

ELECTRICAL

Wiring Systems and Power Management - Repair Instructions - CTS Sedan

REPAIR INSTRUCTIONS

GMLAN AND MEDIA ORIENTED SYSTEMS TRANSPORT (MOST) WIRING REPAIRS

Special Tools

- **EL-38125-10** Splice Sleeve Crimping Tool
- DuraSeal splice sleeves
- A wire stripping tool

For equivalent regional tools, refer to **Special Tools** .

The DuraSeal splice sleeves have the following 2 critical features:

- A special heat shrink sleeve environmentally seals the splice. The heat shrink sleeve contains a sealing adhesive inside.
- A cross hatched (knurled) core crimp provides necessary contact integrity for the sensitive, low energy circuits.

The GM Local Area Network (GMLAN) System requires special wiring repair procedures due to the sensitive nature of the circuitry. Follow the specific procedures and instructions when working on GMLAN connectors and terminals.

GMLAN Repairs

NOTE: When making a repair to any GMLAN network, the original wire length after the repair must be the same length as before the repair. If the network is a twisted pair, the twist must be maintained after the repair is completed.

GMLAN has 2 types of networks, low speed and high speed. Low speed GMLAN has a single wire and works at slow speeds. High speed GMLAN has 2 wires in a twisted pair and works at higher speeds. For more information on GMLAN, refer to **Data Link Communications Description and Operation** .

GMLAN Connector Terminal Repair

NOTE: A terminated lead can be used to replace damaged connector terminals for both high speed and low speed GMLAN systems. When making a connector terminal repair on a GMLAN high speed system with twisted pair wires, do not untwist the wires more than necessary to make the repair.

If the individual terminals are damaged on any GMLAN connection, use the appropriate connector repair procedure in order to repair the terminal. Refer to **Connector Repairs** for the appropriate connector repair

procedure.

GMLAN Wire Repair

NOTE: Refer to Wiring Repairs in the service information connector end views or the vehicle schematics in order to determine the correct wire size for the circuit you are repairing. You must obtain this information in order to ensure circuit integrity.

If any wire except the pigtail is damaged, repair the wire by splicing in a new section of wire of the same gauge size (0.5 mm², 0.8 mm², 1.0 mm² etc.). Use the DuraSeal splice sleeves and **EL-38125-10** tool. For wiring repair, refer to **Splicing Copper Wire Using Splice Sleeves**.

Media Oriented Systems Transport (MOST) Wiring Repair

NOTE: If harness repair/analysis is performed, MOST bus Twist Pair unshielded wire should be 0.22 mm gauge wire with at least one twist per each 1 45/64 inch (45 mm) and must not be untwisted for more than 3 15/16 of an inch (10 cm).

The following conditions need to be met to ensure a valid continuity:

- Untwisted length for all MOST 50 circuits at each wire harness connector should be no longer 50 mm max (25 mm preferred).
- When wire repairs are made, a minimum 25 twists/meter for all MOST 50 circuits.
- MOST 50 has specific receive and transmit I/O.

The transmit of one module is connected to receive of the next module in ring topology.

RELAY REPLACEMENT (ATTACHED TO WIRE HARNESS)

Removal Procedure

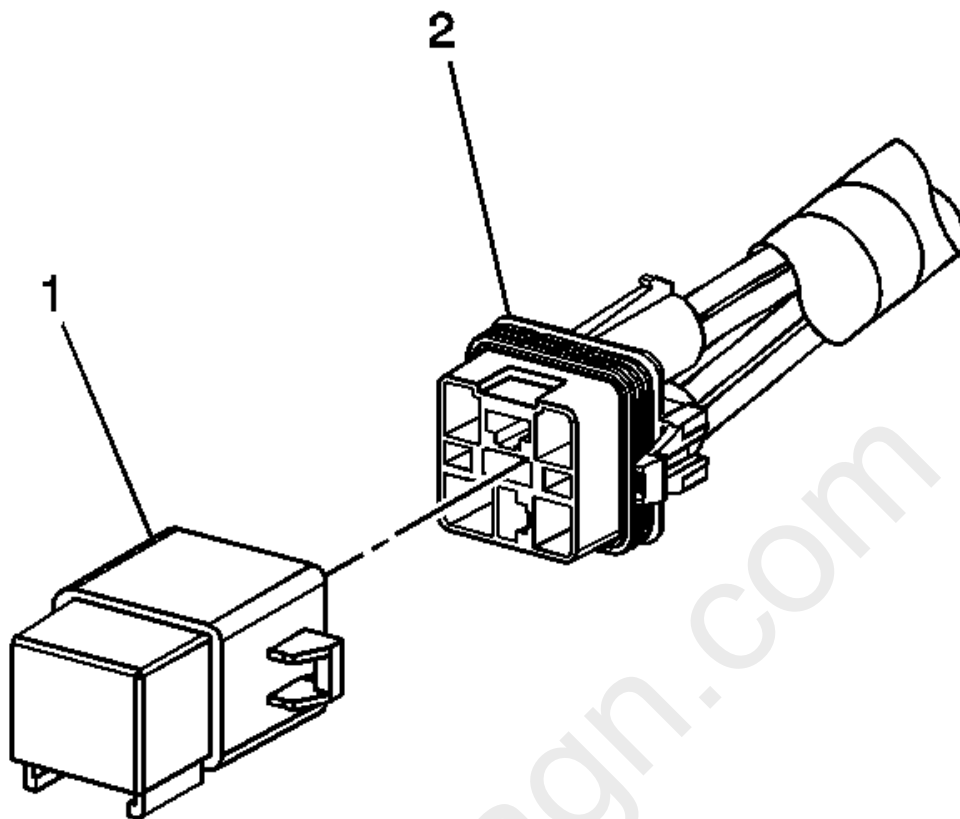


Fig. 1: Identifying Relay & Wire Harness Connector
Courtesy of GENERAL MOTORS COMPANY

1. Locate the relay. Refer to the **Master Electrical Component List** to locate the relay in the vehicle.
2. Remove any fasteners which hold the relay in place.
3. Remove any connector position assurance (CPA) devices or secondary locks.

NOTE: Use care when removing a relay in a wiring harness when the relay is secured by fasteners or tape.

4. Separate the relay (1) from the wire harness connector (2).

Installation Procedure

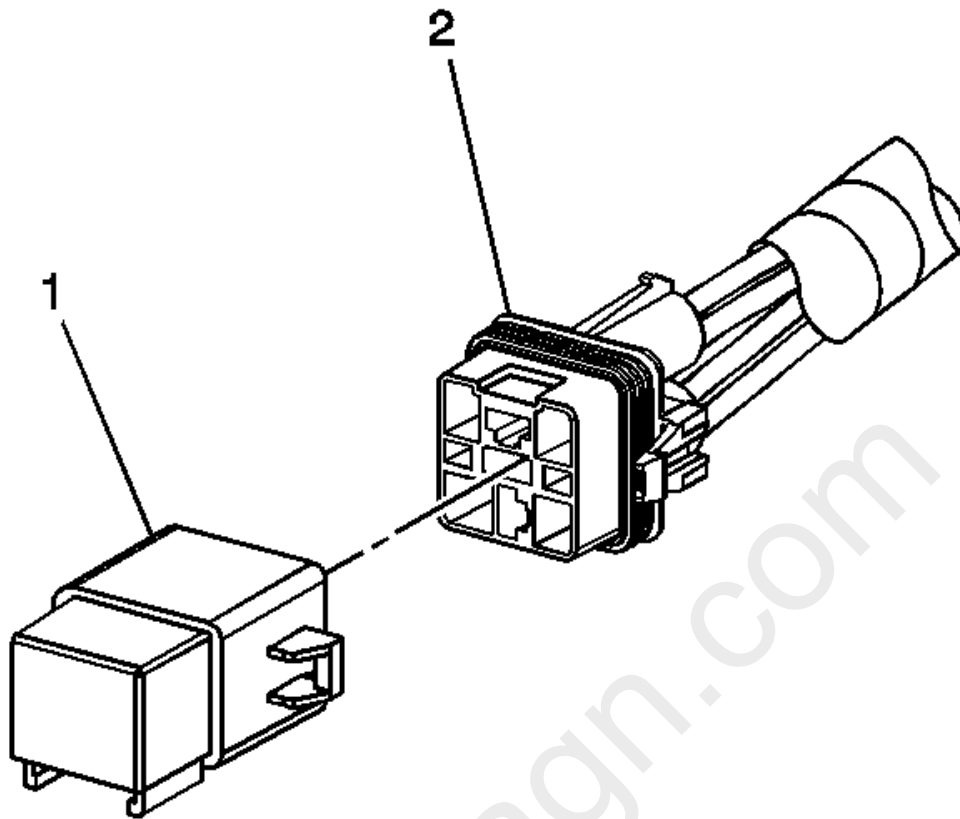


Fig. 2: Identifying Relay & Wire Harness Connector
Courtesy of GENERAL MOTORS COMPANY

1. Connect the relay (1) to the wire harness connector (2).
2. Install any connector position assurance (CPA) devices or secondary locks.
3. Install the relay using any fasteners or tape that originally held the relay in place.

