

2010 ELECTRICAL

Wiring Systems and Power Management - Equinox & Terrain

REPAIR INSTRUCTIONS

RELAY REPLACEMENT (ATTACHED TO WIRE HARNESS)

Removal Procedure

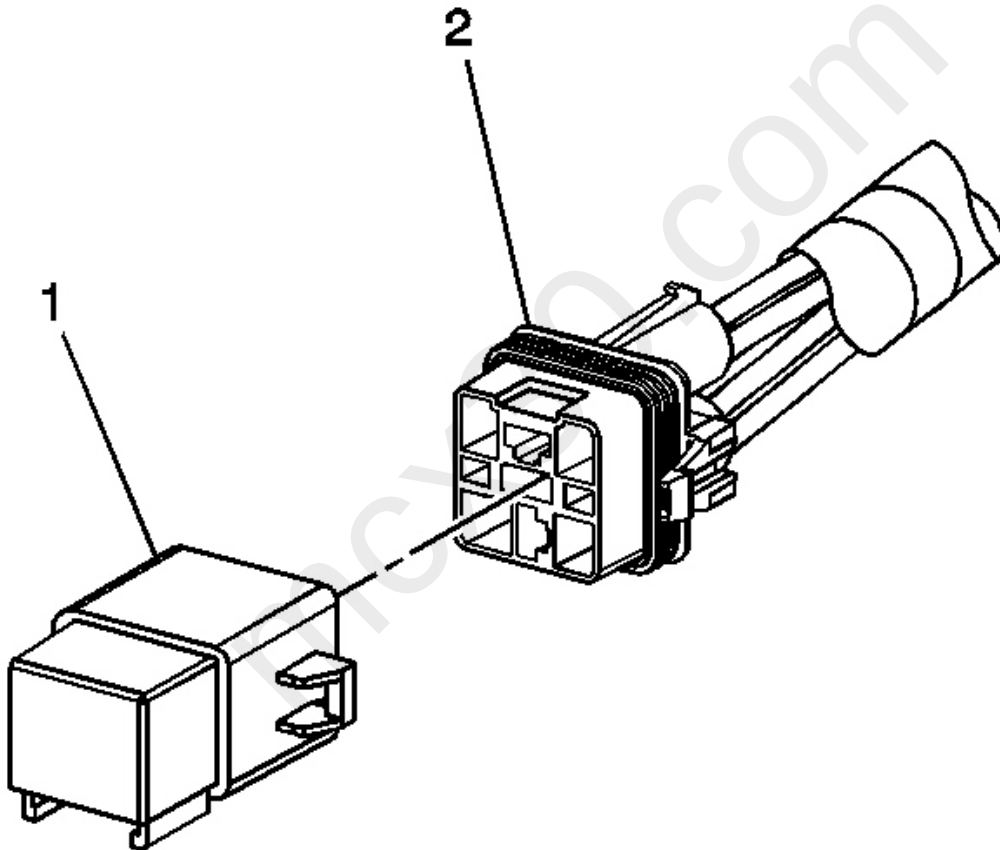


Fig. 1: Identifying Relay & Wire Harness Connector
Courtesy of GENERAL MOTORS CORP.

