

2010 Transmission

Automatic Transmission - 6T70/6T75 - Equinox & Terrain

REPAIR INSTRUCTIONS - ON VEHICLE

MANUAL SHIFT DETENT LEVER WITH SHAFT POSITION SWITCH ASSEMBLY REPLACEMENT

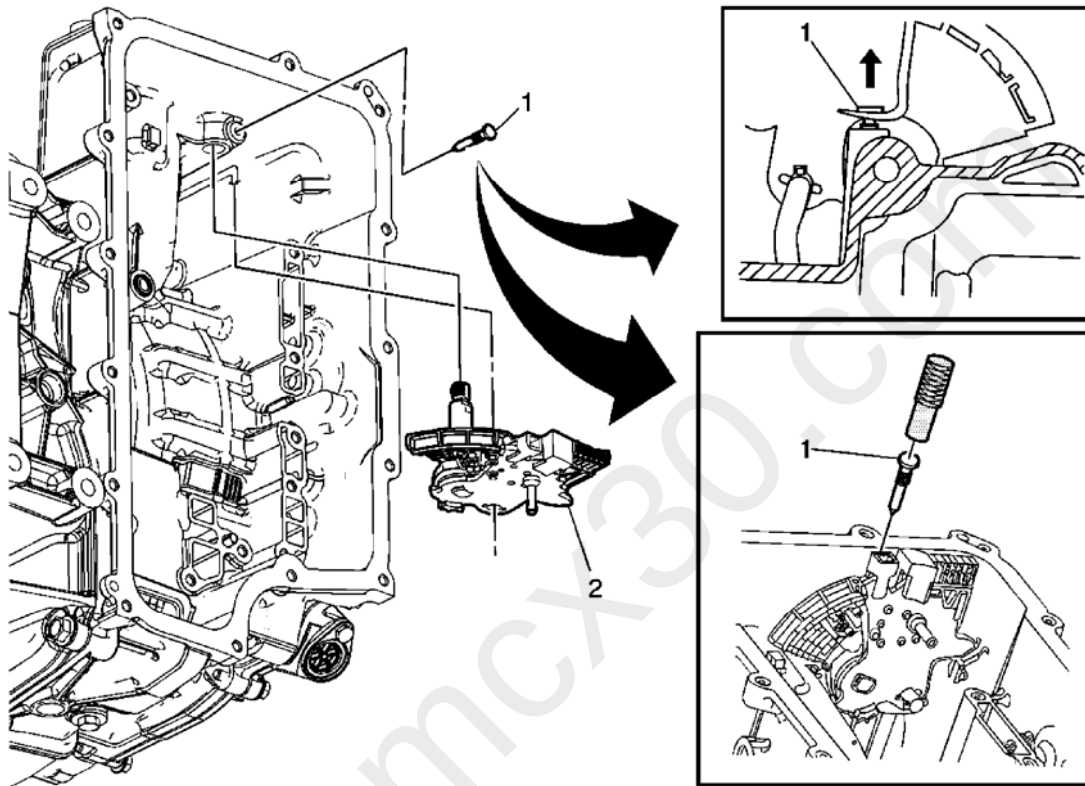


Fig. 1: Manual Shift Detent Lever With Shaft Position Switch Assembly
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedures	
1. Remove the transmission range selector lever. Refer to <u>Automatic Transmission Range Selector Lever Replacement</u> .	
2. Remove the lower control valve body. Refer to <u>Control Valve Lower Body and Upper Body Replacement</u> .	
	Manual Shaft Detent Lever Pin
	CAUTION:

1	Use J 41229 to install the manual shaft pin at the correct height in order to properly secure the manual shaft. If you install the pin too deep, the case bore may crack. Tip: • Use a small nail puller to remove the pin. Discard the pin. It is not reusable. • Use J 41229 Manual Shaft Pin Installer to install the pin. Inspect that the pin installed height is within 6.5 mm-7.5 mm (0.25 in-0.30 in). Special Tools: J 41229: Manual Shaft Pin Installer
2	Manual Shaft Detent Lever Assembly (w/Shift Position Switch) Procedure 1. Removal: partly lower the manual shaft detent lever assembly (w/shift position switch) in order to rotate the detent lever and disconnect the park actuator rod. Then fully remove the manual shaft detent lever assembly from the transmission case. 2. Installation: partly install the manual shaft detent lever assembly (w/shift position switch). Rotate the detent lever and connect the park actuator rod. Then fully install the manual shaft detent lever assembly in the transmission case. 3. Lubricate the manual shaft with automatic transmission fluid (ATF) to prevent damage to the manual shift shaft seal. Tip: Do not pull the park actuator rod end out beyond the machined oil passage surface in the case. A no park condition will exist if the park pawl actuator assembly is pulled out of the transmission too far and the actuator rod disengages from the park pawl. The transmission assembly will require disassembly to re-install the actuator rod over the park pawl.

TRANSMISSION CONTROL LEVER KNOB REPLACEMENT

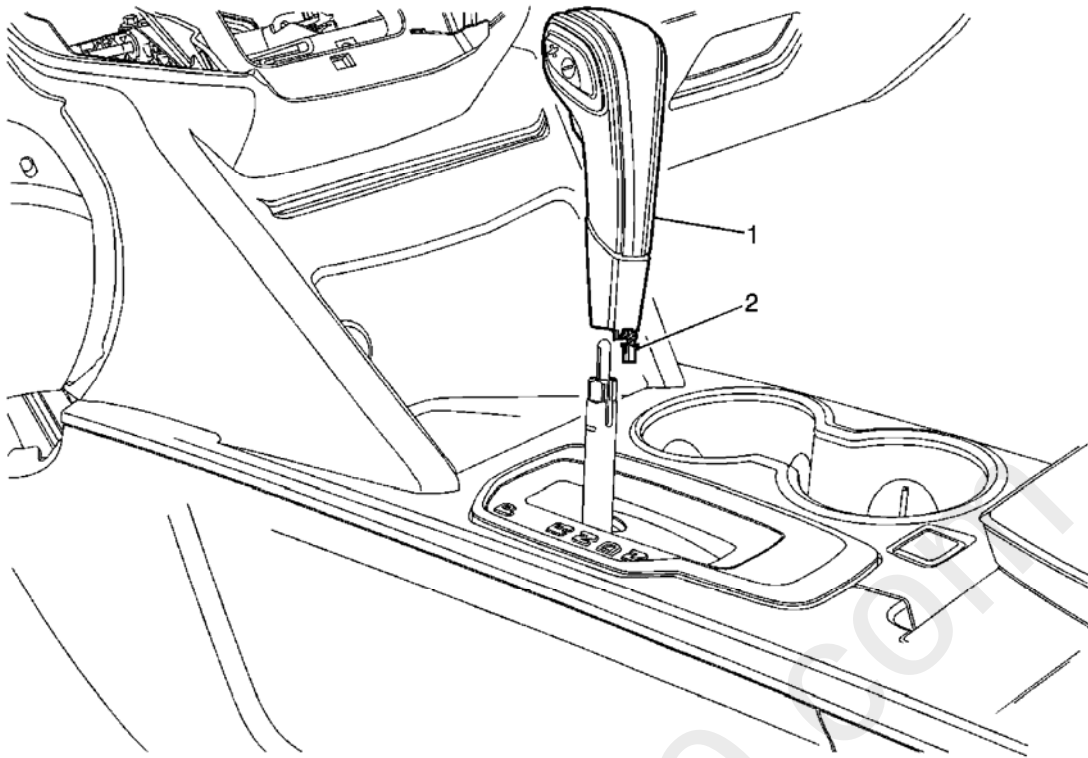


Fig. 2: Transmission Control Lever Knob
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
1	Shift Control Knob Tip: Pull knob up off shift lever. Considerable effort may be required to remove knob from shift control lever. Place shift lever in the Neutral position.
2	Shift Control Connector Tip: To install, use a small flat tool to push connector into receiving connector.

TRANSMISSION CONTROL REPLACEMENT

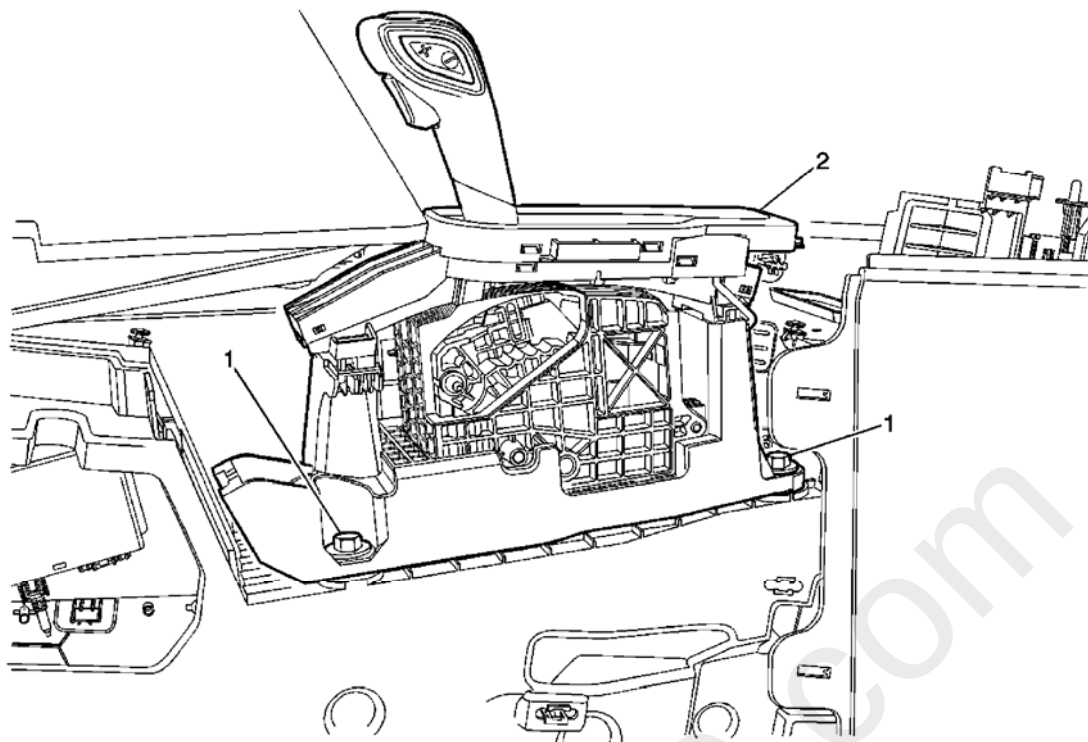


Fig. 3: Transmission Control
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedures 1. Remove the front floor console accessory trim plate. Refer to <u>Front Floor Console Accessory Trim Plate Replacement</u> . 2. Remove the left front lower console side finish cover. Refer to <u>Front Floor Lower Console Side Finish Cover Replacement - Left Side (Equinox)</u> or <u>Front Floor Lower Console Side Finish Cover Replacement - Left Side (Terrain)</u> . 3. Disconnect the range selector lever cable. Refer to <u>Range Selector Lever Cable Replacement</u> . 4. Disconnect the transmission control electrical connectors. 5. Remove the screws security upper control structures to lower console. Lift upon structure to allow shifter to clear.	
1	Transmission Control Fasteners (Qty: 3) CAUTION: Refer to <u>Fastener Caution</u> . Tighten: 25 N.m (18 lb ft).
2	Transmission Control

AUTOMATIC TRANSMISSION RANGE SELECTOR LEVER REPLACEMENT

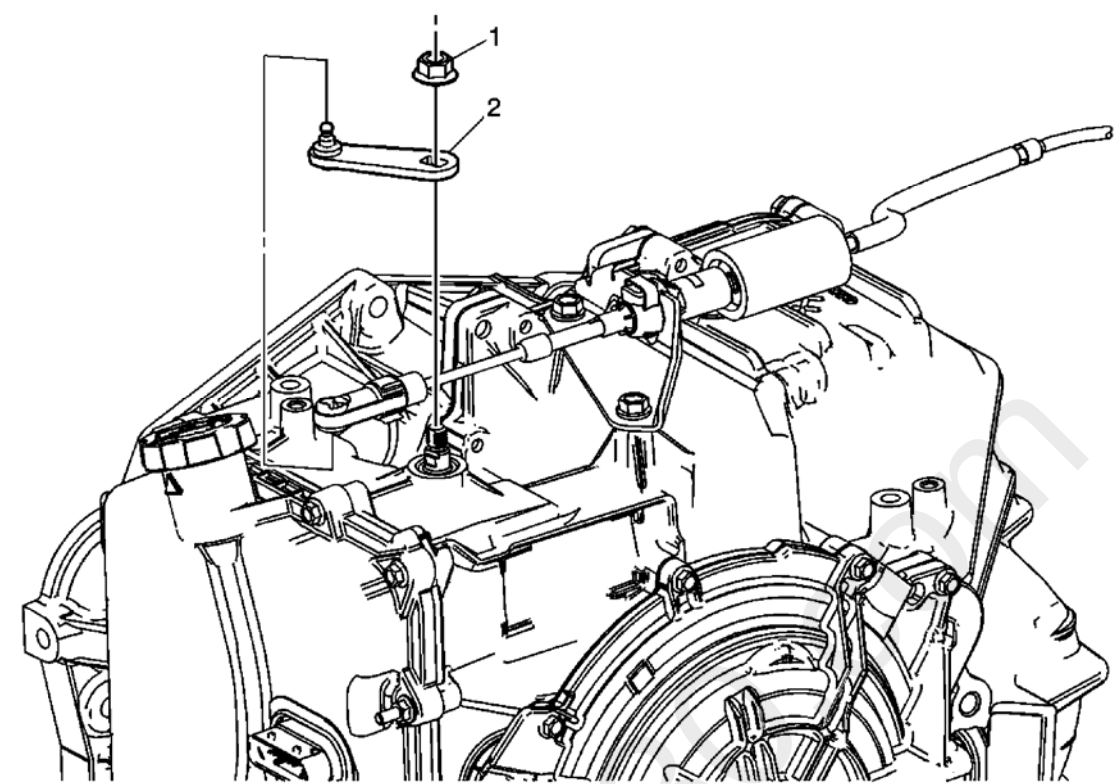


Fig. 4: Automatic Transmission Range Selector Lever
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedures	
1. Set the park brake and chock the wheels. 2. Disconnect the range selector cable from the range selector lever.	
1	Transmission Range Selector Lever Nut WARNING: Hold the transmission range selector lever while removing or installing the lever retaining nut. Failure to hold the lever can cause damage to the transmission internal park system components which could allow the vehicle to roll when placed in the park position. CAUTION: Refer to <u>Fastener Caution</u> . Tighten: 30 N.m (22 lb ft)

RANGE SELECTOR LEVER CABLE REPLACEMENT

Removal Procedure

1. Set the park brake and chock the wheels.

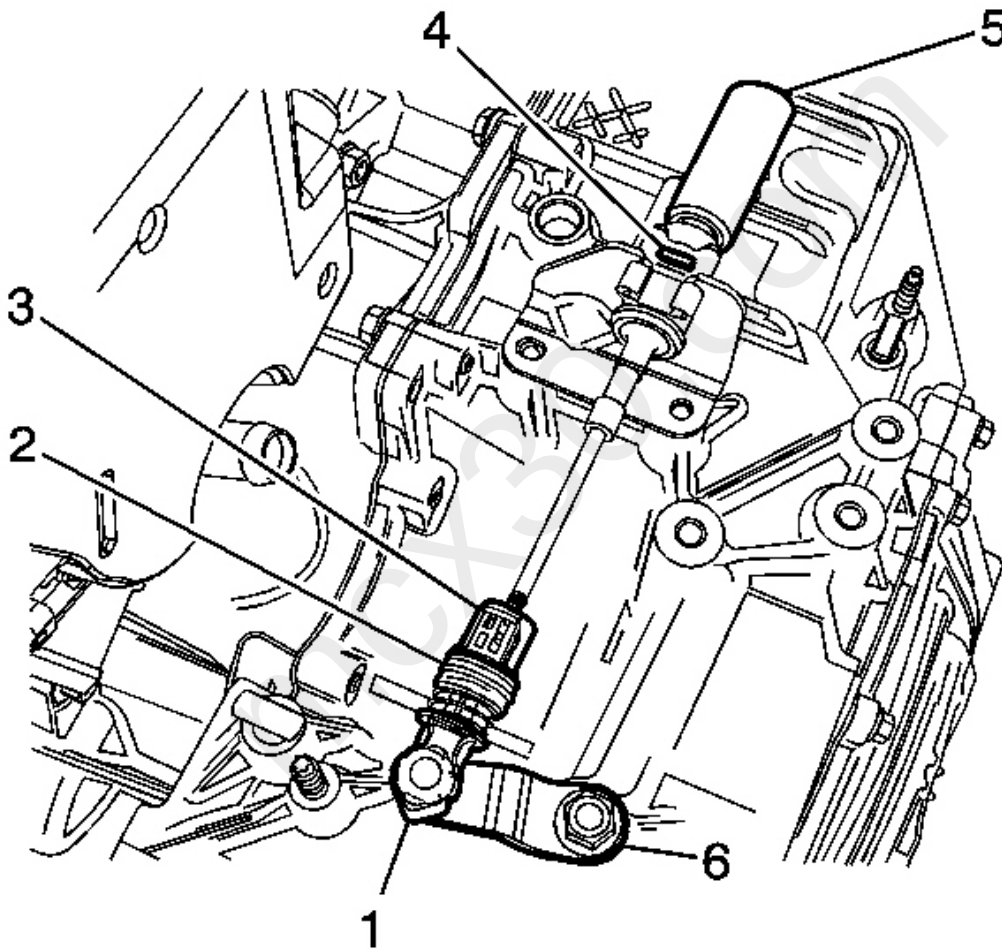


Fig. 5: Transmission Range Selector Lever Components
Courtesy of GENERAL MOTORS CORP.

