

ACCESSORIES & EQUIPMENT

Bumpers and Fascias - Canyon, Colorado

SPECIFICATIONS

FASTENER SPECIFICATIONS

Application	Specification	
	Metric	English
Front Bumper Fascia Air Deflector Bolts	2.5 N.m	22 lb in
Front Bumper Fascia Bolts	2.5 N.m	22 lb in
Front Bumper Fascia Bracket Bolts	9 N.m	80 lb in
Front Bumper Fascia Lower Screws	2.5 N.m	22 lb in
Front Bumper Fascia To Fender Bolts	2.5 N.m	22 lb in
Front Bumper Fascia Lower Stiffener Bolt	9 N.m	80 lb in
Front Bumper Impact Bar Bolts	58 N.m	43 lb ft
Front Bumper Intermediate Filler Bolts	2.5 N.m	22 lb in
Front Bumper Shutter Bolts	6 N.m	53 lb in
Front Grille Lower Bolt	6 N.m	53 lb in
Rear Bumper Impact Bar Bolt	160 N.m	118 lb ft
Rear Bumper Impact Bar Outer Brace	6 N.m	53 lb in
Rear Bumper Impact Bar Bracket Bolts	50 N.m	37 lb ft
Rear Bumper Step Outer Pad Bolts	2.5 N.m	22 lb in
Rear Bumper Step Outer Pad Retainers	2.5 N.m	22 lb in

SCHEMATIC WIRING DIAGRAMS

ACTIVE GRILLE AIR SHUTTER WIRING SCHEMATICS

Active Grille Air Shutter (LCV/LFX)

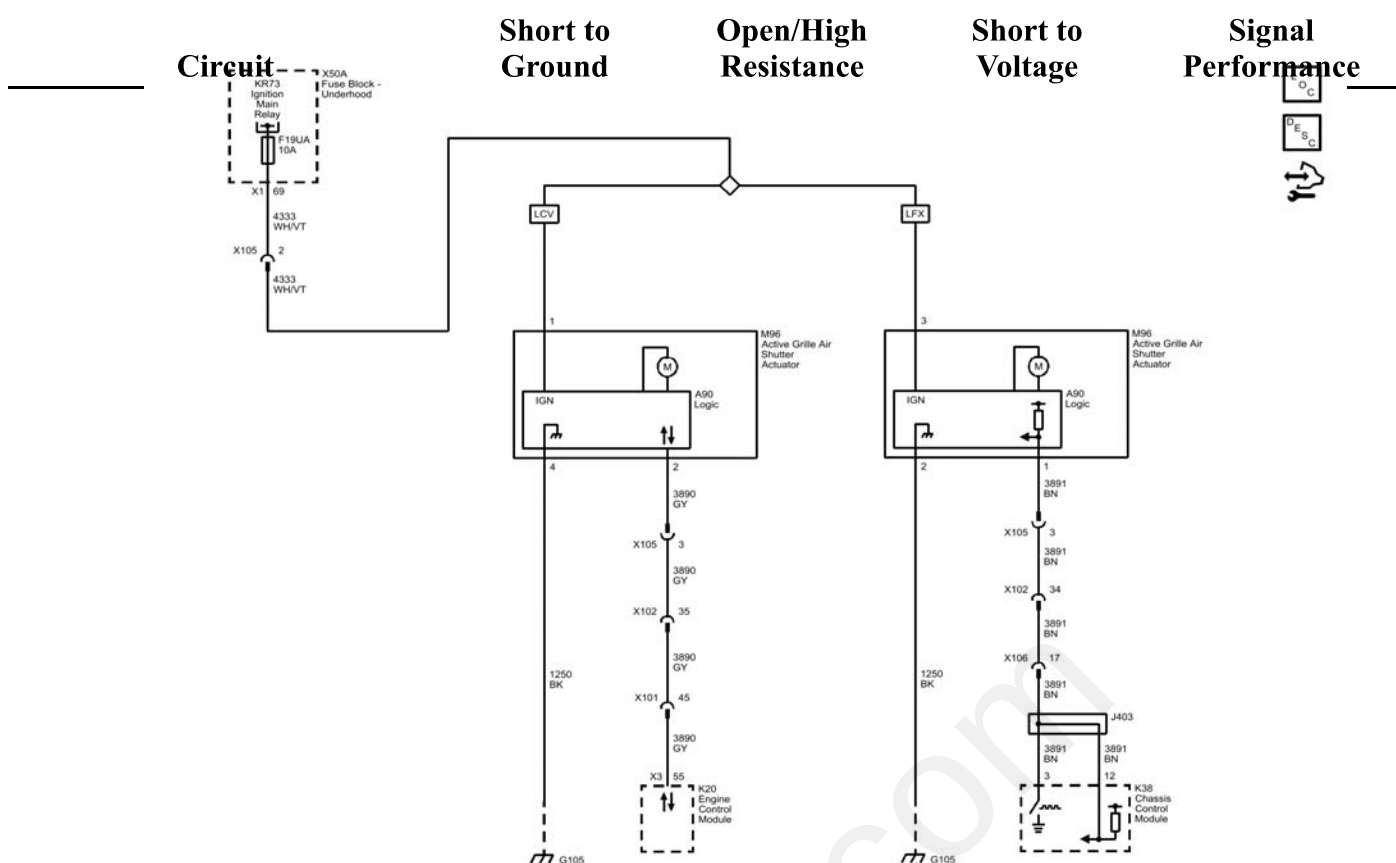


Fig. 1: Active Grille Air Shutter (LCV/LFX)
 Courtesy of GENERAL MOTORS COMPANY

DIAGNOSTIC INFORMATION AND PROCEDURES

DTC P059F OR P151E: ACTIVE GRILLE AIR SHUTTER (LFX)

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	--	--

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Control - Terminal 3	P059F, P151E	P059F, P151E	P059F, P151E	P059F, P151E
Control - Terminal 12	P059F, P151E	P059F, P151E	P059F, P151E	P059F, P151E
Ground	-	P059F, P151E	-	--

Circuit/System Description

The active grille air shutter actuator closes louvers 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 louvers. The control signal from the chassis 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 chassis control module commands the active grille air shutter actuator to open the louvers.

Conditions for Running the DTC

- The engine is running.
- The ignition 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 3 attempts are made to move the louvers. 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 louvers will be commanded to move again. If the commanded louver position can not be achieved after 3 more attempts, the MIL will be illuminated and DTC P059F will be set as current.
- The DTC P151E will set if there is no communication on the bi-directional control circuit.

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 (LFX)

Electrical Information Reference

- **Circuit Testing**

tor 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.
2. Verify DTC U0109 is not set.
 - **If DTC U0109 is set**
Refer to Diagnostic Trouble Code (DTC) List - Vehicle for further diagnosis.
 - **If DTC U0109 is not set**
3. Verify the active grille air shutter actuator opens and closes the louvers in the front grille when performing the Active Grille Air Shutter System test with a scan tool.
 - **If the louvers in the front grille do not open and close and the test result is fail**
Refer to Circuit/System Testing.
 - **If the louvers in the front grille open and close and the test result is pass**
4. Verify 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 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 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 minutes for all vehicle systems to power down.
2. Test for less than 10 Ω between the ground circuit terminal 2 and ground.
 - **If 10 Ω or greater**
 1. Ignition 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.
4. Verify a test lamp illuminates between the ignition circuit terminal 3 and ground.
 - **If the test lamp does not illuminate and the circuit fuse is good**
 1. Ignition OFF.

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**.

- **If the test lamp does not illuminate and the circuit fuse is open**

1. Ignition 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 infinite resistance, replace the M60A Active Grille Air Shutter 1 Motor Module.

- **If the test lamp illuminates**

5. Connect a test lamp between the control circuit terminal 1 and the ignition circuit terminal 3.
6. Verify the test lamp turns On and Off when performing the Active Grille Air Shutter System test with a scan tool.

- **If the test lamp is always Off**

1. Ignition OFF, disconnect the harness connector at the K38 Chassis Control Module, ignition ON.
2. Test for less than 1 V between the control circuit and ground.
 - If 1 V or greater, repair the short to voltage on the circuit.
 - If less than 1 V

3. Ignition OFF.

4. Test for less than 2 Ω in the control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the K38 Chassis Control Module.

- **If the test lamp is always On**

1. Ignition OFF, disconnect the harness connector at the K38 Chassis Control Module.
2. Test for infinite resistance between the control circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the K38 Chassis Control Module.

- **If the test lamp turns On and Off**

7. Ignition OFF, connector the harness connector at the M60A Active Grille Air Shutter 1 Motor Module. Disconnect the harness connector at the K38 Chassis Control Module, Ignition ON.
8. Test for greater than 11 V between the control circuit terminal 12 and ground.

- **If 11 V or less**

1. Ignition OFF, disconnect the harness connector at the M60A Active Grille Air Shutter 1 Motor Module.
2. Test for less than 2 Ω in the control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the M60A Active Grille Air Shutter 1 Motor Module.

- **If greater than 11 V**

9. Test or replace the M60A Active Grille Air Shutter 1 Motor Module.
10. Verify DTC P151E is not set.

- **If the DTC is set**

Replace the K38 Chassis Control Module.

the DTC is not set	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
11. All OK				

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

[Control Module References](#) for chassis control module replacement, programming and setup.

DTC P059F OR P151E: ACTIVE GRILLE AIR SHUTTER (LCV)

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	--	--
Control	P059F, P151E	P059F, P151E	P059F, P151E	P059F, P151E
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 control 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

- The Vehicle is ON.
- 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 3 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.

next key cycle the louver will be commanded to move again. If the commanded louver position can not be achieved after 3 more attempts, the MIL will be illuminated and DTC P059F will be set as current.

- The DTC P151E will set if there is no communication on the bi-directional control circuit.

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 (LCV)

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.
2. Verify DTC U0100 is not set.
 - **If DTC U0100 is set**

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

- **If DTC U0100 is not set**
3. Verify the active grille air shutter actuator opens and closes the louvers at the front bumper when performing the Active Grille Air Shutter System test with a scan tool.

- **If the louvers at the front bumper do not open and close and the test result is fail**

Refer to Circuit/System Testing.

- **If the louvers at the front bumper open and close and the test result is pass**
4. Verify none of the following conditions are present:

low 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 OFF, and all vehicle systems OFF, disconnect the harness connector at the M96 Active Grille Air Shutter Actuator. 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 terminal 4 and ground.

- **If 10 Ω or greater**

1. Ignition 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.

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 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](#).

- **If the test lamp does not illuminate and the circuit fuse is open**

1. Ignition 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 infinite resistance, replace the M96 Active Grille Air Shutter Actuator.

- **If the test lamp illuminates**

5. Connect a test lamp between the control circuit terminal 2 and the ignition circuit terminal 1.

6. Verify the test lamp turns On and Off when performing the Active Grille Air Shutter System test with a scan tool.

- **If the test lamp is always Off**

1. Ignition OFF, disconnect the harness connector at the K20 Engine Control Module, Ignition ON.

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

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

3. Ignition OFF.

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

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

- If less than 2 Ω , replace the K20 Engine Control Module.
- **If the test lamp is always On**
 1. Ignition OFF, disconnect the harness connector at the K20 Engine Control Module.
 2. Test for infinite resistance between the control circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the K20 Engine Control Module.
- **If the test lamp turns On and Off**
- 7. Ignition OFF, connector the harness connector at the M96 Active Grille Air Shutter Actuator. Disconnect the X3 harness connector at the K20 Engine Control Module, Ignition ON.
- 8. Test for greater than 11 V between the control circuit terminal 55 and ground.
 - **If 11 V or less**
 1. Vehicle OFF, disconnect the harness connector at the M96 Active Grille Air Shutter Actuator.
 2. Test for less than 2 Ω in the control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the M96 Active Grille Air Shutter Actuator.
 - **If greater than 11 V**
- 9. Test or replace the M96 Active Grille Air Shutter Actuator.
- 10. Verify DTC P151E is not set.
 - **If the DTC is set**

Replace the K20 Engine Control Module.
 - **If the DTC is not set**
- 11. 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 \(LFX\)Active Grille Air Shutter Description and Operation \(LCV\)](#).

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.

Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
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 \(LFX\)](#)[Active Grille Air Shutter 1 Malfunction \(LCV\)](#)

ACTIVE GRILLE AIR SHUTTER 1 MALFUNCTION (LFX)

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	--	--
Control - Terminal 3	P059F, P151E	P059F, P151E	P059F, P151E	P059F, P151E
Control - Terminal 12	P059F, P151E	P059F, P151E	P059F, P151E	P059F, P151E
Ground	-	P059F, P151E	-	--

Circuit/System Description

The active grille air shutter actuator closes louvers 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 louvers. The control signal from the chassis 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 chassis control module commands the active grille air shutter actuator to open the louvers.

Conditions for Running the DTC

- The engine is running.
- The ignition 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 3 attempts are made to move the louvers. The DTC will be stored as current for this key cycle but the

tion indicator lamp (MIL) will not be illuminated.

- On the next key cycle the louvers will be commanded to move again. If the commanded louver position can not be achieved after 3 more attempts, the MIL will be illuminated and DTC P059F will be set as current.
- The DTC P151E will set if there is no communication on the bi-directional control circuit.

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 (LFX)

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.
2. Verify DTC U0109 is not set.
 - **If DTC U0109 is set**

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

- **If DTC U0109 is not set**

3. Verify the active grille air shutter actuator opens and closes the louvers in the front grille when performing the Active Grille Air Shutter System test with a scan tool.

- **If the louvers in the front grille do not open and close and the test result is fail**

Refer to Circuit/System Testing.

- **If the louvers in the front grille open and close and the test result is pass**

one 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 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 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 minutes for all vehicle systems to power down.

2. Test for less than 10 Ω between the ground circuit terminal 2 and ground.

- **If 10 Ω or greater**

1. Ignition 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.

4. Verify a test lamp illuminates between the ignition circuit terminal 3 and ground.

- **If the test lamp does not illuminate and the circuit fuse is good**

1. Ignition 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**.

- **If the test lamp does not illuminate and the circuit fuse is open**

1. Ignition 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 infinite resistance, replace the M60A Active Grille Air Shutter 1 Motor Module.

- **If the test lamp illuminates**

5. Connect a test lamp between the control circuit terminal 1 and the ignition circuit terminal 3.

6. Verify the test lamp turns On and Off when performing the Active Grille Air Shutter System test with a scan tool.

- **If the test lamp is always Off**

1. Ignition OFF, disconnect the harness connector at the K38 Chassis Control Module, ignition ON.

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

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

3. Ignition OFF.

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

- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω , replace the K38 Chassis Control Module.
- **If the test lamp is always On**
 1. Ignition OFF, disconnect the harness connector at the K38 Chassis Control Module.
 2. Test for infinite resistance between the control circuit and ground.
 - If less than infinite resistance, repair the short to ground on the circuit.
 - If infinite resistance, replace the K38 Chassis Control Module.
- **If the test lamp turns On and Off**
 7. Ignition OFF, connector the harness connector at the M60A Active Grille Air Shutter 1 Motor Module. Disconnect the harness connector at the K38 Chassis Control Module, Ignition ON.
 8. Test for greater than 11 V between the control circuit terminal 12 and ground.
 - **If 11 V or less**
 1. Ignition OFF, disconnect the harness connector at the M60A Active Grille Air Shutter 1 Motor Module.
 2. Test for less than 2 Ω in the control circuit end to end.
 - If 2 Ω or greater, repair the open/high resistance in the circuit.
 - If less than 2 Ω , replace the M60A Active Grille Air Shutter 1 Motor Module.
 - **If greater than 11 V**
 9. Test or replace the M60A Active Grille Air Shutter 1 Motor Module.
 10. Verify DTC P151E is not set.
 - **If the DTC is set**

Replace the K38 Chassis Control Module.
 - **If the DTC is not set**
 11. All OK

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the repair.