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

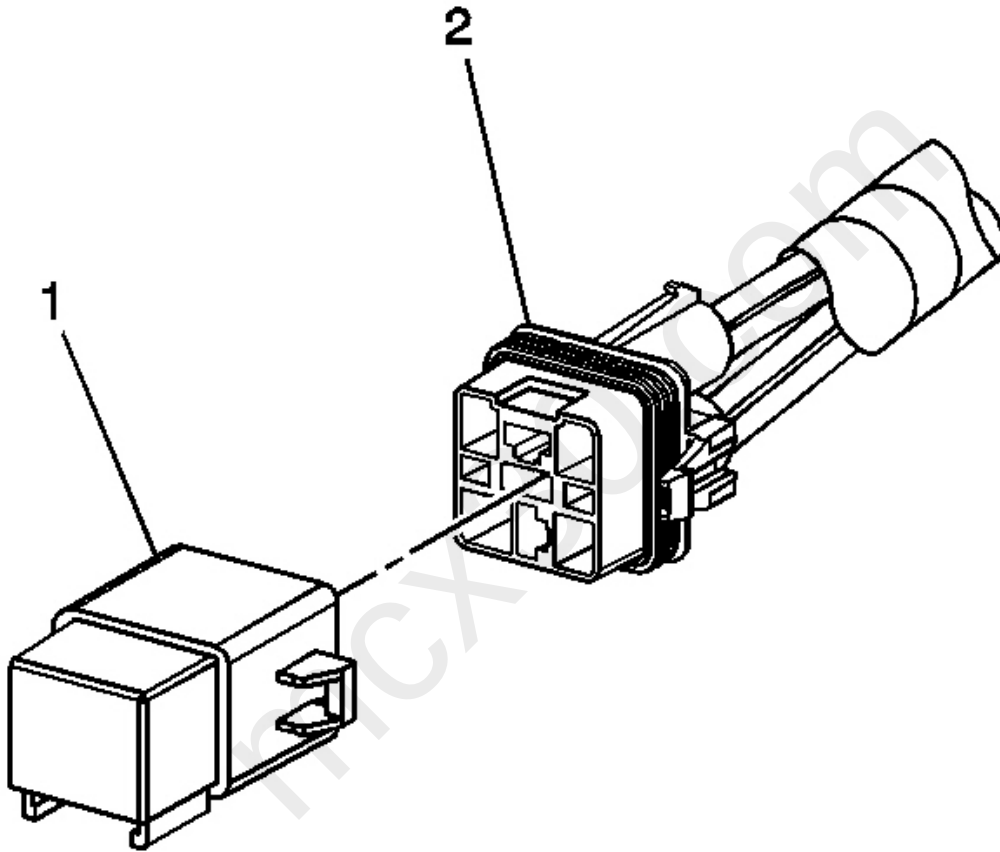


Fig. 2: Identifying Relay & Wire Harness Connector
Courtesy of GENERAL MOTORS CORP.

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.

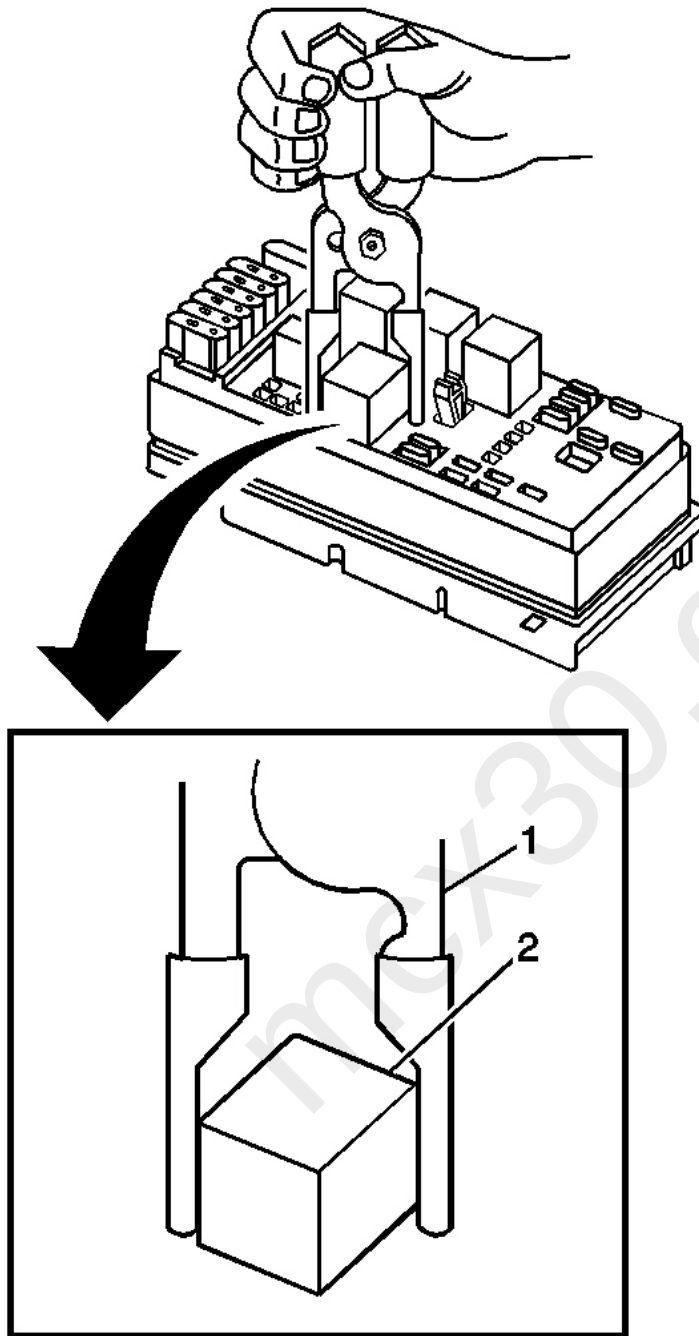


Fig. 3: Removing/Installing Relay Using J 43244
Courtesy of GENERAL MOTORS CORP.

