

2011 ACCESSORIES & EQUIPMENT

Wiring Systems and Power Management - CTS

REPAIR INSTRUCTIONS

RELAY REPLACEMENT (ATTACHED TO WIRE HARNESS)

Removal Procedure

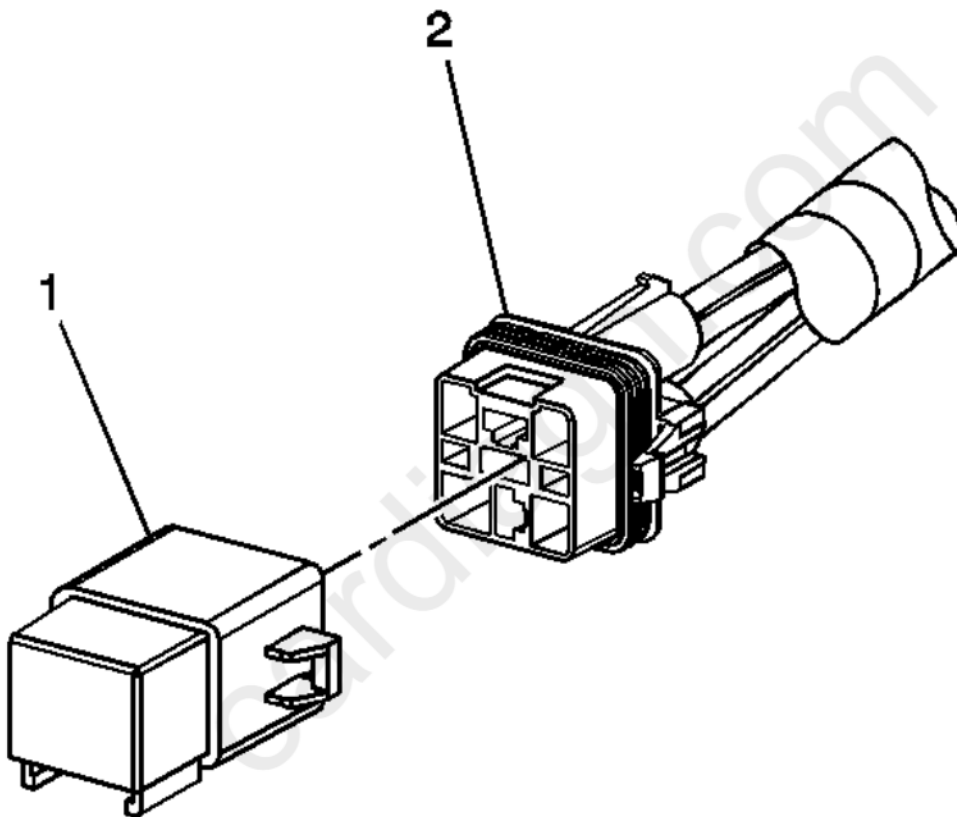


Fig. 1: Identifying Relay & Wire Harness Connector
Courtesy of GENERAL MOTORS CORP.