[Control Module References](#) for chassis control module replacement, programming and setup.

ACTIVE GRILLE AIR SHUTTER 1 MALFUNCTION (LCV)

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

It Information Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Circuit	Short to Ground	Open/High Resistance	Short to Voltage	Signal Performance
Ignition	P059F, P151E	P059F, P151E	--	--
Control	P059F, P151E	P059F, P151E	P059F, P151E	P059F, P151E
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 control 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

- The Vehicle is ON.
- 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 3 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.
- On the next key cycle the louver will be commanded to move again. If the commanded louver position can not be achieved after 3 more attempts, the MIL will be illuminated and DTC P059F will be set as current.
- The DTC P151E will set if there is no communication on the bi-directional control circuit.

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 (LCV)

Electrical Information Reference

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.
2. Verify DTC U0100 is not set.
 - **If DTC U0100 is set**

Refer to Diagnostic Trouble Code (DTC) List - Vehicle for further diagnosis.
 - **If DTC U0100 is not set**
3. Verify the active grille air shutter actuator opens and closes the louvers at the front bumper when performing the Active Grille Air Shutter System test with a scan tool.
 - **If the louvers at the front bumper do not open and close and the test result is fail**

Refer to Circuit/System Testing.
 - **If the louvers at the front bumper open and close and the test result is pass**
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 OFF, and all vehicle systems OFF, disconnect the harness connector at the M96 Active Grille Air Shutter Actuator. 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 terminal 4 and ground.
 - **If 10 Ω or greater**
 1. Ignition 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.
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**

Ignition 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**.

• **If the test lamp does not illuminate and the circuit fuse is open**

1. Ignition 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 infinite resistance, replace the M96 Active Grille Air Shutter Actuator.

• **If the test lamp illuminates**

5. Connect a test lamp between the control circuit terminal 2 and the ignition circuit terminal 1.

6. Verify the test lamp turns On and Off when performing the Active Grille Air Shutter System test with a scan tool.

• **If the test lamp is always Off**

1. Ignition OFF, disconnect the harness connector at the K20 Engine Control Module, Ignition ON.

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

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

3. Ignition OFF.

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

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

• **If the test lamp is always On**

1. Ignition OFF, disconnect the harness connector at the K20 Engine Control Module.

2. Test for infinite resistance between the control circuit and ground.

- If less than infinite resistance, repair the short to ground on the circuit.
- If infinite resistance, replace the K20 Engine Control Module.

• **If the test lamp turns On and Off**

7. Ignition OFF, connector the harness connector at the M96 Active Grille Air Shutter Actuator. Disconnect the X3 harness connector at the K20 Engine Control Module, Ignition ON.

8. Test for greater than 11 V between the control circuit terminal 55 and ground.

• **If 11 V or less**

1. Vehicle OFF, disconnect the harness connector at the M96 Active Grille Air Shutter Actuator.

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

- If 2 Ω or greater, repair the open/high resistance in the circuit.
- If less than 2 Ω , replace the M96 Active Grille Air Shutter Actuator.

• **If greater than 11 V**

9. Test or replace the M96 Active Grille Air Shutter Actuator.

10. Verify DTC P151E is not set.

• **If the DTC is set**

Replace the K20 Engine Control Module.

the DTC is not set	Component Name
11. 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 FASCIA ENERGY UPPER ABSORBER REPLACEMENT

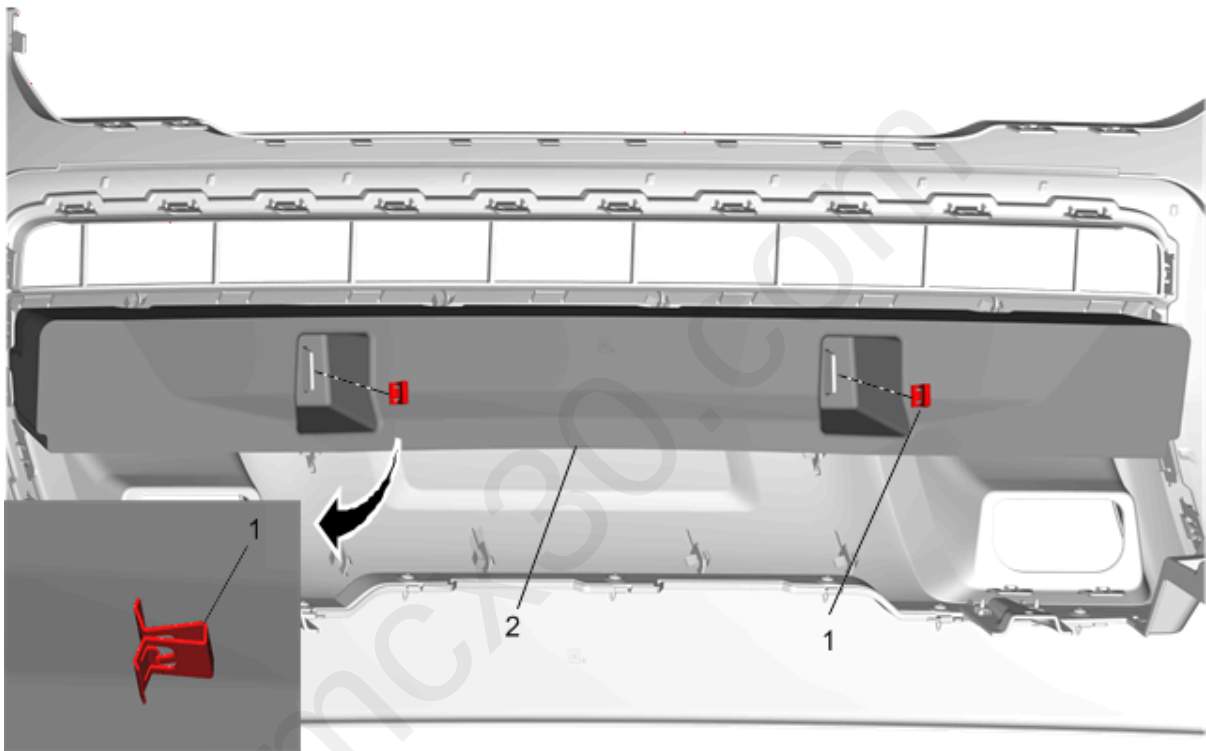


Fig. 2: Front Bumper Fascia Energy Upper Absorber
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure 1. Remove the front bumper fascia. Refer to Front Bumper Fascia Replacement (GMC)Front Bumper Fascia Replacement (Chevrolet) 2. Place the bumper fascia face down on a clean protected surface. 3. Reposition front bumper fascia wiring harness if needed.	
1	Front Bumper Fascia Energy Upper Absorber Clip (Qty 2)
2	Front Bumper Fascia Energy Upper Absorber

FRONT BUMPER IMPACT BAR REPLACEMENT

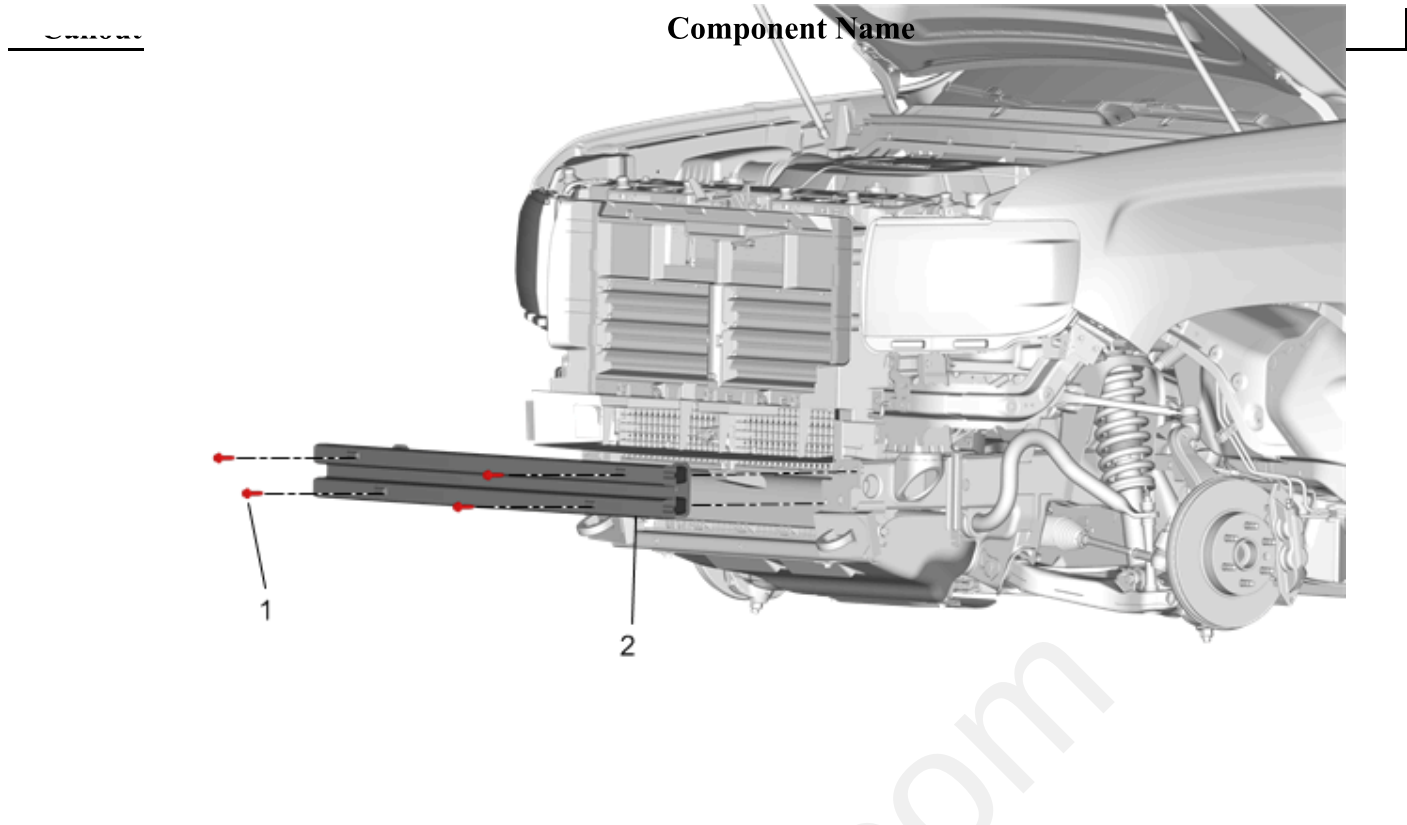


Fig. 3: Front Bumper Impact Bar
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the front fascia. Refer to Front Bumper Fascia Replacement (GMC) Front Bumper Fascia Replacement (Chevrolet) .	
1	Front Bumper Impact Bar Bolt (Qty: 4) CAUTION: Refer to Fastener Caution . Tighten 58 N.m (43 lb ft)
2	Front Bumper Impact Bar Procedure Remove the two retainers that attach the front bumper shutter lower baffle to the front bumper impact bar.

FRONT BUMPER INTERMEDIATE FILLER REPLACEMENT

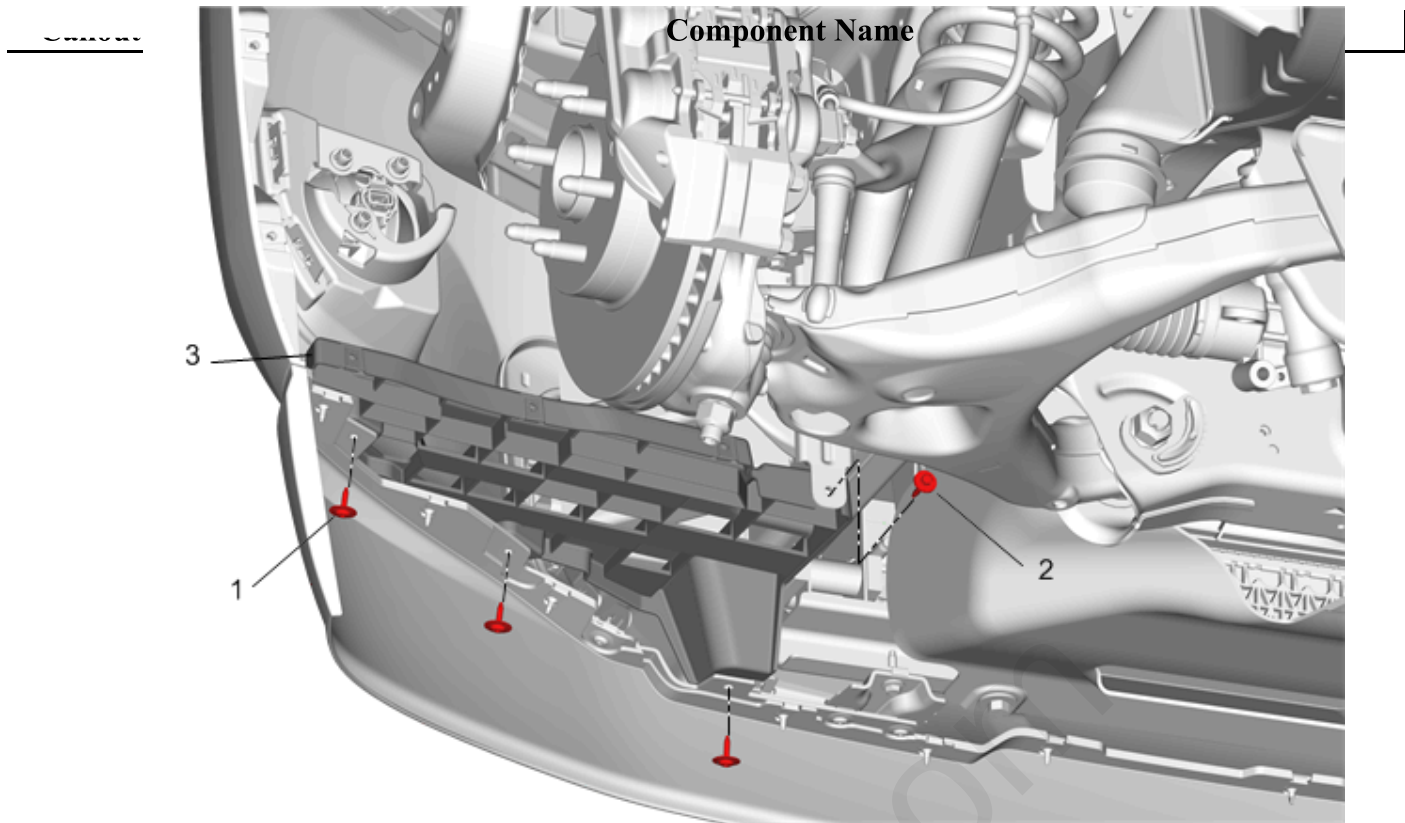


Fig. 4: Front Bumper Intermediate Filler
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures Remove either the left or right hand front wheelhouse liner. Refer to Front Wheelhouse Liner Replacement	
1	Front Bumper Intermediate Filler Bolt (Qty: 3) CAUTION: Refer to Fastener Caution . Tighten 2.5 N.m (22 lb in)
2	Front Bumper Fascia Lower Stiffener Bolt Tighten 9 N.m (80 lb in)
3	Front Bumper Intermediate Filler

FRONT BUMPER FASCIA REPLACEMENT (GMC)

Removal Procedure

1. Remove the front compartment front sight shield. Refer to [Front Compartment Front Sight Shield Replacement](#) .
2. Remove the right and left front wheelhouse liner. Refer to [Front Wheelhouse Liner Replacement](#) .