RELAY REPLACEMENT (WITHIN AN ELECTRICAL CENTER)

Special Tools

EL-43244 Relay Puller Pliers

Removal Procedure

1. Remove the electrical center cover.

NOTE:

- Always note the orientation of the relay.

- If equipped with a notch style relay; observe the location of the notch on the old relay to verify the new relay is installed with the notch in the same location.
- Ensure that the electrical center is secure, as not to put added stress on the wires or terminals.

2. Locate the relay. Refer to **Electrical Center Identification Views** to locate the electrical center where the relay exists.

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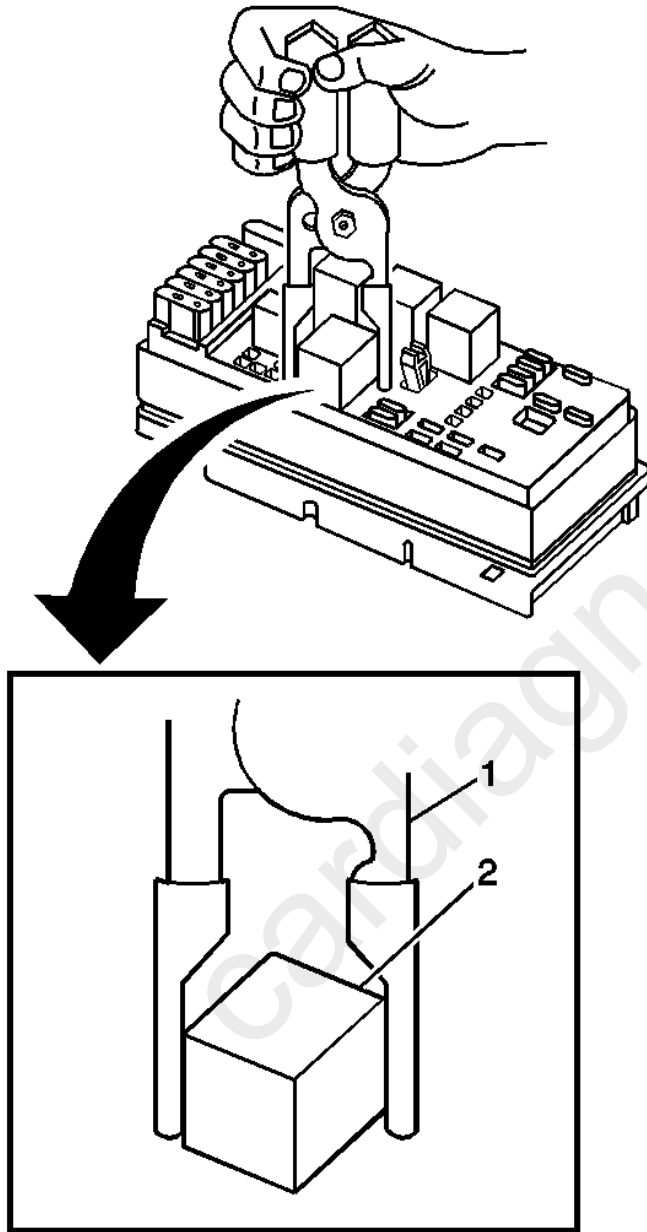


Fig. 3: Removing/Installing Relay
Courtesy of GENERAL MOTORS COMPANY

3. Using the EL-43244 (1) position the tool on opposing corners of the relay (2).

CAUTION: Use EL-43244 to pull the relay straight out from the electrical center terminals. The use of pliers or a flat bladed tool could damage the electrical center.

4. Remove the relay (2) from the electrical center.

Installation Procedure

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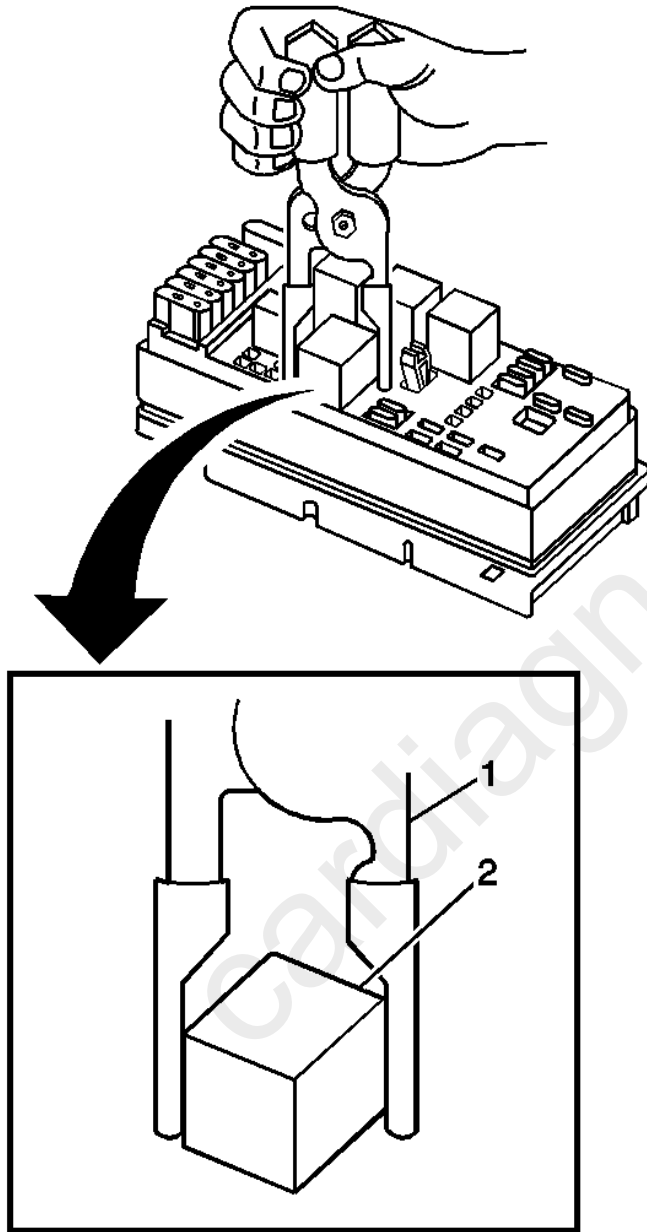


Fig. 4: Removing/Installing Relay
Courtesy of GENERAL MOTORS COMPANY

1. Install the relay (2) in the same position as removed.
2. Install the electrical center cover.

FRONT COMPARTMENT FUSE BLOCK HOUSING REPLACEMENT

Removal Procedure

1. Disconnect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection** .
2. Remove the front compartment front sight shield. Refer to **Front Compartment Front Sight Shield Replacement** .

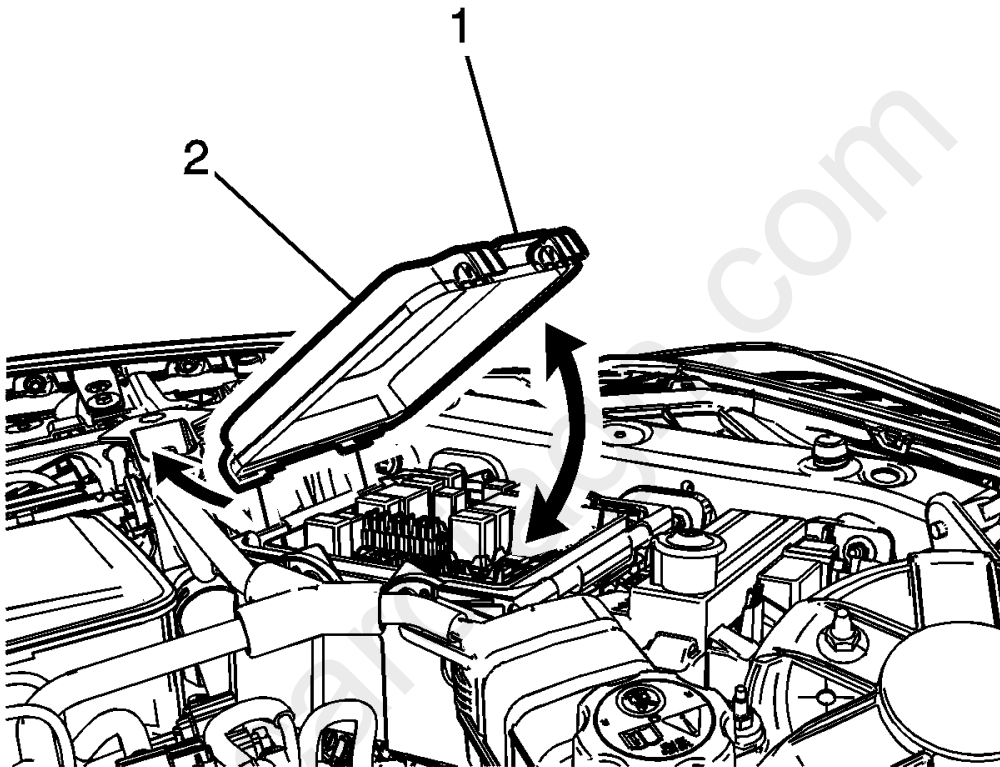


Fig. 5: Front Compartment Fuse Block Housing Cover & Tab
Courtesy of GENERAL MOTORS COMPANY

