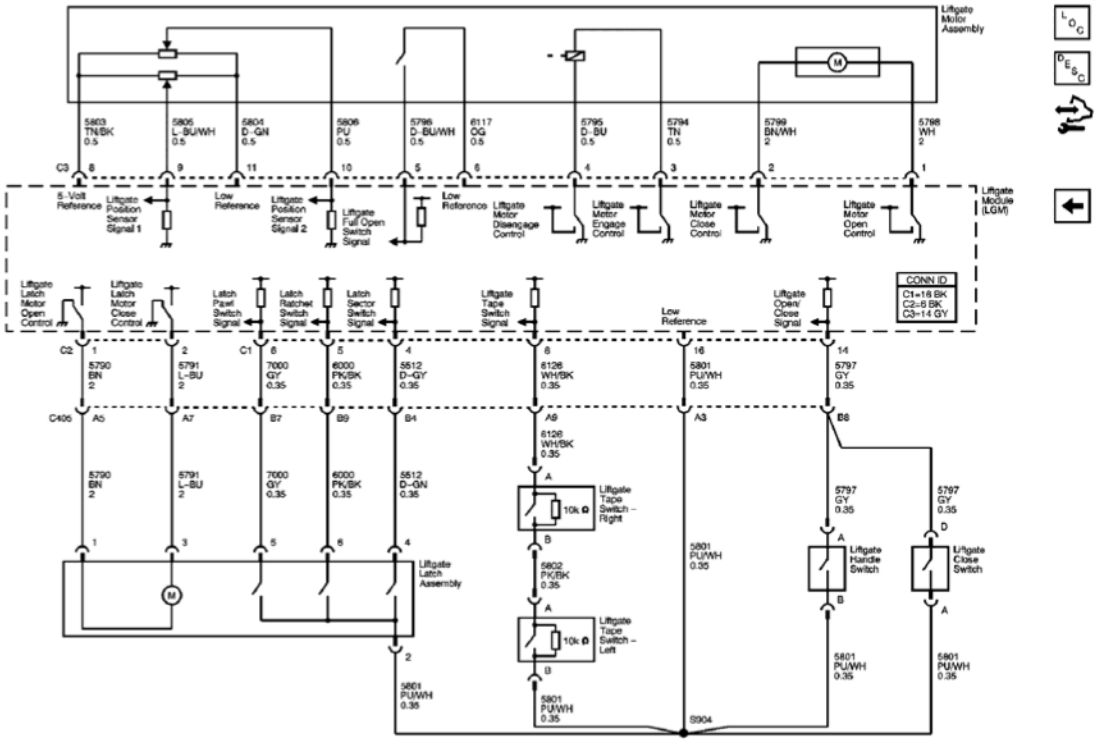


Fig. 10: Liftgate Motor Controls Schematic
Courtesy of GENERAL MOTORS CORP.

COMPONENT LOCATOR

VEHICLE ACCESS COMPONENT VIEWS

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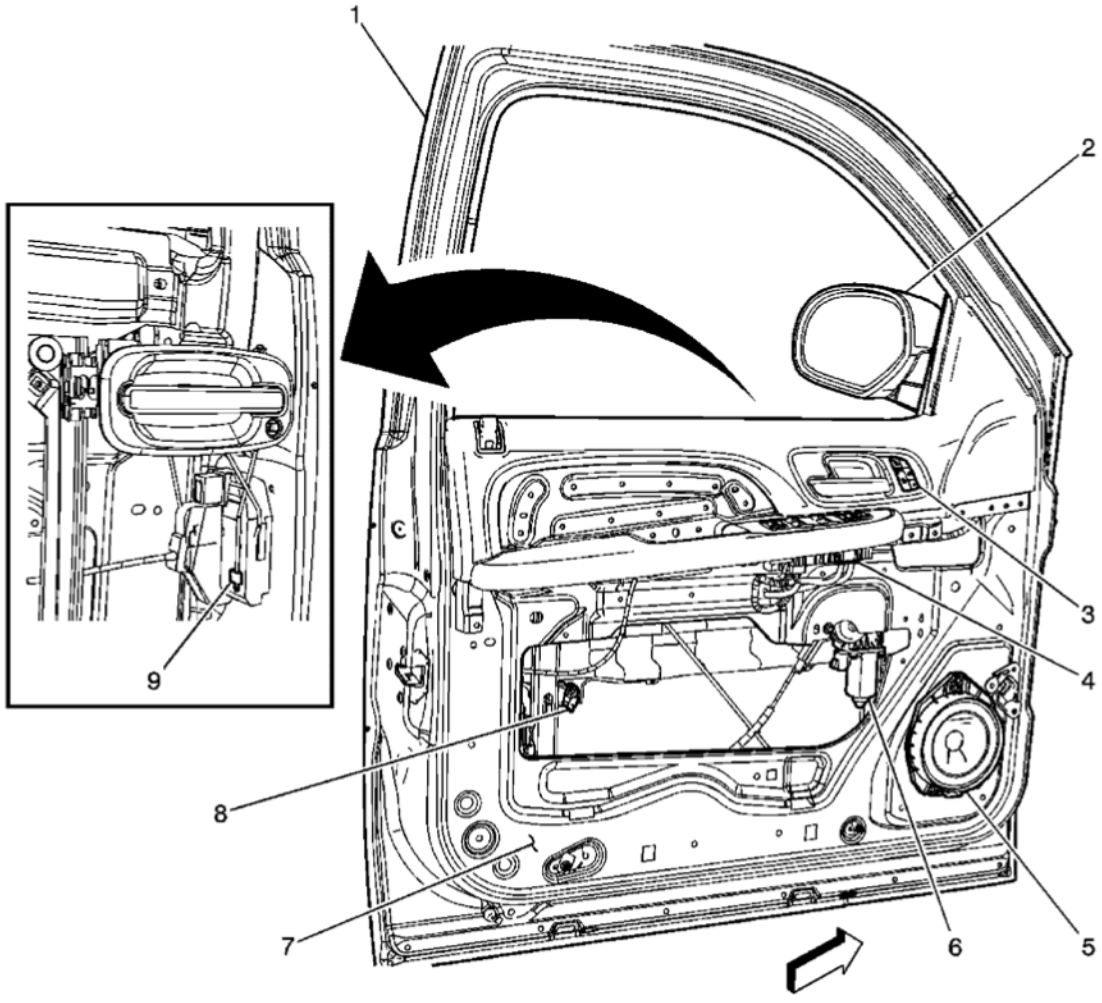


Fig. 11: Driver Door
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 11

Callout	Component Name
1	Door Frame
2	Outside Rearview Mirror - Driver
3	Memory/Heated Seat Switch (AN3 Except KB6) / Memory Seat Switch (KB6)
4	Driver Door Switch (DDS)
5	Speaker - LF Door
6	Window Motor - Driver
7	Inflatable Restraint Side Impact Sensor (SIS) - LF (ASF)
8	Door Latch Assembly - Driver

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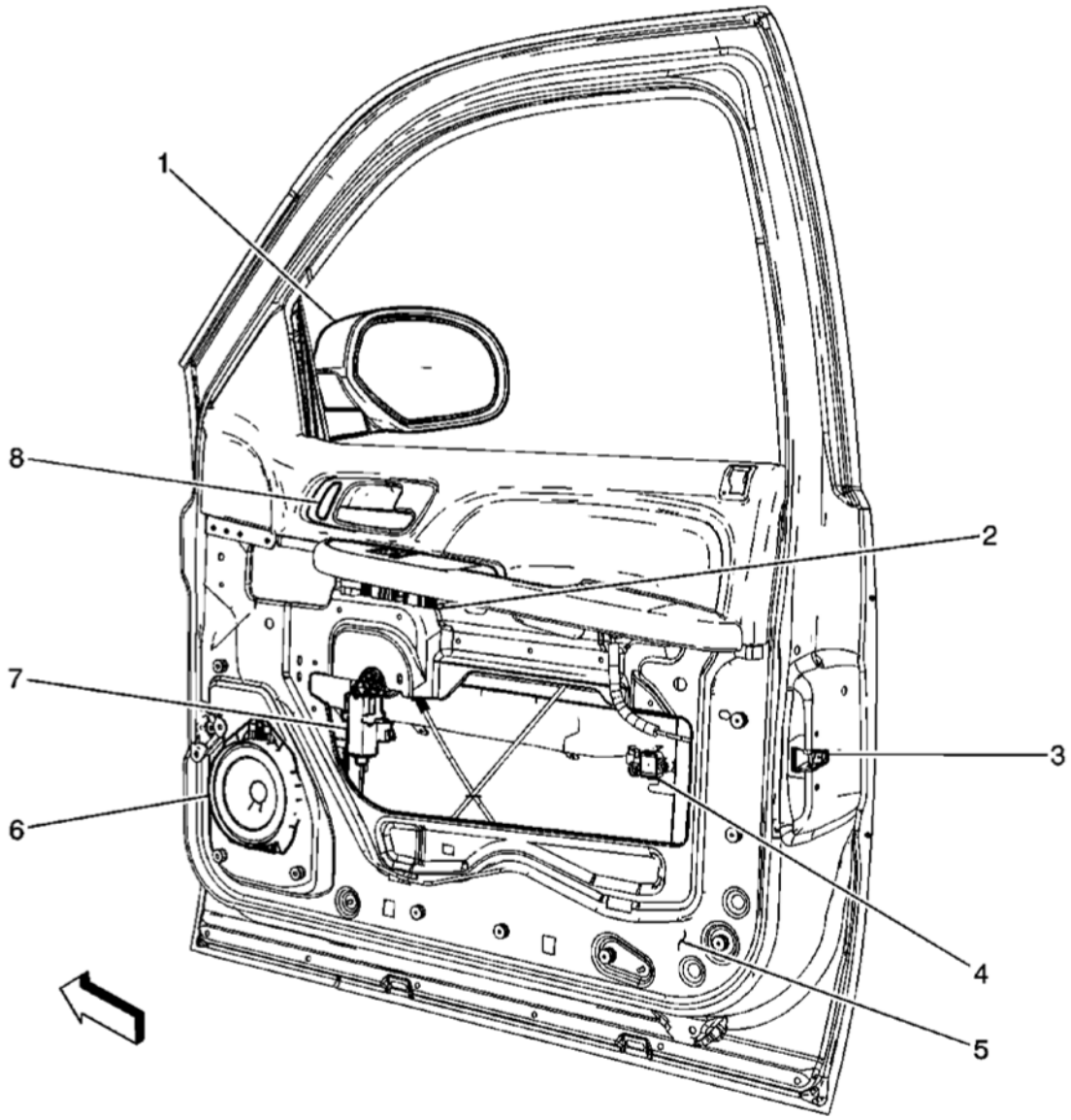


Fig. 12: Passenger Door
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 12

Callout	Component Name
1	Outside Rearview Mirror - Passenger
2	Passenger Door Switch (PDS)
3	Door Latch Assembly - Passenger
4	Inflatable Restraint Side Impact Sensor (SIS) - RF (ASF)
5	Speaker - RF Door
6	Window Motor - Passenger

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7	Heated Seat Switch (KA6)

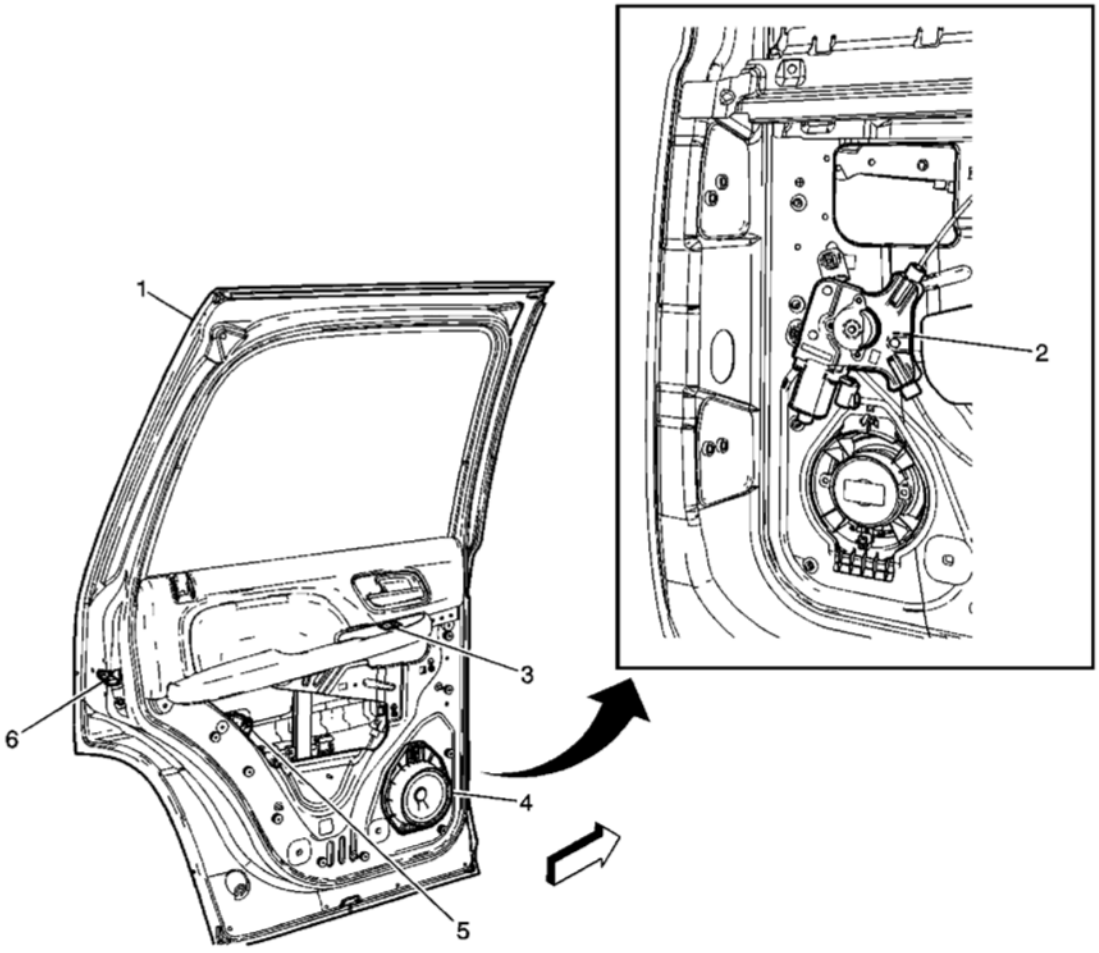


Fig. 13: LR Door
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 13

Callout	Component Name
1	Door Frame
2	Window Motor - LR
3	Window Switch - LR
4	Speaker - LR Door
5	Inflatable Restraint Side Impact Sensor (SIS) - LR (ASF)
6	Door Latch Assembly - LR

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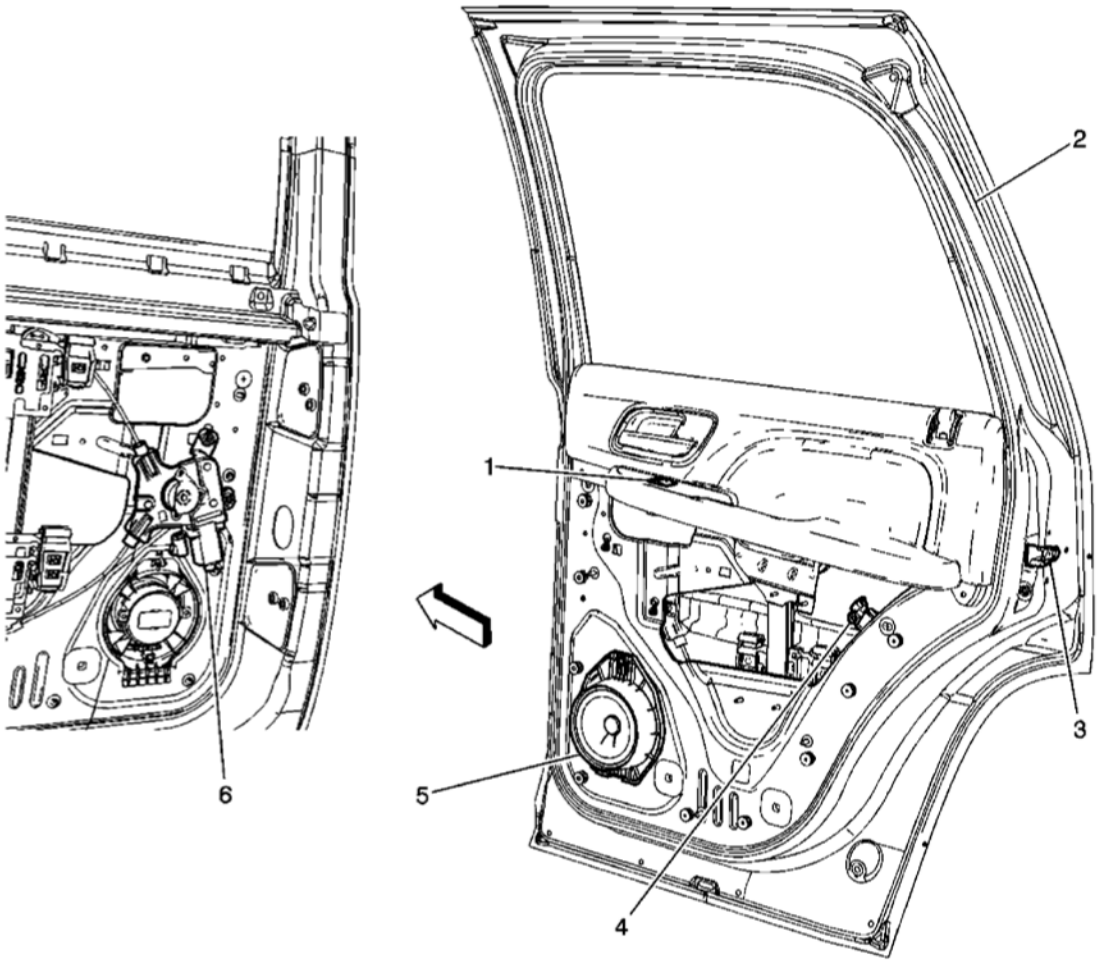


Fig. 14: RR Door
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 14

Callout	Component Name
1	Window Switch - RR
2	Door Frame
3	Inflatable Restraint Side Impact Sensor (SIS) - RR (ASF)
4	Speaker - RR Door
5	Window Motor - RR

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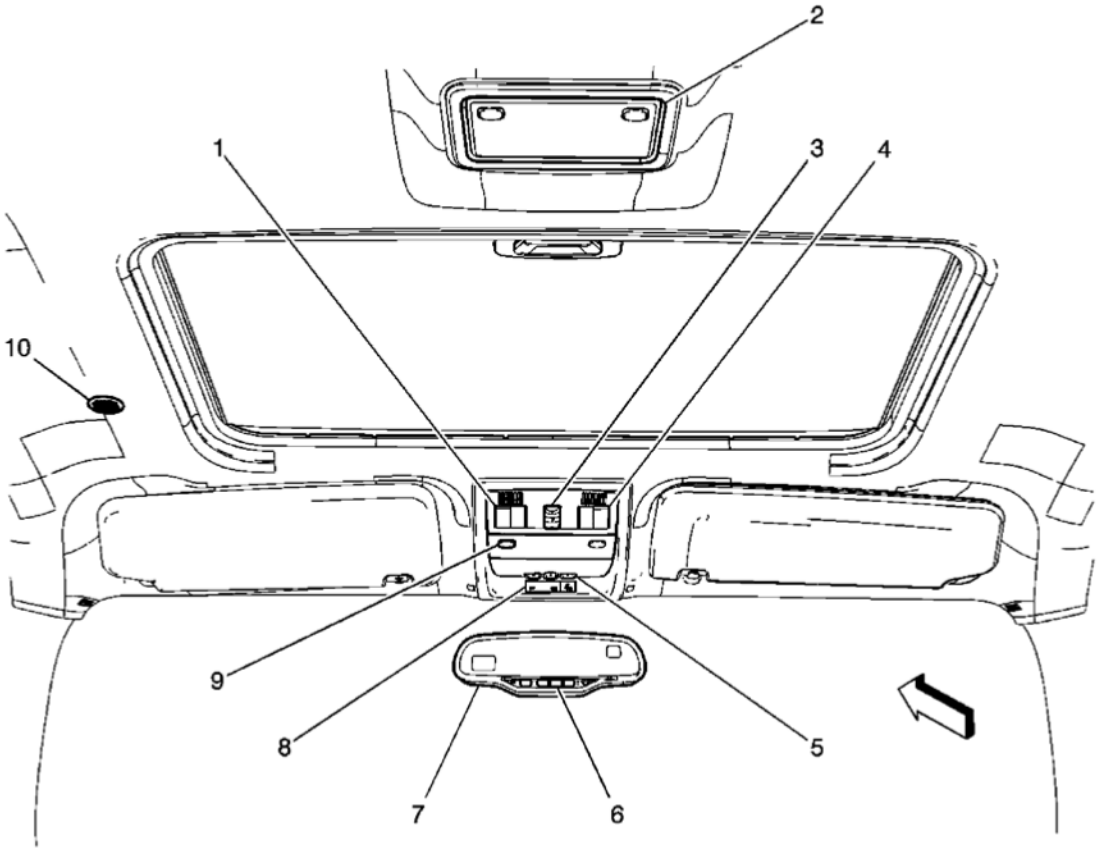


Fig. 15: Top Front of the Passenger Compartment
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 15

Callout	Component Name
1	Sunroof Switch (CF5)
2	Courtesy/Reading Lamps - Second Row
3	Power Liftgate Switch (E61)
4	Folding Seat Switch - Front (ARS)
5	Garage Door Opener (UG1)
6	Onstar Button Assembly (UE1)
7	Inside Rearview Mirror (ISRVM)
8	Inflatable Restraint Passenger Air Bag ON/OFF Indicator
9	Courtesy/Reading Lamp - Front
10	Inside Air Temperature Sensor - Front (CJ2)

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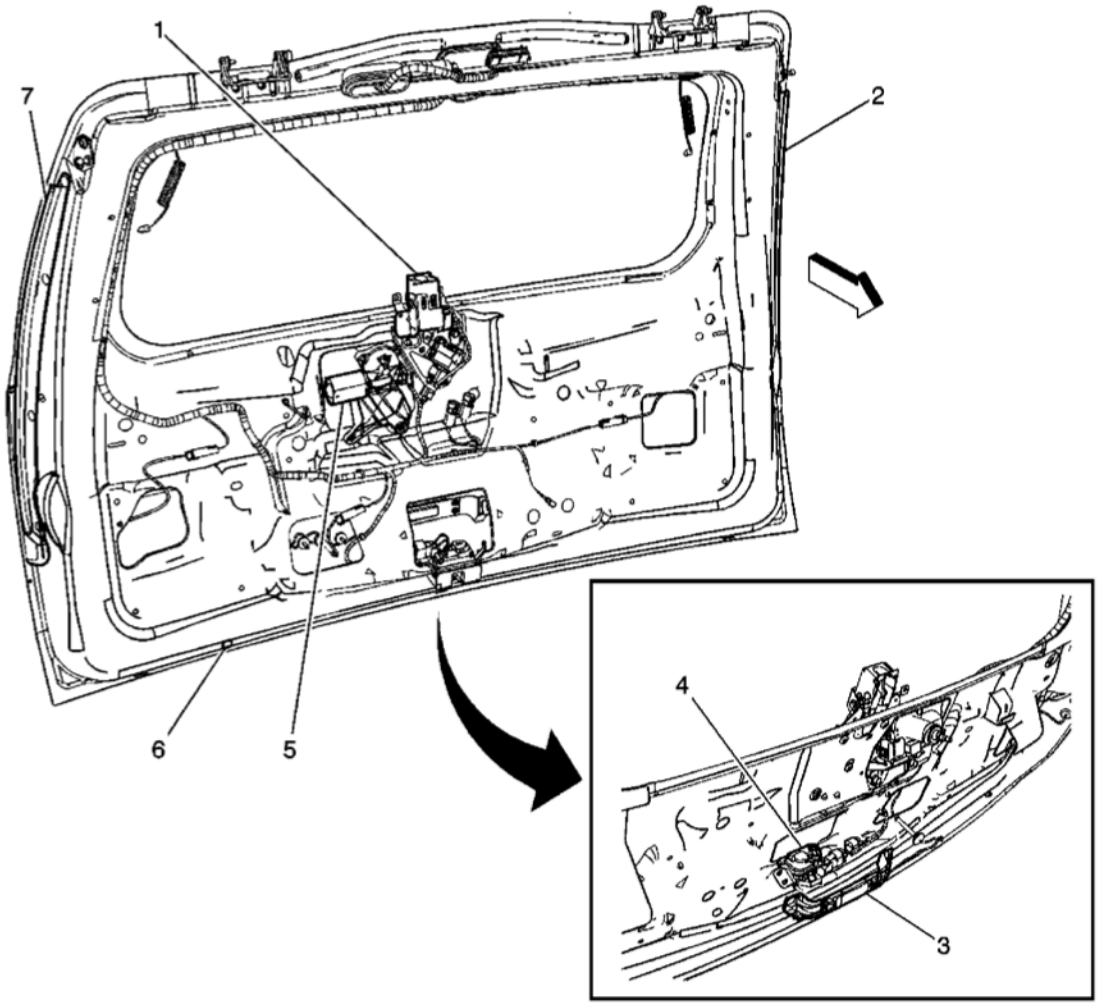


Fig. 16: Liftgate Components
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 16

Callout	Component Name
1	Liftglass Latch Assembly
2	Liftgate Object Sensor - Left (E61)
3	Liftgate Handle Switch (E61)
4	Liftgate Latch Assembly
5	Rear Window Wiper Motor
6	Liftgate Object Sensor - Right (E61)

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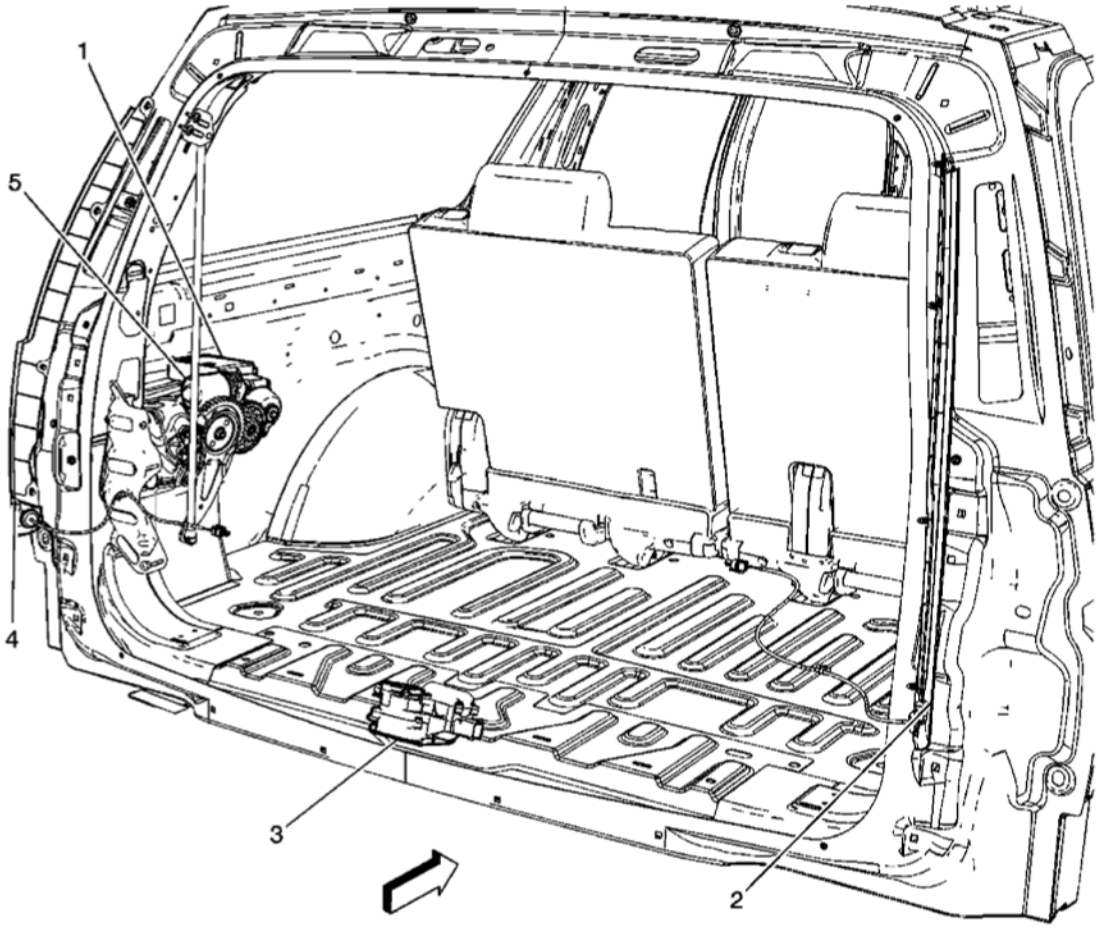


Fig. 17: Power Liftgate Components (E61)
Courtesy of GENERAL MOTORS CORP.

Callouts For Fig. 17

Callout	Component Name
1	Power Liftgate Module
2	Liftgate Object Sensor - Right
3	Liftgate Latch Assembly
4	Liftgate Object Sensor - Left
5	Liftgate Motor Assembly

VISUAL IDENTIFICATION

VEHICLE ACCESS CONNECTOR END VIEWS

Door Latch Assembly - Driver

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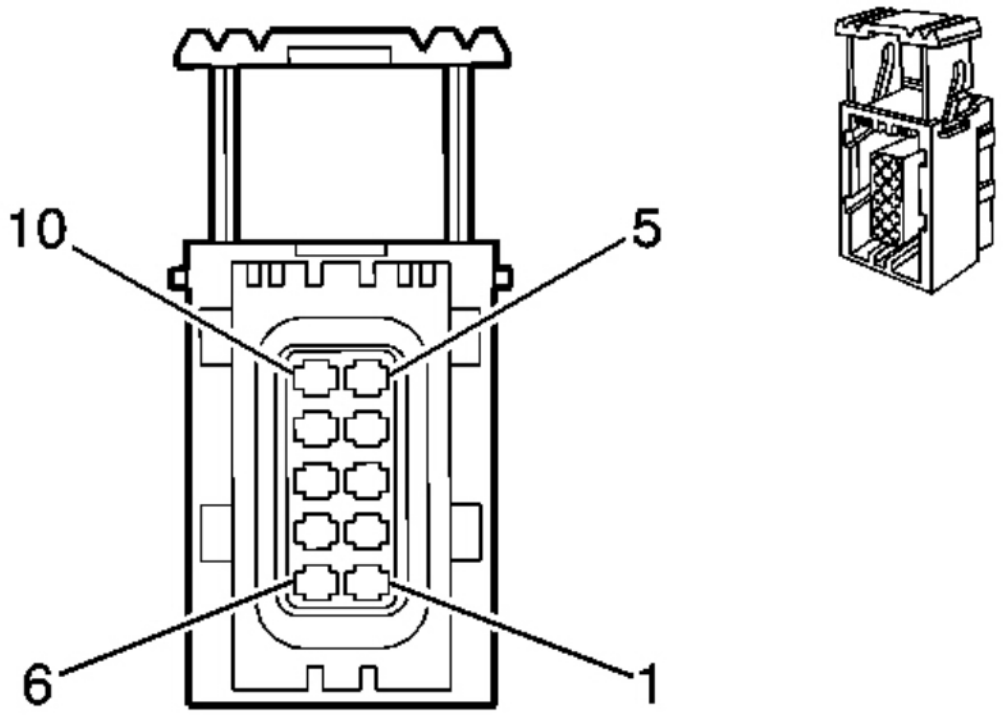


Fig. 18: Door Latch Assembly - Driver Connector End View
Courtesy of GENERAL MOTORS CORP.