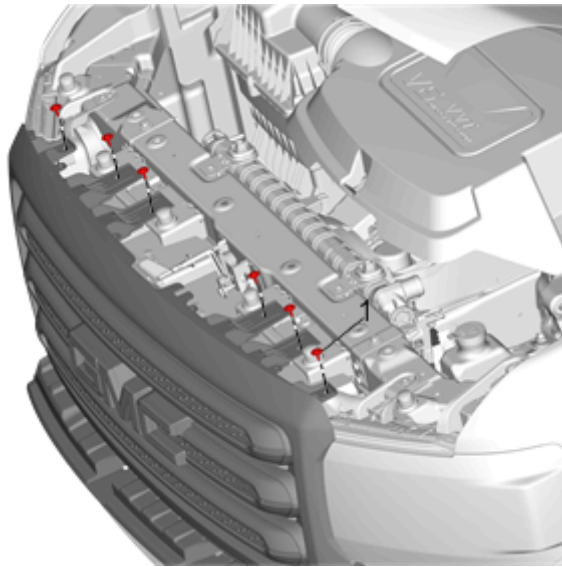


Fig. 5: Six Upper Grille Bolts

Courtesy of GENERAL MOTORS COMPANY

3. Remove the six upper grille bolts (1).

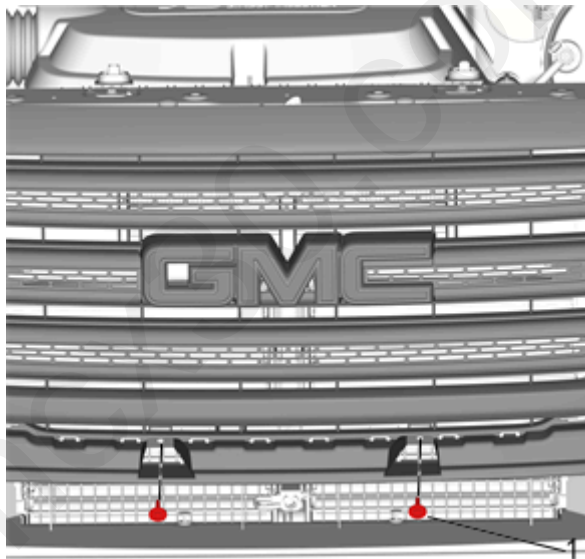


Fig. 6: Two Grille Lower Bolts

Courtesy of GENERAL MOTORS COMPANY

4. Remove the two grille lower bolts (1).

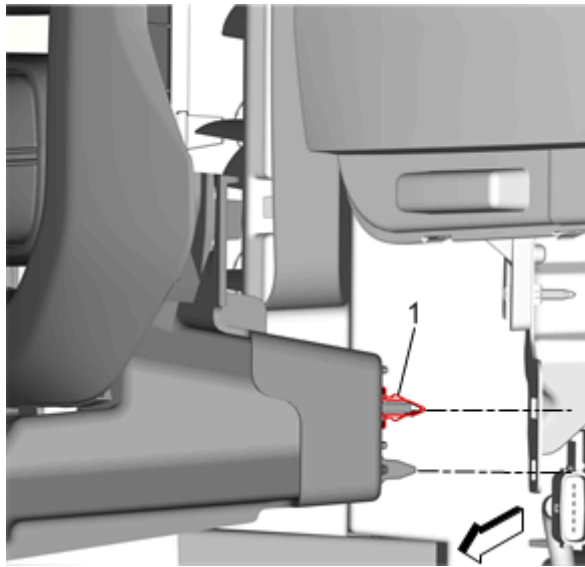


Fig. 7: Lower Retainer Clip

Courtesy of GENERAL MOTORS COMPANY

5. Release the lower retainer clip (1) from each side of the grille.

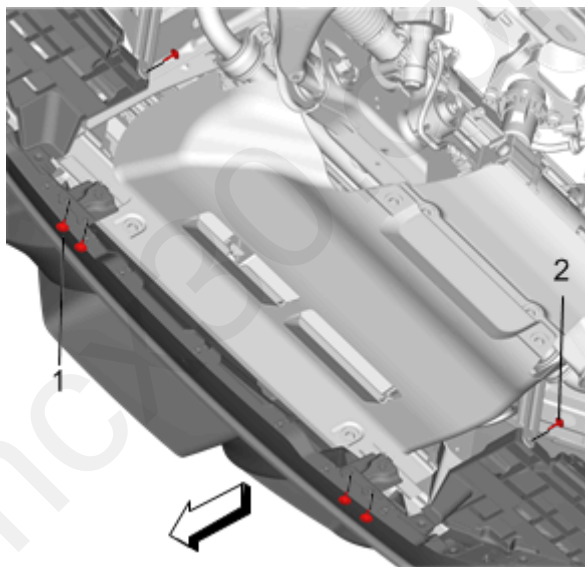


Fig. 8: Front Bumper Fascia Lower Screws

Courtesy of GENERAL MOTORS COMPANY

6. Remove the front bumper fascia lower screws (1).
7. Remove the front bumper fascia bolts (2).

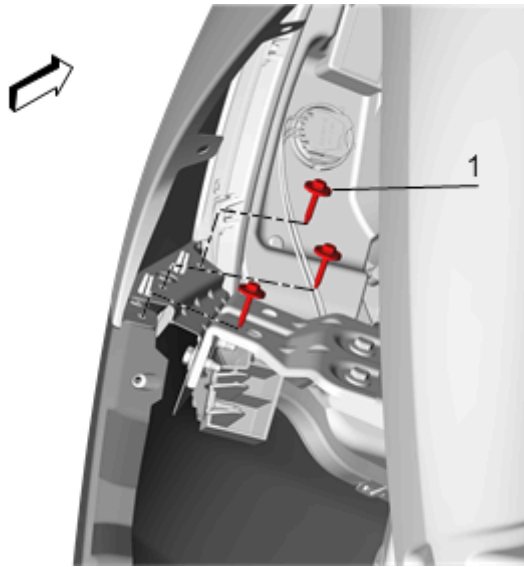


Fig. 9: Front Bumper Fascia To Fender Bolts
 Courtesy of GENERAL MOTORS COMPANY

8. Remove the front bumper fascia to fender bolts (1) on both sides.

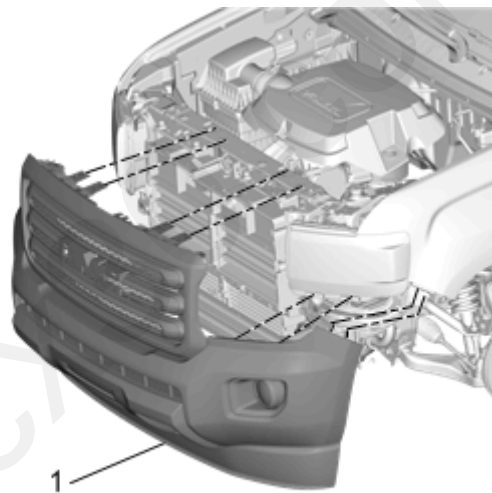


Fig. 10: Fascia
 Courtesy of GENERAL MOTORS COMPANY

9. Carefully push a small nylon wedge between the fascia (1) and the 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.
10. Check for any electrical connections that may need to be disconnected.

Installation Procedure

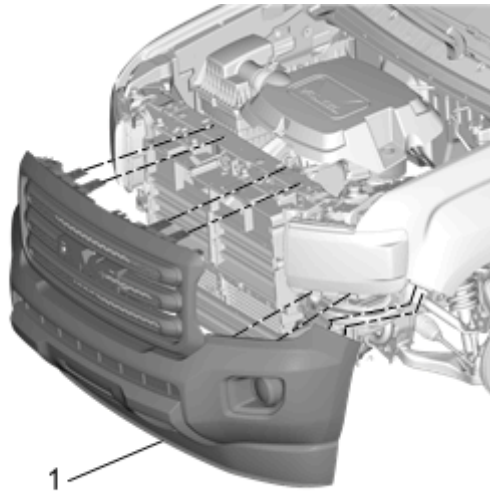


Fig. 11: Fascia

Courtesy of GENERAL MOTORS COMPANY

1. Connect the electrical connectors.
2. Install the fascia (1) to the vehicle.

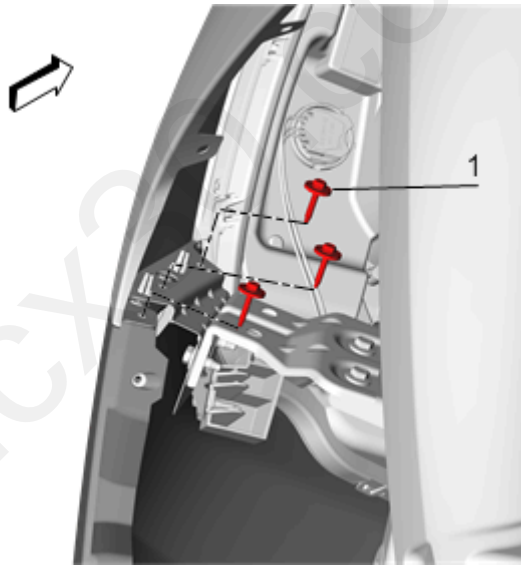


Fig. 12: Front Bumper Fascia To Fender Bolts

Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to [Fastener Caution](#) .

3. Install the front bumper fascia to fender bolts (1) on both sides. Tighten bolts 2.5 N.m (22 lb ft).

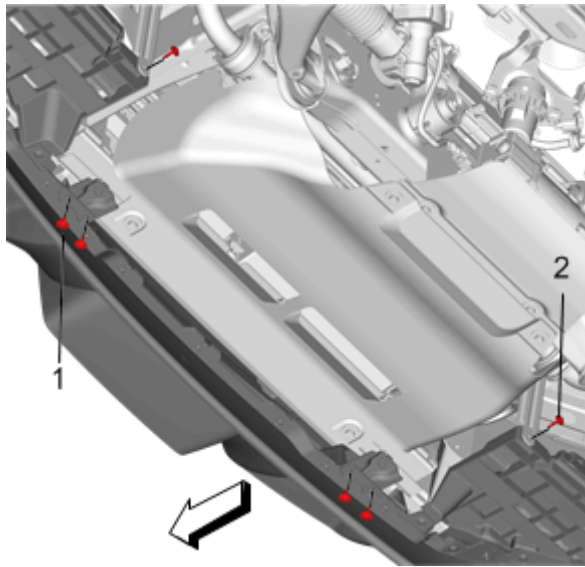


Fig. 13: Front Bumper Fascia Lower Screws
Courtesy of GENERAL MOTORS COMPANY

4. Install the front bumper fascia lower screws (1). Tighten bolts 2.5 N.m (22 lb ft)
5. Install the front bumper fascia bolts (2). Tighten bolts 2.5 N.m (22 lb ft).

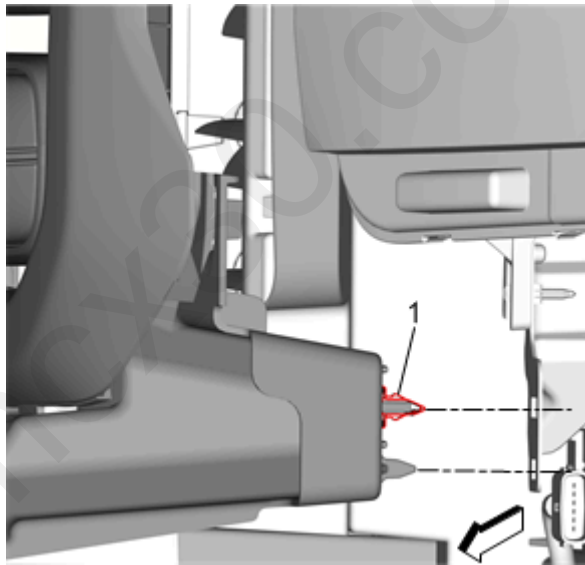


Fig. 14: Lower Retainer Clip
Courtesy of GENERAL MOTORS COMPANY

6. Install the grille and seat the lower retainer clips (1).

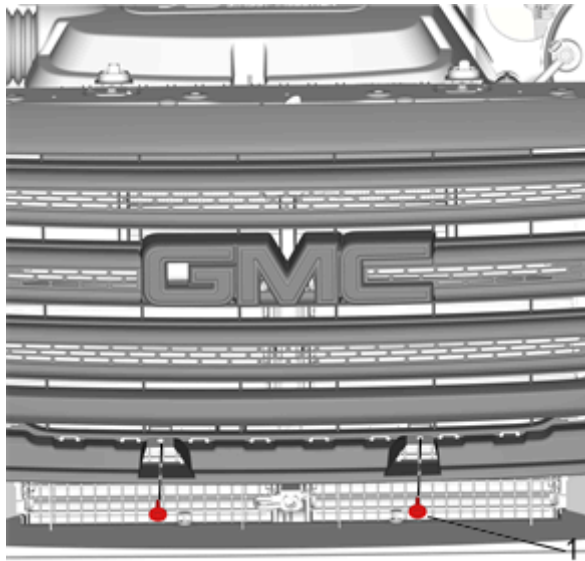


Fig. 15: Two Grille Lower Bolts

Courtesy of GENERAL MOTORS COMPANY

7. Install the two lower grille bolts (1). Tighten bolts 6 N.m (53 lb in).

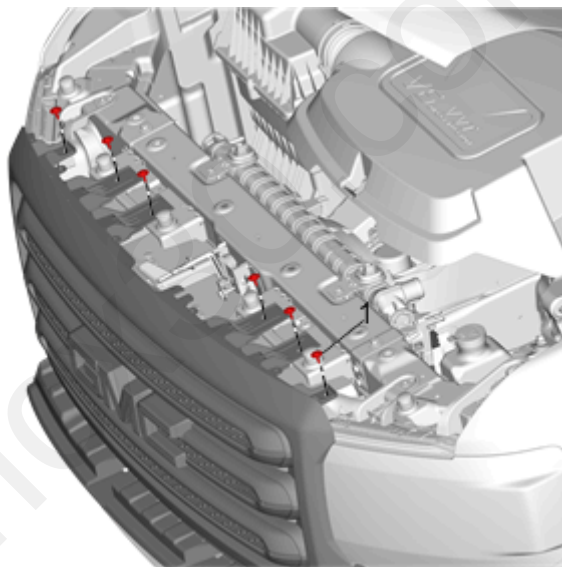


Fig. 16: Six Upper Grille Bolts

Courtesy of GENERAL MOTORS COMPANY

8. Install the six upper grille bolts (1). Tighten bolts 2.5 N.m (22 lb ft).
9. Install the right and left front wheelhouse liner. Refer to [Front Wheelhouse Liner Replacement](#) .
10. Install the front compartment front sight shield. Refer to [Front Compartment Front Sight Shield Replacement](#) .