3. Lift the tab (1) on the cover (2) upward and twist the cover 90 degrees to disengage the cover from the hinge.

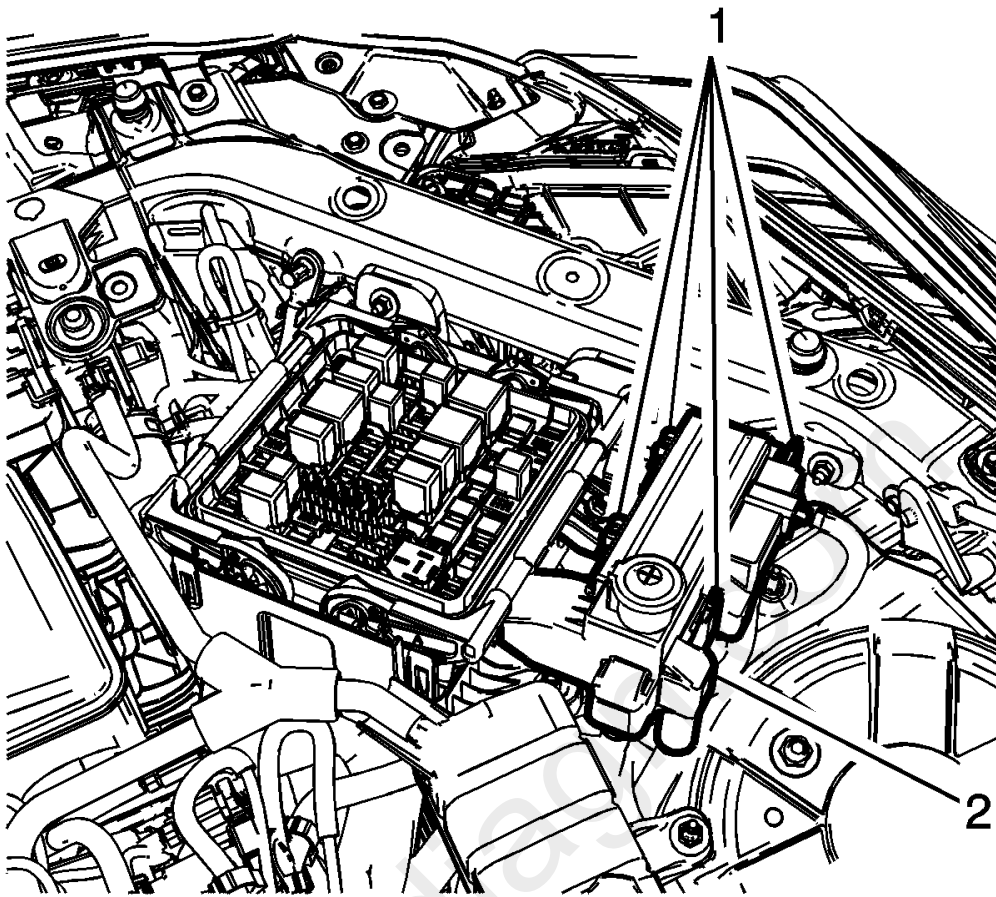


Fig. 6: Pre Fuse Cover & Retainer Tabs
Courtesy of GENERAL MOTORS COMPANY

4. Press the retainer tabs (1) outward and lift the pre fuse cover (2) from the pre fuse base.

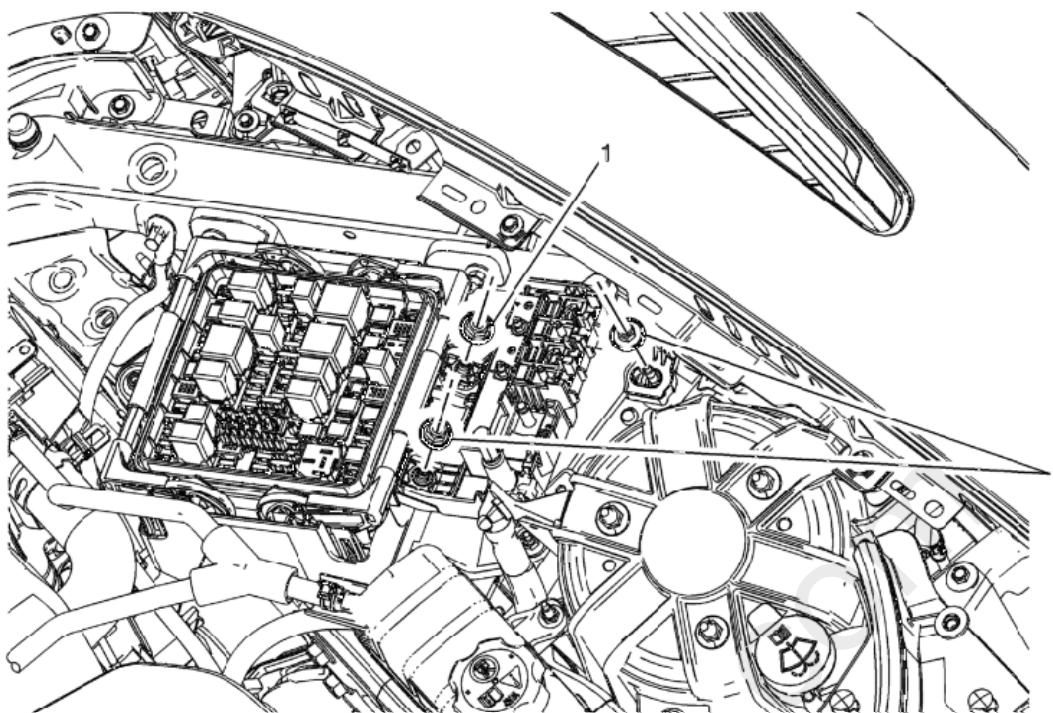


Fig. 7: Pre Fuse Base Nuts

Courtesy of GENERAL MOTORS COMPANY

5. Remove the pre fuse base nuts (1) and reposition the pre fuse base from the front compartment fuse block housing.

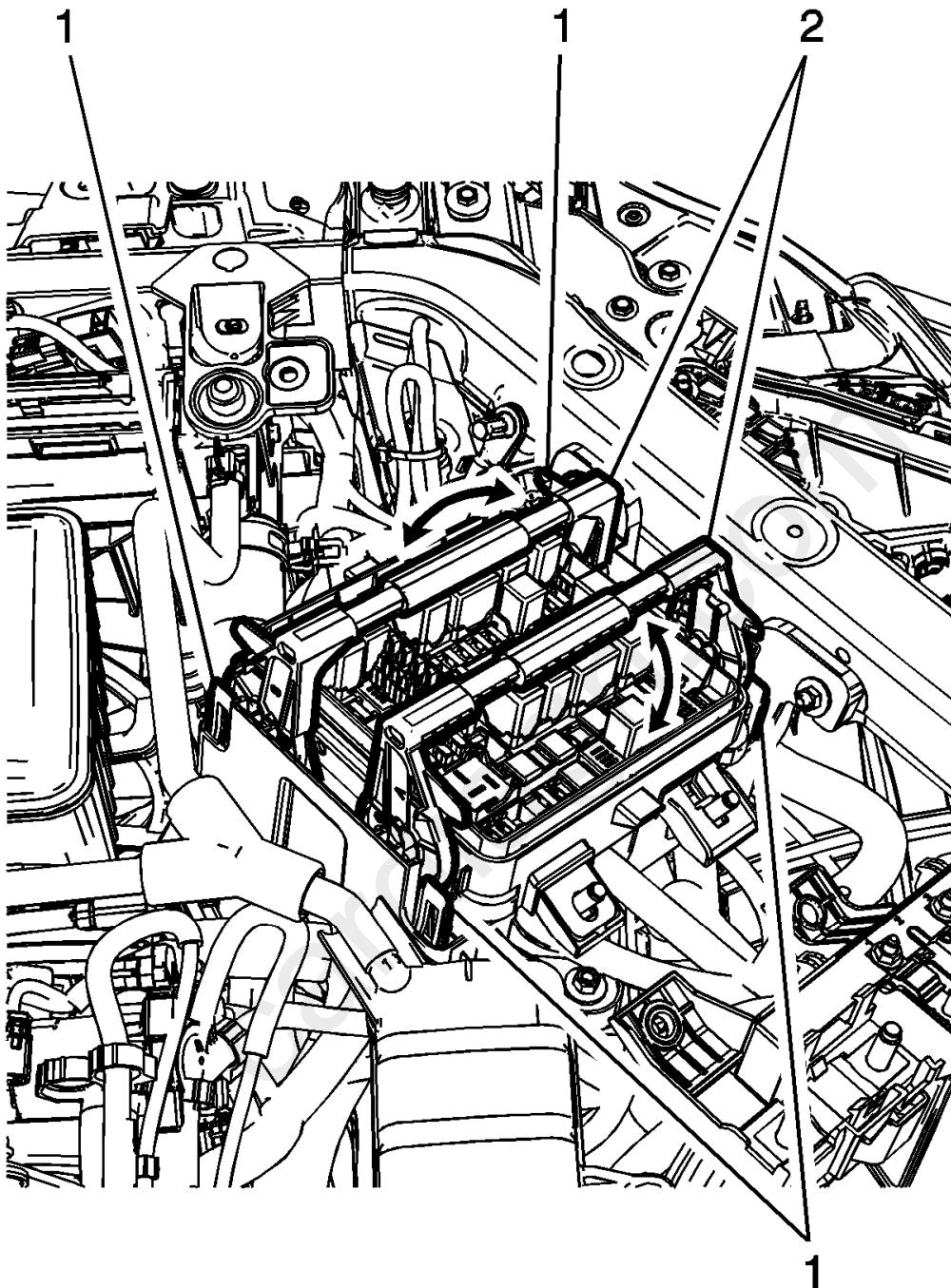


Fig. 8: Pre Fuse Base Locking Levers & Retainer Tabs
Courtesy of GENERAL MOTORS COMPANY

6. Release the 4 retainer tabs (1) using a suitable hook-like tool to release the locking levers (2) to allow the

locking levers to be rotated to the full up position.

