ACCESSORIES & EQUIPMENT

Bumpers and Fascias - Escalade, Suburban, Tahoe, Yukon

SPECIFICATIONS

FASTENER SPECIFICATIONS

Application	Specification	
	Metric	English
Front Bumper Fascia Center Support Bolts	7 N.m	62 lb in
Front Bumper Fascia Guide Bolts	2.5 N.m	22 lb in
Front Bumper Fascia Lower Bolts	7 N.m	62 lb in
Front Bumper Impact Bar Bolts	58 N.m	43 lb ft
Front Bumper Outer Front Filler Bolts	3 N.m	27 lb in
Front Bumper Shutter Bolts	6 N.m	53 lb in
Front Bumper Shutter Lower Bolts	6 N.m	53 lb in
Radiator Air Lower Deflector Screw	3 N.m	27 lb in
Radiator Grille Bolts	7 N.m	62 lb in
Radiator Grille Filler Bolts (Chevrolet)	2.5 N.m	22 lb in
Rear Bumper Fascia Bolts	2.5 N.m	22 lb in
Rear Bumper Fascia Guide Bolt	2.5 N.m	22 lb in
Rear Bumper Fascia Lower Bolts	7 N.m	62 lb in
Rear Bumper Fascia Tail Lamp Opening Bracket Bolt	2.5 N.m	22 lb in
Rear Bumper Impact Bar Bolt	100 N.m	74 lb ft
Rear Bumper Impact Bar Bolt - Side	70 N.m	52 lb ft
Rear Bumper Lower Fascia Bolts	2.5 N.m	22 lb in
Rear Bumper Upper Fascia Bolts	2.5 N.m	22 lb in
Rear Closure Hands Free Sensor Bolts	2.5 N.m	22 lb in

SCHEMATIC WIRING DIAGRAMS

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ACTIVE GRILLE AIR SHUTTER WIRING SCHEMATICS

Active Grille Air Shutter (Z75)

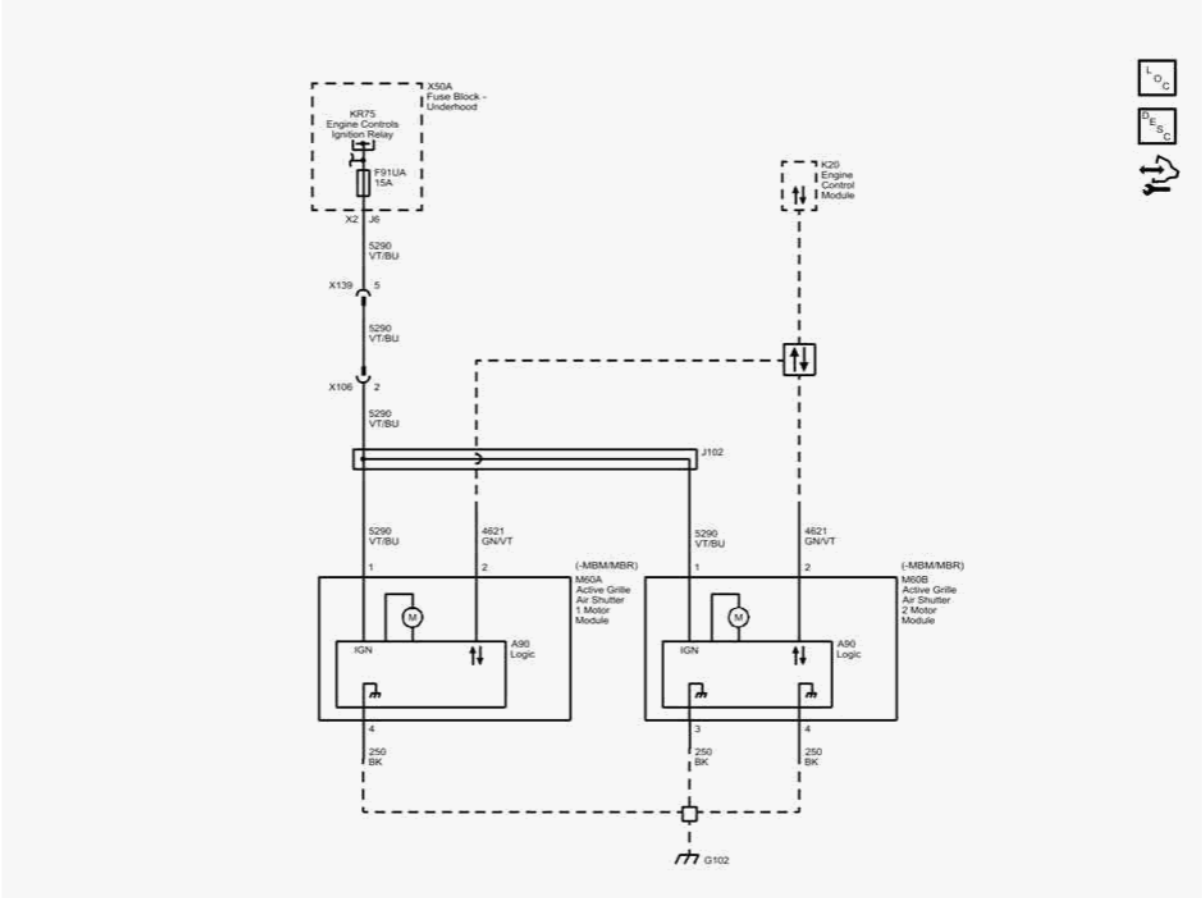


Fig. 1: Active Grille Air Shutter (Z75)
Courtesy of GENERAL MOTORS COMPANY

DIAGNOSTIC INFORMATION AND PROCEDURES

DTC P059F OR P151E: ACTIVE GRILLE AIR SHUTTER

Diagnostic Instructions

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

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- Review **Strategy Based Diagnosis** for an overview of the diagnostic approach.
- **Diagnostic Procedure Instructions** provides an overview of each diagnostic category.

DTC Descriptors

DTC P059F

Active Grille Air Shutter 1 Performance

DTC P151E

Active Grille Air Shutter Actuator 1 Signal Message Counter Incorrect

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Ignition	P059F, P151E	P059F, P151E	--	--
Local Interconnect Network Serial Data Bus	U1510	U1510	U1510	U1510
Ground	-	P059F, P151E	-	--

Circuit/System Description

The active grille air shutter actuator closes louvers at the front bumper to enhance vehicle aerodynamics in driving situations where cooling and A/C loads are relatively low and high levels of front end airflow are not required. If high levels of airflow are required the active grille air shutter actuator opens the louvers. The Local Interconnect Network (LIN) Serial Data Bus signal from the engine control module, ignition and ground circuits enable the active grille air shutter actuator to operate. If the conditions for opening the louvers are reached the engine control module commands the active grille air shutter actuator to open the louvers.

Conditions for Running the DTC

- Ignition On/Vehicle in Service Mode.
- The battery voltage is greater than 10 V.
- The DTC runs continuously when the above conditions are met.

Conditions for Setting the DTC

- The DTC P059F will be set during a key cycle when the commanded louver position can not be achieved after 5 attempts are made to move the

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louver. The DTC will be stored as current for this key cycle but the malfunction indicator lamp (MIL) will not be illuminated.

- The DTC P151E will set if there is a serial data communication failure.

Action Taken When the DTC Sets

DTC P059F and P151E are type B DTCs.

Conditions for Clearing the DTC

DTC P059F and P151E are type B DTCs.

Reference Information

Schematic Reference

Active Grille Air Shutter Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Active Grille Air Shutter Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Ignition On/Vehicle in Service Mode.

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2. Verify DTC U1510 is not set.
   - **If DTC U1510 is set**

     Refer to **Diagnostic Trouble Code (DTC) List - Vehicle** for further diagnosis.

   - **If DTC U1510 is not set**
3. Verify the active grille air shutter position parameter changes from 0% (fully open) to 100% (fully closed) when using the scan tool ECM Active Grille Air Shutter Position control function.
   - **If the louvers at the front bumper do not open and close**

     Refer to Circuit/System Testing.

   - **If the louvers at the front bumper open and close**
4. Verify none of the following conditions are present:
   - Snow or ice packed in the front fascia which prevents the louvers from moving.
   - Debris or foreign objects which prevent the louvers from moving.
   - **If any of the conditions are present**

     Clear any snow, ice or foreign objects from the front grille.

   - **If none of the conditions are present**
5. All OK

Circuit/System Testing

1. Ignition/Vehicle Off and all vehicle systems Off, disconnect the harness connector(s) at the active grille air shutter actuator(s). It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit and ground.
   - **If 10 Ω or greater**
   1. Ignition/Vehicle Off.
   2. Test for less than 2 Ω in the ground circuit end to end.
      - If 2 Ω or greater, repair the open/high resistance in the circuit.
      - If less than 2 Ω, repair the open/high resistance in the ground connection.
   - **If less than 10 Ω**

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3. Ignition On/Vehicle in Service Mode.
4. Verify a test lamp illuminates between the ignition circuit and ground.
    - **If the test lamp does not illuminate and the circuit fuse is good**
    1. Ignition/Vehicle Off.
    2. Test for less than 2 Ω in the ignition circuit end to end.
        - If 2 Ω or greater, repair the open/high resistance in the circuit.
        - If less than 2 Ω, verify the fuse is not open and there is voltage at the fuse. Refer to **Power Mode Mismatch (With BTM)** **Power Mode Mismatch (Without BTM)** .
    - **If the test lamp does not illuminate and the circuit fuse is open**
    1. Ignition/Vehicle Off.
    2. Test for infinite resistance between the ignition circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
    - **If the test lamp illuminates**
5. Ignition/Vehicle Off, disconnect the harness connector at the K20 Engine Control Module.
    1. Test for infinite resistance between the LIN Serial Data Bus circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
        - If infinite resistance
    2. Test for less than 2 Ω in the LIN Serial Data Bus circuit end to end.
        - If 2 Ω or greater, repair the open/high resistance in the circuit.
        - If less than 2 Ω
    3. Test for less than 1 V between the LIN Serial Data Bus circuit and ground.
        - If 1 V or greater, repair the short to voltage on the circuit.
        - If less than 1 V
6. Test or replace the M60A Active Grille Air Shutter 1 Motor Module.
7. Verify DTCs P059F, P151E or U1510 are not set while operating the vehicle under the conditions for setting the DTC.
    - **If the DTC is set**

      Replace the K20 Engine Control Module.

    - **If the DTC is not set**

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8. All OK.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

Control Module References for control module replacement, programming and setup.

DTC P05AE OR P151F: ACTIVE GRILLE AIR SHUTTER 2

Diagnostic Instructions

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

DTC Descriptors

DTC P05AE

Active Grille Air Shutter 2 Performance

DTC P151F

Active Grille Air Shutter Actuator 2 Signal Message Counter Incorrect

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Ignition	P05AE, P151F	P05AE, P151F	--	--
Local Interconnect Network Serial Data Bus	U1511	U1511	U1511	U1511
Ground	-	P05AE, P151F	-	--

Circuit/System Description

The active grille air shutter actuator closes louvers at the front bumper to enhance vehicle aerodynamics in driving situations where cooling and A/C loads are relatively low and high levels of front end airflow are not required. If high levels of airflow are required the active grille air shutter actuator

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opens the louvers. The Local Interconnect Network (LIN) Serial Data Bus signal from the engine control module, ignition and ground circuits enable the active grille air shutter actuator to operate. If the conditions for opening the louvers are reached the engine control module commands the active grille air shutter actuator to open the louvers.

Conditions for Running the DTC

- Ignition On/Vehicle in Service Mode.
- The battery voltage is greater than 10 V.
- The DTC runs continuously when the above conditions are met.

Conditions for Setting the DTC

- The DTC P05AE will be set during a key cycle when the commanded louver position can not be achieved after 5 attempts are made to move the louver. The DTC will be stored as current for this key cycle but the malfunction indicator lamp (MIL) will not be illuminated.
- The DTC P151F will set if there is a serial data communication failure.

Action Taken When the DTC Sets

DTC P05AE and P151F are type B DTCs.

Conditions for Clearing the DTC

DTC P05AE and P151F are type B DTCs.

Reference Information

Schematic Reference

Active Grille Air Shutter Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Active Grille Air Shutter Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Ignition On/Vehicle in Service Mode.
2. Verify DTC U1511 is not set.
   - **If DTC U1511 is set**

     Refer to **Diagnostic Trouble Code (DTC) List - Vehicle** for further diagnosis.

   - **If DTC U1511 is not set**
3. Verify the active grille air shutter position parameter changes from 0% (fully open) to 100% (fully closed) when using the scan tool ECM Active Grille Air Shutter Position control function.
   - **If the louvers at the front bumper do not open and close**

     Refer to Circuit/System Testing.

   - **If the louvers at the front bumper open and close**
4. Verify none of the following conditions are present:
   - Snow or ice packed in the front fascia which prevents the louvers from moving.
   - Debris or foreign objects which prevent the louvers from moving.
   - **If any of the conditions are present**

     Clear any snow, ice or foreign objects from the front grille.

   - **If none of the conditions are present**
5. All OK

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Circuit/System Testing

1. Ignition/Vehicle Off and all vehicle systems Off, disconnect the harness connector(s) at the active grille air shutter actuator(s). It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit and ground.
    - **If 10 Ω or greater**
    1. Ignition/Vehicle Off.
    2. Test for less than 2 Ω in the ground circuit end to end.
        - If 2 Ω or greater, repair the open/high resistance in the circuit.
        - If less than 2 Ω, repair the open/high resistance in the ground connection.
    - **If less than 10 Ω**
3. Ignition On/Vehicle in Service Mode.
4. Verify a test lamp illuminates between the ignition circuit and ground.
    - **If the test lamp does not illuminate and the circuit fuse is good**
    1. Ignition/Vehicle Off.
    2. Test for less than 2 Ω in the ignition circuit end to end.
        - If 2 Ω or greater, repair the open/high resistance in the circuit.
        - If less than 2 Ω, verify the fuse is not open and there is voltage at the fuse. Refer to **Power Mode Mismatch (With BTM)** **Power Mode Mismatch (Without BTM)** .
    - **If the test lamp does not illuminate and the circuit fuse is open**
    1. Ignition/Vehicle Off.
    2. Test for infinite resistance between the ignition circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
    - **If the test lamp illuminates**
5. Ignition/Vehicle Off, disconnect the harness connector at the K20 Engine Control Module.
    1. Test for infinite resistance between the LIN Serial Data Bus circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
        - If infinite resistance
    2. Test for less than 2 Ω in the LIN Serial Data Bus circuit end to end.
        - If 2 Ω or greater, repair the open/high resistance in the circuit.

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- If less than 2 Ω

3. Test for less than 1 V between the LIN Serial Data Bus circuit and ground.
   - If 1 V or greater, repair the short to voltage on the circuit.
   - If less than 1 V

6. Test or replace the M60B Active Grille Air Shutter 2 Motor Module.
7. Verify DTCs P05AE, P151F or U1511 are not set while operating the vehicle under the conditions for setting the DTC.
   - **If the DTC is set**

     Replace the K20 Engine Control Module.

   - **If the DTC is not set**
8. All OK.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

Control Module References for control module replacement, programming and setup.

SYMPTOMS - ACTIVE GRILLE AIR SHUTTER

NOTE: 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 **Active Grille Air Shutter Description and Operation**.

Visual/Physical Inspection

- Inspect for aftermarket devices which may 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 may cause the symptom.

Intermittent

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

Symptom List

- **Active Grille Air Shutter 1 Malfunction**
- **Active Grille Air Shutter 2 Malfunction**

ACTIVE GRILLE AIR SHUTTER MALFUNCTION

Diagnostic Instructions

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

DTC Descriptors

DTC P059F

Active Grille Air Shutter 1 Performance - Upper Shutter

DTC P151E

Active Grille Air Shutter Actuator 1 Signal Message Counter Incorrect - Upper Shutter

DTC P05AE

Active Grille Air Shutter 2 Performance - Lower Shutter

DTC P151F

Active Grille Air Shutter 2 Signal Message Counter Incorrect - Lower Shutter

Diagnostic Fault Information

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

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Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Ignition	3	1, 2 or 3	--	--
LIN Bus serial data	3	1, 2 or 3	3	P151E, P151F
Ground	-	1, 2 or 3	--	--
1. Upper Active Grille Air Shutter Malfunction 2. Lower Active Grille Air Shutter Malfunction 3. Both Active Grille Air Shutter Malfunction				

Circuit/System Description

The active grille air shutter actuator closes shutters in the front grille to enhance vehicle aerodynamics in driving situations where cooling and A/C loads are relatively low and high levels of front end airflow are not required. If high levels of airflow are required the active grille air shutter actuator opens the shutters. The Local Interconnect Network (LIN) BUS serial data circuit from the engine control module, ignition and ground circuits enable the active grille air shutter actuator to operate. If the conditions for opening the shutters are reached the K20 Engine Control Module commands the active grille air shutter actuator to open the shutters.

The scan tool Active Grille Air Shutter System test will help technicians diagnose system concerns. If the shutters are initially in the open position when the test is run the shutters will move to the closed position and stop moving. If the shutters are initially in the closed position the shutters will move to the open position, then close and stop moving.

Conditions for Running the DTC

- Ignition/Vehicle On or the engine is running.
- The battery voltage is greater than 10 V.
- The DTC runs continuously when the above conditions are met.

Conditions for Setting the DTC

- The DTC P059F or P05AE will be set during a key cycle when the commanded shutter position can not be achieved after 3 attempts are made to move the shutters. The DTC will be stored as current for this key cycle but the malfunction indicator lamp (MIL) will not be illuminated.
- On the next key cycle the shutters will be commanded to move again. If the commanded shutter position cannot be achieved after 3 more attempts, the MIL will be illuminated and DTC P059F or P05AE will be set as current.
- The DTC P151E or P151F will set if there is no communication on the LIN Bus circuit.

Action Taken When the DTC Sets

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DTC P059F, P151E, P05AE or P151F are type B DTCs.

Conditions for Clearing the DTC

DTC P059F, P151E, P05AE or P151F are type B DTCs.

Reference Information

Schematic Reference

Active Grille Air Shutter Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Active Grille Air Shutter Description and Operation

Electrical Information Reference

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

DTC Type Reference

Powertrain Diagnostic Trouble Code (DTC) Type Definitions

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Ignition On/Vehicle in Service Mode.

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2. Verify that none of the following conditions are present:
   - Snow or ice packed in the front grille which prevents the louvers from moving.
   - Debris or foreign objects which prevent the shutters from moving.
   - **If any of the conditions are present**

     Clear any snow, ice or foreign objects from the front grille.

   - **If none of the conditions are present**
3. Verify that DTC U1510 or U1511 is not set.
   - **If any of the DTCs are set**

     Refer to **Diagnostic Trouble Code (DTC) List - Vehicle** for further diagnosis.

   - **If none of the DTCs are set**
4. Verify the test result is a pass after performing the Active Grille Air Shutter System test with a scan tool.
   - **If the test result is fail and only the upper shutter assembly is not moving**

     Refer to Circuit/System Testing - Active Grille Air Shutter 1 Inoperative, DTCs P059F or P151E.

   - **If the test result is fail and only the lower shutter assembly is not moving**

     Refer to Circuit/System Testing - Active Grille Air Shutter 2 Inoperative, DTCs P05AE or P151F.

   - **If the test result is fail and both shutter assemblies are not moving**

     Refer to Circuit/System Testing - Both Active Grille Air Shutters Inoperative, DTCs P059F, P151E, P05AE and P151F.

   - **If the test result is pass**
5. All OK

Circuit/System Testing

NOTE: **The M60A Active Grille Air Shutter 1 Motor Module is the upper shutter assembly. The M60B Active Grille Air Shutter 2 Motor Module is the lower shutter assembly.**

Active Grille Air Shutter 1 Inoperative, DTCs P059F or DTC P151E

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1. Ignition/Vehicle Off, and all vehicles systems Off, disconnect the harness connector at the M60A Active Grille Air Shutter 1 Motor Module. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 4 and ground.
    - **If 10 Ω or greater**
    1. Ignition/Vehicle Off.
    2. Test for less than 2 Ω in the ground circuit end to end.
        - If 2 Ω or greater, repair the open/high resistance in the circuit.
        - If less than 2 Ω, repair the open/high resistance in the ground connection.
    - **If less than 10 Ω**
3. Ignition On/Vehicle in Service Mode.
4. Verify a test lamp illuminates between the ignition circuit terminal 1 and ground.
    - **If the test lamp does not illuminate and the circuit fuse is good**
    1. Ignition/Vehicle Off, remove the test lamp.
    2. Test for less than 2 Ω in the ignition circuit end to end.
        - If 2 Ω or greater, repair the open/high resistance in the circuit.
        - If less than 2 Ω, verify the fuse is not open and there is voltage at the fuse. Refer to **Power Mode Mismatch (With BTM)** **Power Mode Mismatch (Without BTM)** .
    - **If the test lamp does not illuminate and the circuit fuse is open**
    1. Ignition/Vehicle Off, remove the test lamp.
    2. Test for infinite resistance between the ignition circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
        - If infinite resistance, replace the M60A Active Grille Air Shutter 1 Motor Module.
    - **If the test lamp illuminates**
5. Disconnect the harness connector at the K20 Engine Control Module.
6. Test for less than 2 Ω in the serial data circuit end to end.
    - If 2 Ω or greater, repair the open/high resistance in the circuit.
    - If less than 2 Ω
7. Test or replace the M60A Active Grille Air Shutter 1 Motor Module.
8. Verify DTCs P059F, P151E, P05AE or P151F are not set.

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- **If any of these DTCs are set**

  Replace the K20 Engine Control Module.