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

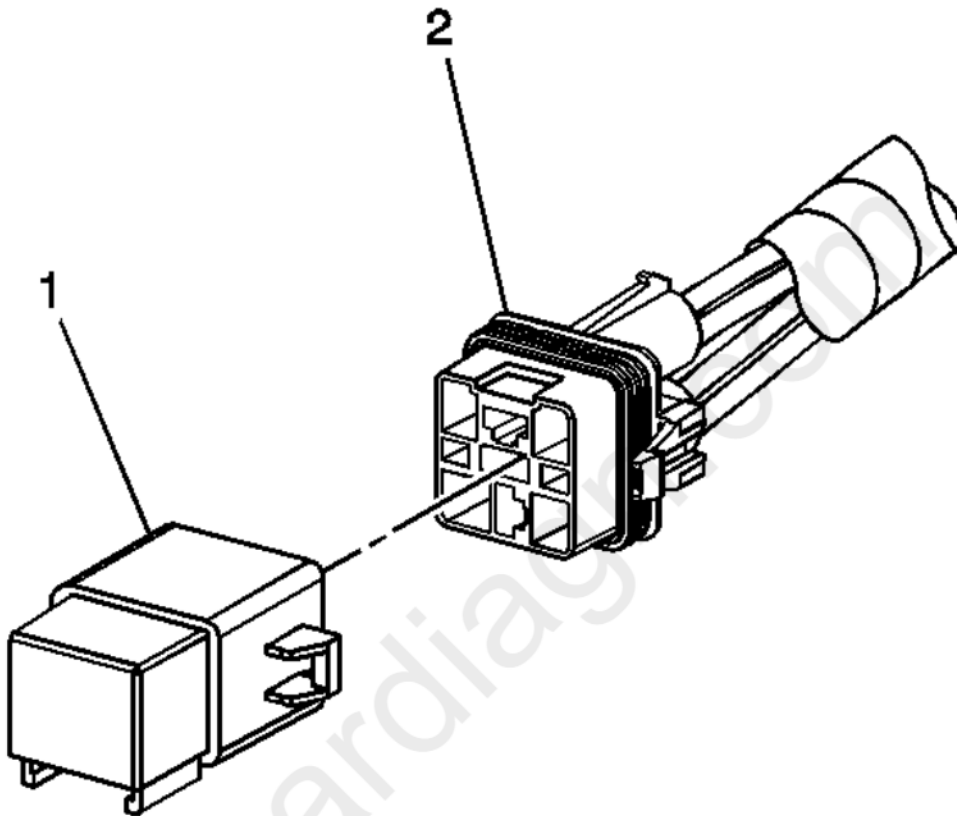


Fig. 2: Identifying Relay & Wire Harness Connector
Courtesy of GENERAL MOTORS CORP.

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

J 43244 Relay Puller Pliers

Removal Procedure

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

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.

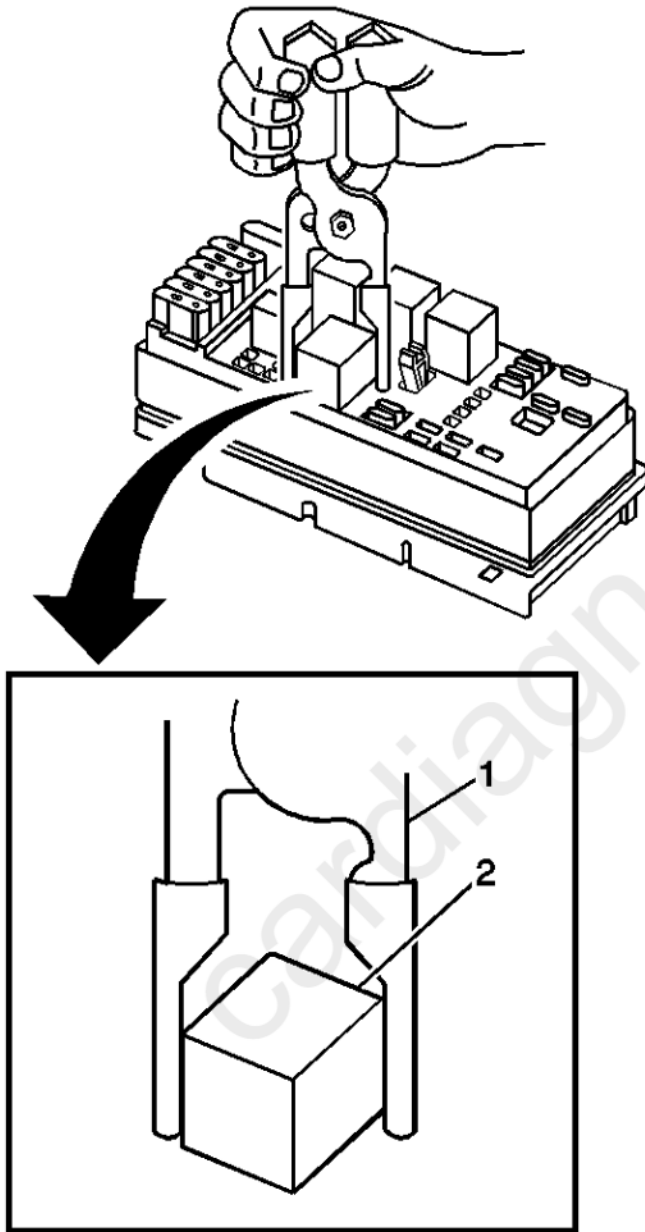


Fig. 3: Relay & Special Tool - J 43244
Courtesy of GENERAL MOTORS CORP.