FRONT BUMPER FASCIA REPLACEMENT (CHEVROLET)

Removal Procedure

1. Remove Front Wheelhouse Liner. [Front Wheelhouse Liner Replacement](#) .

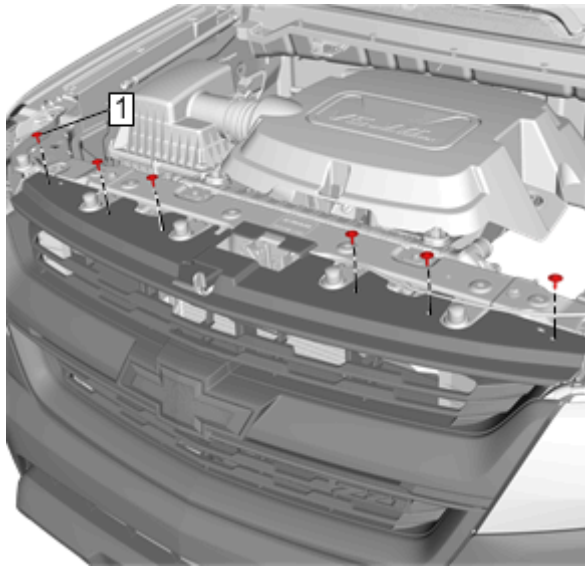


Fig. 17: Front Upper Grille Bolt

Courtesy of GENERAL MOTORS COMPANY

2. Remove Front Upper Grille Bolt (1)

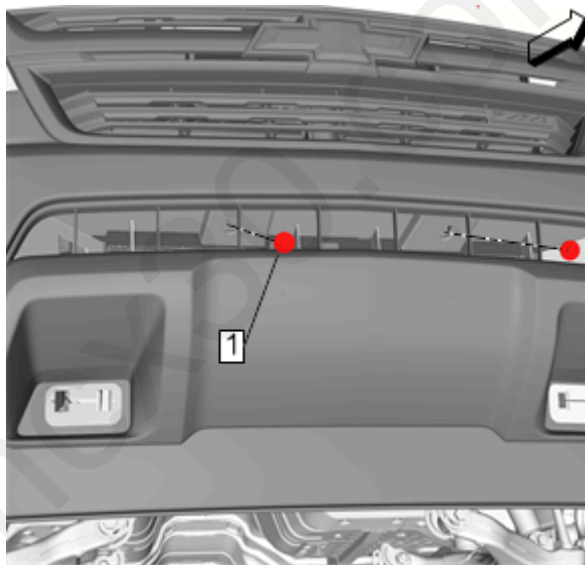


Fig. 18: Front Grille Lower Bolt

Courtesy of GENERAL MOTORS COMPANY

3. Remove Front Grille Lower Bolt (1)

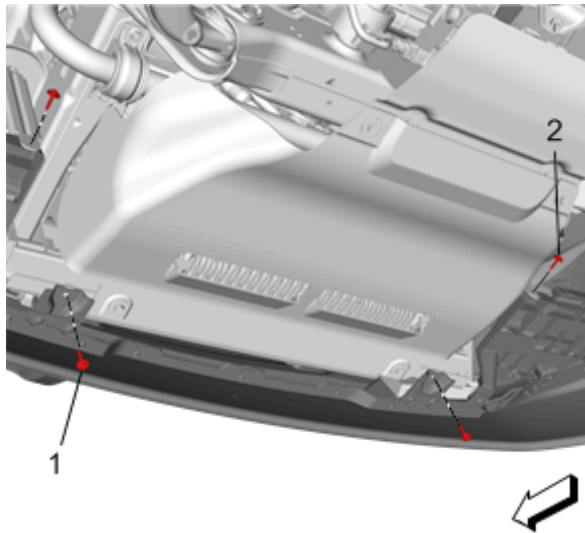


Fig. 19: Front Bumper Lower Fascia Bolt

Courtesy of GENERAL MOTORS COMPANY

4. Remove Front Bumper Lower Fascia Bolt (1)
5. Remove Front Bumper Fascia Bolt (2)

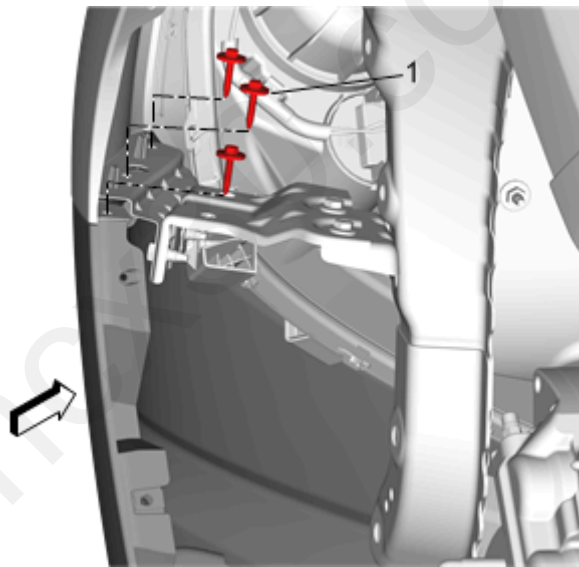


Fig. 20: Front Bumper Fascia to Fender Bolts

Courtesy of GENERAL MOTORS COMPANY

6. Remove Front Bumper Fascia to Fender Bolts (1)

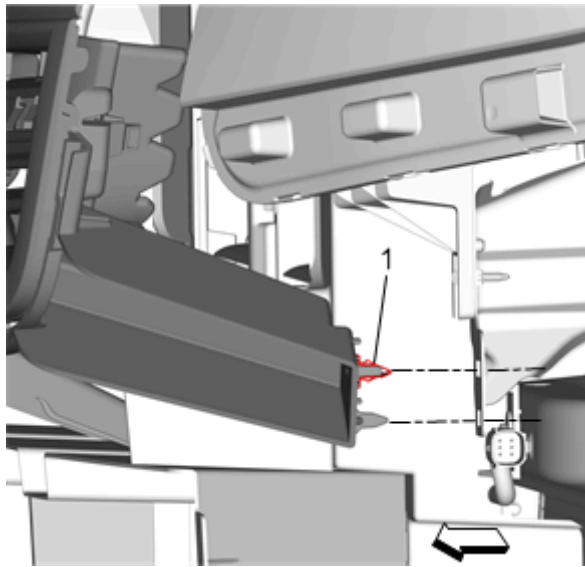


Fig. 21: Grille Retainer

Courtesy of GENERAL MOTORS COMPANY

7. Remove Grille Retainer (1)

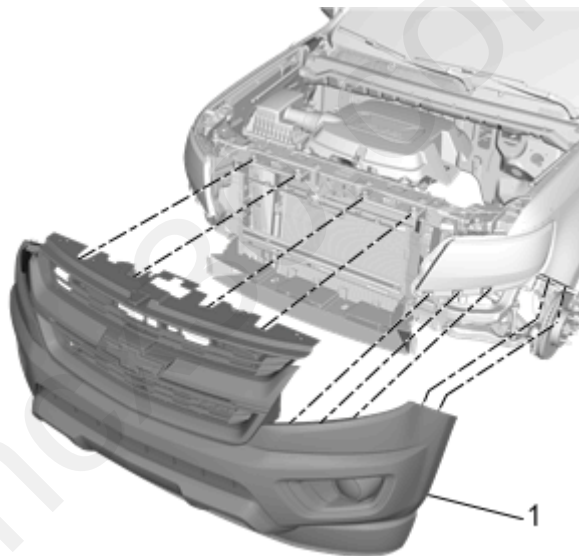


Fig. 22: Fascia

Courtesy of GENERAL MOTORS COMPANY

8. Carefully push a small nylon wedge between the fascia (1) and the 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.
9. Disconnect all electrical connectors.

Installation Procedure

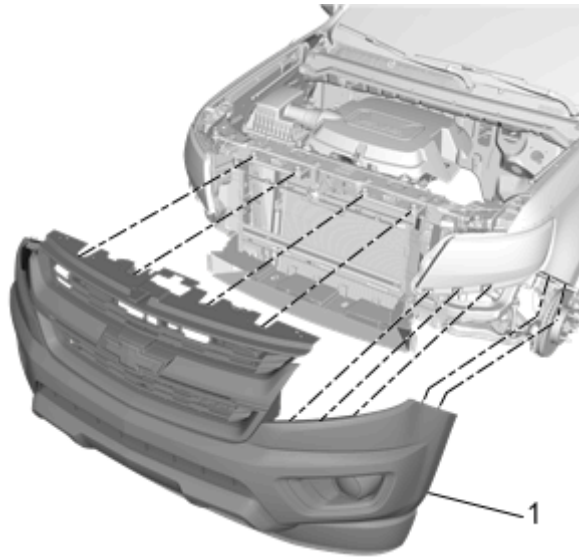


Fig. 23: Fascia

Courtesy of GENERAL MOTORS COMPANY

1. Transfer components as necessary.
2. Install Front Bumper Fascia (1)
3. Connect the electrical connectors.

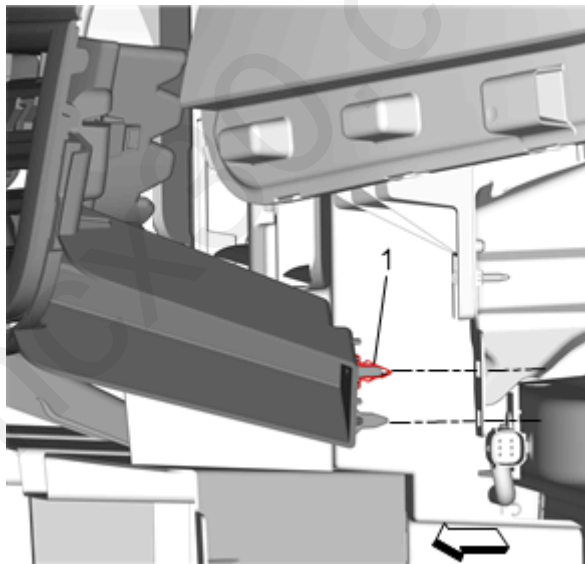


Fig. 24: Grille Retainer

Courtesy of GENERAL MOTORS COMPANY

4. Install Grille Retainer (1)

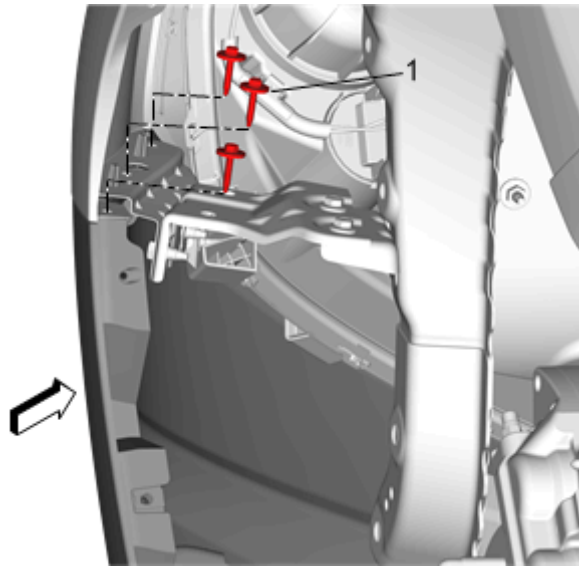


Fig. 25: Front Bumper Fascia to Fender Bolts
Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to **Fastener Caution** .

5. Install Front Bumper Fascia to Fender Bolts (1) and tighten 2.5 N.m (22 lb ft)

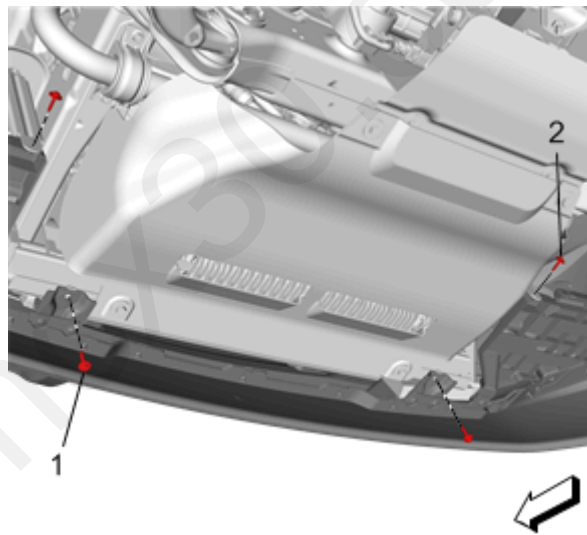


Fig. 26: Front Bumper Lower Fascia Bolt
Courtesy of GENERAL MOTORS COMPANY

6. Install Front Bumper Lower Fascia Bolt (1) and tighten 2.5 N.m (22 lb ft)
7. Install Front Bumper Fascia Bolt (2) and tighten 2.5 N.m (22 lb ft)