Door Latch Assembly - Driver Connector Parts Information

Connector Part Information

- OEM: 10768367
- Service: 88952463
- Description: 10-Way F Sealed Series (BK)

Terminal Part Information

- Terminal/Tray: 4-969005-1/16
- Core/Insulation Crimp: E/1
- Release Tool/Test Probe: J-38125-560/J-35616-33 (YE)

Door Latch Assembly - Driver Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function

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1	-	-	Not Used
2	PU	5927	Driver Door Lock Motor Unlock Control
3	TN	5925	Driver Door Lock Motor Common
4-5	-	-	Not Used
6	GY/BK	745	Left Front Door Ajar Switch Signal
7	TN	126	Left Front Door Open Switch Signal
8	YE	5942	Left Front Door Ajar Switch Low Reference
9	L-GN	262	Driver Door Key Switch Signal
10	-	-	Not Used

Door Latch Assembly - LR

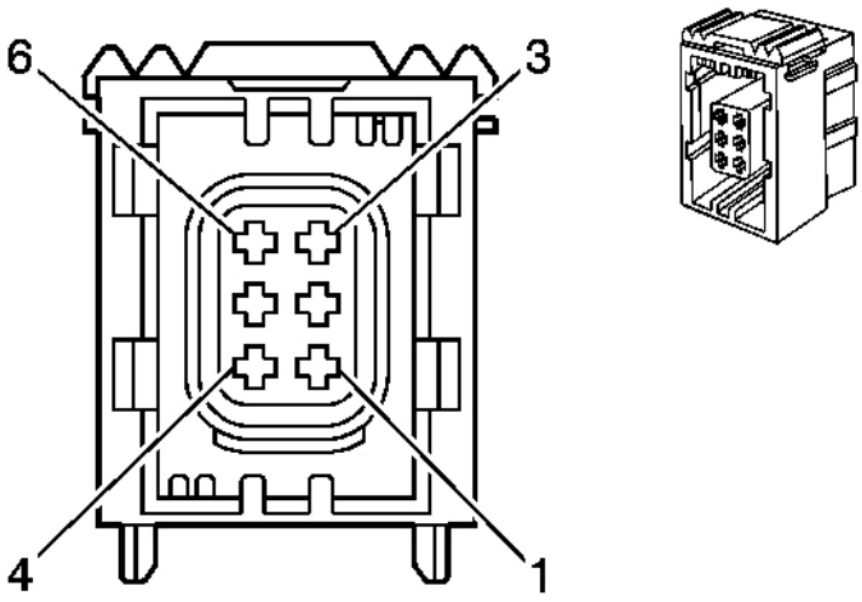


Fig. 19: Door Latch Assembly - LR Connector End View
Courtesy of GENERAL MOTORS CORP.

Door Latch Assembly - LR Connector Parts Information

Connector Part Information

- OEM: 10768369
- Service: 88986251

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- Description: 6-Way F Sealed Series (NA)

Terminal Part Information

- Terminal/Tray: 4-969005-1/16
- Core/Insulation Crimp: E/1
- Release Tool/Test Probe: J-38125-560/J-35616-33 (YE)

Door Latch Assembly - LR Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	-	-	Not Used
2	TN	294	Door Lock Actuator Unlock Control
3	GY	295	Door Lock Actuator Lock Control
4	L-BU/BK	747	Left Rear Door Ajar Switch Signal
5	OG	5922	Non-Driver Door Open Switch Signal
6	BK	1150	Ground

Door Latch Assembly - Passenger

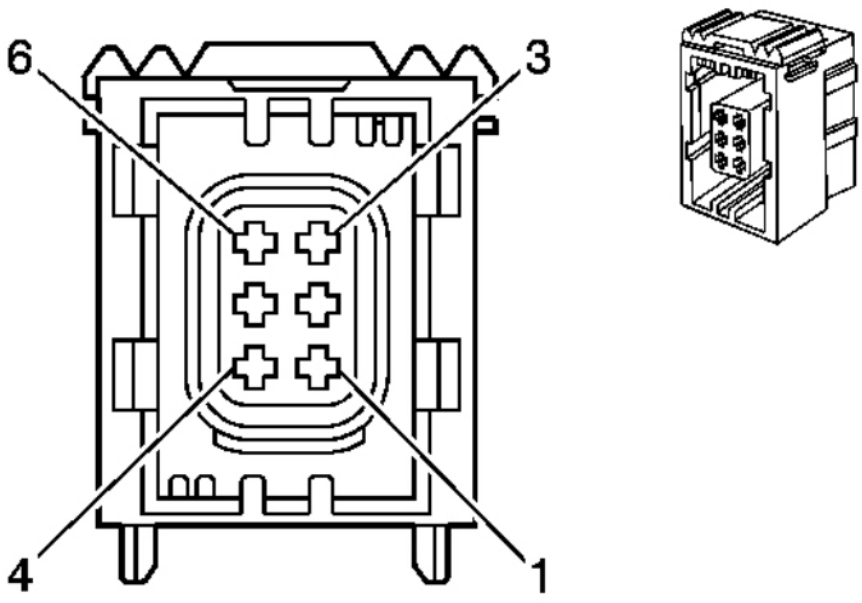


Fig. 20: Vehicle Access Connector End View
Courtesy of GENERAL MOTORS CORP.

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Vehicle Access Connector End Views

Connector Part Information

- OEM: 10768369
- Service: 88986251
- Description: 6-Way F Sealed Series (NA)

Terminal Part Information

- Terminal/Tray: 964274-2/16
- Core/Insulation Crimp: E/1
- Release Tool/Test Probe: J-38125-560/J-35616-33 (YE)

Door Latch Assembly - Passenger Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	TN/WH	746	Right Front Door Ajar Switch Signal
2	L-GN	1177	Right Front Door Open Switch Signal
3	YE	5943	Right Front Door Ajar Switch Low Reference
4	-	-	Not Used
5	GY/BK	1663	Passenger Door Lock Actuator Unlock Control
6	TN	5946	Passenger Door Lock Motor Common

Door Latch Assembly - RR

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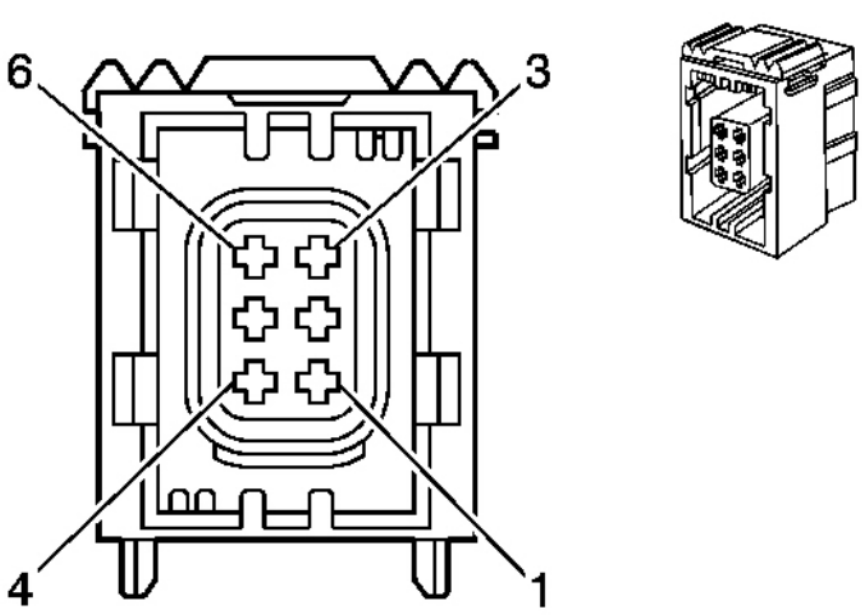


Fig. 21: Door Latch Assembly - RR Connector End View
Courtesy of GENERAL MOTORS CORP.

Door Latch Assembly - RR Connector Parts Information

Connector Part Information

- OEM: 10768369
- Service: 88986251
- Description: 6-Way F Sealed Series (N/A)

Terminal Part Information

- Terminal/Tray: 964274-2/16
- Core/Insulation Crimp: E/1
- Release Tool/Test Probe: J-38125-560/J-35616-33 (YE)

Door Latch Assembly - RR Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	L-GN/BK	748	Right Rear Door Ajar Switch Signal
2	OG	5922	Non-Driver Door Open Switch Signal
3	BK	1250	Ground

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4	-	-	Not Used
5	TN	294	Door Lock Actuator Unlock Control
6	GY	295	Door Lock Actuator Lock Control

Driver Door Switch (DDS) C1

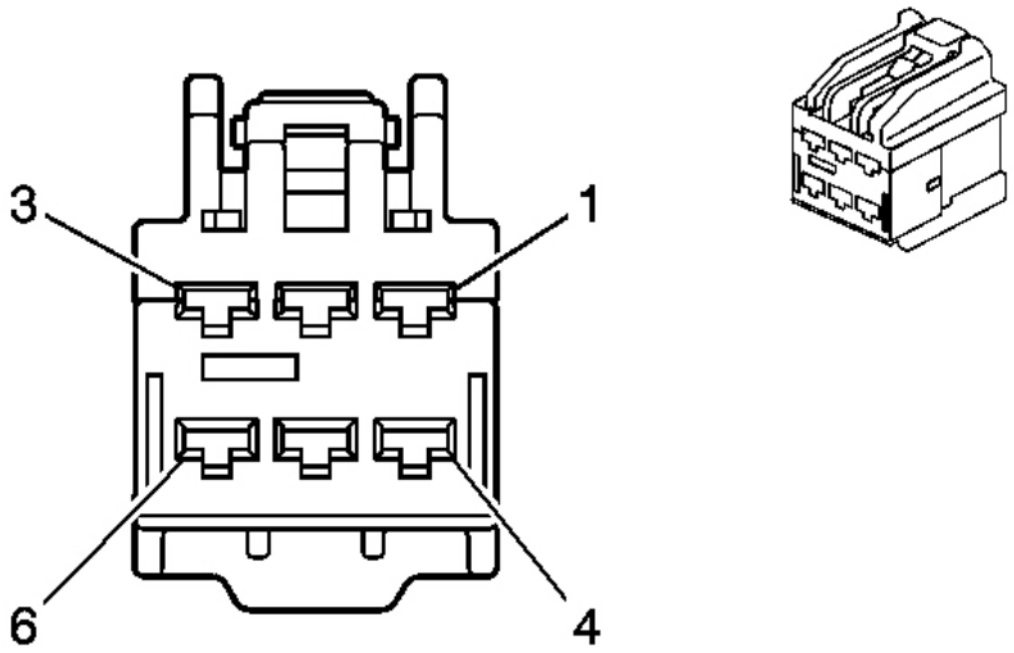


Fig. 22: Driver Door Switch (DDS) C1 Connector End View
Courtesy of GENERAL MOTORS CORP.

Driver Door Switch (DDS) C1 Connector Parts Information

Connector Part Information

- OEM: 15466067
- Service: 88988497
- Description: 6-Way F Receptacle 2.8 Series (BK)

Terminal Part Information

- Pins: 1-3, 6
- Terminal/Tray: 8100-4445/22
- Core/Insulation Crimp: Pins 1-3: 4/4

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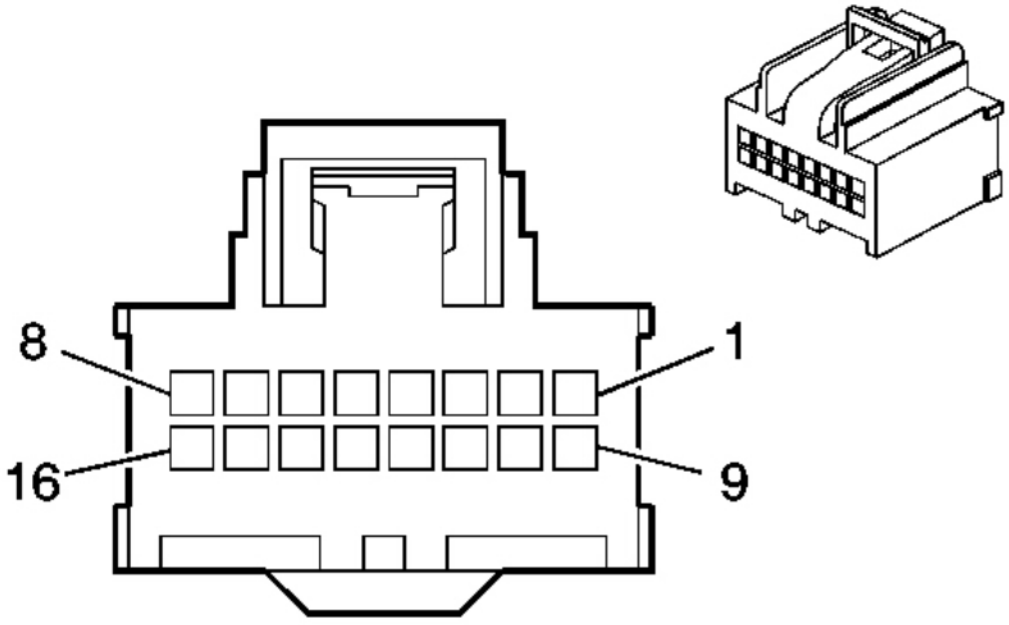
- Core/Insulation Crimp: Pins 6: F/D
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

- Pin: 4
- Terminal/Tray: 8100-4444/22
- Core/Insulation Crimp: 2/A
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Driver Door Switch (DDS) C1 Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	BN	165	Power Window Motor Left Front Down Control
2	RD/WH	1240	Battery Positive Voltage
3	D-BU	164	Power Window Motor Left Front Up Control
4	RD/WH	140	Battery Positive Voltage
5	-	-	Not Used
6	BK	1850	Ground

Driver Door Switch (DDS) C2



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Fig. 23: Driver Door Switch (DDS) C2 Connector End View
Courtesy of GENERAL MOTORS CORP.

Driver Door Switch (DDS) C2 Connector Parts Information

Connector Part Information

- OEM: 15466054
- Service: 15136074
- Description: 16-Way F Kaizen 0.64 Series (BK)

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)

Driver Door Switch (DDS) C2 Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	L-BU/WH	1314	Left Front Turn Signal Lamp Supply Voltage
2	PK	1691	Automatic Day/Night Mirror Low Reference
3	-	-	Not Used
4	L-GN	262	Driver Door Key Switch Signal
5	YE	5942	Low Reference
6	-	-	Not Used
7	TN	5925	Door Lock Actuator Lock Control
8	PU	5927	Door Lock Actuator Unlock Control
9	D-GN	5060	Low Speed GMLAN Serial Data
10	D-BU	660	Left Courtesy Lamp Control
11	TN	126	Left Front Door Open Switch Signal
12	GY	1690	Automatic Day/Night Mirror Signal
13	GY/BK	745	Left Front Door Ajar Switch Signal
14	-	-	Not Used
15	BK	1050	Low Reference
16	-	-	Not Used

Driver Door Switch (DDS) C3

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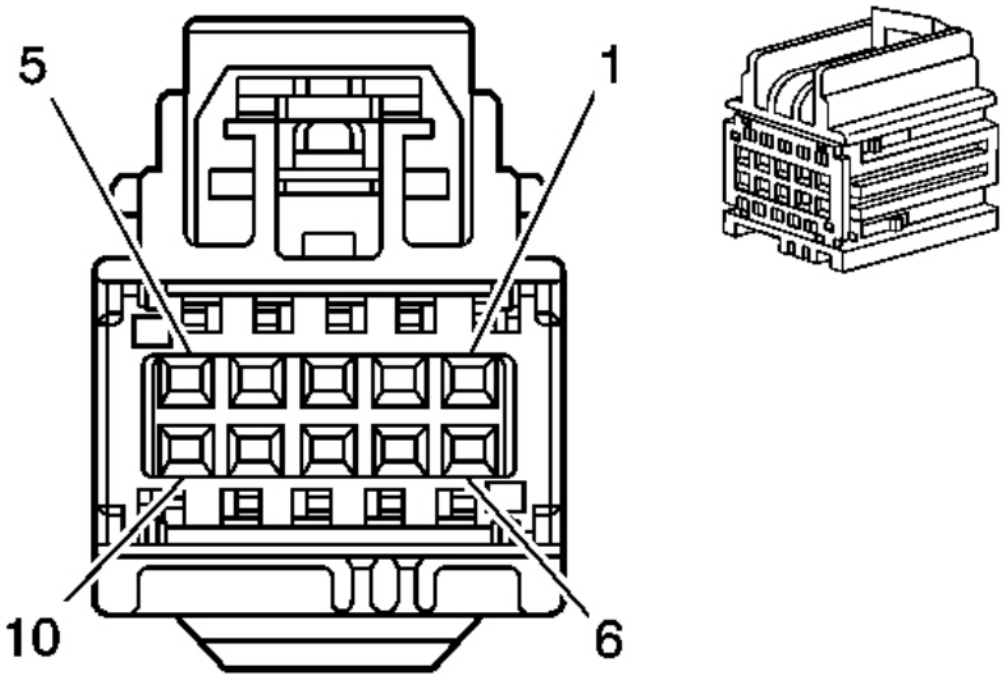


Fig. 24: Driver Door Switch (DDS) C3 Connector End View
Courtesy of GENERAL MOTORS CORP.

Driver Door Switch (DDS) C3 Connector Parts Information

Connector Part Information

- OEM: 15491259
- Service: 15127042
- Description: 10-Way F Kaizen 0.64 Series (BK)

Terminal Part Information

- TBD
- TBD
- TBD

Driver Door Switch (DDS) C3 Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	D-BU/WH	6160	Driver Folding Mirror Motor Retract Control

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2	D-GN/WH	6159	Driver Folding Mirror Motor Extend Control
3	L-GN	627	Low Reference
4	PK	1691	Automatic Day/Night Mirror Low Reference
5	L-BU/WH	1314	Left Front Turn Signal Lamp Supply Voltage
6	YE	7197	Driver Folding Mirror Motor Retract Control
7	OG	2267	Mirror Heating Element Supply Voltage
8	-	-	Not Used
9	GY	1690	Automatic Day/Night Mirror Signal
10	BK	1050	Ground

Driver Door Switch (DDS) C4

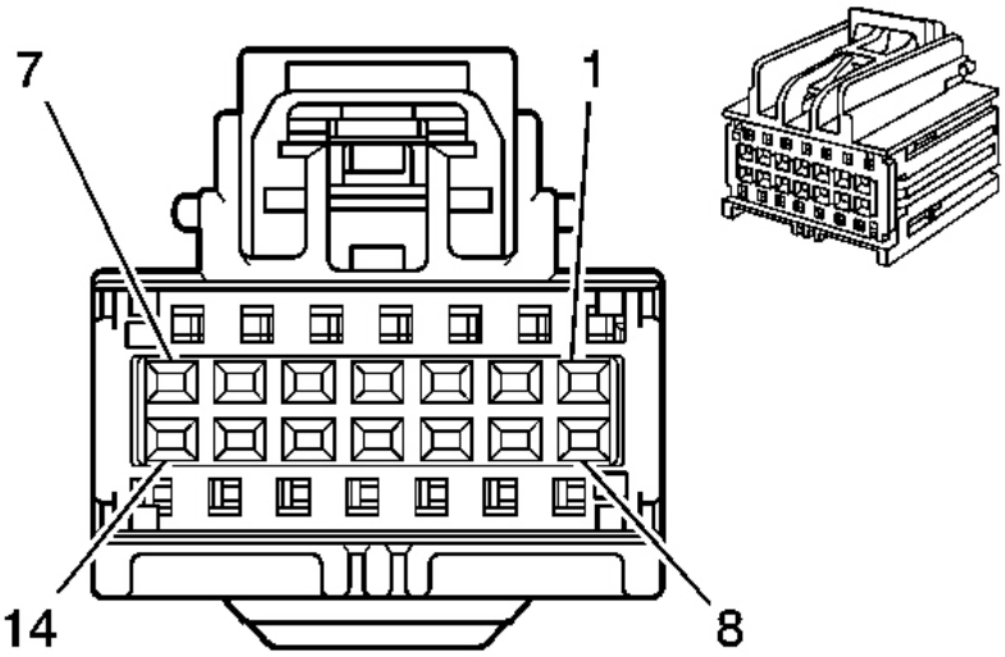


Fig. 25: Driver Door Switch (DDS) C4 Connector End View
Courtesy of GENERAL MOTORS CORP.

Driver Door Switch (DDS) C4 Connector Parts Information

Connector Part Information

- OEM: 15491261

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- Service: 15127039
- Description: 14-Way F Kaizen 0.64 Series (GY)

Terminal Part Information

- TBD
- TBD
- TBD

Driver Door Switch (DDS) C4 Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	WH/BK	6177	Driver Heated Seat Medium Temperature Indicator Control
2	D-GN	1661	Driver Heated Seat High Temperature Indicator Control
3	-	-	Not Used
4	D-BU/WH	5978	Low Reference
5	OG	614	Low Reference
6	D-BU	6172	Driver Heated Seat Back and Cushion Indicator Control
7	GY	6175	Driver Heated Seat Back Indicator Control
8	-	-	Not Used
9	L-BU	1662	Driver Heated Seat Low Temperature Indicator Control
10	BN	6173	Driver Heated Seat Back and Cushion Indicator Control
11	PU	6174	Driver Heated Seat Back Indicator Control
12	-	-	Not Used
13	BN/WH	6064	Memory Switch Dimming Control
14	GY/BK	5979	Memory Function Switch Supply Voltage

Driver Door Switch (DDS) C7

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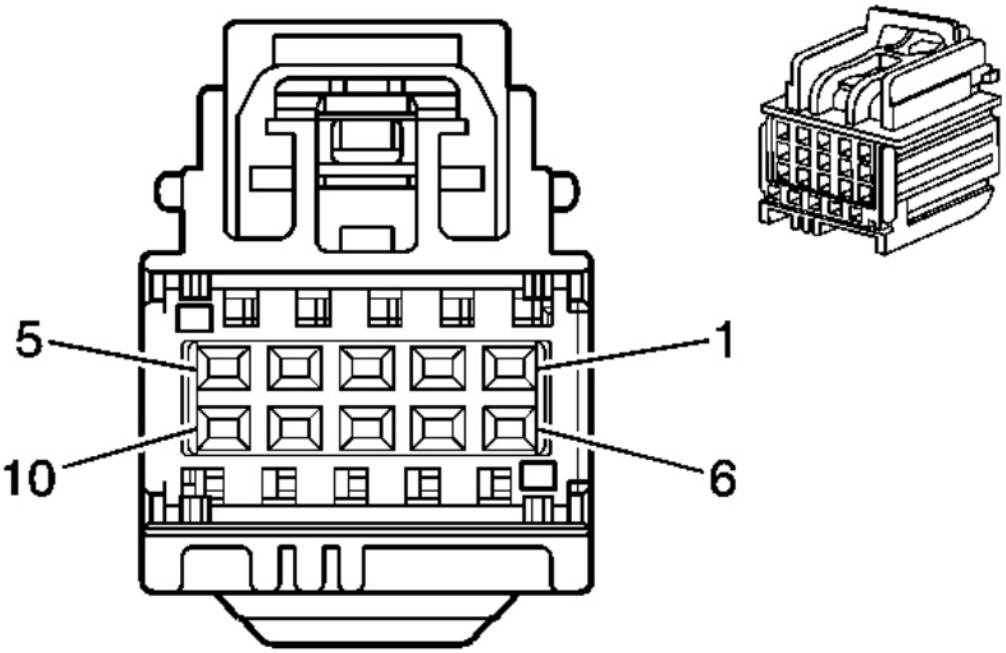


Fig. 26: Driver Door Switch (DDS) C7 Connector End View
Courtesy of GENERAL MOTORS CORP.

Driver Door Switch (DDS) C7 Connector Parts Information

Connector Part Information

- OEM: 15491260
- Service: 15127040
- Description: 10-Way F Kaizen 0.64 Series (BK)

Terminal Part Information

- TBD
- TBD
- TBD

Driver Door Switch (DDS) C7 Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	YE	6802	Driver Folding Mirror Motor Retract Control
2	L-BU	6803	Driver Folding Mirror Motor Extend Control

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3	OG/BK	5996	Driver Exterior Courtesy Lamp Supply Voltage
4	D-GN	784	Driver Mirror Vertical Position Sensor
5	GY	786	Driver Mirror Horizontal Position Sensor Signal
6	BN	5998	Low Reference
7	D-BU	672	5-Volt Reference
8-9	-	-	Not Used
10	BN	673	Low Reference

Endgate Lock Actuator

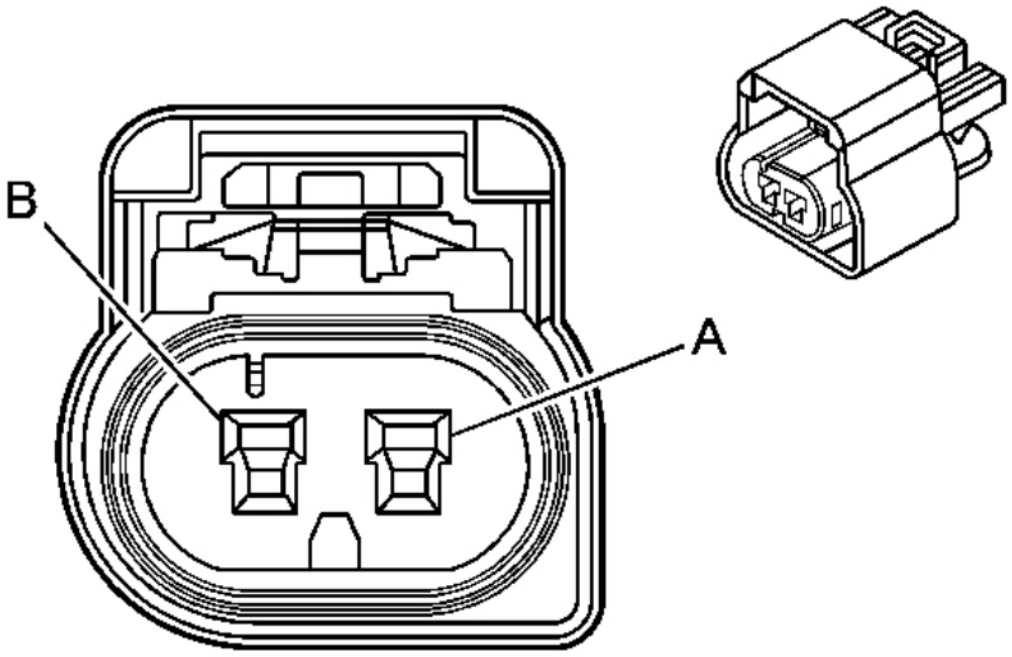


Fig. 27: Endgate Lock Actuator Connector End View
Courtesy of GENERAL MOTORS CORP.

Endgate Lock Actuator Connector Parts Information

Connector Part Information

- OEM: 15374222
- Service: 88953268

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- Description: 2-Way F GT 150 Series Sealed (NA)

Terminal Part Information

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

Endgate Lock Actuator Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
A	TN	294	Door Lock Actuator Unlock Control
B	GY	295	Door Lock Actuator Lock Control

Liftgate Close Switch (E61)

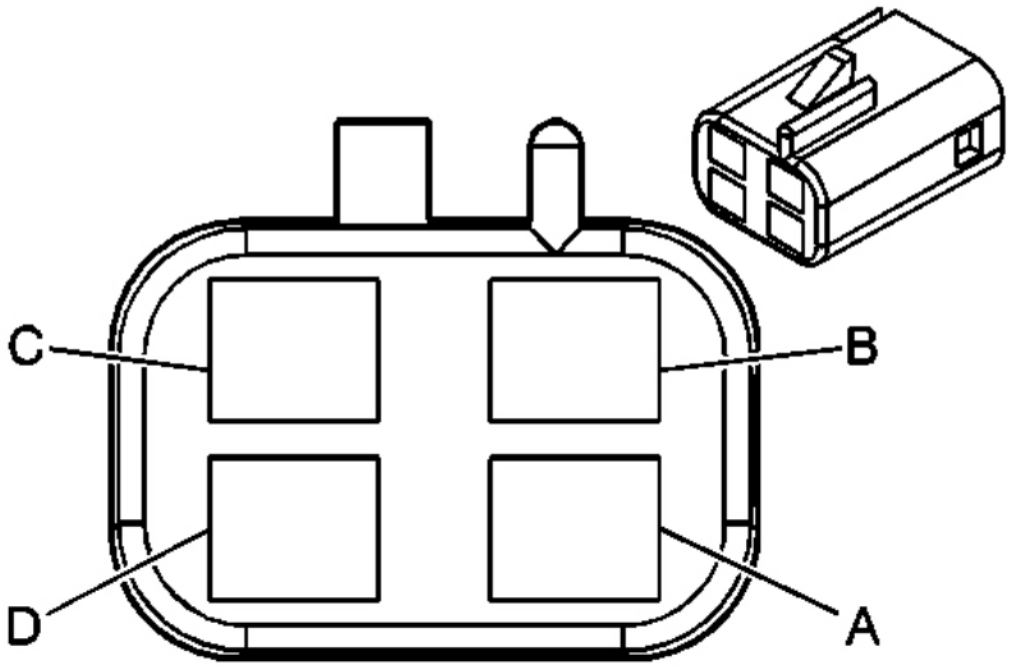


Fig. 28: Liftgate Close Switch (E61) Connector End View
Courtesy of GENERAL MOTORS CORP.

Liftgate Close Switch (E61) Connector Parts Information

Connector Part Information

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- OEM: 12047785
- Service: 12102900
- Description: 4-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-35616-2A (GY)

Liftgate Close Switch (E61) Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
A	PU/WH	5801	Liftgate Object Sensor Low Reference
B-C	-	-	Not Used
D	GY	5797	Rear Closure Handle Switch Open Signal

Liftgate Handle Switch

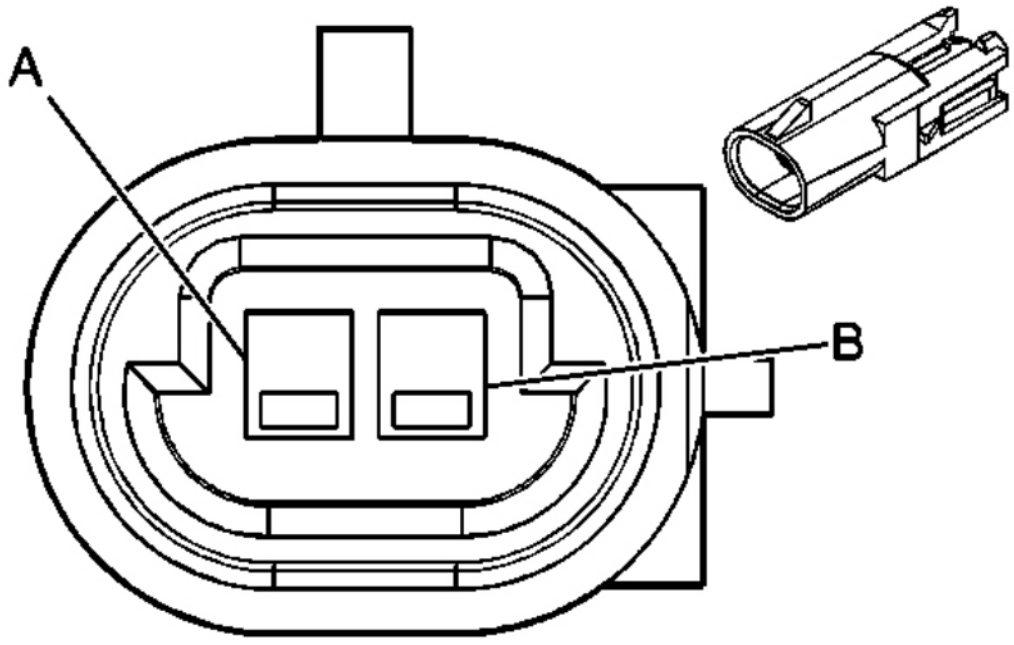


Fig. 29: Liftgate Handle Switch Connector End View
Courtesy of GENERAL MOTORS CORP.