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

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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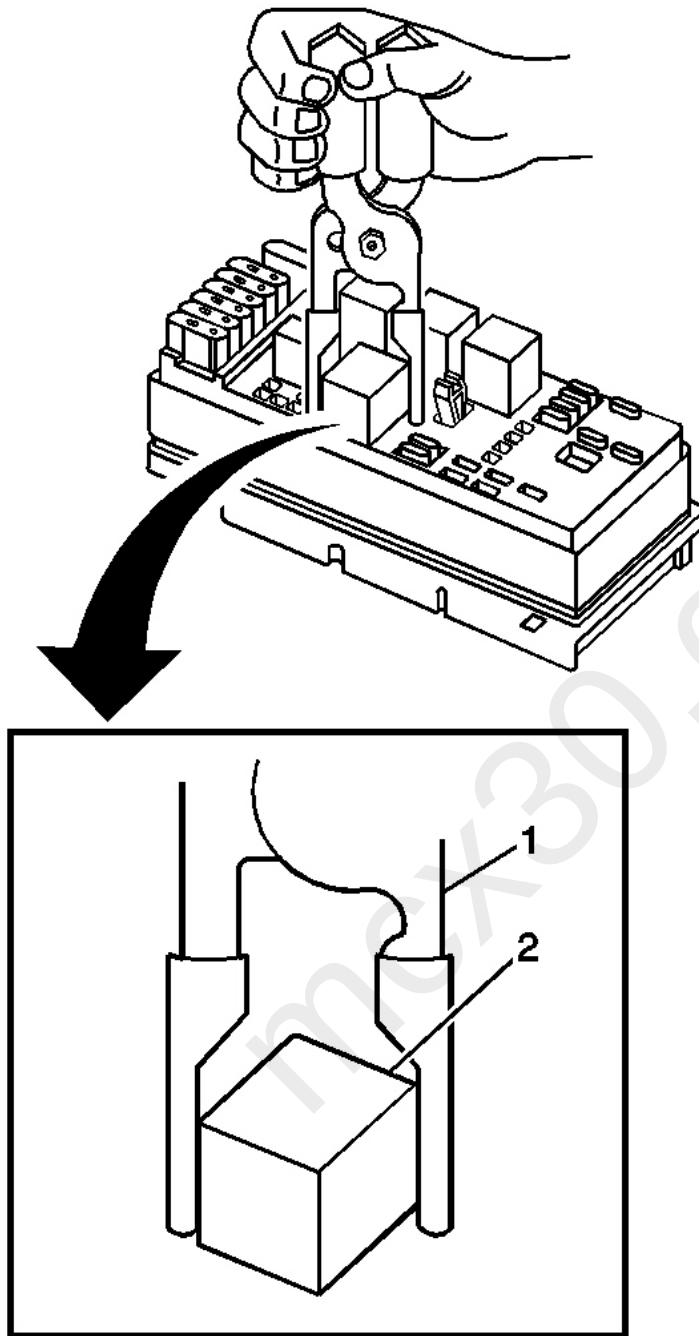


Fig. 4: Removing/Installing Relay Using J 43244
Courtesy of GENERAL MOTORS CORP.

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 **Anti-Corrosion Treatment and Repair**.
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 Fastener Caution.

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 Fastener Caution.

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 Fastener Caution .

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 **Anti-Corrosion Treatment and Repair** .
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 Fastener Caution.

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 **Anti-Corrosion Treatment and Repair**.
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 **Anti-Corrosion Treatment and Repair**.
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 Fastener Caution.