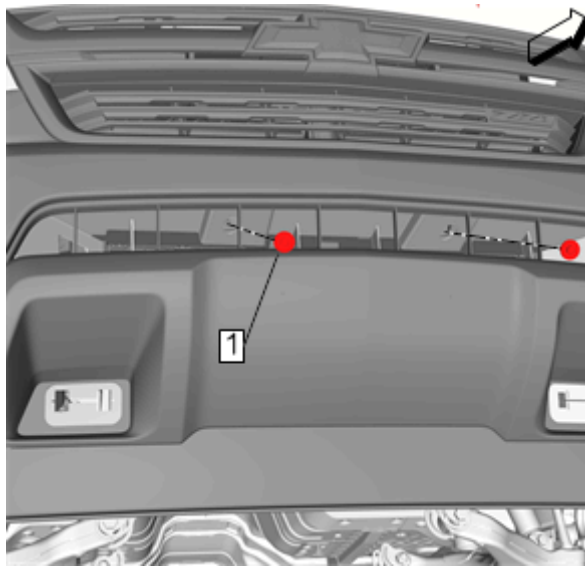


Fig. 27: Front Grille Lower Bolt

Courtesy of GENERAL MOTORS COMPANY

8. Install Front Grille Lower Bolt (1) and tighten 6 N.m (53 lb in)

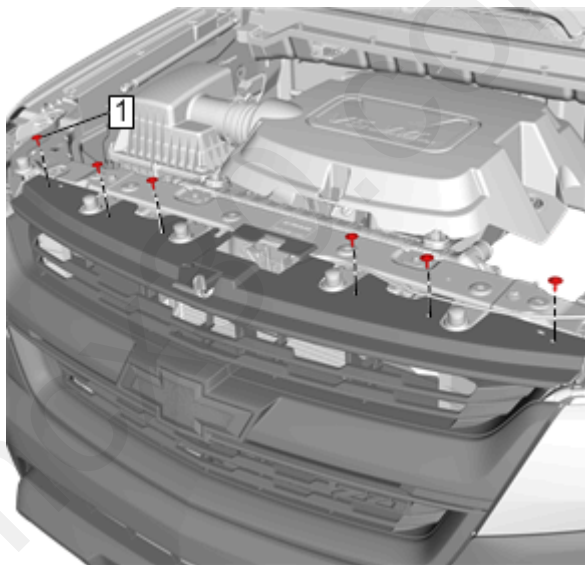


Fig. 28: Front Upper Grille Bolt

Courtesy of GENERAL MOTORS COMPANY

9. Install Front Upper Grille Bolt (1) and tighten 2.5 N.m (22 lb in)
10. Install Front Wheelhouse Liner. [**Front Wheelhouse Liner Replacement**](#)
11. Install Front Compartment Front Sight Shield. [**Front Compartment Front Sight Shield Replacement**](#)

FRONT BUMPER FASCIA GUIDE REPLACEMENT

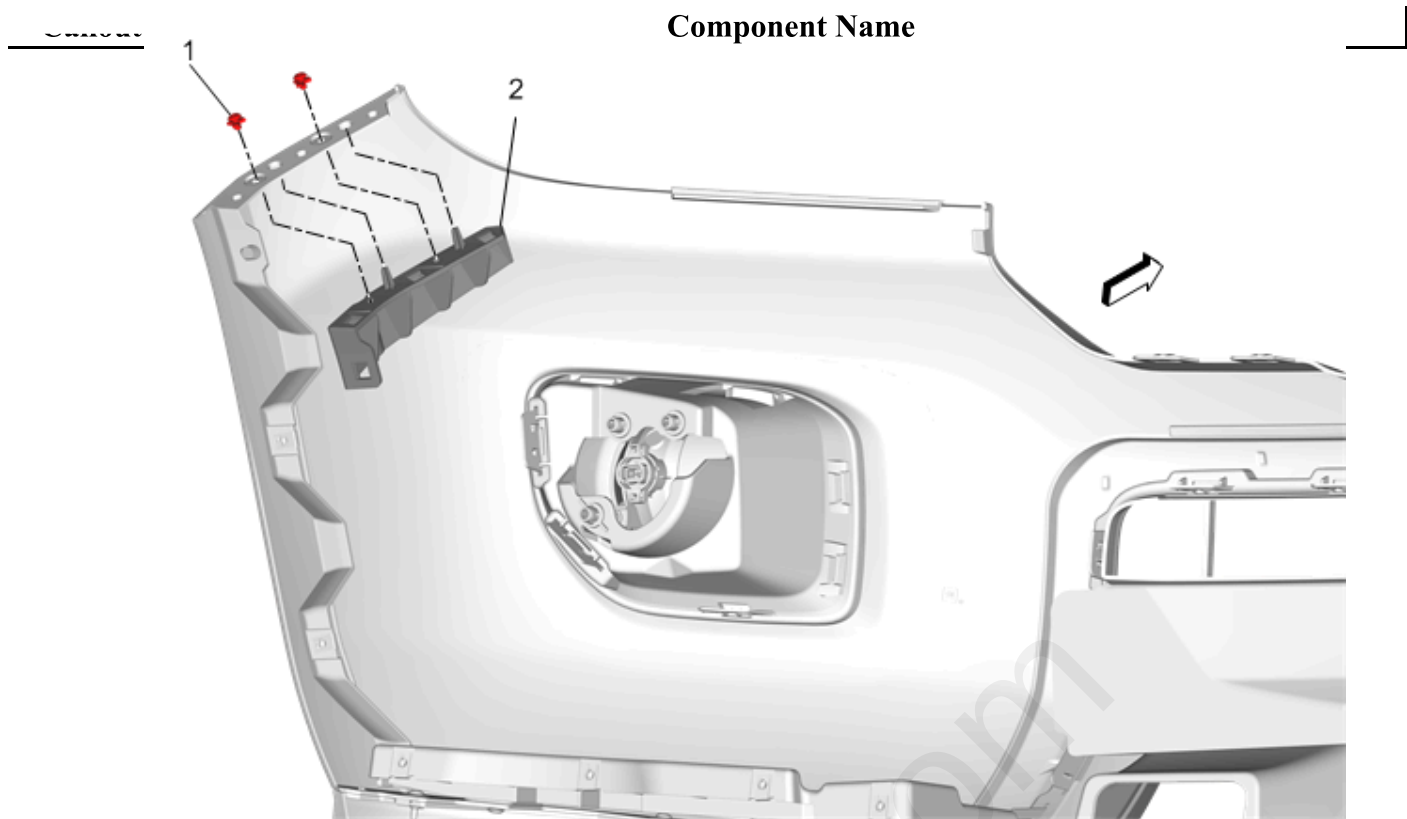


Fig. 29: Front Bumper Fascia Guide
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Eye protection must be worn when drilling rivets to reduce the chance of personal injury.	
Preliminary Procedures 1. Remove the front bumper fascia. Refer to Front Bumper Fascia Replacement (GMC) Front Bumper Fascia Replacement (Chevrolet) 2. Place the bumper fascia face down on a clean protected surface.	
1	Front Bumper Fascia Guide Rivet (Qty: 2)
2	Front Bumper Fascia Guide

FRONT BUMPER FASCIA SEAL REPLACEMENT

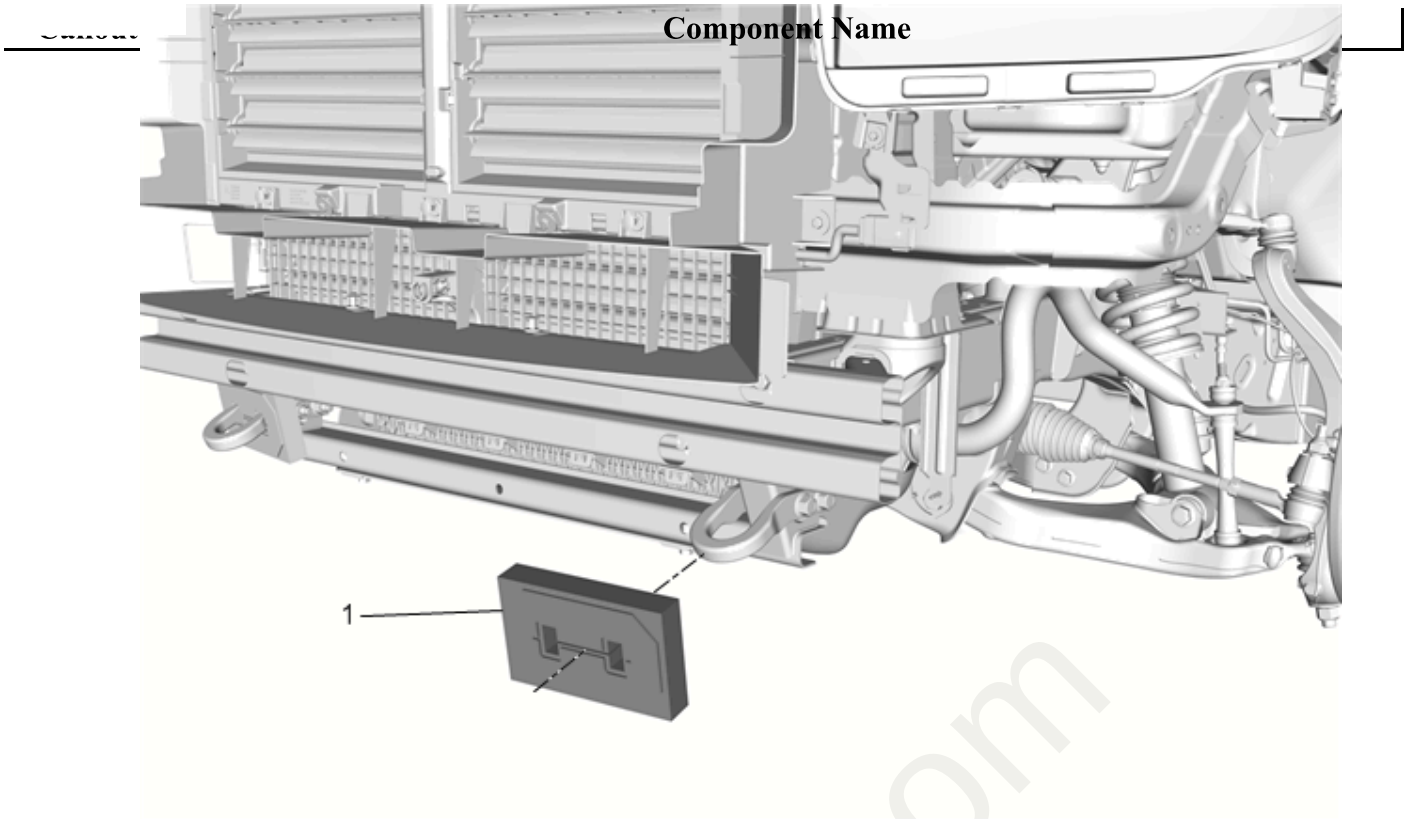


Fig. 30: Front Bumper Fascia Seal
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the front bumper fascia. Refer to Front Bumper Fascia Replacement (GMC) Front Bumper Fascia Replacement (Chevrolet) .	
1	Front Bumper Fascia Seal Procedure Pull straight forward from the front tow hook.

FRONT BUMPER FASCIA MOLDING REPLACEMENT

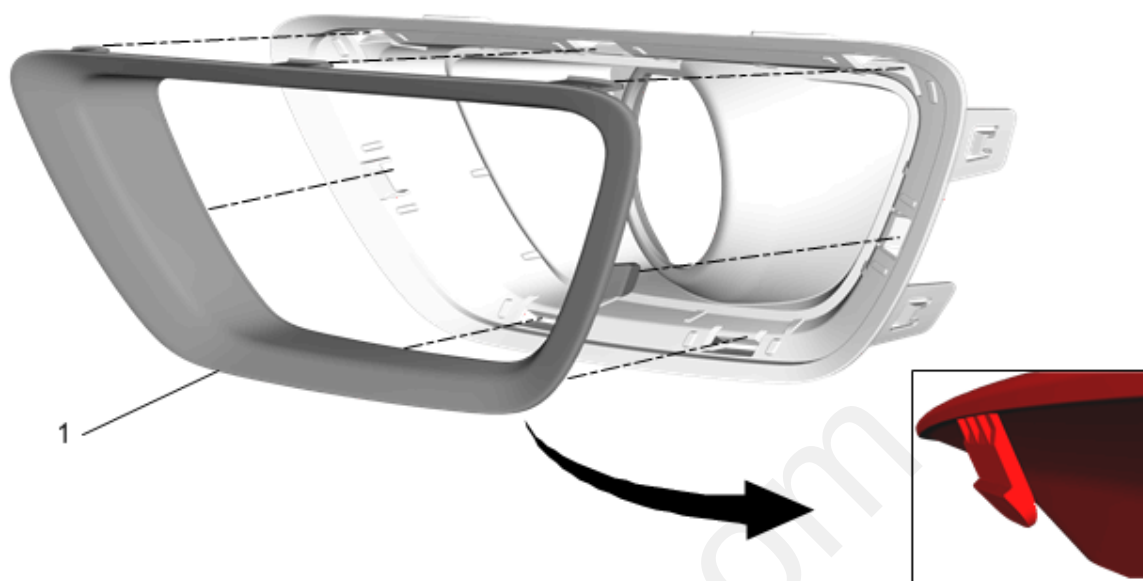


Fig. 31: Front Bumper Fascia Molding
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the front fog lamp bezel. Refer to Front Fog Lamp Bezel Replacement .	
1	Front Bumper Fascia Molding Procedure With a suitable flat bladed trim tool release the locking tabs and pull forward from the front fog lamp bezel.

FRONT BUMPER SHUTTER BAFFLE REPLACEMENT (LOWER)

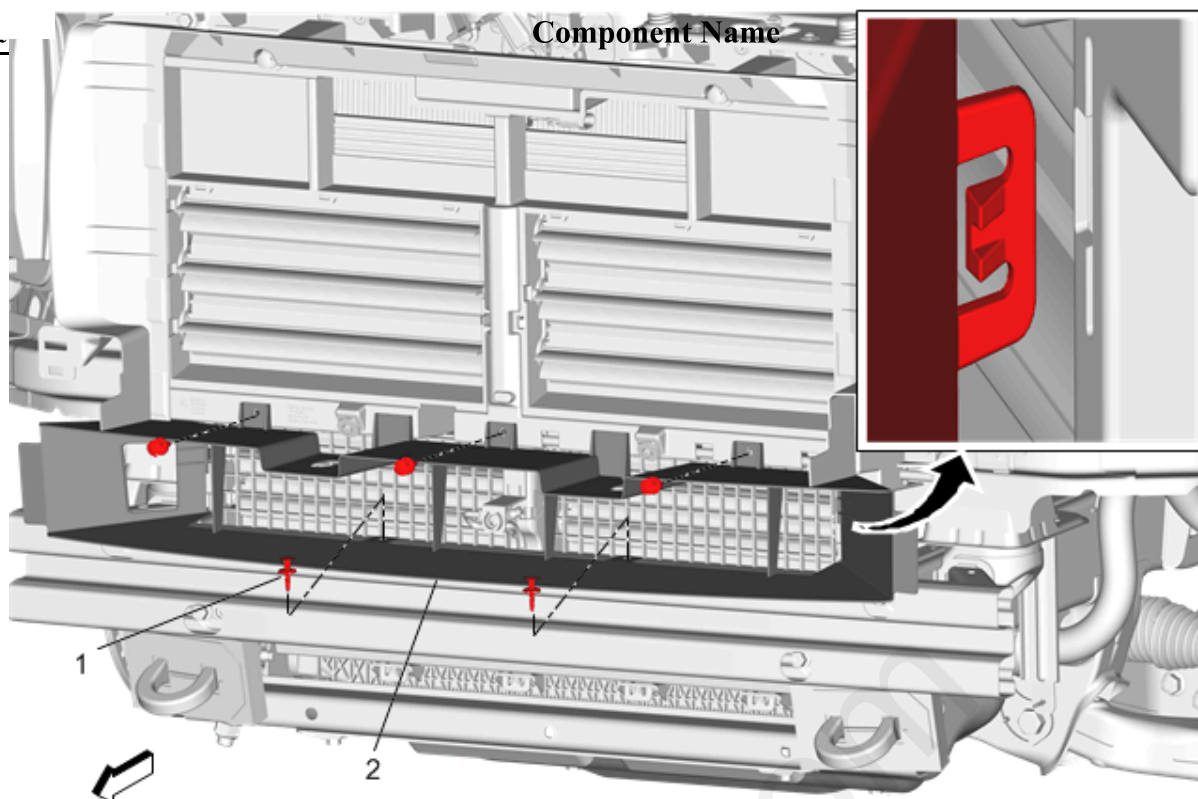


Fig. 32: Front Bumper Shutter Baffle (Lower)
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure Remove the front bumper fascia. Refer to Front Bumper Fascia Replacement (GMC) Front Bumper Fascia Replacement (Chevrolet)	
1	Front Bumper Shutter Baffle Push-In Retainer (Qty: 5)
2	Front Bumper Shutter Baffle Procedure Release the two front bumper shutter baffle retainer tabs.