2. Disconnect the transmission range selector lever cable terminal (1) from the transmission manual shift lever pin (6).

3. Slide the retainer (4) rearward to release the transmission range selector lever cable from the bracket.
4. Remove the left front floor lower console extension. Refer to **Front Floor Lower Console Side Finish Cover Replacement - Left Side (Equinox)** or **Front Floor Lower Console Side Finish Cover Replacement - Left Side (Terrain)** .

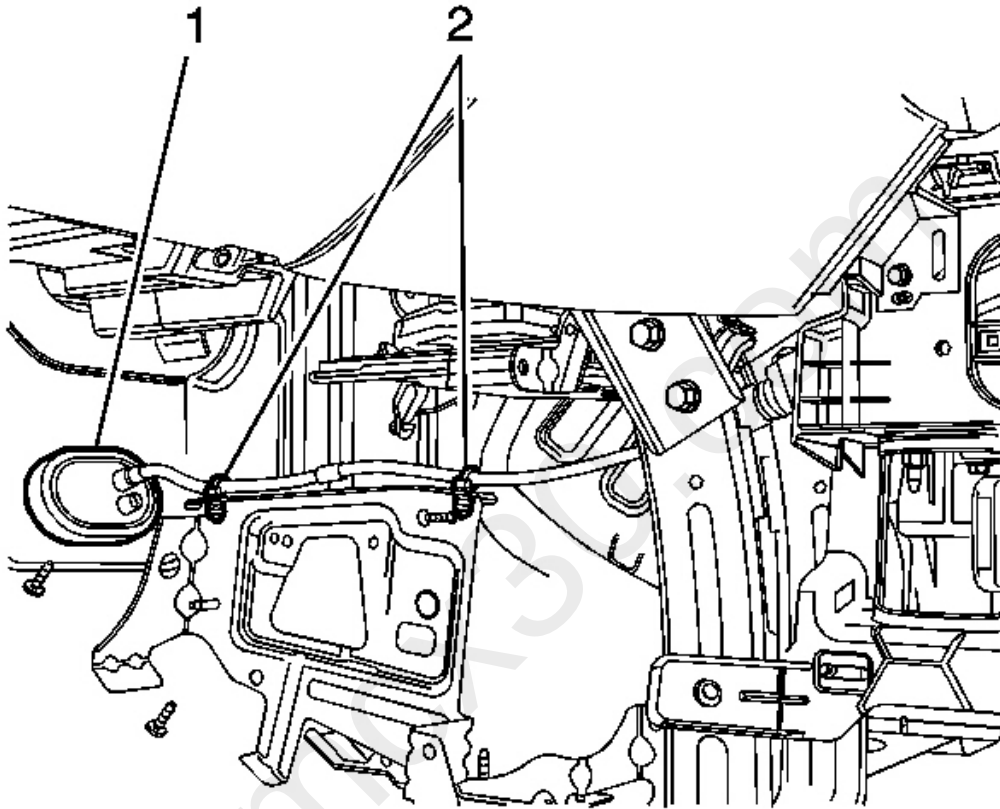


Fig. 6: Transmission Range Selector Lever Cable Retainers & Grommet
Courtesy of GENERAL MOTORS CORP.

5. Disconnect the transmission range selector lever cable retainers (2) from the support bracket.
6. Remove the grommet (1) and cable assembly from the floor panel.

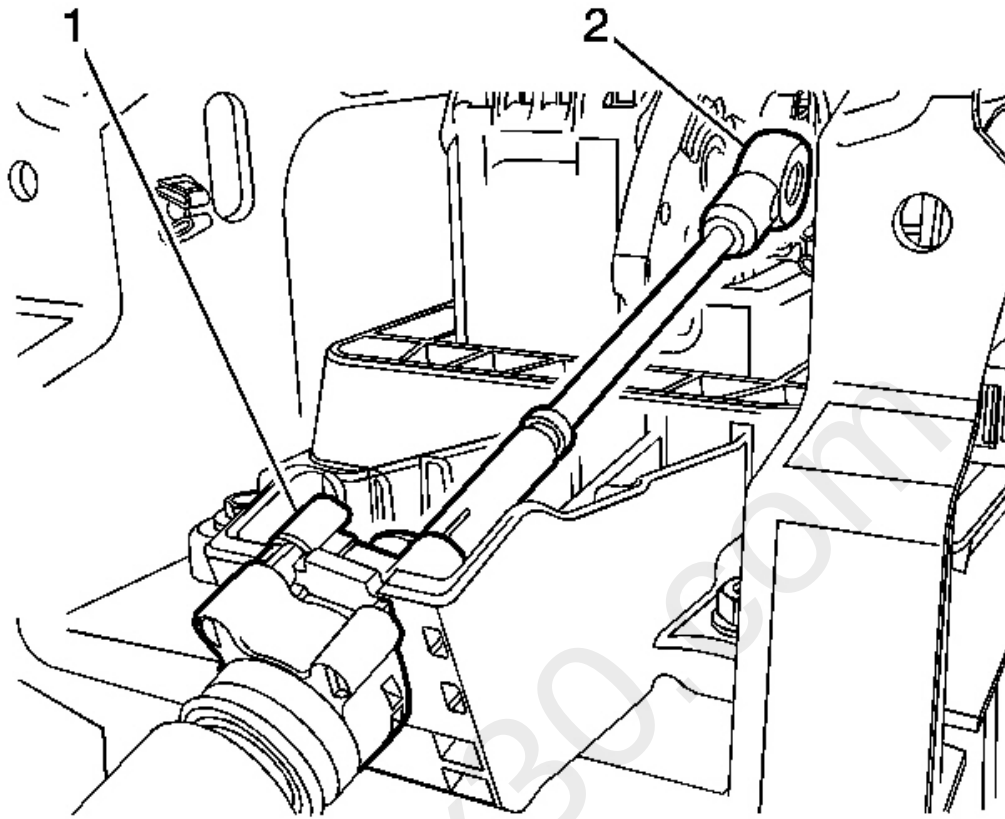


Fig. 7: Transmission Range Selector Lever Cable Retainer & Terminal
Courtesy of GENERAL MOTORS CORP.

7. Slide the transmission range selector lever cable retainer forward (1) and remove the transmission range selector cable from the transmission control base.
8. Disconnect the transmission range selector lever cable terminal (2) from the shift lever pin.
9. Remove the transmission range selector lever cable from the vehicle.

Installation Procedure

1. Install the transmission range selector lever cable in the vehicle.

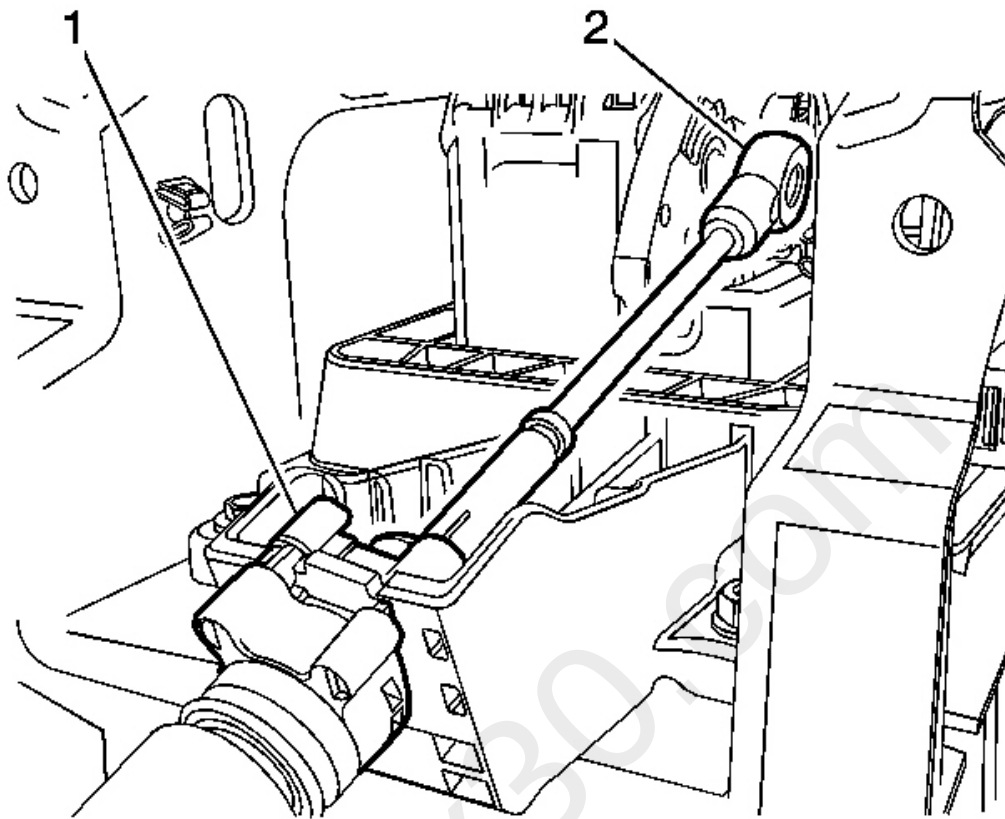


Fig. 8: Transmission Range Selector Lever Cable Retainer & Terminal
Courtesy of GENERAL MOTORS CORP.

2. Connect the transmission range selector lever cable terminal (2) to the shift lever pin.

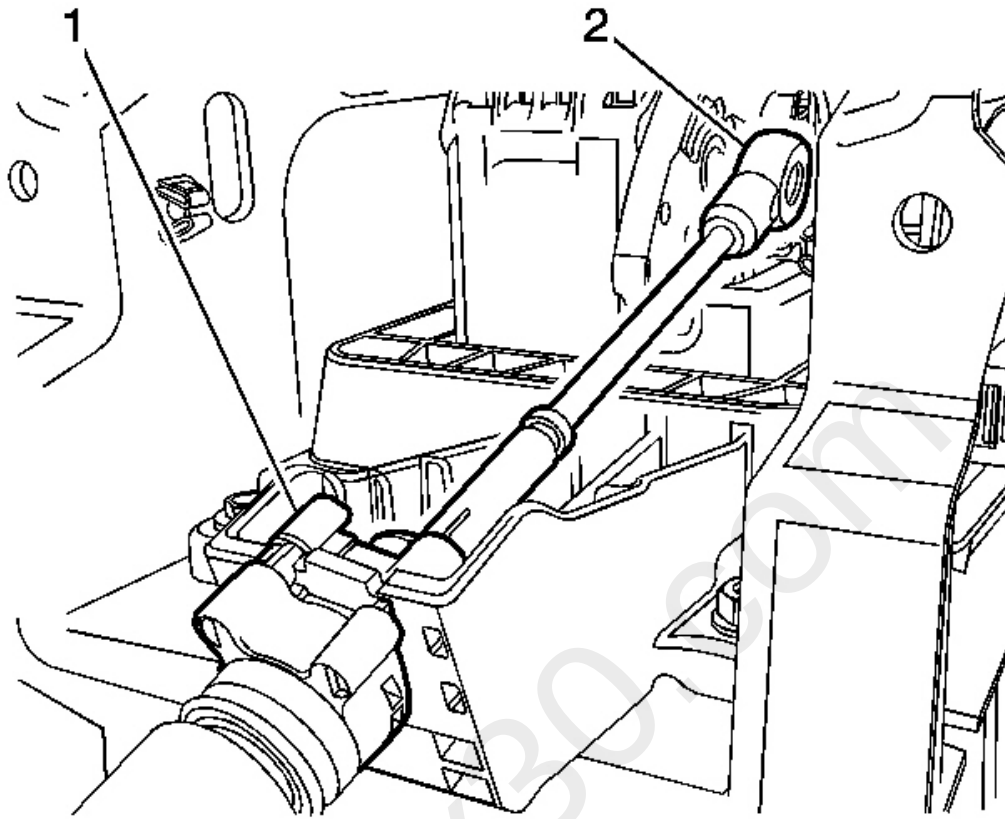


Fig. 9: Transmission Range Selector Lever Cable Retainer & Terminal
Courtesy of GENERAL MOTORS CORP.

3. Install the transmission range selector cable to the transmission control base, then slide the transmission range selector lever cable retainer rearward (1) to lock the cable in place.

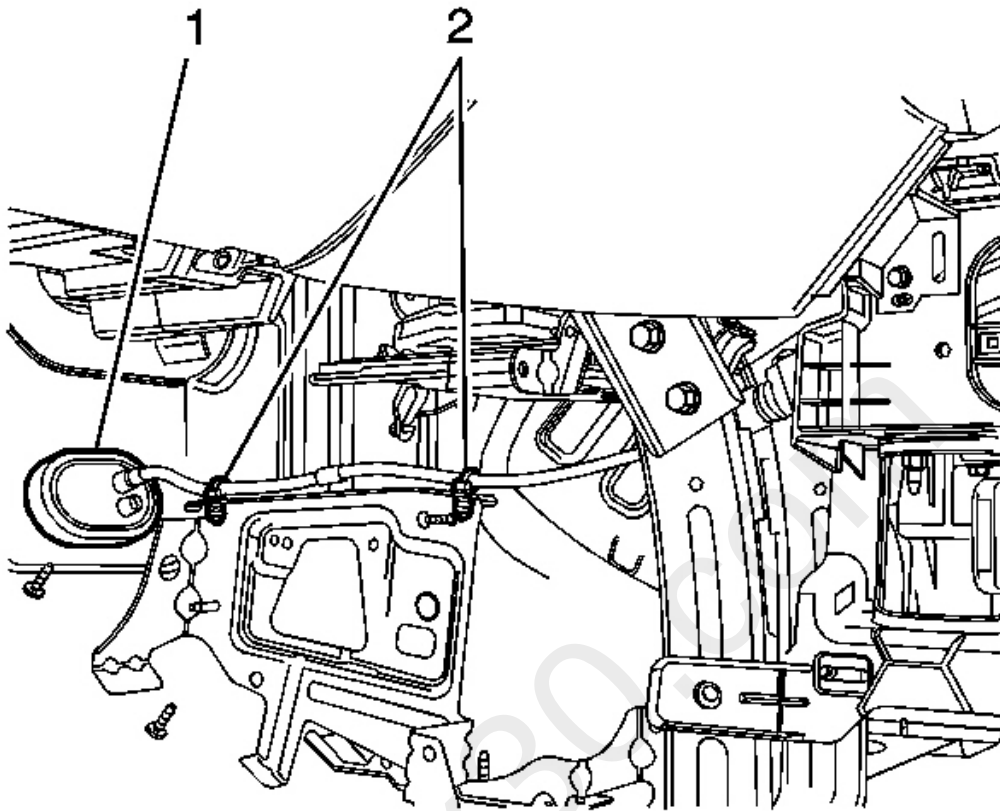


Fig. 10: Transmission Range Selector Lever Cable Retainers & Grommet
Courtesy of GENERAL MOTORS CORP.

4. Install the grommet (1) and cable assembly into the floor panel.
5. Connect the transmission range selector lever cable retainers (2) to the support bracket.
6. Install the front floor console extension. Refer to **Front Floor Lower Console Side Finish Cover Replacement - Left Side (Equinox)** or **Front Floor Lower Console Side Finish Cover Replacement - Left Side (Terrain)** .