- **If none of these DTCs are set**

9. All OK.

Active Grille Air Shutter 2 Inoperative, DTCs P05AE or P151F

1. Ignition/Vehicle Off, and all vehicles systems Off, disconnect the harness connector at the M60B Active Grille Air Shutter 2 Motor Module. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between each of the ground circuit terminals listed below and ground:
   - Terminal 3
   - Terminal 4
   - **If 10 Ω or greater**
   1. Ignition/Vehicle Off.
   2. Test for less than 2 Ω in the ground circuit end to end.
      - If 2 Ω or greater, repair the open/high resistance in the circuit.
      - If less than 2 Ω, repair the open/high resistance in the ground connection.
   - **If less than 10 Ω**
3. Ignition On/Vehicle in Service Mode.
4. Verify a test lamp illuminates between the ignition circuit terminal 1 and ground.
   - **If the test lamp does not illuminate and the circuit fuse is good**
   1. Ignition/Vehicle Off, remove the test lamp.
   2. Test for less than 2 Ω in the ignition circuit end to end.
      - If 2 Ω or greater, repair the open/high resistance in the circuit.
      - If less than 2 Ω, verify the fuse is not open and there is voltage at the fuse. Refer to **Power Mode Mismatch (With BTM)** **Power Mode Mismatch (Without BTM)** .
   - **If the test lamp does not illuminate and the circuit fuse is open**
   1. Ignition/Vehicle Off, remove the test lamp.
   2. Test for infinite resistance between the ignition circuit and ground.

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- If less than infinite resistance, repair the short to ground on the circuit.
- If infinite resistance, replace the M60B Active Grille Air Shutter 2 Motor Module.

- **If the test lamp illuminates**

5. Disconnect the harness connector at the K20 Engine Control Module.
6. Test for less than 2 Ω in the serial data circuit end to end.
   - If 2 Ω or greater, repair the open/high resistance in the circuit.
   - If less than 2 Ω
7. Test or replace the M60B Active Grille Air Shutter 2 Motor Module.
8. Verify DTCs P059F, P151E, P05AE or P151F are not set.
   - **If any of these DTCs are set**

     Replace the K20 Engine Control Module.

   - **If none of these DTCs are set**
9. All OK.

Both Active Grille Air Shutters Inoperative, DTCs P059F, P151E, P05AE and P151F

1. Ignition/Vehicle Off, and all vehicles systems Off, disconnect the harness connector at the M60A Active Grille Air Shutter 1 Motor Module. It may take up to 2 min for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 4 and ground:
   - **If 10 Ω or greater**
   1. Ignition/Vehicle Off.
   2. Test for less than 2 Ω in the ground circuit end to end.
      - If 2 Ω or greater, repair the open/high resistance in the circuit.
      - If less than 2 Ω, repair the open/high resistance in the ground connection.
   - **If less than 10 Ω**
3. Ignition On/Vehicle in Service Mode.
4. Verify a test lamp illuminates between the ignition circuit terminal 1 and ground.
   - **If the test lamp does not illuminate and the circuit fuse is good**
   1. Ignition/Vehicle Off, remove the test lamp.

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2. Test for less than 2 Ω in the ignition circuit end to end.
    - If 2 Ω or greater, repair the open/high resistance in the circuit.
    - If less than 2 Ω, verify the fuse is not open and there is voltage at the fuse. Refer to **Power Mode Mismatch (With BTM)** **Power Mode Mismatch (Without BTM)** .
- **If the test lamp does not illuminate and the circuit fuse is open**

1. Ignition/Vehicle Off, remove the test lamp, disconnect the harness connector at the M60B Active Grille Air Shutter 2 Motor Module, Ignition On/Vehicle in Service Mode.
2. Verify a test lamp illuminates between the ignition circuit and ground.
    - If the test lamp illuminates, replace M60B Active Grille Air Shutter 2 Motor Module.
    - If the test lamp does not illuminate
3. Test for infinite resistance between the ignition circuit and ground.
    - If less than infinite resistance, repair the short to ground on the circuit.
    - If infinite resistance, replace the M60A Active Grille Air Shutter 1 Motor Module.
- **If the test lamp illuminates**

NOTE: **For accurate voltage reading, disconnect the battery charger prior to performing the following test step.**

5. Test for 2-12 V between the LIN serial data circuit terminal 2 and ground.
    - **If less than 2 V**

1. Ignition/Vehicle Off, disconnect the harness connectors at the K20 Engine Control Module and the M60B Active Grille Air Shutter 2 Motor Module.
2. Test for infinite resistance between the LIN serial data circuit terminal 2 and ground.
    - If less than infinite resistance, repair the short to ground on the circuit.
    - If infinite resistance
3. Test for less than 2 Ω in the LIN serial data circuit end to end.
    - If 2 Ω or greater, repair the open/high resistance in the circuit.
    - If less than 2 Ω
4. Reconnect the harness connector at the K20 Engine Control Module, Ignition On/Vehicle in Service Mode.
5. Test for 2-12 V between the LIN serial data circuit terminal 2 and ground.
    - If less than 2 V, replace the K20 Engine Control Module.

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- If greater than 2 V

6. Ignition/Vehicle Off, reconnect the harness connector at the M60A Active Grille Air Shutter 1 Motor Module, Ignition On/Vehicle in Service Mode.
7. Verify the upper shutter assembly is moving while performing the Active Grille Air Shutter System test with a scan tool.
    - If the upper shutter assembly is not moving, replace the M60A Active Grille Air Shutter 1 Motor Module.
    - If the upper shutter assembly is moving, replace the M60B Active Grille Air Shutter 2 Motor Module.

- **If greater than 12 V**

1. Ignition/Vehicle Off, disconnect the harness connectors at the K20 Engine Control Module and the M60B Active Grille Air Shutter 2 Motor Module, Ignition On/Vehicle in Service Mode.
2. Test for less than 1 V between the LIN serial data circuit terminal 2 and ground.
    - If 1 V or greater, repair the short to voltage on the circuit.
    - If less than 1 V
3. Ignition/Vehicle Off, reconnect the harness connector at the K20 Engine Control Module, Ignition On/Vehicle in Service Mode.
4. Test for 2-12 V between the LIN serial data circuit terminal 2 and ground.
    - If greater than 12 V, replace the K20 Engine Control Module.
    - If less than 12 V
5. Ignition/Vehicle Off, reconnect the harness connector at the M60B Active Grille Air Shutter 2 Motor Module, Ignition On/Vehicle in Service Mode.
6. Test for 2-12 V between the LIN serial data circuit terminal 2 and ground.
    - If greater than 12 V, replace the M60B Active Grille Air Shutter 2 Motor Module.
    - If less than 12 V, replace the M60A Active Grille Air Shutter 1 Motor Module.

- **If between 2-12 V**

6. Test or replace the M60A Active Grille Air Shutter 1 Motor Module.
7. Verify DTCs P059F, P151E, P05AE or P151F are not set.
    - **If any of these DTCs are set**

      Replace the K20 Engine Control Module.

    - **If none of these DTCs are set**
8. All OK.

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Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

Control Module References for control module replacement, programming and setup.

ACTIVE GRILLE AIR SHUTTER 1 MALFUNCTION

Diagnostic Instructions

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

DTC Descriptors

DTC P059F

Active Grille Air Shutter 1 Performance

DTC P151E

Active Grille Air Shutter Actuator 1 Signal Message Counter Incorrect

Diagnostic Fault Information

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Ignition	P059F, P151E	P059F, P151E	--	--
Local Interconnect Network Serial Data Bus	U1510	U1510	U1510	U1510
Ground	-	P059F, P151E	-	--

Circuit/System Description

The active grille air shutter actuator closes louvers at the front bumper to enhance vehicle aerodynamics in driving situations where cooling and A/C loads are relatively low and high levels of front end airflow are not required. If high levels of airflow are required the active grille air shutter actuator opens the louvers. The Local Interconnect Network (LIN) Serial Data Bus signal from the engine control module, ignition and ground circuits enable the active grille air shutter actuator to operate. If the conditions for opening the louvers are reached the engine control module commands the active

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grille air shutter actuator to open the louvers.

Conditions for Running the DTC

- Ignition On/Vehicle in Service Mode.
- The battery voltage is greater than 10 V.
- The DTC runs continuously when the above conditions are met.

Conditions for Setting the DTC

- The DTC P059F will be set during a key cycle when the commanded louver position can not be achieved after 5 attempts are made to move the louver. The DTC will be stored as current for this key cycle but the malfunction indicator lamp (MIL) will not be illuminated.
- The DTC P151E will set if there is a serial data communication failure.

Action Taken When the DTC Sets

DTC P059F and P151E are type B DTCs.

Conditions for Clearing the DTC

DTC P059F and P151E are type B DTCs.

Reference Information

Schematic Reference

Active Grille Air Shutter Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Active Grille Air Shutter Description and Operation

Electrical Information Reference

- **Circuit Testing**

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Ignition On/Vehicle in Service Mode.
2. Verify DTC U1510 is not set.
   - **If DTC U1510 is set**

     Refer to **Diagnostic Trouble Code (DTC) List - Vehicle** for further diagnosis.

   - **If DTC U1510 is not set**
3. Verify the active grille air shutter position parameter changes from 0% (fully open) to 100% (fully closed) when using the scan tool ECM Active Grille Air Shutter Position control function.
   - **If the louvers at the front bumper do not open and close**

     Refer to Circuit/System Testing.

   - **If the louvers at the front bumper open and close**
4. Verify none of the following conditions are present:
   - Snow or ice packed in the front fascia which prevents the louvers from moving.
   - Debris or foreign objects which prevent the louvers from moving.
   - **If any of the conditions are present**

     Clear any snow, ice or foreign objects from the front grille.

   - **If none of the conditions are present**
5. All OK

Circuit/System Testing

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1. Ignition/Vehicle Off and all vehicle systems Off, disconnect the harness connector(s) at the active grille air shutter actuator(s). It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit and ground.
    - **If 10 Ω or greater**
    1. Ignition/Vehicle Off.
    2. Test for less than 2 Ω in the ground circuit end to end.
        - If 2 Ω or greater, repair the open/high resistance in the circuit.
        - If less than 2 Ω, repair the open/high resistance in the ground connection.
    - **If less than 10 Ω**
3. Ignition On/Vehicle in Service Mode.
4. Verify a test lamp illuminates between the ignition circuit and ground.
    - **If the test lamp does not illuminate and the circuit fuse is good**
    1. Ignition/Vehicle Off.
    2. Test for less than 2 Ω in the ignition circuit end to end.
        - If 2 Ω or greater, repair the open/high resistance in the circuit.
        - If less than 2 Ω, verify the fuse is not open and there is voltage at the fuse. Refer to **Power Mode Mismatch (With BTM)** **Power Mode Mismatch (Without BTM)** .
    - **If the test lamp does not illuminate and the circuit fuse is open**
    1. Ignition/Vehicle Off.
    2. Test for infinite resistance between the ignition circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
    - **If the test lamp illuminates**
5. Ignition/Vehicle Off, disconnect the harness connector at the K20 Engine Control Module.
    1. Test for infinite resistance between the LIN Serial Data Bus circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
        - If infinite resistance
    2. Test for less than 2 Ω in the LIN Serial Data Bus circuit end to end.
        - If 2 Ω or greater, repair the open/high resistance in the circuit.
        - If less than 2 Ω

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3. Test for less than 1 V between the LIN Serial Data Bus circuit and ground.
    - If 1 V or greater, repair the short to voltage on the circuit.
    - If less than 1 V
6. Test or replace the M60A Active Grille Air Shutter 1 Motor Module.
7. Verify DTCs P059F, P151E or U1510 are not set while operating the vehicle under the conditions for setting the DTC.
    - **If the DTC is set**

      Replace the K20 Engine Control Module.

    - **If the DTC is not set**
8. All OK.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

Control Module References for control module replacement, programming and setup.

ACTIVE GRILLE AIR SHUTTER 2 MALFUNCTION

Diagnostic Instructions

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

DTC Descriptors

DTC P05AE

Active Grille Air Shutter 2 Performance

DTC P151F

Active Grille Air Shutter Actuator 2 Signal Message Counter Incorrect

Diagnostic Fault Information

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Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Ignition	P05AE, P151F	P05AE, P151F	--	--
Local Interconnect Network Serial Data Bus	U1511	U1511	U1511	U1511
Ground	-	P05AE, P151F	-	--

Circuit/System Description

The active grille air shutter actuator closes louvers at the front bumper to enhance vehicle aerodynamics in driving situations where cooling and A/C loads are relatively low and high levels of front end airflow are not required. If high levels of airflow are required the active grille air shutter actuator opens the louvers. The Local Interconnect Network (LIN) Serial Data Bus signal from the engine control module, ignition and ground circuits enable the active grille air shutter actuator to operate. If the conditions for opening the louvers are reached the engine control module commands the active grille air shutter actuator to open the louvers.

Conditions for Running the DTC

- Ignition On/Vehicle in Service Mode.
- The battery voltage is greater than 10 V.
- The DTC runs continuously when the above conditions are met.

Conditions for Setting the DTC

- The DTC P05AE will be set during a key cycle when the commanded louver position can not be achieved after 5 attempts are made to move the louver. The DTC will be stored as current for this key cycle but the malfunction indicator lamp (MIL) will not be illuminated.
- The DTC P151F will set if there is a serial data communication failure.

Action Taken When the DTC Sets

DTC P05AE and P151F are type B DTCs.

Conditions for Clearing the DTC

DTC P05AE and P151F are type B DTCs.

Reference Information

Schematic Reference

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Active Grille Air Shutter Schematics

Connector End View Reference

COMPONENT CONNECTOR END VIEWS - INDEX

Description and Operation

Active Grille Air Shutter Description and Operation

Electrical Information Reference

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

Scan Tool Reference

Control Module References for scan tool information

Circuit/System Verification

1. Ignition On/Vehicle in Service Mode.
2. Verify DTC U1511 is not set.
   - **If DTC U1511 is set**

     Refer to **Diagnostic Trouble Code (DTC) List - Vehicle** for further diagnosis.

   - **If DTC U1511 is not set**
3. Verify the active grille air shutter position parameter changes from 0% (fully open) to 100% (fully closed) when using the scan tool ECM Active Grille Air Shutter Position control function.
   - **If the louvers at the front bumper do not open and close**

     Refer to Circuit/System Testing.

   - **If the louvers at the front bumper open and close**

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4. Verify none of the following conditions are present:
    - Snow or ice packed in the front fascia which prevents the louvers from moving.
    - Debris or foreign objects which prevent the louvers from moving.
    - **If any of the conditions are present**

      Clear any snow, ice or foreign objects from the front grille.

    - **If none of the conditions are present**
5. All OK

Circuit/System Testing

1. Ignition/Vehicle Off and all vehicle systems Off, disconnect the harness connector(s) at the active grille air shutter actuator(s). It may take up to 2 minutes for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit and ground.
    - **If 10 Ω or greater**
    1. Ignition/Vehicle Off.
    2. Test for less than 2 Ω in the ground circuit end to end.
        - If 2 Ω or greater, repair the open/high resistance in the circuit.
        - If less than 2 Ω, repair the open/high resistance in the ground connection.
    - **If less than 10 Ω**
3. Ignition On/Vehicle in Service Mode.
4. Verify a test lamp illuminates between the ignition circuit and ground.
    - **If the test lamp does not illuminate and the circuit fuse is good**
    1. Ignition/Vehicle Off.
    2. Test for less than 2 Ω in the ignition circuit end to end.
        - If 2 Ω or greater, repair the open/high resistance in the circuit.
        - If less than 2 Ω, verify the fuse is not open and there is voltage at the fuse. Refer to **Power Mode Mismatch (With BTM)** **Power Mode Mismatch (Without BTM)** .
    - **If the test lamp does not illuminate and the circuit fuse is open**
    1. Ignition/Vehicle Off.

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2. Test for infinite resistance between the ignition circuit and ground.
    - If less than infinite resistance, repair the short to ground on the circuit.
- **If the test lamp illuminates**

5. Ignition/Vehicle Off, disconnect the harness connector at the K20 Engine Control Module.
    1. Test for infinite resistance between the LIN Serial Data Bus circuit and ground.
        - If less than infinite resistance, repair the short to ground on the circuit.
        - If infinite resistance
    2. Test for less than 2 Ω in the LIN Serial Data Bus circuit end to end.
        - If 2 Ω or greater, repair the open/high resistance in the circuit.
        - If less than 2 Ω
    3. Test for less than 1 V between the LIN Serial Data Bus circuit and ground.
        - If 1 V or greater, repair the short to voltage on the circuit.
        - If less than 1 V
6. Test or replace the M60B Active Grille Air Shutter 2 Motor Module.
7. Verify DTCs P05AE, P151F or U1511 are not set while operating the vehicle under the conditions for setting the DTC.
    - **If the DTC is set**

      Replace the K20 Engine Control Module.

    - **If the DTC is not set**
8. All OK.

Repair Instructions

Perform the **Diagnostic Repair Verification** after completing the repair.

Control Module References for control module replacement, programming and setup.

REPAIR INSTRUCTIONS

FRONT BUMPER IMPACT BAR REPLACEMENT (GMC)

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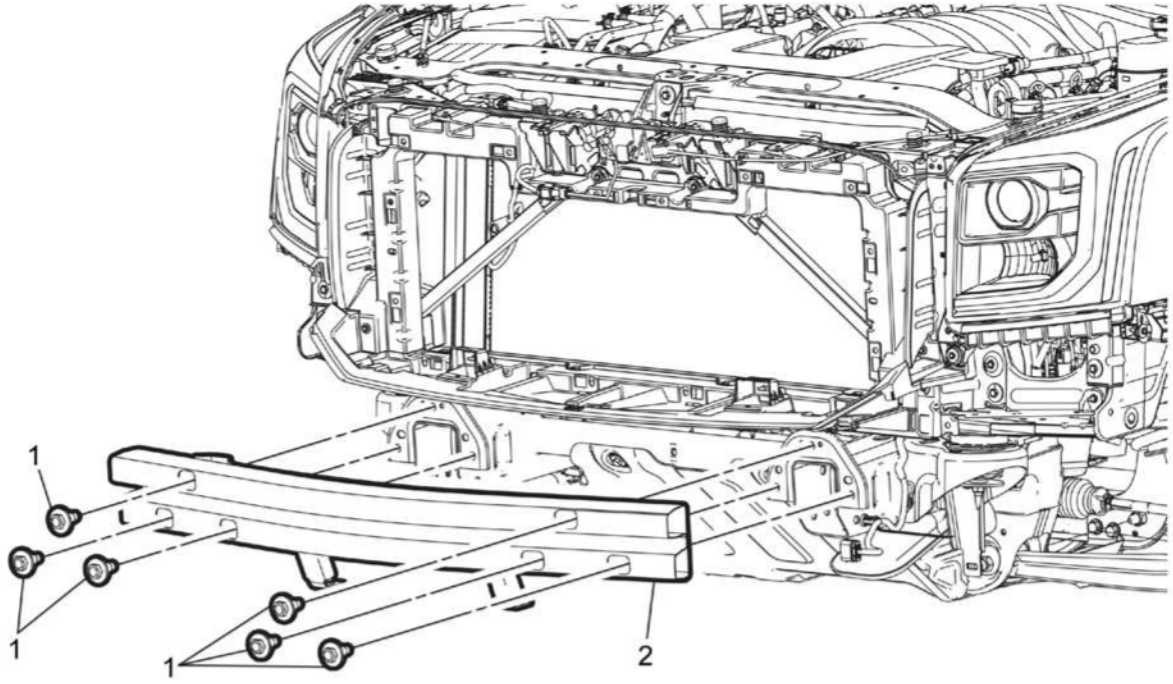


Fig. 2: Front Bumper Impact Bar (GMC)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the bumper fascia. Refer to **Front Bumper Fascia Replacement (GMC)**.	
1	Front Bumper Impact Bar Bolt (Qty: 6) **CAUTION:** **Refer to Fastener Caution .**

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Callout	Component Name
	Tighten 58 N.m (43 lb ft)
2	Front Bumper Impact Bar **Procedure** Disconnect the electrical harness from the impact bar if needed.

FRONT BUMPER IMPACT BAR REPLACEMENT (CHEVROLET)

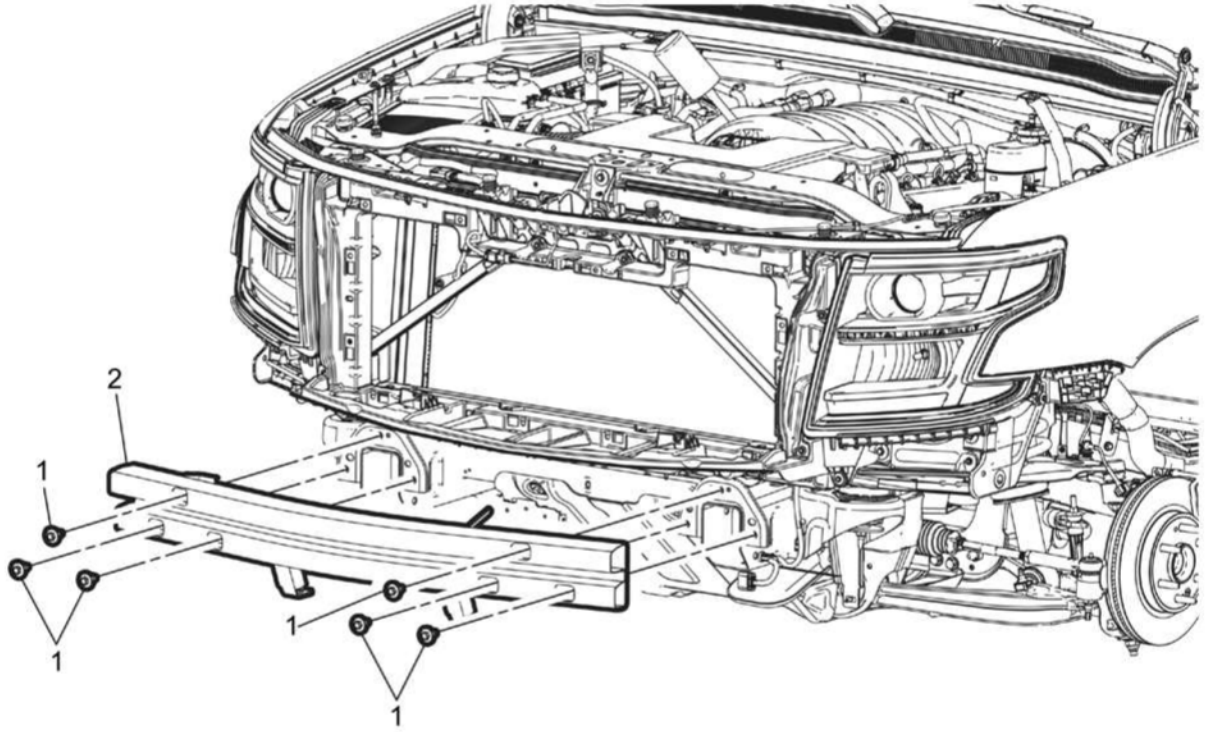


Fig. 3: Front Bumper Impact Bar (Chevrolet)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure	

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Callout	Component Name
Remove the bumper fascia. Refer to **Front Bumper Fascia Replacement (Chevrolet)**.	
1	Front Bumper Impact Bar Bolt (Qty: 6) **CAUTION:** **Refer to** **Fastener** **Caution** . **Tighten** 58 N.m (43 lb ft)
2	Front Bumper Impact Bar **Procedure** Disconnect the electrical harness from the impact bar if needed.