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

2011 Cadillac CTS

2011 ACCESSORIES & EQUIPMENT Wiring Systems and Power Management - CTS

CAUTION: Use J43244 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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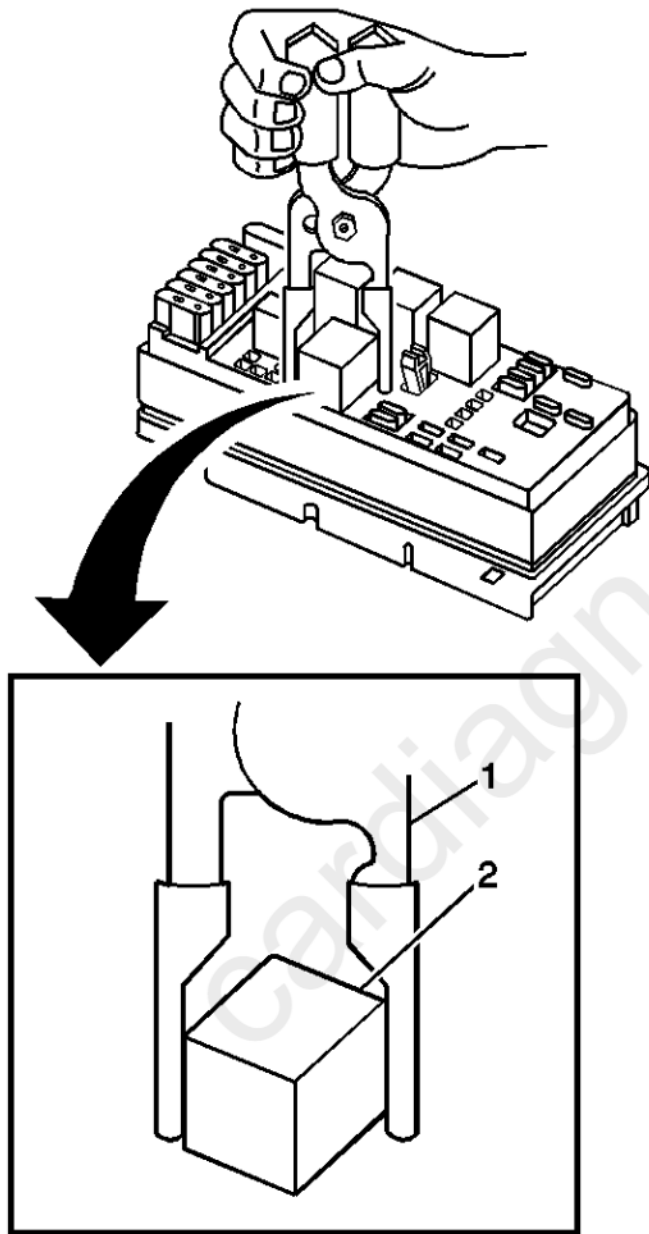


Fig. 4: Relay & Special Tool - J 43244
Courtesy of GENERAL MOTORS CORP.

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

GROUND REPAIR

Electrical Grounds

Proper electrical system function relies on secure, positive, corrosion-free ground connections. Loose, stripped, or corroded connections increase the possibility of improper system function and loss of module communication. These conditions may also lead to unnecessary repairs and component replacements.

In general, electrical ground connections are accomplished using one, or a combination of, three attachment methods:

- Welded M6 stud and nut
- Welded M6 nut and bolt
- Welded M8 nut and bolt

CAUTION: Use GM approved replacement fasteners with conductive finish for electrical ground repair.

Determine which attachment method is used, and carry out the appropriate repair.

M6 Weld Stud Replacement

1. Select a location adjacent the damaged or missing M6 ground stud having 20 mm (0.79 in) clearance behind the panel surface and 20 mm (0.79 in) clearance surrounding the M6 rivet stud flange.
2. Using GM approved residue-free solvent or equivalent, remove any grease from the repair site and allow to dry.

NOTE: Ensure 20 mm (0.79 in) clearance is maintained behind the panel to be drilled.

3. Drill a 10 mm (0.40 in) diameter hole through the panel.
4. Carefully remove paint and primer from the area surrounding the rivet stud flange until bare metal is visible.

CAUTION: Use GM approved replacement fasteners with conductive finish for electrical ground repair.

5. Select a replacement conductive M6 rivet stud. Refer to GM parts catalog for the correct part number and application.
6. Using a rivet stud installer, install the replacement conductive M6 rivet stud.
7. Ensure the new rivet stud is securely fastened, with no detectable movement.

NOTE: The rivet stud and surrounding panel area must be properly refinished prior to the installation of the ground terminal and nut to maintain positive

electrical grounding.

8. Completely wrap the threads of the rivet stud with painters tape or equivalent.
9. Refinish the repair area using an anti-corrosion primer. Refer to.
10. Allow the refinished repair area to cure sufficiently before removing the protective material applied to the rivet stud threads.
11. Remove the painters tape or equivalent from the rivet stud threads.
12. Using GM approved residue-free solvent or equivalent, thoroughly clean the rivet stud threads to remove any adhesive and allow to dry.
13. Carefully remove any corrosion from the electrical ground wire terminal. Refer to **Testing for Intermittent Conditions and Poor Connections**.
14. Using a small brush, apply Dielectric Lubricant GM P/N 12377900 (Canadian P/N 10953529) to the new conductive M6 rivet stud threads.
15. Install the ground terminal to the new rivet stud.
16. Select a new, conductive M6 nut. Refer to GM parts catalog for the correct part number and application.

CAUTION: Refer to.

17. Install the M6 nut and tighten to 8 N.m (71 lb in).
18. Check for proper system operation.

M6 Weld Nut**CAUTION: Use GM approved replacement fasteners with conductive finish for electrical ground repair.**

1. If the M6 weld nut at the electrical ground location is damaged or stripped, a new, conductive self-threading M7 bolt may be used to secure the ground terminal. Refer to GM parts catalog for the correct part number and application.
2. Using GM approved residue-free solvent or equivalent, remove any grease from the surface surrounding the weld nut and allow to dry.
3. Remove any loose metal particles from the damaged or stripped weld nut with a stiff brush.
4. Using a small brush, apply Dielectric Lubricant GM P/N 12377900 (Canadian P/N 10953529) to the new, conductive, self-threading M7 bolt threads.
5. Carefully remove any corrosion from the electrical ground terminal. Refer to **Testing for Intermittent Conditions and Poor Connections**.
6. Install the electrical ground terminal to the new, conductive M7 bolt.