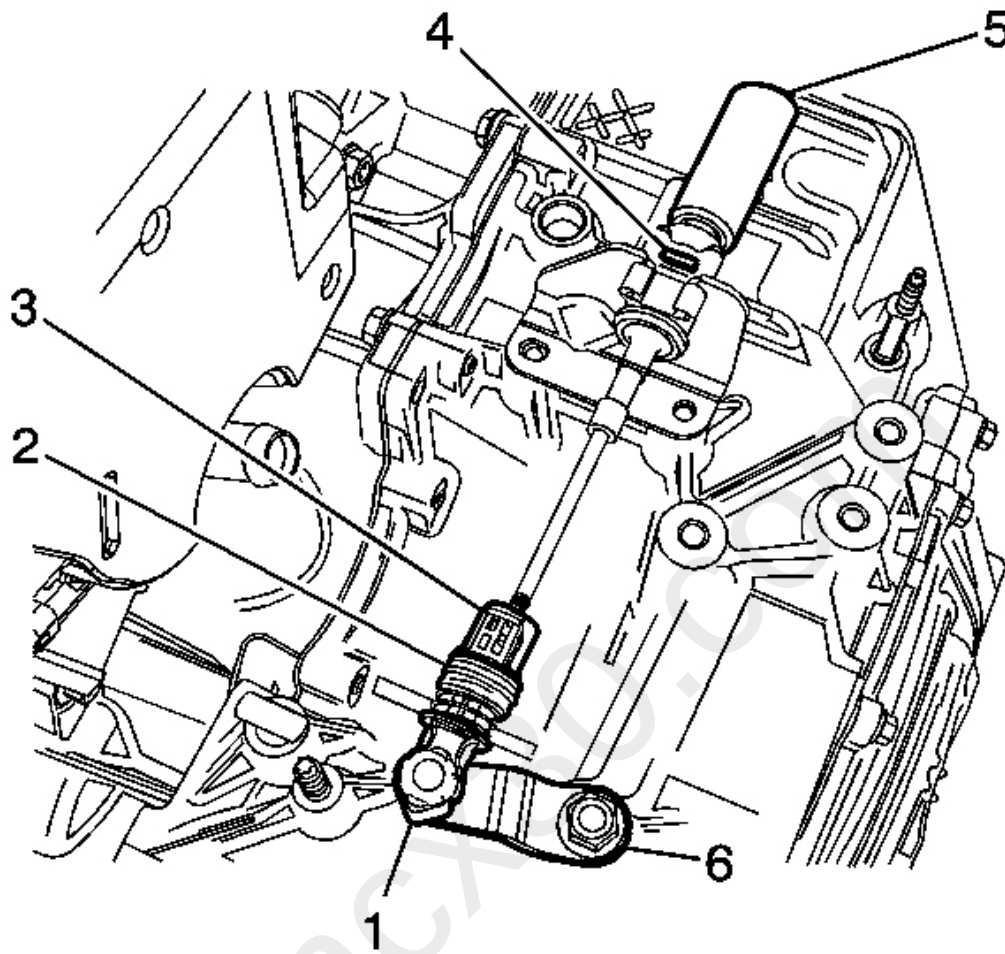


Fig. 11: Transmission Range Selector Lever Components
Courtesy of GENERAL MOTORS CORP.

7. Connect the transmission range selector lever cable terminal (1) to the transmission manual shift lever pin (6).
8. Install the cable in the bracket, then slide the retainer (4) forward to lock the transmission range selector lever cable in the bracket.
9. Adjust the cable. Refer to **Range Selector Lever Cable Adjustment**

RANGE SELECTOR LEVER CABLE ADJUSTMENT

NOTE: Adjust the automatic transmission range selector cable while the transmission and the gear selector are in the Park position only. Failure to

do so may cause mis-adjustment.

1. Set the park brake and chock the wheels.
2. Verify the transmission range select lever is in the park position.
3. Verify the transmission manual shift lever is in the park position.

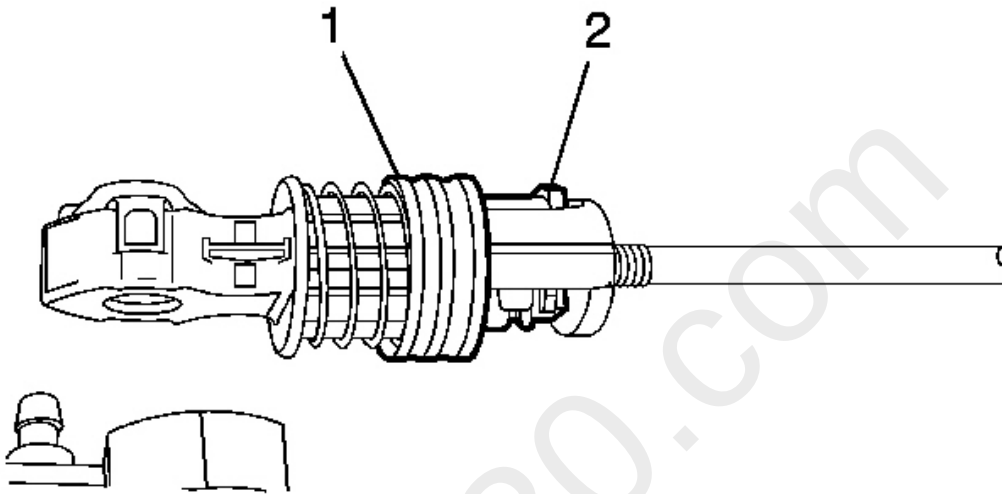


Fig. 12: Releasing Range Select Cable Adjuster Clip
Courtesy of GENERAL MOTORS CORP.

4. Pull the retaining collar (1) forward, then release the range select cable adjuster clip (2).

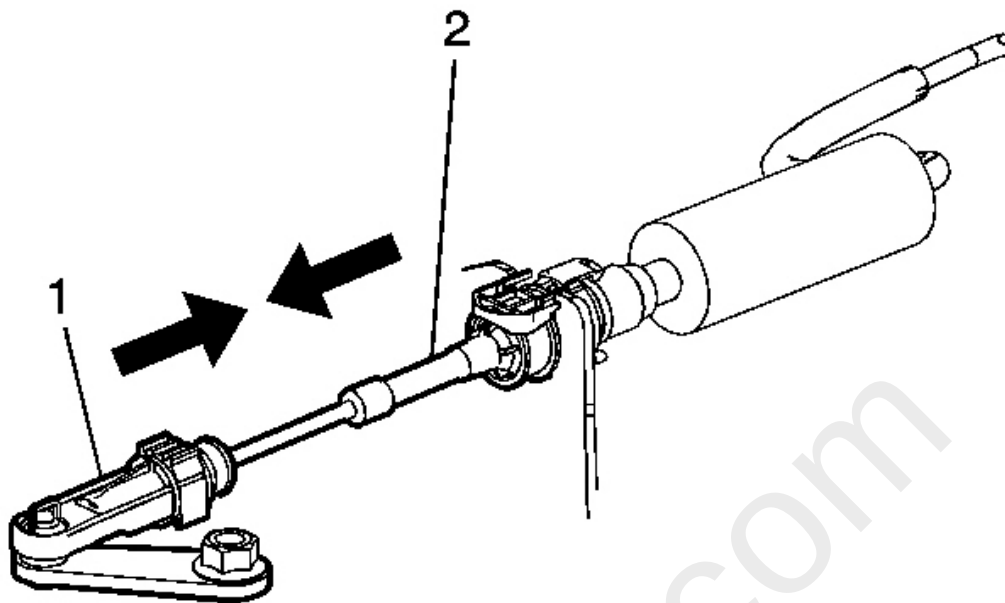


Fig. 13: Sliding Range Selector Halves Together
Courtesy of GENERAL MOTORS CORP.

5. Slide the two halves (1, 2) of the range select cable together until all free play is removed.

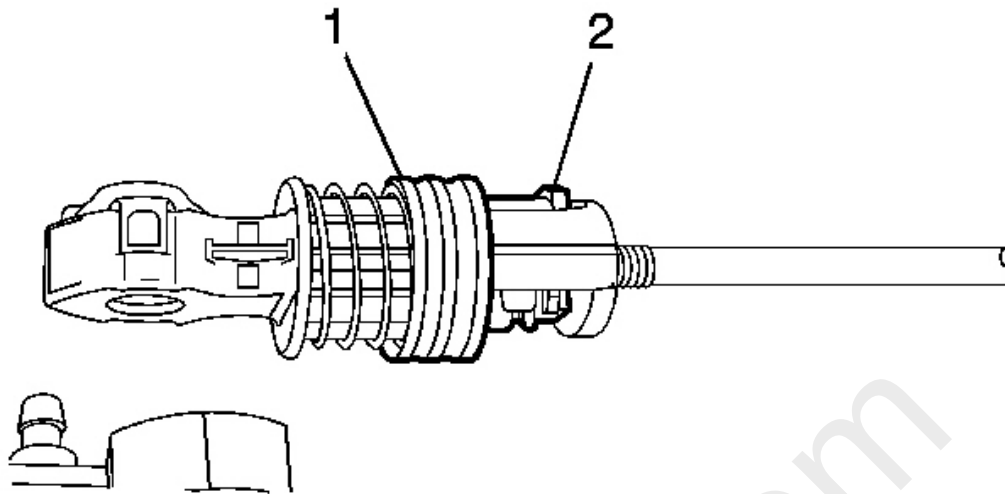


Fig. 14: Releasing Retaining Collar
Courtesy of GENERAL MOTORS CORP.

6. Depress the adjuster clip (1) locking the adjuster clip completely, then release the retaining collar.
7. Pull both halves of the range select cable in opposite directions to verify the cable adjuster is secured.
8. Check the transmission range select lever in all gear selections for proper operation.

RANGE SELECTOR LEVER CABLE BRACKET REPLACEMENT

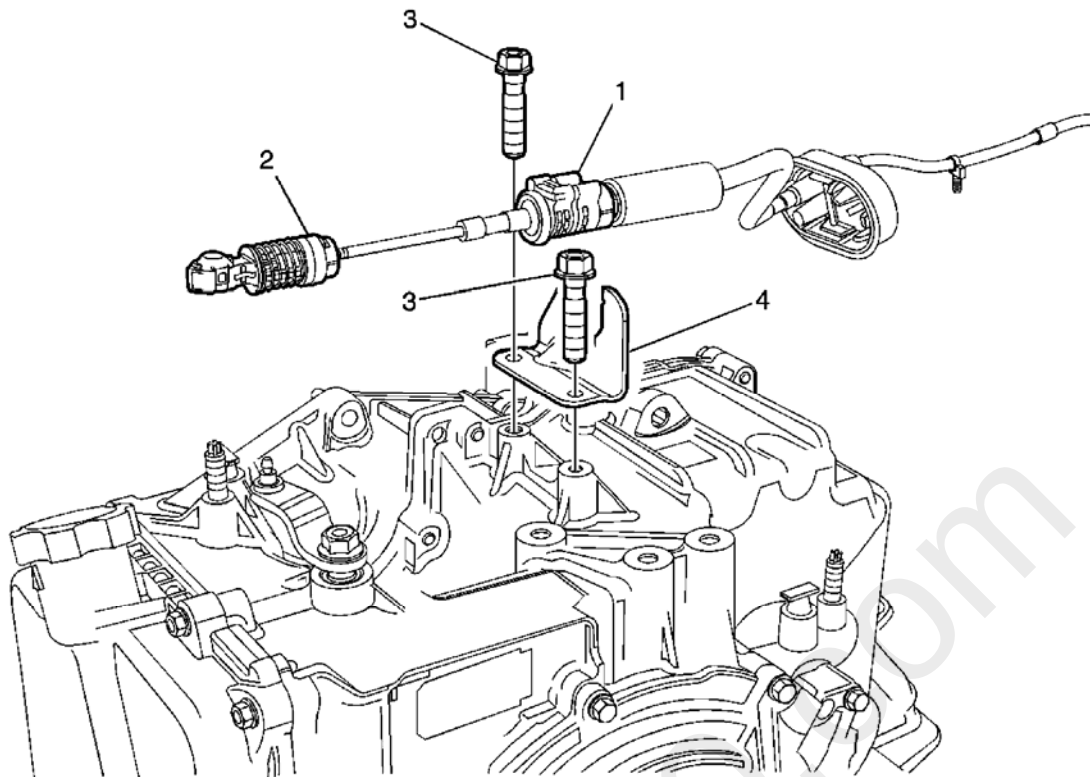


Fig. 15: Range Selector Lever Cable Bracket
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedures	
1. Set the park brake and chock the wheels. 2. Remove the battery tray. Refer to <u>Battery Tray Replacement</u> .	
1	Transmission Range Selector Lever Cable Retaining lock
2	Transmission Range Selector Lever Cable
3	Transmission Range Selector Lever Cable Bracket Bolt CAUTION: Refer to <u>Fastener Caution</u> . Tighten: 25 N.m (18 lb ft)
4	Transmission Range Selector Lever Cable Bracket Procedure: Adjust the cable, if necessary. Refer to <u>Range Selector Lever Cable Adjustment</u> .

TRANSMISSION FLUID REPLACEMENT

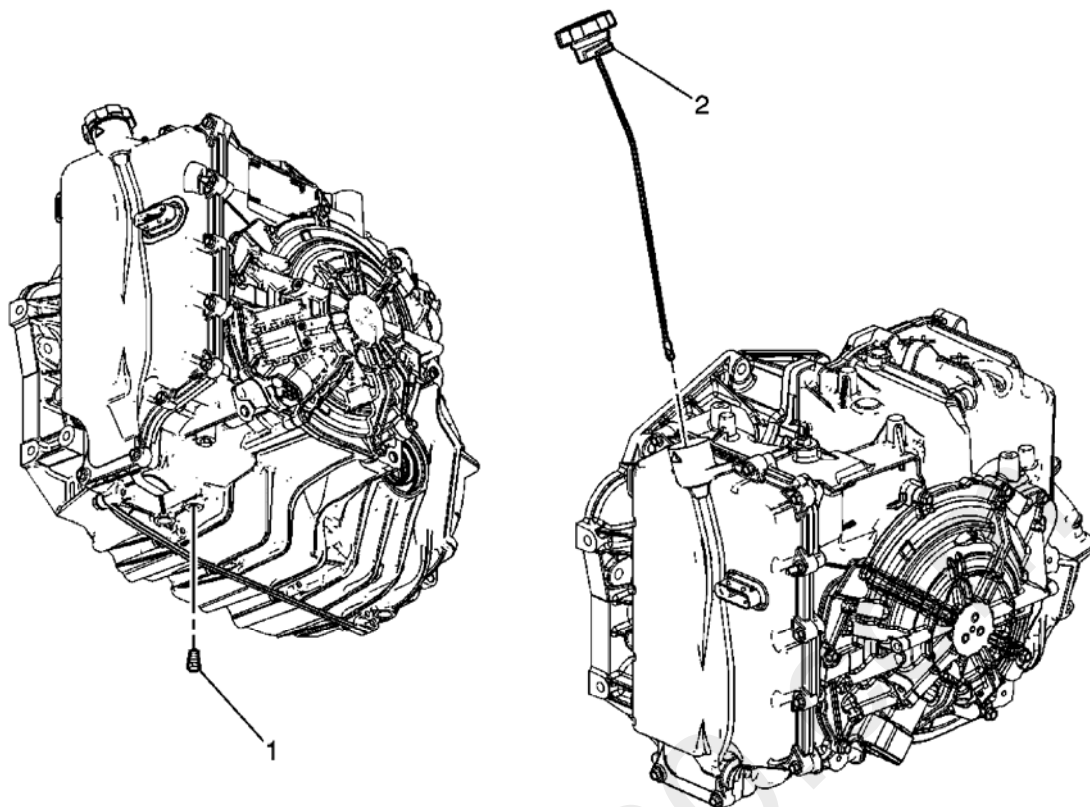


Fig. 16: Transmission Fluid
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Raise the vehicle. Refer to <u>Lifting and Jacking the Vehicle</u> .	
1	Fluid Drain Plug CAUTION: Refer to <u>Fastener Caution</u> . Tip: Place a drain pan capable of containing more than 5 quarts of fluid under the transmission before removing the plug to drain the fluid. Tighten: 12 N.m (106 lb in)
2	Fluid Level Indicator Tip: • Transmission will require approximately 5 quarts of fluid. • Fill the transmission with fluid. Refer to <u>Transmission Fluid Level and Condition</u>

TRANSMISSION FLUID COOLER PIPE CONNECTOR REPLACEMENT - RADIATOR

Removal Procedure

1. Drain the cooling system. Refer to Cooling System Draining and Filling (Static) or Cooling System Draining and Filling (GE 47716) .
2. Remove the transaxle oil cooler hoses from the oil cooler fittings on the radiator. Refer to Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection.