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

INSTRUMENT PANEL WIRING HARNESS JUNCTION BLOCK REPLACEMENT

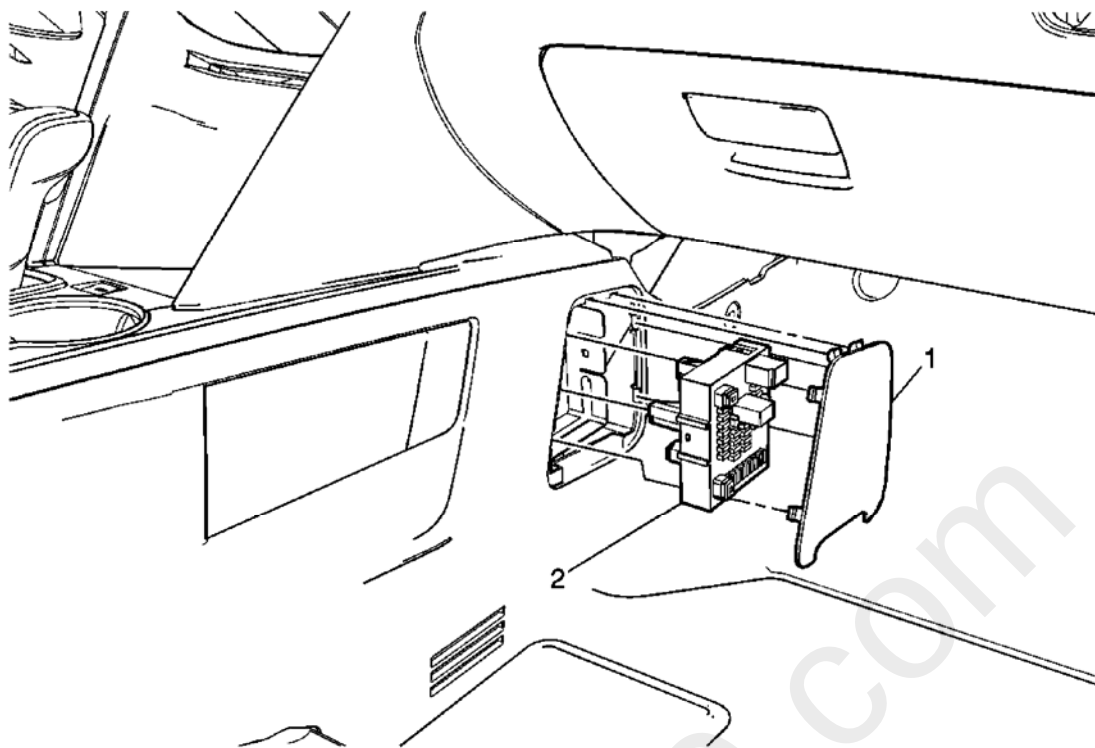


Fig. 5: Identifying Instrument Panel Wiring Harness Junction Block Components
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Disconnect the battery. Refer to <u>Battery Negative Cable Disconnection and Connection</u> .	
1	Front Floor Lower Console Side Finish Cover
2	Instrument Panel Wiring Harness Junction Block Procedure 1. Extract terminals from block housing. 2. For replacement of terminals, Refer to <u>Electrical Center Identification Views</u> .