FRONT BUMPER IMPACT BAR REPLACEMENT (CADILLAC)

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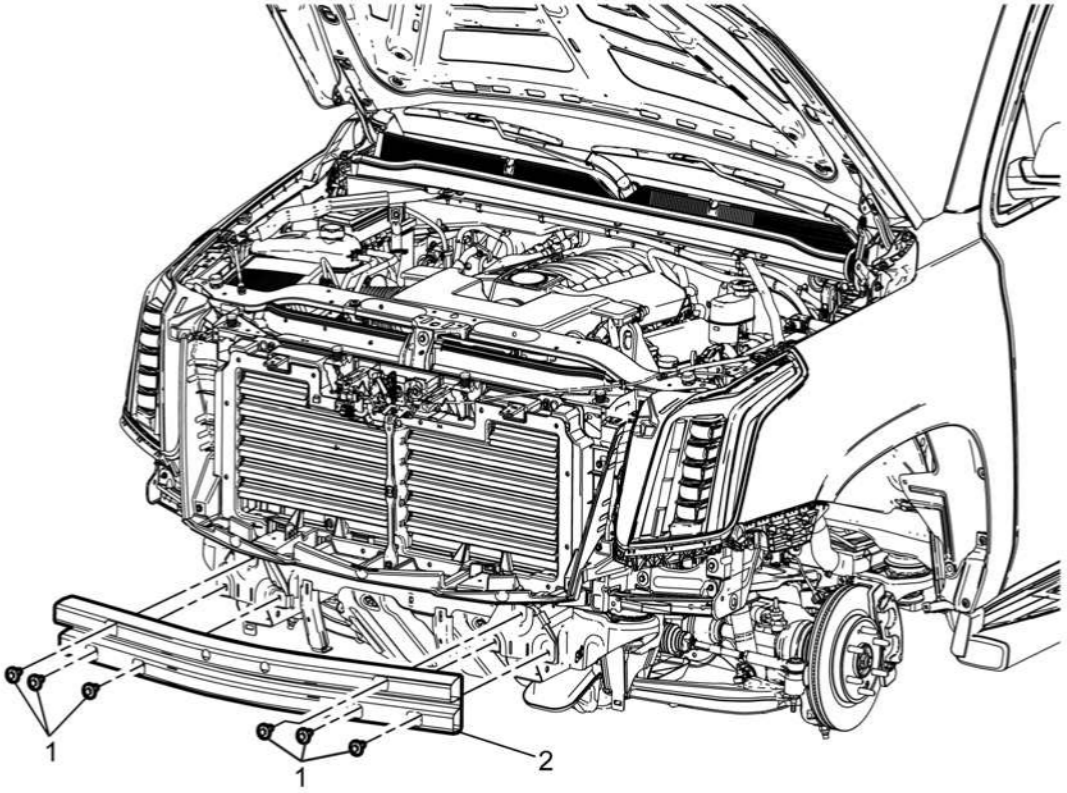


Fig. 4: Front Bumper Impact Bar (Cadillac)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the bumper fascia. Refer to **Front Bumper Fascia Replacement (Cadillac)**.	
1	Front Bumper Impact Bar Bolt (Qty: 6) **CAUTION:** **Refer to Fastener Caution .**

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Callout	Component Name
	Tighten 58 N.m (43 lb ft)
2	Front Bumper Impact Bar **Procedure** Disconnect the electrical harness from the impact bar if needed.

FRONT BUMPER OUTER FRONT FILLER REPLACEMENT (CADILLAC, GMC)

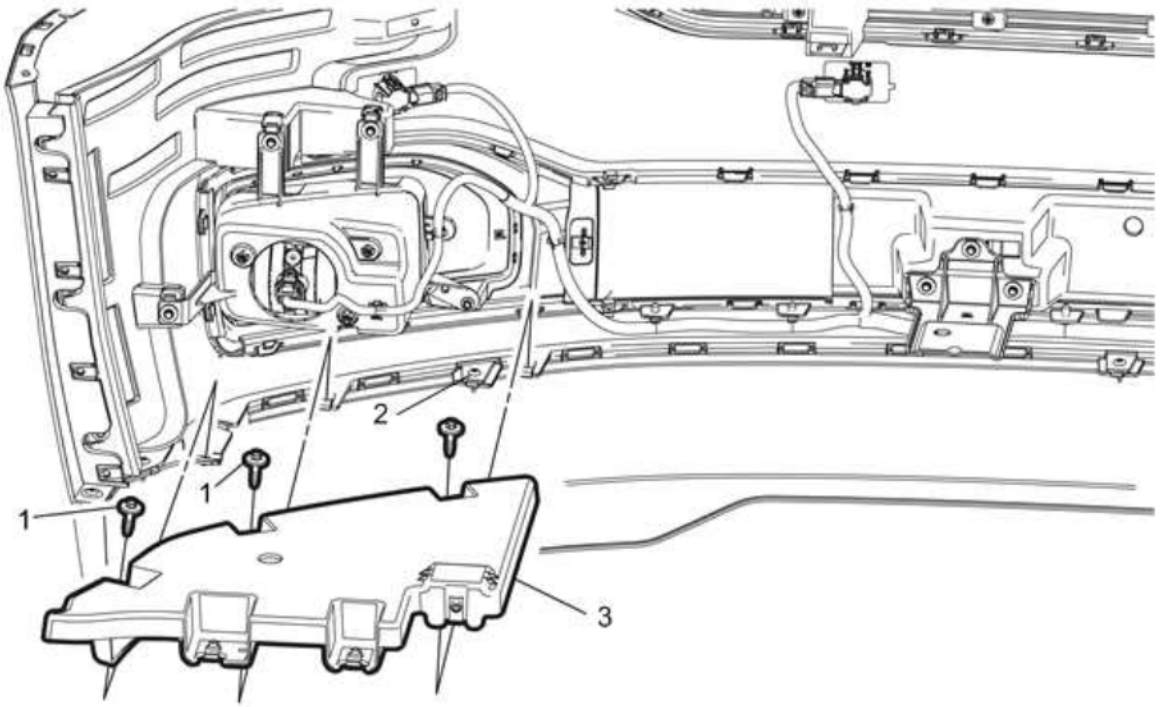


Fig. 5: Front Bumper Outer Front Filler (Chevrolet)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures	

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Callout	Component Name
1. If working on the right side remove the front wheelhouse liner right hand side. Refer to **Front Wheelhouse Liner Replacement - Right Side (Cadillac)** **Front Wheelhouse Liner Replacement - Right Side (GMC)** 2. If working on the left side remove the front wheelhouse liner left hand side. Refer to **Front Wheelhouse Liner Replacement - Left Side (Cadillac)** **Front Wheelhouse Liner Replacement - Left Side (GMC)**	
1	Front Bumper Outer Front Filler Bolt (Qty: 3) **CAUTION:** **Refer to Fastener Caution .** **Tighten** 3 N.m (27 lb in)
2	Front Bumper Fascia Support Brace Bolt **Tighten** 3 N.m (27 lb in)
3	Front Bumper Outer Front Filler

FRONT BUMPER OUTER FRONT FILLER REPLACEMENT (CHEVROLET)

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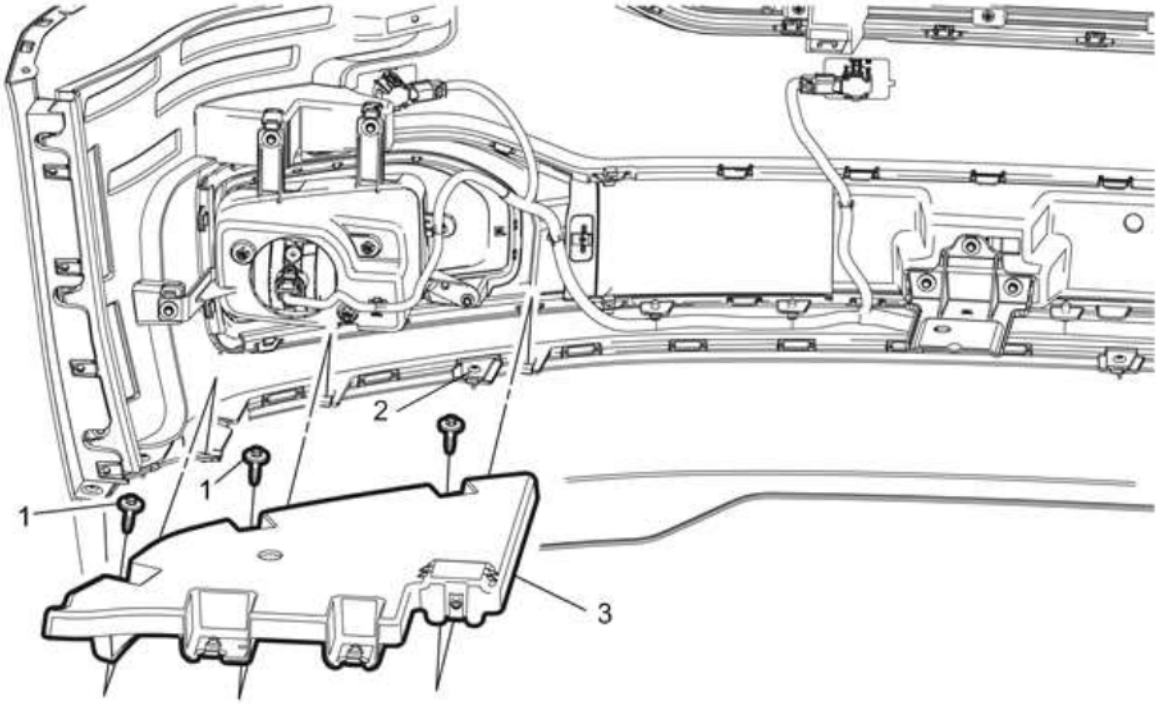


Fig. 6: Front Bumper Outer Front Filler (Chevrolet)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the parking and front fog lamp bracket. Refer to **Parking and Front Fog Lamp Bracket Replacement (Chevrolet)**	
1	Front Bumper Outer Front Filler Bolt (Qty: 3) **CAUTION:** **Refer to** **Fastener** **Caution** .

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Callout	Component Name
	Tighten 3 N.m (27 lb in)
2	Front Bumper Fascia Support Brace Bolt **Tighten** 3 N.m (27 lb in)
3	Front Bumper Outer Front Filler

RADIATOR GRILLE FILLER REPLACEMENT (CHEVROLET)

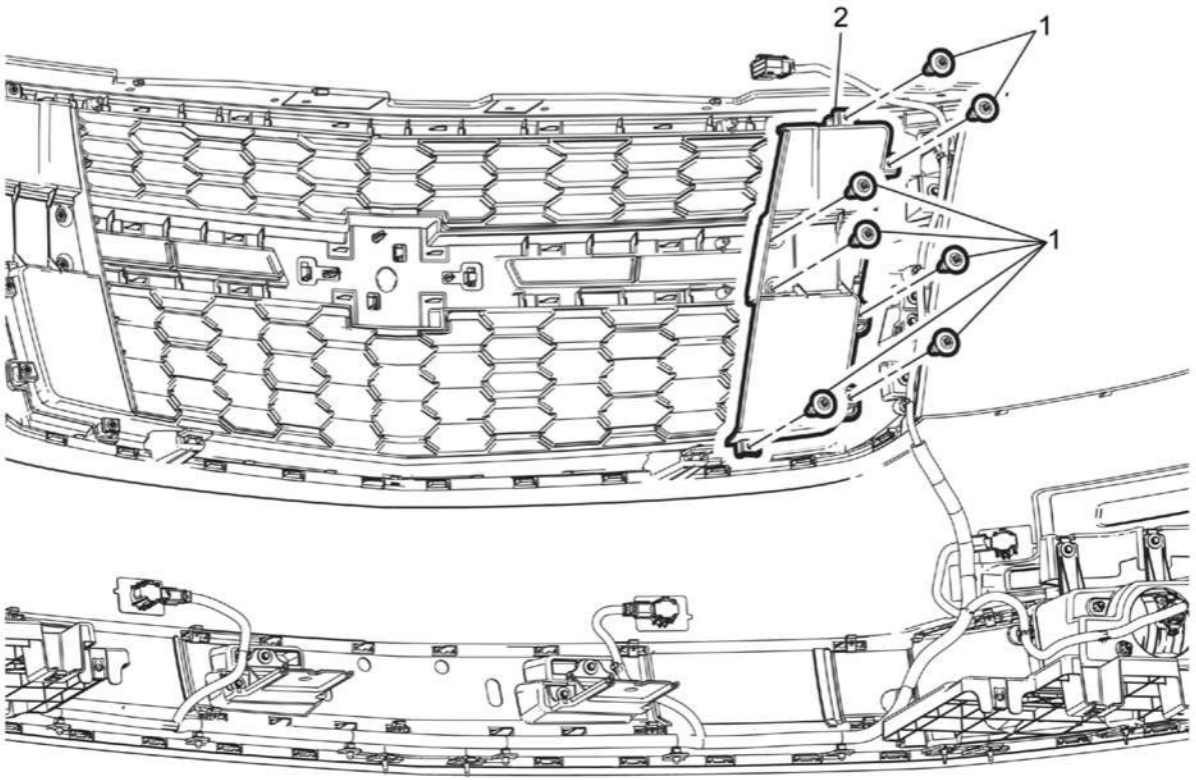


Fig. 7: Radiator Grille Filler (Chevrolet)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name

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Callout	Component Name
Preliminary Procedure 1. Remove the front bumper fascia. Refer to **Front Bumper Fascia Replacement (Chevrolet)**. 2. Place the bumper fascia face down on a clean protected surface.	
1	Radiator Grille Filler Bolt (Qty: 7) **CAUTION:** **Refer to Fastener Caution .** **Tighten** 2.5 N.m (22 lb in)
2	Radiator Grille Filler

FRONT BUMPER FASCIA REPLACEMENT (GMC)

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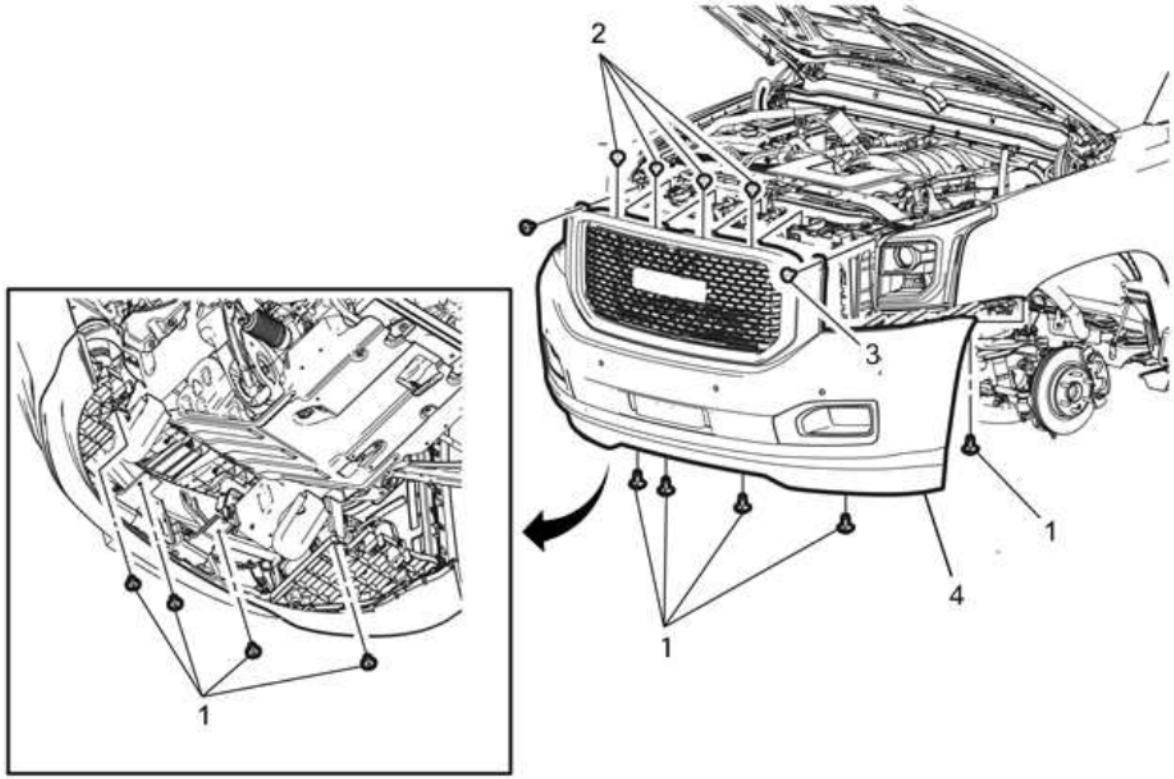


Fig. 8: Front Bumper Fascia (GMC)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure 1. Remove the front compartment front sight shield. Refer to **Front Compartment Front Sight Shield Replacement (GMC)** 2. Remove the front wheelhouse liners. Refer to **Front Wheelhouse Liner Replacement - Left Side (GMC)** , and **Front Wheelhouse Liner Replacement - Right Side (GMC)** .	
1	Front Bumper Fascia Lower Bolts (Qty: 4) **CAUTION:**

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Callout	Component Name
	Refer to Fastener Caution . **Tighten** 7 N.m (62 lb in)
2	Front Bumper Fascia Center Support Bolt (Qty: 6) **Tighten** 7 N.m (62 lb in)
3	Front Bumper Fascia Guide Bolts (Qty: 2) **Tighten** 2.5 N.m (22 lb in)
4	Front Bumper Fascia **Procedure** 1. Carefully push a small nylon wedge between the fascia and the front fascia guide. Insert a small flat-bladed tool into the fascia slot and depress the snaps one at a time and pull on the fascia at the same time to gradually remove the fascia from the front fascia guide. 2. Release the front center grille support tabs with an appropriate tool from beneath the vehicle with assistance. 3. Disconnect the electrical connectors before attempting removal of the front bumper fascia. 4. Remove the fascia from the vehicle with assistance.

FRONT BUMPER FASCIA REPLACEMENT (CHEVROLET)

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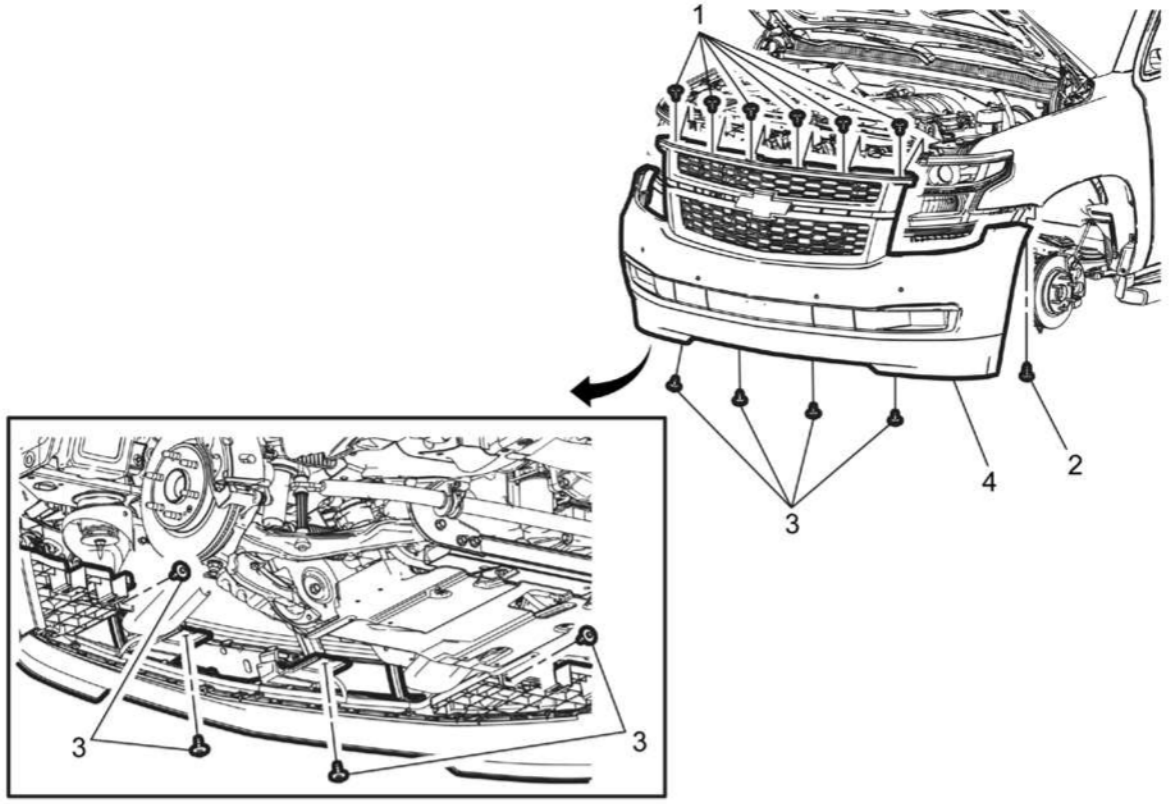


Fig. 9: Front Bumper Fascia (Chevrolet)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure 1. Remove the front compartment front sight shield. Refer to **Front Compartment Front Sight Shield Replacement (Chevrolet)** 2. Remove the front wheelhouse liners. Refer to **Front Wheelhouse Liner Replacement - Left Side (Chevrolet)** , and **Front Wheelhouse Liner Replacement - Right Side (Chevrolet)** .	
1	Radiator Grille Bolt (Qty: 6) **CAUTION:**

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Callout	Component Name
	Refer to Fastener Caution . **Tighten** 7 N.m (62 lb in)
2	Front Bumper Fascia Guide Bolt (Qty: 2) **Tighten** 2.5 N.m (22 lb in)
3	Front Bumper Fascia Lower Bolts (Qty: 4) **Tighten** 7 N.m (62 lb in)
4	Front Bumper Fascia **Procedure** 1. Carefully push a small nylon wedge between the fascia and the front fascia guide. Insert a small flat-bladed tool into the fascia slot and depress the snaps one at a time and pull on the fascia at the same time to gradually remove the fascia from the front fascia guide. 2. Release the front center grille support tabs using the appropriate tool from beneath the vehicle with assistance. 3. Disconnect the electrical connectors before attempting removal of the front bumper fascia. 4. Remove the fascia from the vehicle with assistance. 5. Transfer parts as necessary.