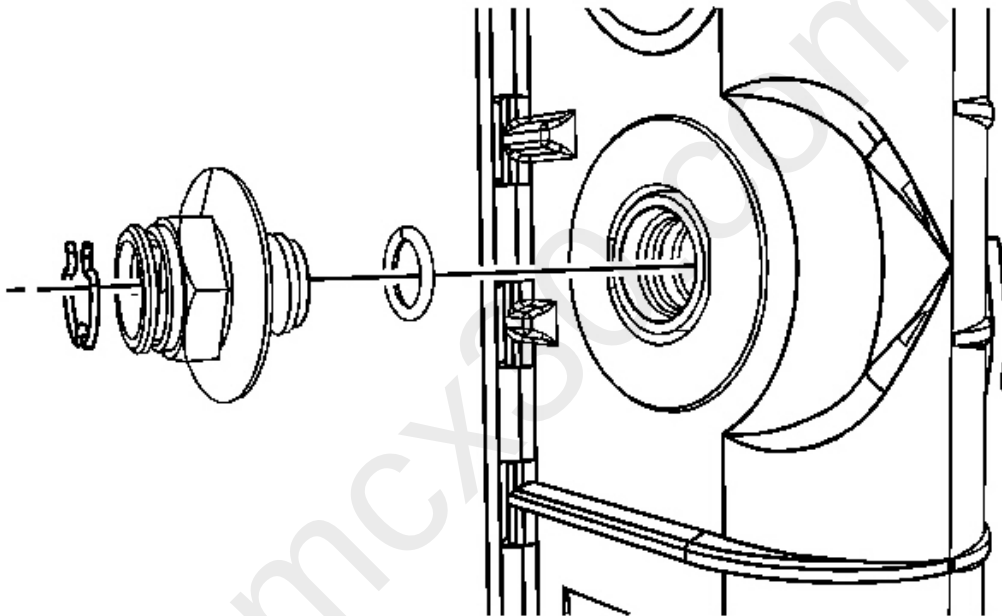


Fig. 17: View Of Oil Cooler Fitting At Radiator
Courtesy of GENERAL MOTORS CORP.

NOTE: Do not remove the upper and lower transaxle oil cooler fittings from the radiator at the same time other wise the transaxle oil cooler will fall inside the radiator end tank.

3. Remove the oil cooler fitting from the radiator.

Installation Procedure

1. Inspect the new O-ring seals for cracks, cuts or damage. Replace if necessary.

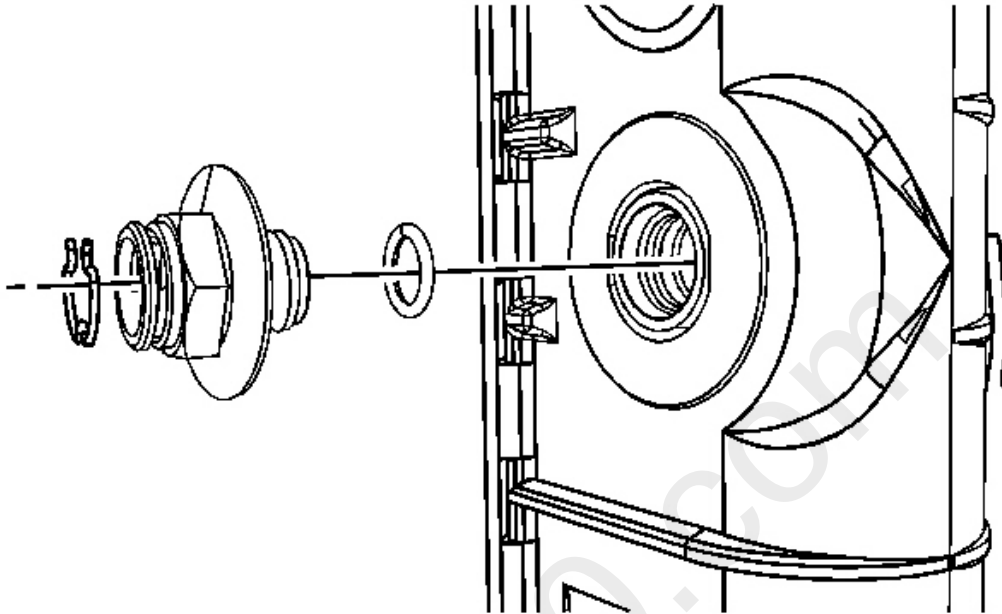


Fig. 18: View Of Oil Cooler Fitting At Radiator
Courtesy of GENERAL MOTORS CORP.

CAUTION: Refer to Fastener Caution .

NOTE: The correct thread engagement is critical. Cross-threaded fittings can achieve proper tightness and still leak.

2. Install the oil cooler fitting to the radiator and tighten to 38 N.m (28 lb ft).
3. Install the transaxle oil cooler hoses to the oil cooler fittings on the radiator. Refer to Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection.
4. Fill the cooling system. Refer to Cooling System Draining and Filling (Static) or Cooling System Draining and Filling (GE 47716) .
5. Adjust the transmission fluid level.
6. Inspect for fluid leaks.

TRANSMISSION FLUID COOLER HOSE/PIPE QUICK-CONNECT FITTING DISCONNECTION AND CONNECTION

Special Tools

J 41623-B: Cooler Quick Connect Tool

Removal Procedure

IMPORTANT: Perform the following procedure when removing the retaining rings and cooler lines from the quick connect fittings located on the radiator and/or the transmission.

1. Pull the plastic cap back from the quick connect fitting and down along the cooler line about 5 cm (2 in).
2. Using J 41623-B: Cooler Quick Connect Tool to remove the retaining ring.
3. Remove the retaining ring from the quick connect fitting.
4. Discard the retaining ring.

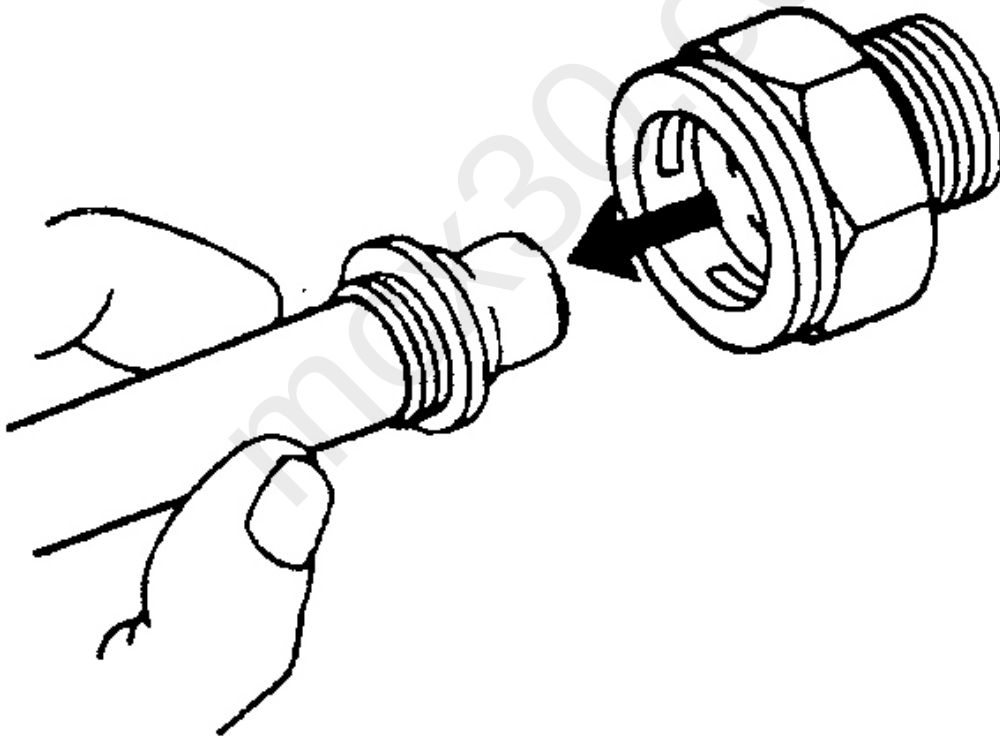


Fig. 19: Cooler Line & Quick Connect Fitting
Courtesy of GENERAL MOTORS CORP.

5. Pull the cooler line straight out from the quick connect fitting.

Installation Procedure

IMPORTANT:

- Do not reuse any of the existing oil lines or oil line fittings if there is excessive corrosion.
- Do not reuse any of the existing retaining rings that were removed from the existing quick connect fittings. Install new retaining rings.
- Ensure the following procedures are performed when installing the new retaining rings onto the fittings.

1. Install a new retaining ring into the quick connect fitting using the following procedure:

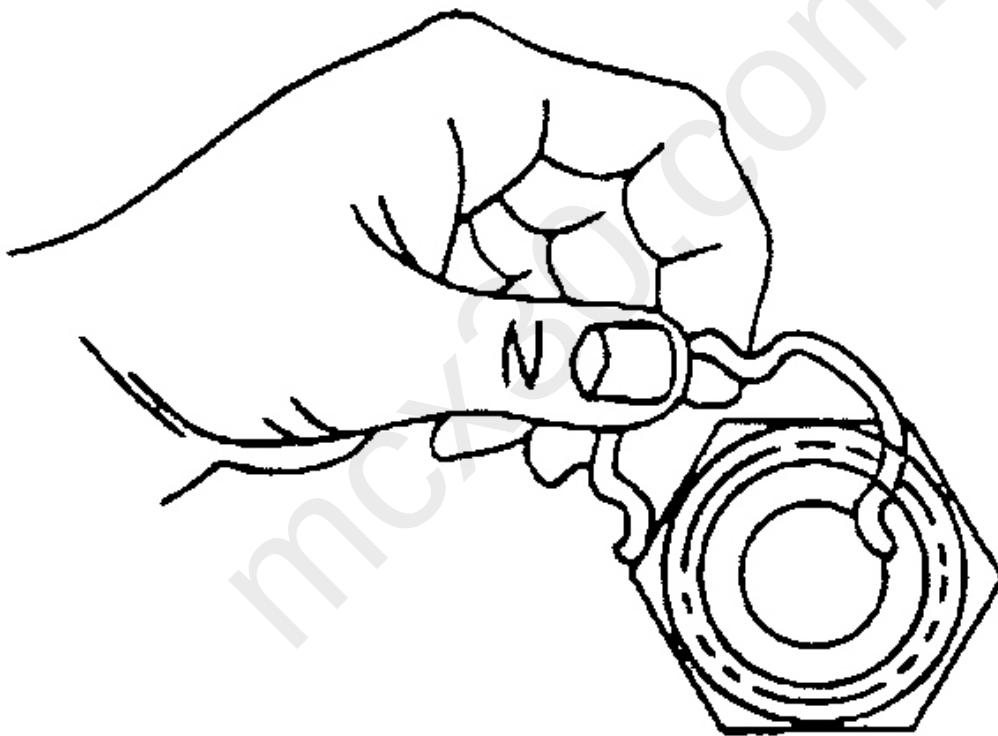


Fig. 20: Hooking Retaining Ring Into Quick Connect Fitting
Courtesy of GENERAL MOTORS CORP.

2. Hook one of the open ends of the retaining ring in one of the slots in the quick connect fitting.

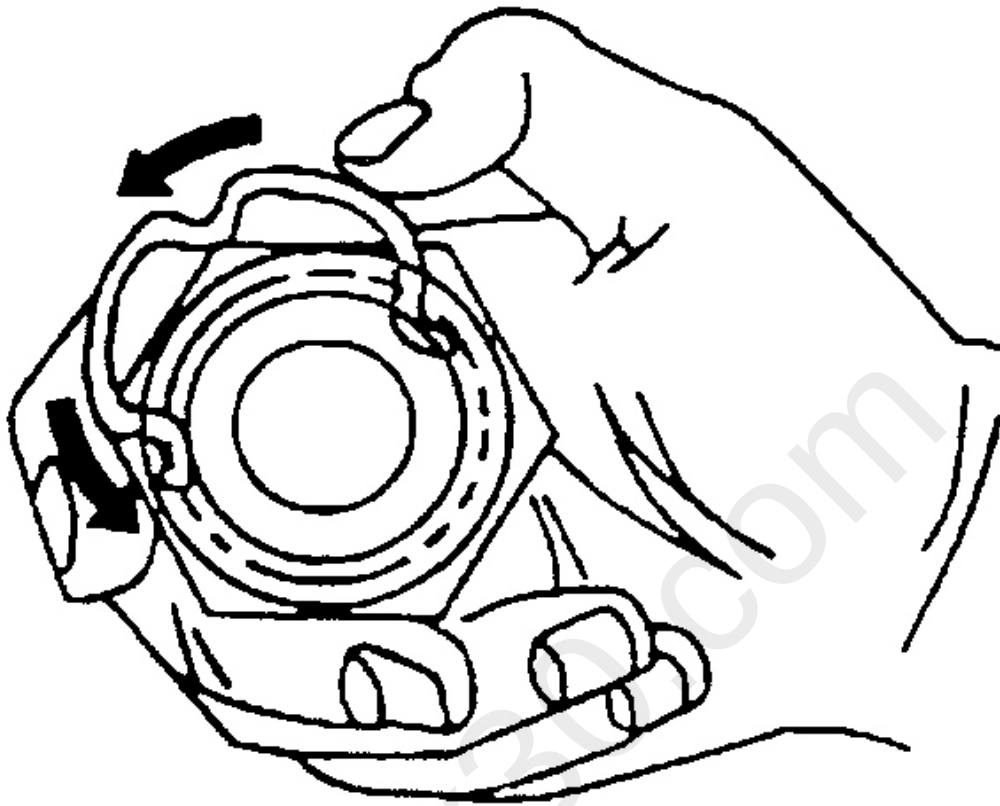


Fig. 21: Rotating Retaining Ring Around Fitting
Courtesy of GENERAL MOTORS CORP.

3. Rotate the retaining ring around the fitting until the retaining ring is positioned with all three ears through the three slots on the fitting.

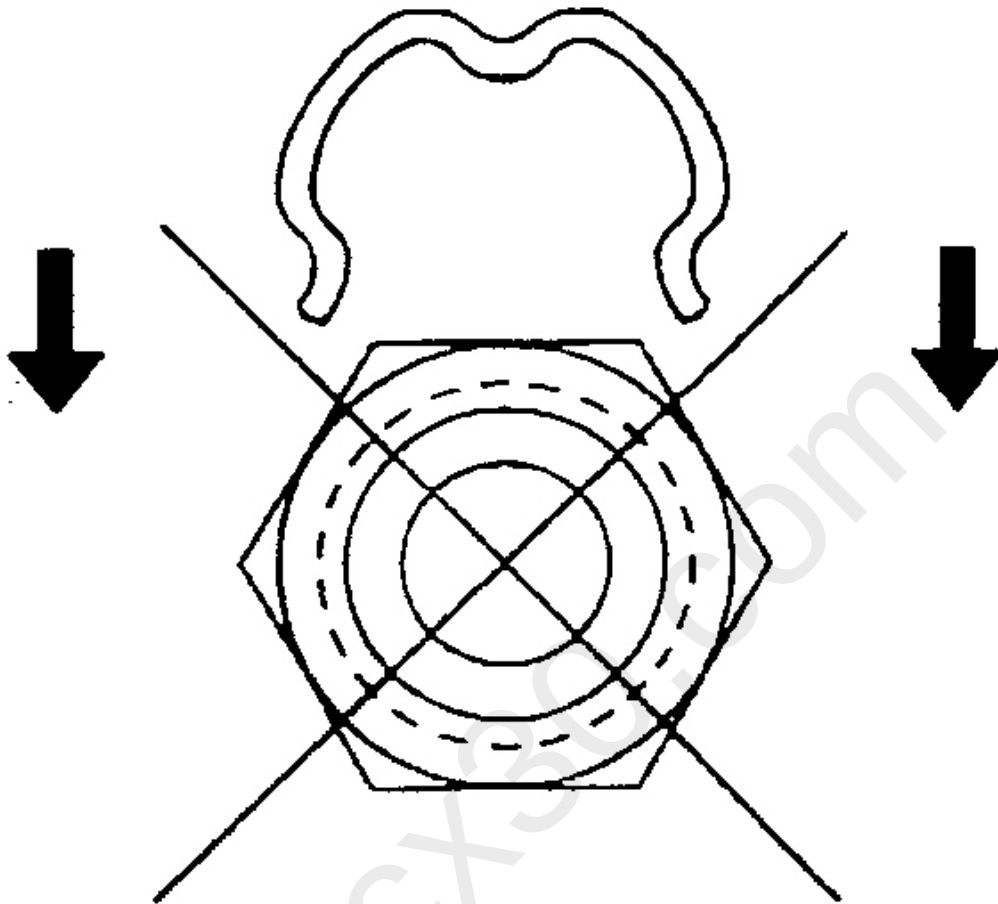


Fig. 22: Identifying Improper Engine Oil Cooler Hose/Pipe Retaining Ring Installation
Courtesy of GENERAL MOTORS CORP.