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Liftgate Handle Switch Connector Parts Information

Connector Part Information

- OEM: 15355466
- Service: 89046633
- Description: 2-Way M GT 150 Series Sealed (BK)

Terminal Part Information

- Terminal/Tray: 15326269/19
- Core/Insulation Crimp: E/4
- Release Tool/Test Probe: 15315247/J-35616-3 (GY)

Liftgate Handle Switch Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
A	GY	5797	Rear Closure Handle Switch Open Signal
B	BK	1450	Ground
	PU/WH	5801	Liftgate Object Sensor Low Reference

Liftgate Latch Assembly (E61)

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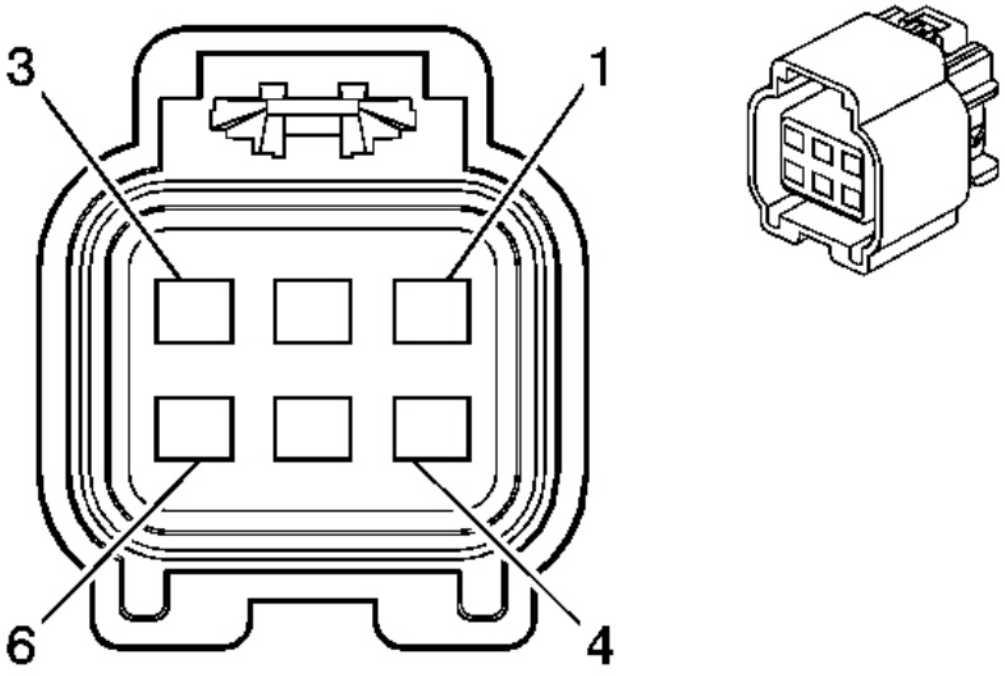


Fig. 30: Liftgate Latch Assembly (E61) Connector End View
Courtesy of GENERAL MOTORS CORP.

Liftgate Latch Assembly (E61) Connector Parts Information

Connector Part Information

- OEM: 15476196
- Service: 88988498
- Description: 6-Way F GT 280 Series Sealed (BK)

Terminal Part Information

- Pins: 1, 3
- Terminal/Tray: 15304720/19
- Core/Insulation Crimp: 4/5
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

- Pins: 2, 4-6
- Terminal/Tray: 15304719/19

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- Core/Insulation Crimp: E/5
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Liftgate Latch Assembly (E61) Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	BN	5790	Liftgate Cinch Latch Motor Open Control
2	PU/WH	5801	Liftgate Object Sensor Low Reference
3	L-BU	5791	Liftgate Cinch Latch Motor Close Control
4	D-GN	5512	Latch Sector Switch Signal
5	GY	7000	Latch Pawl Switch Signal
6	PK/BK	6000	Latch Ratchet Switch Signal

Power Liftgate Module C1 (E61)

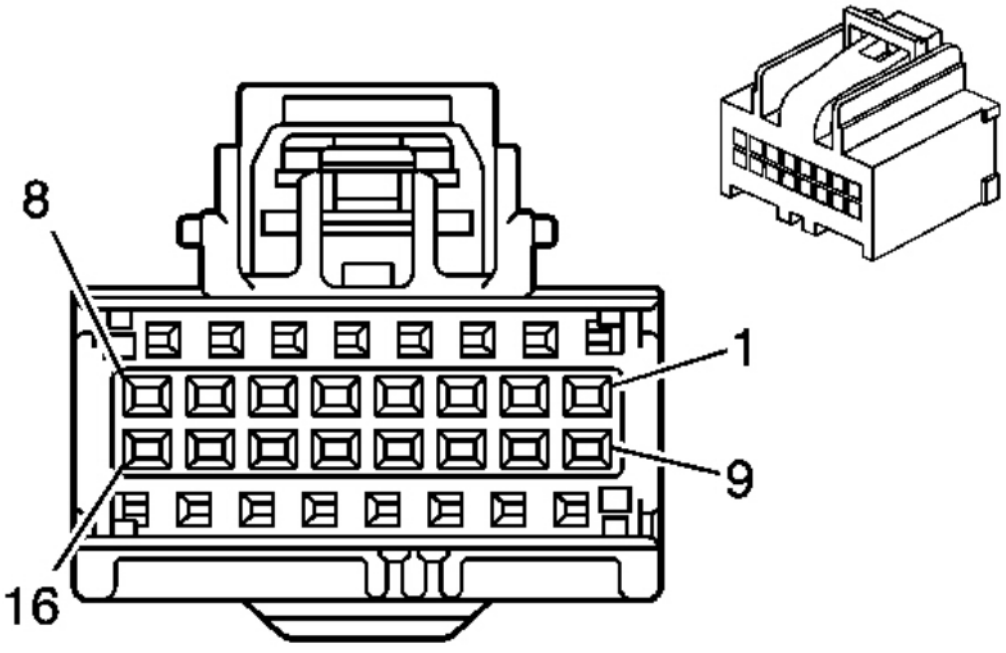


Fig. 31: Power Liftgate Module C1 (E61) Connector End View
Courtesy of GENERAL MOTORS CORP.

Power Liftgate Module C1 (E61) Connector Parts Information

Connector Part Information

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- OEM: 15491285
- Service: 15136073
- Description: 16-Way F Kaizan 0.64 (BK)

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)

Power Liftgate Module C1 (E61) Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	D-GN	6112	Power Liftgate On/Off Switch Signal
2	-	-	Not Used
3	PU	2279	Liftglass Ajar Switch Signal
4	D-GN	5512	Latch Sector Switch Signal
5	PK/BK	6000	Latch Ratchet Switch Signal
6	GY	7000	Latch Pawl Switch Signal
7	D-GN	5060	Low Speed GMLAN Serial Data
8	WH/BK	6126	Liftgate Object Sensor 2 Signal
9-10	-	-	Not Used
11	PK/BK	1303	Liftgate Ajar Switch Signal
12	D-GN/WH	5800	Front Liftgate Open/Close Switch Signal
13	-	-	Not Used
14	GY	5797	Rear Closure Handle Switch Open Signal
15	-	-	Not Used
16	PU/WH	5801	Liftgate Object Sensor Low Reference

Power Liftgate Module C2 (E61)

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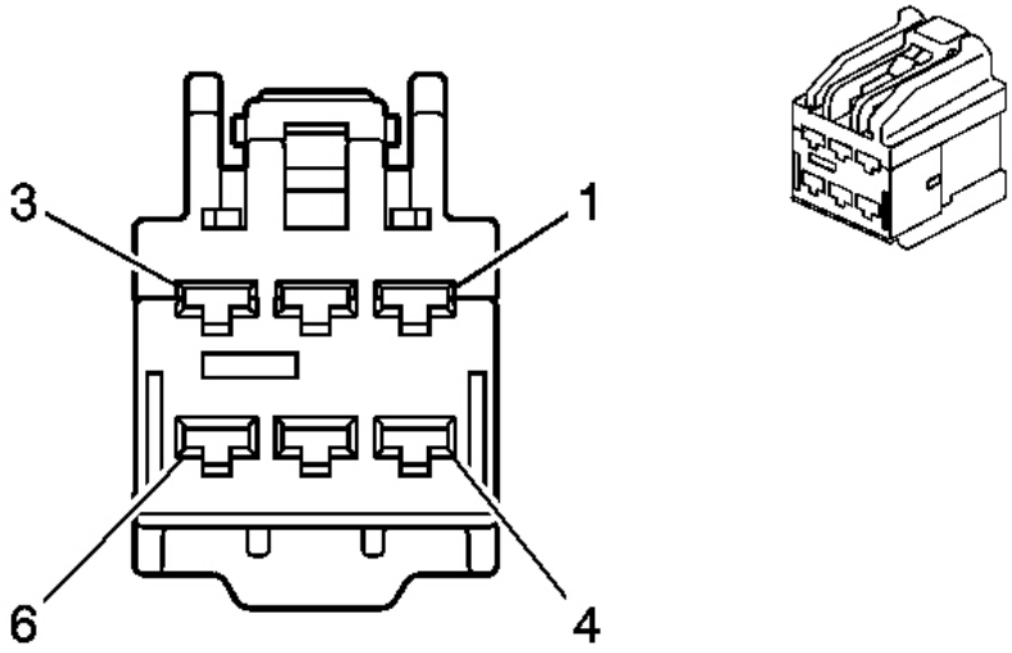


Fig. 32: Power Liftgate Module C2 (E61) Connector End View
Courtesy of GENERAL MOTORS CORP.

Power Liftgate Module C2 (E61) Connector Parts Information

Connector Part Information

- OEM: 15466067
- Service: 88988497
- Description: 6-Way F Receptacle 2.8 Series (BK)

Terminal Part Information

- Pins: 4
- Terminal/Tray: 8100-4443/22
- Core/Insulation Crimp: E/A
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

- Pins: 1-3, 6
- Terminal/Tray: 8100-4445/22
- Core/Insulation Crimp: Pins 1, 2: 4/4

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- Core/Insulation Crimp: Pins 3, 6: F/D
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Power Liftgate Module C2 (E61) Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	BN	5790	Liftgate Cinch Latch Motor Open Control
2	L-BU	5791	Liftgate Cinch Latch Motor Close Control
3	RD/BK	1242	Battery Positive Voltage
4	RD/WH	840	Battery Positive Voltage
5	-	-	Not Used
6	BK	1450	Ground

Liftgate Latch Assembly (Except E61)

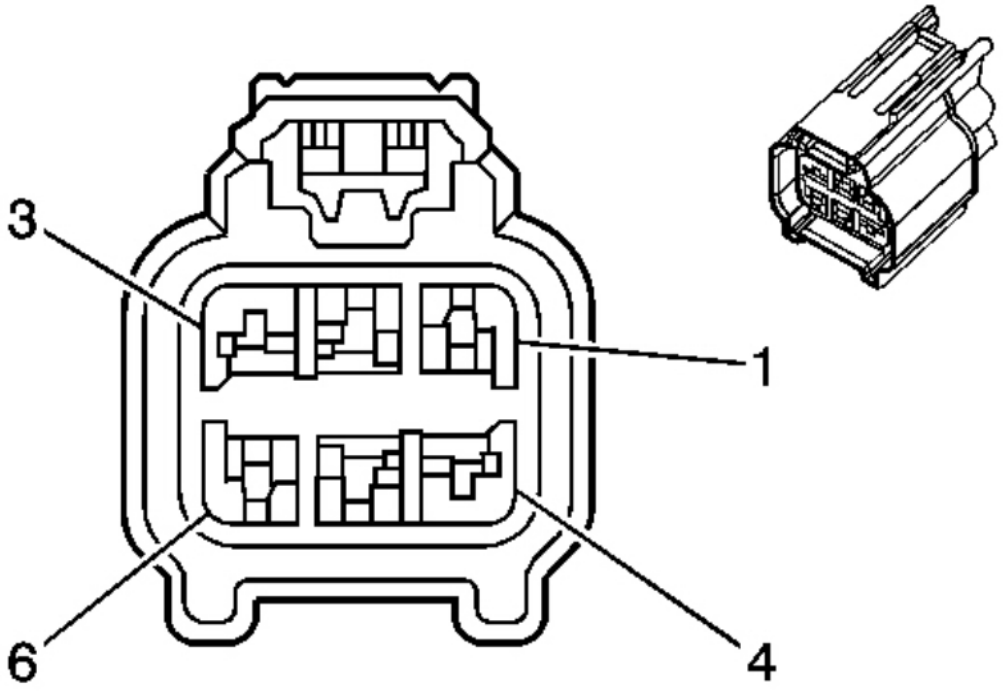


Fig. 33: Liftgate Latch Assembly (Except E61) Connector End View
Courtesy of GENERAL MOTORS CORP.

Liftgate Latch Assembly (Except E61) Connector Parts Information

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Connector Part Information

- OEM: 15476199
- Service: 88988358
- Description: 6-Way F GT 280 Series Sealed (GN)

Terminal Part Information

- Terminal/Tray: 15304719/19
- Core/Insulation Crimp: Pins 1, 3: 2/5
- Core/Insulation Crimp: Pins 4-6: E/5
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Liftgate Latch Assembly (Except E61) Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	L-BU	6128	Rear Closure Unlatch Motor Unlatch Control
2	-	-	Not Used
3	BK	1450	Ground
4	L-GN	5926	Rear Access Open Switch Signal
5	BK	1450	Ground
6	PK/BK	1303	Liftgate Ajar Switch Signal

Liftglass Latch Assembly

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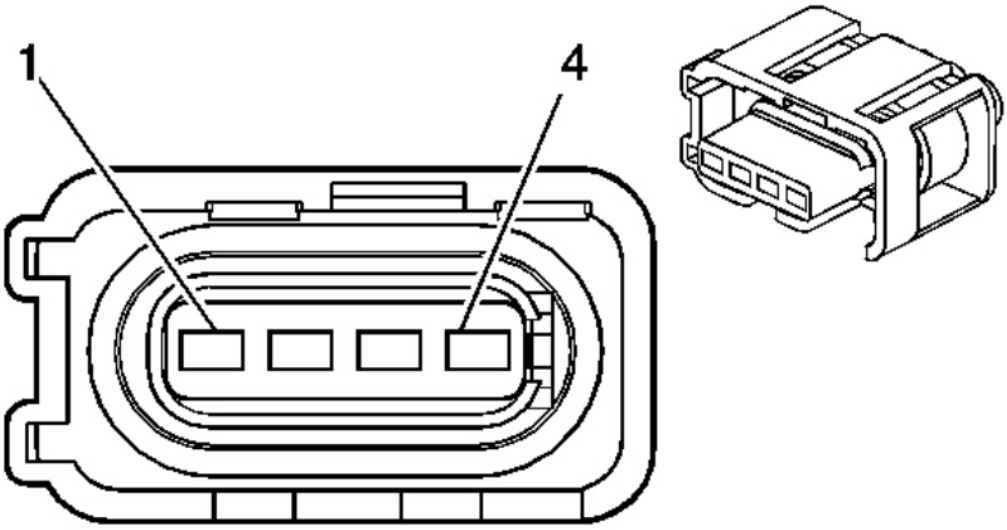


Fig. 34: Liftglass Latch Assembly Connector End View
Courtesy of GENERAL MOTORS CORP.

Liftglass Latch Assembly Connector Parts Information

Connector Part Information

- OEM: 15489983
- Service: 88988815
- Description: 4-Way F Timer Micro-Pack III Series Sealed (NA)

Terminal Part Information

- Terminal/Tray: 4-969005-1/16
- Core/Insulation Crimp: E/1
- Release Tool/Test Probe: J-38125-560/J-35616-33 (YE)

Liftglass Latch Assembly Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	L-BU	6795	Liftglass/Trunk Motor Release Control 2
2	BK	1450	Ground
3	BK	1450	Ground
4	PK/BK	1303	Liftgate Ajar Switch Signal (E52 Except E61)
	PU	2279	Liftglass Ajar Switch Signal (E61)

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Liftgate Object Sensor - Left (E61)

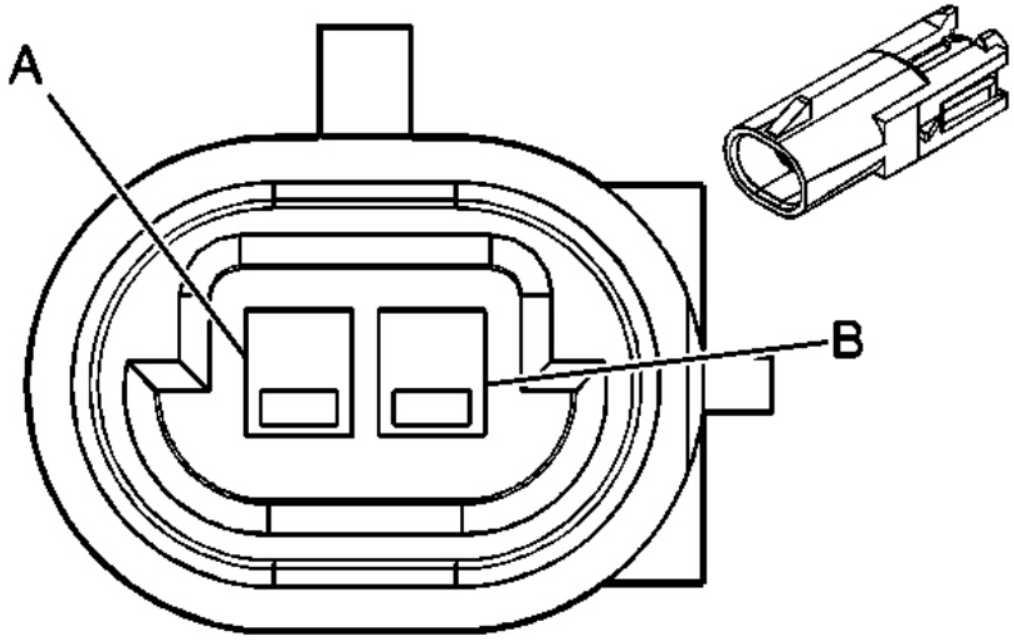


Fig. 35: Liftgate Object Sensor - Left (E61) Connector End View
Courtesy of GENERAL MOTORS CORP.

Liftgate Object Sensor - Left (E61) Connector Parts Information

Connector Part Information

- OEM: 15355466
- Service: 89046633
- Description: 2-Way M GT 150 Series Sealed (BK)

Terminal Part Information

- Terminal/Tray: 15326269/19
- Core/Insulation Crimp: E/4
- Release Tool/Test Probe: 15315247/J-35616-3 (GY)

Liftgate Object Sensor - Left (E61) Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
A	WH/BK	6126	Liftgate Object Sensor 2 Signal

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B	PK/BK	5802	Liftgate Object Sensor Signal

Liftgate Object Sensor - Right (E61)

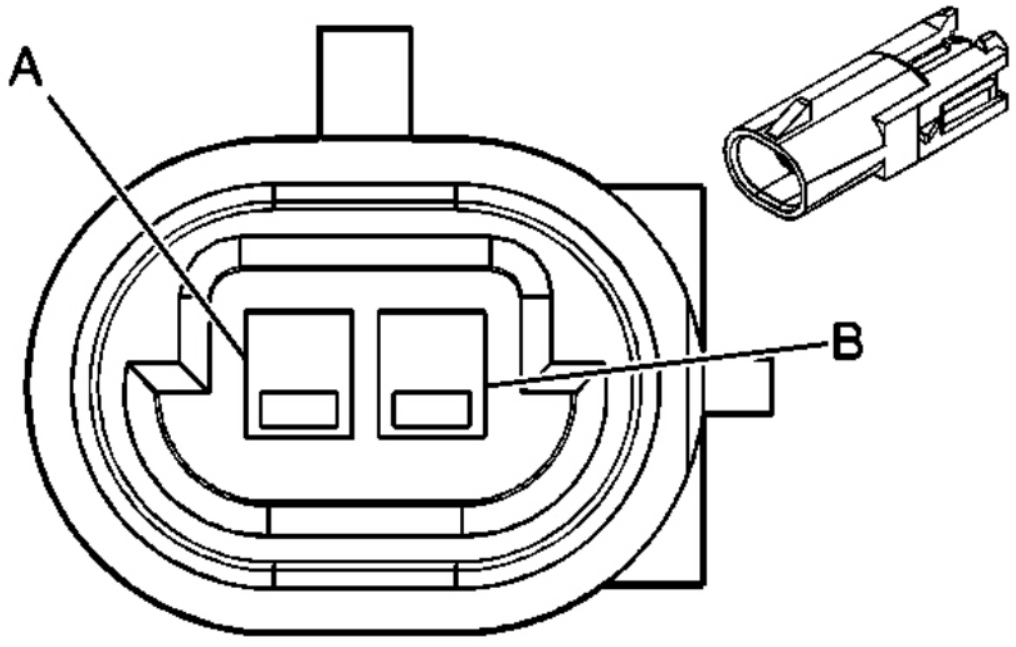


Fig. 36: Liftgate Object Sensor - Right (E61) Connector End View
Courtesy of GENERAL MOTORS CORP.

Liftgate Object Sensor - Right (E61) Connector Parts Information

Connector Part Information

- OEM: 15355466
- Service: 89046633
- Description: 2-Way M GT 150 Series Sealed (BK)

Terminal Part Information

- Terminal/Tray: 15326269/19
- Core/Insulation Crimp: E/4
- Release Tool/Test Probe: 15315247/J-35616-3 (GY)

Liftgate Object Sensor - Right (E61) Connector Terminal Identification

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Pin	Wire Color	Circuit No.	Function
A	PK/BK	5802	Liftgate Object Sensor Signal
B	PU/WH	5801	Liftgate Object Sensor Low Reference

Liftglass Release Switch (E52)

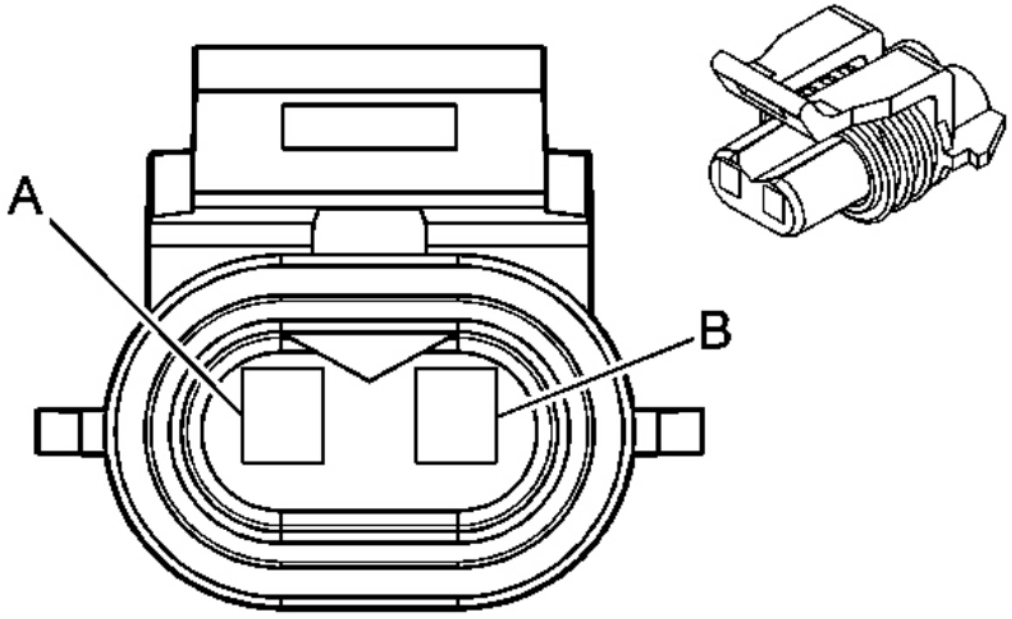


Fig. 37: Liftglass Release Switch (E52) Connector End View
Courtesy of GENERAL MOTORS CORP.

Liftglass Release Switch (E52) Connector Parts Information

Connector Part Information

- OEM: 12052643
- Service: 12101858
- Description: 2-Way F Metri-Pack 150 Series Sealed (RD)

Terminal Part Information

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

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Liftglass Release Switch (E52) Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
A	PK	6190	Liftglass/Trunk Exterior Release Signal
B	BK	1450	Ground

Passenger Door Switch (PDS) C1

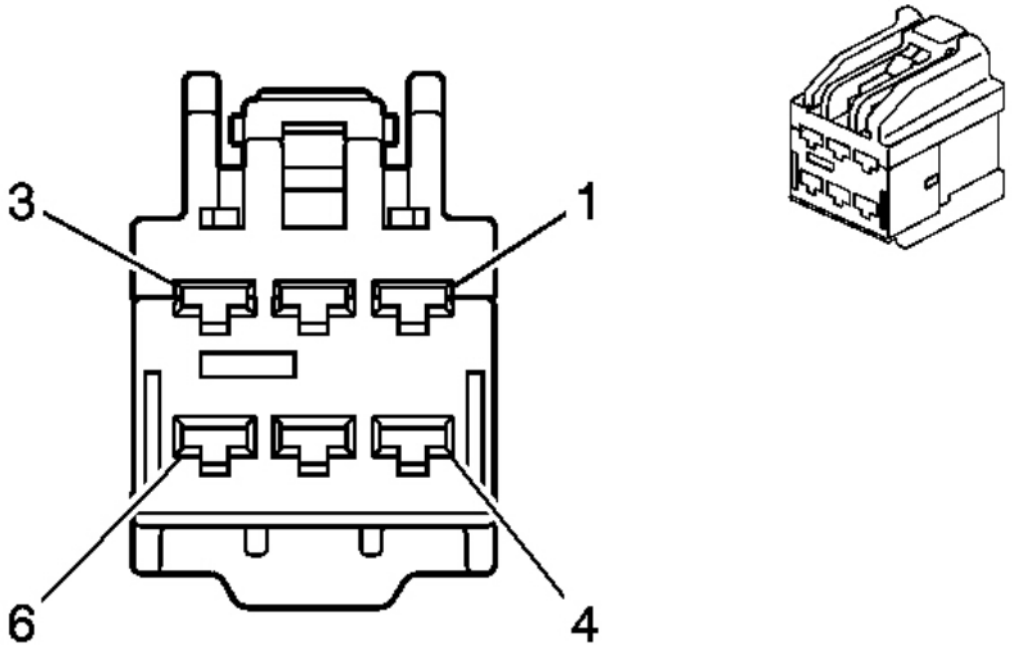


Fig. 38: Passenger Door Switch (PDS) C1 Connector End View
Courtesy of GENERAL MOTORS CORP.

Passenger Door Switch (PDS) C1 Connector Parts Information

Connector Part Information

- OEM: 15466067
- Service: 88988497
- Description: 6-Way F Receptacle 2.8 Series (BK)

Terminal Part Information

- Pin: 4
- Terminal/Tray: 8100-4444/22

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- Core/Insulation Crimp: 2/A
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

- Pins: 1-3, 6
- Terminal/Tray: 8100-4445/22
- Core/Insulation Crimp: Pins 1-3: 4/4
- Core/Insulation Crimp: Pin 6: F/D
- Release Tool/Test Probe: 15315247/J-35616-4A (PU)

Passenger Door Switch (PDS) C1 Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	BN	667	Power Window Motor Right Front Down Control
2	RD/WH	1340	Battery Positive Voltage
3	D-BU	666	Power Window Motor Right Front Up Control
4	RD/WH	240	Battery Positive Voltage
5	-	-	Not Used
6	BK	1050	Ground

Passenger Door Switch (PDS) C2

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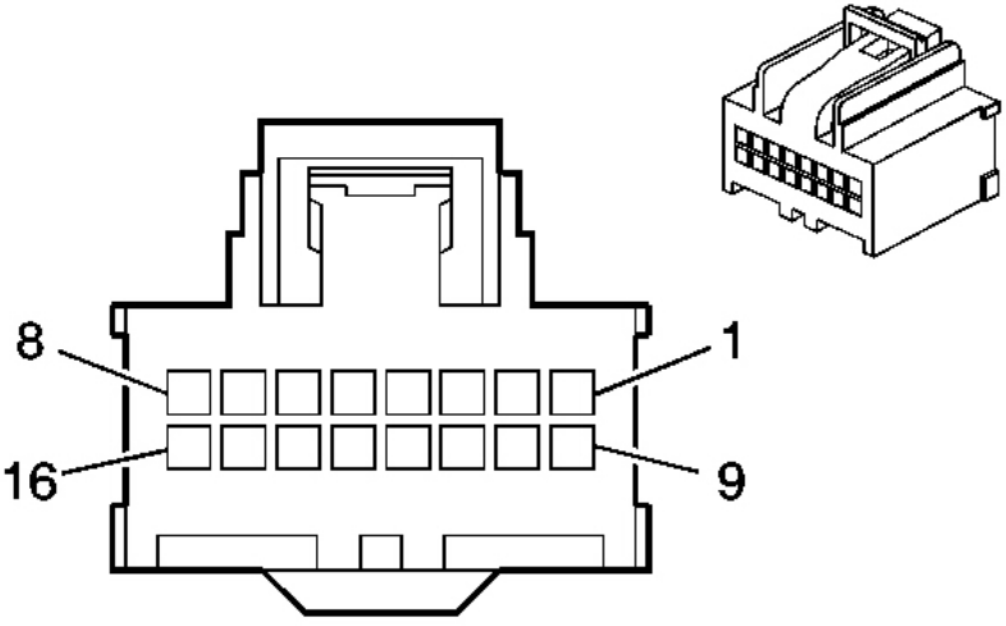


Fig. 39: Passenger Door Switch (PDS) C2 Connector End View
Courtesy of GENERAL MOTORS CORP.

Passenger Door Switch (PDS) C2 Connector Parts Information

Connector Part Information

- OEM: 15466054
- Service: 15136074
- Description: 16-Way F Kaizen 0.64 Series (BK)

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)

Passenger Door Switch (PDS) C2 Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	D-BU/WH	1315	Right Front Turn Signal Lamp Supply Voltage
2-4	-	-	Not Used

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5	YE	5943	Low Reference
6	-	-	Not Used
7	TN	5946	Passenger Door Lock Actuator Lock Control
8	GY/BK	1663	Passenger Door Lock Actuator Unlock Control
9	D-GN	5060	Low Speed GMLAN Serial Data
10	L-BU	661	Right Courtesy Lamp Control
11	L-GN	1177	Right Front Door Open Switch Signal
12	-	-	Not Used
13	TN/WH	746	Right Front Door Ajar Switch Signal
14	-	-	Not Used
15	BK	1050	Ground
16	-	-	Not Used

Passenger Door Switch (PDS) C3

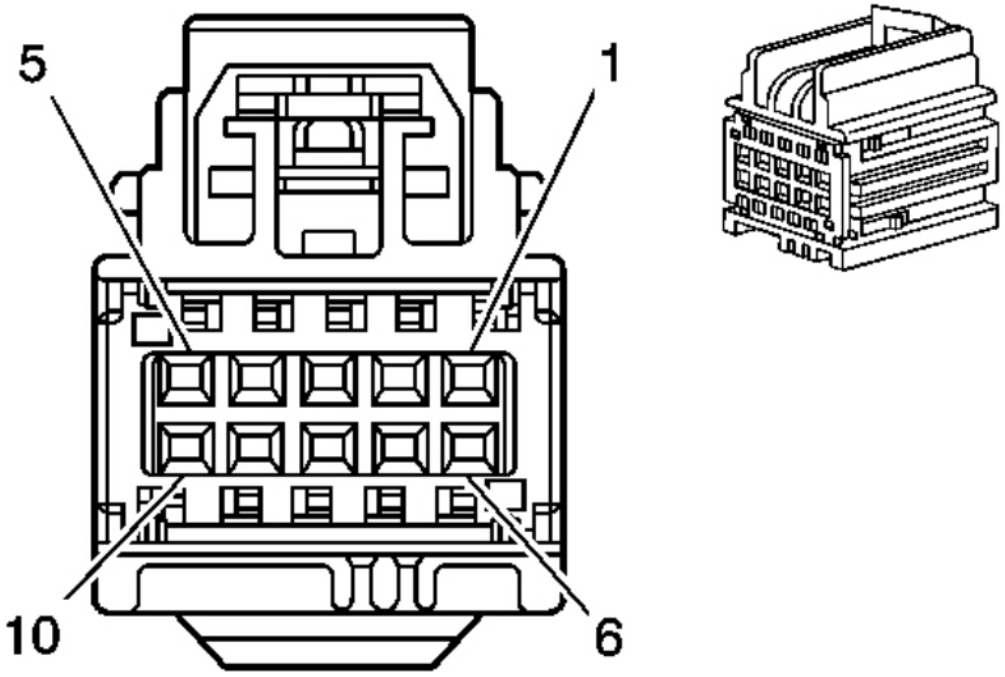


Fig. 40: Passenger Door Switch (PDS) C3 Connector End View
Courtesy of GENERAL MOTORS CORP.