FRONT BUMPER FASCIA REPLACEMENT (CADILLAC)

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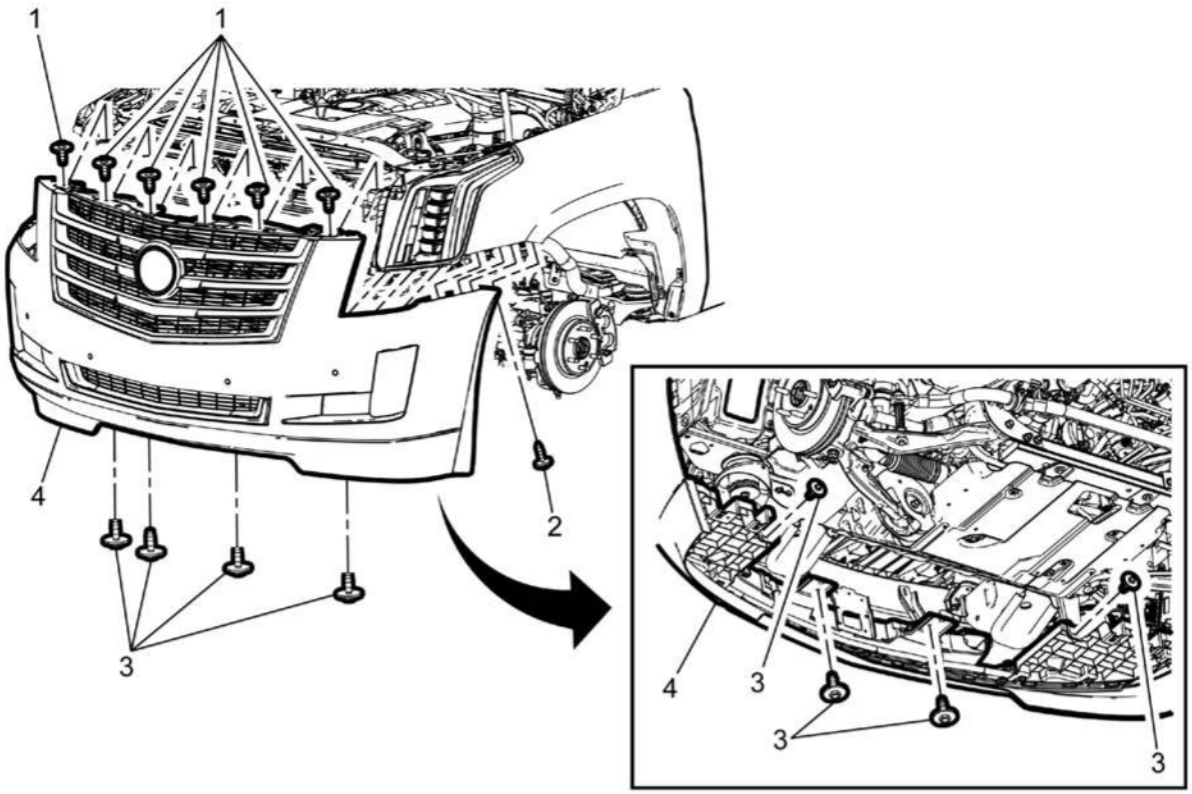


Fig. 10: Front Bumper Fascia (Cadillac)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure 1. Remove the front compartment front sight shield. Refer to **Front Compartment Front Sight Shield Replacement (Cadillac)** 2. Remove the front wheelhouse liners. Refer to **Front Wheelhouse Liner Replacement - Left Side (Cadillac)** , and **Front Wheelhouse Liner Replacement - Right Side (Cadillac)** .	
1	Radiator Grille Bolt (Qty: 8) **CAUTION:**

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Callout	Component Name
	Refer to Fastener Caution . **Tighten** 7 N.m (62 lb in)
2	Front Bumper Fascia Guide Bolt (Qty: 2) **Tighten** 2.5 N.m (22 lb in)
3	Front Bumper Fascia Lower Bolts (Qty: 4) **Tighten** 7 N.m (62 lb in)
4	Front Bumper Fascia **Procedure** 1. Carefully push a small nylon wedge between the fascia and the front fascia guide. Insert a small flat-bladed tool into the fascia slot and depress the snaps one at a time and pull on the fascia at the same time to gradually remove the fascia from the front fascia guide. 2. Release the front center grille support tabs using the appropriate tool from beneath the vehicle with assistance. 3. Disconnect the electrical connectors before attempting removal of the front bumper fascia. 4. Remove the fascia from the vehicle with assistance.

FRONT BUMPER FASCIA GUIDE REPLACEMENT (GMC)

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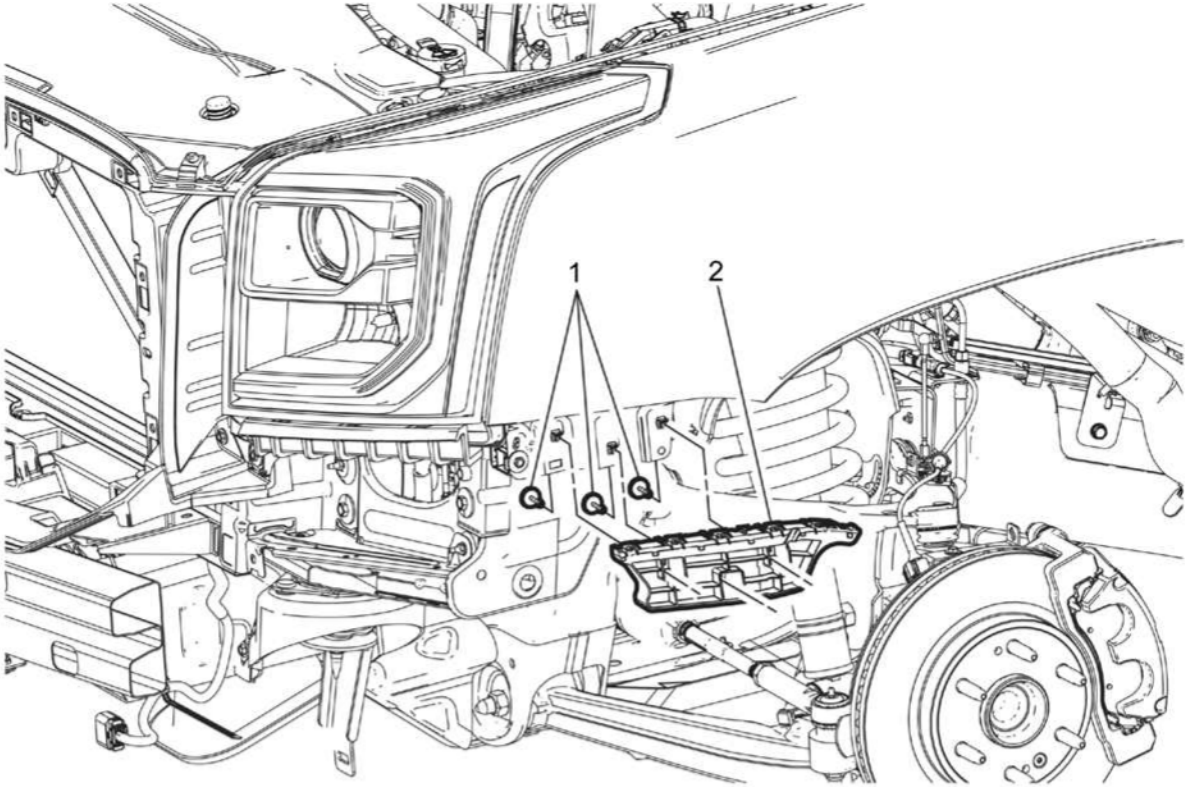


Fig. 11: Front Bumper Fascia Guide (GMC)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the front bumper fascia. Refer to **Front Bumper Fascia Replacement (GMC)**.	
1	Front Bumper Fascia Guide Bolt (Qty: 3) **CAUTION:** **Refer to** **Fastener** **Caution** .

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Callout	Component Name
	Tighten 2.5 N.m (22 lb in)
2	Front Bumper Fascia Guide

FRONT BUMPER FASCIA GUIDE REPLACEMENT (CHEVROLET)

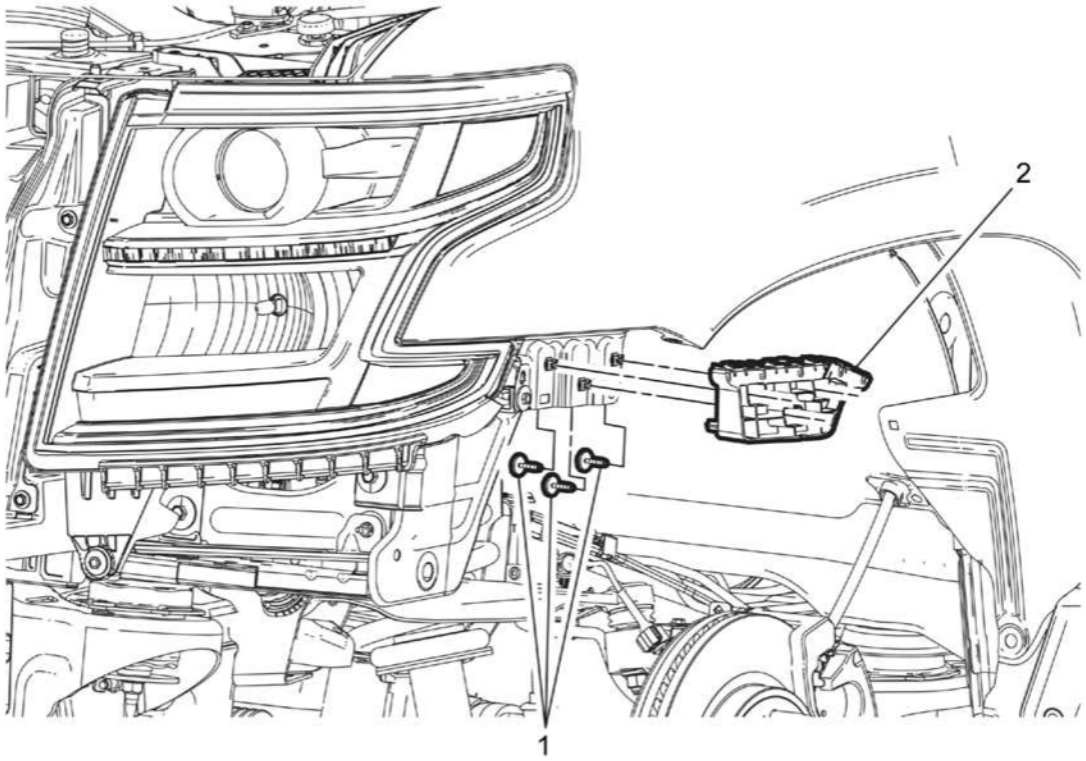


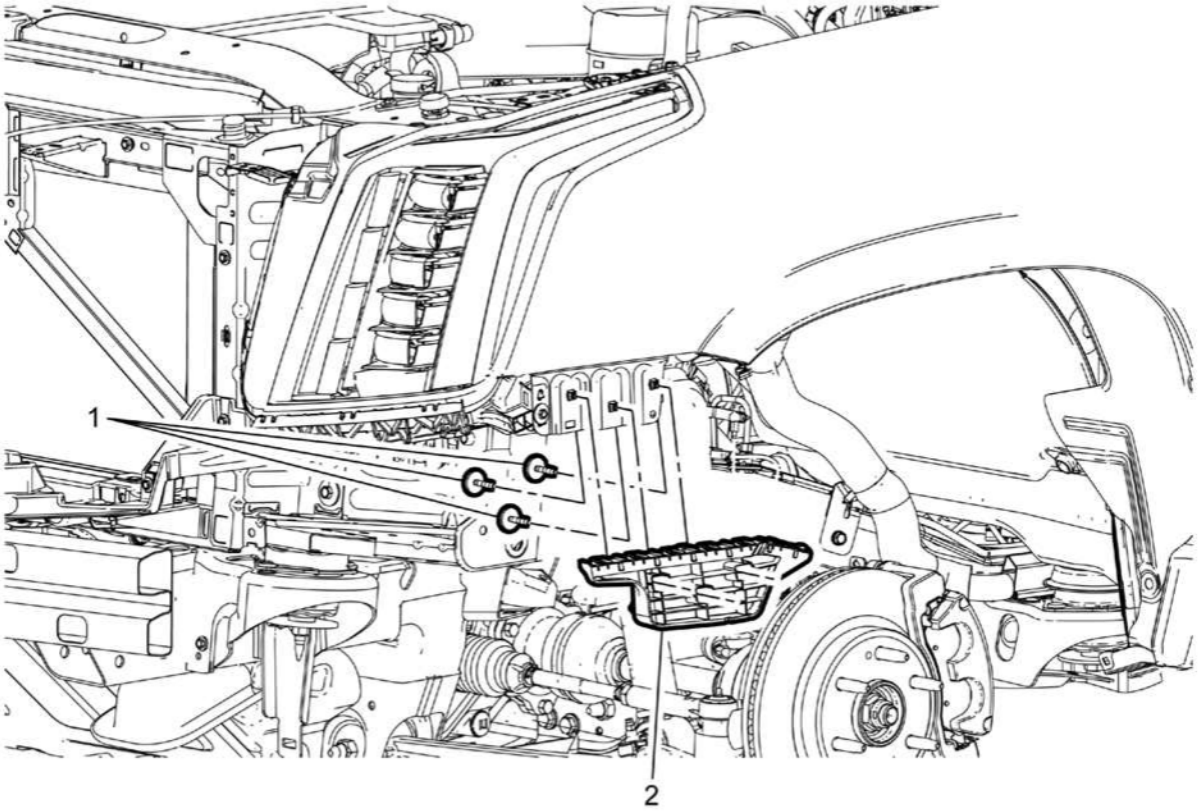
Fig. 12: Front Bumper Fascia Guide (Chevrolet)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the front bumper fascia. Refer to **Front Bumper Fascia Replacement (Chevrolet)**.	

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Callout	Component Name
1	Front Bumper Fascia Guide Bolt (Qty: 3) **CAUTION:** **Refer to** **Fastener Caution** . **Tighten** 2.5 N.m (22 lb in)
2	Front Bumper Fascia Guide

FRONT BUMPER FASCIA GUIDE REPLACEMENT (CADILLAC)



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Fig. 13: Front Bumper Fascia Guide (Cadillac)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the front bumper fascia. Refer to **Front Bumper Fascia Replacement (Cadillac)**.	
1	Front Bumper Fascia Guide Bolt (Qty: 3) **CAUTION:** **Refer to** **Fastener** **Caution** . **Tighten** 2.5 N.m (22 lb in)
2	Front Bumper Fascia Guide

FRONT BUMPER FASCIA LOWER MOLDING REPLACEMENT (GMC)

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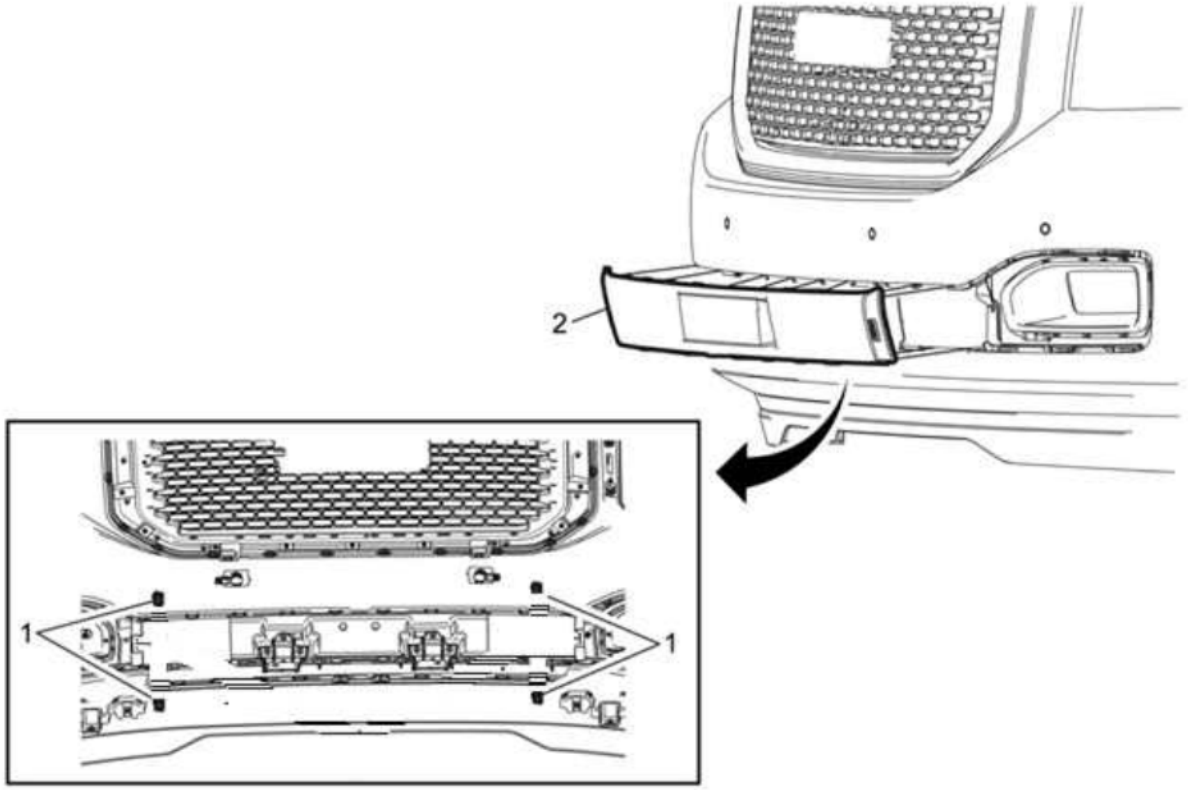


Fig. 14: Front Bumper Fascia Lower Molding (GMC)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Remove the front fog lamp bezel. Refer to **Front Fog Lamp Bezel Replacement** . 2. Place the bumper fascia face down on a clean protected surface.	
1	Front Bumper Fascia Lower Molding Clip (Qty: 4)
2	Front Bumper Fascia Lower Molding **Procedure** Using a suitable plastic flat-bladed tool, release the retainer tabs from the front bumper fascia lower molding while slowly pulling the fascia lower molding from the front fascia.

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FRONT BUMPER FASCIA LOWER MOLDING REPLACEMENT (CHEVROLET)

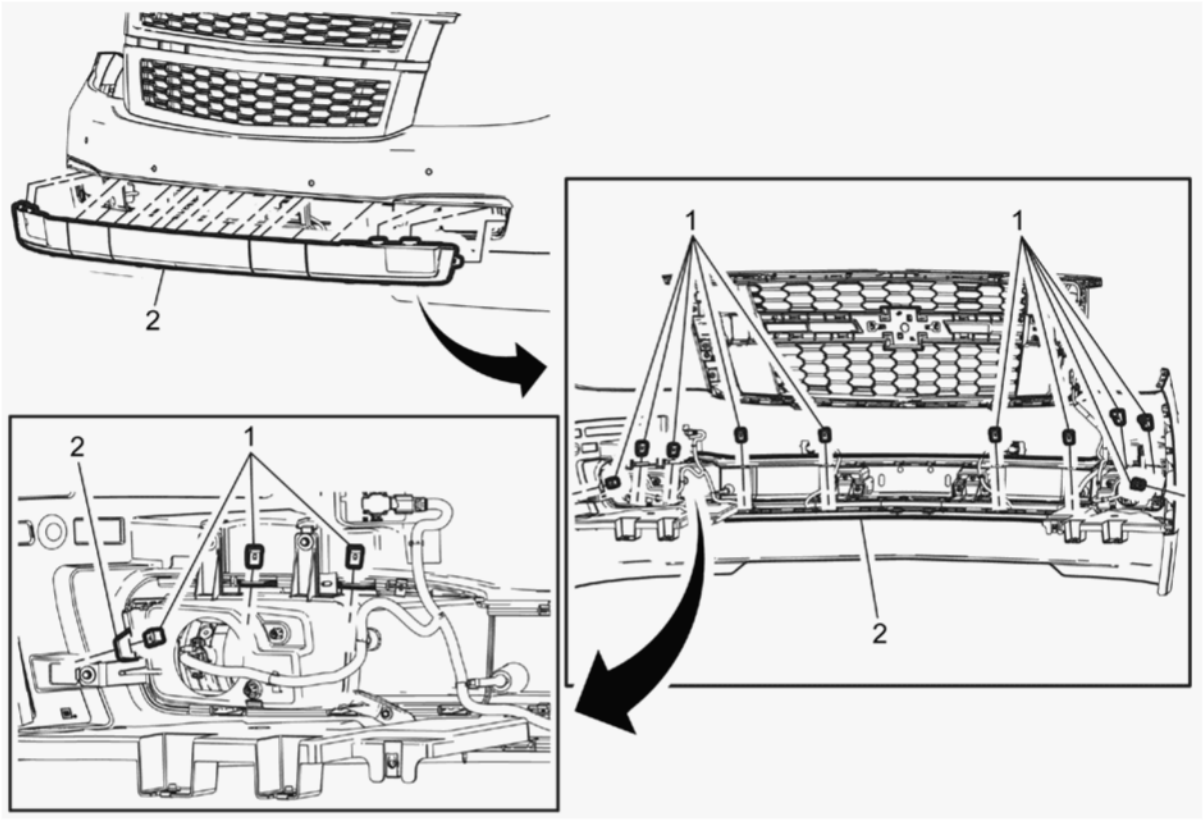


Fig. 15: Front Bumper Fascia Lower Molding (Chevrolet)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Remove the front bumper fascia. Refer to **Front Bumper Fascia Replacement (Chevrolet)**. 2. Place the bumper fascia face down on a clean protected surface. 3. Remove both of the parking and front fog lamp brackets. Refer to **Parking and Front Fog Lamp Bracket Replacement (Chevrolet)**	
1	Front Bumper Fascia Lower Molding Clip (Qty: 10)

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Callout	Component Name
2	Front Bumper Fascia Lower Molding **Procedure** Using a suitable plastic flat-bladed tool, release the retainer tabs from the front bumper fascia lower molding while slowly pulling the fascia lower molding from the front fascia.