4. Do not install the new retaining ring onto the fitting by pushing the retaining ring.

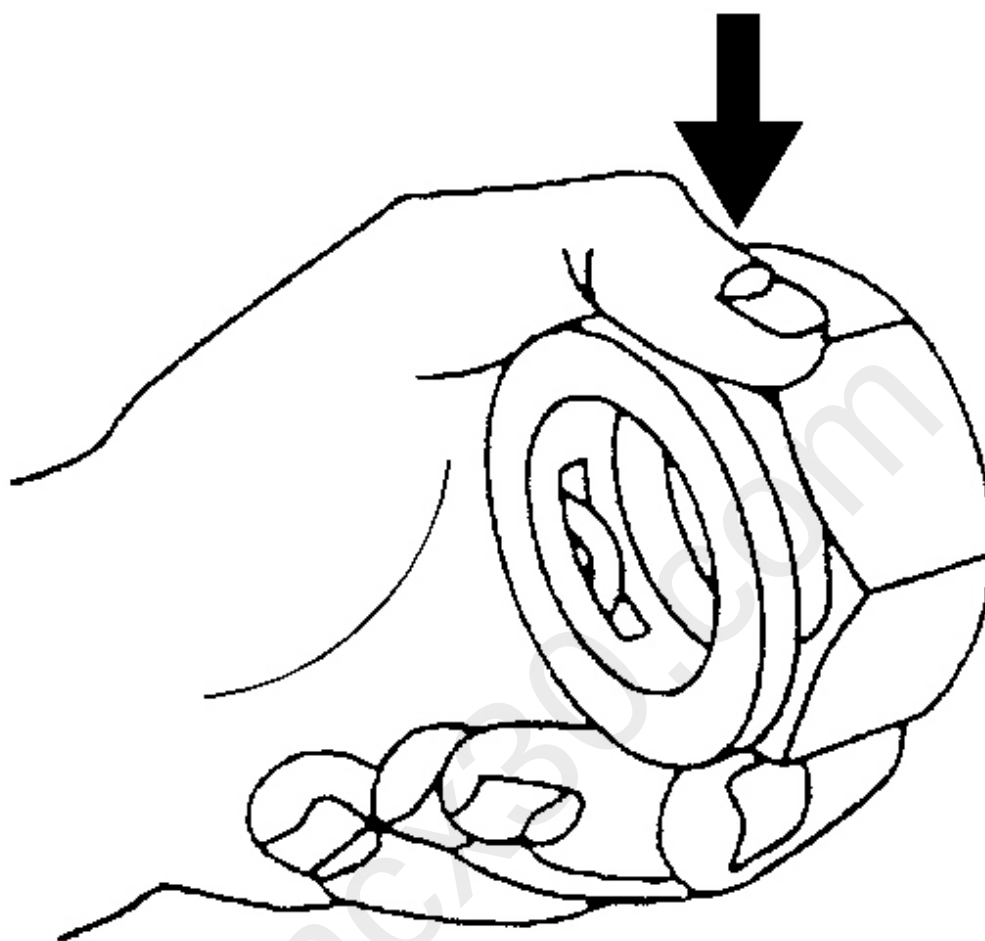


Fig. 23: Ensuring Retaining Ring Is Seated Correctly
Courtesy of GENERAL MOTORS CORP.

5. Ensure that the three retaining ring ears are seen from inside the fitting and that the retaining ring moves freely in the fitting slots.

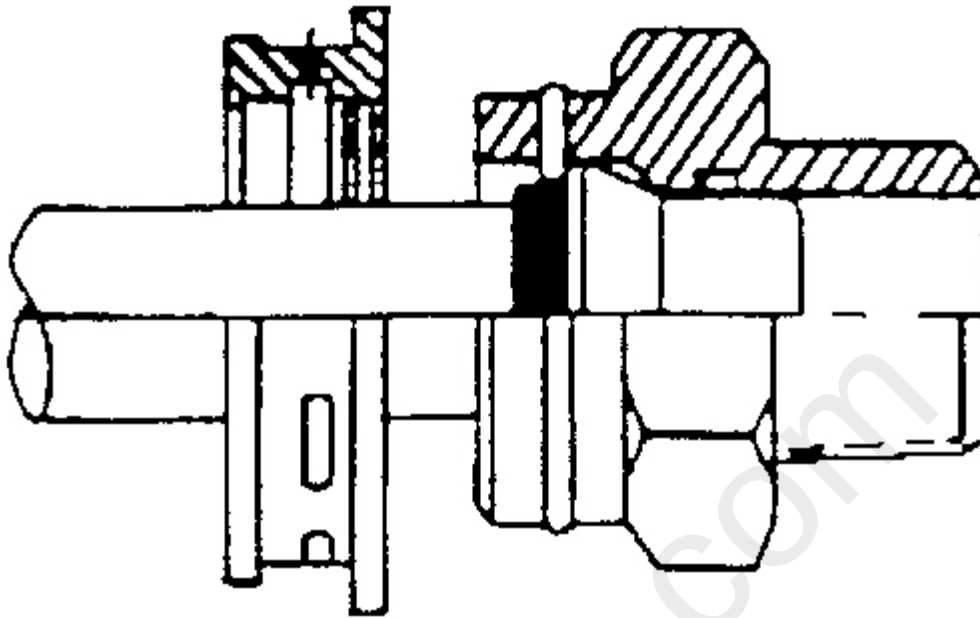


Fig. 24: View Of Cooler Line Quick Connect Fitting
Courtesy of GENERAL MOTORS CORP.

6. Install the cooler line into the quick connect fitting.
7. Insert the cooler line end into the quick connect fitting until a click is either heard or felt.

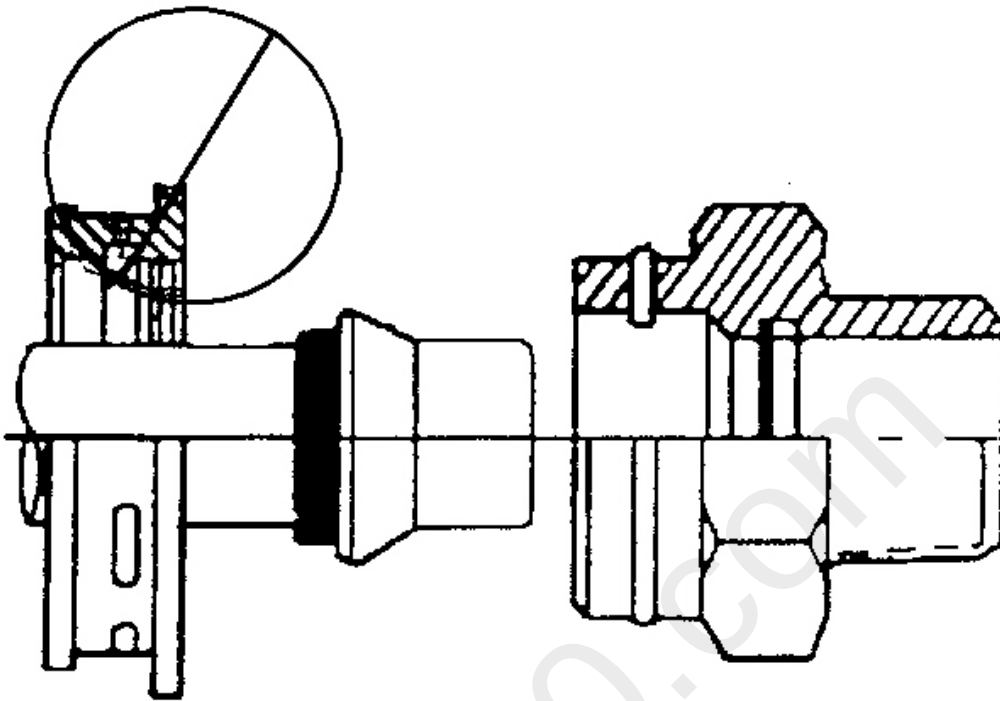


Fig. 25: Identifying Plastic Cap
Courtesy of GENERAL MOTORS CORP.

8. Do not use the plastic cap on the cooler line in order to install the cooler line into the fitting.
9. Pull back sharply on the cooler line in order to ensure that the cooler line is fastened into the quick connect fitting.

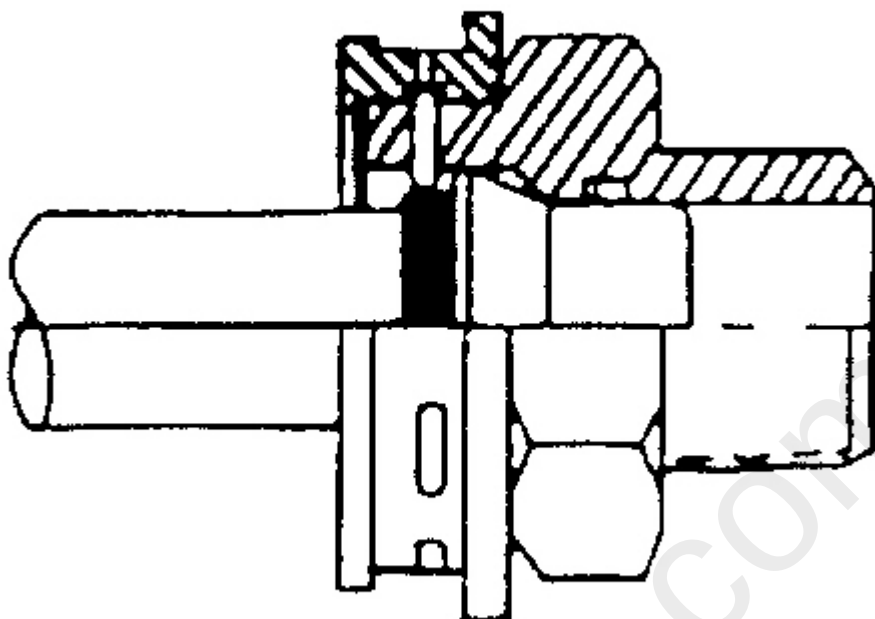


Fig. 26: View Of Cooler Line & Plastic Cap
Courtesy of GENERAL MOTORS CORP.

IMPORTANT: Do not manually depress the retaining clip when installing the plastic cap.

10. Position (snap) the plastic cap onto the fitting. Do not manually depress the retaining ring when installing the plastic cap onto the quick connect fitting.
11. Ensure that the plastic cap is fully seated against the fitting.

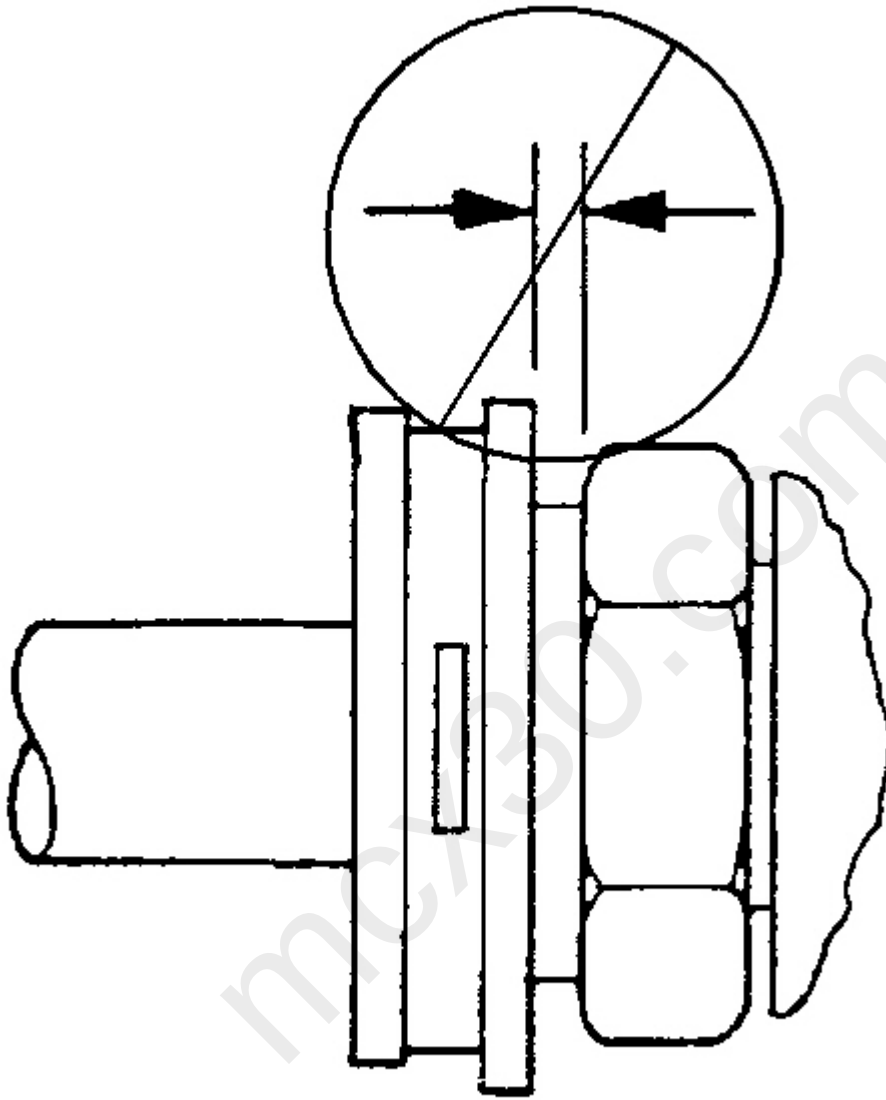


Fig. 27: Checking For Gap Between Cap & Fitting
Courtesy of GENERAL MOTORS CORP.

12. Ensure that no gap is present between the cap and the fitting.

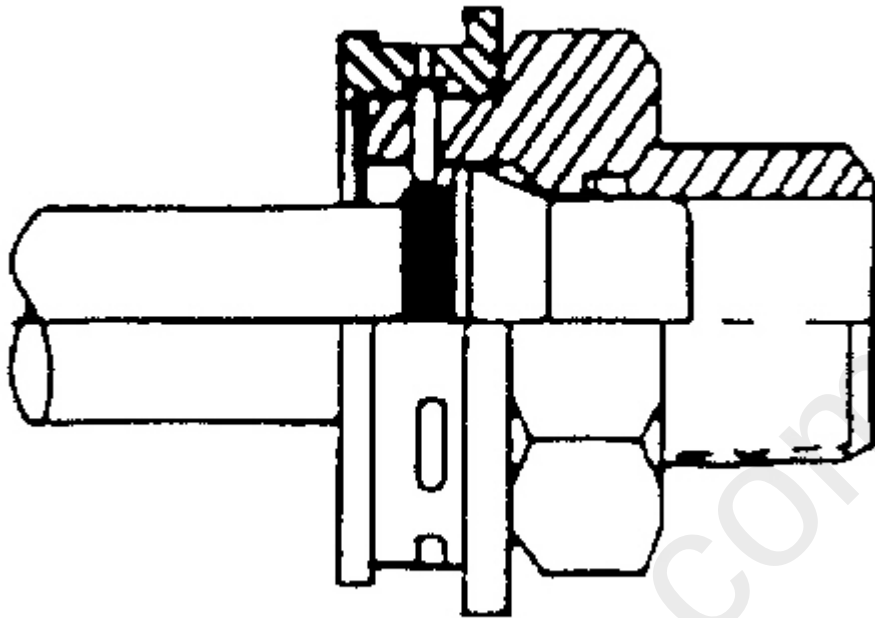


Fig. 28: View Of Cooler Line & Plastic Cap
Courtesy of GENERAL MOTORS CORP.