ACCESSORY WIRING JUNCTION BLOCK REPLACEMENT

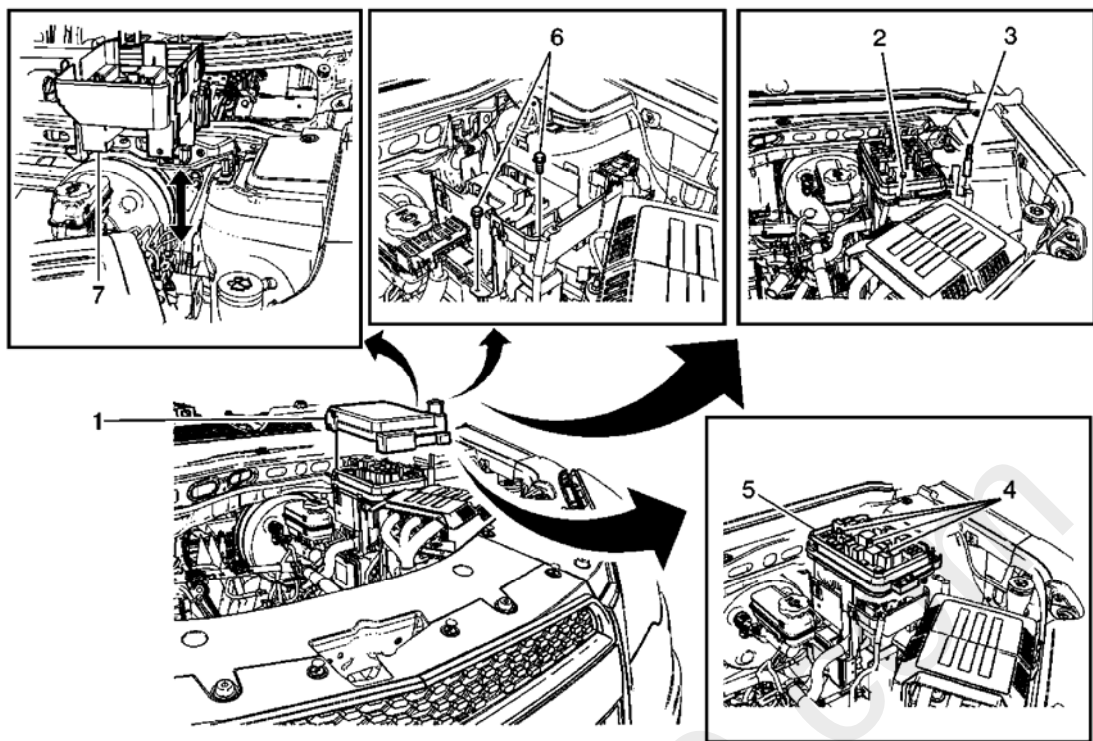


Fig. 6: Identifying Accessory Wiring Junction Block Components
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedures: Disconnect the battery. Refer to <u>Battery Negative Cable Disconnection and Connection</u> .	
1	Accessory Wiring Junction Block Cover Procedure: Remove the accessory wiring junction block cover by pushing in on the 2 retainer tabs located on the sides of the cover and lift. To reinstall, fit together the retainer tabs located on the ends of the cover and push down on the cover until the tabs on the ends of the cover lock into place.
2	Accessory Wiring Junction Block Battery Cable Nut CAUTION: Refer to <u>Fastener Caution</u> . Tighten: 7 N.m (62 lb in)
3	Accessory Wiring Junction Block Battery Cable Nut Tighten: 7 N.m (62 lb in)
4	Accessory Wiring Junction Block Harness Connector Bolt (Qty: 4)

	Tighten: 10 N.m (89 lb in)
5	Accessory Wiring Junction Block Procedure 1. Reposition the accessory wiring harness from the accessory wiring junction block retainer. 2. Remove the accessory wiring junction block by pushing in on the 4 retainer tabs located on the sides of the block and lift. To reinstall, fit together the retainer tabs located on the ends of the cover and push down on the cover until the tabs on the ends of the cover lock into place.
6	Accessory Wiring Junction Block Retainer Base Bolt Procedure 1. Disconnect the battery cable retainer. 2. Position the junction block retainer base alignment tab to the bracket first, then install the bolt. Tighten: 10 N.m (89 lb in)
7	Accessory Wiring Junction Block Retainer Base

IGNITION LOCK CYLINDER REPLACEMENT

Removal Procedure

1. Disconnect the battery negative cable. Refer to **Battery Negative Cable Disconnection and Connection** .
2. Remove the steering column shroud. Refer to **Steering Column Shroud Replacement** .
3. Insert the key into the ignition lock cylinder and turn the key to the RUN position.