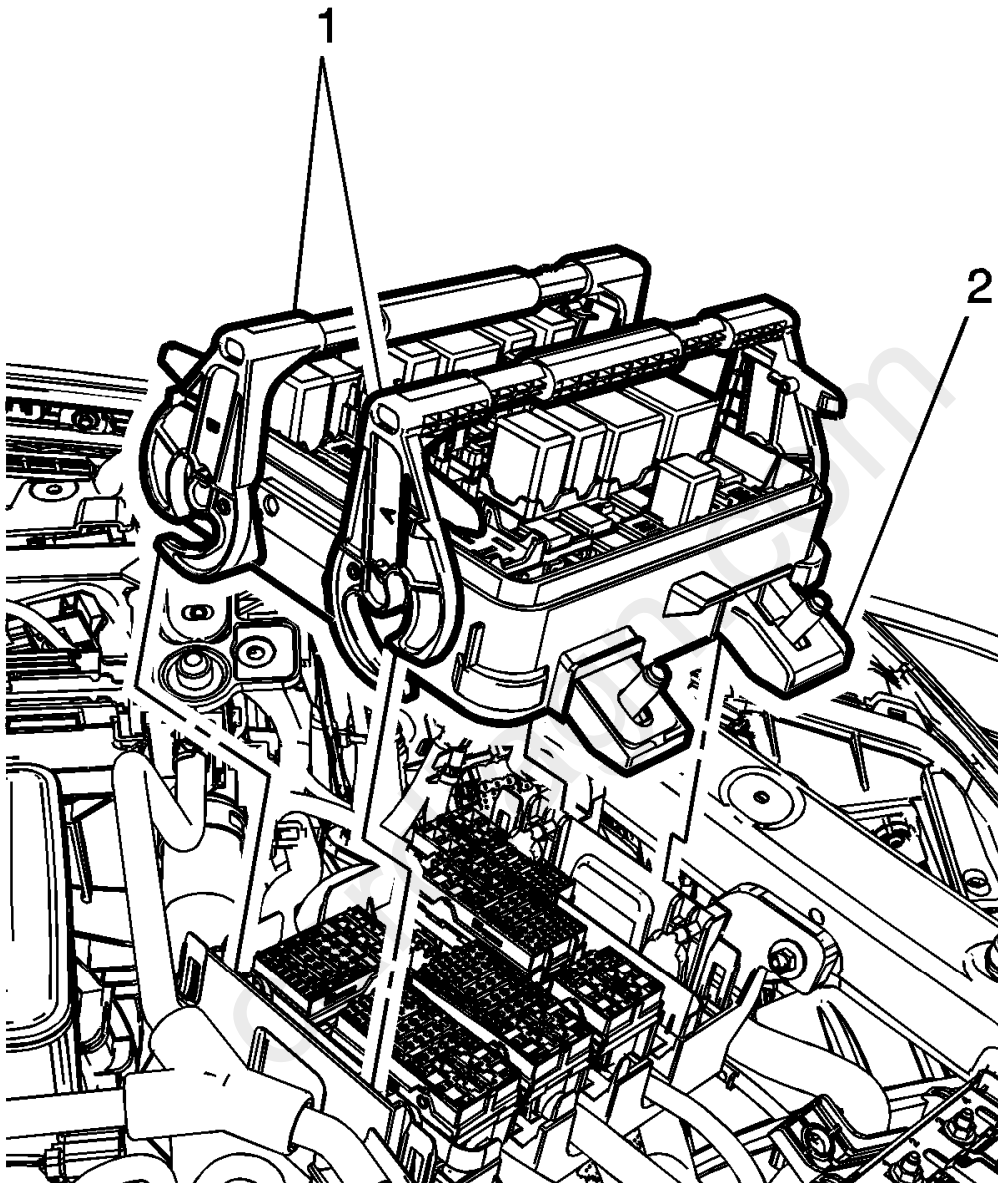


Fig. 9: Fuse Block Housing Base & Locking Levers
Courtesy of GENERAL MOTORS COMPANY

7. Remove the front compartment fuse block housing by lifting on the locking levers (1) then with a slight shaking motion on the locking levers remove the front compartment fuse block housing from the fuse block housing base (2).

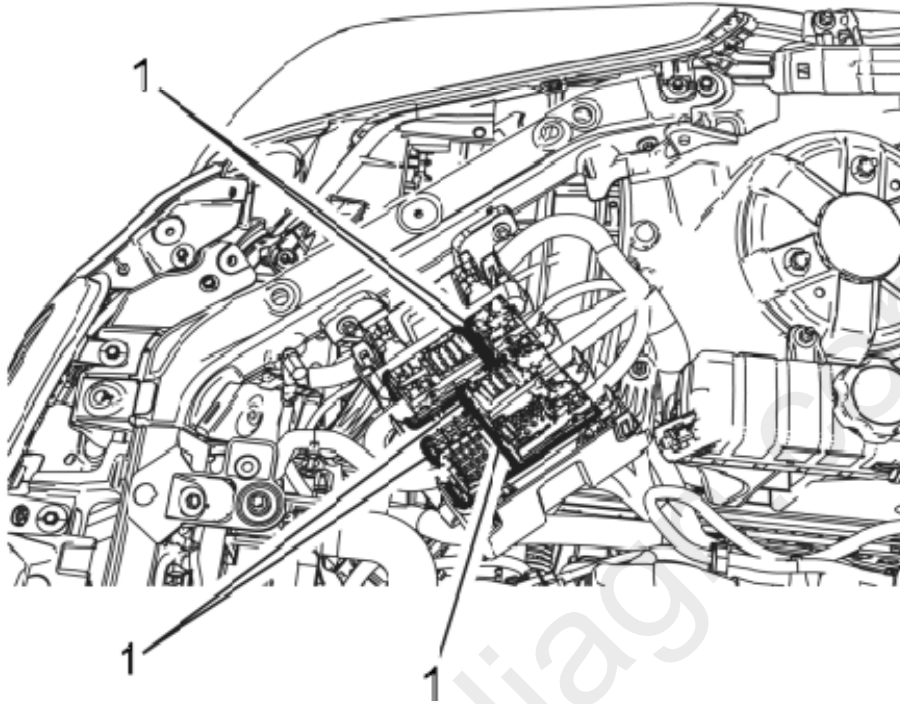


Fig. 10: Fuse Block Base Releasing Retainers
Courtesy of GENERAL MOTORS COMPANY

8. Disconnect the 5 individual electrical connectors from the fuse block base, connector bases unclip from fuse block base by releasing the retainer (1) with slight pressure pushing them outward, all 5 connectors are color coded to the base.
9. Undo the 3 christmas tree fasteners holding the wiring harness to the fuse block base.