CAUTION: Refer to.

7. Install the M7 bolt and tighten to 9 N.m (80 lb in).
8. Check for proper system operation.

M6 Weld Nut (Alternative Repair)

CAUTION: Use GM approved replacement fasteners with conductive finish for electrical ground repair.

1. If the electrical ground location is accessible from both sides of the panel, a conductive M6 bolt and a conductive M6 nut may be used to secure the electrical ground terminal. Refer to GM parts catalog for the correct part number and application.
2. Select a location adjacent the damaged M6 weld nut having 20 mm (0.79) clearance behind the panel surface and 20 mm (0.79) clearance surrounding the new electrical ground site.
3. Using GM approved residue-free solvent or equivalent, remove any grease from the surface surrounding the ground location and allow to dry.

NOTE: Ensure 20 mm (0.79 in) clearance is maintained behind the panel to be drilled.

4. Drill a 10 mm (0.40 in) diameter hole through the panel.
5. Carefully remove paint and primer from the area surrounding the new ground site until bare metal is visible.
6. Using a small brush, apply Dielectric Lubricant GM P/N 12377900 (Canadian P/N 10953529) to the new, conductive M6 bolt threads.
7. Carefully remove any corrosion from the electrical ground terminal. Refer to **Testing for Intermittent Conditions and Poor Connections**.
8. Install the electrical ground terminal and new, conductive M6 bolt to the ground location.

CAUTION: Refer to.

9. Install the conductive M6 nut and tighten to 8 N.m (71 lb in).

NOTE: The repair area must be properly refinished to maintain positive electrical grounding.

10. Refinish the repair area using an anti-corrosion primer. Refer to.
11. Check for proper system operation.

M8 Weld Nut

CAUTION: Use GM approved replacement fasteners with conductive finish for electrical ground repair.

1. If the M8 weld nut electrical ground location is accessible from both sides of the panel, a conductive M8 bolt and a conductive M8 nut may be used to secure the ground terminal. Refer to GM parts catalog for the correct part numbers and application.
2. Select a location adjacent to M8 weld nut having 20 mm (0.79 in) clearance behind the panel surface and 20 mm (0.79 in) clearance surrounding the new electrical ground site.
3. Using GM approved residue-free solvent or equivalent, remove any grease from the surface surrounding the ground location and allow to dry.

NOTE: **Ensure 20 mm (0.79 in) clearance is maintained behind the panel to be drilled.**

4. Drill a 10 mm (0.40 in) diameter hole through the panel.
5. Carefully remove paint and primer from the area surrounding the new ground site until bare metal is visible.
6. Using a small brush, apply Dielectric Lubricant GM P/N 12377900 (Canadian P/N 10953529) to the new, conductive M8 bolt threads.
7. Carefully remove any corrosion from the electrical ground terminal. Refer to **Testing for Intermittent Conditions and Poor Connections**.
8. Install the electrical ground terminal and new, conductive M8 bolt to the ground location.

CAUTION: Refer to.

9. Install the conductive M8 nut and tighten to 22 N.m (16 lb ft).

NOTE: **The repair area must be properly refinished to maintain positive electrical grounding.**

10. Refinish the repair area using an anti-corrosion primer. Refer to.
11. Check for proper system operation.

M8 Weld Nut (Alternative Repair)

CAUTION: Use GM approved replacement fasteners with conductive finish for electrical ground repair.

1. If the M8 weld nut electrical ground location is not accessible from both sides of the panel, a conductive M6 rivet stud and a conductive M6 nut may be used to secure the ground terminal. Refer to GM parts catalog for the correct part numbers and application.
2. Select a location adjacent the damaged M8 weld nut having 20 mm (0.79 in) clearance behind the panel surface and 20 mm (0.79 in) clearance surrounding the new, conductive M6 rivet stud flange.

3. Using GM approved residue-free solvent or equivalent, remove any grease from the repair site and allow to dry.

NOTE: **Ensure 20 mm (0.79 in) clearance is maintained behind the panel to be drilled.**

4. Drill a 10 mm (0.40 in) diameter hole through the panel.
5. Carefully remove paint and primer from the area surrounding the rivet stud flange until bare metal is visible.
6. Using a rivet stud installer, install the replacement conductive M6 rivet stud.
7. Ensure the new rivet stud is securely fastened, with no detectable movement.