FRONT BUMPER SHUTTER BAFFLE REPLACEMENT (UPPER)

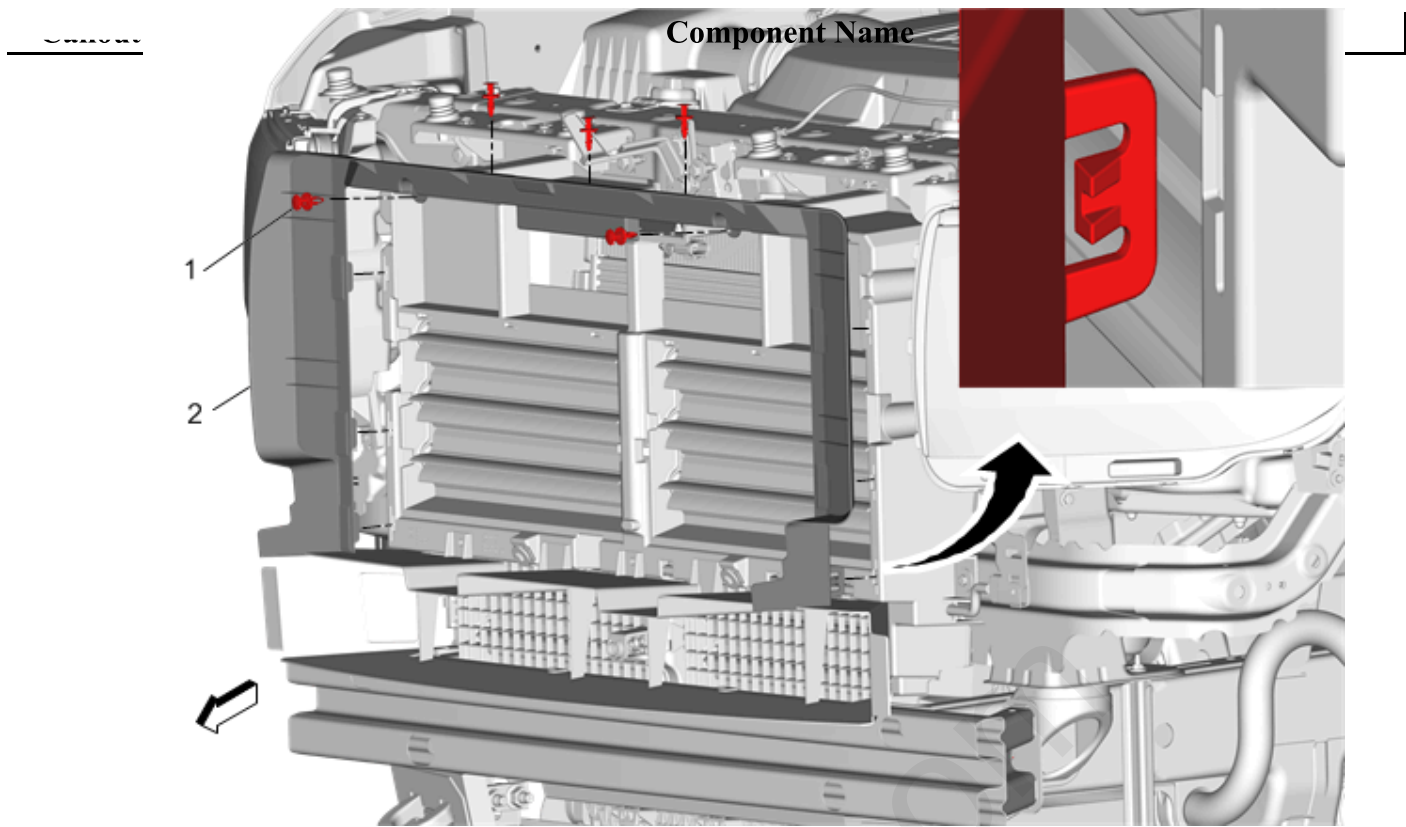


Fig. 33: Front Bumper Shutter Baffle (Upper)
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure 1. Remove the front bumper fascia. Refer to Front Bumper Fascia Replacement (GMC)Front Bumper Fascia Replacement (Chevrolet) 2. Remove the front grille. Refer to Front Grille Replacement (Colorado) Front Grille Replacement (Canyon)	
1	Front Bumper Shutter Baffle Push-In Retainer (Qty: 5)
2	Front Bumper Shutter Baffle Procedure Release the four front bumper shutter baffle retainer tabs.

FRONT BUMPER SHUTTER REPLACEMENT

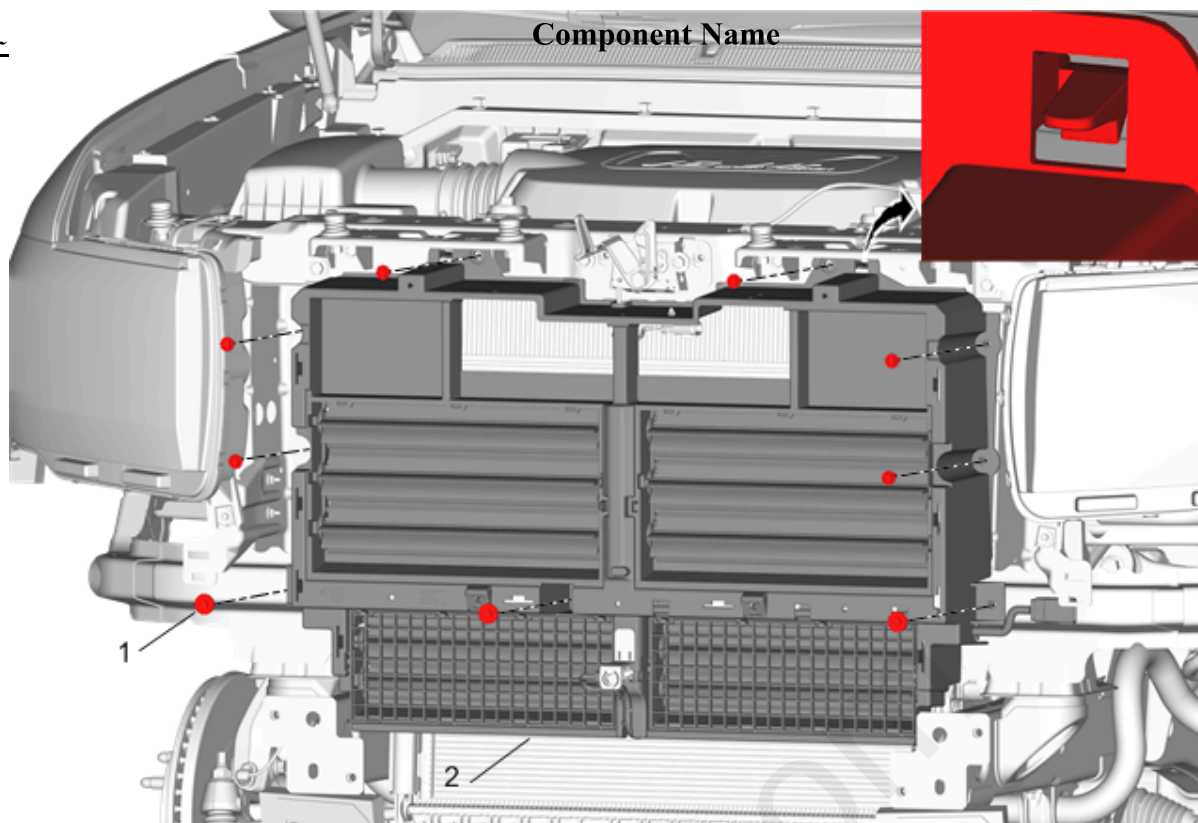


Fig. 34: Front Bumper Shutter

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) 2. Remove the grille. Refer to Front Grille Replacement (Colorado) Front Grille Replacement (Canyon) 3. Remove the front bumper shutter lower and upper baffle. Refer to Front Bumper Shutter Baffle Replacement (Lower)Front Bumper Shutter Baffle Replacement (Upper)	
1	Front Bumper Shutter Bolts (Qty: 9) CAUTION: Refer to Fastener Caution . Tighten: 6 N.m (53 lb in)

Callout	Component Name
	Front Bumper Shutter
2	Procedure 1. Lift the two tabs at the top of the front bumper shutter. 2. Disconnect the electrical connector. 3. Transfer any necessary additional parts as needed. 4.

FRONT BUMPER FASCIA AIR DEFLECTOR REPLACEMENT (GMC)

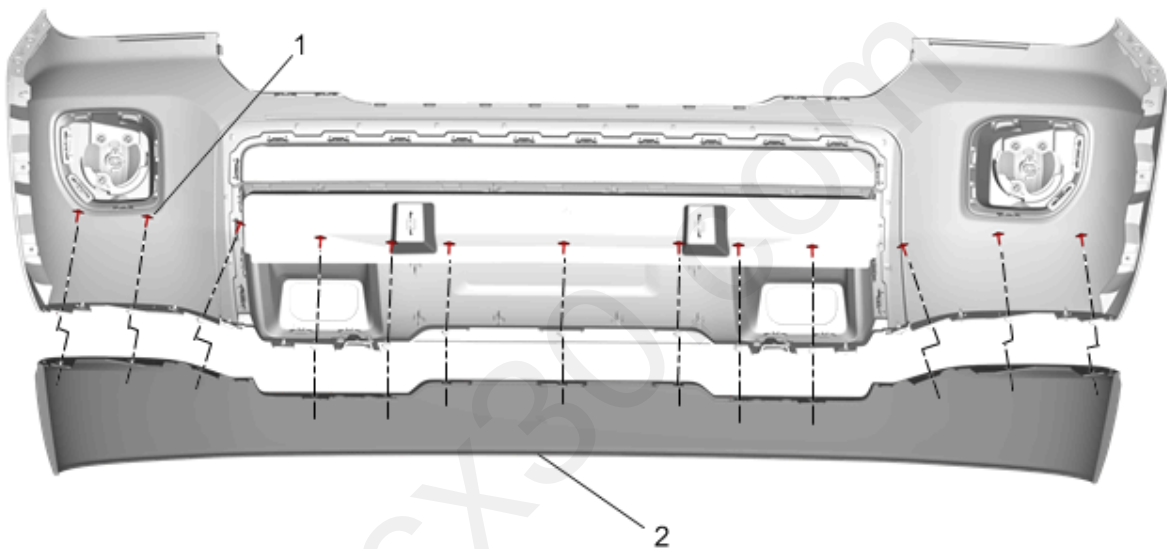


Fig. 35: Front Bumper Fascia Air Deflector (GMC)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure 1. Remove the front bumper fascia. Refer to Front Bumper Fascia Replacement (GMC) 2. Remove the front bumper intermediate filler. Refer to Front Bumper Intermediate Filler Replacement	

Callout	Component Name
1	Front Bumper Fascia Air Deflector Bolt (Qty: 13) CAUTION: Refer to Fastener Caution . Tighten 2.5 N.m (22 lb in)
2	Front Bumper Fascia Air Deflector

FRONT BUMPER FASCIA AIR DEFLECTOR REPLACEMENT (CHEVROLET)

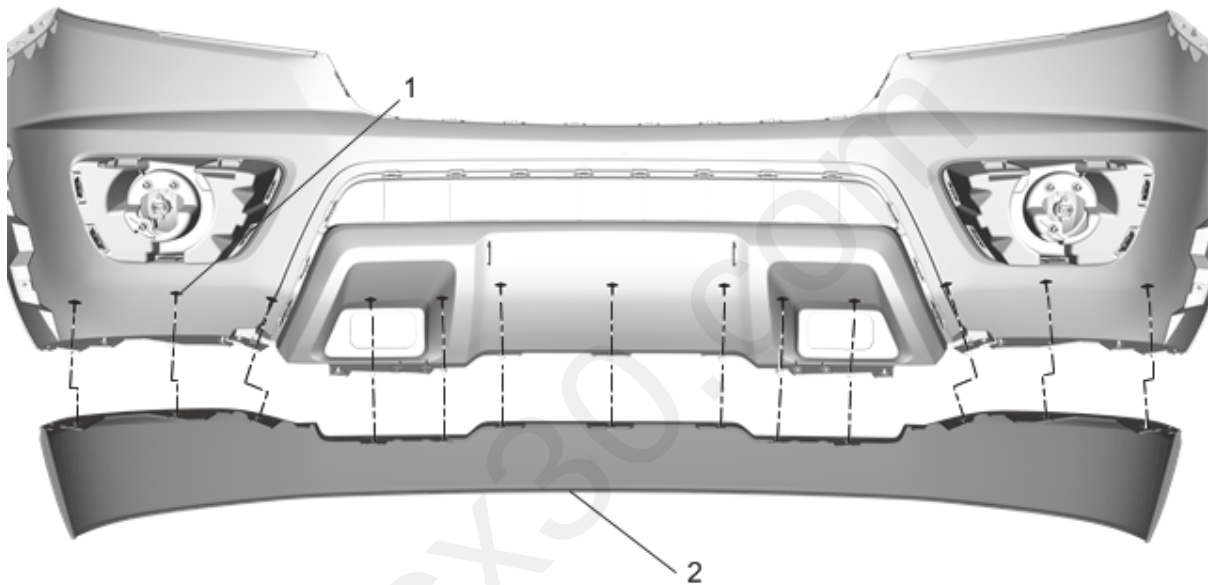


Fig. 36: Front Bumper Fascia Air Deflector (Chevrolet)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure	
1. Remove the front bumper fascia. Refer to Front Bumper Fascia Replacement (Chevrolet) 2. Remove the front bumper intermediate filler. Refer to Front Bumper Intermediate Filler Replacement	

Callout	Component Name
1	Front Bumper Fascia Air Deflector Bolt (Qty: 13) CAUTION: Refer to Fastener Caution . Tighten 2.5 N.m (22 lb in)
2	Front Bumper Fascia Air Deflector

FRONT BUMPER FASCIA SKID PLATE REPLACEMENT (GMC)