13. Ensure that the yellow identification band on the tube is hidden within the quick connect fitting.

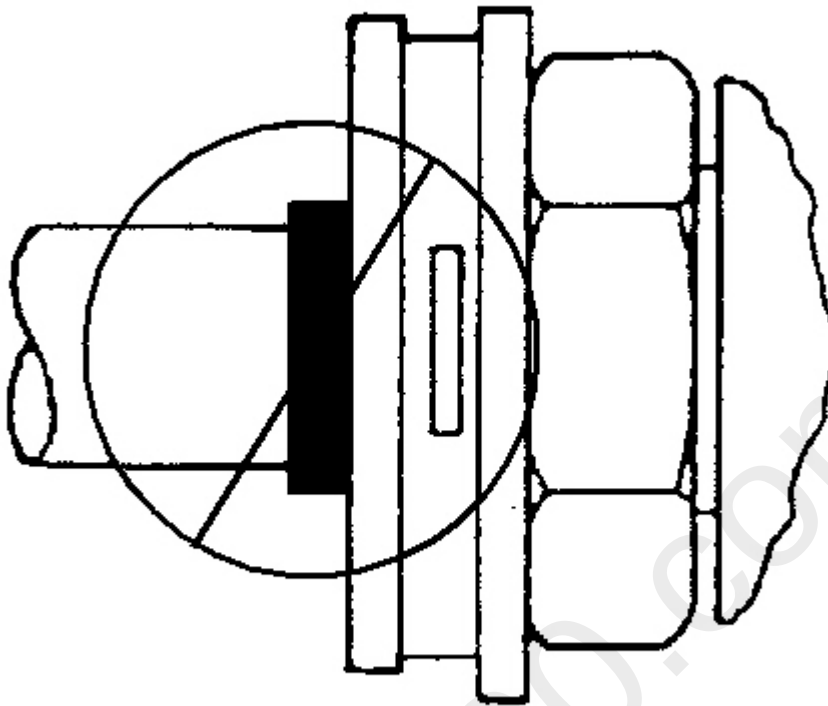


Fig. 29: Identifying Improper Joint Seating
Courtesy of GENERAL MOTORS CORP.

14. A hidden yellow identification band indicates proper joint seating.
15. Fill the transmission to the proper level with DEXRON® VI transmission fluid. Refer to **Transmission Fluid Level and Condition Check** .

TRANSMISSION FLUID COOLER PIPE REPLACEMENT - FRONT

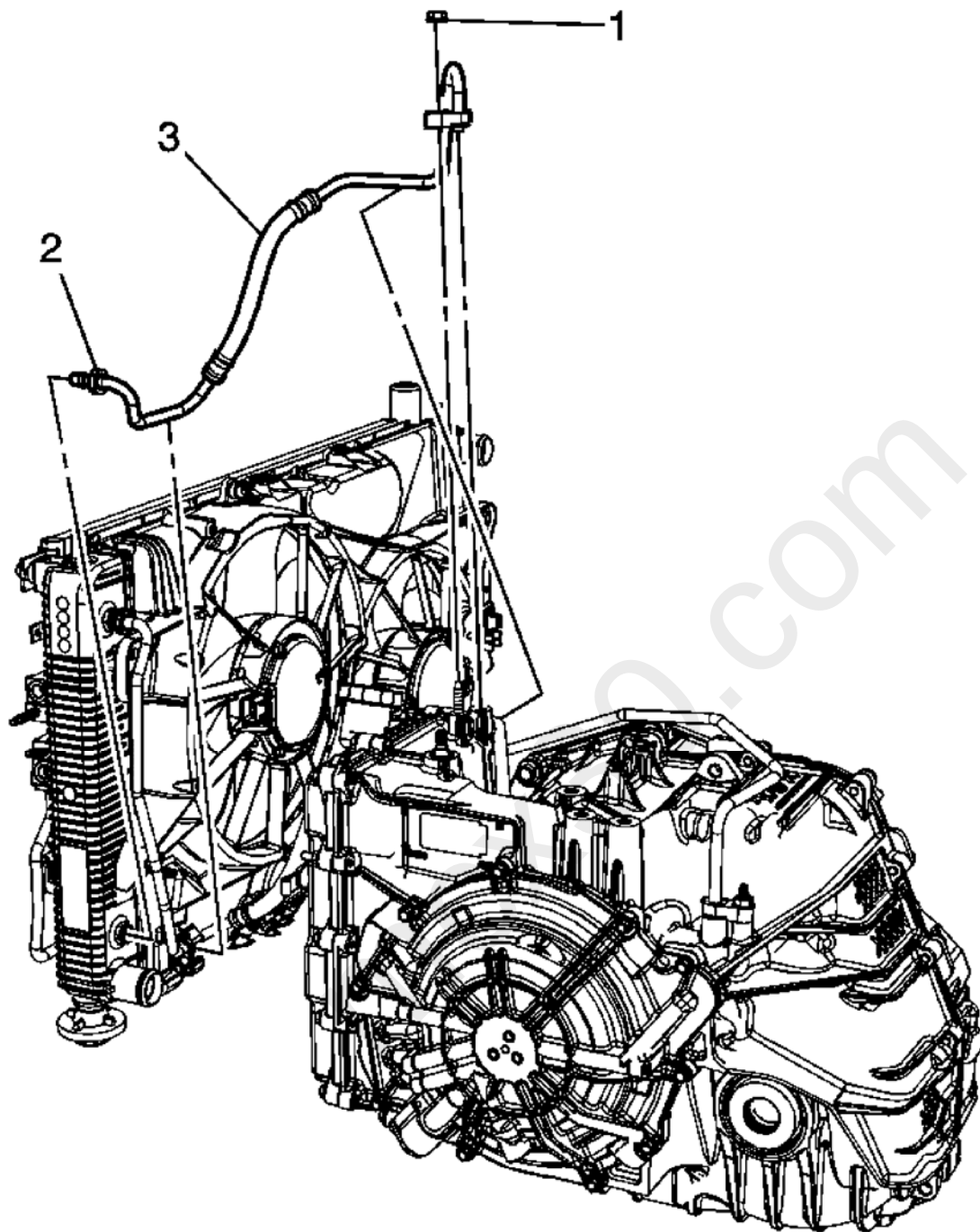


Fig. 30: Transmission Fluid Cooler Pipe - Front
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Raise the vehicle. Refer to <u>Lifting and Jacking the Vehicle</u> .	
	Transmission Fluid Cooler Inlet Pipe Nut

1	CAUTION: Refer to <u>Fastener Caution</u> . Tighten: 22 N.m (16 lb ft)
2	Front Transmission Fluid Cooler Inlet Pipe Quick Disconnect Preliminary Procedure: Disconnect the transmission line from the radiator. Refer to <u>Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection</u> .
3	Front Transmission Fluid Cooler Inlet Pipe Procedure 1. Install new sealing washers. 2. Note the routing of the transmission line to ensure proper installation. 3. Remove the transmission line from the clips securing the line to the transmission and fan shroud. 4. Inspect the transmission fluid level. Refer to <u>Transmission Fluid Level and Condition Check</u> .

TRANSMISSION FLUID COOLER PIPE REPLACEMENT - REAR

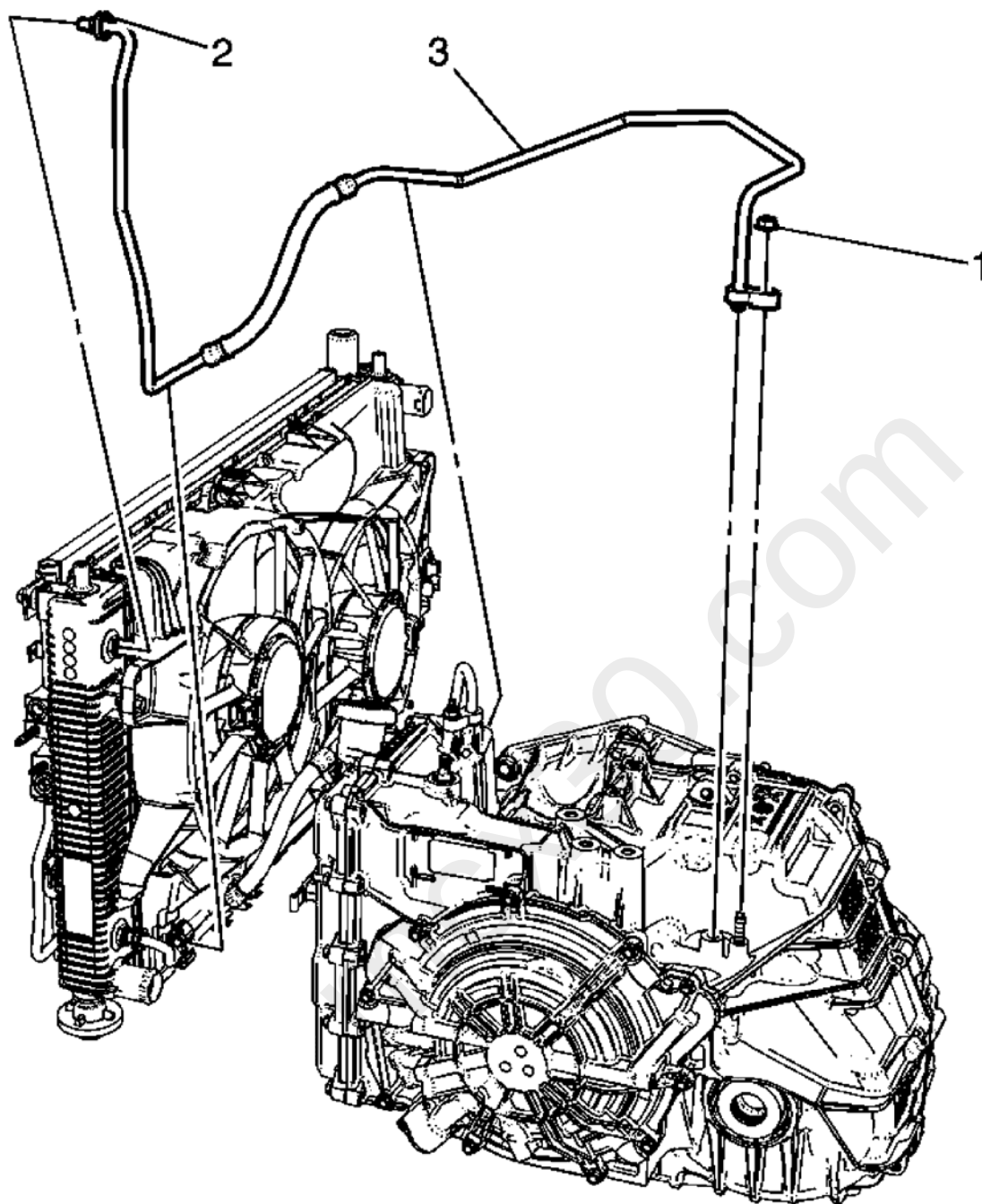


Fig. 31: Transmission Fluid Cooler Pipe - Rear
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Raise the vehicle. Refer to <u>Lifting and Jacking the Vehicle</u> .	
	Transmission Fluid Cooler Outlet Pipe Nut

1	CAUTION: Refer to <u>Fastener Caution</u> . Tighten: 22 N.m (16 lb ft)
2	Front Transmission Fluid Cooler Outlet Pipe Quick Disconnect Preliminary Procedure: Disconnect the transmission line from the radiator. Refer to <u>Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection</u>.
3	Front Transmission Fluid Cooler Outlet Pipe Procedure 1. Install new sealing washers. 2. Note the routing of the transmission line to ensure proper installation. 3. Remove the transmission line from the clips securing the line to the transmission and fan shroud. 4. Inspect the transmission fluid level. Refer to <u>Transmission Fluid Level and Condition Check</u> .

AUTOMATIC TRANSMISSION FLUID PRESSURE TEST HOLE PLUG REPLACEMENT

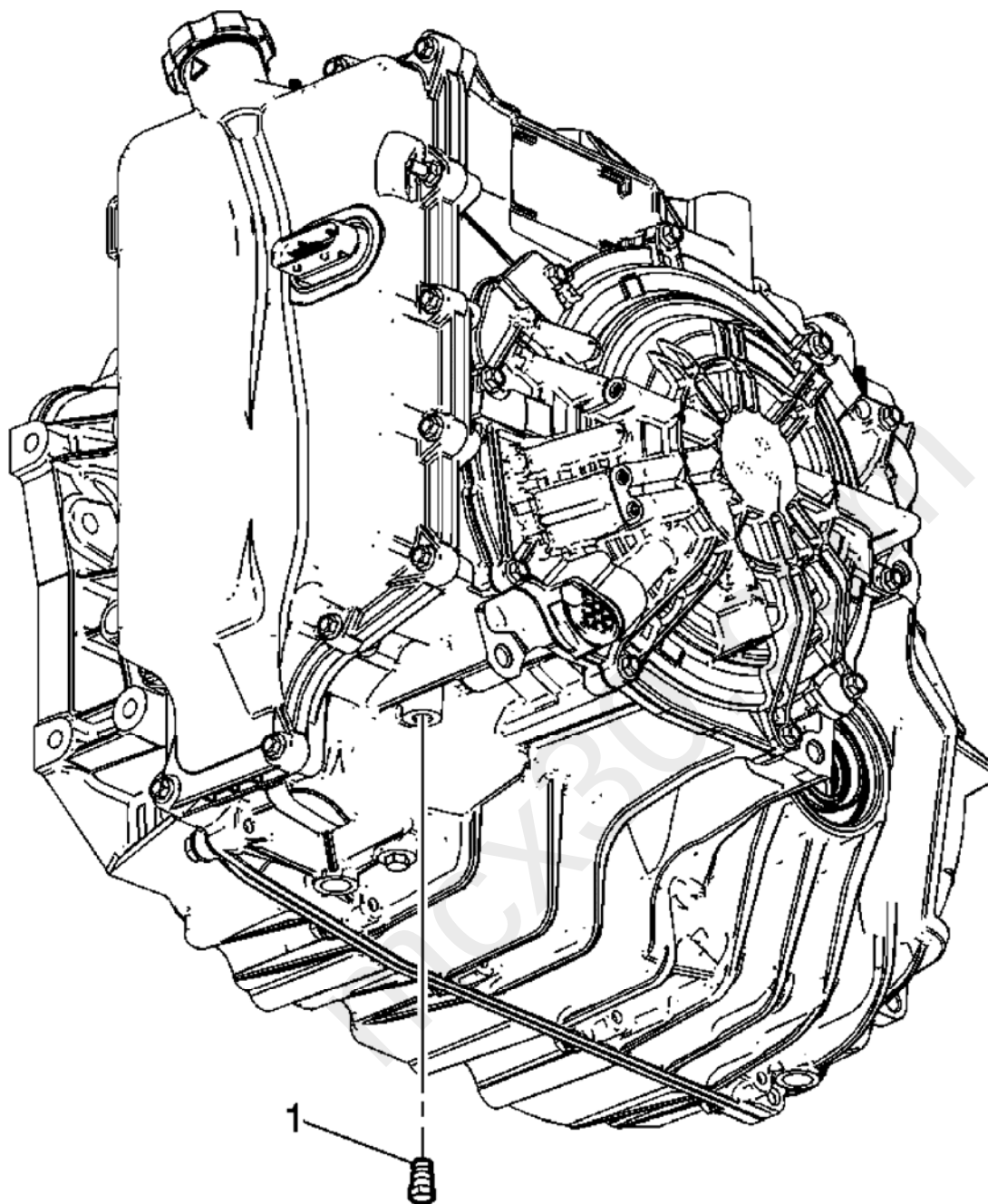


Fig. 32: Automatic Transmission Fluid Pressure Test Hole Plug
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedure: Raise the vehicle. Refer to <u>Lifting and Jacking the Vehicle</u> .	
	Fluid Pressure Test Plug

1

CAUTION:
Refer to Fastener Caution .