NOTE: **The rivet stud and surrounding panel area must be properly refinished prior to the installation of the ground terminal and nut to maintain positive electrical grounding.**

8. Completely wrap the threads of the rivet stud with painters tape or equivalent.
9. Refinish the repair area using an anti-corrosion primer. Refer to.
10. Allow the refinished repair area to cure sufficiently before removing the protective material applied to the rivet stud threads.
11. Remove the painters tape or equivalent from the rivet stud threads.
12. Using GM approved residue-free solvent or equivalent, thoroughly clean the rivet stud threads to remove any adhesive and allow to dry.
13. Carefully remove any corrosion from the electrical ground wire terminal. Refer to **Testing for Intermittent Conditions and Poor Connections**.
14. Using a small brush, apply Dielectric Lubricant GM P/N 12377900 (Canadian P/N 10953529) to the new conductive M6 rivet stud threads.
15. Install the ground terminal to the new, conductive M6 rivet stud.

CAUTION: Refer to.

16. Install the conductive M6 nut and tighten to 8 N.m (71 lb in).
17. Check for proper system operation.

UNDERHOOD ELECTRICAL CENTER OR JUNCTION BLOCK REPLACEMENT

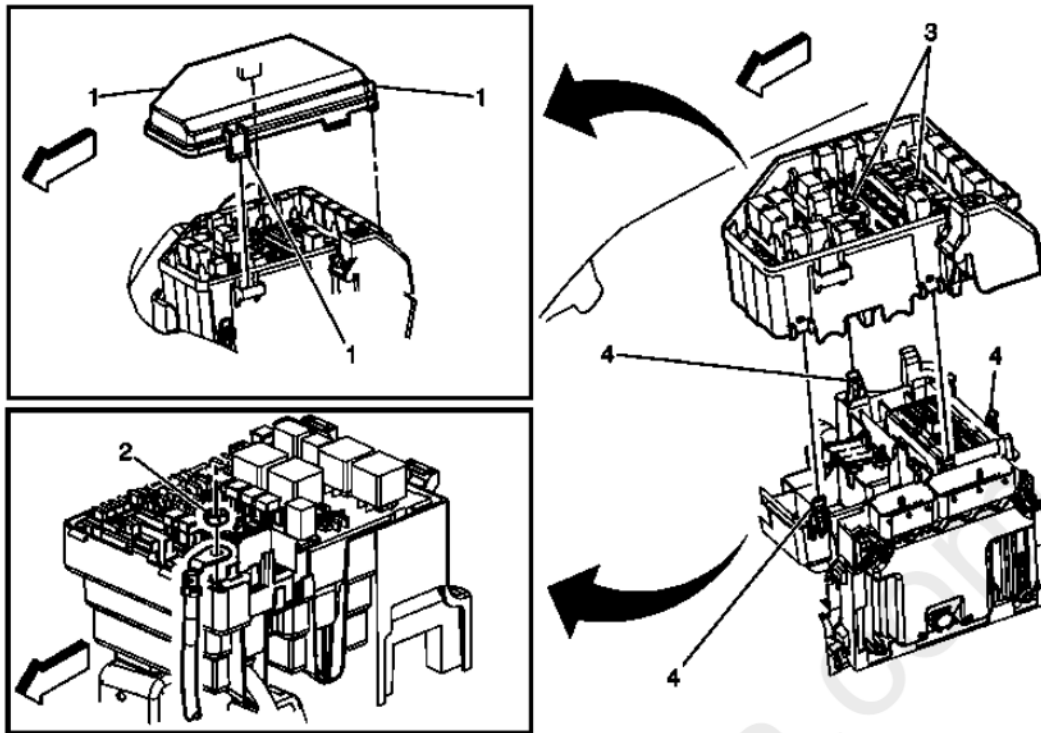


Fig. 5: Identifying Underhood Electrical Center or Junction Block
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedures	
1. Disconnect the battery. Refer to <u>Battery Negative Cable Disconnection and Connection (Sedan,Wagon)</u> or <u>Battery Negative Cable Disconnection and Connection (Coupe)</u> . 2. Remove the front compartment sight shield right side. Refer to <u>Front Compartment Side Sight Shield Replacement</u>	
1	Underhood Electrical Center/Junction Block Cover Tab (Qty: 3) Procedure 1. Push in on the 2 locking tabs located on the rear of the cover and lift in order to remove the cover. 2. Align the tabs on the cover with the corresponding locks on the electrical center.
2	Underhood Electrical Center/Junction Block Power Nut CAUTION: Refer to. Procedure:

	Disconnect the battery positive cable from the junction block by removing the nut. Tighten: 7 N.m (62 lb in)
3	Positive Cable to Junction Block Bolt (Qty: 2) Tip: The bolts are part of the junction block. Do not try to remove. Tighten: 10 N.m (89 lb in)
4	Underhood Electrical Center/Junction Block Tab (Qty: 4) Procedure: Remove the electrical center/junction block by using a hook-like tool to disengage the tabs.