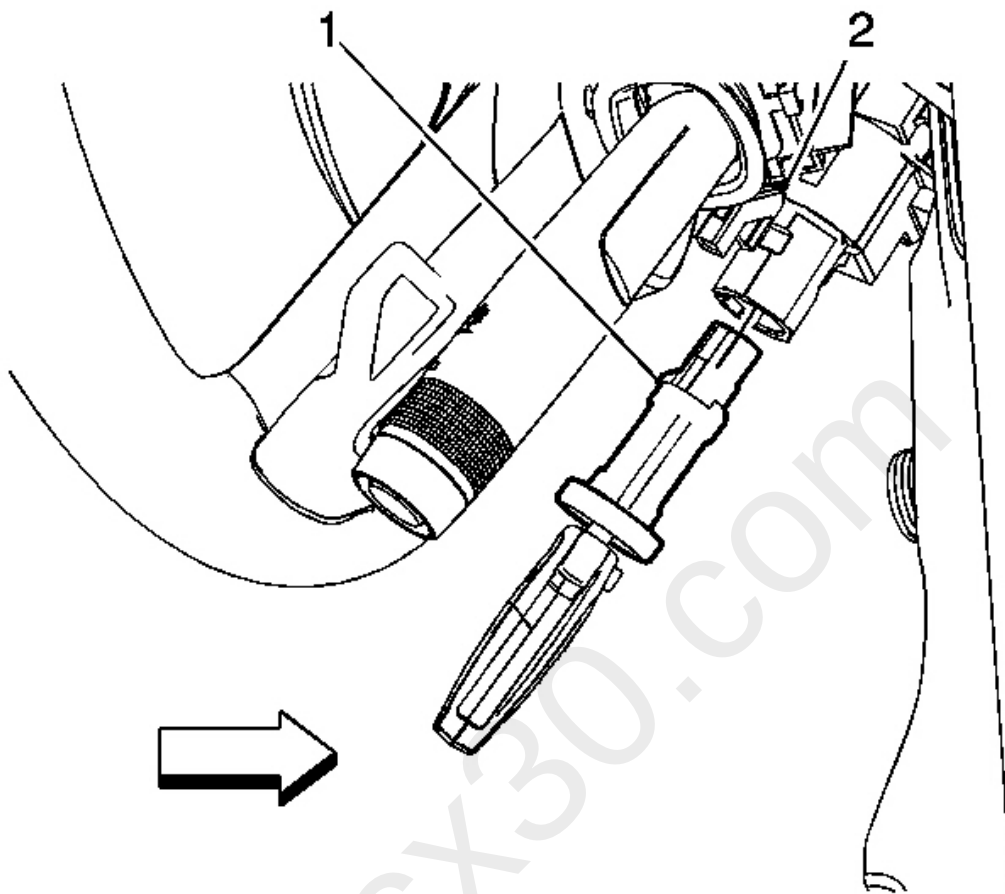


Fig. 7: View Of Ignition Lock Cylinder
Courtesy of GENERAL MOTORS CORP.

4. Depress the retainer through the lock housing access hole (2) with a small Allen wrench or similar pick-type tool.
5. Remove the ignition lock cylinder (1) from the ignition and start switch housing.

Installation Procedure

1. If you are installing a new ignition lock cylinder, code the lock cylinder. Refer to **Lock Cylinder Coding - Ignition** .

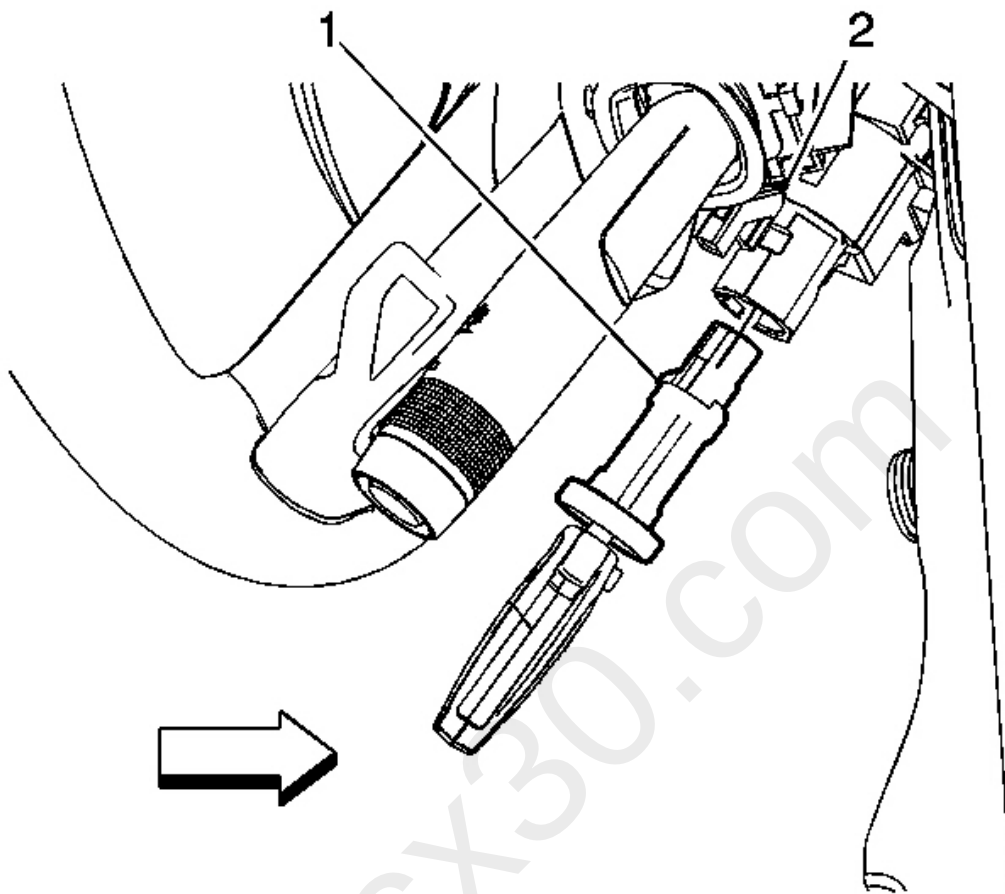


Fig. 8: View Of Ignition Lock Cylinder
Courtesy of GENERAL MOTORS CORP.