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Passenger Door Switch (PDS) C3 Connector Parts Information

Connector Part Information

- OEM: 15491259
- Service: 15127042
- Description: 10-Way F Kaizen 0.64 Series (BK)

Terminal Part Information

- TBD
- TBD
- TBD

Passenger Door Switch (PDS) C3 Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	OG/BK	6162	Passenger Folding Mirror Motor Retract Control
2	GY/BK	6161	Passenger Folding Mirror Motor Extend Control
3	D-GN	628	Low Reference
4	-	-	Not Used
5	D-BU/WH	1315	Right Front Turn Signal Lamp Supply Voltage
6	WH	7196	Passenger Folding Mirror Motor Retract Control
7	OG	2267	Mirror Heating Element Supply Voltage
8-9	-	-	Not Used
10	BK	1050	Ground

Passenger Door Switch (PDS) C4

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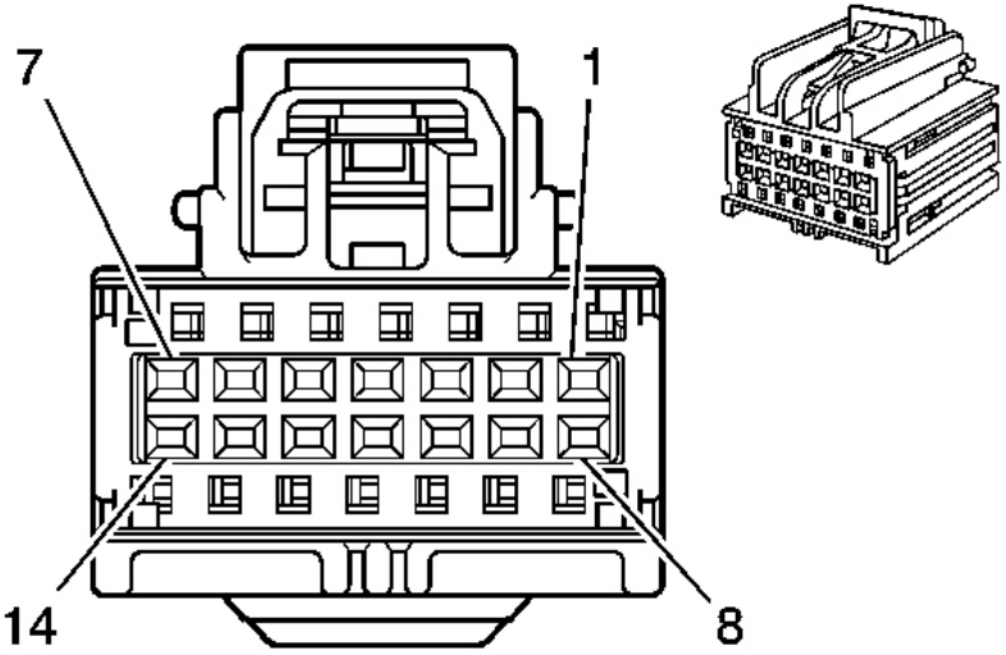


Fig. 41: Passenger Door Switch (PDS) C4 Connector End View
Courtesy of GENERAL MOTORS CORP.

Passenger Door Switch (PDS) C4 Connector Parts Information

Connector Part Information

- OEM: 15491261
- Service: 15127039
- Description: 14-Way F Kaizen 0.64 Series (GY)

Terminal Part Information

- TBD
- TBD
- TBD

Passenger Door Switch (PDS) C4 Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	WH/BK	6185	Passenger Heated Seat Medium Temperature Indicator Control

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2	YE	1685	Passenger Heated Seat High Temperature Indicator Control
3	-	-	Not Used
4	PK	6184	Low Reference
5	-	-	Not Used
6	D-BU	6180	Passenger Heated Seat Back and Cushion Indicator Control
7	GY	6182	Passenger Heated Seat Back Switch Signal
8	-	-	Not Used
9	TN	1686	Passenger Heated Seat Low Temperature Indicator Control
10	BN	6179	Passenger Heated Seat Back and Cushion Indicator Control
11	PU	6181	Passenger Heated Seat Back Indicator Control
12	-	-	Not Used
13	L-BU	6183	Passenger Heated Seat Switch Dimming Control
14	-	-	Not Used

Passenger Door Switch (PDS) C7

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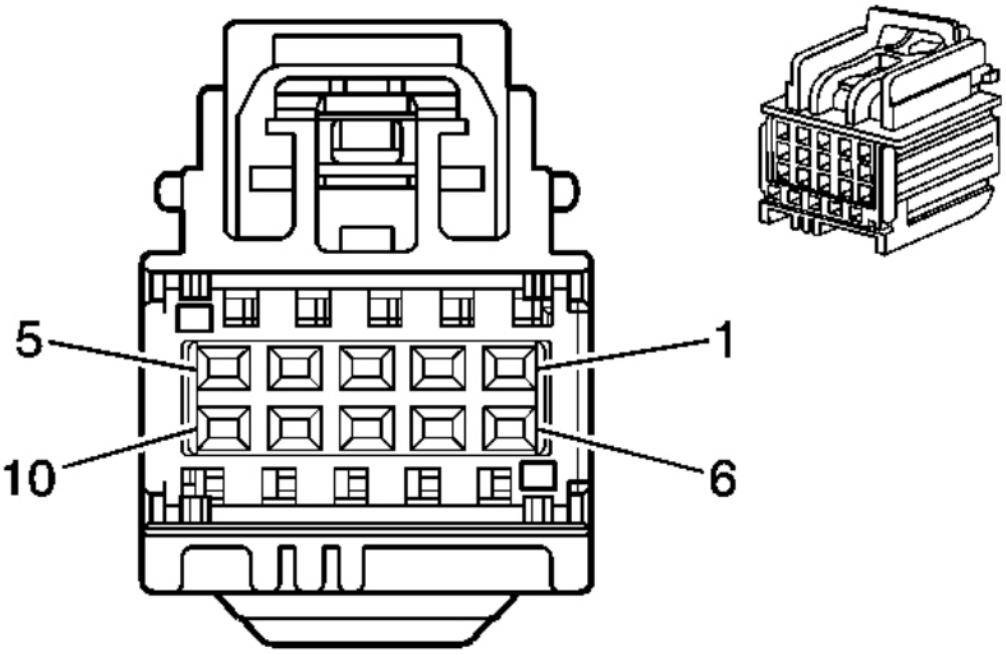


Fig. 42: Passenger Door Switch (PDS) C7 Connector End View
Courtesy of GENERAL MOTORS CORP.

Passenger Door Switch (PDS) C7 Connector Parts Information

Connector Part Information

- OEM: 15491260
- Service: 15127040
- Description: 10-Way F Kaizen 0.64 Series (BK)

Terminal Part Information

- TBD
- TBD
- TBD

Passenger Door Switch (PDS) C7 Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	YE	6804	Passenger Folding Mirror Motor Retract Control

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2	L-BU	6805	Passenger Folding Mirror Motor Extend Control
3	OG/BK	5997	Passenger Exterior Courtesy Lamp Supply Voltage
4	BN	787	Passenger Mirror Vertical Position Sensor Signal
5	L-BU/BK	785	Passenger Mirror Horizontal Position Sensor Signal
6	BN	5999	Low Reference
7	YE	674	5-Volt Reference
8-9	-	-	Not Used
10	L-GN	675	Low Reference

Power Liftgate Switch (E61)

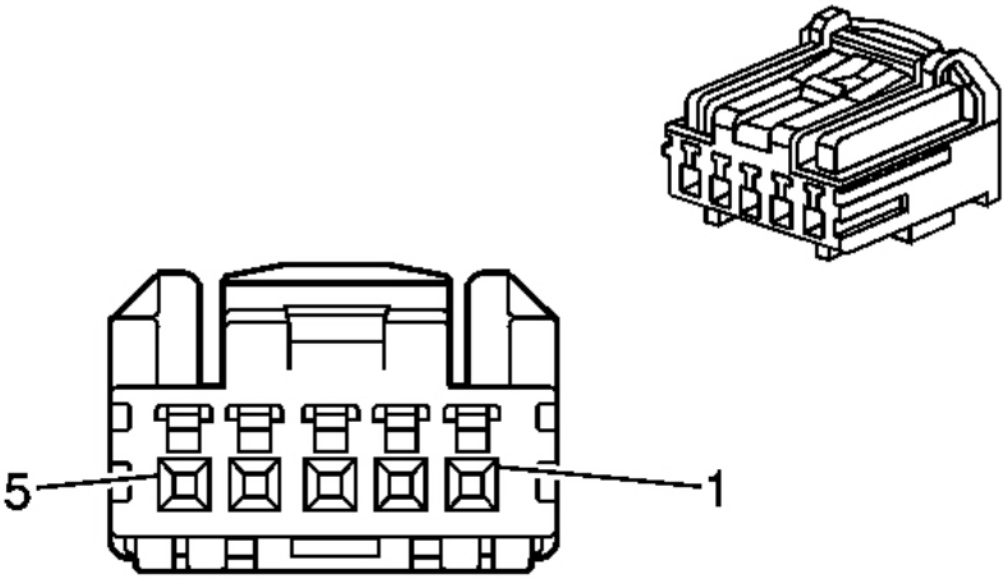


Fig. 43: Power Liftgate Switch (E61) Connector End View
Courtesy of GENERAL MOTORS CORP.

Power Liftgate Switch (E61) Connector Parts Information

Connector Part Information

- OEM: 15491283

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- Service: 19149304
- Description: 5-Way F HCM (NA)

Terminal Part Information

- Terminal/Tray: SHCM-A03T-P025/20
- Core/Insulation Crimp: J/J
- Release Tool/Test Probe: 12094429/J-35616-64B (L-BU)

Power Liftgate Switch (E61) Connector Terminal Identification

Pin	Wire Color	Circuit No.	Function
1	D-GN	6112	Power Liftgate On/Off Switch Signal
2	BN/WH	230	Instrument Panel Lamp Dimming Control
3	BK	1050	Ground
4	D-GN/WH	5800	Front Liftgate Open/Close Switch Signal
5	-	-	Not Used

DIAGNOSTIC INFORMATION AND PROCEDURES

DIAGNOSTIC CODE INDEX

DIAGNOSTIC CODE INDEX

DTC	Description
DTC B1019	System Configuration Error
DTC B1023	Integral Switch Performance
DTC B153A	Liftgate Latch Switch Signal Circuit Signal Invalid
DTC B153B	Liftgate Open Switch Signal Circuit Short
DTC B153E	Liftgate Position Sensor Reference Voltage Circuit
DTC B153F	Liftgate Object Sensor Signal Circuit
DTC B2494	Liftgate Handle Switch Circuit Short to Ground
DTC B2495	Liftgate Latch Control Circuit
DTC B3265	Liftglass Release Output Circuit
DTC B396A	Liftgate Motor Control Circuit Short
DTC B396B	Liftgate Motor Clutch Control Circuit Short
DTC B396F	Liftglass Ajar Output Signal Circuit

DIAGNOSTIC STARTING POINT - VEHICLE ACCESS

Begin the system diagnosis with the **Diagnostic System Check - Vehicle** . The Diagnostic System Check 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.

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- The identification of any stored diagnostic trouble codes (DTCs) and their status.

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

SCAN TOOL DATA DEFINITIONS

Battery Voltage Signal 2

The scan tool displays the battery voltage as seen at the liftgate module.

Hall Sensor Feed Status

The scan tool displays No Output/Short to Ground. Than scan tool will display any faults associated with the hall sensor while in motion.

Liftgate Handle Switch Status

The scan tool displays Active/Inactive. The scan tool the status of the liftgate handle switch and the liftgate close switch.

Liftgate Ajar Switch

The scan tool displays Active/Inactive. The scan tool displays the state of the liftgate ajar switch as seen at the rear integration module.

Object Detection Sensor Status

The scan tool displays the voltage as seen through the object sensors.

LGM Clutch Actuator Command

The scan tool displays Active/Inactive. The scan tool displays the commanded state of the liftgate clutch.

LGM Latch Motor Cinch Command

The scan tool displays Active/Inactive. The scan tool displays the commanded state of the cinching portion of the liftgate latch.

LGM Latch Pawl Switch

The scan tool displays Active/Inactive. The scan tool displays the state of the liftgate open switch.

LGM Latch Ratchet Switch

The scan tool displays Active/Inactive. The scan tool displays the state of the liftgate ajar switch.

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LGM Motor Release Command

The scan tool displays Active/Inactive. The scan tool displays the commanded state of the release portion of the liftgate latch.

LGM Latch Sector Switch

The scan tool displays Active/Inactive. The scan tool displays the state of the liftgate conch/release switch.

LGM Motor Closed Command

The scan tool displays Active/Inactive. The scan tool displays the commanded state of the liftgate motor during closing.

LGM Motor Open Command

The scan tool displays Active/Inactive. The scan tool displays the commanded state of the liftgate motor during opening.

LGM Open/Close Position Learned

The scan tool displays Yes/No. The scan tool displays the results of the liftgate calibration.

LGM Full Open Switch

The scan tool displays Active/Inactive. The scan tool displays the status of the liftgate full open switch.

SCAN TOOL DATA LIST

Liftgate Module

Scan Tool Parameter	Data List	Units Displayed	Typical Data Value
Ignition ON/Engine OFF/Liftgate Closed			
Battery Voltage Signal 2	Data	Voltage	Varies
Hall Sensor Feed Status	Data	No Output/Short to Ground	No Output
Liftgate Handle Switch Status	Data	Active/Inactive	Inactive
Liftgate Ajar Switch	Data	Active/Inactive	Inactive
Object Detection Sensor Status	Data	Voltage	3.33 V
Object Sensor Supply Voltage	Data	Active/Inactive	Active
LGM Clutch Actuator Command	Data	Active/Inactive	Inactive
LGM Latch Motor Cinch Command	Data	Active/Inactive	Inactive
LGM Latch Pawl Switch	Data	Active/Inactive	Inactive
LGM Latch Ratchet Switch	Data	Active/Inactive	Inactive
LGM Latch Motor Release Command	Data	Active/Inactive	Inactive

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LGM Latch Sector Switch	Data	Active/Inactive	Inactive
LGM Motor Closed Command	Data	Active/Inactive	Inactive
LGM Motor Open Command	Data	Active/Inactive	Inactive
LGM Open/Close Position Learned	Data	Yes/No	Yes
LGM Full Open Switch	Data	Active/Inactive	Inactive

SCAN TOOL OUTPUT CONTROLS

Scan Tool Output Controls

Scan Tool Output Control	Additional Menu Selections	Description
Liftgate Release	Output Control	The rear integration module (RIM) activates the Power Liftgate when you select On.

DTC B1019

DTC Descriptor

DTC B1019 00

System Configuration Error

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

Circuit/System Description

During power liftgate operation the liftgate module continuously monitors the liftgate position and load profile. The position is calculated from hall effect sensor counts and the electrical load of the gear motor is used to determine physical resistance to the liftgate. The hall effect sensor counts are used to determine when the liftgate has reached the open and closed points of travel where the actuator clutch should be disengaged. These positions may vary slightly and must be learned when most liftgate components are serviced.

Conditions for Running the DTC

System voltage to the liftgate control module must be 9-16 volts.

Conditions for Setting the DTC

The liftgate control module is replaced or reprogrammed.

Conditions for Clearing the DTC

- The DTC will be current until the liftgate calibration procedure has been completed.
- When the calibration procedure has been completed the DTC will be a history status code.

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- A history DTC will clear after 50 ignition cycles or with a scan tool using the clear DTCs function.

Diagnostic Aids

A new or reprogrammed control module will be in a locked state and will require an ignition cycle before the calibration procedure can be performed.

Reference Information

Schematic Reference

Lift Gate Schematics

Connector End View Reference

Vehicle Access 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**
- **Scan Tool Output Controls**

Repair Procedures

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

Lift Gate Calibration Procedure

DTC B1023

DTC Descriptor

DTC B1023 00

Integral Switch Performance

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

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Circuit/System Description

The driver and passenger door lock and side window switches are integrated control module switch assemblies.

Conditions for Running the DTC

Battery voltage must be between 9-16 volts.

Conditions for Setting the DTC

The driver or passenger door module receives simultaneous active signals from both sides of an integrated switch.

Action Taken When the DTC Sets

The driver or passenger door module ignores inputs from the malfunctioning switch.

Conditions for Clearing the DTC

- The DTC will be current for as long as the fault is present.
- When the fault is no longer present, the DTC will be a history status code.
- A history DTC will clear after 50 ignition cycles or with a scan tool using the clear DTCs function.

Reference Information

Schematic Reference

Door Control Module Schematics

Connector End View Reference

Vehicle Access 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**
- **Scan Tool Data Definitions**

Circuit/System Verification

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1. Install a scan tool and display the inputs data list of the affected door module.
    - If any of the integrated switch inputs are displayed as Active while in an inactive state, replace the door module.
2. Clear the DTCs.
3. Activate all of the integrated switch functions.
    - If the DTC resets, replace the affected door module.

Repair Procedures

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

Control Module References for driver or passenger door switch replacement, programming, and setup.

DTC B153A

DTC Descriptor

DTC B153A 08

Liftgate Latch Switch Signal Circuit Signal Invalid

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

DTC B153A

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Pawl Switch Signal	B153A 08	B153A 08	-	-
Ratchet Switch Signal	B153A 08	B153A 08	-	-
Sector Switch Signal	B153A 08	B153A 08	-	-
Full Open Switch Signal	B153A 08	B153A 08	-	-
Low Reference	-	B153A 08	-	-

Circuit/System Description

The ratchet, pawl, and sector switches are part of the latch motor assembly and are used by the liftgate control module to determine the state of the latch during the process of latching or unlatching. Each of the latch switch signal circuits are supplied battery voltage through a resistor and monitored within the liftgate control module. The latch switches share a common low reference circuit from the liftgate control module and when the switch contacts close the signal circuit goes low and the liftgate control module determines the switch to be active. The full open switch is a limit switch mounted on the gear motor assembly alongside the swing arm gear. The full open switch signal circuit is supplied battery voltage through a resistor and monitored within the liftgate control module. When the liftgate reaches the full open position, the switch signal circuit is closed to the low reference circuit and the signal circuit voltage goes low.

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Conditions for Running the DTC

System voltage to the liftgate control module must be 9-16 volts.

Conditions for Setting the DTC

Any incorrect combination of the following switch inputs:

- Ratchet switch
- Pawl switch
- Sector switch
- Full open switch

Action Taken When the DTC Sets

The latch may be inoperative or not function normally.

Conditions for Clearing the DTC

- The DTC will be current for as long as the fault is present.
- When the fault is no longer present, the DTC will be a history status code.

Reference Information

Schematic Reference

Lift Gate Schematics

Connector End View Reference

Vehicle Access 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**

Circuit/System Verification

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1. Install a scan tool and display the liftgate module data list.
2. Ignition ON, and liftgate closed, verify that the Pawl Sw., Ratchet Sw., and Sector Sw. parameters are Inactive.
    - If any of the switch parameters are displayed as Active, perform the Liftgate Latch Switch Circuit Test.
3. Verify that the Full Open Sw. parameter is Inactive.
    - If the Full Open Sw. parameter is displayed as Active, perform the Full Open Switch Circuit Test.
4. Open the liftgate and verify that the Pawl Sw., and Ratchet Sw. parameters are Active.
    - If either of the switch parameters are displayed as Inactive, perform the Liftgate Latch Switch Circuit Test.
5. Verify that the Sector Sw. parameter is Active.
    - If the Sector Sw. parameter is displayed as Inactive, perform the Liftgate Latch Switch Circuit Test.
6. Verify that the Full Open Sw. parameter is Active.
    - If the Full Open Sw. parameter is displayed as Inactive, perform the Full Open Switch Circuit Test.

Circuit/System Testing

Liftgate Latch Switch Circuit Test

1. Disconnect the liftgate latch connector.
2. Ignition ON, verify that the Pawl Sw., Ratchet Sw., and Sector Sw. parameters are Inactive.
    - If any of the switch parameters are displayed as Active, test the affected switch signal circuit for a short to ground. If the signal circuit tests normal, replace the liftgate control module.
3. Using a DMM, verify that battery voltage is present at each of the switch signal circuit terminals in the latch harness connector.
    - If battery voltage is not present on any of the switch signal circuits, test the affected signal circuit for an open. If the circuit tests normal, replace the liftgate control module.
4. Using a DMM, verify that continuity to ground is present at the low reference circuit terminal in the latch harness connector.
    - If the low reference circuit has high resistance to or no continuity to ground, test the low reference circuit for an open or high resistance. If the circuit tests normal, replace the liftgate control module.
5. If all the circuits test normal, replace the liftgate latch assembly.

Full Open Switch Circuit Test

1. Ignition ON, open the liftgate to the full open position and verify that the Full Open switch parameter is Active.
    - If the switch parameter is displayed as Inactive, test the full open switch signal circuit for an open/high resistance. If the circuit tests normal, replace the liftgate control module.
2. Disconnect the full open switch connector and verify that the Full Open switch parameter is Inactive.
    - If the switch parameter is displayed as Active, test the full open switch signal circuit for a short to ground. If the circuit tests normal, replace the liftgate control module.

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3. If the circuits test normal, replace the full open switch.

Repair Procedures

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

- **Liftgate Actuator Switch Replacement**
- **Control Module References** for liftgate control module replacement, programming and setup

DTC B153B

DTC Descriptors

DTC B153B 02

Liftgate Open Switch Signal Circuit Short to Ground

DTC B153B 05

Liftgate Open Switch Signal Circuit Short to Short to Battery or Open

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

DTC B153B

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Full Open Switch Signal	B153B 02	B153B 05	-	-
Full Open Switch Low Reference	-	B153B 05	-	-

Circuit/System Description

The full open switch is part of the gear motor assembly and will close and become active when the liftgate reaches the full open position. The full open switch signal circuit is supplied battery voltage through a resistor and monitored within the liftgate control module. The liftgate control module provides a low reference circuit and when the switch contacts close, the signal circuit goes low and the liftgate control module determines the switch to be active.

Conditions for Running the DTC

- System voltage to the liftgate control module must be 9-16 volts.
- Power open or close operation is attempted.

Conditions for Setting the DTC

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- During power open operation, the full open switch does not become active when the hall sensor counts indicate the open cycle is complete.
- During power close operation, the full open switch remains active when the hall sensor counts indicate the close cycle has begun.

Action Taken When the DTC Sets

Power open and close operations will be disabled.

Conditions for Clearing the DTC

- The DTC will be current for as long as the fault is present.
- When the fault is no longer present the DTC will be a history status code.

Reference Information

Schematic Reference

Lift Gate Schematics

Connector End View Reference

Vehicle Access 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**

Circuit/System Testing

1. Disconnect the liftgate control module connector C3.
2. Ignition ON, verify that battery voltage is present between the full open switch signal circuit and low reference circuit terminals in the liftgate control module.
    - If battery voltage is not present, replace the liftgate control module.
3. If the circuits test normal, replace the liftgate motor assembly.

Repair Procedures

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

- **Power Lift Gate Motor Replacement**
- **Control Module References** for liftgate control module replacement, programming and setup

DTC B153E

DTC Descriptors

DTC B153E 02

Liftgate Position Sensor Reference Voltage Circuit Short to Ground

DTC B153E 05

Liftgate Position Sensor Reference Voltage Circuit Short to Battery

DTC B153E 08

Liftgate Position Sensor Signal Circuit Signal Invalid

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

DTC B153E

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Position Sensor Reference Voltage	B153E 02	-	B153E 05	-
Position Sensor 1 Signal	B153E 08	B153E 08	B153E 08	-
Position Sensor 2 Signal	B153E 08	B153E 08	B153E 08	-
Low Reference	-	-	-	-

Circuit/System Description

The liftgate control module continuously monitors power liftgate operation and calculates its location and direction of travel using 2 hall effect sensors that are part of the gear motor assembly. The hall effect sensors are 5-volt 3-wire sensors and are supplied with a 5-volt power circuit, ground and battery positive signal circuits from the liftgate control module. The hall effect sensor signal circuits are referenced from battery voltage within the liftgate control module and pulsed low by the hall effect sensors.

Conditions for Running the DTC

System voltage to the liftgate control module must be 9-16 volts.

Conditions for Setting the DTC

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- The hall sensor supply circuit is shorted low during a power open or close cycle.
- The hall sensor supply circuit is shorted high while in an off state.
- During a power open or close cycle, pulses are detected from only one hall sensor.

Action Taken When the DTC Sets

- An open condition on the hall sensor signal circuit may cause the liftgate control module to react as if the liftgate has encountered an object in its travel and reverse direction.
- A shorted low condition will cause all power functions to be inoperative.

Conditions for Clearing the DTC

- The DTC will be current for as long as the fault is present.
- When the fault is no longer present the DTC will be a history status code.

Reference Information

Schematic Reference

Lift Gate Schematics

Connector End View Reference

Vehicle Access 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**

Circuit/System Testing

1. Disconnect the liftgate control module connector C3.
2. Ignition ON, verify that 4.5-5.5 volts are present between the 5-volt reference and low reference circuit terminals in the liftgate control module.
    - If 4.5-5.5 volts are not present, replace the liftgate control module.
3. Verify that battery voltage is present between the sensor 1 signal and low reference circuit terminals in

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the liftgate control module.
    - If battery voltage is not present, replace the liftgate control module.
4. Verify that battery voltage is present between the sensor 2 signal and low reference circuit terminals in the liftgate control module.
    - If battery voltage is not present, replace the liftgate control module.
5. If all the circuits test normal, replace the liftgate motor assembly.

Repair Procedures

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

- **Power Lift Gate Motor Replacement**
- **Control Module References** for liftgate control module replacement, programming and setup

DTC B153F

DTC Descriptors

DTC B153F 02

Liftgate Object Sensor Signal Circuit Short to Ground

DTC B153F 05

Liftgate Object Sensor Signal Circuit Short to Battery or Open

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

DTC B153F

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Tape Switch Signal	B153F 02	B153F 05	B153F 05	-
Low Reference	-	B153F 05	-	-

Circuit/System Description

The power liftgate system uses a secondary object detection method which consists of object sensors fixed to both sides of the liftgate near the seal area. The sensors consist of an internal fixed resistor and normally open switch contacts which when closed will bypass the resistor. The sensor signal circuit is supplied 5 volts through a resistor and monitored within the liftgate control module and during normal power liftgate operation the signal circuit should remain a fixed value. When an object presses one of the sensors the contacts close and the resistor is bypassed causing the signal circuit voltage at the module to go low.

Conditions for Running the DTC

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System voltage to the liftgate control module must be 9-16 volts.

Conditions for Setting the DTC

- The object sensor signal circuit voltage to the liftgate control module is out of range low for 10 minutes.
- The object sensor signal circuit voltage to the liftgate control module is out of range high for 10 minutes.

Action Taken When the DTC Sets

Power close function will be disabled.

Conditions for Clearing the DTC

- The DTC will be current for as long as the fault is present.
- When the fault is no longer present, the DTC will be a history status code.
- A history DTC will clear after 50 ignition cycles or with a scan tool using the clear DTCs function.

Reference Information

Schematic Reference

Lift Gate Schematics

Connector End View Reference

Vehicle Access 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**

Circuit/System Testing

1. Disconnect the liftgate module connector C1.
2. Ignition ON, using a DMM verify that no voltage is present at the object sensor signal circuit terminal 8 in the harness connector.
    - If voltage is present, repair the object sensor signal and low reference circuits for a short to voltage.

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3. Verify that continuity to ground is not present from the object sensor signal circuit terminal 8 in the harness connector.
    - If continuity to ground is present, repair the object sensor signal circuits for a short to ground.
4. Verify that the resistance between the signal circuit terminal 8 and the low reference circuit terminal 16 is approximately 20K ohms.
    - If the resistance is not approximately 20K ohms, test the object sensor signal and low reference circuits for an open/high resistance. If the circuits test normal, test and replace the faulted object sensor.
5. If the circuits test normal, replace the liftgate control module.

Component Testing

1. Ignition OFF, disconnect the harness connector at the right object sensor.
2. Test for 10K ohms of resistance through the sensor between the signal terminal and the low reference terminal.
    - If resistance is not within the specified range, replace the right object sensor.
3. Disconnect the harness connector at the left object sensor.
4. Test for approximately 10K ohms of resistance through the sensor between the signal terminal and the low reference terminal.
    - If resistance is not within the specified range, replace the left object sensor.

Repair Procedures

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

- **Liftgate Side Upper Sensor Replacement**
- **Control Module References** for liftgate control module replacement, programming and setup

DTC B2494

DTC Descriptor

DTC B2494 02

Liftgate Handle Switch Circuit Short to Ground

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

DTC B2494

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Handle/Close Switch				

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Signal	B2494 02	-	-	-
Low Reference	-	-	-	-

Circuit/System Description

The handle switch and close switch are parallel circuits and provide a single input to the liftgate control module. The handle/close switch signal circuit is supplied battery voltage through a resistor and monitored within the liftgate control module. The switches share a common low reference circuit from the liftgate control module and when the switch contacts close the signal circuit goes low and the liftgate control module determines the switch to be active.

Conditions for Running the DTC

System voltage to the liftgate control module must be 9-16 volts.

Conditions for Setting the DTC

The handle/close switch signal circuit is active for longer than 10 minutes.

Action Taken When the DTC Sets

Power open and close functions from the handle switch and the rear close switch will be disabled.

Conditions for Clearing the DTC

- The DTC will be current for as long as the fault is present.
- When the fault is no longer present, the DTC will be a history status code.
- A history DTC will clear after 50 ignition cycles or with a scan tool using the clear DTCs function.

Reference Information

Schematic Reference

Lift Gate Schematics

Connector End View Reference

Vehicle Access Connector End Views

Electrical Information Reference

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

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Scan Tool Reference

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

Circuit/System Testing

1. Install a scan tool and display the liftgate handle switch status parameter in the liftgate module data list.
2. Ignition ON, verify that the parameter displays inactive when the body harness to liftgate harness inline connector is disconnected.
    - If the parameter displays active, test the handle/close switch signal circuit in the body harness for a short to ground. If the circuit tests normal, replace the liftgate control module.
3. Using a DMM verify that continuity to ground is not present from the handle/close switch signal circuit terminal in the liftgate harness inline connector.
    - If continuity to ground is present, repair the handle/close switch signal circuit in the liftgate harness for a short to ground.
4. If the circuits test normal, replace the stuck switch.

Repair Procedures

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

- **Liftgate Release Switch Replacement**
- **Control Module References** for liftgate control module replacement, programming and setup

DTC B2495

DTC Descriptors

DTC B2495 01

Liftgate Latch Control Circuit Short to Battery

DTC B2495 02

Liftgate Latch Control Circuit Short to Ground

DTC B2495 04

Liftgate Latch Control Circuit Open

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

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DTC B2495

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Latch Open Control Circuit	B2495 02	B2495 04	B2495 01	-
Latch Close Control Circuit	B2495 02	B2495 04	B2495 01	-

Circuit/System Description

The latch motor is a bi-directional motor and latch or unlatch operation is the result of the direction of the motor rotation. The liftgate control module controls the latch motor through the control circuits by suppling power and ground in the appropriate polarity. The motor control circuits are monitored by the liftgate control module prior to activation for a high or low condition and during motor operation for an insufficient current flow condition.

Conditions for Running the DTC

- System voltage to the liftgate control module must be 9-16 volts.
- Power open or close function is initiated.

Conditions for Setting the DTC

- The liftgate control module detects a high or low condition on one of the control circuits prior to being activated.
- During latch or unlatch operation the liftgate control module detects insufficient current flow on the control circuits.

Action Taken When the DTC Sets

Power latch operation will be suspended.

Conditions for Clearing the DTC

- The DTC will be current for as long as the fault is present.
- When the fault is no longer present the DTC will be a history status code.

Reference Information

Schematic Reference

Lift Gate Schematics

Connector End View Reference

Vehicle Access Connector End Views

Electrical Information Reference

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

Scan Tool Reference

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

Circuit/System Testing

1. Disconnect the liftgate control module connector C2.
2. Using a DMM verify that 1-3 ohms of resistance is present between the liftgate latch motor control circuit terminals in the harness connector.
    - If excessive resistance is present between the motor control circuits, replace the liftgate latch assembly.
3. Using a DMM verify that no continuity is present between either of the motor control circuit terminals in the harness connector and ground.
    - If continuity is present from a motor control circuit and ground, replace the liftgate latch assembly.
4. If the liftgate latch motor control circuits test normal, replace the liftgate control module.