BODY WIRING HARNESS JUNCTION BLOCK REPLACEMENT

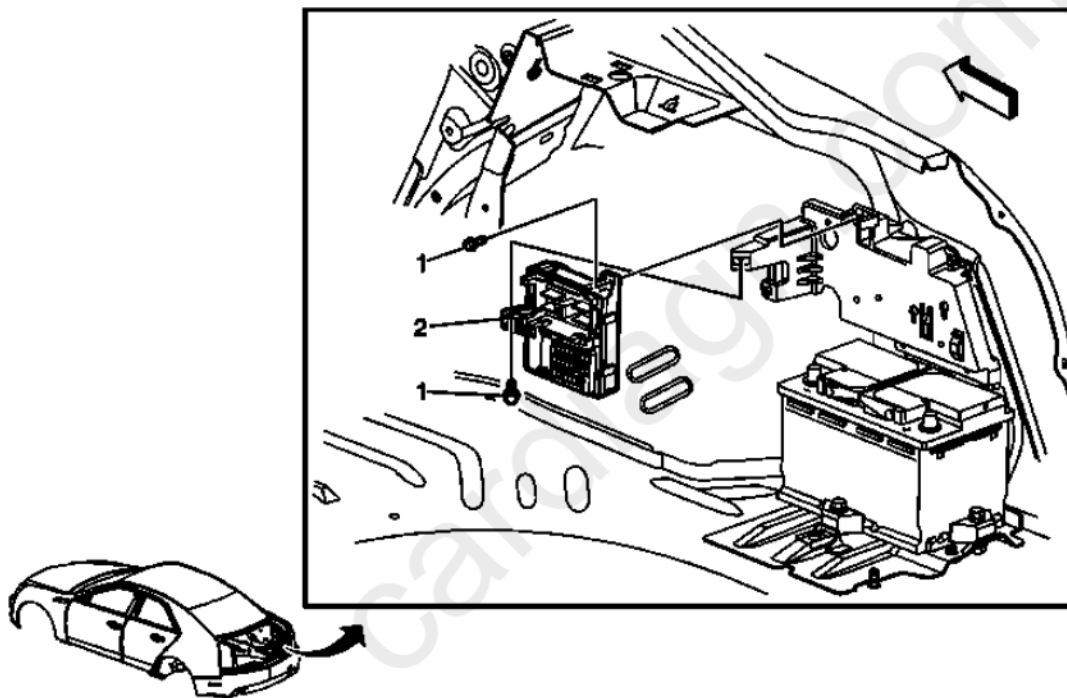


Fig. 6: Body Wiring Harness Junction Block
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedures	
1.	Disconnect the battery. Refer to <u>Battery Negative Cable Disconnection and Connection (Sedan,Wagon)</u> or <u>Battery Negative Cable Disconnection and Connection (Coupe)</u> .
2.	For the sedan, remove the rear compartment side trim panel. Refer to <u>Rear Compartment Side Trim Panel Replacement (Sedan)</u> or <u>Rear Compartment Side Trim Panel Replacement (Coupe)</u> .

3. For the wagon, remove the body side lower trim panel. Refer to **Body Side Lower Trim Panel Replacement (Wagon)** .

1	Body Wiring Harness Junction Block Bolt (Qty: 2) CAUTION: Refer to.
2	Body Wiring Harness Junction Block Procedure: Disconnect the electrical connections.