FRONT BUMPER FASCIA LOWER MOLDING REPLACEMENT (CHEVROLET ABOVE FOG LAMP)

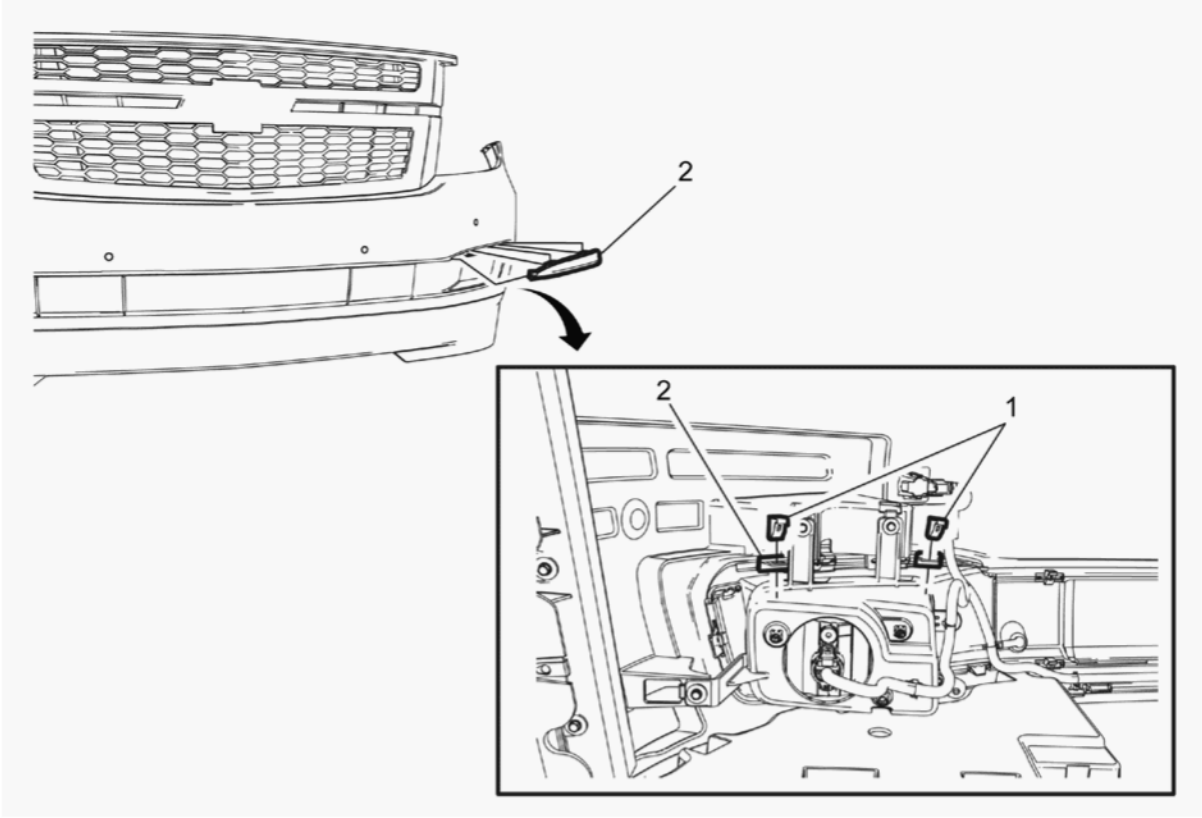


Fig. 16: Front Bumper Fascia Lower Molding (Chevrolet above fog lamp)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures	

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Callout	Component Name
1. Remove the front bumper fascia. Refer to **Front Bumper Fascia Replacement (Chevrolet)**. 2. Place the bumper fascia face down on a clean protected surface.	
1	Front Bumper Fascia Lower Molding Clip (Qty: 2)
2	Front Bumper Fascia Lower Molding **Procedure** Remove the molding from the front bumper fascia.

FRONT BUMPER FASCIA LOWER MOLDING REPLACEMENT (CADILLAC BELOW THE FRONT SIDE TURN SIGNAL LAMP)

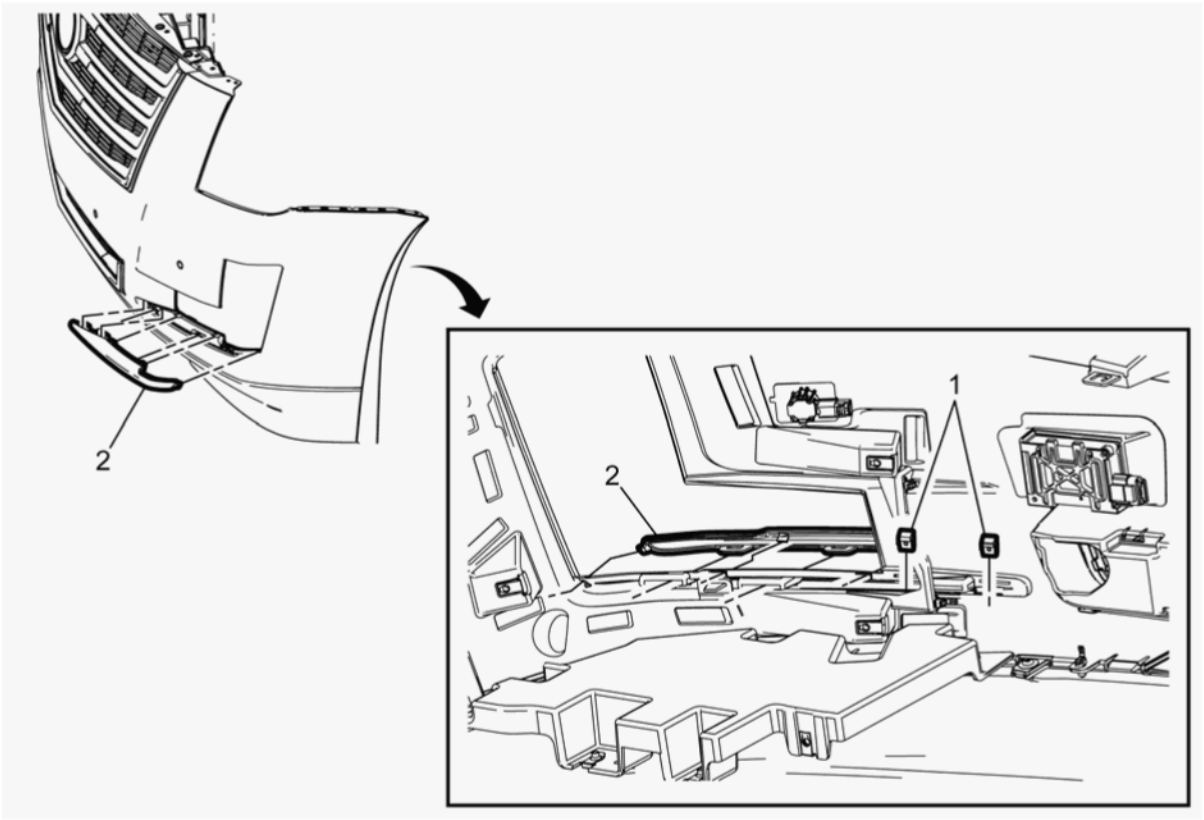


Fig. 17: Front Bumper Fascia Lower Molding(Cadillac below front side turn signal lamp)
Courtesy of GENERAL MOTORS COMPANY

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Callout	Component Name
Preliminary Procedures 1. Remove the front side turn signal lamp. Refer to **Front Side Turn Signal Lamp Replacement**	
1	Front Bumper Fascia Lower Molding Clip (Qty: 2)
2	Front Bumper Fascia Lower Molding **Procedure** Release the five remaining front bumper fascia lower molding tabs from the front bumper fascia.

FRONT BUMPER SHUTTER REPLACEMENT (UPPER)

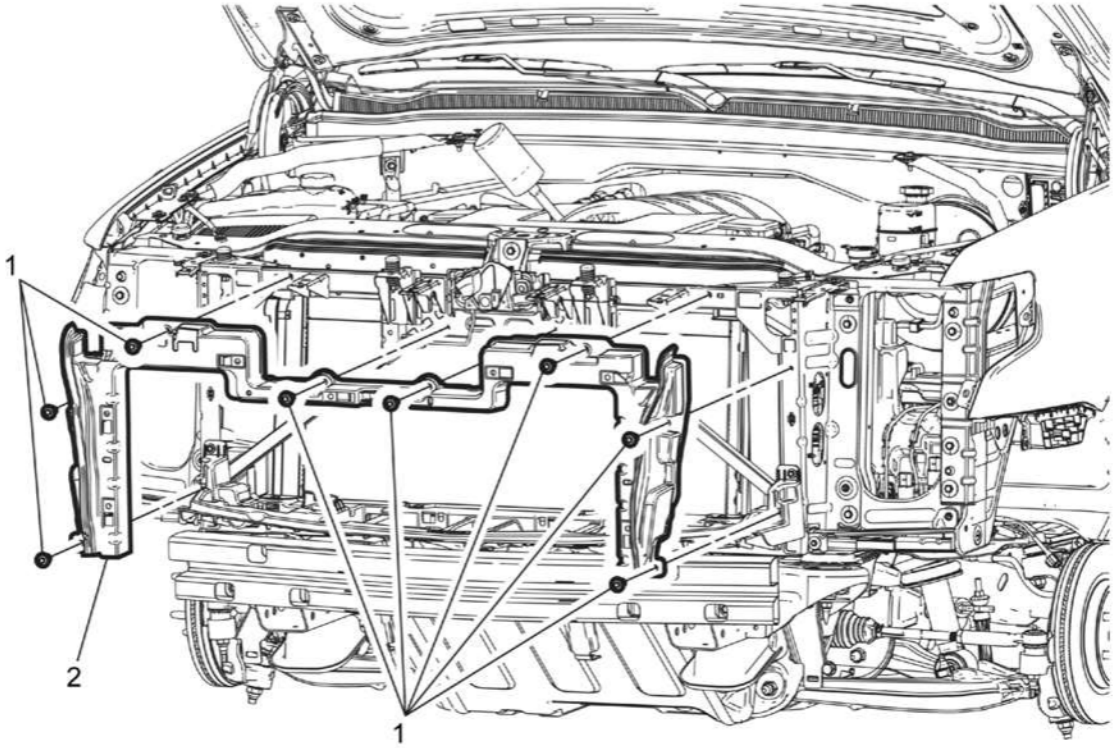


Fig. 18: Front Bumper Shutter (Upper)
Courtesy of GENERAL MOTORS COMPANY

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Callout	Component Name
Preliminary Procedures Remove the front bumper fascia. Refer to **Front Bumper Fascia Replacement (GMC)Front Bumper Fascia Replacement (Chevrolet)Front Bumper Fascia Replacement (Cadillac)**.	
1	Front Bumper Shutter Bolt (Qty: 8) **CAUTION:** **Refer to Fastener Caution .** **Tighten** 6 N.m (53 lb in)
2	Front Bumper Shutter

FRONT BUMPER SHUTTER REPLACEMENT (LOWER)

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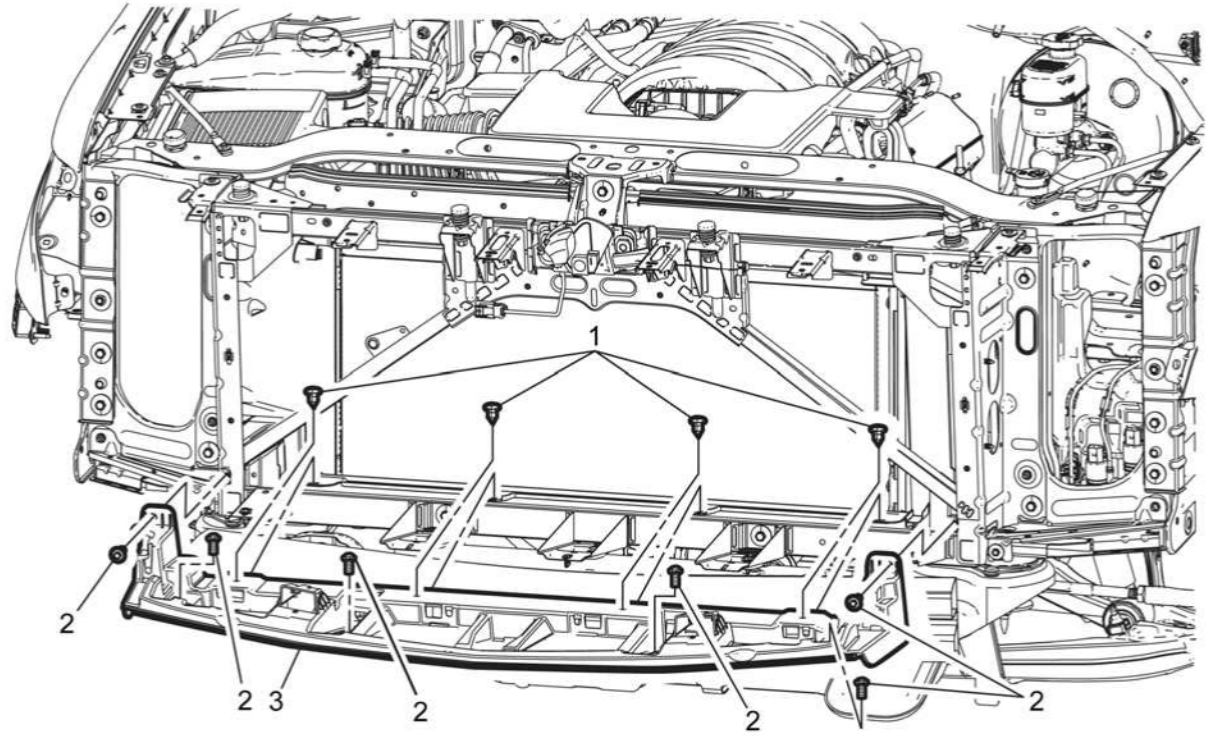


Fig. 19: Front Bumper Shutter (Lower)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Remove the front bumper fascia. Refer to **Front Bumper Fascia Replacement (GMC)Front Bumper Fascia Replacement (Chevrolet)Front Bumper Fascia Replacement (Cadillac)**. 2. Remove the front bumper shutter upper. Refer to **Front Bumper Shutter Replacement (Lower)**	
1	Front Bumper Shutter Lower Retainer (Qty 4)
2	Front Bumper Shutter Lower Bolt (Qty: 6) **CAUTION:**

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Callout	Component Name
	Refer to Fastener Caution . **Tighten** 6 N.m (53 lb in)
3	Front Bumper Shutter Lower

FRONT BUMPER SHUTTER REPLACEMENT (MECHANICAL, CADILLAC)

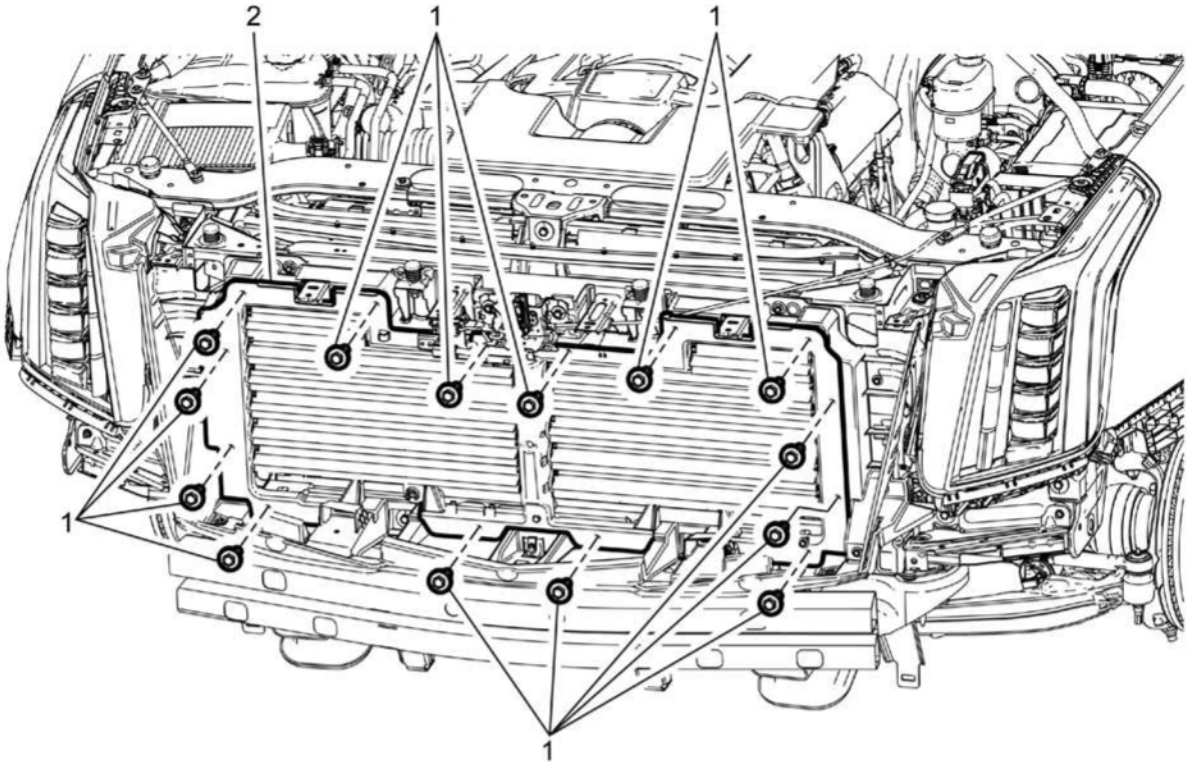


Fig. 20: Front Bumper Shutter (Mechanical, Cadillac)
Courtesy of GENERAL MOTORS COMPANY

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Callout	Component Name
Preliminary Procedures 1. Remove the front bumper fascia. Refer to **Front Bumper Fascia Replacement (GMC)Front Bumper Fascia Replacement (Chevrolet)Front Bumper Fascia Replacement (Cadillac)**. 2. Headlamp and front end panel mount panel brace. Refer to **Headlamp and Front End Panel Mount Panel Brace Replacement (Cadillac)**	
1	Front Bumper Shutter Bolts (Qty: 14) **CAUTION:** **Refer to Fastener Caution .** **Tighten:** 6 N.m (53 lb in)
2	Front Bumper Shutter **Procedure** 1. Disconnect the electrical connector. 2. Unclip the wiring harness.