Tighten: 12 N.m (106 lb in)

FRONT WHEEL DRIVE SHAFT SEAL REPLACEMENT - LEFT SIDE

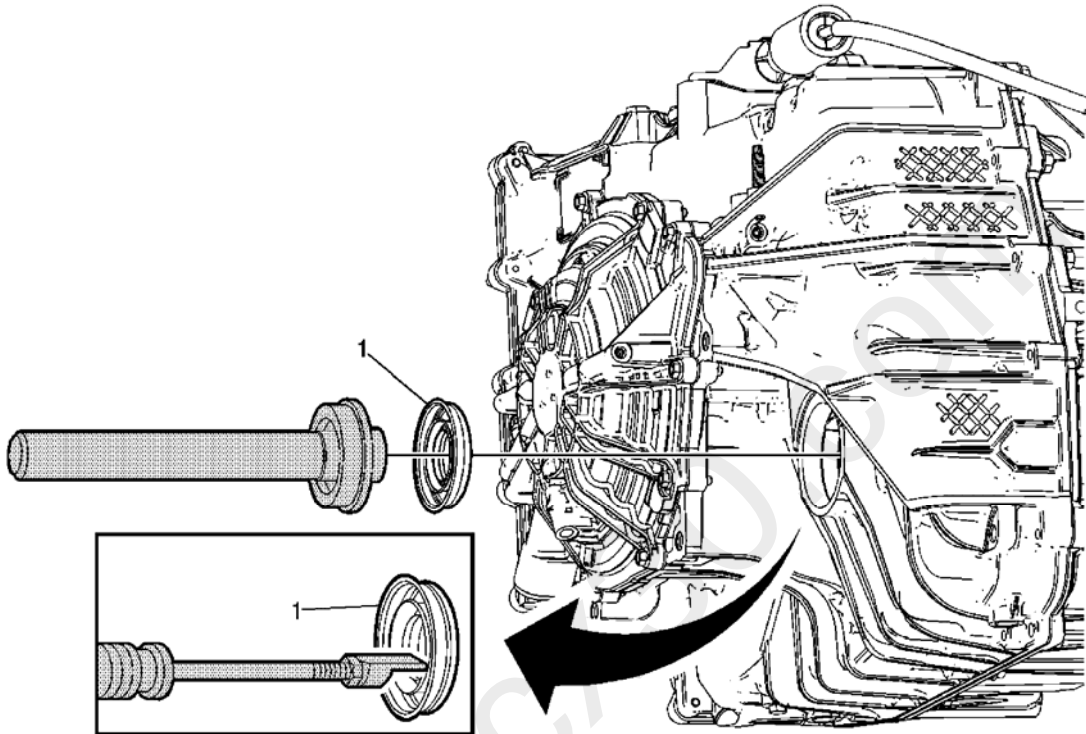


Fig. 33: Front Wheel Drive Shaft Seal - Left Side
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedures	
1. Raise the vehicle. Refer to <u>Lifting and Jacking the Vehicle</u> . 2. Remove the left wheel drive shaft. Refer to <u>Front Wheel Drive Shaft Replacement</u> .	
1	Left Front Wheel Drive Shaft Oil Seal Tip: • For seal removal use J 6125-1B Slide Hammer with J 23129 Universal Seal Remover. • For seal installation use J 8092 Driver Handle with J-46629-A Axle Seal Installer. See <u>Special Tools</u> .

Special Tools

- **J 6125-1B:** Slide Hammer
- **J 8092:** Driver Handle
- **J 23129:** Universal Seal Remover
- **J 46629-A:** Axle Seal Installer

FRONT WHEEL DRIVE SHAFT SEAL REPLACEMENT - RIGHT SIDE

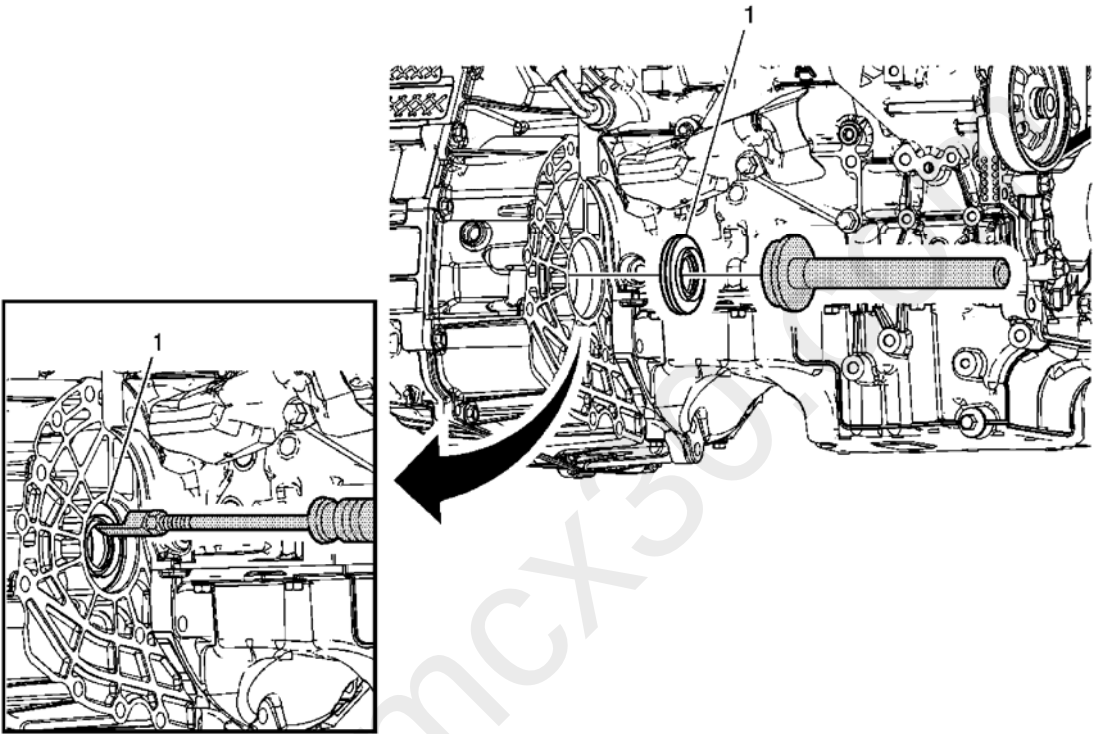


Fig. 34: Front Wheel Drive Shaft Seal - Right Side
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedures	
1. Raise the vehicle. Refer to <u>Lifting and Jacking the Vehicle</u> . 2. Remove the intermediate drive shaft. Refer to <u>Front Wheel Drive Intermediate Shaft Replacement</u> .	
	Right Front Wheel Drive Shaft Oil Seal Tip: • For seal removal use J 6125-1B Slide Hammer with J 23129 Universal Seal Remover.

- For seal installation use **J 8092** Driver Handle with **J-46629-A** Axle Seal Installer. See **Special Tools** .

Special Tools

1

- **J 6125-1B**: Slide Hammer
- **J 8092**: Driver Handle
- **J 23129**: Universal Seal Remover
- **J 46629-A**: Axle Seal Installer

MANUAL SHIFT SHAFT AND SEAL REPLACEMENT

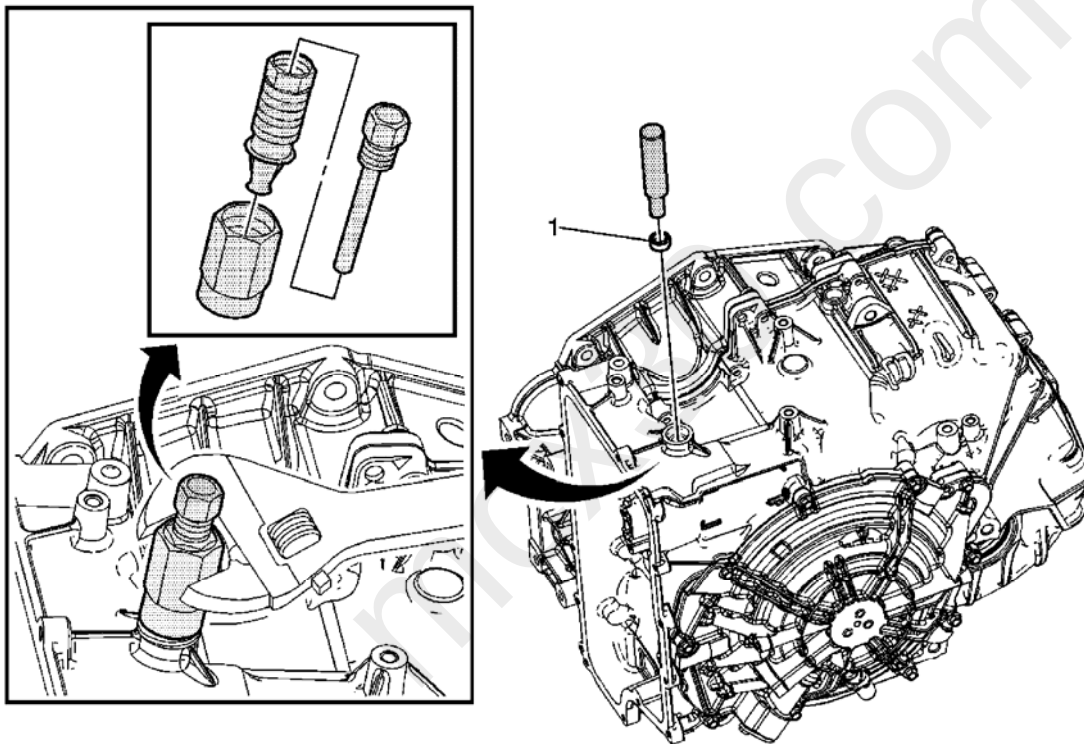


Fig. 35: Manual Shift Shaft & Seal
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedures	
1. Remove the battery tray. Refer to Battery Tray Replacement . 2. Remove the manual shaft and position switch assembly. Refer to Manual Shift Detent Lever with Shaft Position Switch Assembly and Park Pawl Actuator Removal .	
	Manual Shift Shaft Seal

Tip:

1

- For seal removal use **J 45201** .
- For seal installation use **J-46626** . See **Special Tools** .
- Lubricate the manual shaft with automatic transmission fluid (ATF) to prevent damage to the manual shift shaft seal.

Special Tools

- **J 45201** Cooler Line Seal Remover
- **J-46626** Seal Installer. See **Special Tools** .

CONTROL VALVE BODY COVER REPLACEMENT

Removal Procedure

1. Remove the battery tray. Refer to **Battery Tray Replacement** .

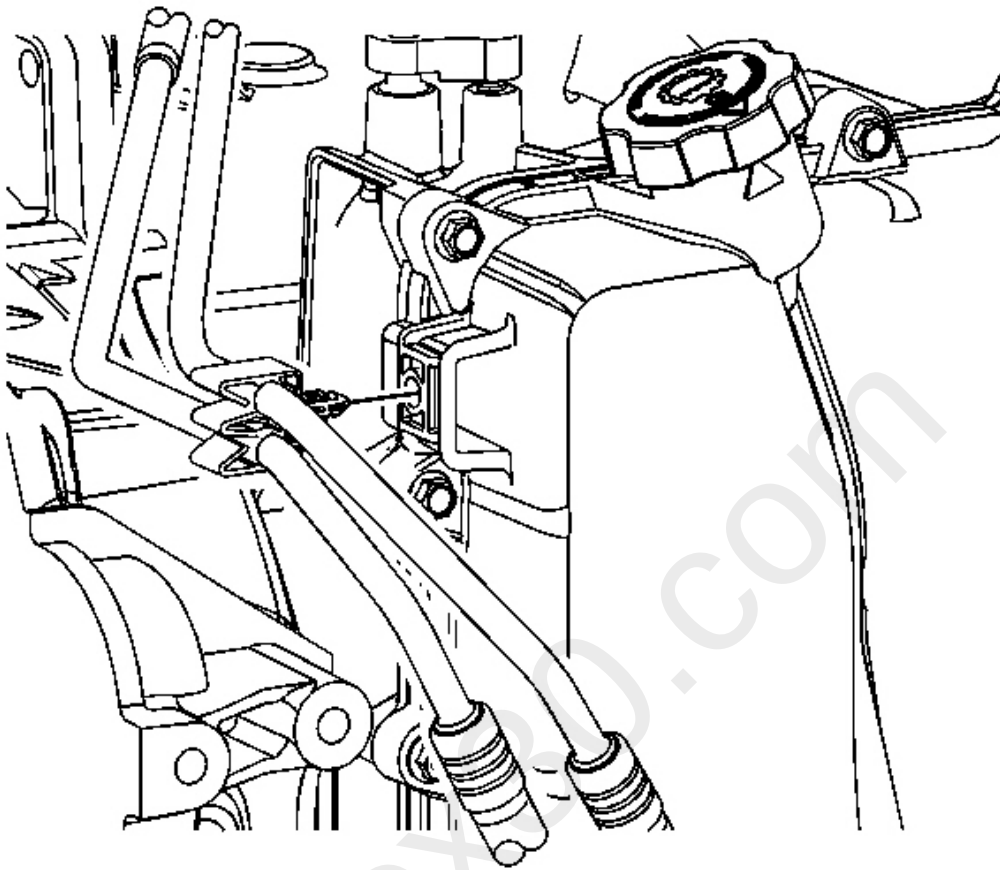


Fig. 36: View Of Oil Cooler Inlet & Outlet Hoses
Courtesy of GENERAL MOTORS CORP.

2. Remove the oil cooler inlet and outlet hoses from the retainer on the control valve body cover.
3. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** .
4. Remove the front transmission mount. Refer to **Transmission Front Mount Replacement**.
5. Remove the lower nuts from the left transmission mount. Refer to **Transmission Mount Replacement - Left Side** .
6. Drain the transmission. Refer to **Transmission Fluid Replacement**.

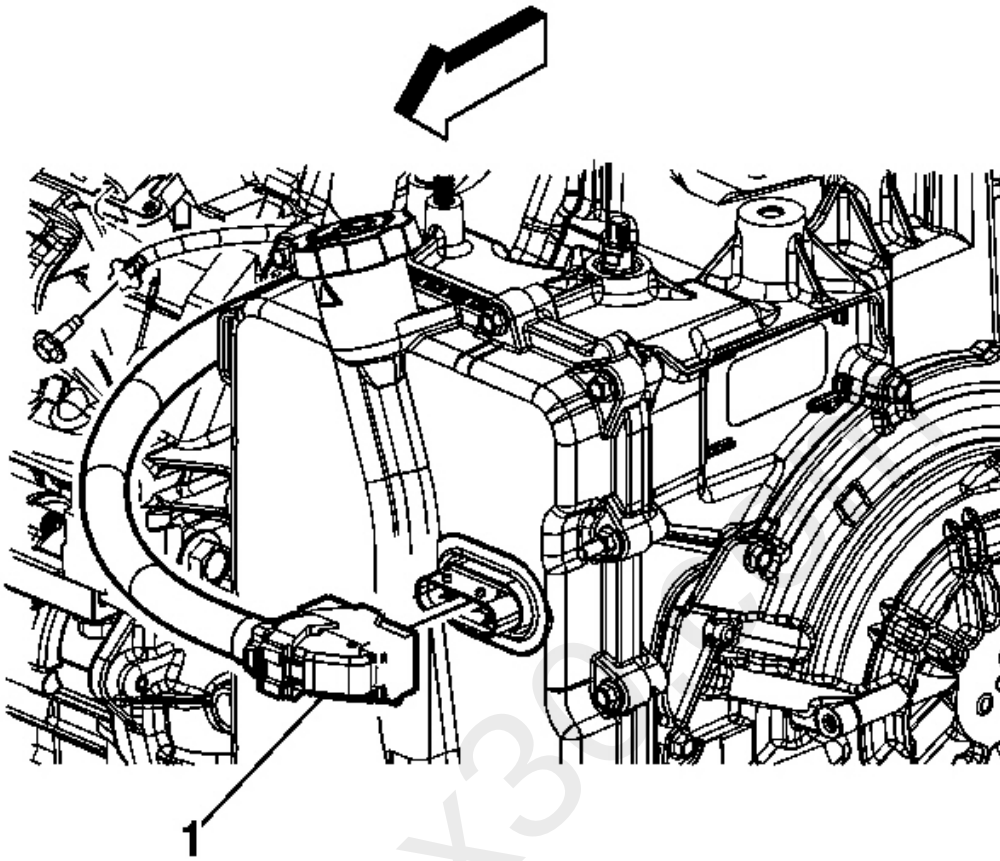


Fig. 37: Identifying Control Valve Body Transmission Control Module Electrical Connector
Courtesy of GENERAL MOTORS CORP.