Repair Procedures

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

- **Control Module References** for liftgate control module replacement, programming and setup

DTC B3265

DTC Descriptor

DTC B3265 00

Liftglass Release Output Circuit

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

DTC B3265

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Liftglass Release Switch Signal	1	1	1	-

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Liftglass Latch Release Signal	B3265 00	1	1	-
Liftglass Release Actuator Control	1	1	1	-
Liftglass Release Switch Ground	-	1	-	-
Liftglass Release Actuator Ground	-	1	-	-
1. Liftglass Latch Release Inoperative				

Circuit/System Description

The liftglass release switch is an input to the body control module (BCM). The BCM supplies battery voltage to the signal circuit and when the release switch is activated the signal circuit voltage goes low. The BCM controls the liftglass release actuator through the rear wiper motor control module. When the release switch signal is activated the BCM applies battery voltage to the liftglass latch release signal circuit. The rear wiper motor control module supplies voltage to the release actuator through the liftglass release actuator control circuit.

Conditions for Running the DTC

- System voltage must be 9-18 volts.
- The liftglass release operation is attempted.

Conditions for Setting the DTC

The liftglass latch release signal circuit is shorted to ground.

Action Taken When the DTC Sets

The BCM will disable the liftglass latch release signal circuit output until the next ignition cycle.

Conditions for Clearing the DTC

- The DTC will be current only while the liftglass release request is active.
- The history DTC will be cleared after 50 fault- free ignition cycles.

Reference Information

Schematic Reference

Lift Gate Schematics

Connector End View Reference

Vehicle Access Connector End Views

Electrical Information Reference

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

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

Scan Tool Reference

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

Circuit/System Testing

1. Disconnect the BCM connector C7.
2. Verify that a test lamp does not illuminate when connected from battery voltage to the liftglass latch release signal circuit terminal in the harness connector.
    - If the test lamp illuminates, test the signal circuit for a short to ground. If the circuit tests normal, replace the rear wiper motor module.
3. If the liftglass latch release signal circuit tests normal, replace the BCM.

Repair Procedures

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

- **Wiper Motor Replacement - Rear**
- **Control Module References** for BCM replacement and setup procedures

DTC B396A

DTC Descriptors

DTC B396A 01

Liftgate Motor Control Circuit Short to Battery

DTC B396A 02

Liftgate Motor Control Circuit Short to Ground

DTC B396A 04

Liftgate Motor Control Circuit Open

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

DTC B396A

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Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Motor Open Control Circuit	B396A 02	B396A 04	B396A 01	-
Motor Close Control Circuit	B396A 02	B396A 04	B396A 01	-

Circuit/System Description

The liftgate motor is a bi-directional motor and open or close operation is the result of the direction of the motor rotation. The liftgate control module controls the liftgate motor through the control circuits by suppling power and ground in the appropriate polarity. The motor control circuits are monitored by the liftgate control module prior to activation for a high or low condition and during motor operation for any irregular current flow conditions.

Conditions for Running the DTC

- System voltage to the liftgate control module must be 9-16 volts.
- Power open or close function is initiated.

Conditions for Setting the DTC

- The liftgate control module detects a high or low condition on one of the control circuits prior to being activated.
- During power open or close operation, the liftgate control module detects current flow on one of the control circuits to be greater or less than the learned limits.

Action Taken When the DTC Sets

Power liftgate operation will be suspended.

Conditions for Clearing the DTC

- The DTC will be current for as long as the fault is present.
- When the fault is no longer present, the DTC will be a history status code.

Diagnostic Aids

In some circumstances high or low control circuit faults may cause the liftgate control module to react as if the liftgate has encountered an object in its travel and reverse direction.

Reference Information

Schematic Reference

Lift Gate Schematics

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Connector End View Reference

Vehicle Access 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**

Circuit/System Testing

1. Disconnect the liftgate control module connector C3.
2. Using a DMM, verify that approximately 1 ohm of resistance is present between the liftgate motor control circuit terminals in the harness connector.
    - If excessive resistance is present between the motor control circuits, replace the liftgate motor assembly.
3. Using a DMM, verify that no continuity is present between either of the motor control circuit terminals in the harness connector and ground.
    - If continuity is present from a motor control circuit and ground, replace the liftgate motor assembly.
4. If the liftgate motor control circuits test normal, replace the liftgate control module.

Repair Procedures

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

- **Power Lift Gate Motor Replacement**
- **Control Module References** for liftgate control module replacement, programming and setup

DTC B396B

DTC Descriptors

DTC B396B 01

Liftgate Motor Clutch Control Circuit Short to Battery

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DTC B396B 02

Liftgate Motor Clutch Control Circuit Short to Ground

DTC B396B 04

Liftgate Motor Clutch Control Circuit Open

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

DTC B396B

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Clutch Control Circuit	B396B 02	B396B 04	B396B 01	-
Clutch Ground	-	B396B 04	-	-

Circuit/System Description

The liftgate motor clutch engages or disengages the liftgate motor to the liftgate drive gear and is the component that determines power or manual operation. When the liftgate control module supplies power to the clutch control circuit, the clutch coil is energized and the liftgate motor is engaged to the liftgate drive gear so that power operation can occur. The liftgate control module monitors the clutch control circuit at all times for a short high while in an inactive state or a short low or insufficient current flow while in an active state.

Conditions for Running the DTC

System voltage to the liftgate control module must be 9-16 volts.

Conditions for Setting the DTC

- The liftgate control module detects a high condition on the clutch control circuit while in an inactive state.
- The liftgate control module detects a low condition on the clutch control circuit while in an active state.
- The liftgate control module detects insufficient current flow on the clutch control circuit while in an active state.

Action Taken When the DTC Sets

- When an open or short low condition exists, power liftgate operation will be inoperative.
- When a short high condition exists, the liftgate can not be opened or closed manually.

Conditions for Clearing the DTC

- The DTC will be current for as long as the fault is present.

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- When the fault is no longer present, the DTC will be a history status code.

Reference Information

Schematic Reference

Liftgate Schematics

Connector End View Reference

Vehicle Access 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**

Circuit/System Testing

1. Disconnect the liftgate control module connector C3.
2. Using a DMM, verify that approximately 10 ohms of resistance is present between the liftgate clutch control circuit terminals in the harness connector.
    - If excessive resistance is present between the clutch control circuits, replace the liftgate motor assembly.
3. Using a DMM, verify that no continuity is present between either of the clutch control circuit terminals in the harness connector and ground.
    - If continuity is present from a clutch control circuit and ground, replace the liftgate motor assembly.
4. If the liftgate motor control circuits test normal, replace the liftgate control module.

Repair Procedures

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

- **Power Lift Gate Motor Replacement**
- **Control Module References** for liftgate control module replacement, programming and setup

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DTC B396F

DTC Descriptors

DTC B396F 06

Liftglass Ajar Output Signal Circuit Short to Ground or Open

DTC B396F 0B

Liftglass Ajar Output Signal Circuit Current Above Threshold

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

DTC B396F

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Rear Wiper Inhibit	B396F 06	B396F 06	B396F 0B	-

Circuit/System Description

The liftgate control module provides an output signal to the rear wiper motor for the purpose of disabling wiper motor operation whenever the liftglass or liftgate are open. The liftgate control module receives inputs from the liftglass ajar switch and the sector, ratchet and pawl switches in the latch assembly to determine when an ajar condition exists. The rear wiper inhibit circuit is supplied 12 volts through a resistor and monitored within the wiper motor module. When an ajar condition exists, the liftgate control module drives the rear wiper inhibit circuit low which the wiper motor module determines is an active inhibit signal.

Conditions for Running the DTC

System voltage to the liftgate control module must be 9-16 volts.

Conditions for Setting the DTC

- The rear wiper inhibit signal is shorted to ground or open.
- The rear wiper inhibit signal is shorted to voltage.

Action Taken When the DTC Sets

- When a short to ground condition is present, the rear wiper motor will operate while the liftglass or liftgate are open.
- When an open or short to voltage condition is present, the rear wiper motor will not operate.

Conditions for Clearing the DTC

- The DTC will be current for as long as the fault is present.

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- When the fault is no longer present, the DTC will be a history status code.

Reference Information

Schematic Reference

Lift Gate Schematics

Connector End View Reference

Vehicle Access 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**

Circuit/System Testing

1. Disconnect the liftgate control module connector C1.
2. Ignition ON, using a DMM, verify that battery voltage is present at the rear wiper inhibit circuit terminal in the harness connector.
    - If battery voltage is not present, test the rear wiper inhibit circuit for an open or short to ground. If the circuit tests normal, replace the rear wiper motor module.
3. Disconnect the rear wiper motor connector.
4. Ignition ON, using a DMM, verify that voltage is not present at the rear wiper inhibit circuit terminal in the liftgate control module harness connector C1.
    - If voltage is present, repair the rear wiper inhibit circuit for a short to voltage.
5. If the circuit tests normal, replace the liftgate control module.

Repair Procedures

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

- **Wiper Motor Replacement - Rear**
- **Control Module References** for liftgate control module replacement, programming and setup

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SYMPTOMS - VEHICLE ACCESS

IMPORTANT: The following steps must be completed before using the symptom tables.

1. Perform the **Diagnostic System Check - Vehicle** before using the Symptom Tables in order to verify that all of the following are true:
   - There are no DTCs set.
   - The control modules can communicate via the serial data link.
2. Review the system operation in order to familiarize yourself with the system functions. Refer to the following system descriptions:
   - **Power Door Locks Description and Operation**
   - **Rear Hatch/Gate Description and Operation**

Visual/Physical Inspection

- Inspect for aftermarket devices which could affect the operation of the 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:

- **Hatch Release Inoperative**
- **Power Door Locks Inoperative (Front)**
- **Power Lift Gate Inoperative**

HATCH RELEASE INOPERATIVE

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

Hatch Release Inoperative

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Liftgate Release Switch Signal	1	1	1	-
Liftgate Latch Release Relay Supply	1	1	-	-

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Liftgate Latch Release Relay Control	1	1	1	-
Liftgate Release Actuator Control	1	1	1	-
Liftgate Release Switch Ground	-	1	-	-
Liftgate Release Actuator Ground	-	1	-	-
1. Liftgate Latch Release Inoperative				

Circuit/System Description

The liftgate release switch is an input to the body control module (BCM). The BCM supplies battery voltage to the signal circuit and when the release switch is activated the signal circuit voltage goes low. The BCM controls the liftgate release actuator through the liftgate latch release relay. When the release switch signal is activated, the BCM enables the liftgate latch release relay by applying battery voltage to the liftgate latch release relay supply circuit and the relay is energized when the BCM grounds the liftgate latch release relay control circuit. When the relay is energized battery voltage is supplied to the liftgate release actuator through the liftgate release actuator control circuit.

Reference Information

Schematic Reference

Release Systems Schematics

Connector End View Reference

Vehicle Access 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**

Circuit/System Verification

1. Install a scan tool and display Liftgate Release Switch parameter in the BCM Inputs data list.
2. Ignition ON, the parameter should be active only when the release switch is activated.
    - If the scan tool parameter does not display the actual switch state perform the Liftgate Release Switch Circuit Test.

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3. Attempt to activate the Liftgate Release Actuator form the scan tool BCM output controls.
    - If the liftgate release actuator cannot be activated using the scan tool output controls function, perform the Liftgate Release Output Circuit Test.
    - If the release switch input and the actuator output both function properly, another BCM input may be preventing the liftgate release action from being performed.

Circuit/System Testing

Liftgate Release Switch Circuit Test

1. Disconnect the BCM connector C6.
2. Connect a test lamp from battery voltage to the liftgate release switch circuit terminal in the harness connector.
3. Verify the test lamp is not illuminated while the release switch is inactive.
    - If the test lamp remains illuminated, the signal circuit is shorted to ground or the switch contacts are shorted closed.
4. Verify the test lamp is illuminated, while the release switch is active.
    - If the test lamp does not illuminate, an open is present in the signal circuit, switch or ground.
5. If the release switch circuits test normal, replace the BCM.

Liftgate Release Output Circuit Test

1. Remove the liftgate 15A fuse in the underhood fuse block and connect a fused jumper wire to actuator output fuse terminal in the fuse block.
2. Verify that the liftgate latch actuator activates when the other end of the jumper wire is momentarily touched to battery voltage.
    - If the actuator does not activate, test the control and ground circuits for an open or short to ground. If the circuits test normal, replace the liftgate latch actuator.
3. Disconnect the underhood fuse block connector C5.
4. Connect a test lamp from the endgate latch relay supply voltage circuit terminal to the endgate latch relay coil control circuit terminal in the harness connector.
5. Ignition ON, verify that the test lamp illuminates when the liftgate latch release function is activated.
    - If the test lamp does not illuminate, test the relay supply voltage and relay coil control circuits for an open or short to ground. If the circuits test normal, replace the BCM.
6. If the liftgate release output circuits test normal, replace the underhood fuse block.

Repair Procedures

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

POWER DOOR LOCKS INOPERATIVE (FRONT)

Diagnostic Fault Information

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Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

Circuit/System Description

The driver and passenger door lock and side window switches are integrated control module switch assemblies. The DDS and PDS door lock switches are normally open, 2 position rocker type switches, with detents for lock and unlock. The DDS and PDS are directly connected to the respective door lock actuator through the door lock actuator control circuits. When a door lock or unlock function is activated from the DDS or PDS a GMLAN lock or unlock command is sent to the other door switch and body control module.

Reference Information

Schematic Reference

Door Lock Schematics

Connector End View Reference

Vehicle Access 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**
- **Scan Tool Data Definitions**

Circuit/System Testing

Front Power Door Locks Inoperative

1. Install a scan tool and display the Driver Door Switch Outputs data list.
2. Verify that the door lock actuator command parameter displays Off, Lock, and Unlock while the driver door lock switch is operated from lock to unlock.
    - If the lock actuator parameter is incorrect, replace the DDS.
3. Display the Passenger Door Switch Outputs data list.
4. Verify that the door lock actuator command parameter displays Off, Lock, and Unlock while the passenger door lock switch is operated from lock to unlock.
    - If the lock actuator parameter is incorrect, replace the PDS.
5. Disconnect the affected door latch connector, and connect a test lamp across the lock actuator control

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circuit terminals.

6. Verify that the test lamp illuminates while the lock switch is operated to lock and unlock.
    - If the test lamp does not illuminate, test the lock actuator control circuits for an open/high resistance or a short to ground. If the circuit tests normal replace the door lock.
7. If the circuits test normal replace the affected door switch.

Repair Procedures

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

- **Front Side Door Lock Replacement**
- **Control Module References** for DDS or PDS replacement, programming, and setup.

POWER LIFT GATE INOPERATIVE

Diagnostic Fault Information

Perform the **Diagnostic System Check - Vehicle** prior to using this diagnostic procedure.

Circuit/System Description

The power liftgate module (PLGM) controls operation of the liftgate latch motor and the liftgate actuator assembly. Under normal conditions the power latch can only be unlatched under power from the PLGM through an input from the liftgate handle switch, the overhead console switch, or the remote keyless entry (RKE) transmitter, but the liftgate may be manually closed to the primary latched position without the PLGM performing the power latch function. The ON/OFF switch in the overhead console will enable or disable the power open/close operation of the actuator assembly and have no effect on power latch operation. The liftgate actuator assembly consists of the actuator drive motor with 2 internal hall effect sensors. The drive motor is mated to a worm type gear off the actuator clutch and when the clutch is engaged the motor rotation is transferred to the clutch gear, intermediate gear, and actuator arm gear. The full open switch is a limit switch mounted on the liftgate actuator assembly along side the actuator arm gear, and will make contact with the cam on the actuator arm gear when the liftgate is near the full open position. The PLGM continuously monitors the liftgate location and direction of travel using the 2 hall effect sensors in the drive motor. The sensor counts are used to determine when the liftgate has reached the open and closed points of travel where the actuator clutch should be disengaged. These positions may vary slightly and must be learned when most liftgate components are serviced.

Diagnostic Aids

Power liftgate function will only be allowed if certain operating criteria are met. Any of the following may cause the power liftgate not to function:

- After a power loss of the low current battery supply until the ignition is cycled
- Vehicle is not in park.
- Engine cranking is present.
- Ambient temperature at the PLGM must be within -17 to +80°C (+1 to +176°F).

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- Liftgate motor overcurrent is detected.
- System voltage is out of range.
- A DTC is set that disables power liftgate functionality.
- The liftgate is locked when attempting to open from exterior handle.
- The theft deterrent system is enabled.

The liftgate also receives input from 2 pressure sensing object detection sensors. If either of these sensors indicate an object may be pinched as the liftgate is brought to the closed position, the liftgate will reverse direction and power close operation will be suspended until the pressure against the sensor is released.

Reference Information

Schematic Reference

Lift Gate Schematics

Connector End View Reference

Vehicle Access 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**
- **Scan Tool Data Definitions**
- **Scan Tool Output Controls**

Circuit/System Verification

1. With the liftgate fully closed and the overhead console power liftgate switch in the OFF position, press the RKE transmitter unlock button 2 times to unlock all doors and deactivate the theft deterrent system.
2. Verify that the liftgate will unlatch when operated from the liftgate handle switch.
    - If the liftgate will not unlatch validate the Liftgate Handle Sw. Status parameter to determine if a switch input or a latch output condition exists.
3. Manually open the liftgate to the full open position and verify that the liftgate opens smoothly without excessive resistance.
    - If excessive resistance or binding occurs in the liftgate travel, disconnect the actuator rod to

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determine if the actuator assembly or liftgate assembly is the cause.

4. Verify that the liftgate will remain at or near the full open position for several minutes.
   - If the liftgate will not remain open replace the liftgate struts as necessary.
5. Manually close the liftgate to the primary latched position and verify that the latch is properly aligned and will power cinch to the secondary latched position.
   - If the latch does not power cinch to the secondary latched position perform the Power Latch Circuit Test.
6. Verify that the liftgate will power open when the overhead console power liftgate switch is pressed to the ON and OPEN positions.
   - If the liftgate does not unlatch perform the Overhead Console Switch Circuit Test.
   - If the liftgate unlatches but does not open validate the LGM Front Control Switch parameter to determine if a switch input or an actuator output condition exists.
7. Verify that the liftgate will power close from the switch on the bottom of the liftgate.
   - If the liftgate does not power close validate the Liftgate Handle Sw. Status parameter to determine if a switch input or an actuator output condition exists.

Circuit/System Testing

Liftgate Handle Switch Circuit Test

1. Disconnect the harness connector at the liftgate handle switch.
2. Test for less than 1 ohm of resistance between the ground circuit terminal B and ground.
   - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Verify the scan tool Liftgate Handle Sw. Status parameter is Inactive.
   - If not the specified value, test the signal circuit terminal A for a short to ground. If the circuit tests normal, replace the liftgate control module.
4. Install a 3A fused jumper wire between the signal circuit terminal A and ground. Verify the scan tool Liftgate Handle Sw. Status parameter is Active.
   - If not the specified value, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the liftgate control module.
5. If all circuits test normal, test or replace the liftgate handle switch.

Liftgate Close Switch Circuit Test

1. Disconnect the harness connector at the liftgate close switch.
2. Test for less than 1 ohm of resistance between the ground circuit terminal A and ground.
   - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Verify the scan tool Liftgate Handle Sw. Status parameter is Inactive.
   - If not the specified value, test the signal circuit terminal D for a short to ground. If the circuit tests normal, replace the liftgate control module.
4. Install a 3A fused jumper wire between the signal circuit terminal D and ground. Verify the scan tool Liftgate Handle Sw. Status parameter is Active.

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- If not the specified value, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the liftgate control module.

5. If all circuits test normal, test or replace the liftgate close switch.

Overhead Console Switch Circuit Test

1. Disconnect the harness connector at the overhead console switch.
2. Test for less than 1 ohm of resistance between the ground circuit terminal C and ground.
   - If greater than the specified range, test the ground circuit for an open/high resistance.
3. Verify the scan tool LGM Disable Switch parameter is Inactive.
   - If not the specified value, test the signal circuit terminal A for a short to ground. If the circuit tests normal, replace the liftgate control module.
4. Install a 3A fused jumper wire between the signal circuit terminal A and ground. Verify the scan tool LGM Disable Switch parameter is Active.
   - If not the specified value, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the liftgate control module.
5. Verify the scan tool Front Control Switch parameter is Inactive.
   - If not the specified value, test the signal circuit terminal D for a short to ground. If the circuit tests normal, replace the liftgate control module.
6. Install a 3A fused jumper wire between the signal circuit terminal D and ground. Verify the scan tool Front Control Switch parameter is Active.
   - If not the specified value, test the signal circuit for a short to voltage or an open/high resistance. If the circuit tests normal, replace the liftgate control module.
7. If all circuits test normal, test or replace the overhead console switch.

Repair Procedures

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

- **Lift Gate Calibration Procedure**
- **Opening the Liftgate When There Is an Electrical Failure**
- **Handle Replacement - Liftgate**
- **Power Lift Gate Motor Replacement**
- **Liftgate Side Upper Sensor Replacement**
- **Liftgate Actuator Switch Replacement**
- **Liftgate Release Switch Replacement**
- **Liftgate Close Actuator Drive Unit Replacement**
- **Control Module References** for liftgate control module replacement, programming and setup

REPAIR INSTRUCTIONS

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BINDING LOCK CYLINDERS

In many cases, applying the proper lubrication can correct the following conditions:

- Binding or sticking door lock cylinders
- Difficulty in inserting and removing the keys

For lubricating the above components, use lubricant GM P/N 12346241 or equivalent.

Do not use penetrating lubricants such as GM P/N 1052949 or WD-40®. Penetrating lubricants wash out the original lubrication. Penetrating lubricants eventually evaporate, leaving little or no lubricating material. However, when using penetrating lubricants in order to thaw or in order to loosen the lock cylinder components, refer to steps 2-4 in the procedure below for the proper methods of lubrication.

Repair lock cylinders frozen in cold weather by using the following procedure:

1. While carefully avoiding damage to the painted surfaces, apply heat to the cylinder with a heat gun.
2. Using a paper clip or a similar item, hold the door shutter open.

   Force air into the cylinders using compressed air through a blow gun attachment.

3. While holding the shutter door open, inject small amounts of a recommended lubricant into the cylinder.
4. Work the key into the cylinder repeatedly.

   Wipe away any excess lubrication from the key.

DOOR LOCK CYLINDER REPLACEMENT

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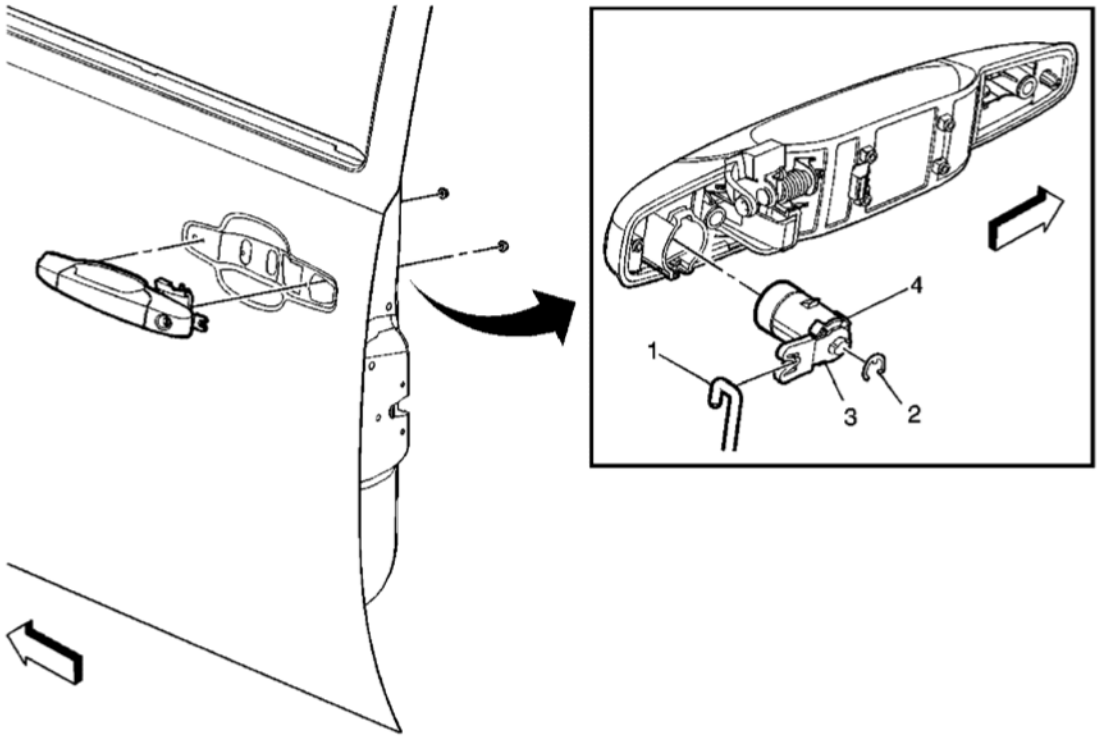


Fig. 44: View Of Front Side Door Lock Cylinder & Components
Courtesy of GENERAL MOTORS CORP.

Door Lock Cylinder Replacement

Callout	Component Name
Preliminary Procedures 1. Remove the door trim panel. Refer to **Front Side Door Trim Panel Replacement** . 2. Remove the water deflector. Refer to **Front Side Door Water Deflector Replacement** . 3. Remove the outside door handle. Refer to **Door Handle Replacement - Front Outside**.	
1	Front Side Door Lock Rod
2	Front Side Door Lock Cylinder Pawl Retainer Clip **Tip:** Remove the clip that attaches the cylinder to the door handle.
3	Front Side Door Lock Cylinder Pawl
4	Front Side Door Lock Cylinder

LIFT GATE CALIBRATION PROCEDURE

IMPORTANT: To ensure proper calibration of the liftgate, the liftgate assembly must be at room temperature during calibration.

Conditions

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Use this procedure after replacing, repairing, or disassembling any portion of the power liftgate assembly.

Calibrate Liftgate

1. Connect the Tech 2 to the vehicle.
2. Select Special Functions in the Liftgate Module menu.
3. Select LGM Open/Close Test.
4. Follow the on screen instructions.

OPENING THE LIFTGATE WHEN THERE IS AN ELECTRICAL FAILURE

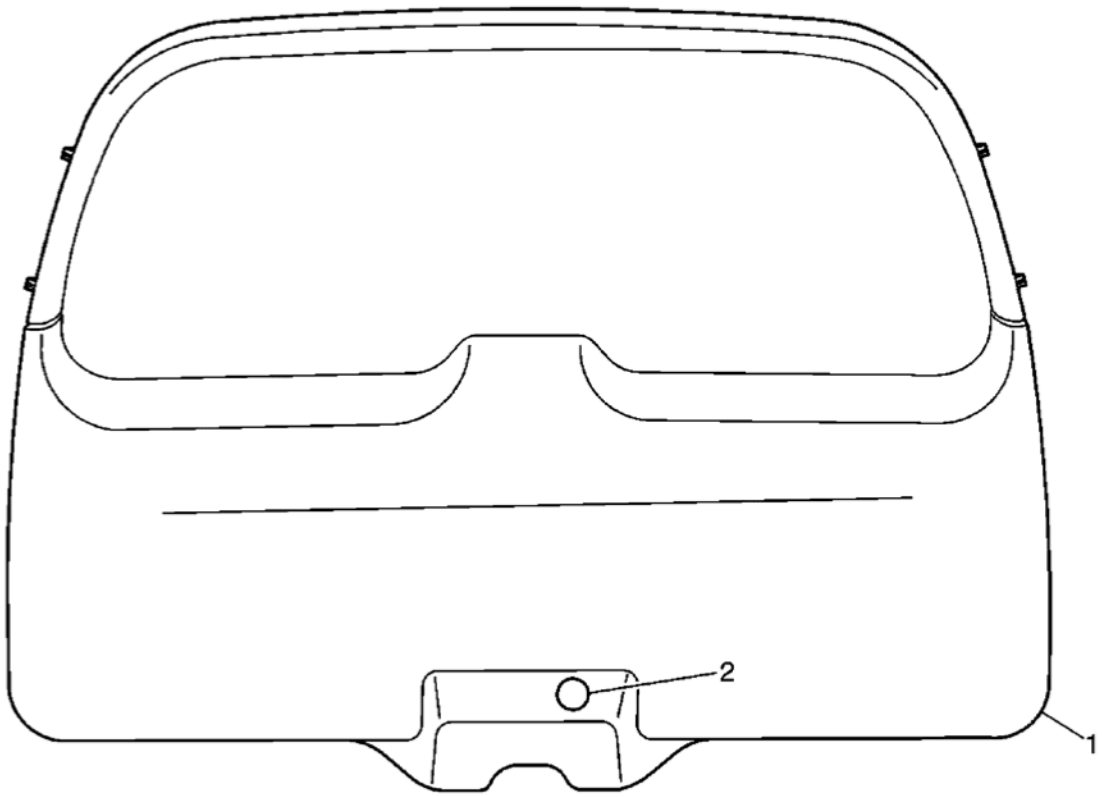


Fig. 45: View Of Liftgate & Trim Panel Plug
Courtesy of GENERAL MOTORS CORP.

Opening the Liftgate When There Is an Electrical Failure

Callout	Component Name
1	Liftgate
	Liftgate Trim Panel Plug **Tip:** 1. Locate dimple on trim panel.

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2	2. Use a 1 1/16 inch hole saw to drill a hole through the trim panel. 3. Using a flat-bladed tool, push down on the black bellcrank lever, through the access hole, to unlock the liftgate. 4. Push open the liftgate from the inside. 5. Install a new hole plug.

HANDLE REPLACEMENT - ENDGATE

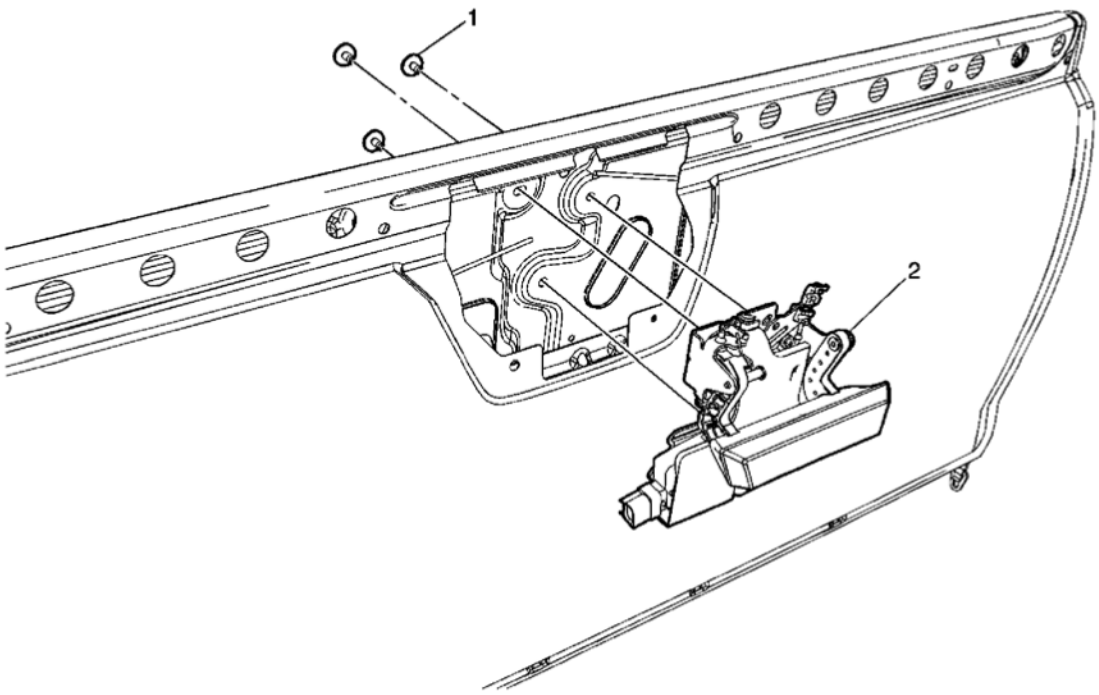


Fig. 46: Endgate Handle Assembly & Bolts
Courtesy of GENERAL MOTORS CORP.