REAR BUMPER FASCIA TRAILER HITCH ACCESS HOLE COVER REPLACEMENT (CADILLAC, GMC)

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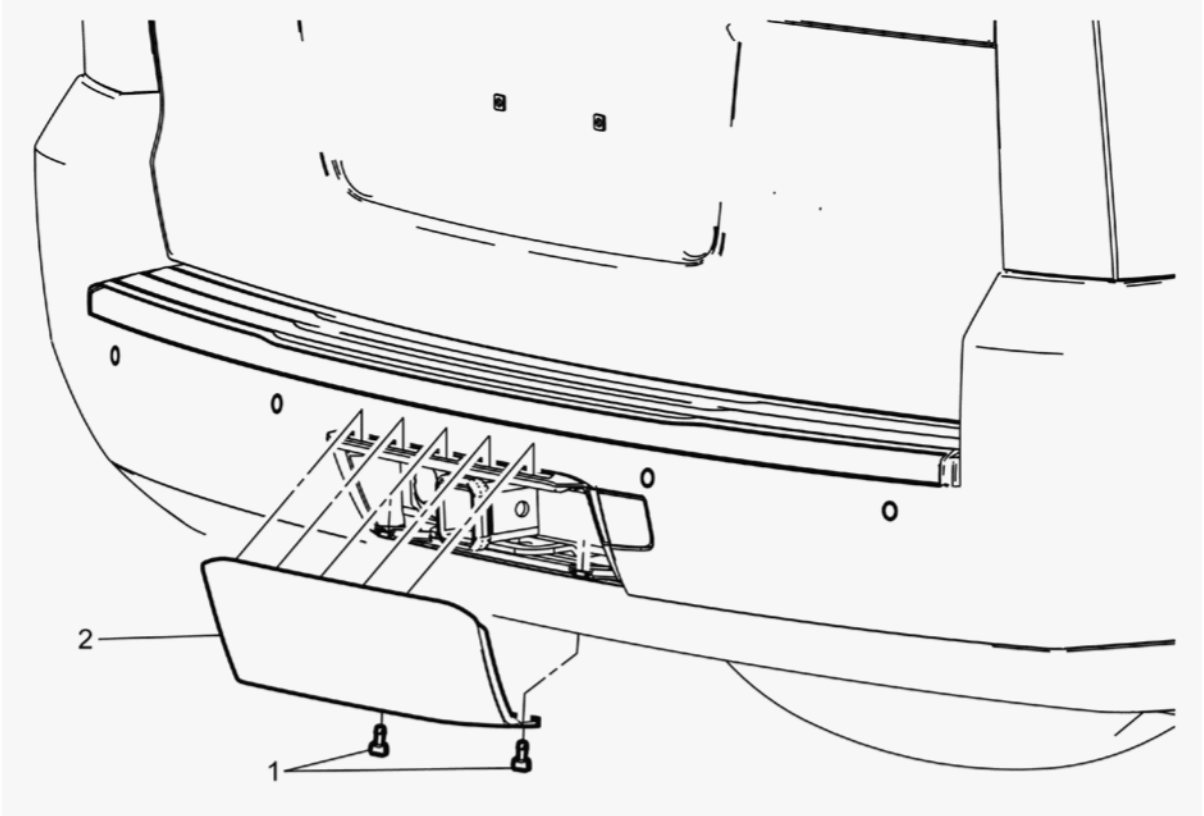


Fig. 21: Rear Bumper Fascia Trailer Hitch Access Hole Cover (Cadillac, GMC)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Rear Bumper Fascia Trailer Hitch Access Hole Cover Retainer (Qty: 2) **Procedure** Turn the rear bumper fascia trailer hitch access hole cover retainer a 1/4 turn counter clockwise and remove.
2	Rear Bumper Fascia Trailer Hitch Access Hole Cover **Procedure** Using a suitable plastic flat-bladed tool, release the retainer tabs from the rear bumper fascia trailer hitch access hole cover while slowly pulling the rear bumper fascia trailer hitch access hole cover up from the rear bumper fascia.

REAR BUMPER FASCIA TRAILER HITCH ACCESS HOLE COVER REPLACEMENT (CHEVROLET)

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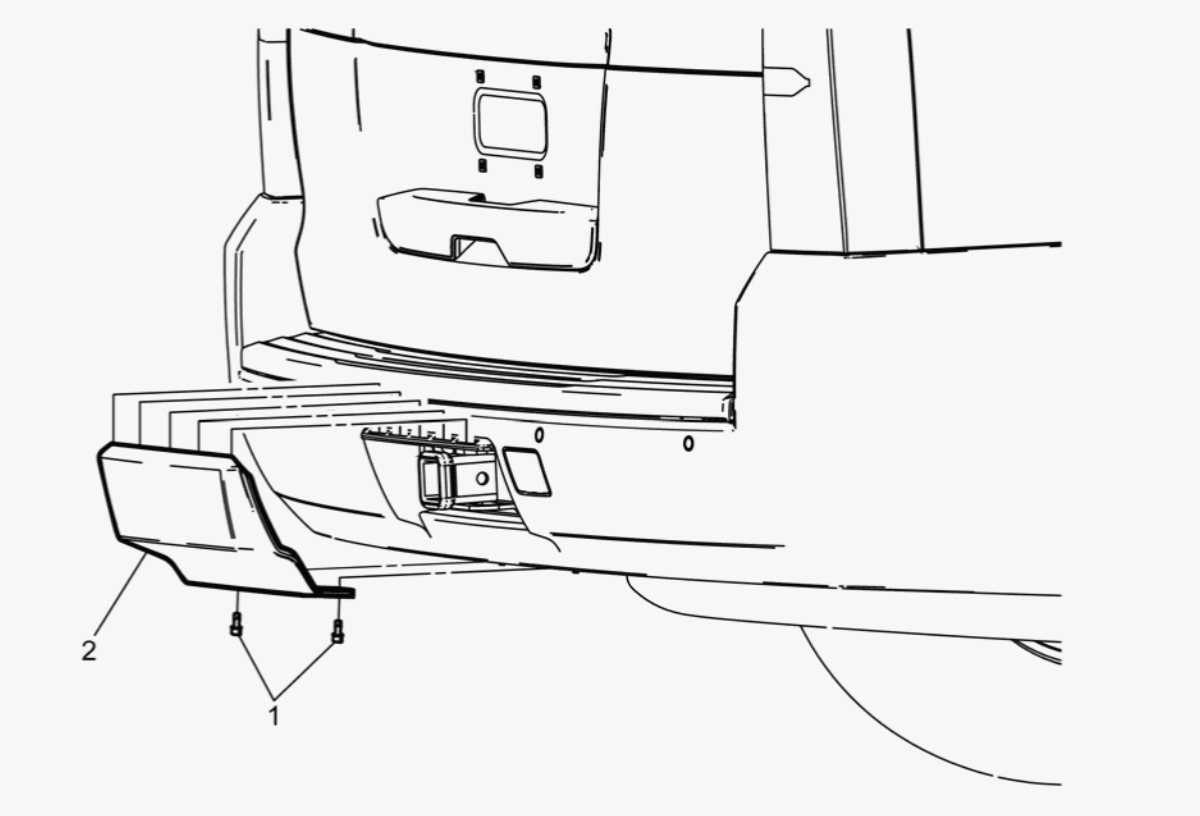


Fig. 22: Rear Bumper Fascia Trailer Hitch Access Hole Cover (Chevrolet)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
1	Rear Bumper Fascia Trailer Hitch Access Hole Cover Retainer (Qty: 2) **Procedure** Turn the rear bumper fascia trailer hitch access hole cover retainer a 1/4 turn counter clockwise and remove.
2	Rear Bumper Fascia Trailer Hitch Access Hole Cover **Procedure** Using a suitable plastic flat-bladed tool, release the retainer tabs from the rear bumper fascia trailer hitch access hole cover while slowly pulling the rear bumper fascia trailer hitch access hole cover up from the rear bumper fascia.

REAR BUMPER FASCIA REPLACEMENT (CHEVROLET, GMC)

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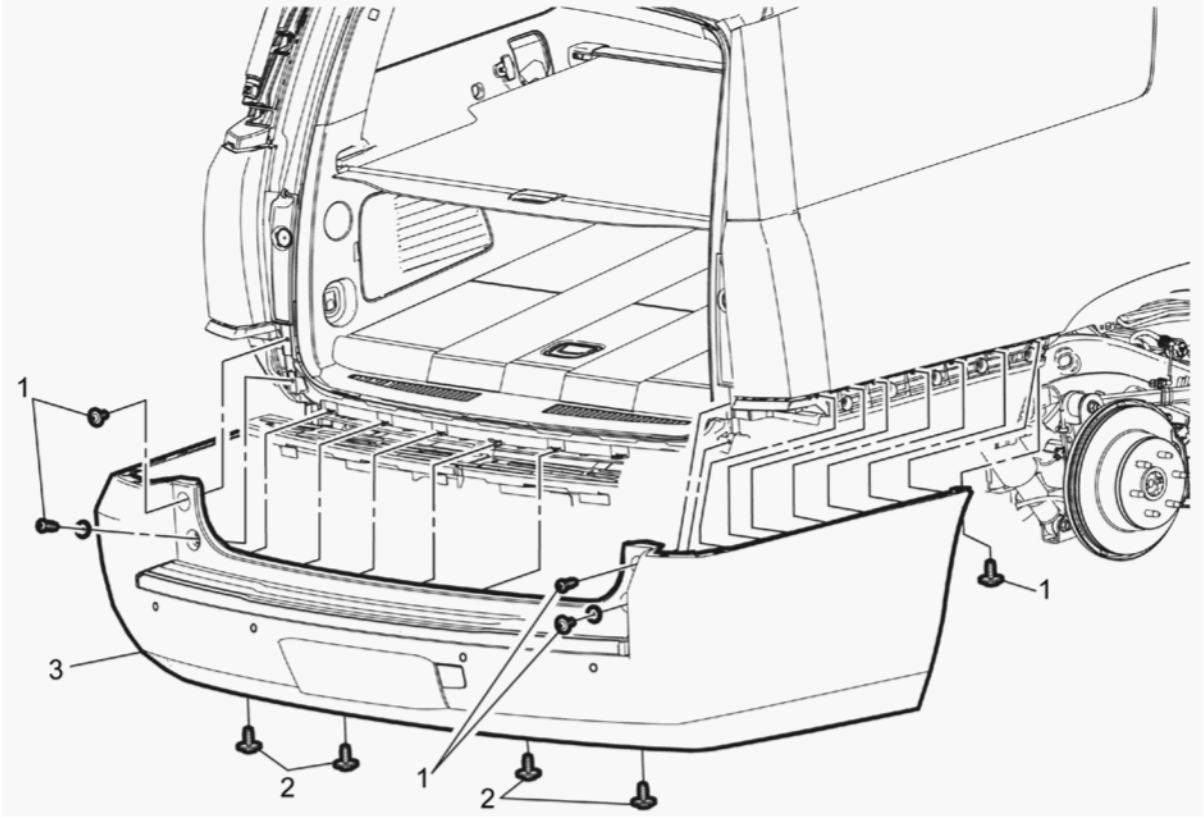


Fig. 23: Rear Bumper Fascia (Chevrolet, GMC)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove only the rear wheelhouse liner bolts retaining the liner to the rear fascia. Refer to **Rear Wheelhouse Liner Replacement (LWB)** **Rear Wheelhouse Liner Replacement (LWB Z75)** **Rear Wheelhouse Liner Replacement (SWB Z75)** **Rear Wheelhouse Liner Replacement (SWB)** .	

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Callout	Component Name
1	Rear Bumper Fascia Bolt (Qty: 6) **CAUTION:** **Refer to** **Fastener Caution** . **Tighten** 2.5 N.m (22 lb in)
2	Rear Bumper Fascia Lower Bolt (Qty: 4) **Tighten** 7 N.m (62 lb in)
3	Rear Bumper Fascia **Procedure** 1. Carefully push a small nylon wedge between the fascia and the rear fascia guide. Insert a small flat-bladed tool into the fascia slot and depress the snaps one at a time and pull on the fascia at the same time to gradually remove the fascia from the rear fascia guide. 2. Disconnect the electrical connector. 3. Transfer parts as needed.

REAR BUMPER FASCIA REPLACEMENT (CADILLAC)

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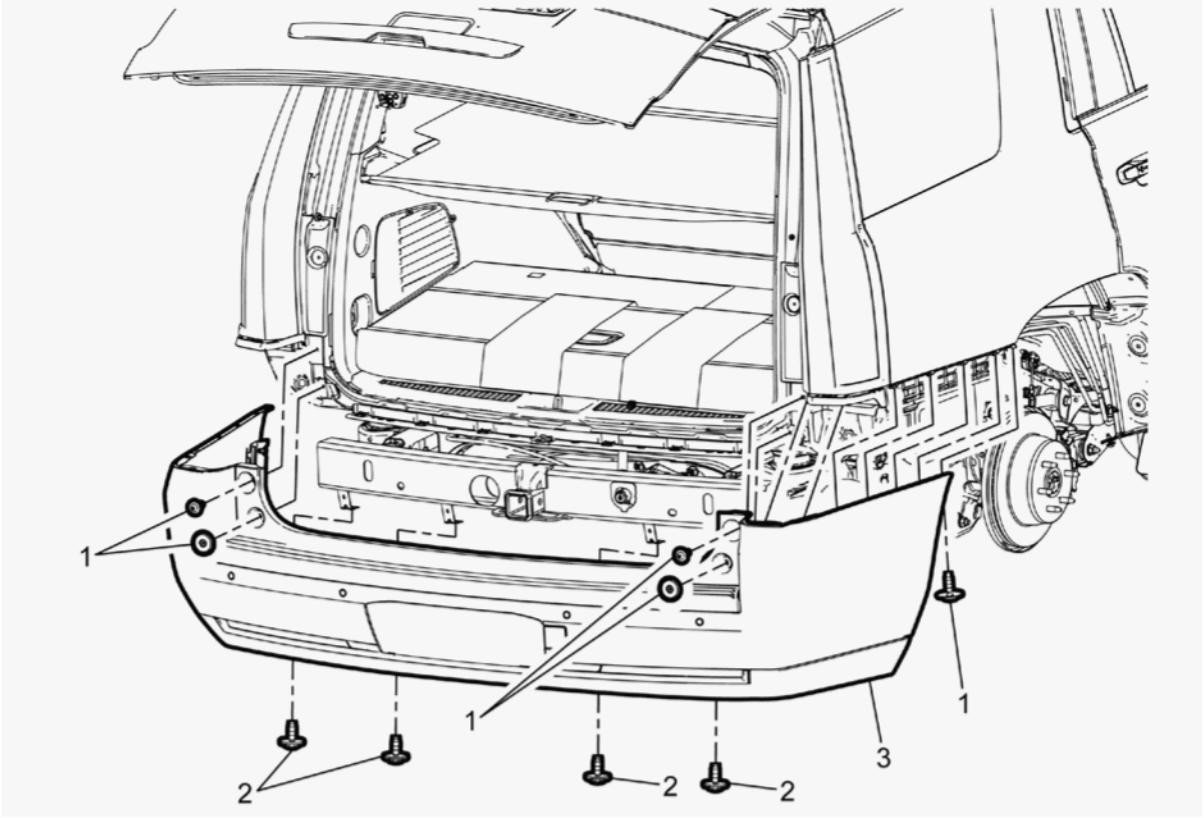


Fig. 24: Rear Bumper Fascia (Cadillac)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove only the rear wheelhouse liner bolts retaining the liner to the rear fascia. Refer to **Rear Wheelhouse Liner Replacement (LWB)** **Rear Wheelhouse Liner Replacement (LWB Z75)** **Rear Wheelhouse Liner Replacement (SWB Z75)** **Rear Wheelhouse Liner Replacement (SWB)** .	

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Callout	Component Name
1	Rear Bumper Fascia Bolt (Qty: 6) **CAUTION:** **Refer to** **Fastener Caution .** **Tighten** 2.5 N.m (22 lb in)
2	Rear Bumper Fascia Lower Bolt (Qty: 4) **Tighten** 7 N.m (62 lb in)
3	Rear Bumper Fascia **Procedure** 1. Carefully push a small nylon wedge between the fascia and the rear fascia guide. Insert a small flat-bladed tool into the fascia slot and depress the snaps one at a time and pull on the fascia at the same time to gradually remove the fascia from the rear fascia guide. 2. Disconnect the electrical connector. 3. Transfer parts as needed.

REAR BUMPER FASCIA GUIDE REPLACEMENT (LONG WHEELBASE)

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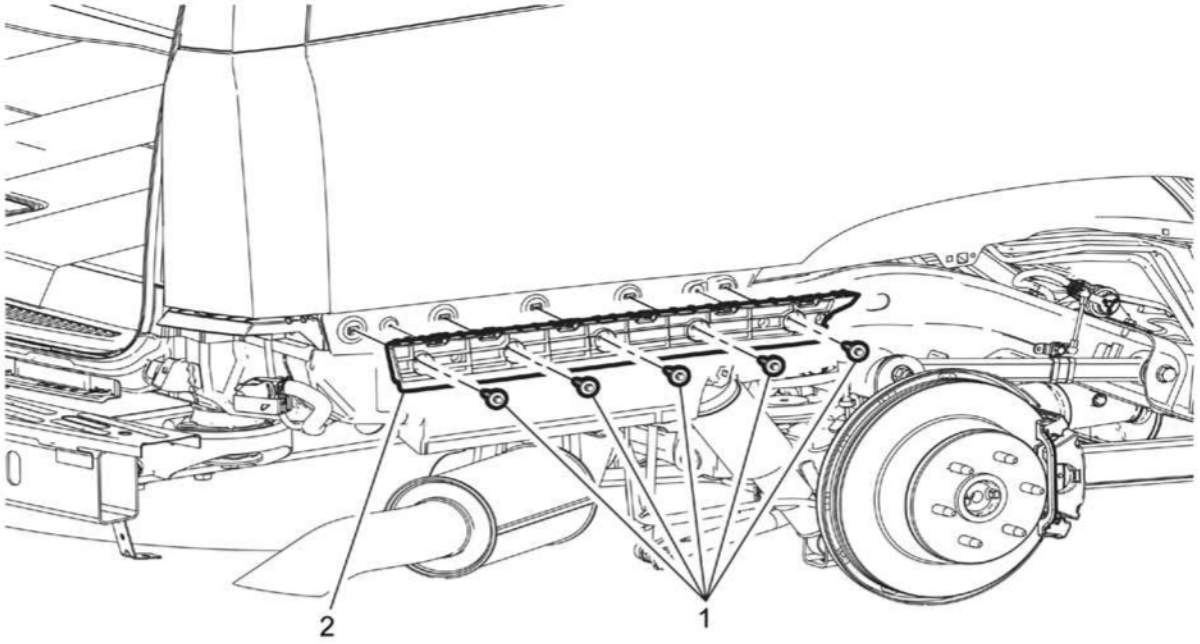


Fig. 25: Rear Bumper Fascia Guide (Long Wheelbase)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the rear bumper fascia. Refer to **Rear Bumper Fascia Replacement (Chevrolet, GMC)Rear Bumper Fascia Replacement (Cadillac)**.	
1	Rear Bumper Fascia Guide Bolt (Qty: 5) **CAUTION:** **Refer to** **Fastener Caution** .

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Callout	Component Name
	Tighten 2.5 N.m (22 lb in)
2	Rear Bumper Fascia Guide

REAR BUMPER FASCIA GUIDE REPLACEMENT (SHORT WHEELBASE)

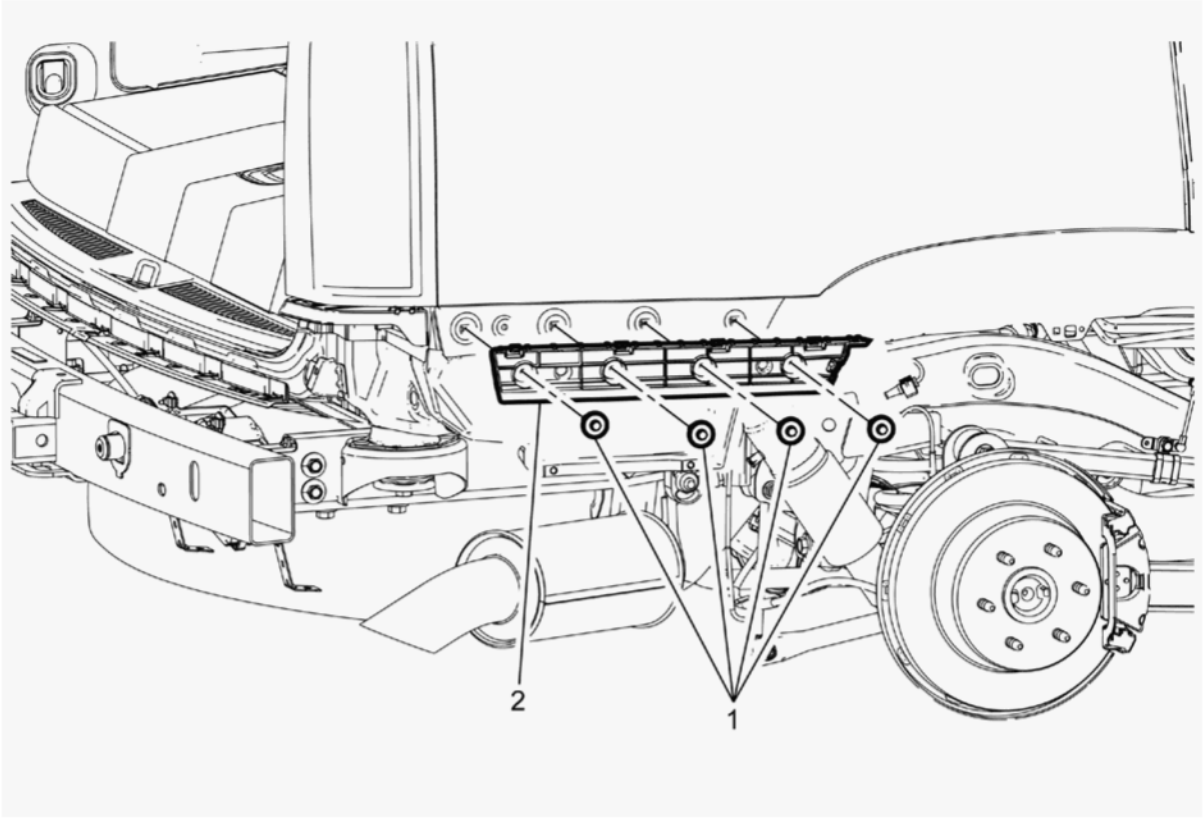


Fig. 26: Rear Bumper Fascia Guide (Short Wheelbase)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the rear bumper fascia. Refer to **Rear Bumper Fascia Replacement (Chevrolet, GMC)Rear Bumper Fascia Replacement**	

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Callout	Component Name
(Cadillac).	
1	Rear Bumper Fascia Guide Bolt (Qty: 4) **CAUTION:** **Refer to** **Fastener Caution** . **Tighten** 2.5 N.m (22 lb in)
2	Rear Bumper Fascia Guide

REAR BUMPER UPPER FASCIA REPLACEMENT (CHEVROLET, GMC)