2. Turn the key to the RUN position and insert ignition lock cylinder (1) into the ignition and start switch housing.
3. Turn the key to the LOCK position and remove the key from the ignition lock cylinder.
4. Install the steering column shroud. Refer to **Steering Column Shroud Replacement** .
5. Connect the battery negative cable. Refer to **Battery Negative Cable Disconnection and Connection** .

IGNITION AND START SWITCH REPLACEMENT

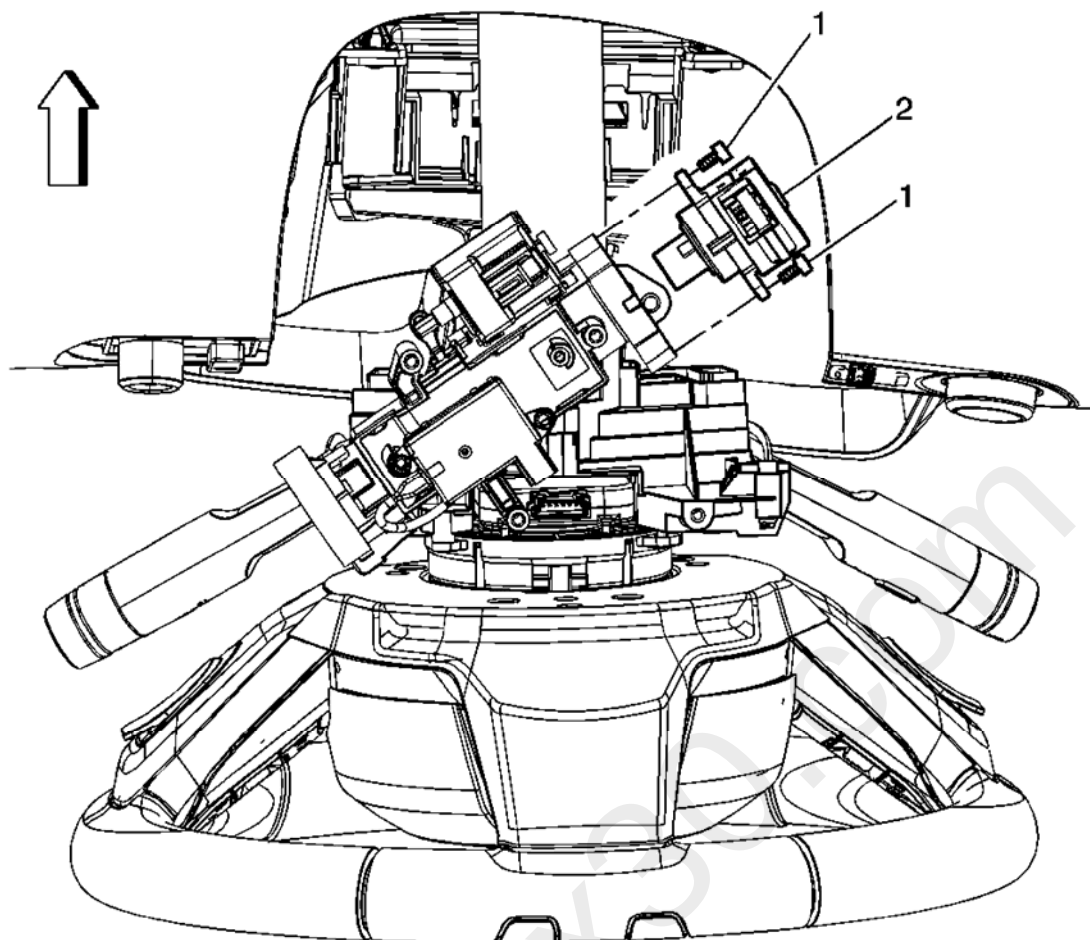


Fig. 9: Identifying Ignition & Start Switch Components
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure 1. Disconnect the battery negative cable. Refer to <u>Battery Negative Cable Disconnection and Connection</u> . 2. Disable the supplemental inflatable restraint (SIR) system. Refer to <u>SIR Disabling and Enabling</u> . 3. Remove the steering column shroud. Refer to <u>Steering Column Shroud Replacement</u> .	
1	Ignition and Start Switch Bolt (Qty: 2) CAUTION: Refer to <u>Fastener Caution</u> . Tighten: 2 N.m (18 lb in)
	Ignition and Start Switch

Procedure:

Disconnect the ignition switch electrical connector.