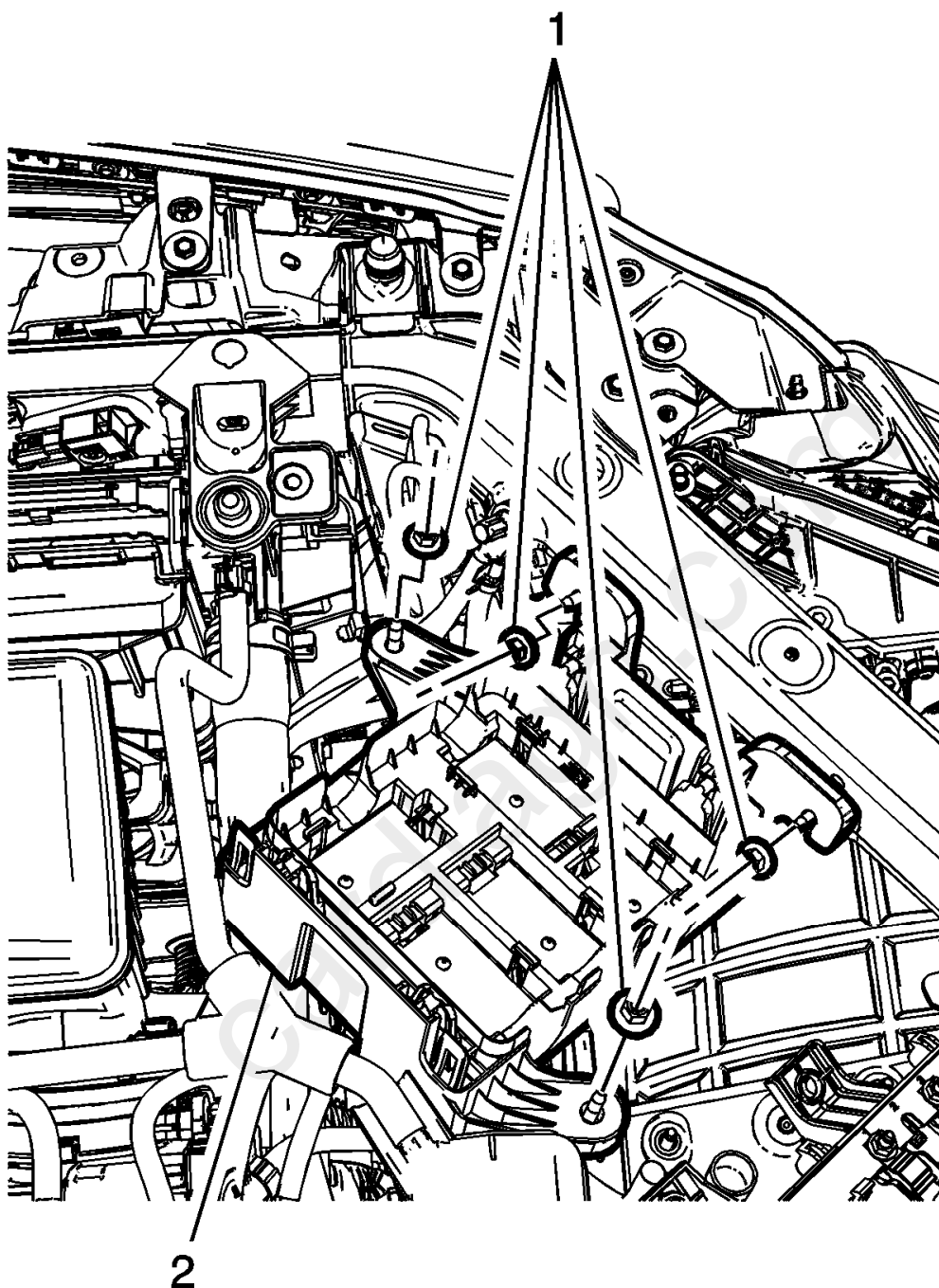


Fig. 11: Fuse Block Housing Base & Mounting Nuts
Courtesy of GENERAL MOTORS COMPANY

10. Remove the 4 nuts (1) from the fuse block housing base (2) push the wiring harness away and remove the

fuse block housing base from the vehicle.

Installation Procedure

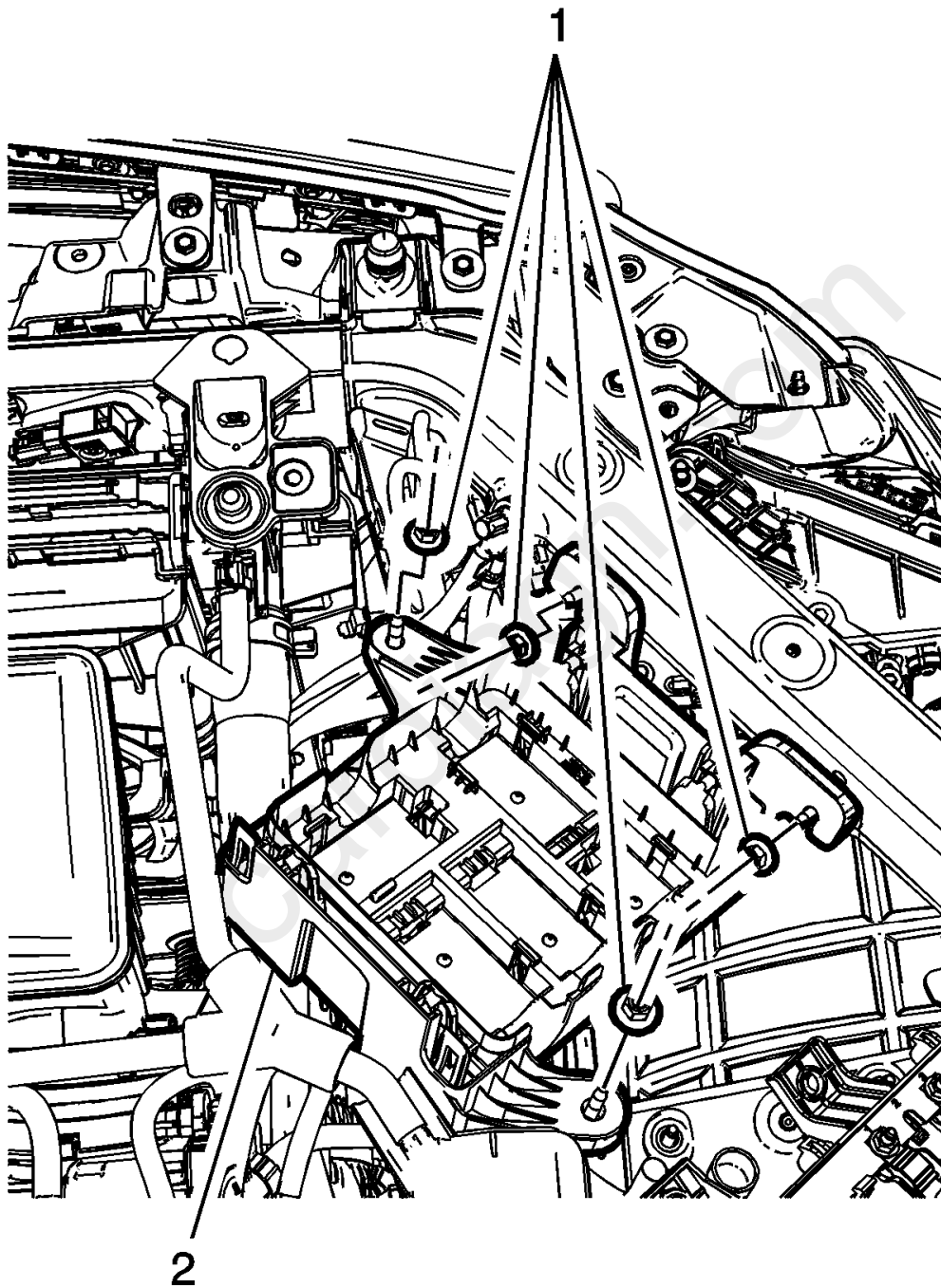


Fig. 12: Fuse Block Housing Base & Mounting Nuts
Courtesy of GENERAL MOTORS COMPANY

CAUTION: Refer to Fastener Caution .

1. Position the fuse block housing base (2) to the vehicle. Install the 4 nuts (1) to the fuse block housing base (2). Tighten the block base nuts to 5 (44 lb in).

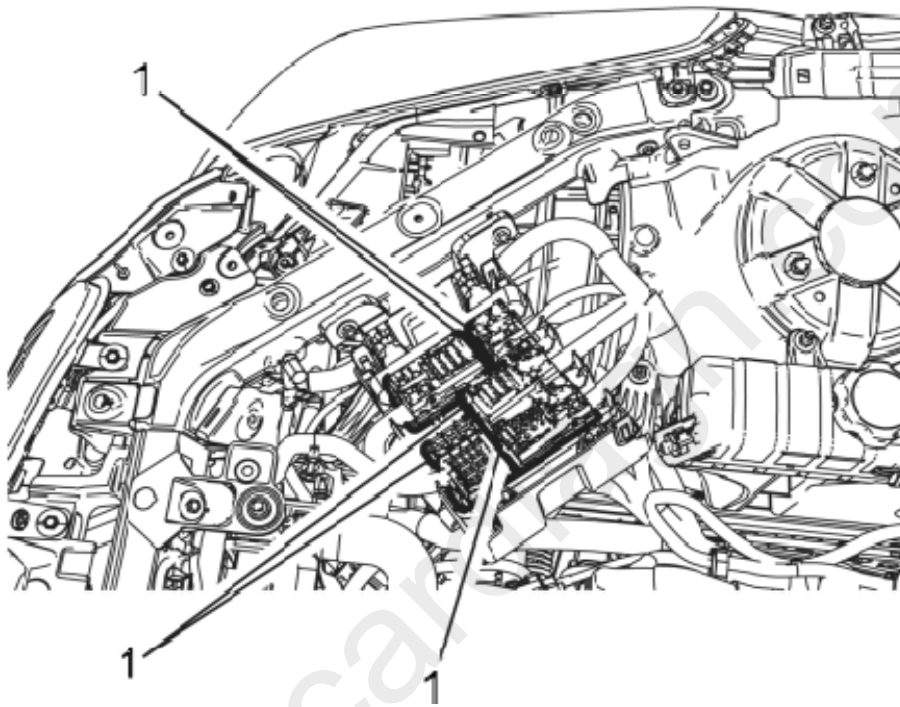


Fig. 13: Fuse Block Base
Courtesy of GENERAL MOTORS COMPANY

2. Connect the 5 individual electrical connectors to the fuse block base, the connector bases clip in the fuse block base (1) by slight pressure pushing them inward, all 5 connectors are color coded to the base.
3. Reconnect the 3 christmas tree fasteners holding the wiring harness to the fuse block base.