IGNITION LOCK CYLINDER REPLACEMENT

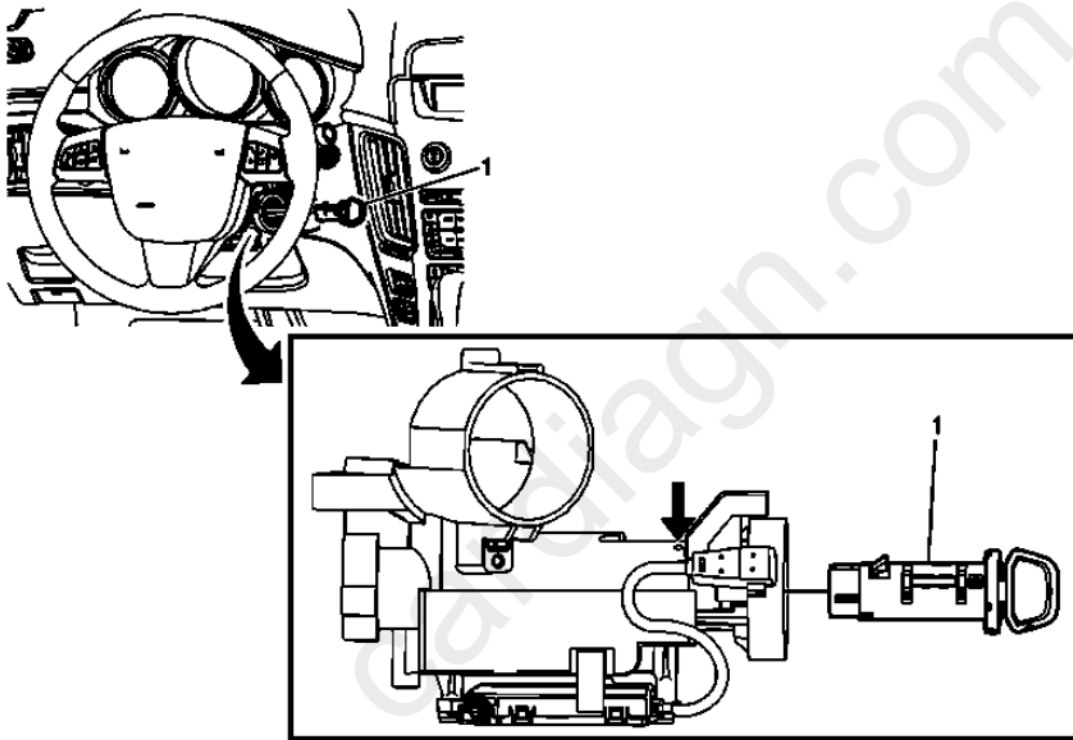


Fig. 7: Ignition Lock Cylinder

Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedures	
1.	Disconnect the battery negative cable. Refer to <u>Battery Negative Cable Disconnection and Connection (Sedan,Wagon)</u> or <u>Battery Negative Cable Disconnection and Connection (Coupe)</u> .
2.	Remove the steering column shrouds. Refer to <u>Steering Column Shroud Replacement (With Key Release Lever Knob)</u> or <u>Steering Column Shroud Replacement (Without Key Release Lever Knob)</u> .

Ignition Lock Cylinder

Procedure

1

1. Turn the ignition lock cylinder to the RUN position.
2. Push a pick-type tool into the access hole on the ignition and start switch housing and press the ignition lock cylinder lock tab down.
3. Pull the ignition lock cylinder out of the ignition and start switch housing.
4. If you are installing a new lock cylinder, code the lock cylinder. Refer to **Key and Lock Cylinder Coding**.

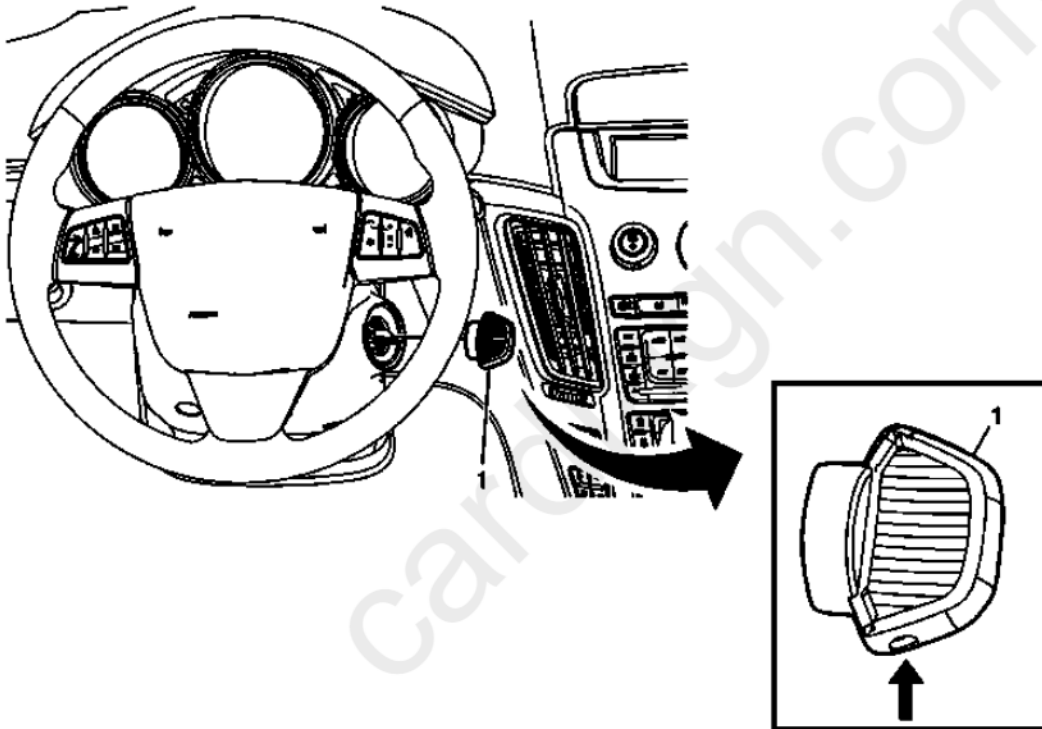
STEERING COLUMN KEY RELEASE LEVER KNOB REPLACEMENT

Fig. 8: Steering Column Key Release Lever Knob
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Steering Column Key Release Lever Knob Procedure: In order to release the knob, push a pick type tool into the access hole on the bottom of the knob while pulling on the knob. Tip: The knob attaches to a cylinder that fits in the same space as an ignition lock cylinder. Refer to <u>Ignition Lock Cylinder Replacement</u> .