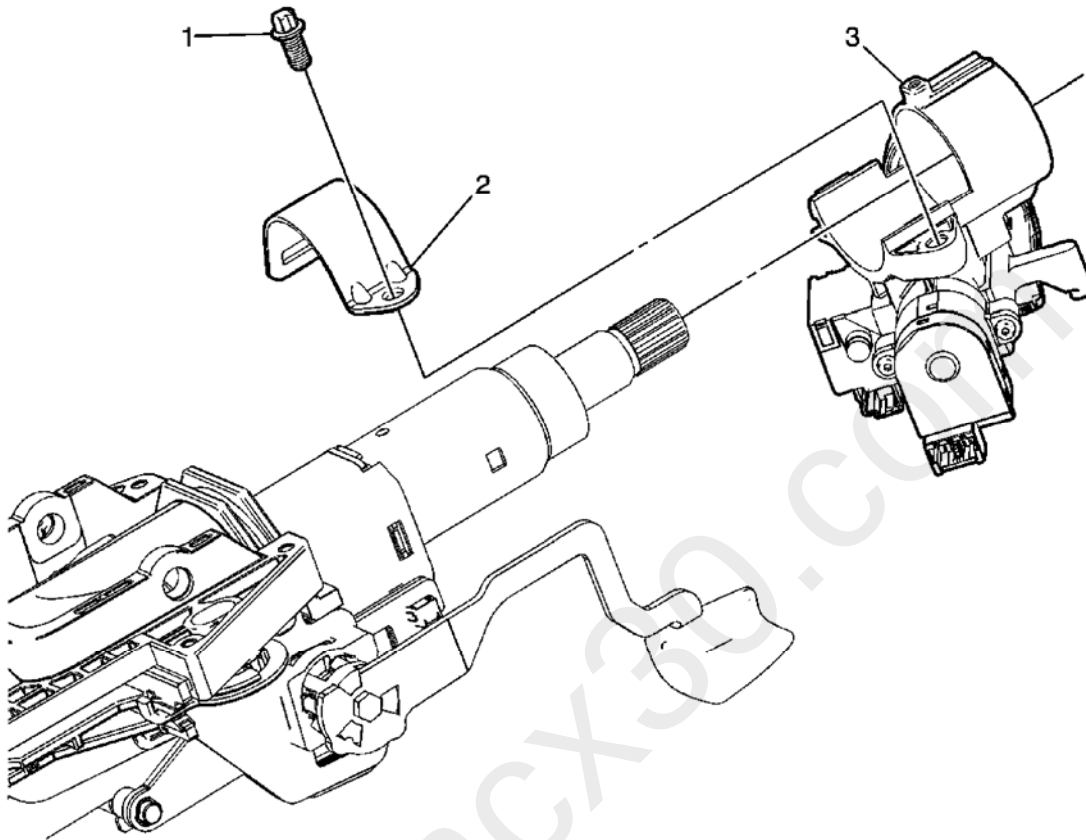
IGNITION AND START SWITCH HOUSING REPLACEMENT

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

Callout	Component Name
Preliminary Procedure: Remove the turn signal switch bracket. Refer to <u>Turn Signal Switch Bracket Replacement</u> .	
1	Ignition and Start Switch Housing Bolt (Qty: 2) CAUTION: Refer to <u>Fastener Caution</u> . Procedure 1. Use any of the following common tools in order to remove the ignition and start switch housing bolts:

	• An angle grinder and a screwdriver • A chisel • A screw extractor • A center punch 2. Discard the old ignition and start switch housing bolts. 3. Install 2 NEW ignition and start switch housing bolts and tighten until the bolt heads break off.
2	Ignition and Start Switch Housing Strap
3	Ignition and Start Switch Housing Procedure 1. Disconnect any electrical connectors as necessary. 2. Transfer any parts as necessary.