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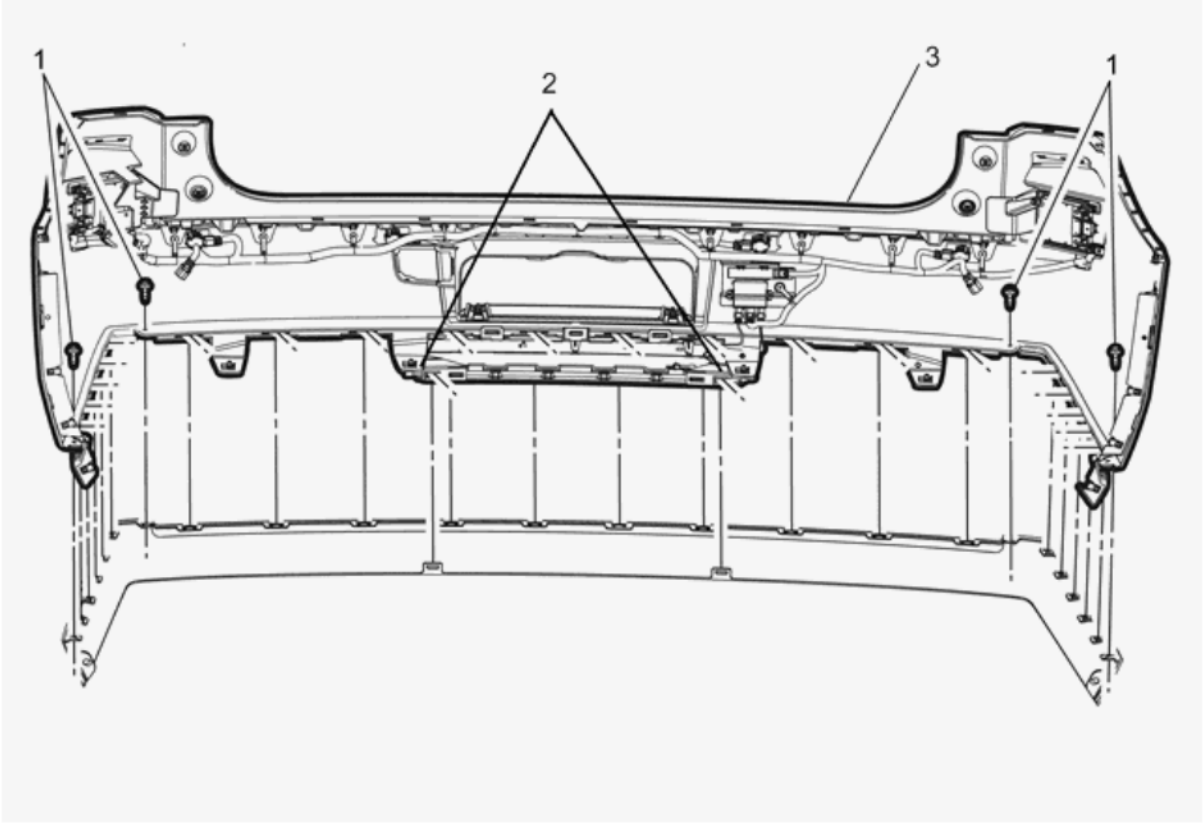


Fig. 27: Rear Bumper Upper Fascia (Chevrolet, GMC)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Remove the rear bumper fascia. Refer to **Rear Bumper Fascia Replacement (Chevrolet, GMC)**. 2. Place the bumper fascia face down on a clean protected surface.	
1	Rear Bumper Upper Fascia Screw (Qty: 4) **CAUTION:** **Refer to** **Fastener**

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Callout	Component Name
	Caution . **Tighten** 2.5 N.m (22 lb in)
2	Rear Bumper Upper Fascia Nut (Qty: 2) **NOTE:** **This is actually a retainer/clip.**
3	Rear Bumper Upper Fascia **Procedure** 1. Carefully push a small nylon wedge between the upper fascia and the lower fascia. Insert a small flat-bladed tool into the fascia slot and depress the snaps one at a time and pull on the fascia at the same time to gradually remove the lower fascia from the upper fascia. 2. Transfer part as necessary.

REAR BUMPER UPPER FASCIA REPLACEMENT (CADILLAC)

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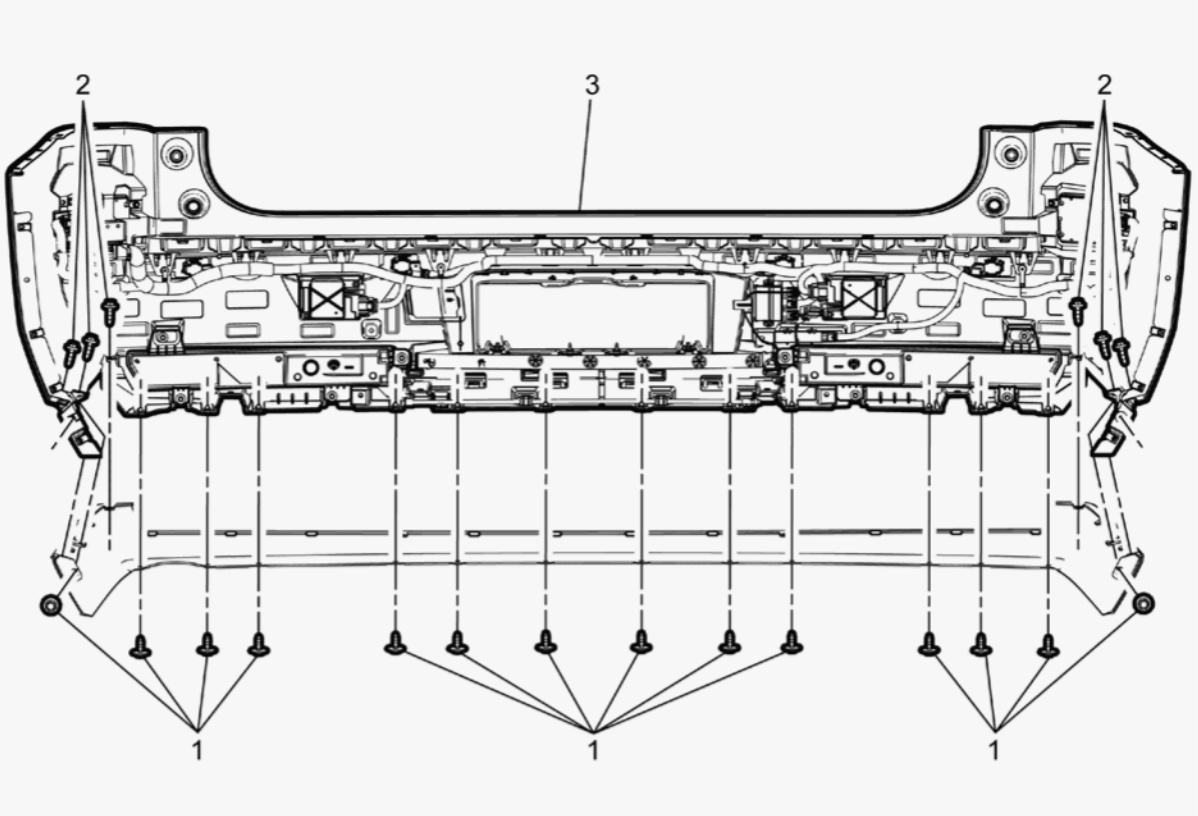


Fig. 28: Rear Bumper Upper Fascia (Cadillac)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Remove the rear bumper fascia. Refer to **Rear Bumper Fascia Replacement (Cadillac)**. 2. Place the bumper fascia face down on a clean protected surface. 3. Remove the rear fog lamps. Refer to **Rear Fog Lamp Replacement (Cadillac)**	
1	Rear Bumper Upper Fascia Screw (Qty: 14) **CAUTION:**

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Callout	Component Name
	Refer to Fastener Caution . **Tighten** 2.5 N.m (22 lb in)
2	Rear Bumper Upper Fascia Bolt (Qty 6) **Tighten** 2.5 N.m (22 lb in)
3	Rear Bumper Upper Fascia **Procedure** 1. Carefully push a small nylon wedge between the upper fascia and the lower fascia. Insert a small flat-bladed tool into the fascia slot and depress the snaps one at a time and pull on the fascia at the same time to gradually remove the lower fascia from the upper fascia. 2. Transfer part as necessary.

REAR BUMPER LOWER FASCIA REPLACEMENT (CHEVROLET, GMC)

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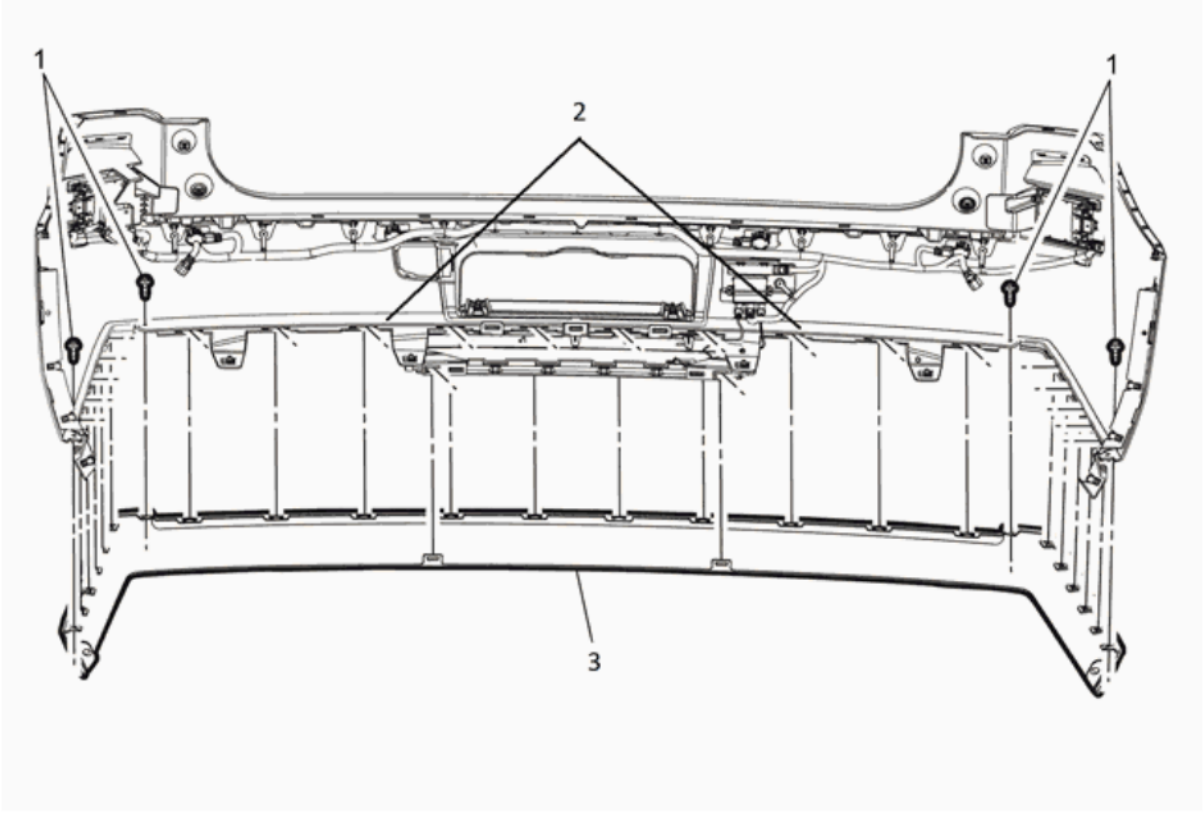


Fig. 29: Rear Bumper Lower Fascia (Chevrolet, GMC)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Remove the rear bumper fascia. Refer to **Rear Bumper Fascia Replacement (Chevrolet, GMC)**.	
1	Rear Bumper Lower Fascia Screw (Qty: 4) **CAUTION:** **Refer to Fastener Caution .**

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Callout	Component Name
	Tighten 2.5 N.m (22 lb in)
2	Rear Bumper Fascia Nut (Qty: 2) **NOTE:** **This is actually a retainer/clip.**
3	Rear Bumper Lower Fascia **Procedure** 1. Carefully push a small nylon wedge between the upper fascia and the lower fascia. Insert a small flat-bladed tool into the fascia slot and depress the snaps one at a time and pull on the fascia at the same time to gradually remove the lower fascia from the upper fascia. 2. 3. Transfer part as necessary.

REAR BUMPER LOWER FASCIA REPLACEMENT (CADILLAC)

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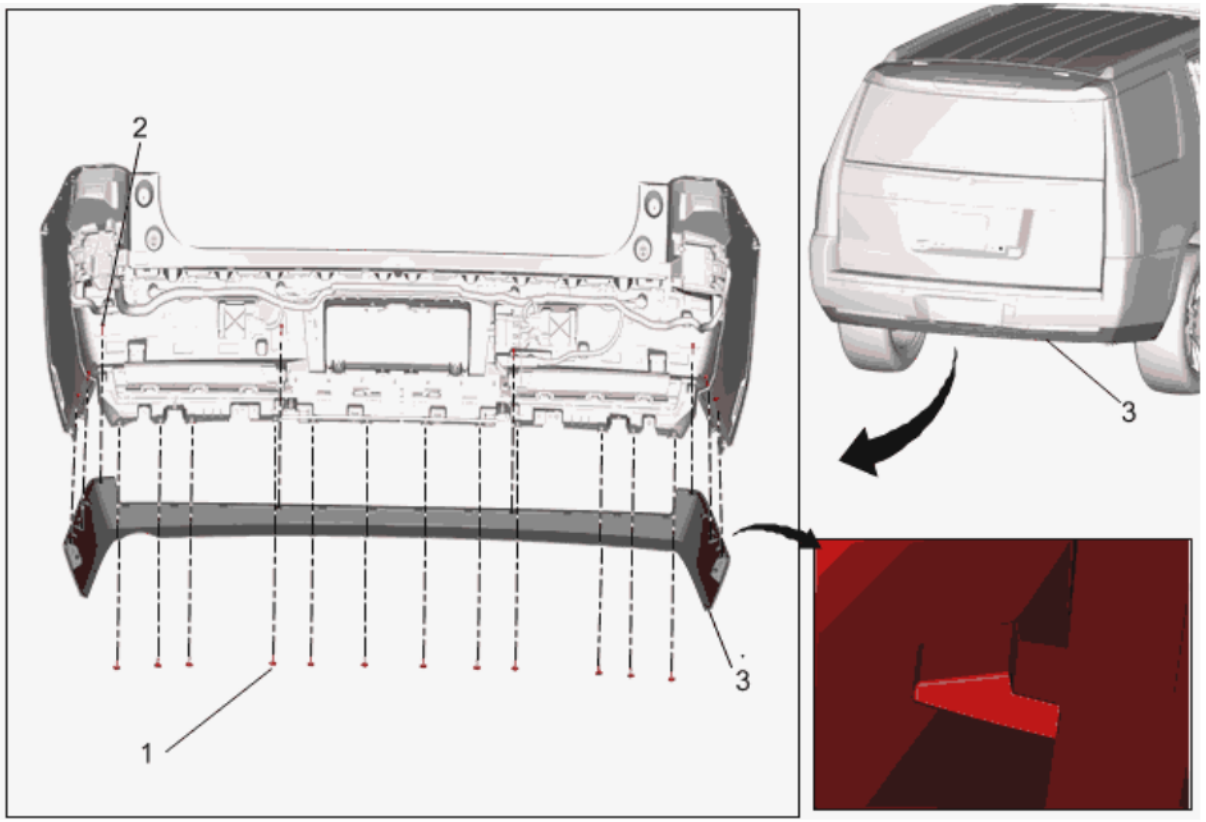


Fig. 30: Rear Bumper Lower Fascia (Cadillac)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure 1. Remove the rear bumper fascia. Refer to **Rear Bumper Fascia Replacement (Cadillac)** 2. Place the bumper fascia face down on a clean protected surface 3. Remove the rear fog lamps. Refer to **Rear Fog Lamp Replacement (Cadillac)**	
1	Rear Bumper Lower Fascia Screw (Qty: 12) **CAUTION:**

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Callout	Component Name
	Refer to Fastener Caution . **Tighten** 2.5 N.m (22 lb in)
2	Rear Bumper Lower Fascia Bolt (Qty 8) **Tighten** 7 N.m (62 lb in)
3	Rear Bumper Lower Fascia **Procedure** 1. Carefully push a small nylon wedge between the upper fascia and the lower fascia. Insert a small flat-bladed tool into the fascia slot and depress the snaps one at a time and pull on the fascia at the same time to gradually remove the lower fascia from the upper fascia. 2. Transfer part as necessary.

REAR BUMPER FASCIA TAIL LAMP OPENING BRACKET REPLACEMENT

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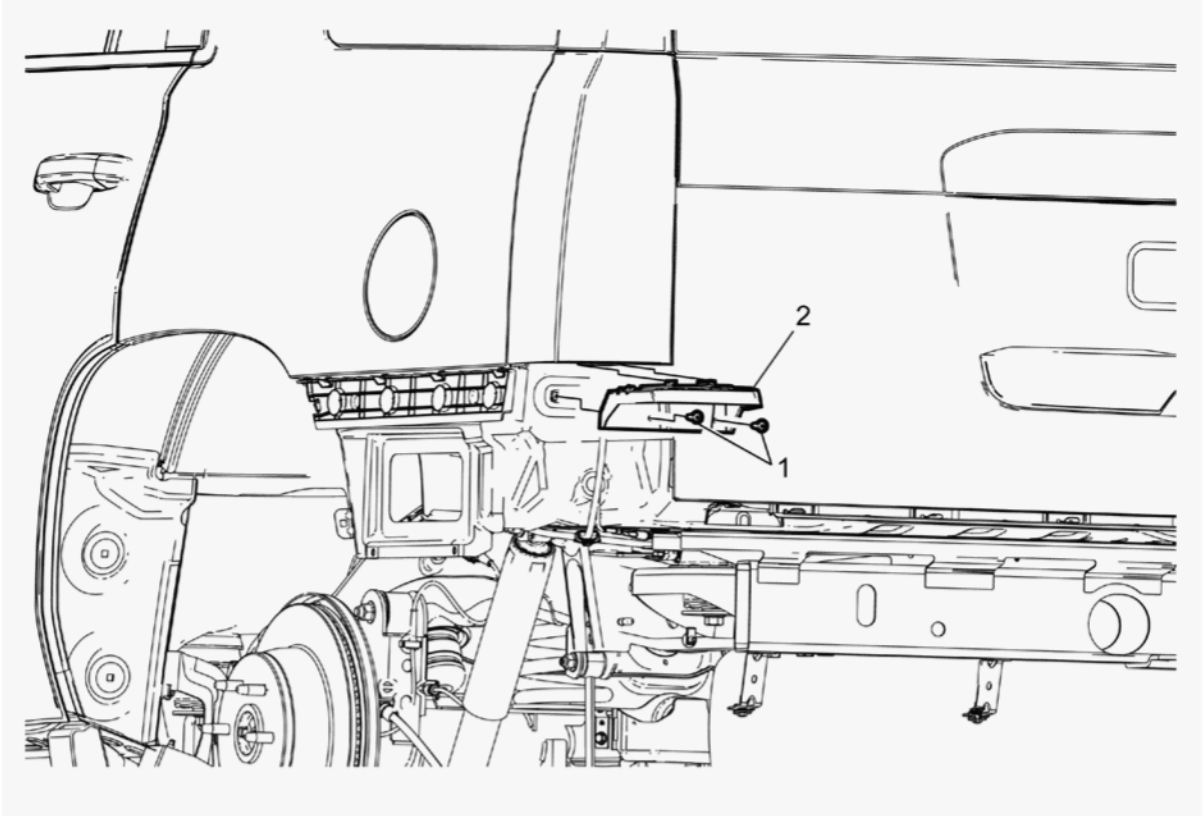


Fig. 31: Rear Bumper Fascia Tail Lamp Opening Bracket
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the rear bumper fascia. Refer to **Rear Bumper Fascia Replacement (Chevrolet, GMC)Rear Bumper Fascia Replacement (Cadillac)**.	
1	Rear Bumper Fascia Tail Lamp Opening Bracket Bolt (Qty: 2) **CAUTION:** **Refer to** **Fastener** **Caution** .