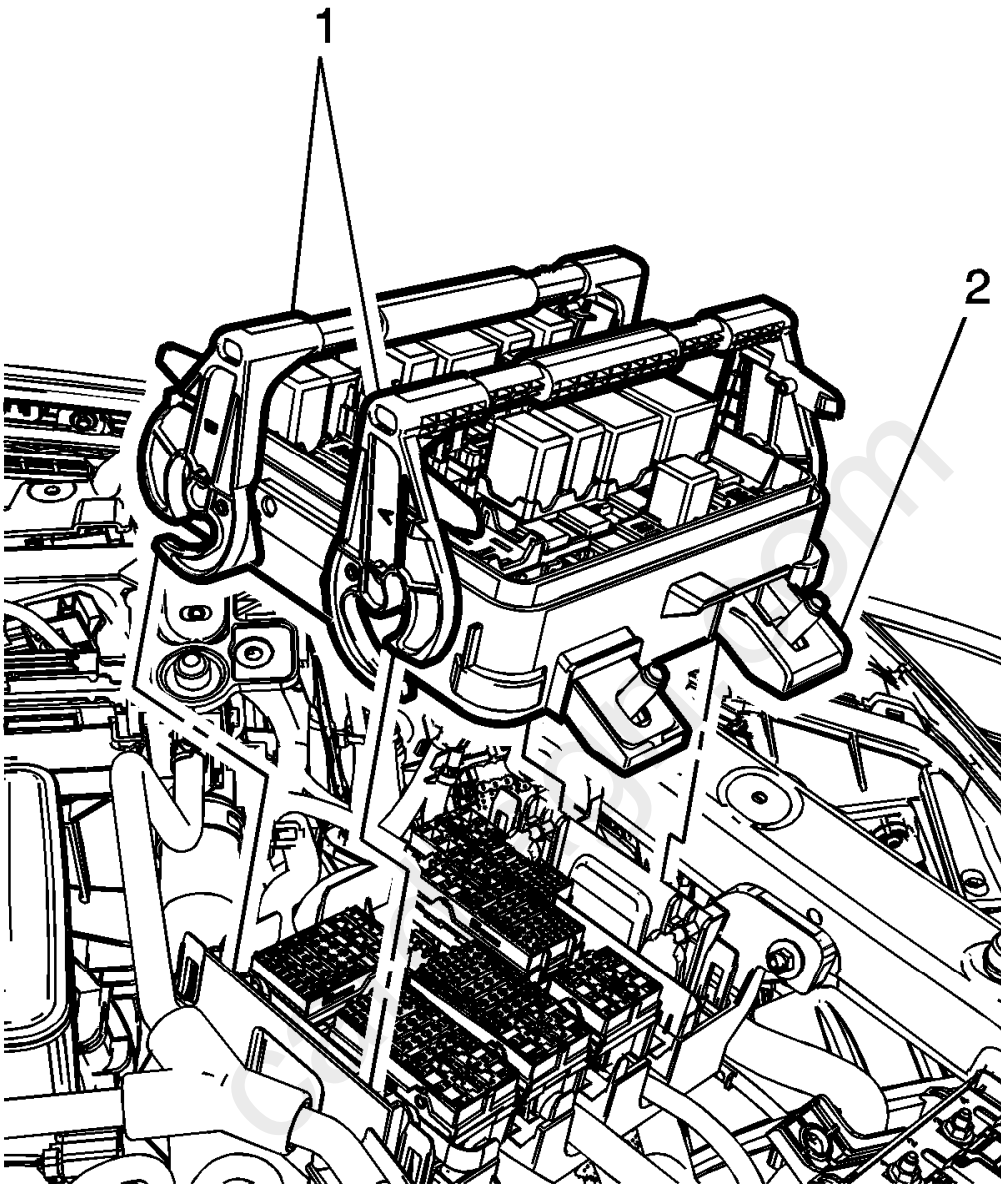


Fig. 14: Fuse Block Housing Base & Locking Levers
Courtesy of GENERAL MOTORS COMPANY

4. Position the front compartment fuse block housing to the fuse block housing base (2) by pressing down

on the locking levers (1) with a slight shaking motion on the locking levers.

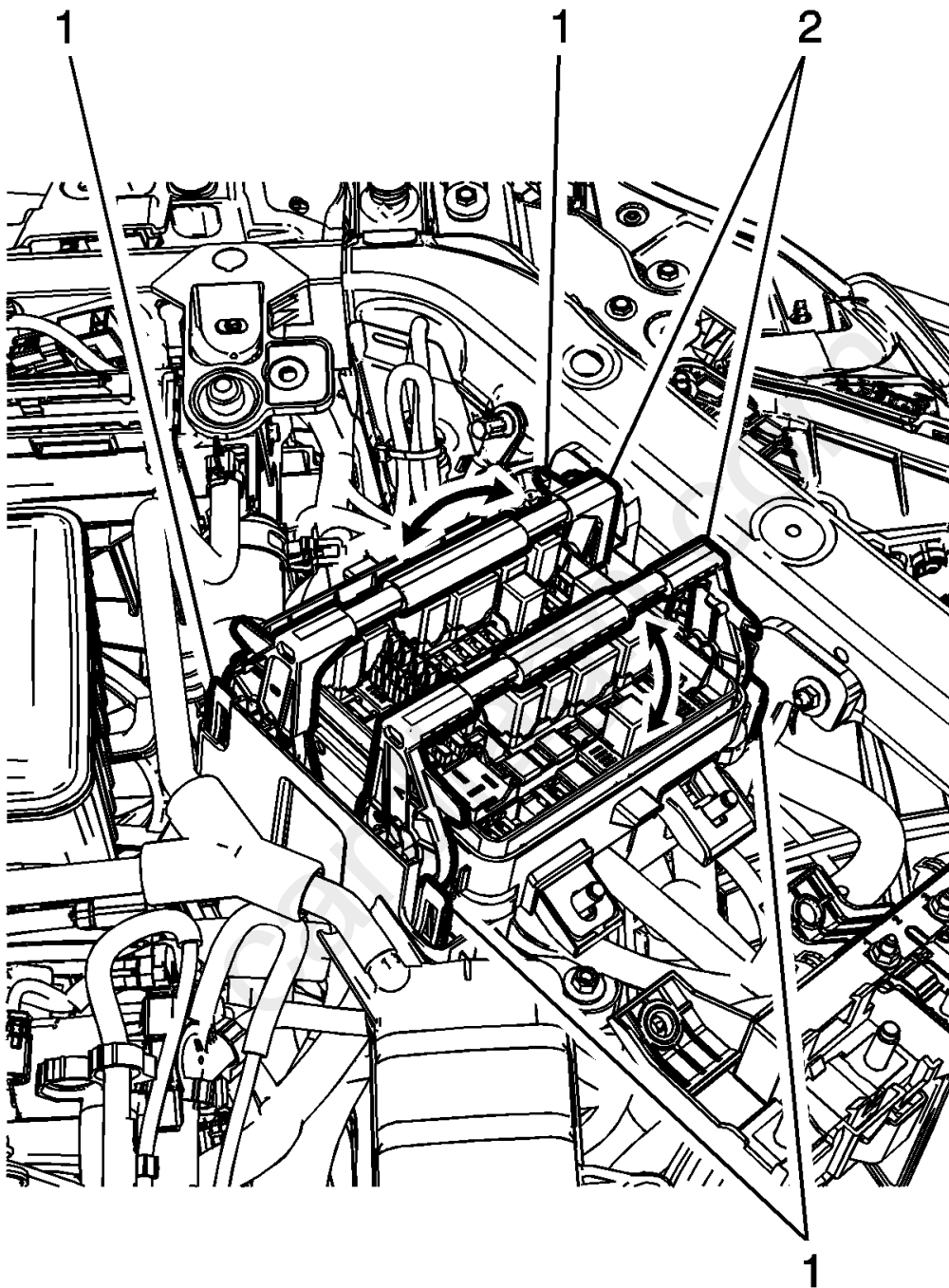


Fig. 15: Pre Fuse Base Locking Levers & Retainer Tabs
Courtesy of GENERAL MOTORS COMPANY

5. Press the locking levers in the full down position to the fuse block housing base (2). To engage the 4 retainer tabs (1) using light pressure on the locking levers (2) to allow the locking levers to be rotated to the full down position.