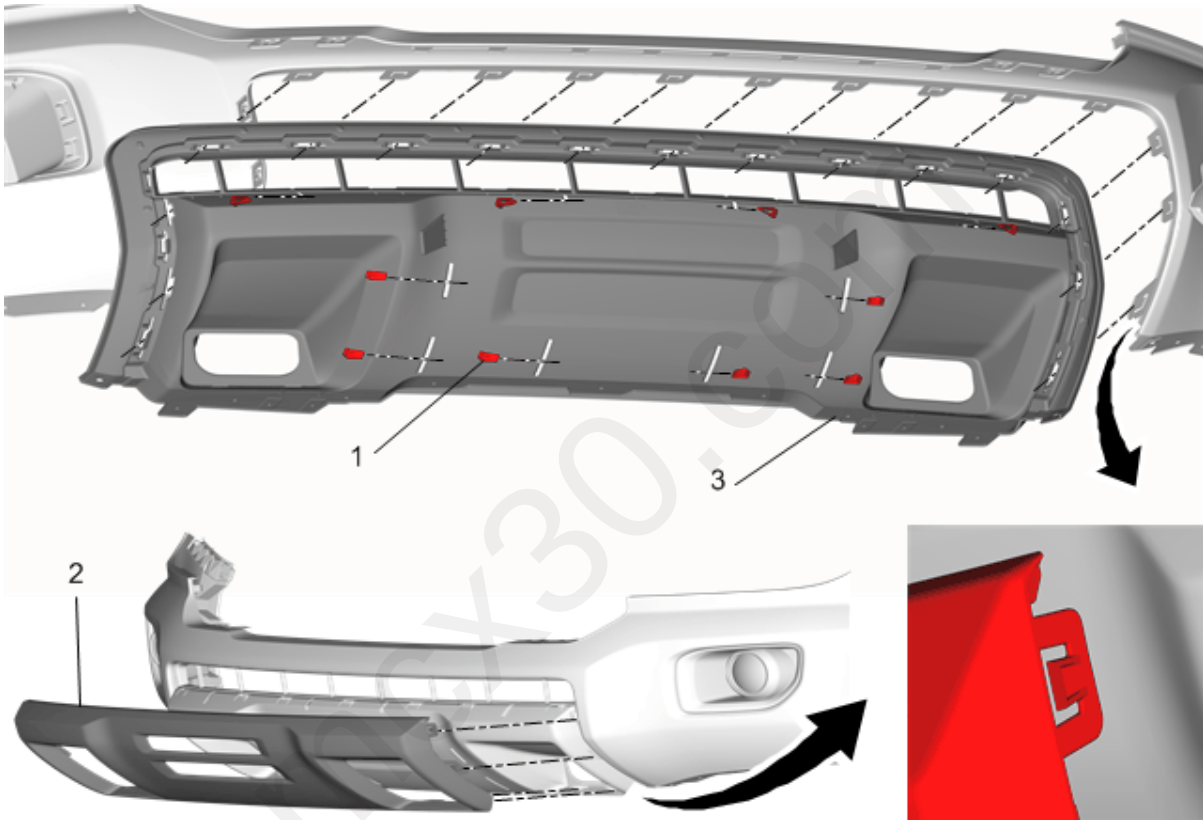


Fig. 37: Front Bumper Fascia Skid Plate (GMC)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure	
1. Remove the front bumper fascia energy upper absorber. Refer to Front Bumper Fascia Energy Upper Absorber Replacement . 2. Remove the front bumper fascia air deflector. Refer to Front Bumper Fascia Air Deflector Replacement (GMC)	
1	Front Bumper Fascia Skid Plate Clip (Qty: 10)
2	Front Bumper Fascia Skid Plate Outer Procedure Release the retaining tabs to remove the front bumper fascia skid plate outer from the inner front bumper fascia skid plate.

Callout	Component Name
3	Front Bumper Fascia Skid Plate Inner Procedure Release the tabs on the front bumper fascia and pull the inner front bumper fascia skid plate from the fascia.

FRONT BUMPER FASCIA SKID PLATE REPLACEMENT (CHEVROLET)

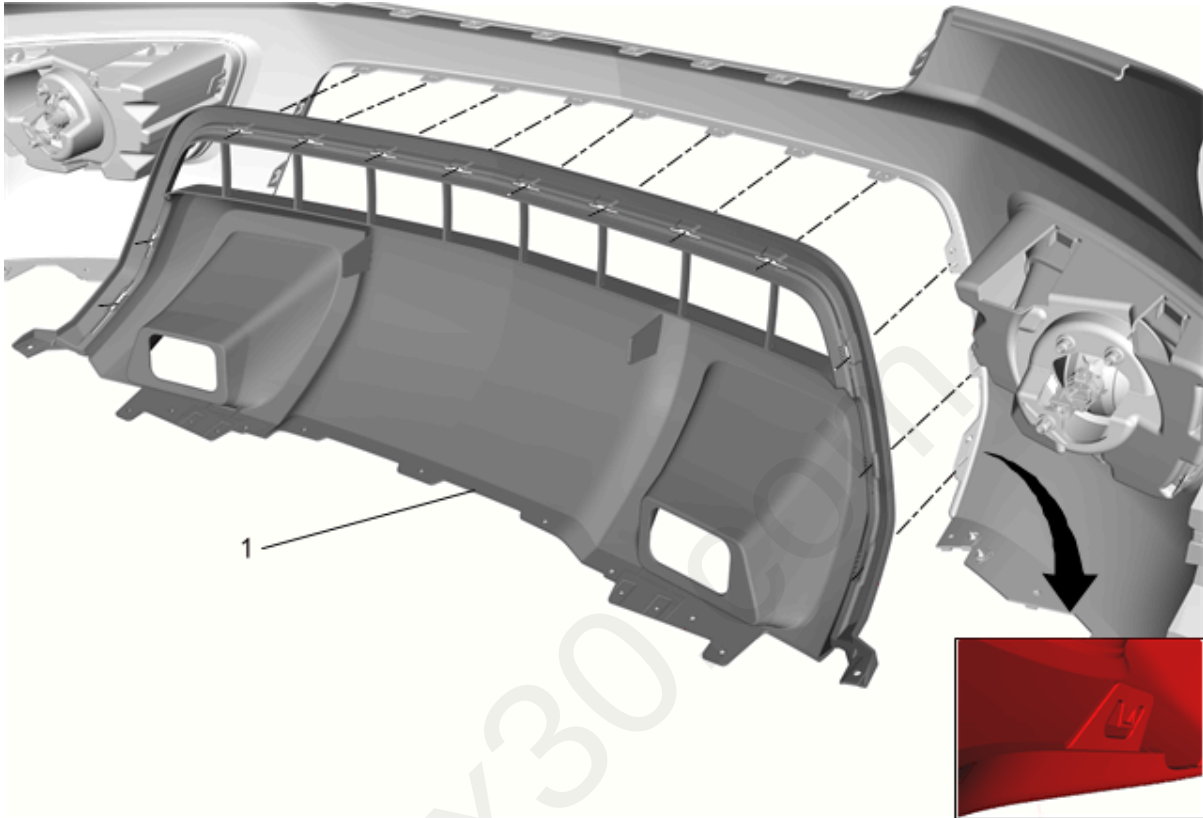


Fig. 38: Front Bumper Fascia Skid Plate (Chevrolet)

Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure	
1. Remove the front bumper fascia energy upper absorber. Refer to Front Bumper Fascia Energy Upper Absorber Replacement. 2. Remove the front bumper fascia air deflector. Refer to Front Bumper Fascia Air Deflector Replacement (Chevrolet)	
1	Front Bumper Fascia Skid Plate Inner Procedure Release the tabs on the front bumper fascia and pull the front bumper fascia skid plate from the fascia.

REAR BUMPER IMPACT BAR REPLACEMENT

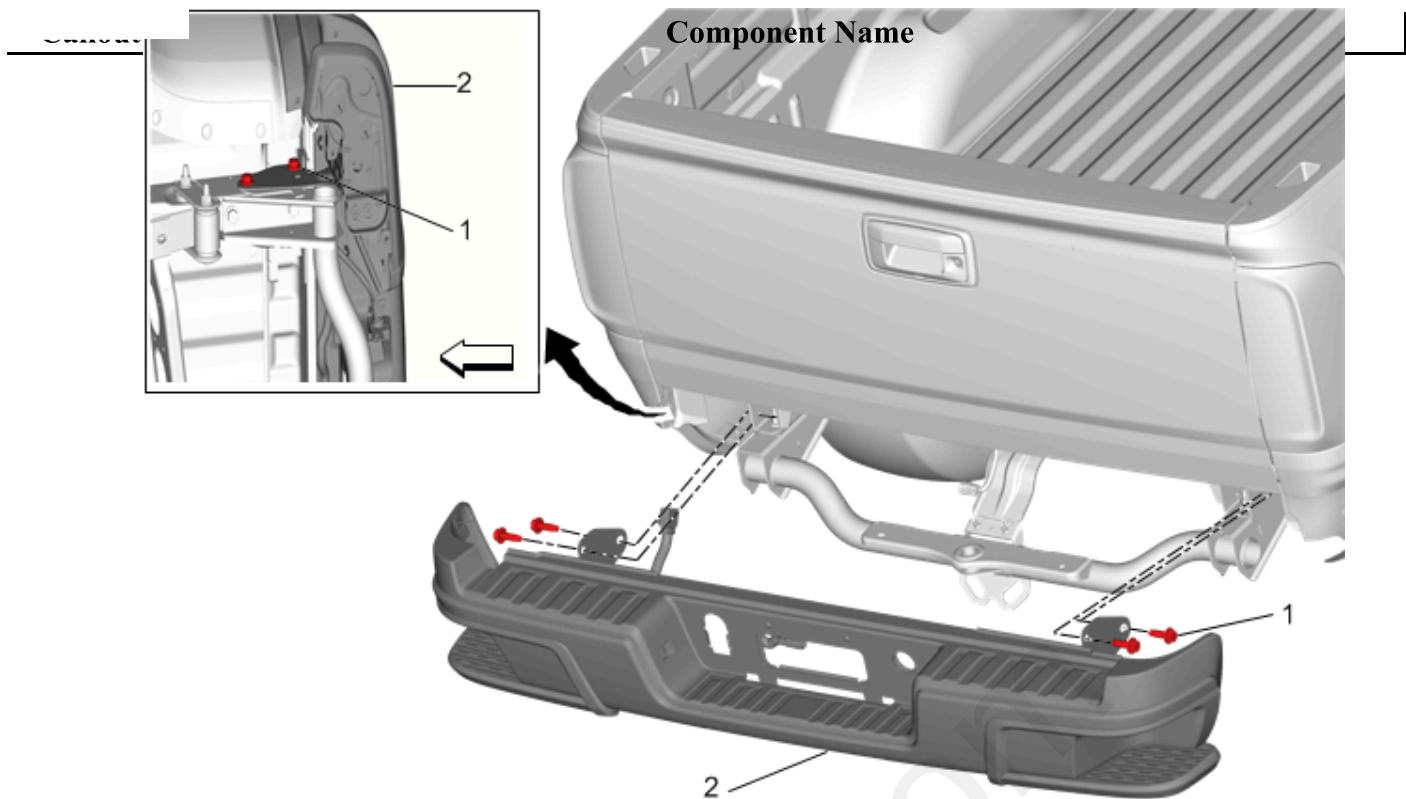


Fig. 39: Rear Bumper Impact Bar
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure 1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle 2. Disconnect the spare wheel hoist lock cylinder. Refer to Spare Wheel Hoist Lock Cylinder Replacement 3. Disconnect all electrical connections on the bumper.	
1	Rear Bumper Impact Bar Bolt (Qty: 4) CAUTION: Refer to Fastener Caution . Tighten 160 N.m (118 lb ft)
2	Rear Bumper Impact Bar Procedure With the aid of an assistant remove the rear bumper impact bar.

REAR BUMPER IMPACT BAR BRACKET REPLACEMENT

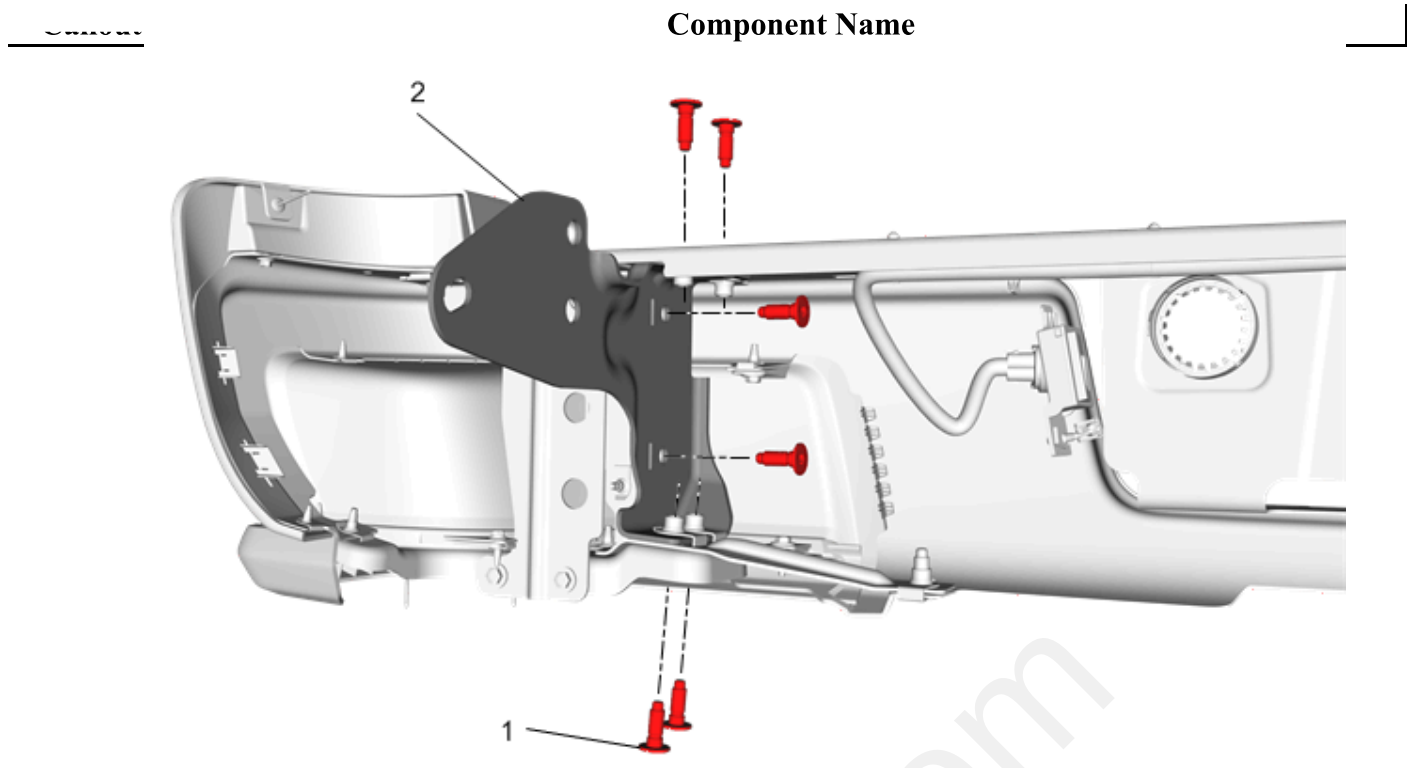


Fig. 40: Rear Bumper Impact Bar Bracket
Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedure 1. Remove the rear bumper impact bar. Refer to Rear Bumper Impact Bar Replacement . 2.	
1	Rear Bumper Impact Bar Bracket Bolt (Qty: 6) CAUTION: Refer to Fastener Caution . Tighten 50 N.m (37 lb ft)
2	Rear Bumper Impact Bar Bracket