Handle Replacement - Endgate

Callout	Component Name
Preliminary Procedure 1. Remove the endgate trim panel. Refer to **Trim Panel Replacement - Endgate** . 2. Remove the endgate spoiler. Refer to **Spoiler Replacement - Rear (Avalanche/Escalade)** .	
1	Endgate Handle Bolts (Qty: 3) **NOTE:** **Refer to Fastener Notice .**

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	Tighten: 25 N.m (18 lb ft)
2	Endgate Handle Assembly **Tip:** Disconnect the actuator rods.

DOOR HANDLE REPLACEMENT - FRONT INSIDE

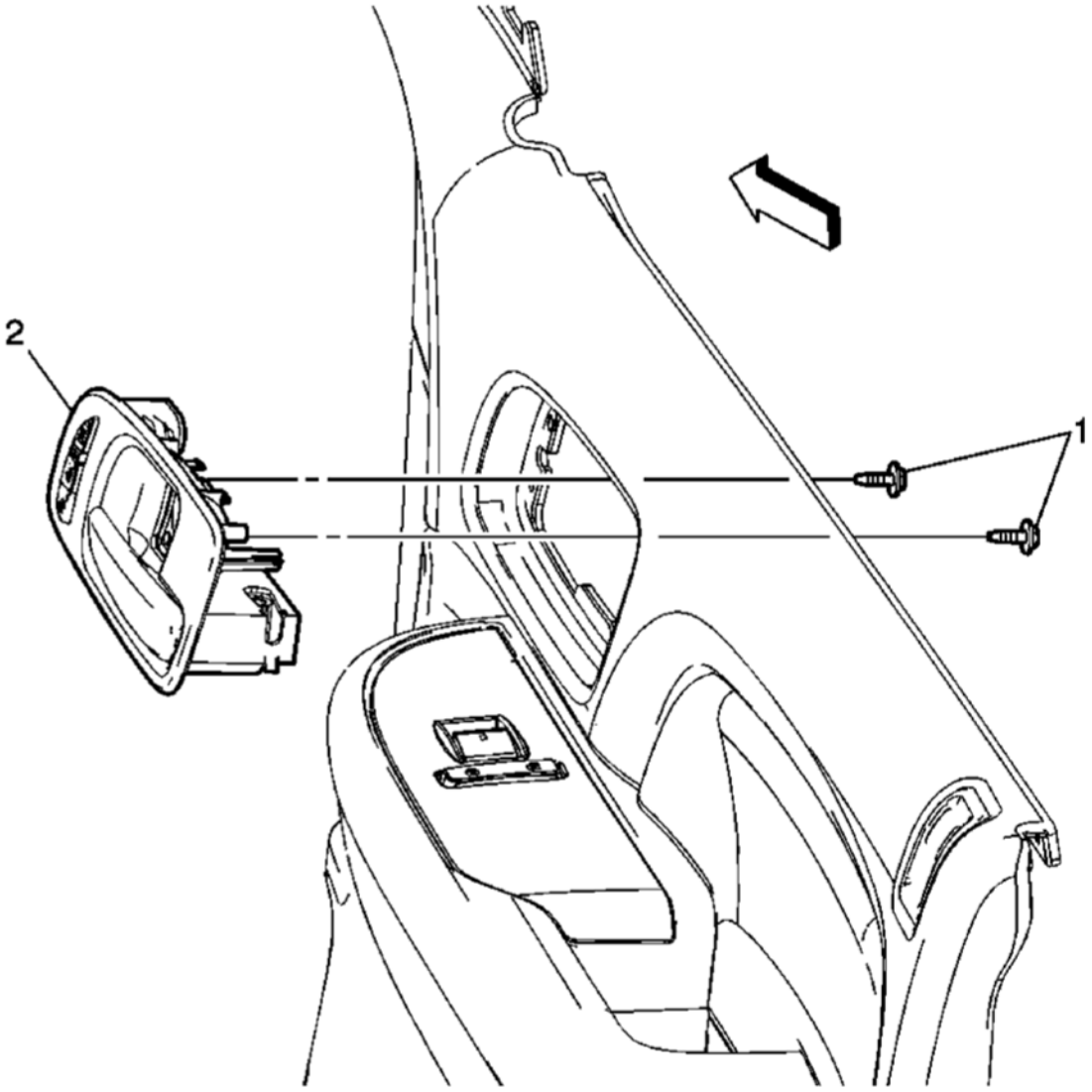


Fig. 47: View Of Front Side Door Inside Handle Assembly & Bolts
Courtesy of GENERAL MOTORS CORP.

Door Handle Replacement - Front Inside

Callout	Component Name

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Preliminary Procedures

1. Remove door upper trim panel. Refer to **Trim Panel Replacement - Upper Extension (Escalade)** or **Trim Panel Replacement - Upper Extension (Tahoe/Yukon)** .
2. Remove door window control switch. Refer to **Door Lock and Side Window Switch Replacement - Driver** and **Door Lock and Side Window Switch Replacement - Passenger**.
3. Remove door trim panel. Refer to **Front Side Door Trim Panel Replacement** .

1	Front Side Door Inside Handle Bolt (Qty: 2) **NOTE:** **Refer to Fastener Notice .** **Tighten:** 2 N.m (18 lb in)
2	Front Side Door Inside Handle Assembly **Tip:** 1. Disconnect the electrical connector. 2. If replacing the door handle, transfer heated seat switch to new handle. Refer to **Heated Seat Switch Replacement - Front (w/o KB6)** .

DOOR HANDLE REPLACEMENT - FRONT OUTSIDE

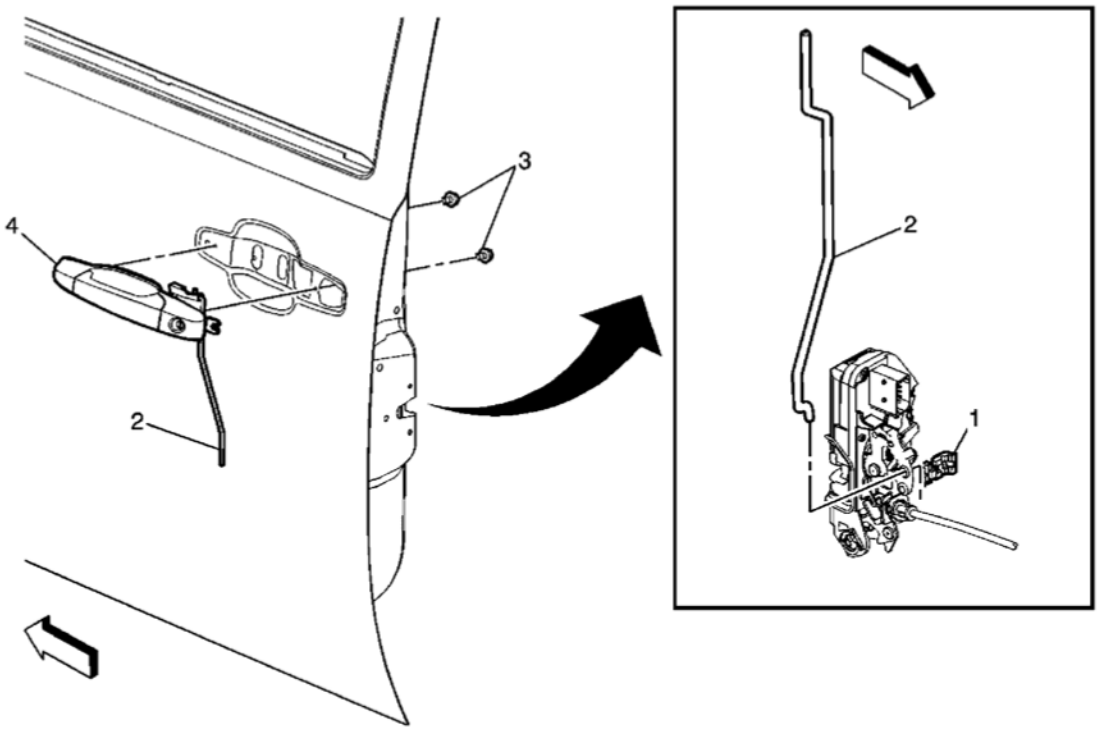


Fig. 48: View Of Front Side Door Outside Handle Assembly & Components

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Courtesy of GENERAL MOTORS CORP.

Door Handle Replacement - Front Outside

Callout	Component Name
Preliminary Procedures 1. Remove the front door trim panel. Refer to **Front Side Door Trim Panel Replacement** . 2. Remove the water deflector. Refer to **Front Side Door Water Deflector Replacement** .	
1	Front Side Door Lock Rod Retaining Clip **Tip:** 1. Remove the rubber grommet to access the bolts. 2. Plug in the window switch and raise the window. 3. Release the handle lock rod from the door lock. 4. Release the door handle lock cylinder rod.
2	Front Side Door Outside Handle Lock Rod
3	Front Side Door Outside Handle Bolts (Qty: 2) **NOTE:** **Refer to Fastener Notice .** **Tighten:** 7 N.m (62 lb in)
4	Front Side Door Outside Handle **Tip:** Transfer the handle lock rod to the new handle.

HANDLE REPLACEMENT - LIFTGATE

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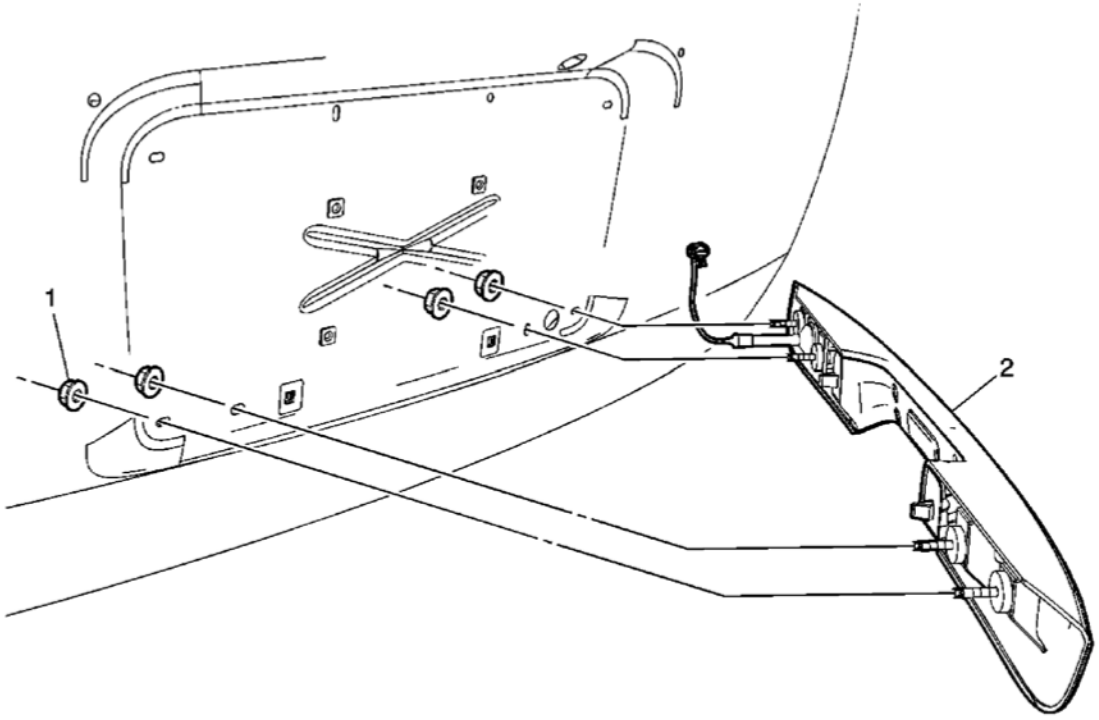


Fig. 49: View Of Liftgate Handle Assembly & Nuts
Courtesy of GENERAL MOTORS CORP.

Handle Replacement - Liftgate

Callout	Component Name
Preliminary Procedure: Remove the liftgate trim panel. Refer to **Liftgate Trim Panel Replacement** .	
1	Liftgate Handle Nuts (Qty: 4) **NOTE:** **Refer to Fastener Notice .** **Tighten:** 9 N.m (80 lb in)
2	Liftgate Handle Assembly **Tip:** Disconnect the electrical connector.

DOOR HANDLE REPLACEMENT - REAR INSIDE

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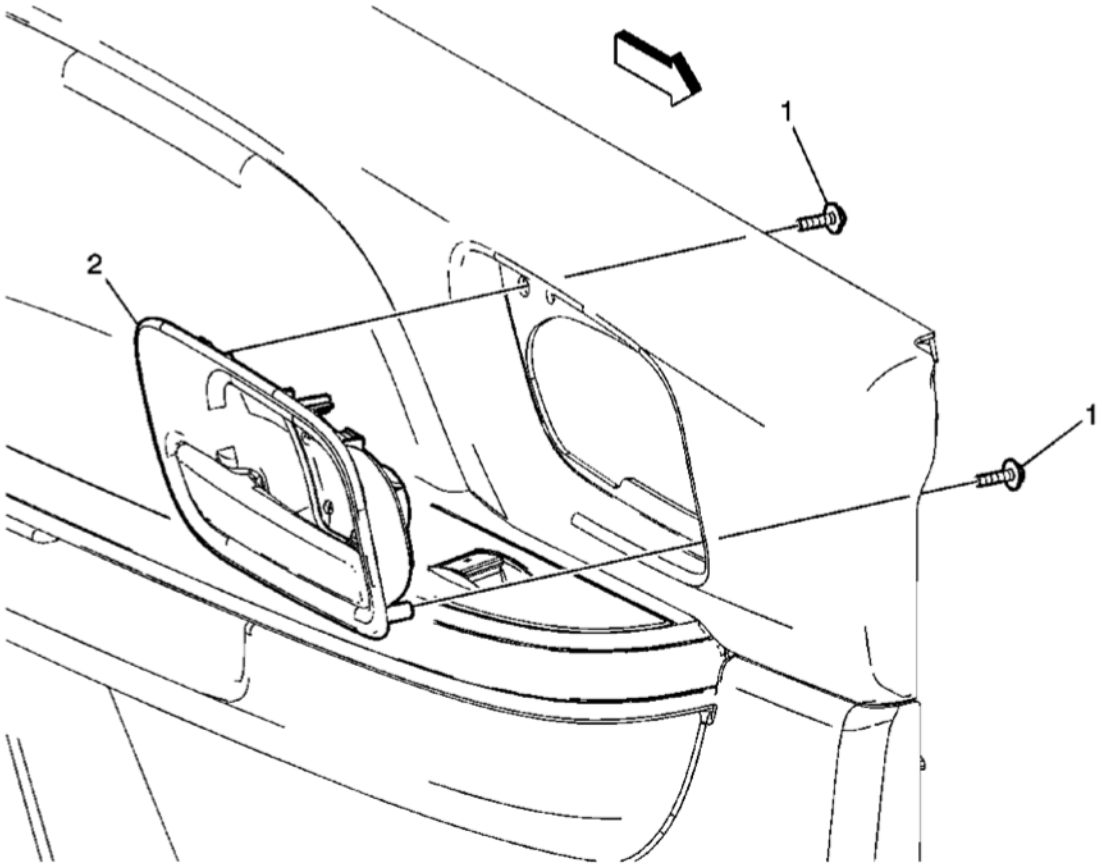


Fig. 50: View Of Rear Side Inside Door Handle Assembly & Bolts
Courtesy of GENERAL MOTORS CORP.

Door Handle Replacement - Rear Inside

Callout	Component Name
Preliminary Procedures 1. Remove door window control switch. Refer to **Rear Side Door Window Switch Replacement** . 2. Remove door trim panel. Refer to **Rear Side Door Trim Panel Replacement (Suburban/Yukon XL/Escalade ESV)** or **Rear Side Door Trim Panel Replacement (Tahoe/Yukon/Escalade)** .	
1	Rear Side Door Inside Handle Bolt (Qty: 2) **NOTE:** **Refer to Fastener Notice .** **Tighten:** 2 N.m (18 lb in)
2	Rear Side Door Inside Handle Assembly

DOOR HANDLE REPLACEMENT - REAR OUTSIDE

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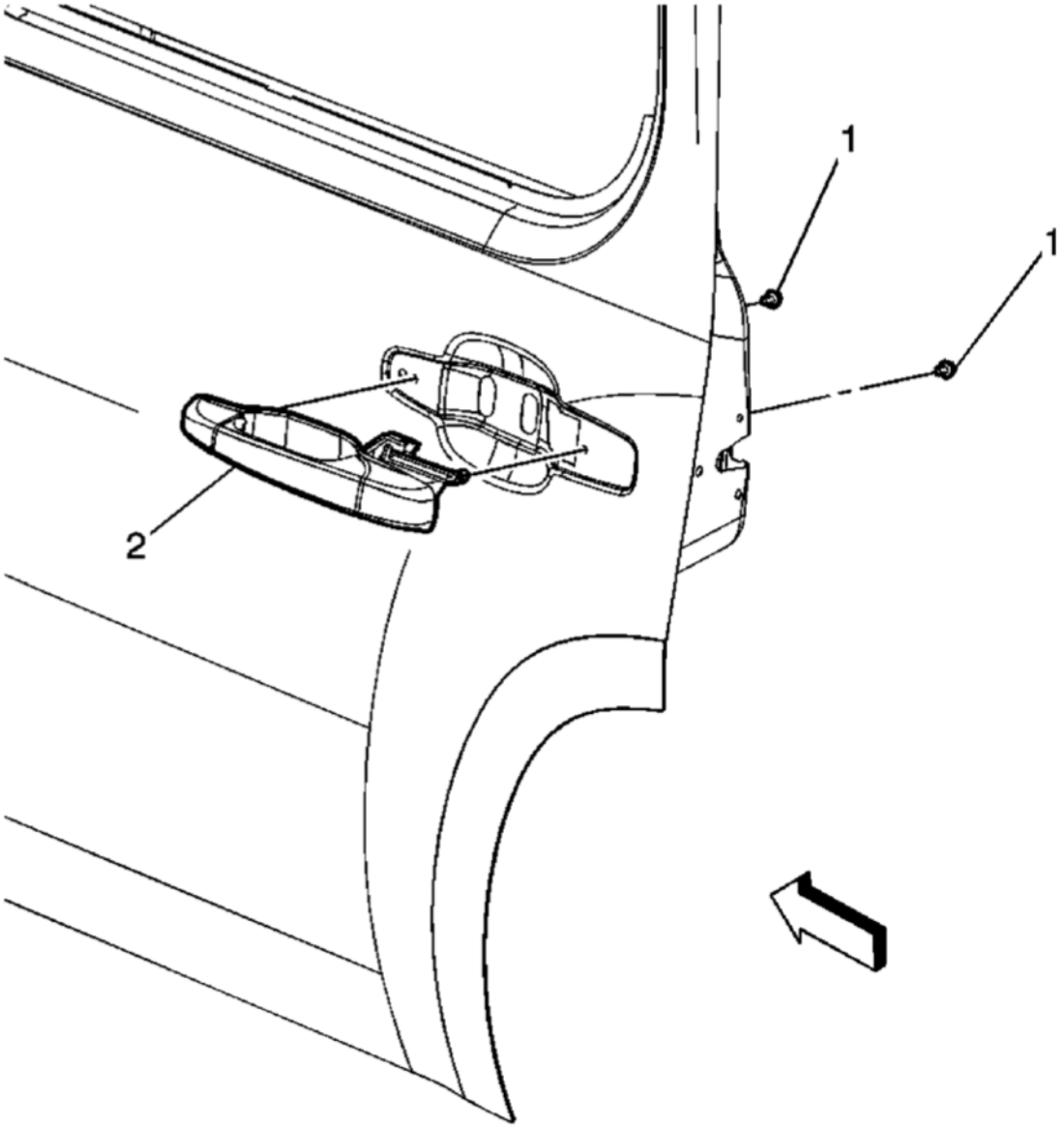


Fig. 51: View Of Rear Side Door Outside Handle & Bolts
Courtesy of GENERAL MOTORS CORP.

Door Handle Replacement - Rear Outside

Callout	Component Name
Preliminary Procedures	
1. Remove the door trim panel. Refer to **Rear Side Door Trim Panel Replacement (Suburban/Yukon XL/Escalade ESV)** or **Rear Side Door Trim Panel Replacement (Tahoe/Yukon/Escalade)** .	
2. Remove the water deflector. Refer to **Rear Side Door Water Deflector Replacement** .	

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1	Rear Side Door Outside Handle Bolts (Qty: 2) **NOTE:** **Refer to Fastener Notice .** **Tighten:** 7 N.m (62 lb in) **Tip:** 1. Release the outside handle rod from the lock retainer clip. 2. Release the lock cylinder rod from the door lock. 3. Remove to outside door handle with the rod attached.
2	Rear Side Door Outside Handle **Tip:** Transfer the handle rod to the new handle.

ENDGATE LATCH REPLACEMENT

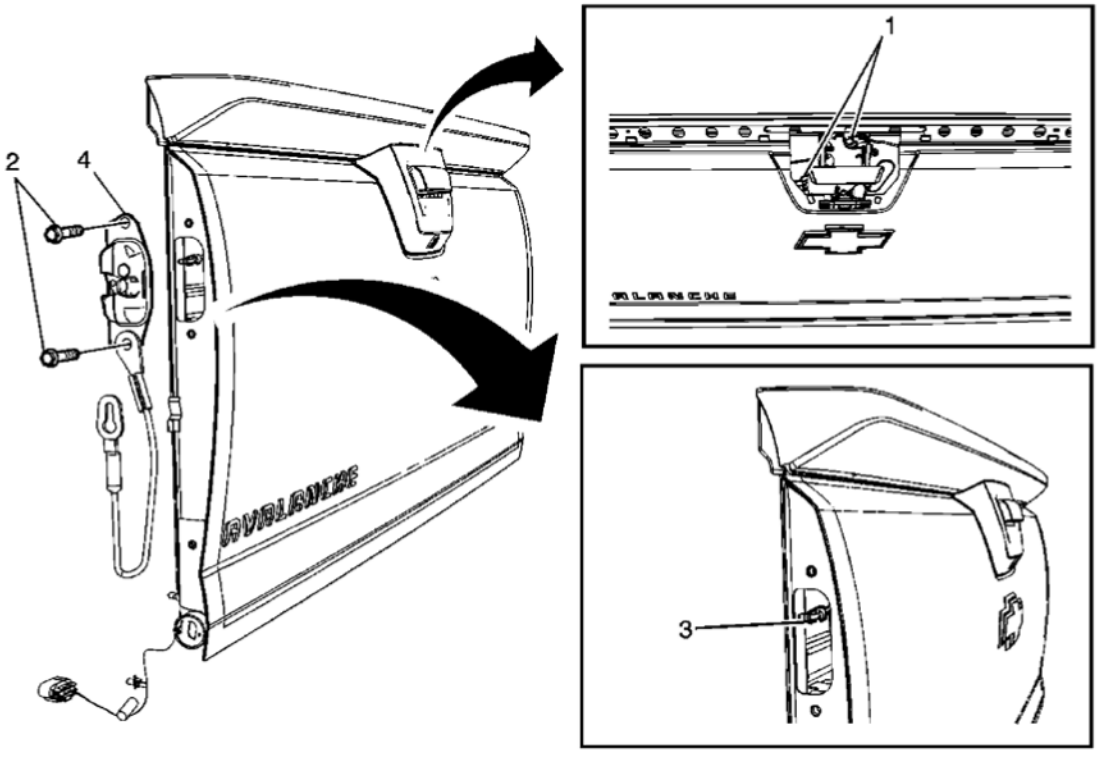


Fig. 52: View Of Endgate Latch Assembly & Bolt
Courtesy of GENERAL MOTORS CORP.

Endgate Latch Replacement

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Callout	Component Name
1	Endgate Latch Bolt (Qty:2) **NOTE:** **Refer to Fastener Notice .** **Tighten:** 25 N.m (18 lb ft)
2	Endgate Latch Assembly **Tip:** Disconnect the actuator rod.

ENDGATE LINKAGE REPLACEMENT

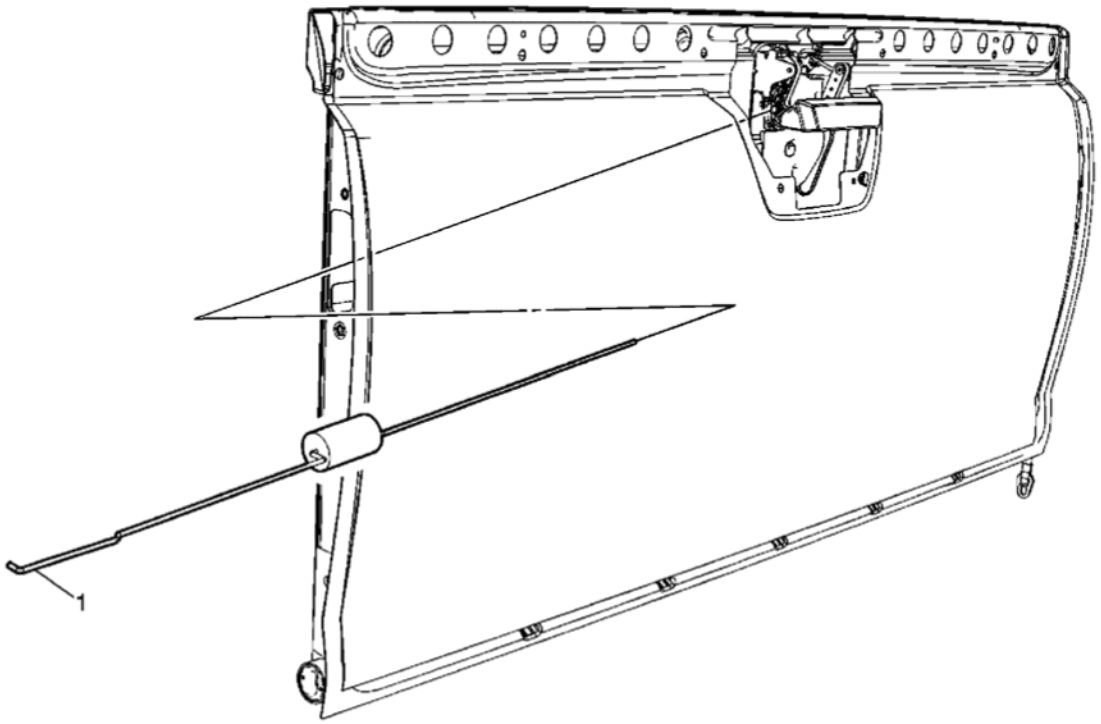


Fig. 53: View Of Endgate Latch Rod Assembly
Courtesy of GENERAL MOTORS CORP.

Endgate Linkage Replacement

Callout	Component Name
Preliminary Procedures 1. Remove the endgate spoiler. Refer to **Spoiler Replacement - Rear (Avalanche/Escalade)** . 2. Remove the endgate latch. Refer to **Endgate Latch Replacement**.	
1	Endgate Latch Rod Assembly **Tip:** Disconnect the actuator rod.

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FRONT SIDE DOOR LOCK REPLACEMENT

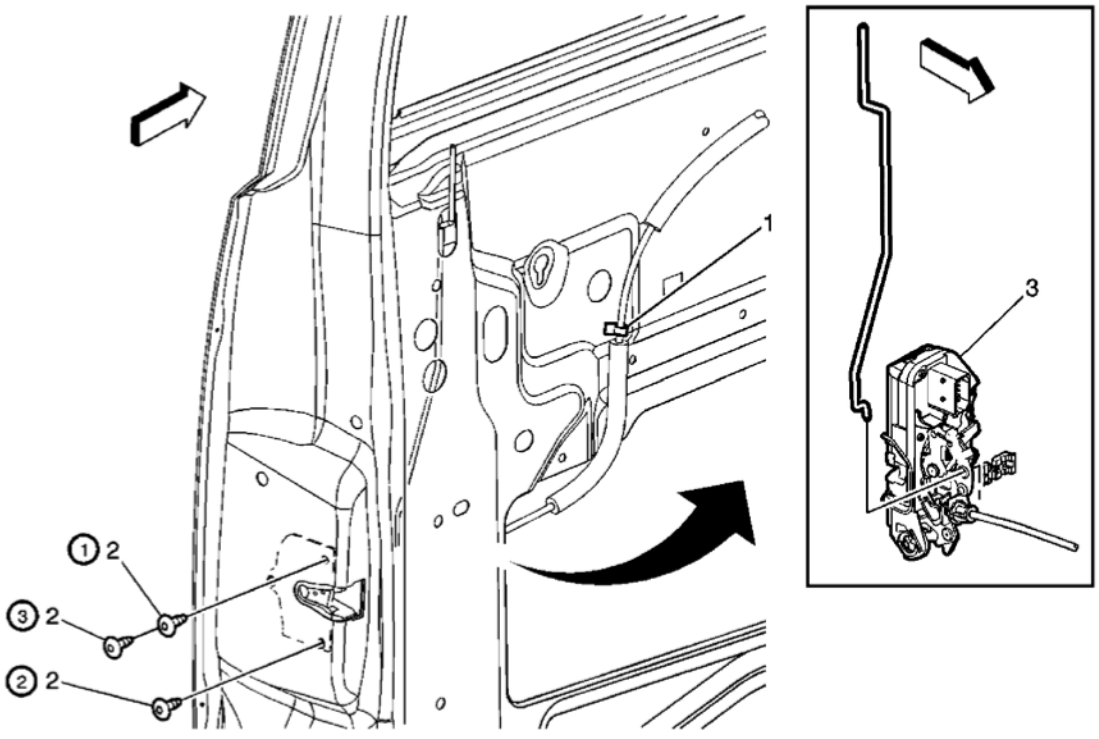


Fig. 54: Front Side Door Lock & Components
Courtesy of GENERAL MOTORS CORP.

Front Side Door Lock Replacement

Callout	Component Name
Preliminary Procedures 1. Remove the door trim panel. Refer to **Front Side Door Trim Panel Replacement** . 2. Remove the water deflector. Refer to **Front Side Door Water Deflector Replacement** .	
1	Inside Door Handle Cable Retainer Clip
2	Front Side Door Lock Screws (Qty: 3) **NOTE:** **Refer to Fastener Notice .** **Tighten:** 10 N.m (89 lb in) **Tip:** 1. Release the door lock cylinder rod.

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	2. Release the outside door handle rod from the door lock clip. 3. The mandatory sequence is 3, 1, 2.
3	Front Side Door Lock **Tip:** 1. Disconnect the electrical plug. 2. Transfer all parts to the new lock.

REAR DOOR LOCK REPLACEMENT

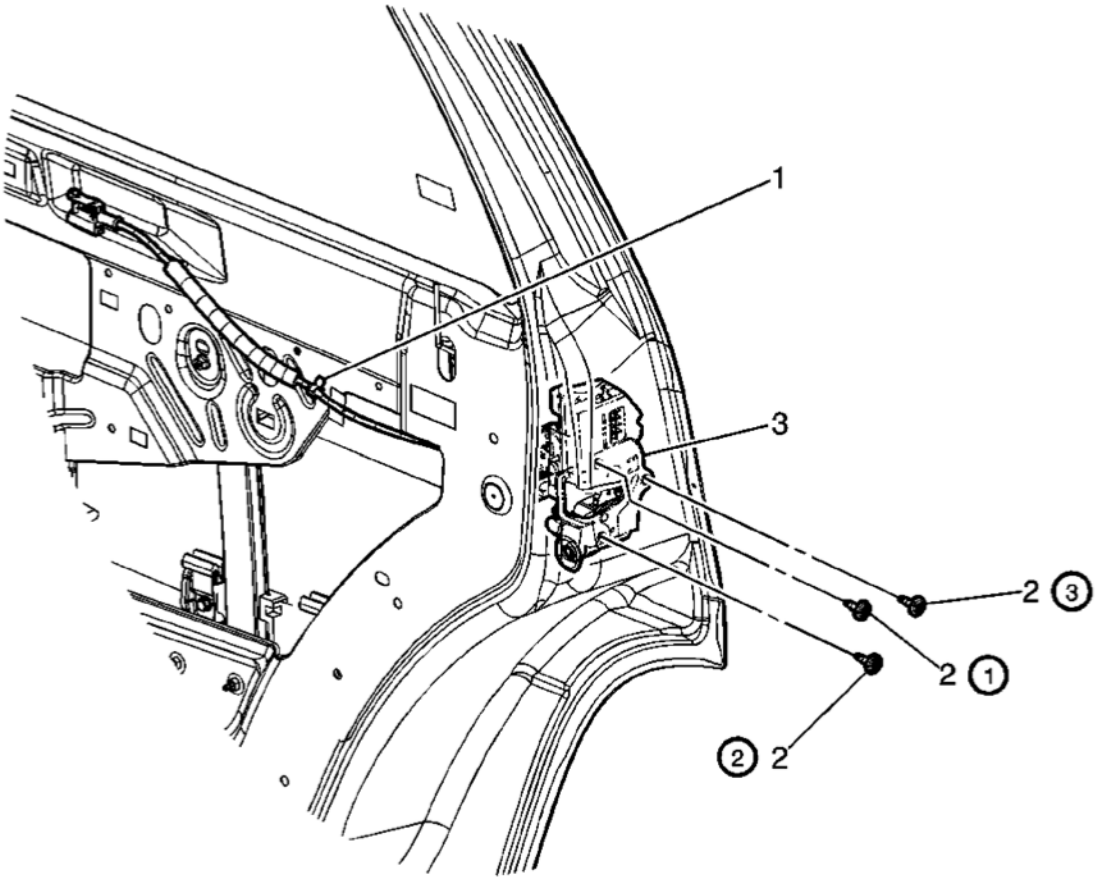


Fig. 55: Rear Side Door Lock & Components
Courtesy of GENERAL MOTORS CORP.