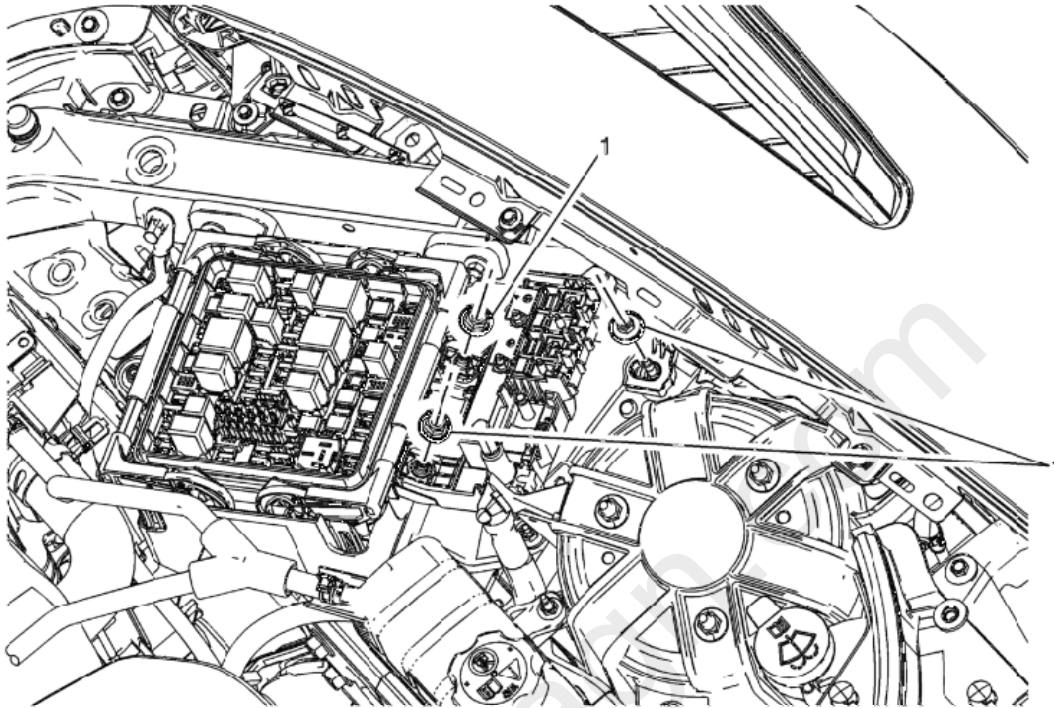


Fig. 16: Pre Fuse Base Nuts

Courtesy of GENERAL MOTORS COMPANY

6. Reposition the pre fuse base to the front compartment fuse block housing and Install the pre fuse base nuts (1). Tighten the pre fuse base nuts to 5 (44 lb in).

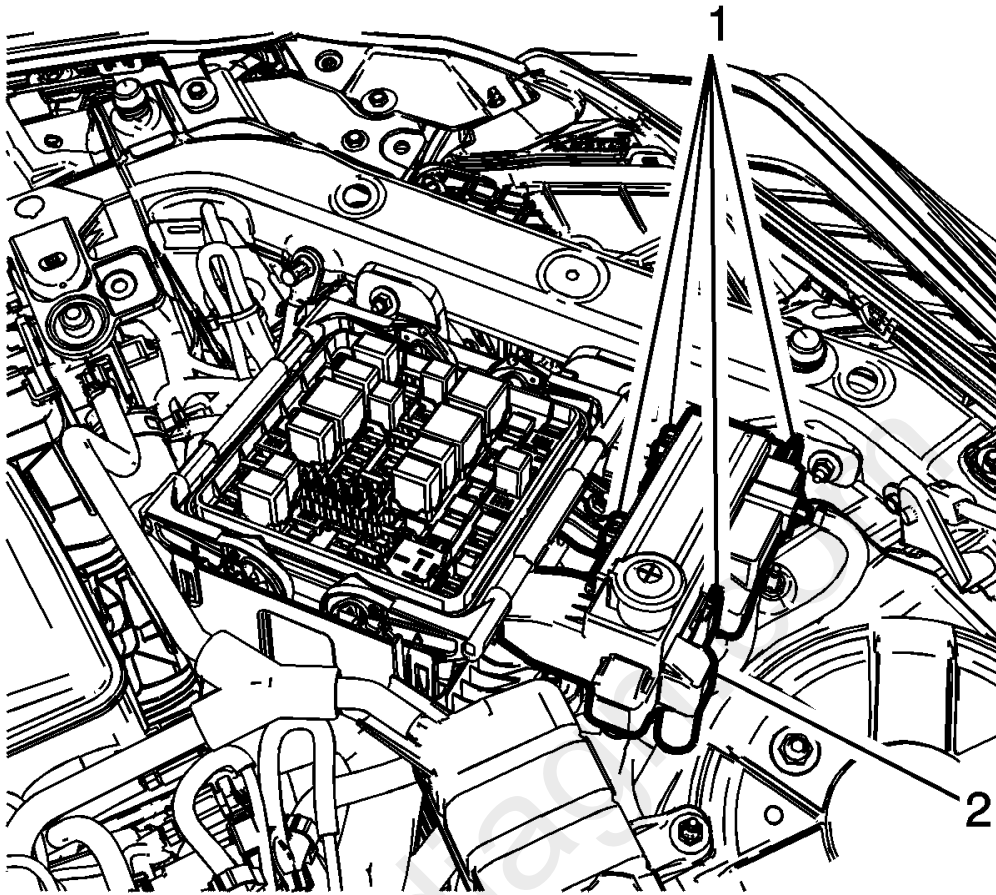


Fig. 17: Pre Fuse Cover & Retainer Tabs
Courtesy of GENERAL MOTORS COMPANY

7. Position the pre fuse cover (2) from the pre fuse base retainer tabs 1), pressing the pre fuse cover (2) until fully seated.

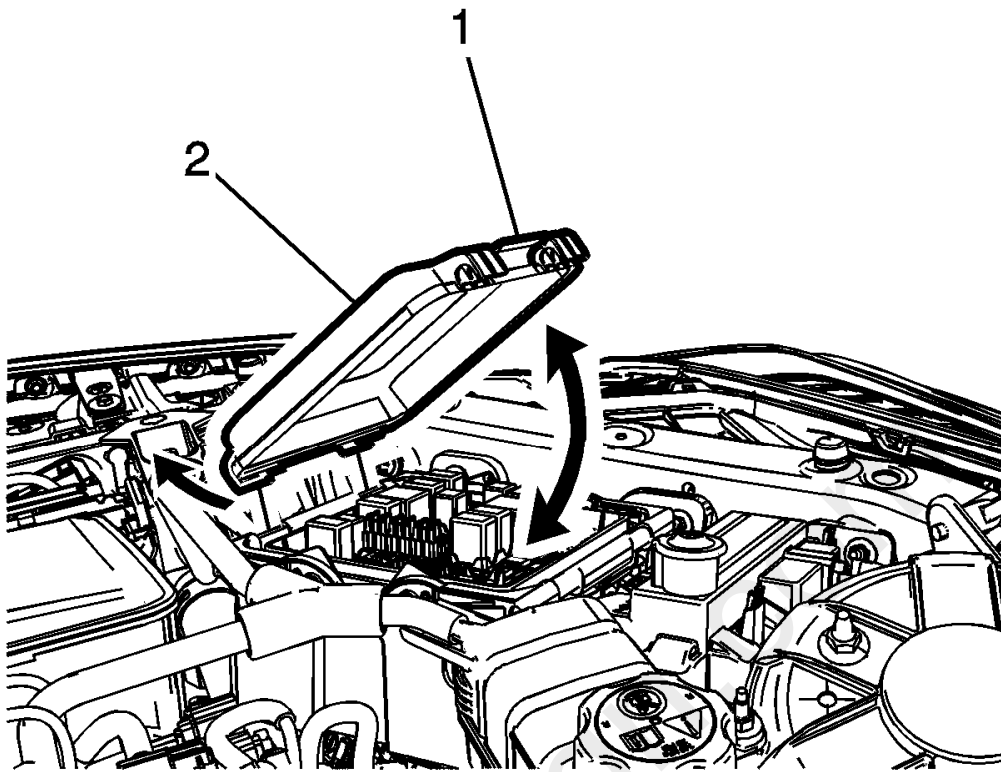


Fig. 18: Front Compartment Fuse Block Housing Cover & Tab
Courtesy of GENERAL MOTORS COMPANY

8. Position the cover (2) to the one hinge and twist the cover 90 degrees downward to engage the cover to the hinge. Depress the tab (1) on the cover until locked into position.
9. Connect the negative battery cable. Refer to **Battery Negative Cable Disconnection and Connection** .
10. Install the front compartment front sight shield. Refer to **Front Compartment Front Sight Shield Replacement** .