IGNITION AND START SWITCH REPLACEMENT

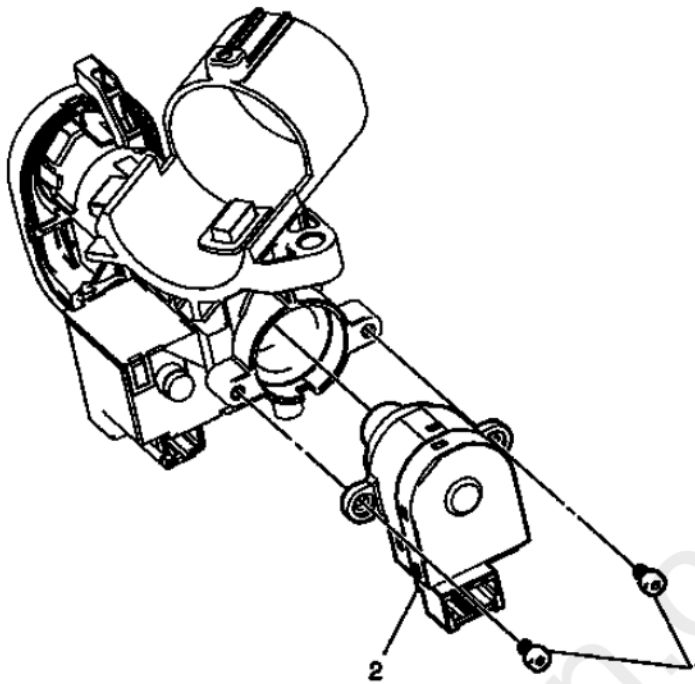


Fig. 9: Locating Ignition & Start Switch
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Remove the ignition and start switch housing. Refer to <u>Ignition and Start Switch Housing Replacement</u> .	
1	Ignition and Start Switch Bolt (Qty: 2) CAUTION: Refer to. Tighten: 2 N.m (18 lb in)
2	Ignition and Start Switch

IGNITION AND START SWITCH HOUSING REPLACEMENT

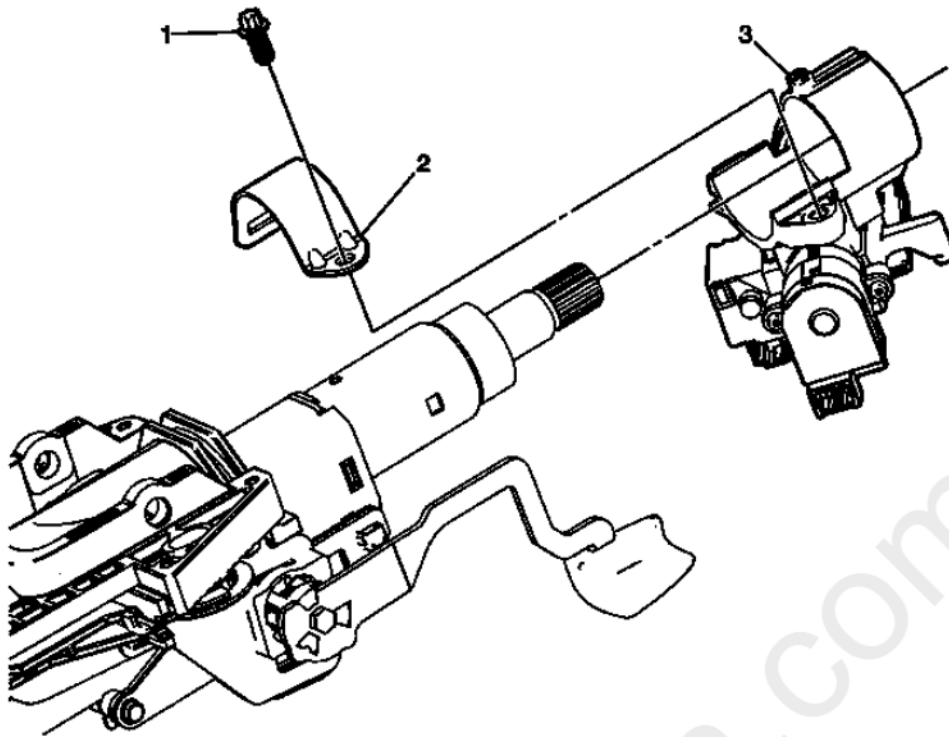


Fig. 10: Identifying Ignition & Start Switch Housing
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Remove the turn signal switch bracket. Refer to Turn Signal Switch Bracket Replacement .	
1	Ignition and Start Switch Housing Bolt CAUTION: Refer to. Tighten: 8 N.m (71 lb in)
2	Ignition and Start Switch Housing Strap
3	Ignition and Start Switch Housing Procedure 1. Disconnect any electrical connectors as needed. 2. Transfer any parts as needed.