Rear Door Lock Replacement

Callout	Component Name
Preliminary Procedures 1. Remove the door trim panel. Refer to **Rear Side Door Trim Panel Replacement**	

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(Suburban/Yukon XL/Escalade ESV) or **Rear Side Door Trim Panel Replacement (Tahoe/Yukon/Escalade)** .

2. Remove the water deflector. Refer to **Rear Side Door Water Deflector Replacement** .

1	Inside Door Handle Cable Retainer Clip
2	Rear Side Door Lock Screws (Qty: 3) **NOTE:** **Refer to Fastener Notice .** **Tighten:** 10 N.m (89 lb in) **Tip:** 1. Release the outside door handle rod from the door lock clip. 2. The mandatory sequence is 3, 1, 2.
3	Rear Side Door Lock **Tip:** 1. Disconnect the electrical plug. 2. Transfer all parts to the new lock.

LIFTGATE CLOSE ACTUATOR MOTOR CONTROL MODULE REPLACEMENT

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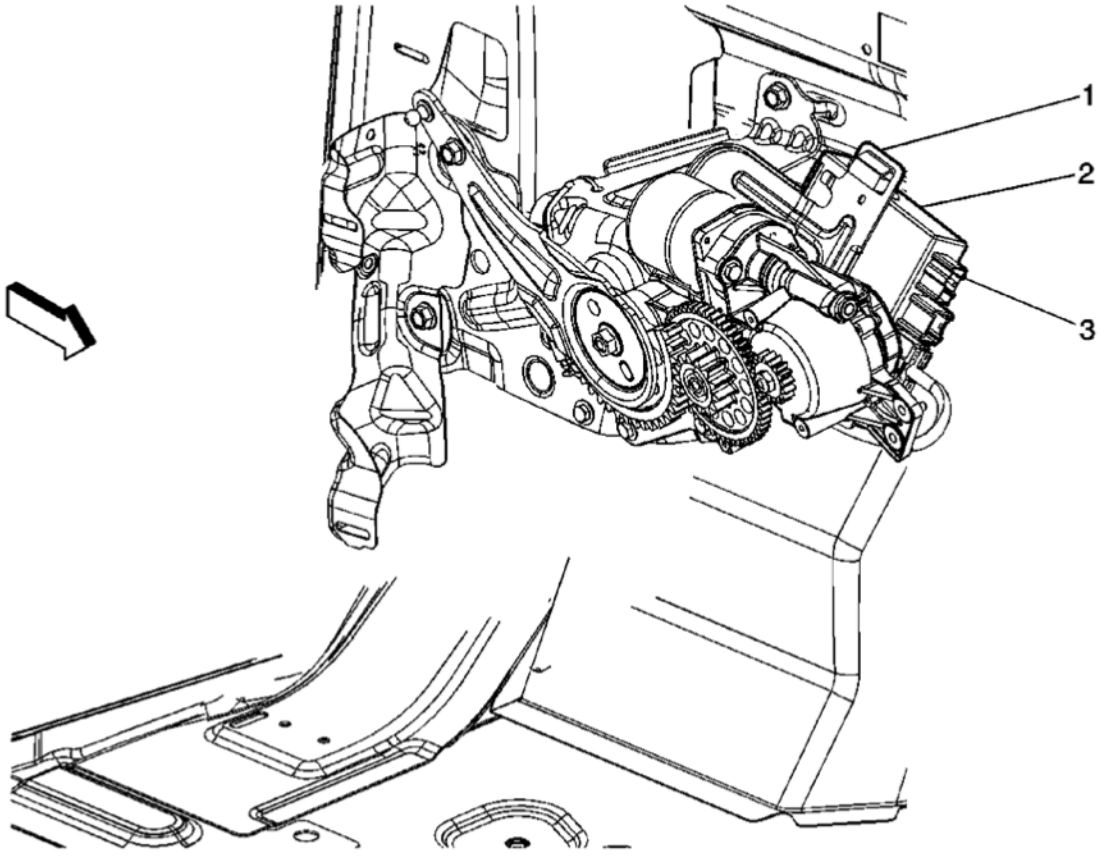


Fig. 56: Power Liftgate Actuator Module & Components
Courtesy of GENERAL MOTORS CORP.

Liftgate Close Actuator Motor Control Module Replacement

Callout	Component Name
Preliminary Procedure: Remove the body side trim panel. Refer to **Trim Panel Replacement - Rear Quarter - Left (Extended Wheelbase w/E61)** or **Trim Panel Replacement - Rear Quarter - Left (Extended Wheelbase w/o E61)** or **Trim Panel Replacement - Rear Quarter - Left (Standard Wheelbase w/E61)** or **Trim Panel Replacement - Rear Quarter - Left (Standard Wheelbase w/o E61)** .	
1	Power Liftgate Actuator Module Retainer **Tip:** Press retainer to release.
2	Power Liftgate Actuator Module
3	Electrical Connector Disconnect

POWER LIFT GATE MOTOR REPLACEMENT

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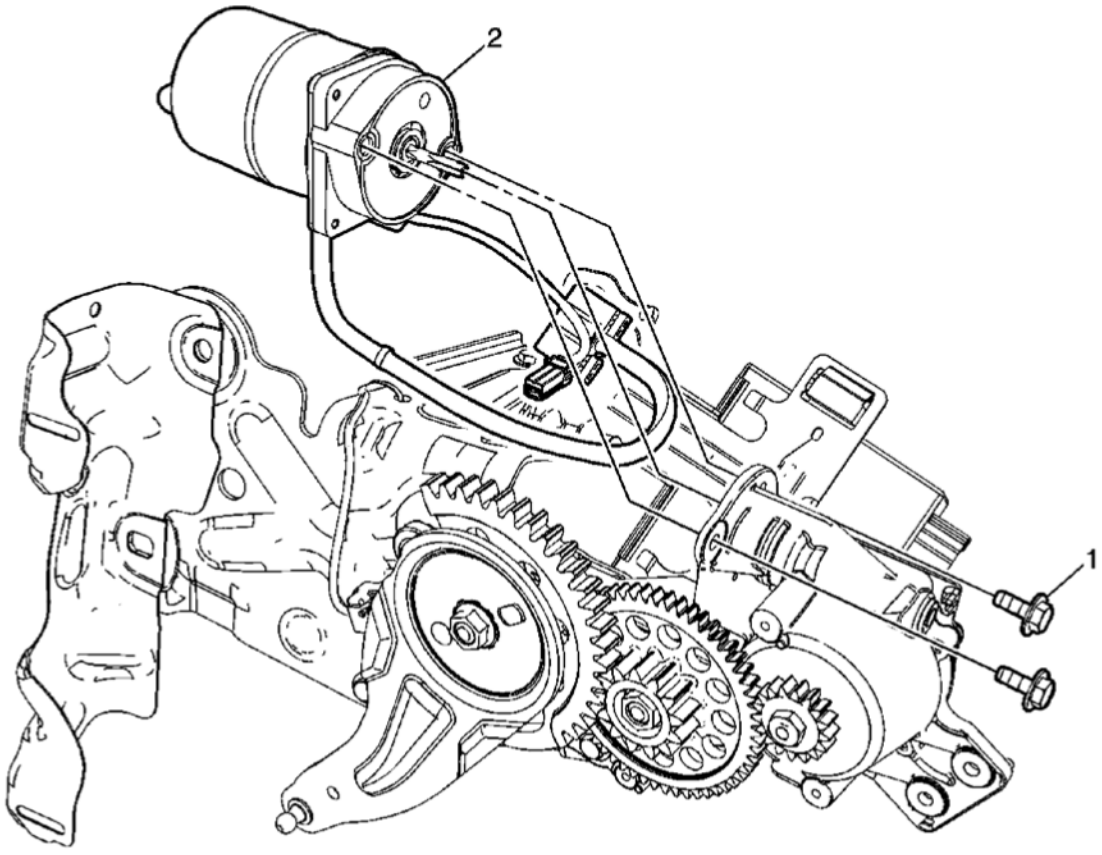


Fig. 57: View Of Liftgate Close Actuator Motor & Components
Courtesy of GENERAL MOTORS CORP.

Power Lift Gate Motor Replacement

Callout	Component Name
Preliminary Procedures 1. Remove the body side trim panel. Refer to **Trim Panel Replacement - Rear Quarter - Left (Extended Wheelbase w/E61)** or **Trim Panel Replacement - Rear Quarter - Left (Extended Wheelbase w/o E61)** or **Trim Panel Replacement - Rear Quarter - Left (Standard Wheelbase w/E61)** or **Trim Panel Replacement - Rear Quarter - Left (Standard Wheelbase w/o E61)** . 2. Remove the liftgate actuator rod. Refer to **Lift Gate Actuator Rod Replacement**.	
1	Power Liftgate Actuator Motor Bolts (Qty: 2) **NOTE:** **Refer to Fastener Notice .** **Tighten:** 8 N.m (71 lb in)
	Power Liftgate Actuator Motor **Tip:**

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2	• Disconnect the electrical connector. • Reprogram the power liftgate motor replacement. Refer to **Lift Gate Control Module Programming and Setup** .

LIFTGATE CLOSE ACTUATOR BRACKET REPLACEMENT

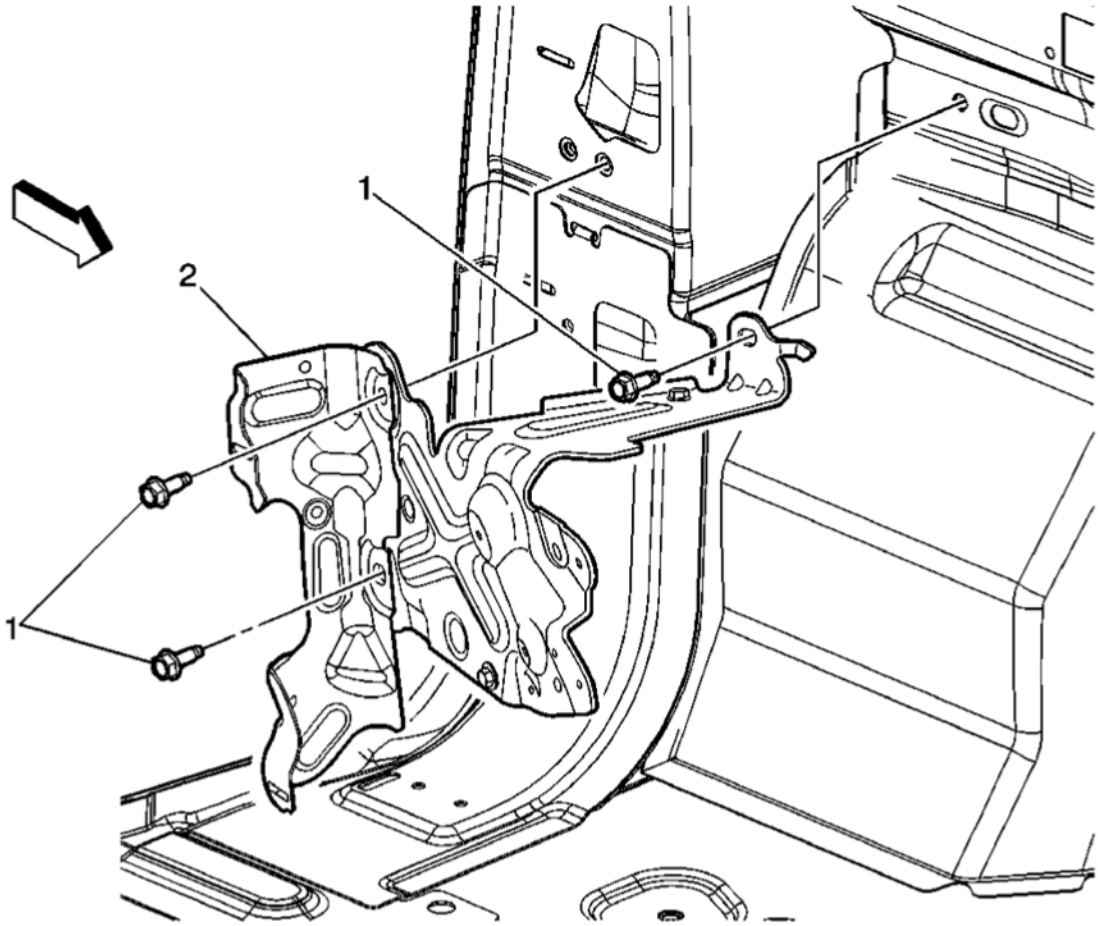


Fig. 58: Locating Liftgate Close Actuator Module Bracket & Bolts
Courtesy of GENERAL MOTORS CORP.

Liftgate Close Actuator Bracket Replacement

Callout	Component Name
Preliminary Procedures 1. Remove the body side trim panel. Refer to **Trim Panel Replacement - Rear Quarter - Left (Extended Wheelbase w/E61)** or **Trim Panel Replacement - Rear Quarter - Left (Extended Wheelbase w/o E61)** or **Trim Panel Replacement - Rear Quarter - Left (Standard Wheelbase w/E61)** or **Trim Panel Replacement - Rear Quarter - Left (Standard Wheelbase w/o E61)** .	

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	2. Remove the liftgate close actuator drive unit. Refer to **Liftgate Close Actuator Drive Unit Replacement**. 3. Remove the liftgate close actuator motor control module, if required. Refer to **Liftgate Close Actuator Motor Control Module Replacement**.
1	Liftgate Close Actuator Bracket Bolts (Qty: 3) **NOTE:** **Refer to Fastener Notice .** **Tighten:** 10 N.m (89 lb in)
2	Liftgate Close Actuator Bracket
3	Liftgate Close Actuator Module, If Required

LIFT GATE ACTUATOR ROD REPLACEMENT

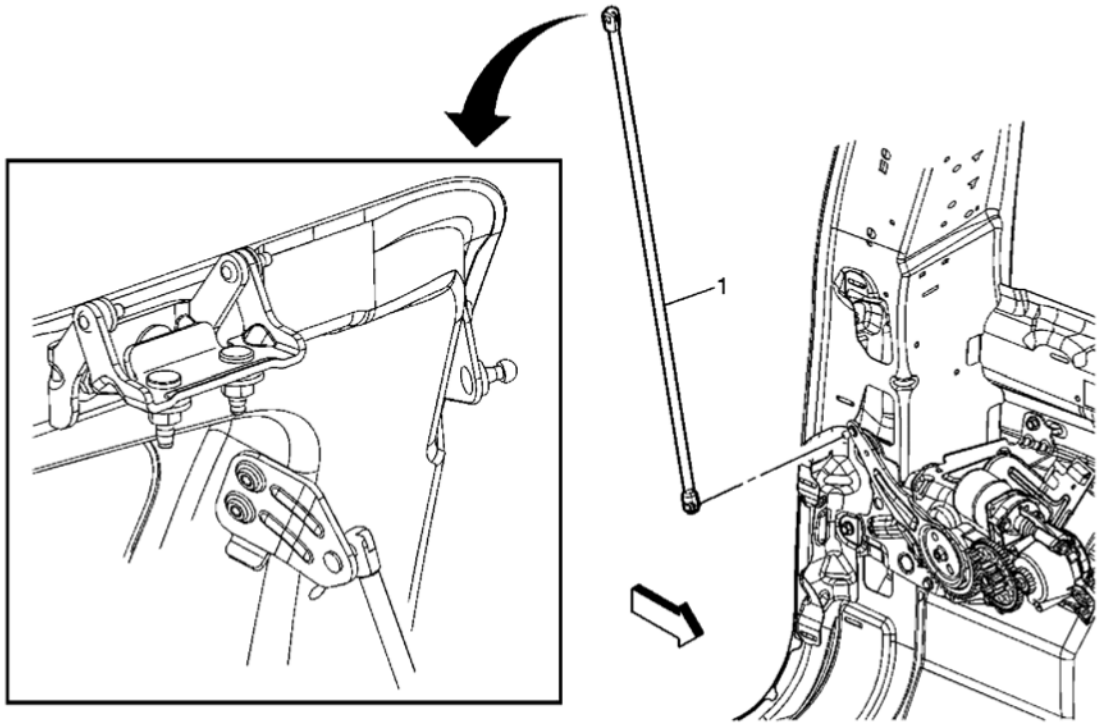


Fig. 59: View Of Liftgate Actuator Rod
Courtesy of GENERAL MOTORS CORP.

Lift Gate Actuator Rod Replacement

Callout	Component Name
Preliminary Procedure: **Remove the left side trim panel. Refer to Trim Panel Replacement - Rear Quarter - Left (Extended Wheelbase w/E61) or Trim Panel Replacement - Rear Quarter - Left (Extended Wheelbase w/o	

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E61) or Trim Panel Replacement - Rear Quarter - Left (Standard Wheelbase w/E61) or Trim Panel Replacement - Rear Quarter - Left (Standard Wheelbase w/o E61) .	
1	Liftgate Actuator Rod **Tip:** • Release the lock tabs on the actuator rod. • Ensure the clip is fully seated when rod is reinstalled. If clip cannot be fully seated, a new rod should be installed.

LIFTGATE SIDE UPPER SENSOR REPLACEMENT

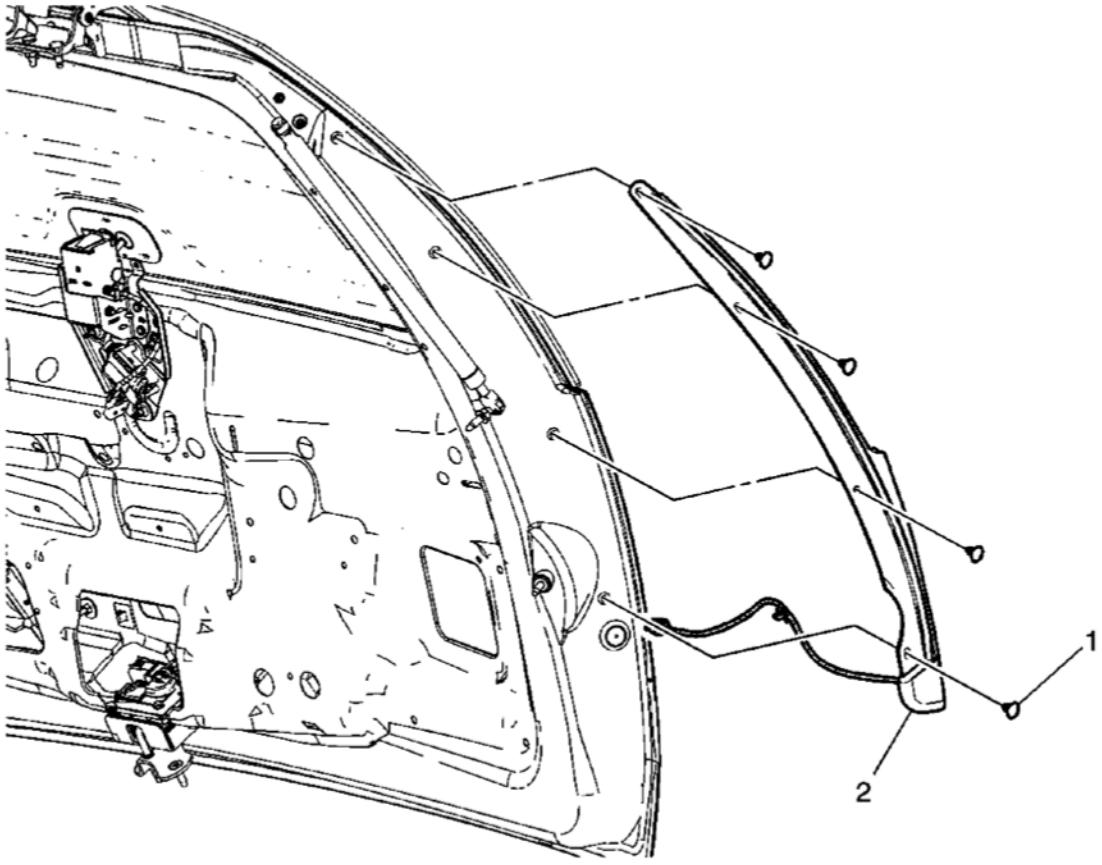


Fig. 60: View Of Liftgate Side Upper Sensor
Courtesy of GENERAL MOTORS CORP.

Liftgate Side Upper Sensor Replacement

Callout	Component Name
Preliminary Procedures 1. Remove the liftgate trim panel. Refer to **Liftgate Trim Panel Replacement** .	

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2. Disconnect the electrical connector.	
1	Sensor Side Upper Liftgate Retainers (Qty: 4)
2	Sensor Side Upper Liftgate

DOOR LOCK STRIKER ADJUSTMENT

To determine if striker adjustment is required, proceed as follows:

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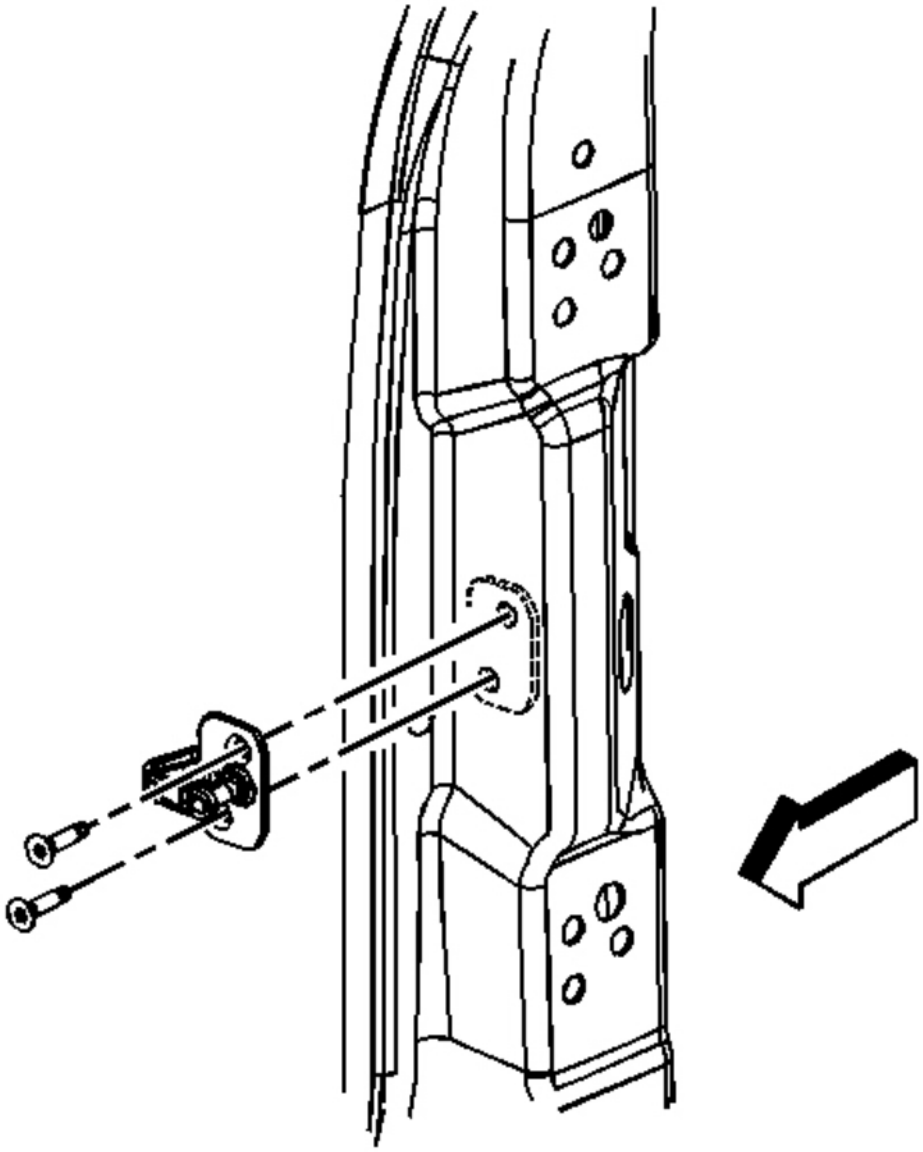


Fig. 61: View Of Door Lock Striker
Courtesy of GENERAL MOTORS CORP.

1. Make certain the door is properly aligned within the door opening before proceeding with the striker adjustment.
2. Close the door onto the striker and note if the door drags on the striker causing the door to move upward

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or downward upon contact with the striker. Also note the closing effort to fully engage the latch.

3. Using a soft marker, mark around the striker for reference of the original position. Loosen the striker.
4. Move the striker to eliminate drag on the striker and door latch and to achieve the proper door position within the door opening. Start with the up/down position, then position the striker to achieve proper alignment to the door opening. Set the in/out adjustment for the proper door seal engagement making sure the door closing efforts are correct.

NOTE: **Refer to Fastener Notice .**

5. Tighten the striker-to-body bolts.

Tighten: Tighten the door striker-to-body bolts to 27 N.m (20 lb ft).

DOOR STRIKER REPLACEMENT

Removal Procedure

IMPORTANT: If both of the door striker bolts are removed at the same time, the striker backing plate will fall into the body. This will result in additional time to perform the repair.

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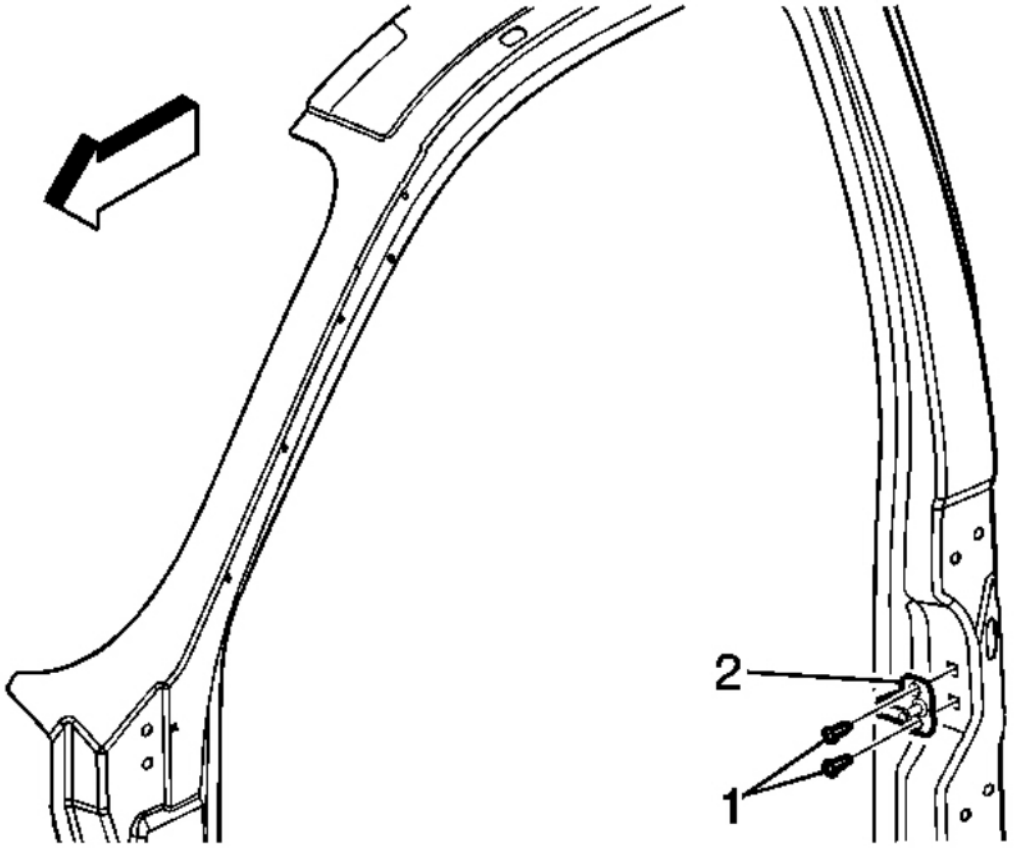


Fig. 62: View Of Door Striker & Bolts
Courtesy of GENERAL MOTORS CORP.

1. Remove the lower striker bolt.
2. Loosen the upper striker bolt enough in order to rotate the striker and the spacer, if equipped, away from the lower bolt hole.
3. Install the lower striker bolt. Tighten the lower striker bolt sufficiently in order to hold the striker backing plate in place.
4. Remove the upper striker bolt (1).
5. Remove the spacer, if equipped.
6. Remove the striker (2).

Installation Procedure

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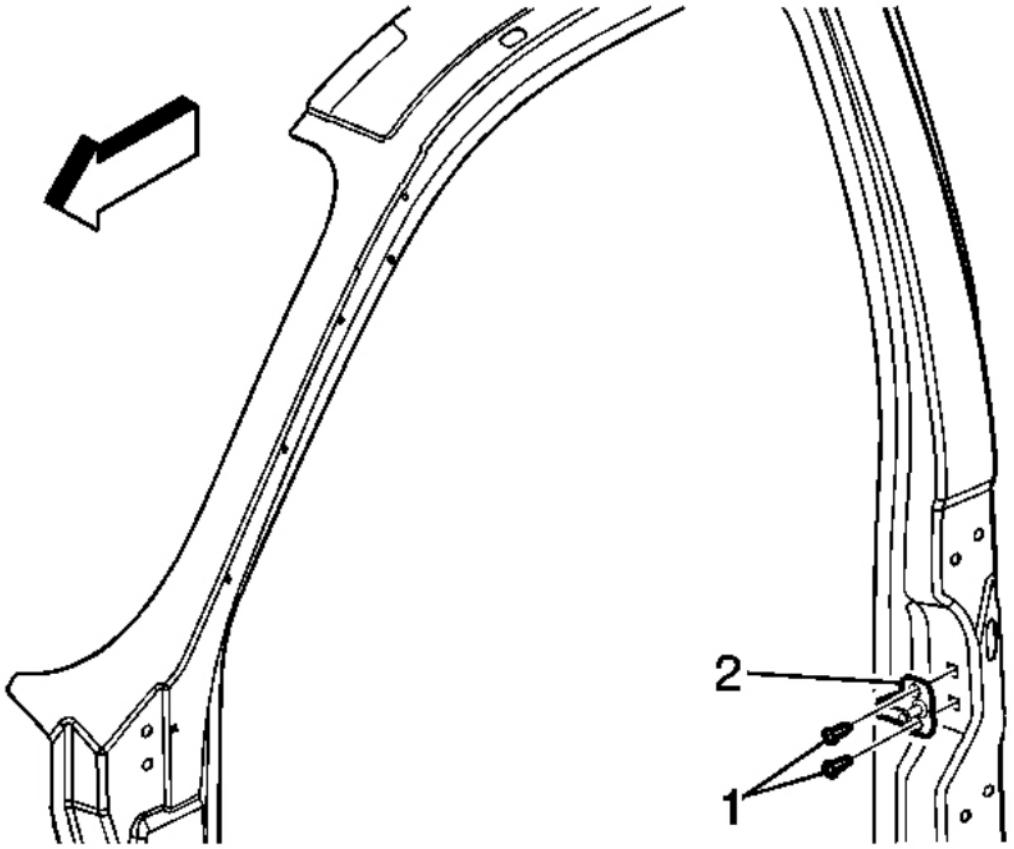


Fig. 63: View Of Door Striker & Bolts
Courtesy of GENERAL MOTORS CORP.