BODY WIRING HARNESS JUNCTION BLOCK REPLACEMENT

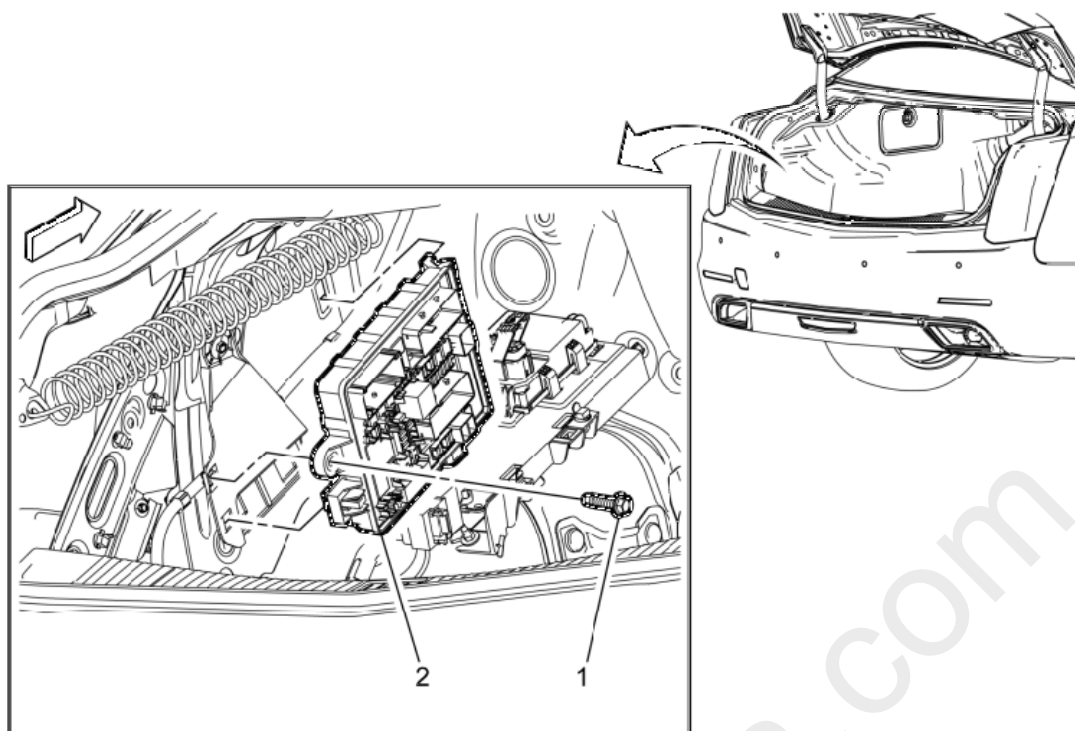


Fig. 19: Body Wiring Harness Junction Block
Courtesy of GENERAL MOTORS COMPANY

Body Wiring Harness Junction Block Replacement

Callout	Component Name
Preliminary Procedure 1. Reposition the rear compartment side trim panel - left side. Refer to <u>Rear Compartment Side Trim Replacement - Left Side</u> . 2. Disconnect the negative battery cable. Refer to <u>Battery Negative Cable Disconnection and Connection</u> .	
1	Body Wiring Harness Junction Block Fastener CAUTION: Refer to <u>Fastener Caution</u> . Tighten 9 N.m (80 lb in)
2	Body Wiring Harness Junction Block Procedure Disconnect the electrical connectors.

REAR BODY FUSE BLOCK REPLACEMENT

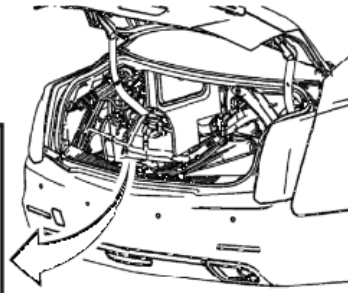
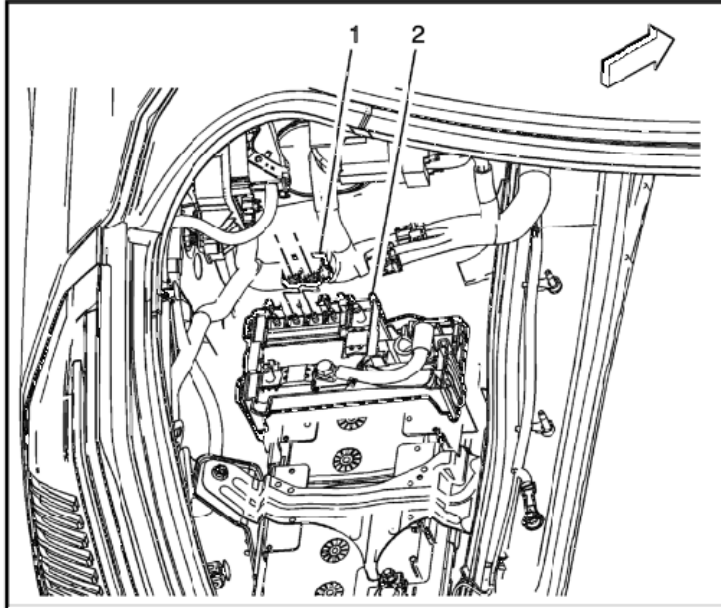


Fig. 20: Rear Body Fuse Block
 Courtesy of GENERAL MOTORS COMPANY

Rear Body Fuse Block Replacement

Callout	Component Name
Preliminary Procedures 1. Reposition the left hand side rear compartment side trim. Refer to <u>Rear Compartment Side Trim Replacement - Left Side</u> 2. Disconnect the battery negative cable. Refer to <u>Battery Negative Cable Replacement</u> . 3. Disconnect the battery positive cable by opening the battery fuse block cover and loosen the battery post cable clamp fastener and set the battery positive cable aside.	
1	Rear Body Fuse Block Terminal Nut CAUTION: Refer to <u>Fastener Caution</u> . Procedure Reposition the fuse block terminal wires. Tighten 5 (44 lb in)
	Rear Body Fuse Block

2	Procedure 1. Loosen the positive battery post terminal nut. 2. Release the tab retainers on each side of the rear body fuse block and remove.
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IGNITION AND START SWITCH REPLACEMENT

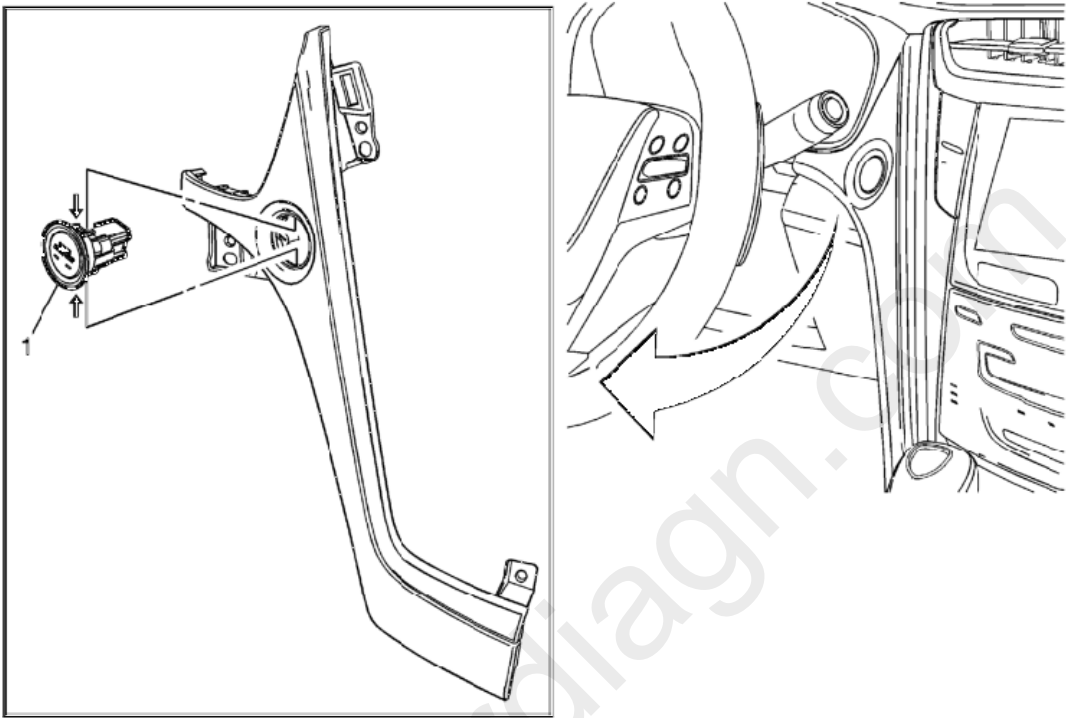


Fig. 21: Ignition and Start Switch
 Courtesy of GENERAL MOTORS COMPANY

Ignition and Start Switch Replacement

Callout	Component Name
Preliminary Procedure Remove the instrument panel lower center trim panel - left side. Refer to <u>Instrument Panel Lower Center Trim Panel Replacement (Right Side)</u> , <u>Instrument Panel Lower Center Trim Panel Replacement (Left Side)</u> .	
1	Ignition and Start Switch Procedure 1. Disconnect electrical connection. 2. Depress tabs on switch and remove from the panel.