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Callout	Component Name
	Tighten 2.5 N.m (22 lb in)
2	Rear Bumper Fascia Tail Lamp Opening Bracket

REAR BUMPER IMPACT BAR REPLACEMENT (CHEVROLET, GMC)

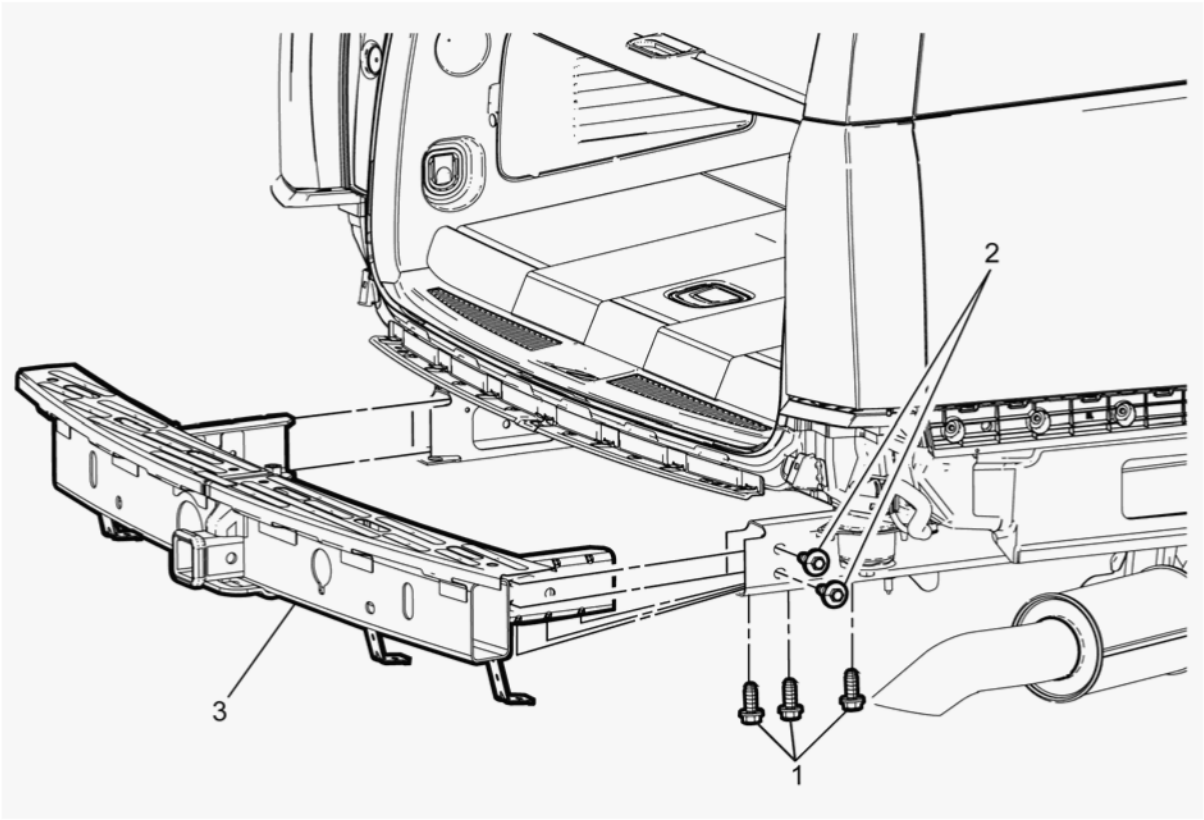


Fig. 32: Rear Bumper Impact Bar (Chevrolet, GMC)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure	

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Callout	Component Name
1. Remove the rear bumper fascia. Refer to **Rear Bumper Fascia Replacement (Chevrolet, GMC)**. 2. Remove the spare wheel hoist. Refer to **Spare Wheel Hoist Replacement** 3. Remove the tow vehicle electrical receptacle. Refer to **Tow Vehicle Electrical Receptacle Replacement** 4. Remove the spare wheel hoist lock cylinder and lock cylinder case. Refer to **Spare Wheel Hoist Lock Cylinder Replacement** 5. Remove the electronic parking brake control module if equipped. Refer to **Electronic Parking Brake Control Module Replacement**	
1	Rear Bumper Impact Bar Bolt (Qty: 6) **CAUTION:** **Refer to Fastener Caution .** **Tighten** 100 N.m (74 lb ft)
2	Rear Bumper Impact Bar Bolt - Side (Qty 4) **Tighten** 70 N.m (52 lb ft)
3	Rear Bumper Impact Bar **Procedure** Disconnect the electrical harness from the impact bar if needed.

REAR BUMPER IMPACT BAR REPLACEMENT (CADILLAC)

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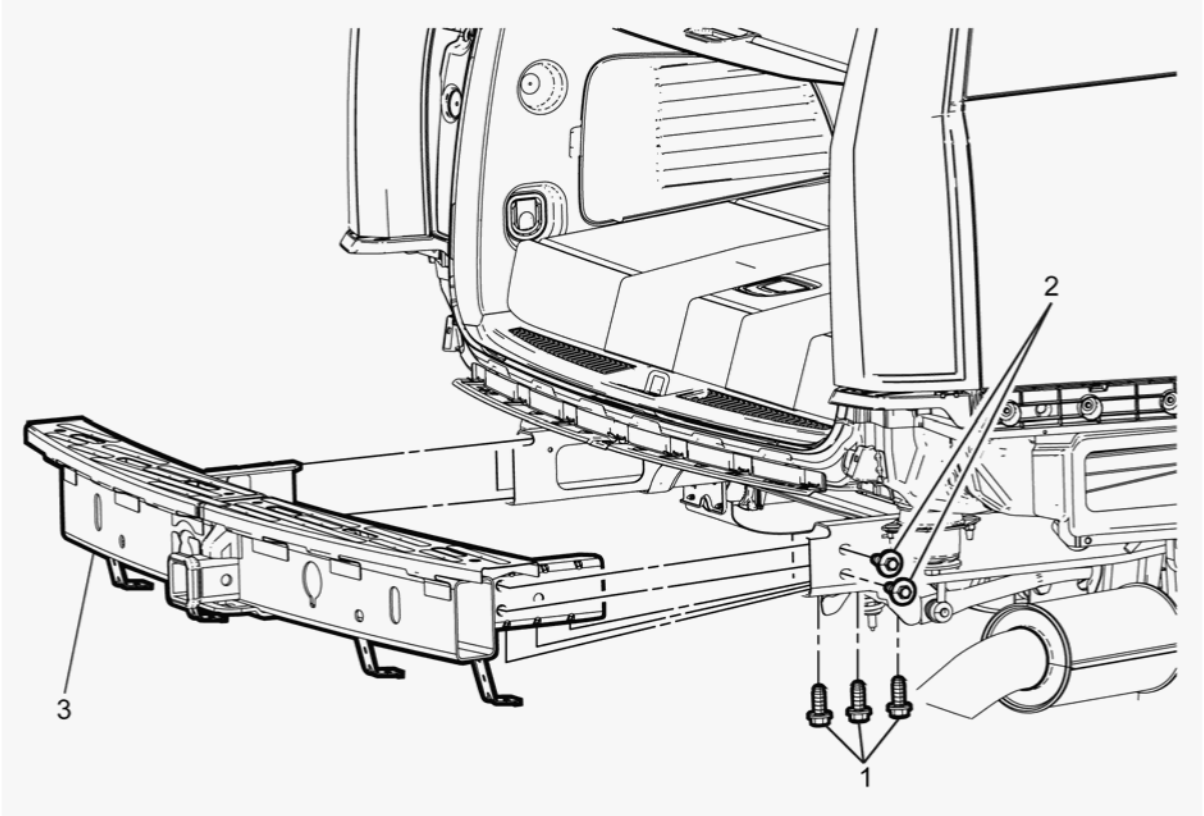


Fig. 33: Rear Bumper Impact Bar (Cadillac)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure	
1. Remove the rear bumper fascia. Refer to **Rear Bumper Fascia Replacement (Cadillac)**.	
2. Remove the spare wheel hoist. Refer to **Spare Wheel Hoist Replacement**	
3. Remove the spare wheel hoist lock cylinder and lock cylinder case. Refer to **Spare Wheel Hoist Lock Cylinder Replacement**	
4. Remove the tow vehicle electrical receptacle. Refer to **Tow Vehicle Electrical Receptacle Replacement**	
5. Remove the electronic parking brake control module if equipped. Refer to **Electronic Parking Brake Control Module Replacement**	

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Callout	Component Name
1	Rear Bumper Impact Bar Bolt (Qty: 6) **CAUTION:** **Refer to** **Fastener Caution .** **Tighten** 100 N.m (74 lb ft)
2	Rear Bumper Impact Bar Bolt - Side (Qty 4) **Tighten** 70 N.m (52 lb ft)
3	Rear Bumper Impact Bar **Procedure** Disconnect the electrical harness from the impact bar if needed.

REAR BUMPER FASCIA STEP PAD REPLACEMENT

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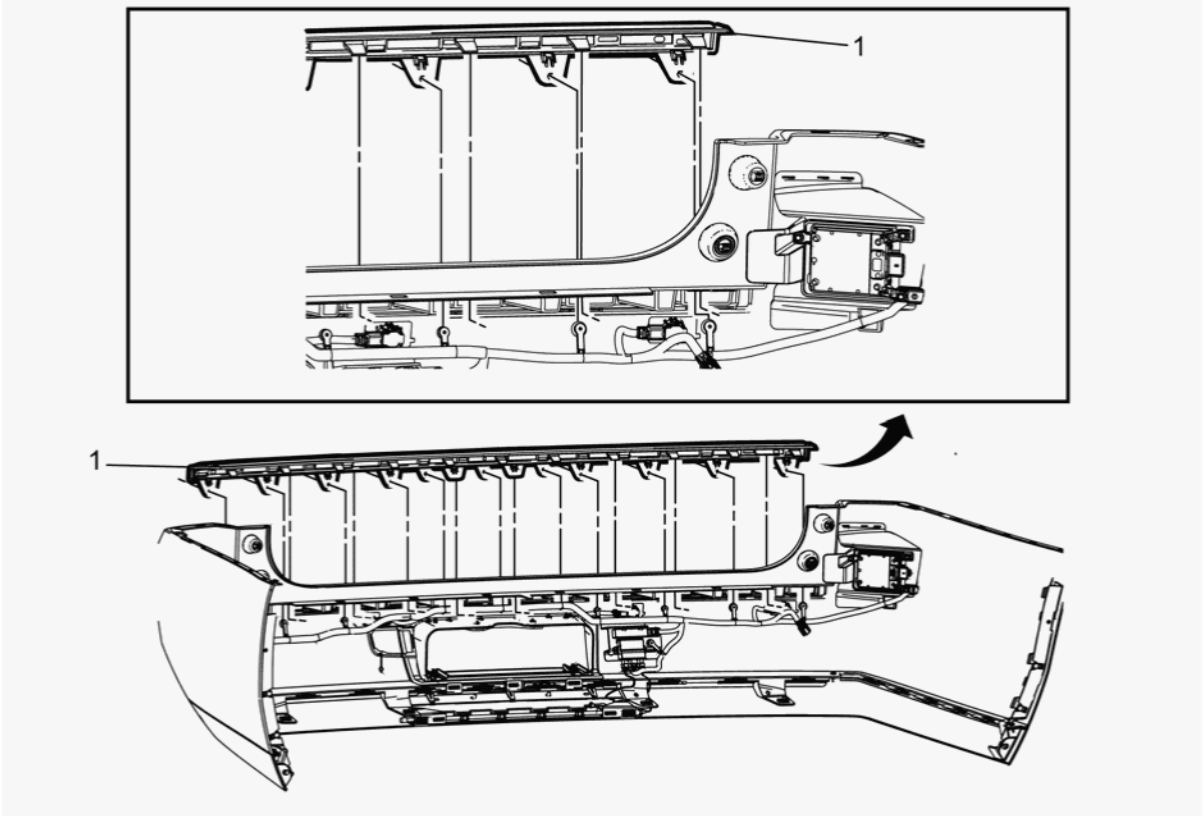


Fig. 34: Rear Bumper Fascia Step Pad
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the rear bumper fascia. Refer to **Rear Bumper Fascia Replacement (Chevrolet, GMC)Rear Bumper Fascia Replacement (Cadillac)**.	
1	Rear Fascia Step Pad **Procedure** 1. Release the retainers from the rear object alarm sensor wiring harness. 2. Release the remaining tabs from the rear bumper fascia.

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RADIATOR AIR LOWER DEFLECTOR REPLACEMENT (GMC)

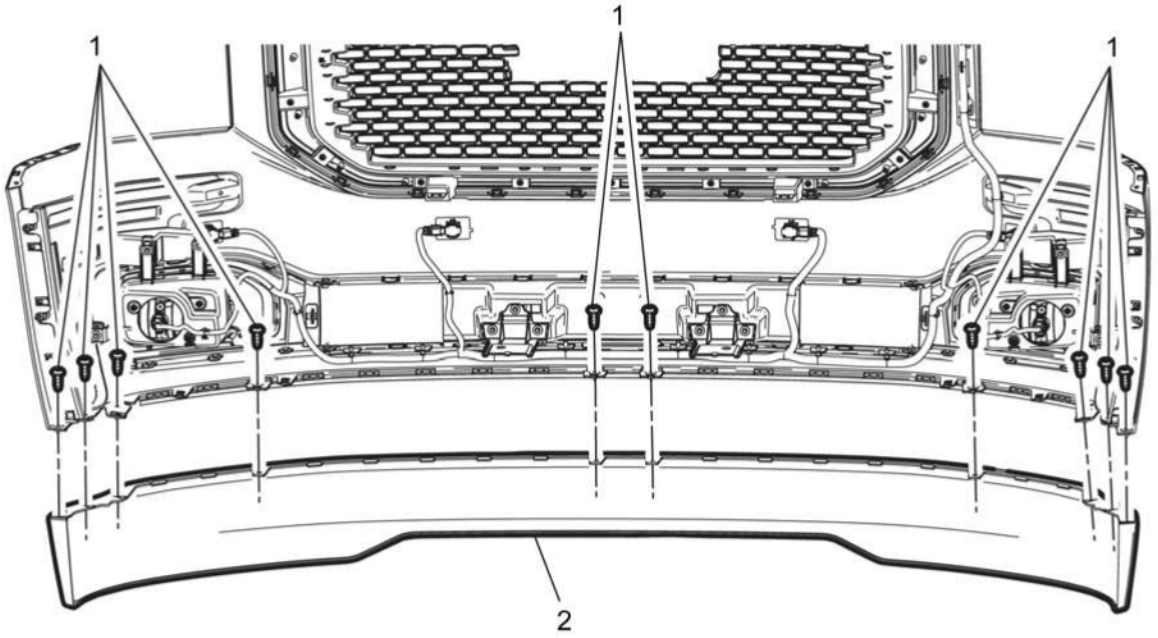


Fig. 35: Radiator Air Lower Deflector (GMC)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure	
1. Remove the front bumper fascia. Refer to **Front Bumper Fascia Replacement (GMC)** 2. Place the bumper fascia face down on a clean protected surface. 3. Remove both of the front bumper outer front fillers from the fascia. Refer to **Front Bumper Outer Front Filler Replacement (Cadillac, GMC)**	

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Callout	Component Name
1	Radiator Air Lower Deflector Screw (Qty: 10) **CAUTION:** **Refer to** **Fastener Caution** . **Tighten** 3 N.m (27 lb in)
2	Radiator Air Lower Deflector **Procedure** Release the front bumper fascia air deflector retainer tabs from the fascia.

RADIATOR AIR LOWER DEFLECTOR REPLACEMENT (CHEVROLET)

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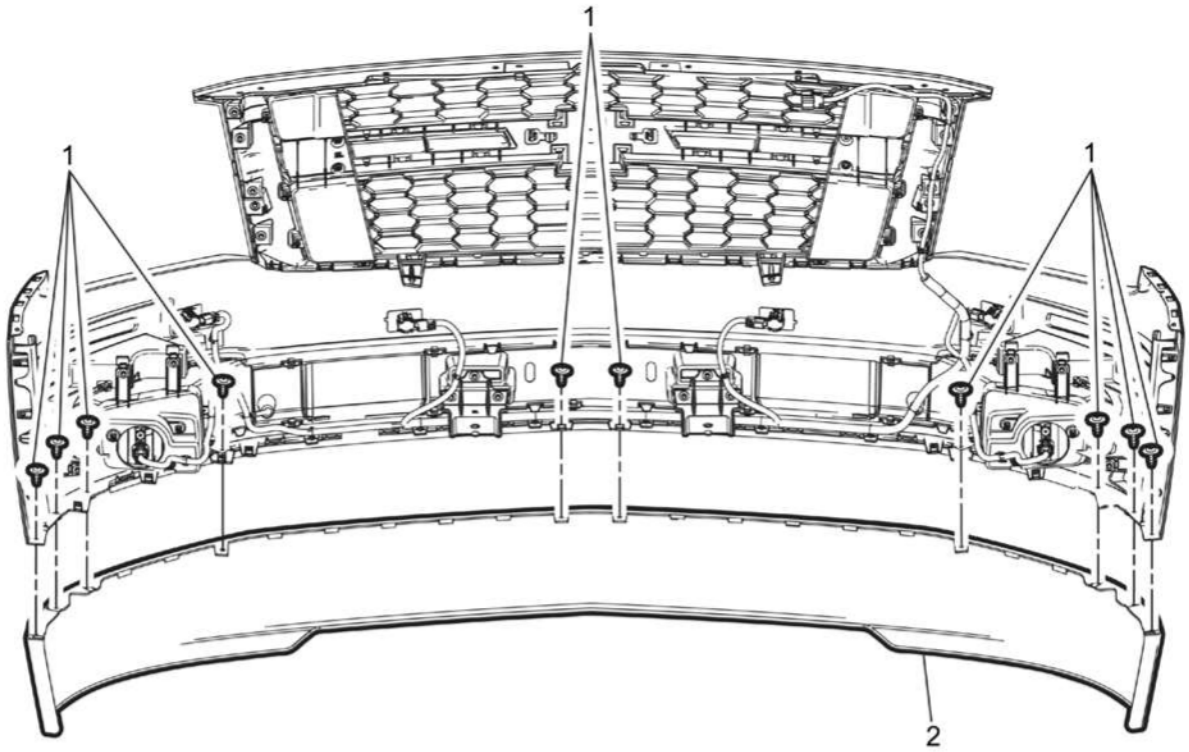


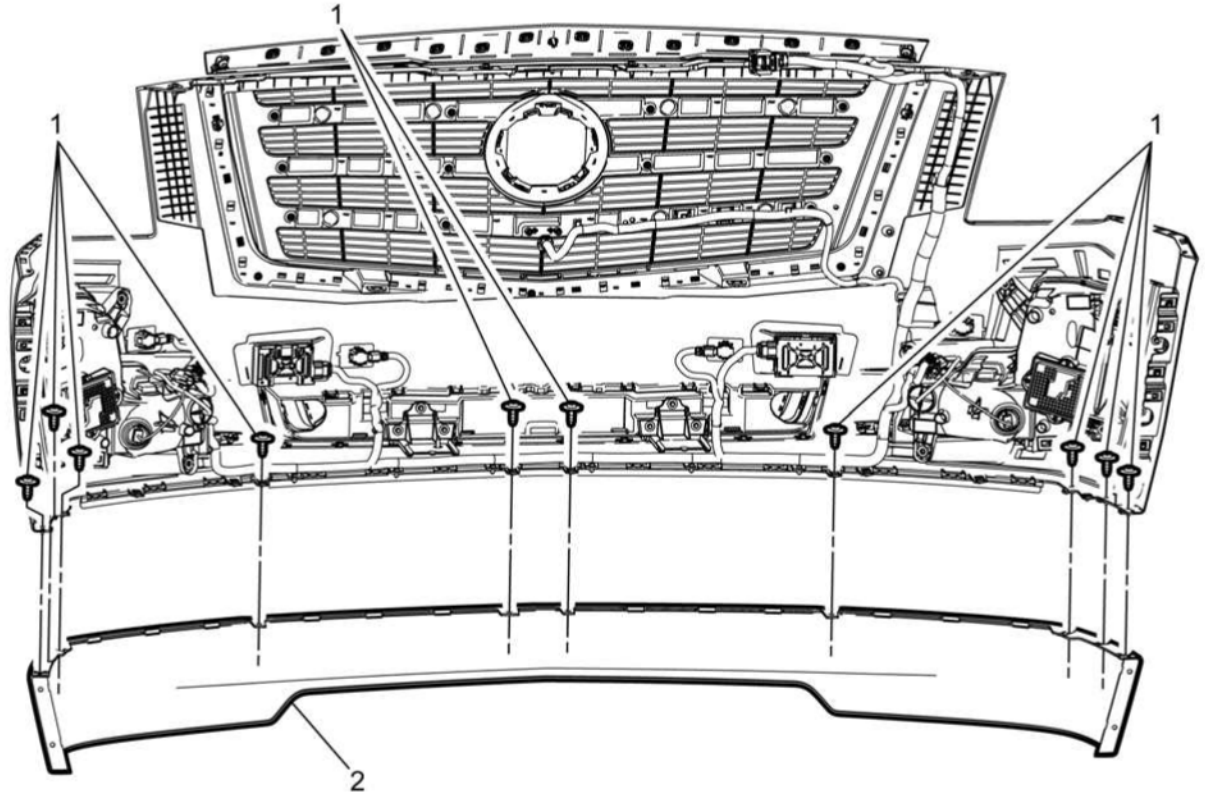
Fig. 36: Radiator Air Lower Deflector (Chevrolet)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Remove the front bumper fascia. Refer to **Front Bumper Fascia Replacement (Chevrolet)** 2. Place the bumper fascia face down on a clean protected surface. 3. Remove both of the front bumper outer front fillers from the fascia. Refer to **Front Bumper Outer Front Filler Replacement (Chevrolet)**	
1	Radiator Air Lower Deflector Screw (Qty: 10) **CAUTION:**

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Callout	Component Name
	Refer to **Fastener Caution** . **Tighten** 3 N.m (27 lb in)
2	Radiator Air Lower Deflector **Procedure** Release the front bumper fascia air deflector retainer tabs from the fascia.

RADIATOR AIR LOWER DEFLECTOR REPLACEMENT (CADILLAC)



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Fig. 37: Radiator Air Lower Deflector (Cadillac)
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the front bumper outer front filler. Refer to **Front Bumper Outer Front Filler Replacement (Cadillac, GMC)** Place the bumper fascia face down on a clean protected surface.	
1	Radiator Air Lower Deflector Screw (Qty: 10) **CAUTION:** **Refer to** **Fastener** **Caution** . **Tighten** 3 N.m (27 lb in)
2	Radiator Air Lower Deflector **Procedure** Release the front bumper fascia air deflector retainer tabs from the fascia.

DESCRIPTION AND OPERATION

ACTIVE GRILLE AIR SHUTTER DESCRIPTION AND OPERATION

The active grille air shutter system closes shutters in the front grille to enhance vehicle aerodynamics in driving situations where cooling and A/C loads are relatively low and high levels of front end airflow are not required. If high levels of airflow are required the active grille air shutter system will open one or both shutters. The control signal from the engine control module, ignition and ground circuits enable the active grille air shutter actuators to operate. If the conditions for opening the shutters are reached the engine control module commands the active grille air shutter actuators to open one or both shutters.

The dual active grille air shutter system consists of two aero shutter mechanisms located in the front grille for controlling the amount of air entering the engine compartment. It includes three wires; ground, power and a Local Interconnect Network (LIN) Bus serial data circuit from the engine control module to the shutter actuator. The engine control module determines shutter state based on various vehicle conditions such as vehicle speed, coolant temperature, fan state, refrigerant system pressure, A/C compressor state and ambient temperature. The engine control module has the ability to command each shutter individually to the open or closed positions through communications on the LIN Bus.

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The actuators are powered by an ignition circuit that is active when the key is in the RUN position. The vehicle may have to be driven for up to 13 minutes at speeds greater than 41 km/h (25 mph) before a shutter begins to move. If low ambient temperature is detected, the shutters will remain in the closed position.

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