REAR BUMPER FASCIA STEP PAD REPLACEMENT

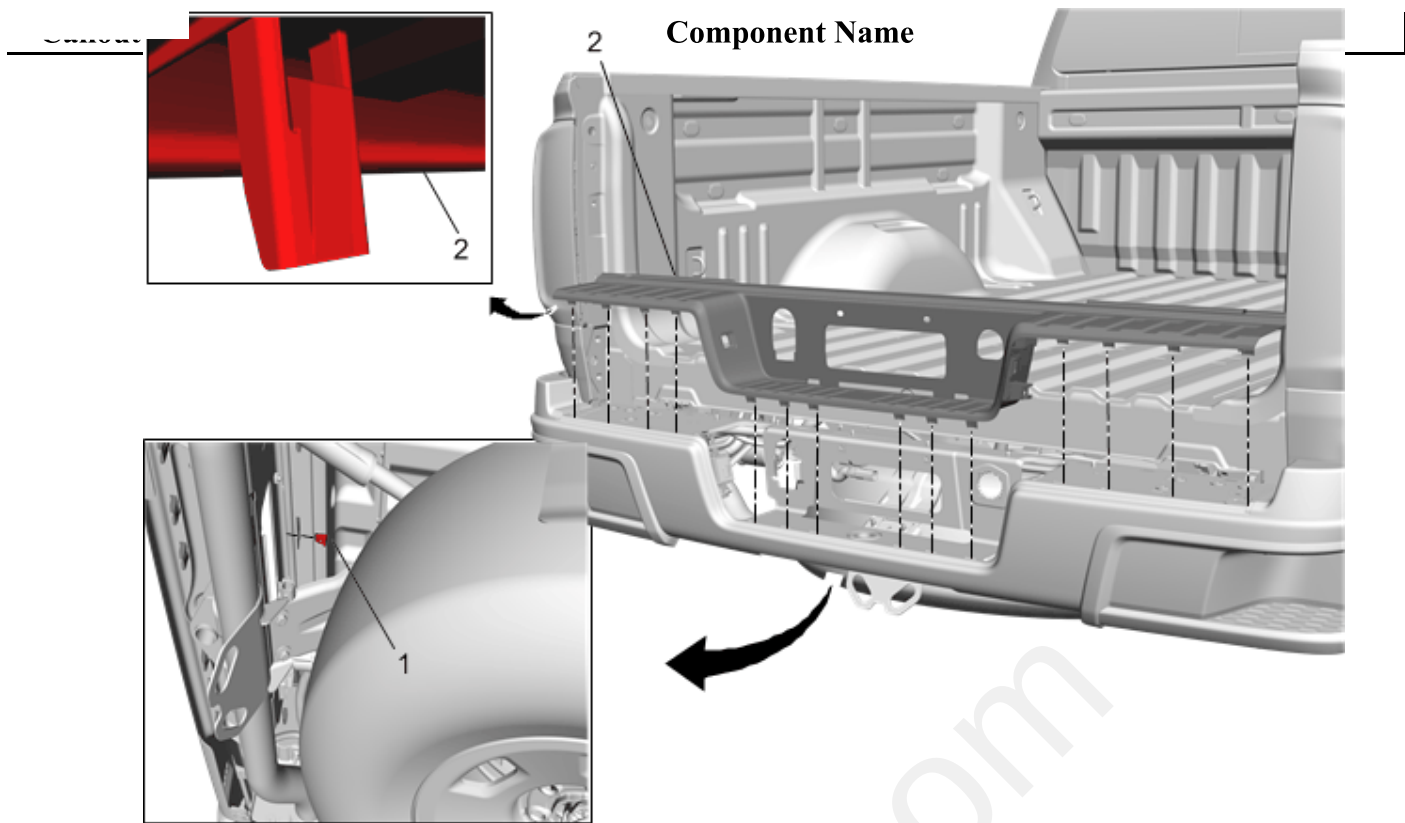


Fig. 41: Rear Bumper Fascia Step Pad
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
Preliminary Procedures 1. Remove the pickup box endgate. Refer to Pickup Box Endgate Replacement 2. Remove the rear license plate lamp. Refer to Rear License Plate Lamp Replacement 3. Remove the spare wheel hoist lock cylinder. Refer to Spare Wheel Hoist Lock Cylinder Replacement 4. Remove the trailer wiring connector cap.	
1	Rear Bumper Fascia Step Pad Clip
2	Rear Bumper Fascia Step Pad Procedure Using a suitable trim tool release the rear bumper fascia step pad retainer tabs from the rear bumper impact bar.

REAR BUMPER STEP OUTER PAD REPLACEMENT (UPPER)

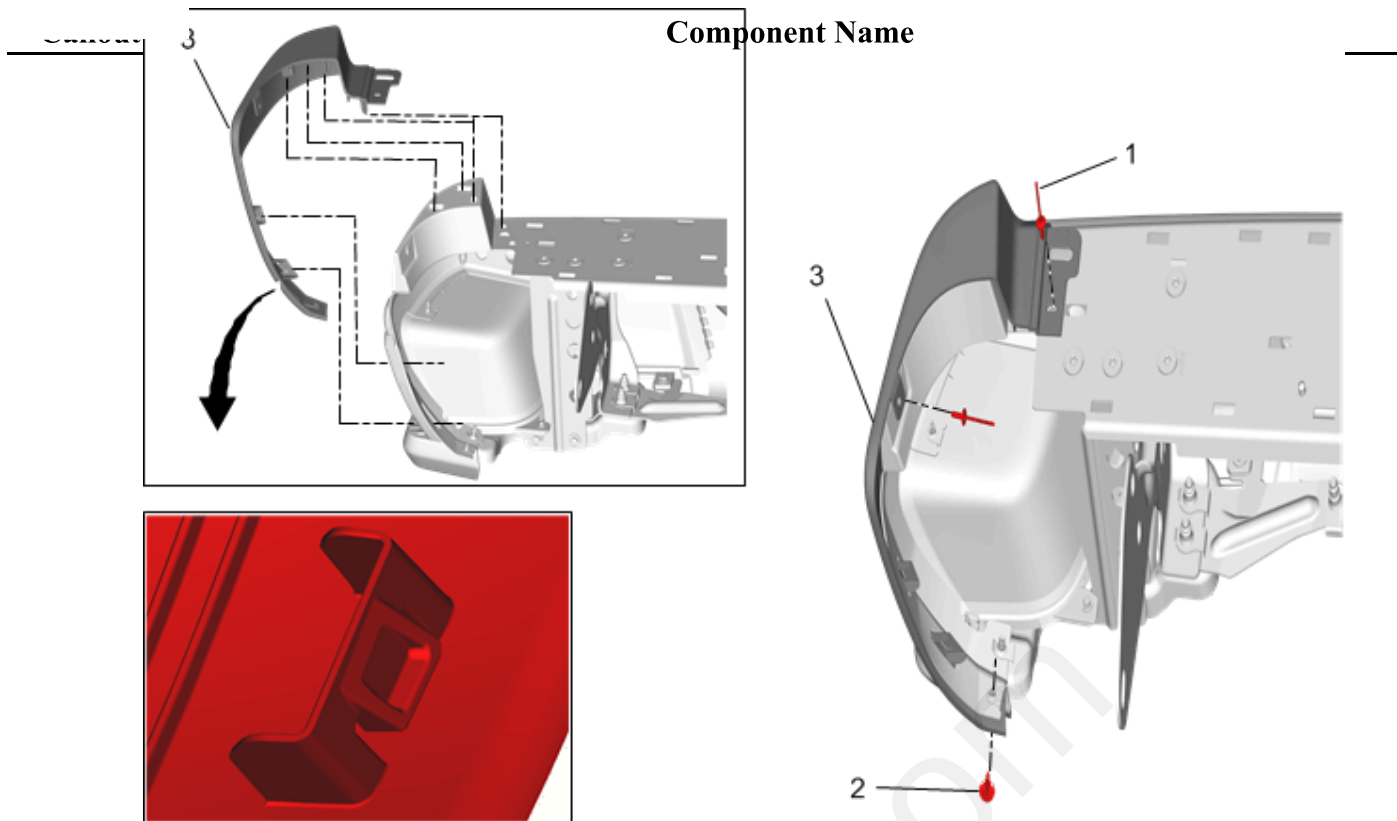


Fig. 42: Rear Bumper Step Outer Pad (Upper)
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to Eye Protection Warning .	
Preliminary Procedures 1. Remove the rear bumper impact bar. Refer to Rear Bumper Impact Bar Replacement 2. Remove the rear bumper step pad. Refer to Rear Bumper Fascia Step Pad Replacement	
1	Rear Bumper Step Outer Pad Rivet (Qty 2)
2	Rear Bumper Step Outer Pad Bolt CAUTION: Refer to Fastener Caution . Tighten 2.5 N.m (22 lb in)
3	Rear Bumper Step Outer Pad Procedure Release the four retainer tabs with the appropriate trim tool.

REAR BUMPER STEP OUTER PAD REPLACEMENT (LOWER)

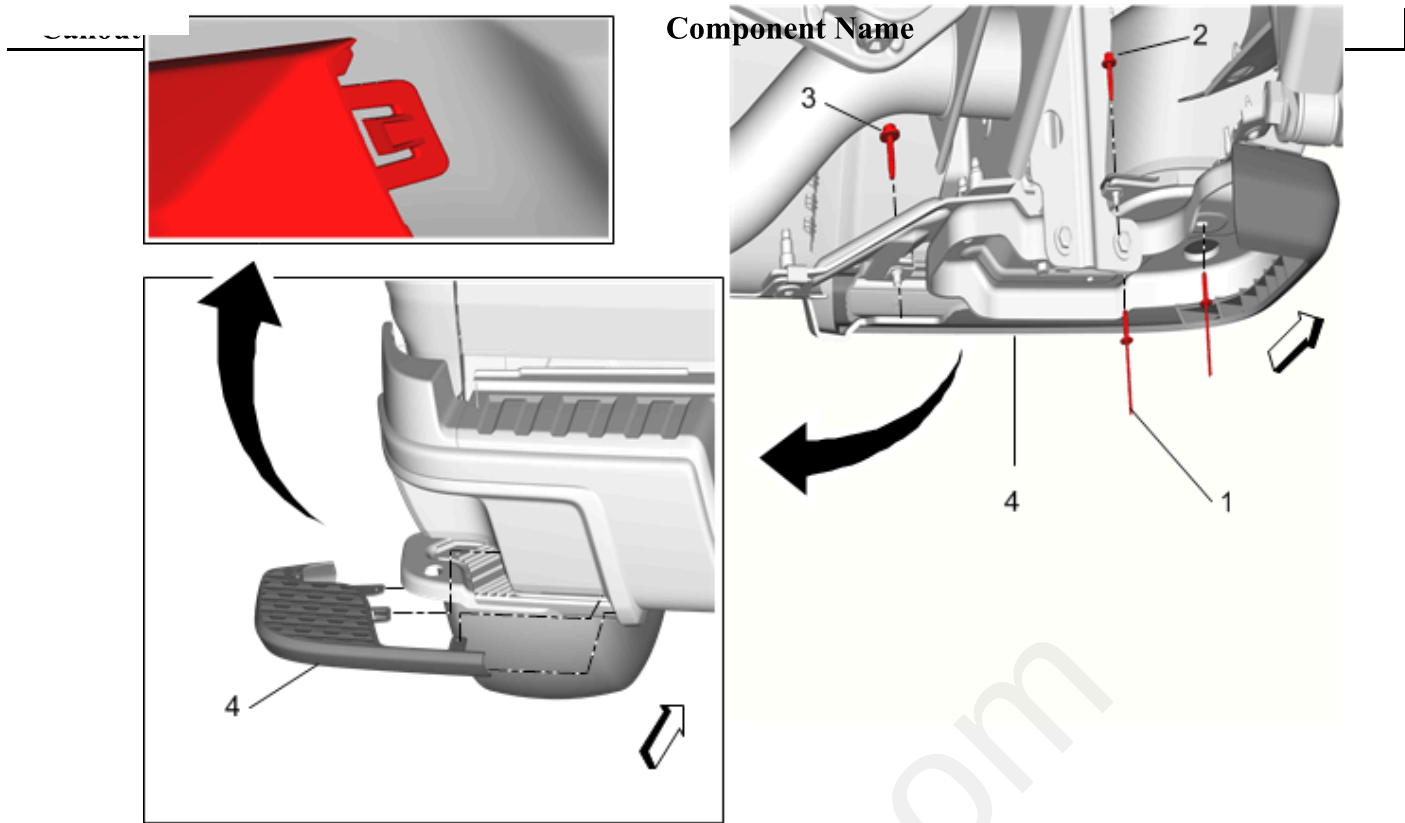


Fig. 43: Rear Bumper Step Outer Pad (Lower)
 Courtesy of GENERAL MOTORS COMPANY

Callout	Component Name
WARNING: Refer to Eye Protection Warning .	
Preliminary Procedures 1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle	
1	Rear Bumper Step Outer Pad Rivet (Qty 2)
2	Rear Bumper Step Outer Pad Retainer CAUTION: Refer to Fastener Caution . Tighten 2.5 N.m (22 lb in)
3	Rear Bumper Impact Bar Outer Brace Bolt Tighten 6 N.m (53 lb in)
4	Rear Bumper Step Outer Pad Procedure Release the single tab retainer with a suitable trim tool.

DESCRIPTION AND OPERATION

ILLE AIR SHUTTER DESCRIPTION AND OPERATION (LFX)

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 control signal from the chassis 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 chassis control module commands the active grille air shutter actuator to open the louvers.

The single active grille air shutter system consists of an individual motor operated mechanism hinged behind the vehicle front grille for controlling the amount of air entering the engine compartment. It includes three wires, ground, power and pulse width modulated signal to the actuator. The chassis 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 pulsed signal controlling the shutter mechanism will be able to control the shutter to close/open positions.

The actuator is 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 the shutter begins to move. If low ambient temperature is detected, the shutter will remain in the closed position.

ACTIVE GRILLE AIR SHUTTER DESCRIPTION AND OPERATION (LCV)

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 control 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.

The single active grille air shutter system consists of an individual motor operated mechanism hinged behind the vehicle front grille for controlling the amount of air entering the engine compartment. It includes three wires, ground, power and pulse width modulated signal to the 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 pulsed signal controlling the shutter mechanism will be able to control the shutter to close/open positions.

The actuator is 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 the shutter begins to move. If low ambient temperature is detected, the shutter will remain in the closed position.