1. Install the striker.
2. Install the spacer, if equipped.
3. Install the upper striker bolt (1).
4. If the striker backing plate has moved, rotate the lower striker bolt until the upper threaded hole is properly aligned.
5. Remove the lower bolt.
6. Rotate the striker (2) and the spacer, if equipped, in order to align the lower threaded hole in the striker backing plate.

NOTE: **Refer to Fastener Notice .**

7. Tighten the striker bolts.

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Tighten: Tighten the door striker bolts to 24 N.m (18 lb ft).

STRIKER REPLACEMENT - MIDGATE

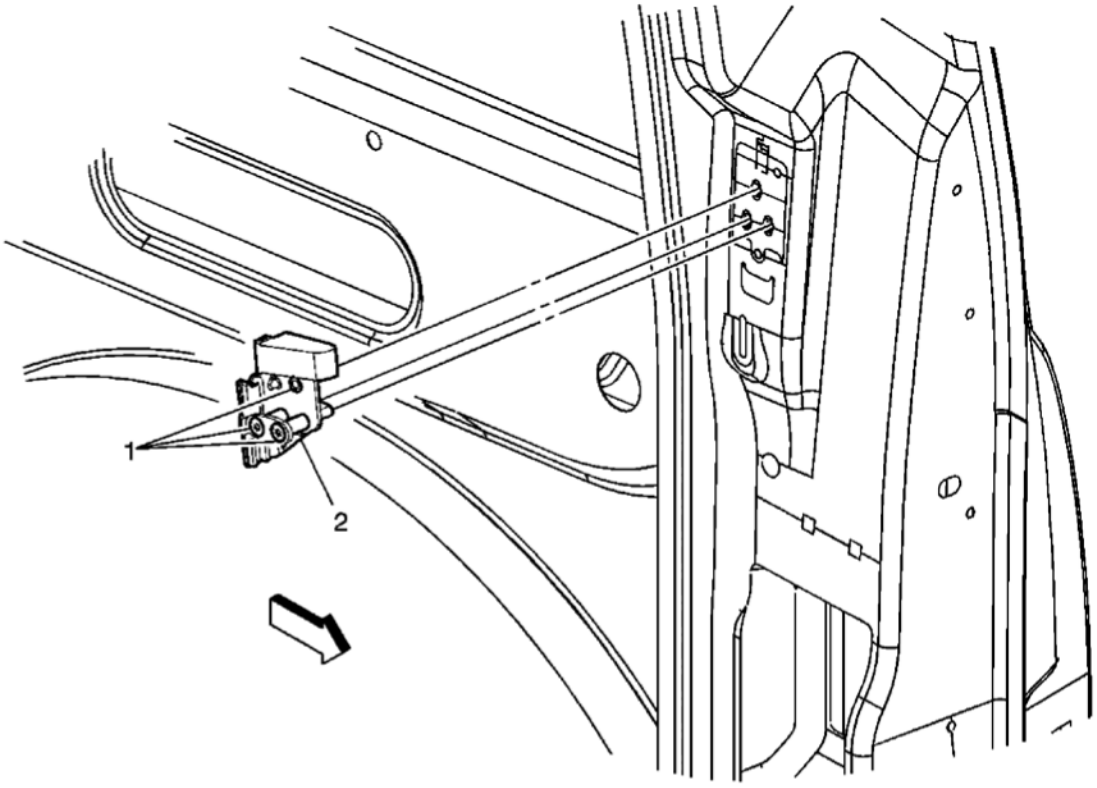


Fig. 64: View Of Midgate Striker & Bolt
Courtesy of GENERAL MOTORS CORP.

Striker Replacement - Midgate

Callout	Component Name
1	Midgate Striker Bolt (Qty: 3) **NOTE:** **Refer to Fastener Notice .** **Tighten:** 25 N.m (18 lb ft)
2	Midgate Striker

LIFTGATE ACTUATOR SWITCH REPLACEMENT

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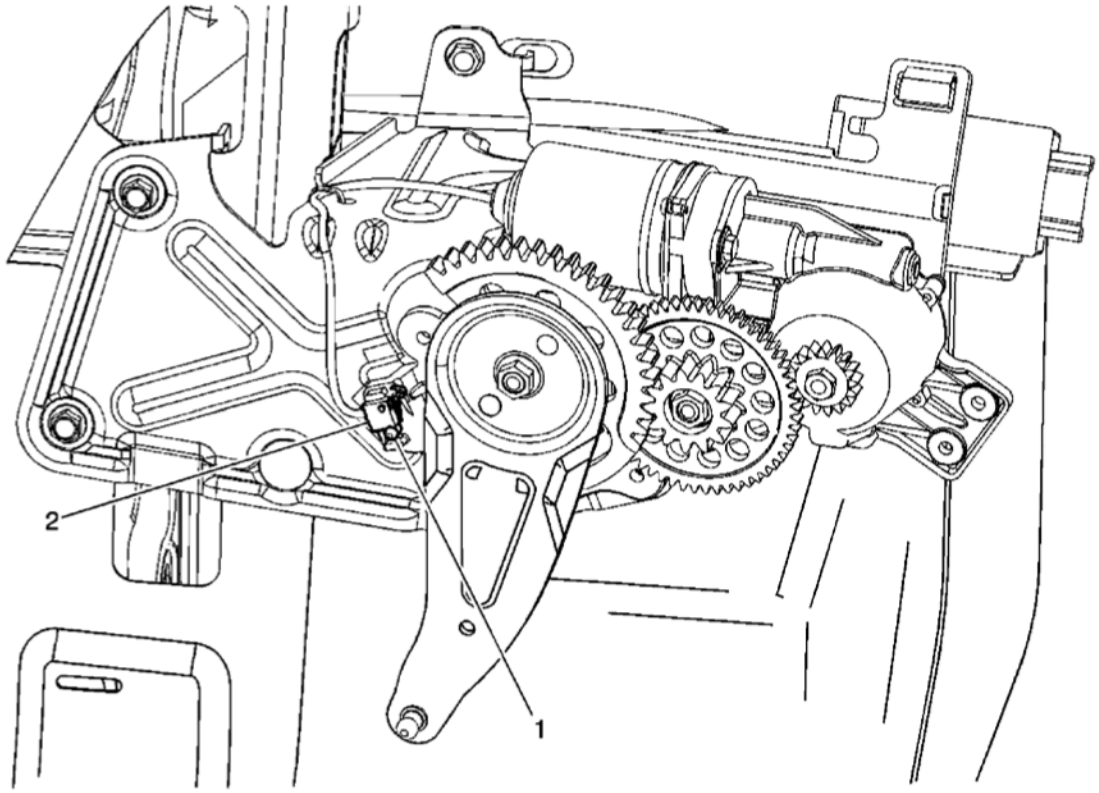


Fig. 65: View Of Power Liftgate Switch & Screw
Courtesy of GENERAL MOTORS CORP.

Liftgate Actuator Switch Replacement

Callout	Component Name
Preliminary Procedure: Remove the left rear quarter trim panel. Refer to **Trim Panel Replacement - Rear Quarter - Left (Extended Wheelbase w/E61)** or **Trim Panel Replacement - Rear Quarter - Left (Extended Wheelbase w/o E61)** or **Trim Panel Replacement - Rear Quarter - Left (Standard Wheelbase w/E61)** or **Trim Panel Replacement - Rear Quarter - Left (Standard Wheelbase w/o E61)** .	
1	Power Liftgate Switch Screw **NOTE:** **Refer to Fastener Notice .** **Tighten:** 7 N.m (25 lb in)
2	Power Liftgate Switch **Tip:** • Disconnect the electrical connector. • Reprogram the power liftgate actuator switch replacement. Refer to **Lift Gate**

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	Control Module Programming and Setup .

LIFTGATE RELEASE SWITCH REPLACEMENT

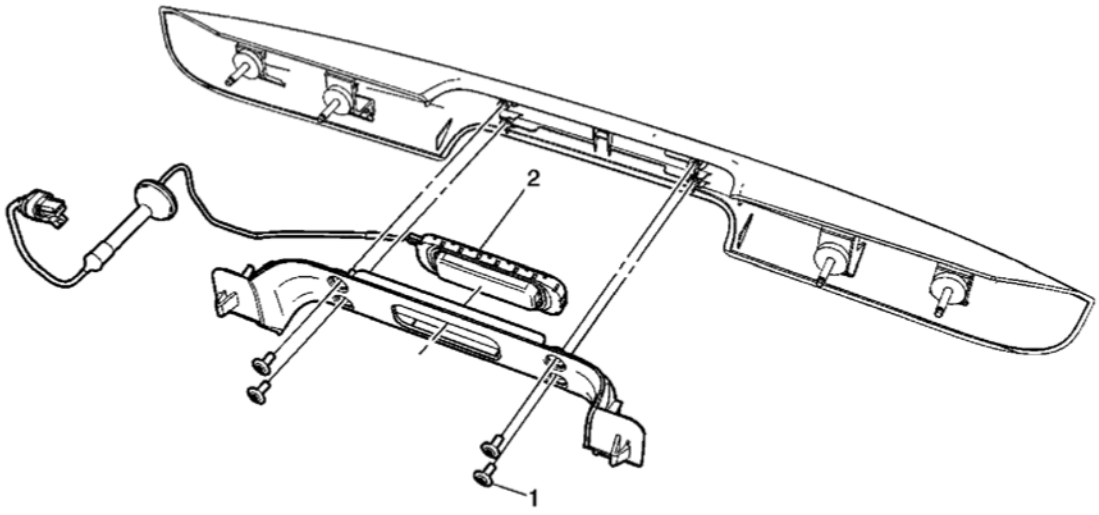


Fig. 66: View Of Liftgate Release Switch & Screws
Courtesy of GENERAL MOTORS CORP.

Liftgate Release Switch Replacement

Callout	Component Name
Preliminary Procedure: Remove the liftgate handle. Refer to **Handle Replacement - Liftgate**.	
1	Liftgate Release Switch Screws (Qty: 4) **NOTE:** **Refer to Fastener Notice .** **Tighten:** 2 N.m (18 lb in)
2	Liftgate Release Switch **Tip:** Disconnect the electrical connector.

DOOR LOCK AND SIDE WINDOW SWITCH REPLACEMENT - DRIVER

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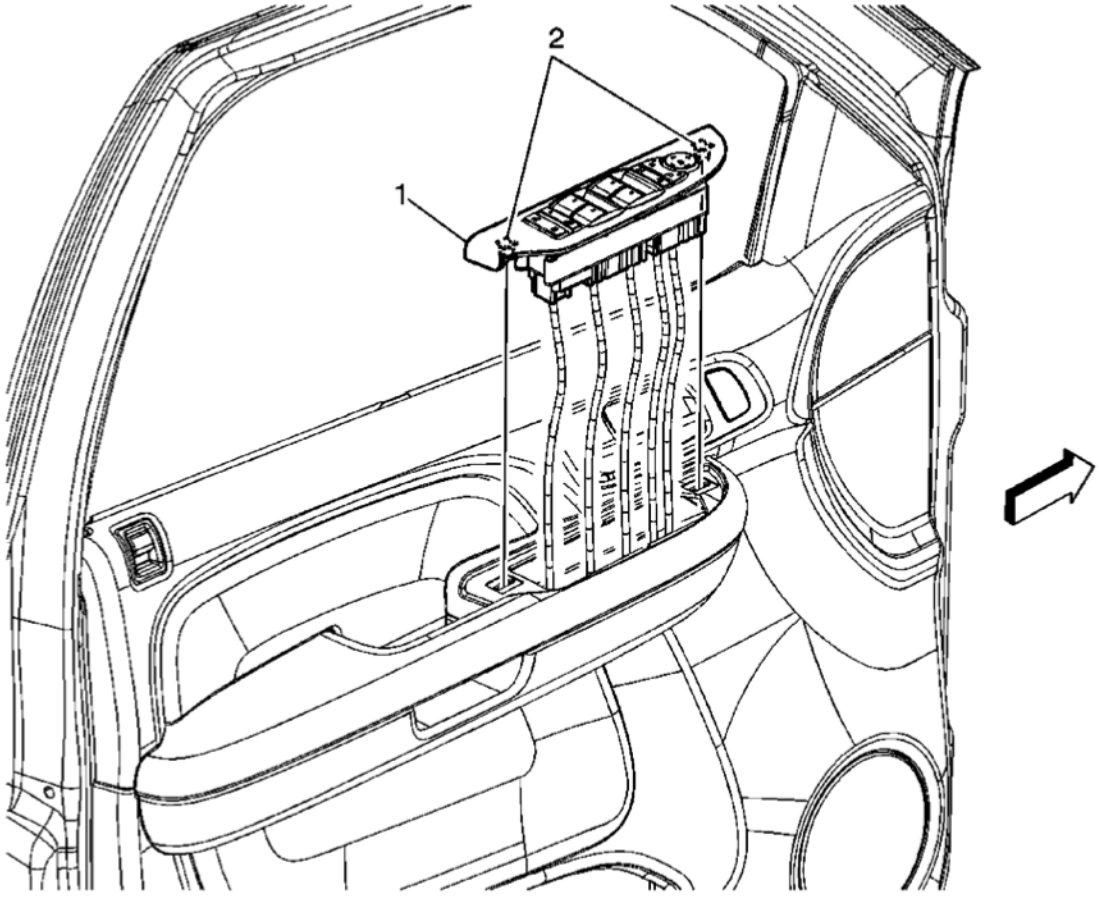


Fig. 67: View Of Front Side Door Window Switch Assembly & Clips
Courtesy of GENERAL MOTORS CORP.

Door Lock and Side Window Switch Replacement - Driver

Callout	Component Name
1	Front Side Door Window Switch Assembly **Tip:** Disconnect electrical connectors.
2	Front Side Door Window Switch Integral Clips (Qty: 2)

DOOR LOCK AND SIDE WINDOW SWITCH REPLACEMENT - PASSENGER

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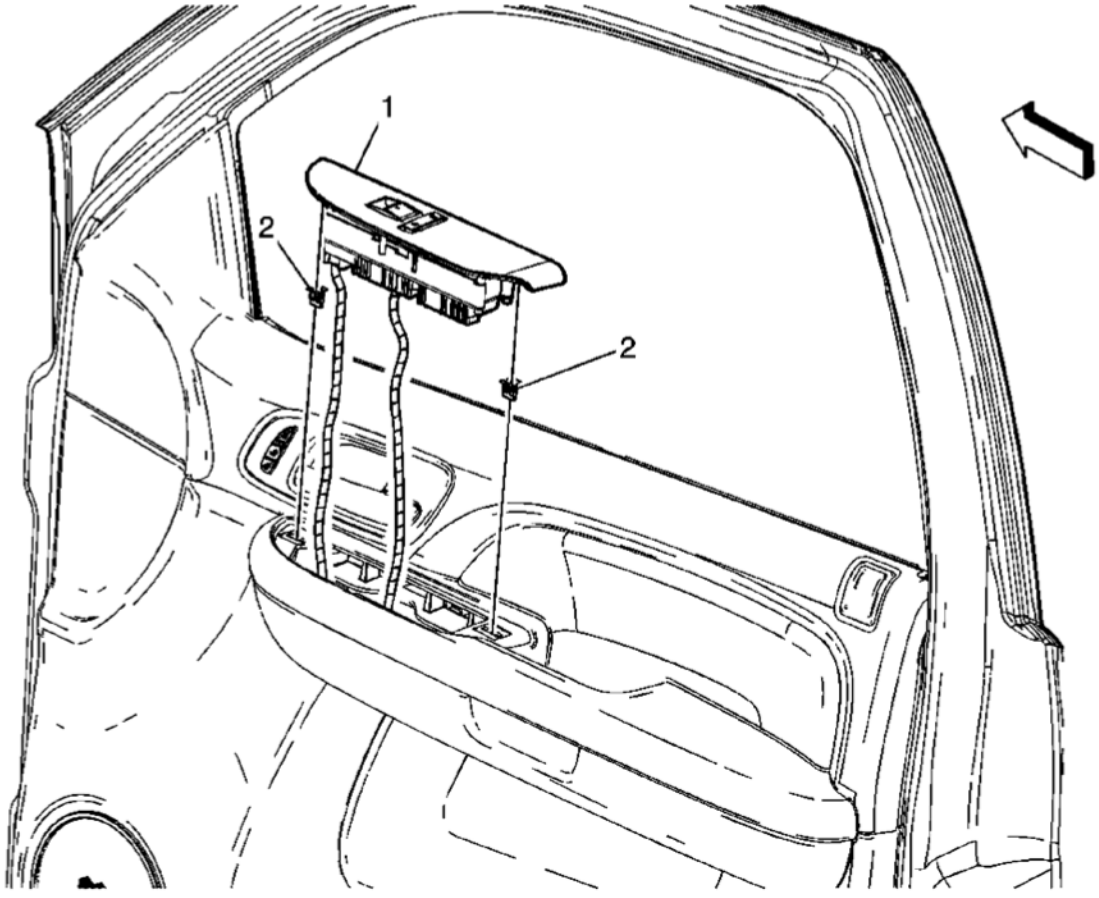


Fig. 68: View Of Front Side Door Window Switch Assembly & Clips
Courtesy of GENERAL MOTORS CORP.

Door Lock and Side Window Switch Replacement - Passenger

Callout	Component Name
1	Front Side Door Window Switch Assembly **Tip:** Disconnect electrical connectors.
2	Front Side Door Window Switch Integral Clips (Qty: 2)

LIFTGATE ACTUATOR ROD BRACKET REPLACEMENT

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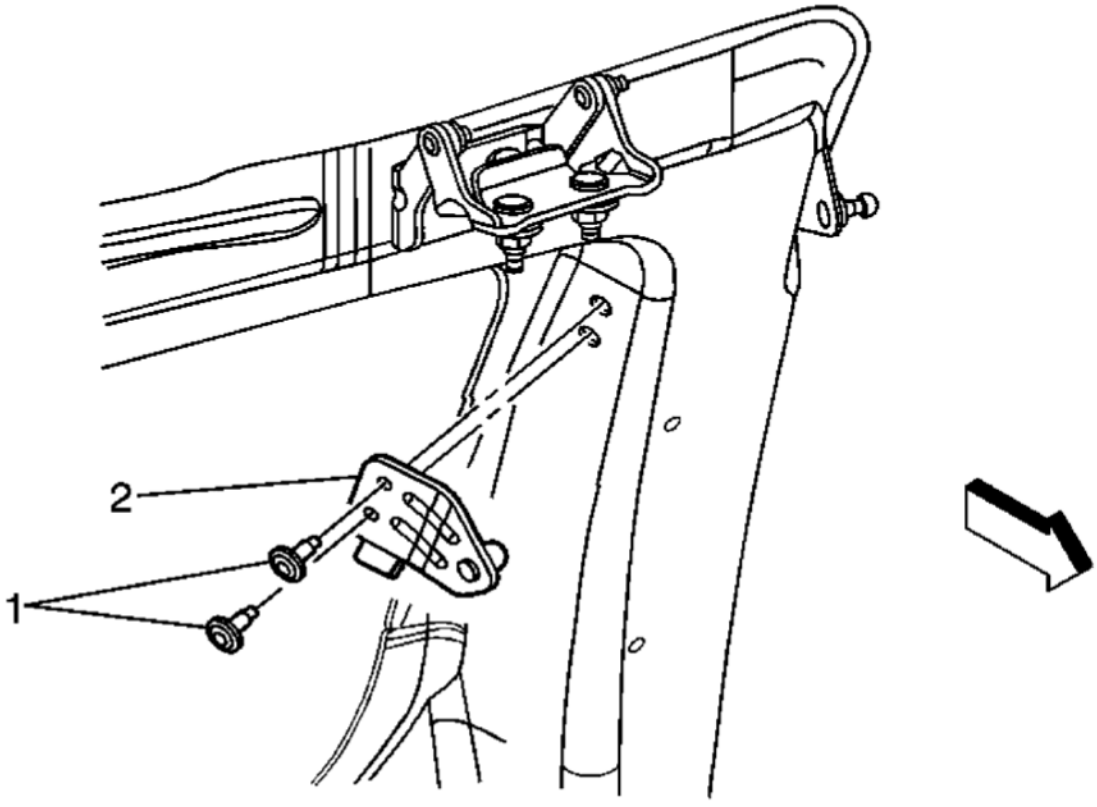


Fig. 69: View Of Liftgate Actuator Rod Bracket & Bolts
Courtesy of GENERAL MOTORS CORP.

Liftgate Actuator Rod Bracket Replacement

Callout	Component Name
Preliminary Procedure: Remove the liftgate garnish molding. Refer to **Liftgate Garnish Molding Replacement** .	
1	Liftgate Actuator Rod Bracket Bolts **NOTE:** **Refer to Fastener Notice .** **Tighten:** 10 N.m (89 lb in)
2	Liftgate Actuator Rod Bracket

LIFTGATE CLOSE ACTUATOR DRIVE UNIT REPLACEMENT

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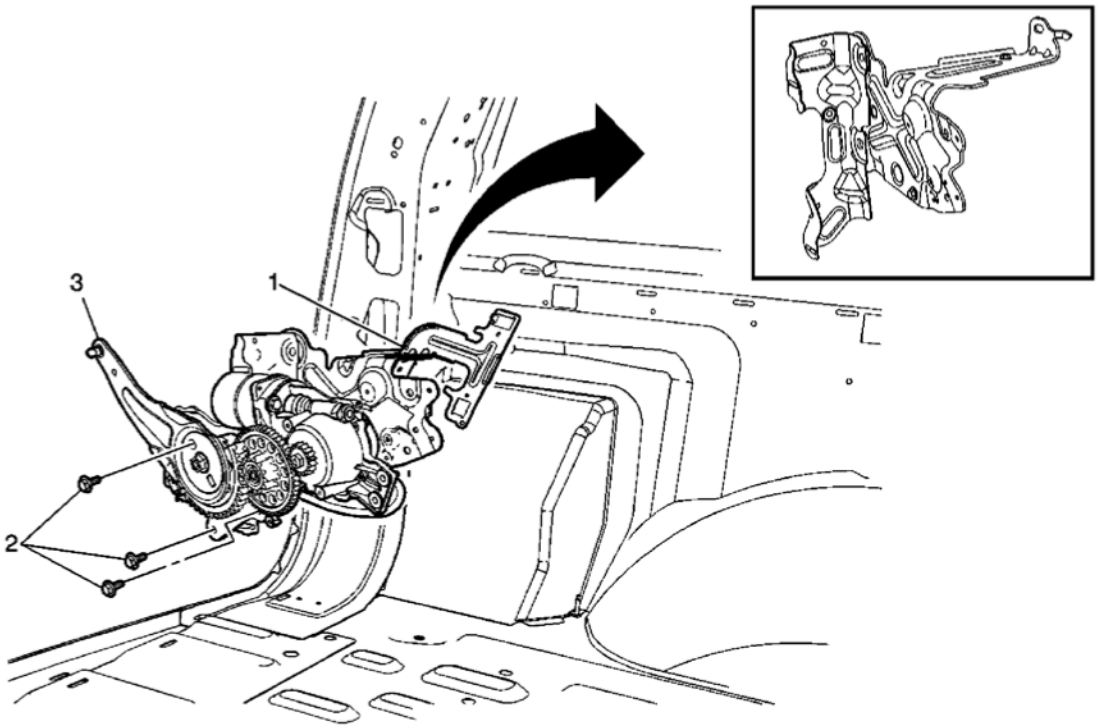


Fig. 70: View Of Liftgate Actuator Drive Unit Bolts
Courtesy of GENERAL MOTORS CORP.

Liftgate Close Actuator Drive Unit Replacement

Callout	Component Name
Preliminary Procedures 1. Remove the bodyside trim panel. Refer to **Trim Panel Replacement - Rear Quarter - Left (Extended Wheelbase w/E61)** or **Trim Panel Replacement - Rear Quarter - Left (Extended Wheelbase w/o E61)** or **Trim Panel Replacement - Rear Quarter - Left (Standard Wheelbase w/E61)** or **Trim Panel Replacement - Rear Quarter - Left (Standard Wheelbase w/o E61)** . 2. Disconnect the power liftgate actuator rod. Refer to **Lift Gate Actuator Rod Replacement**.	
1	Liftgate Close Actuator Drive Unit **Tip:** • Disconnect the electrical connector. • Cut the tie strap, if equipped.
2	Liftgate Close Actuator Drive Unit Bolts (Qty: 3) **NOTE:** **Refer to Fastener Notice .** **Tighten:** 9 N.m (80 lb in)

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3	Liftgate Close Actuator Drive Unit

DESCRIPTION AND OPERATION

POWER DOOR LOCKS DESCRIPTION AND OPERATION

Door Lock System Components

The power door lock system consists of the following components:

- The driver door switch (DDS)
- The passenger door switch (PDS)
- The body control module (BCM)
- The driver information center (DIC)
- The rear door lock/unlock relay (LBEC)
- The reversible door lock actuators in each of the doors and liftgate

Door Lock System Controls

The power door lock system can be controlled by any of the following:

- A power door lock or unlock switch activation
- A keyless entry transmission
- An automatic door lock function
- A delay lock function
- Door lock cylinder switch activation
- Lockout Prevention

Driver, Passenger and Endgate Lock System Operation

The front power door lock switches are integral components of the driver door module (DDS) and passenger door module (PDS). The switches are 2 position normally open rocker switches. When placed in either the lock or unlock positions, the switches provide a direct input to the DDS or PDS. The DDS or PDS monitors these inputs and sends a LAN message indicating a change in the switch's respective position. Modules which activate the power door lock motors receive the LAN message and activate the motor in the appropriate direction to lock or unlock the vehicle's doors and liftgate. The rear door lock switch provides a lock and unlock signal to the body control module (BCM). The BCM upon receipt of a lock or unlock signal will control the rear door lock/unlock relay and also send a LAN message to the DDS and PDS to perform the appropriate function.

The modules which activate the power lock motors are:

- The DDS (driver door lock actuator)
- The PDS (passenger front door lock actuator)

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- The BCM (both rear door lock actuators and cargo door/liftgate)

The DDS and PDS are directly connected to the respective door lock actuator through the door lock motor lock and unlock circuits. Once a door lock or unlock request has been received, the module will supply battery voltage to one side of the actuator and ground the other causing the doors to lock or unlock.

The rear passenger and endgate doors are controlled by the BCM through the rear door lock/unlock relay which is incorporated onto the printed circuit board in the LH BEC. The BCM controls the unlock relay by providing ground to energize the coil and controls the lock relay by providing battery voltage to energize the relay coil. The energized the relay and allows voltage to be applied to either the door lock motor lock or unlock circuits. Since the other side of the door lock actuator is connected to the normally closed contacts of the opposing relay to ground, the doors lock or unlock.

Programmable Automatic Door Locks

The automatic door lock feature can be programmed to control the door lock system. The automatic door lock feature is factory programmed to have all doors lock and unlock.

When the automatic door lock feature is programmed to control the door lock system, the driver door switch (DDS), passenger door switch (PDS) and body control module (BCM) will lock the vehicle doors if the following inputs are true:

- Ignition 1 input is active.
- All door jamb switch inputs are inactive.
- Cargo door or liftgate/liftglass ajar inputs are inactive.
- Transmission is shifted out of PARK.

This automatic door lock function will only occur once per ignition cycle unless, a door jamb switch input changes state to active and back to inactive. Then the DDS, PDS and BCM will lock all doors again.

Once the automatic door lock feature has locked the doors, the BCM will then unlock all the doors when the transmission is shifted into PARK.

Lockout Prevention

This feature prevents the locking of the driver door if the ignition key is left in the ignition lock cylinder. If a lock function occurs from any door lock switch and the body control module (BCM) senses an active state on either the left front door latch signal, secondary door latch switch signal and/or the liftgate ajar switch signal circuits and the key in ignition switch signal circuit is in the YES state, the BCM, driver door switch (DDS) and passenger door switch (PDS) will lock the doors and then the DDS will unlock the driver door.

Delayed Locking Operation

With any door open and a door lock switch is activated in the lock position, the driver door switch (DDS), passenger door switch (PDS) and the body control module (BCM) will go into a lock pending state. The BCM will also give 3 audible chimes. When the door is closed, the DDS, PDS and the BCM will lock the doors after

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approximately 5 seconds. This feature can be overridden by activating the door lock switch a second time and the doors will lock even with a door open.

REAR HATCH/GATE DESCRIPTION AND OPERATION

Operation

A power open or close cycle can only be initiated from the fully closed or open positions while the vehicle is in park and the liftglass ajar switch input to the liftgate module is inactive. At any time during a power open or close cycle the operation can be reversed by pressing any of the open/close switches. The power liftgate can be switched to manual mode with the on/off switch in the overhead console and during manual operation the power latch will still operate. During power liftgate operation the liftgate module continuously monitors the liftgate position and load profile. The position is calculated from hall effect sensor counts and the electrical load of the gear motor is used to determine physical resistance to the liftgate. Both of these profiles must be learned before the liftgate can operate properly and relearned any time most liftgate components are serviced.

Power Latch

The latch motor is a bi-directional motor and latch or unlatch operation is the result of the direction of the motor rotation. The liftgate module controls the latch motor through the control circuits by suppling power and ground in the appropriate polarity. The motor control circuits are monitored by the liftgate module prior to activation for a high or low condition and during motor operation for an insufficient current flow condition. The ratchet, pawl, and sector switches are part of the latch motor assembly and are used by the liftgate control module to determine the state of the latch during the process of latching or unlatching. Each of the latch switch signal circuits are supplied battery voltage through a resistor and monitored within the liftgate module. The latch switches share a common low reference circuit from the liftgate module and when the switch contacts close the signal circuit goes low and the liftgate module determines the switch to be active.

The handle switch and close switch are parallel circuits and provide a single input to the liftgate control module. The handle/close switch signal circuit is supplied battery voltage through a resistor and monitored within the liftgate module. The switches share a common low reference circuit from the liftgate module and when the switch contacts close the signal circuit goes low and the liftgate module determines the switch to be active.

Gear Motor Assembly

The liftgate motor is a bi-directional motor and open or close operation is the result of the direction of the motor rotation. The liftgate module controls the liftgate motor through the control circuits by suppling power and ground in the appropriate polarity. The motor control circuits are monitored by the liftgate module prior to activation for a high or low condition and during motor operation for any irregular current flow conditions.

The liftgate motor clutch engages or disengages the liftgate motor to the liftgate drive gear and is the component that determines power or manual operation. When the liftgate module supplies power to the clutch control circuit the clutch coil is energized and the liftgate motor is engaged to the liftgate drive gear so that power operation can occur. The liftgate module monitors the clutch control circuit at all times for a short high while in an inactive state or a short low or insufficient current flow while in an active state.

The full open switch is part of the gear motor assembly and will close and become active when the liftgate reaches the full open position. The full open switch signal circuit is supplied battery voltage through a resistor

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and monitored within the liftgate module. The liftgate provides a low reference circuit and when the switch contacts close the signal circuit goes low and the liftgate module determines the switch to be active.

Object Detection

The liftgate control module continuously monitors power liftgate operation and calculates its location and direction of travel using 2 hall effect sensors that are part of the gear motor assembly. The hall effect sensors are 3 wire sensors and are supplied with a 5 volt power circuit, ground and signal circuits from the liftgate control module. The hall effect sensor signal circuits are referenced from battery voltage within the liftgate control module and pulsed low by the hall effect sensors.

The power liftgate system uses a secondary object detection method which consists of object sensors fixed to both sides of the liftgate near the seal area. The object sensors consist of an internal fixed resistor and normally open switch contacts which when closed will bypass the resistor. The signal circuit is supplied 5 volts through a resistor and monitored within the liftgate control module, and during normal power liftgate operation the signal circuit should remain a fixed value. When an object presses one of the sensors the contacts close and the resistor is bypassed causing the signal circuit voltage at the module to go low.

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