7. Disconnect the control valve body transmission control module (TCM) electrical connector (1).

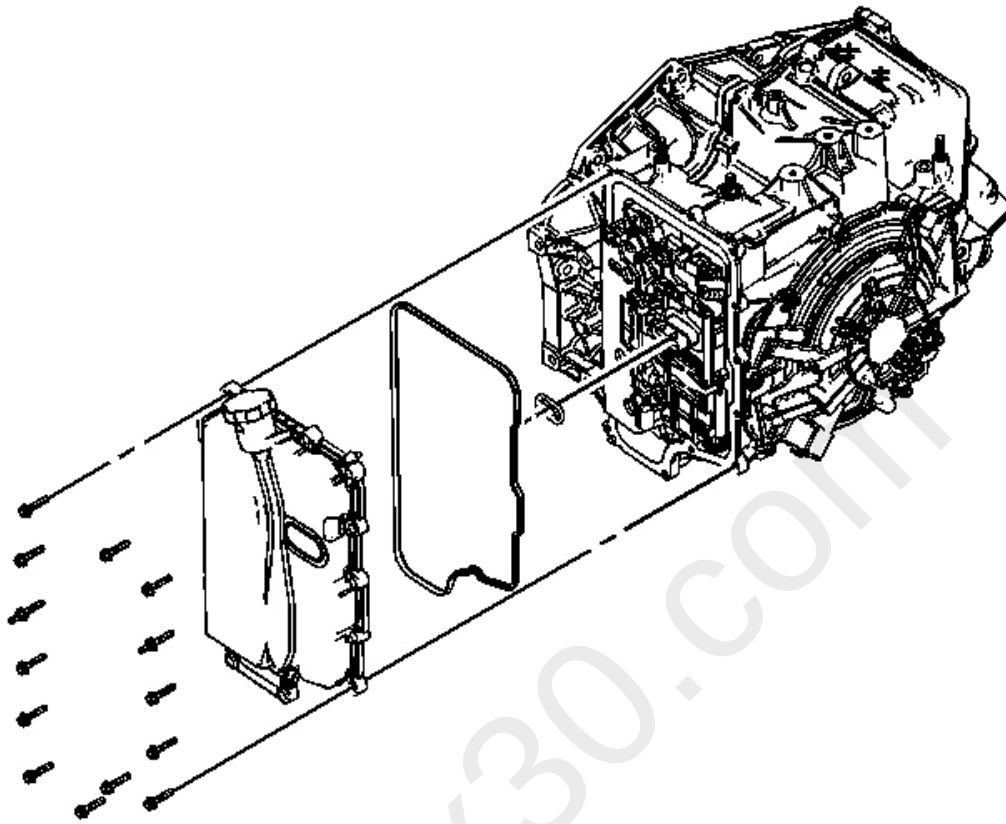


Fig. 38: Identifying Control Valve Body Cover Studs & Bolts
Courtesy of GENERAL MOTORS CORP.

8. Remove the 2 control valve body cover studs M6 x 30.
9. Remove the 12 control valve body cover bolts M6 x 30.
10. Support the transmission with a transmission jack.
11. Using the transmission jack raise the transmission to gain clearance for removal of the control valve body cover.
12. Remove the control valve body cover.
13. Remove the control valve body cover gasket.

CAUTION: Support the control solenoid valve assembly around the connector when removing the seal. Excessive pulling force can damage the internal electrical connections.

14. Remove the control valve body cover wiring connector hole seal.

15. Remove all traces of the old gasket material. Clean the transmission case and control valve body cover gasket surfaces.

Installation Procedure

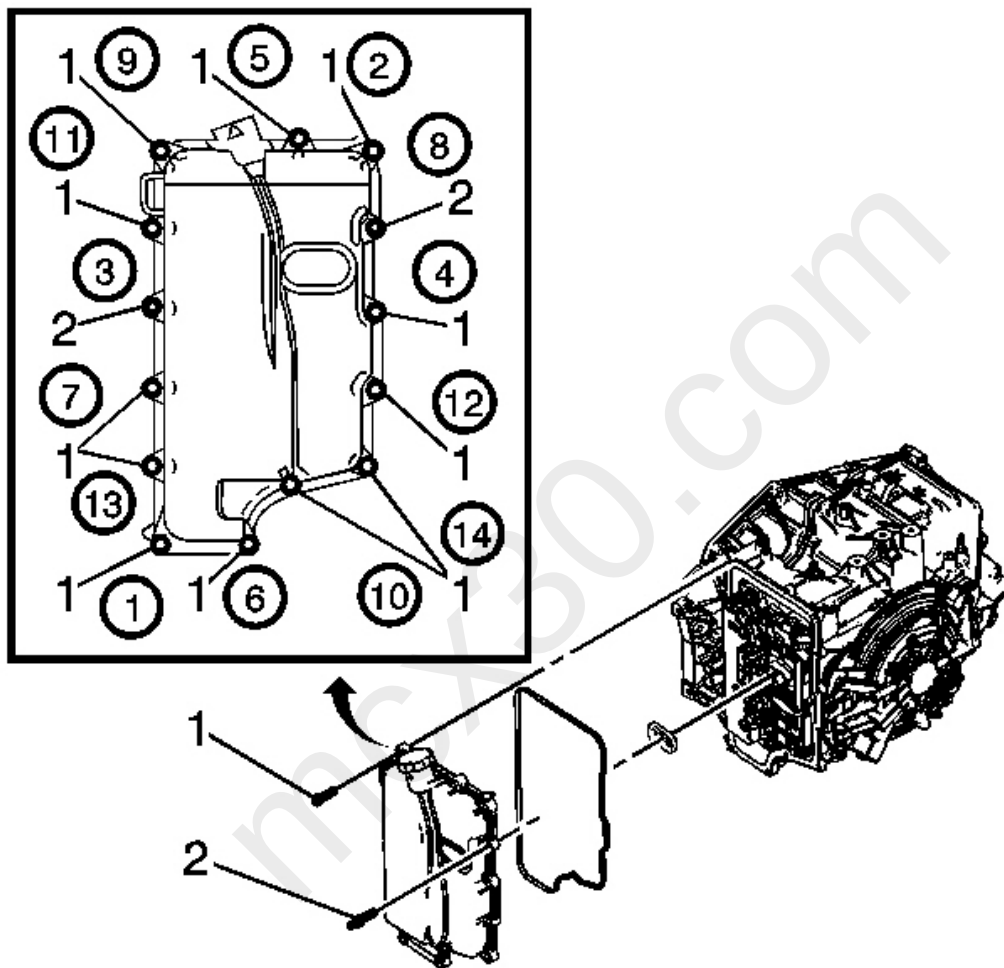


Fig. 39: Identifying Control Valve Body Cover Bolt Tightening Sequence
Courtesy of GENERAL MOTORS CORP.

NOTE: The holes in the control valve body cover wiring connector hole seal must face toward the control solenoid valve assembly. If the holes face toward the valve body cover, there is a potential for a leak around the seal.

1. Install the control valve body cover wiring connector hole seal.

2. Install the control valve body cover gasket to the control valve body cover.
3. Install the control valve body cover.
4. Lower the transmission and remove the transmission jack.

CAUTION: Refer to Fastener Caution .

NOTE: Install all control valve body cover bolts and studs by hand then torque all bolts and studs in sequence.

5. Install the 12 control valve body cover bolts (1) M6 x 30 and tighten the bolts in sequence to 12 N.m (106 lb in).
6. Install the 2 control valve body cover studs (2) M6 x 30 and tighten the studs in sequence to 12 N.m (106 lb in).

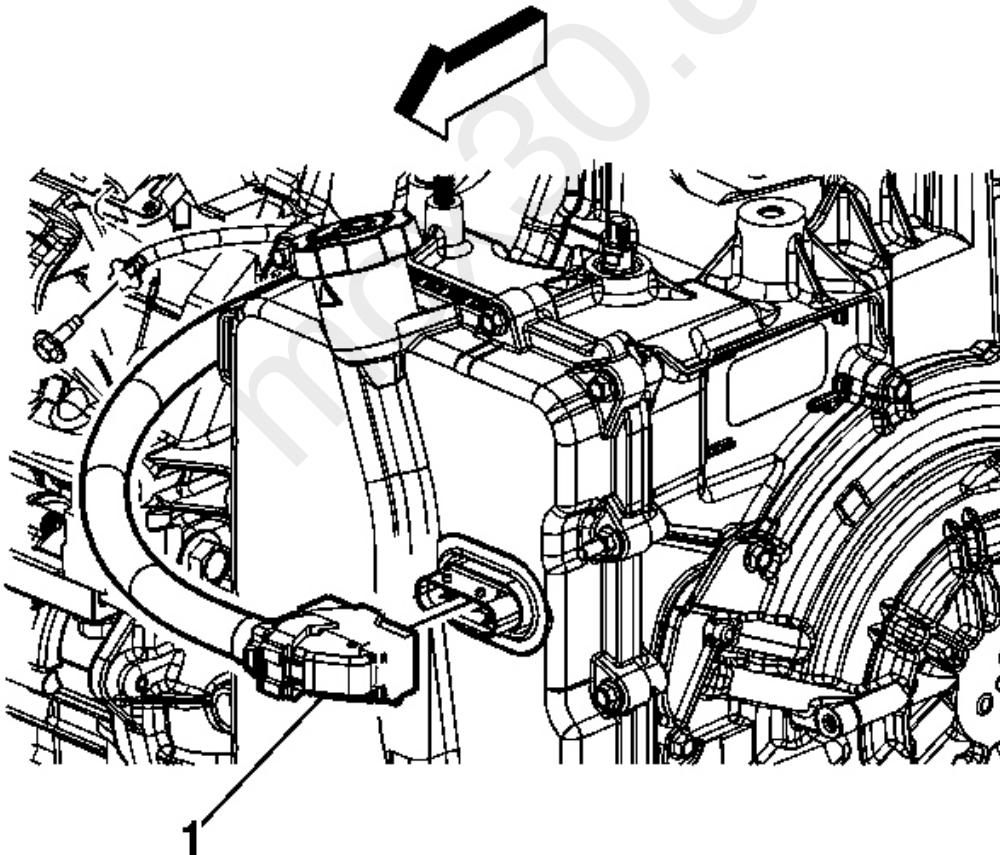


Fig. 40: Identifying Control Valve Body Transmission Control Module Electrical Connector
Courtesy of GENERAL MOTORS CORP.

7. Connect the control valve body TCM electrical connector (1).
8. Install the lower nuts to the left transmission mount. Refer to **Transmission Mount Replacement - Left Side**.
9. Install the front transmission mount. Refer to **Transmission Front Mount Replacement**.
10. Lower the vehicle.

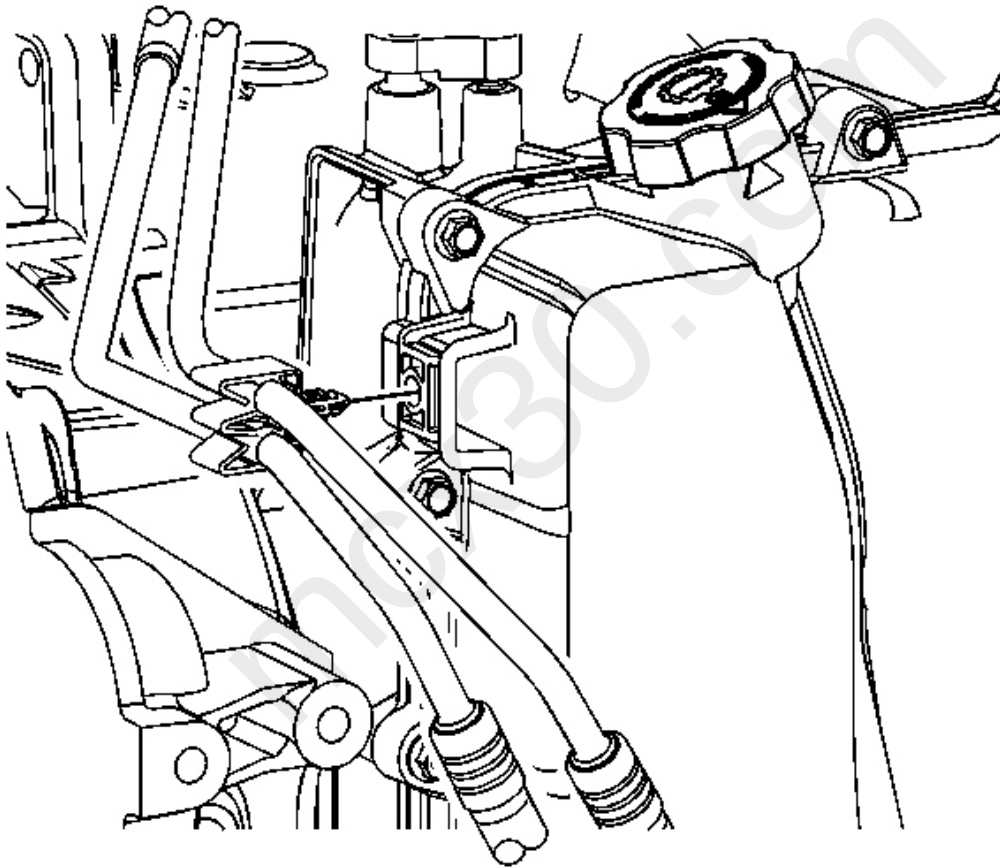


Fig. 41: View Of Oil Cooler Inlet & Outlet Hoses
Courtesy of GENERAL MOTORS CORP.

11. Install the oil cooler inlet and outlet hoses to the retainer on the control valve body cover.
12. Install the battery tray. Refer to **Battery Tray Replacement**.
13. Fill the transmission. Refer to **Transmission Fluid Replacement**.

14. Check for leaks.

CONTROL SOLENOID VALVE AND TRANSMISSION CONTROL MODULE ASSEMBLY REPLACEMENT

Removal Procedure

1. Remove the control valve body cover. Refer to Control Valve Body Cover Replacement.

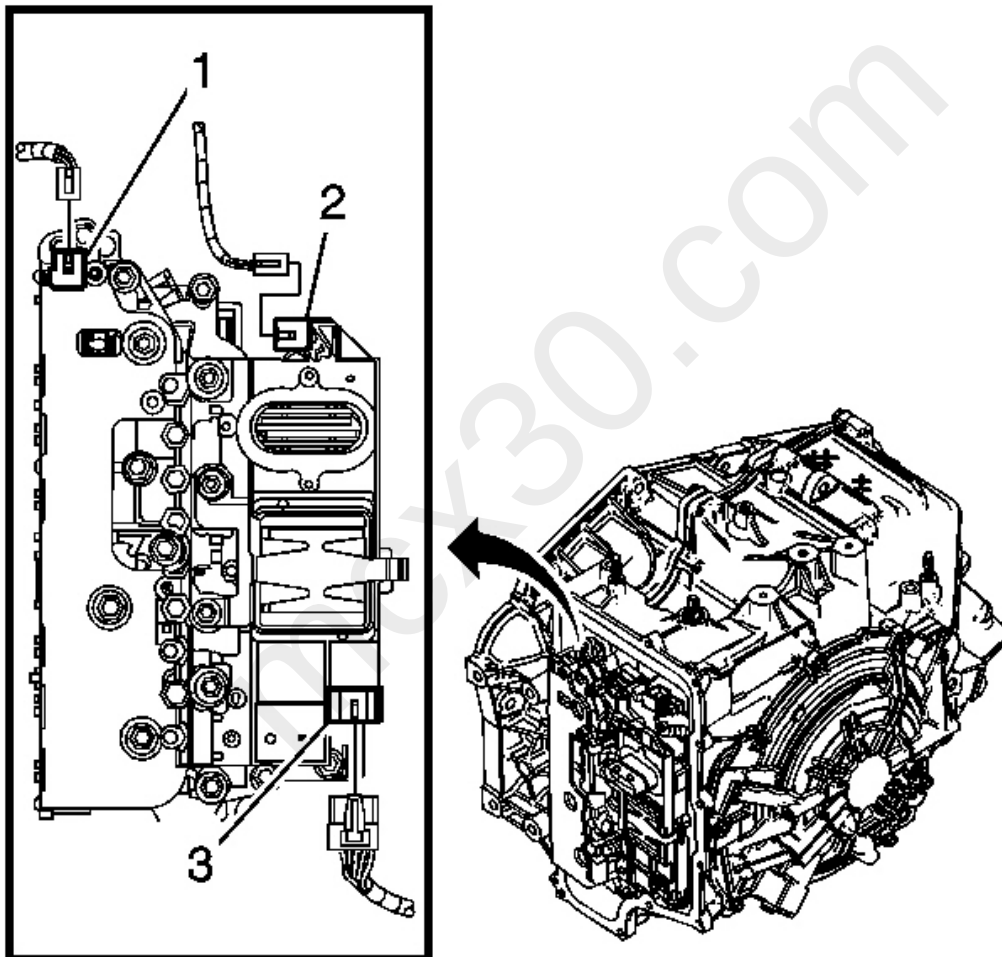


Fig. 42: Identifying Speed Sensor & Shift Position Switch Electrical Connectors
Courtesy of GENERAL MOTORS CORP.

2. Disconnect the input speed sensor electrical connector (1).

3. Disconnect the output speed sensor electrical connector (2).
4. Disconnect the shift position switch electrical connector (3).

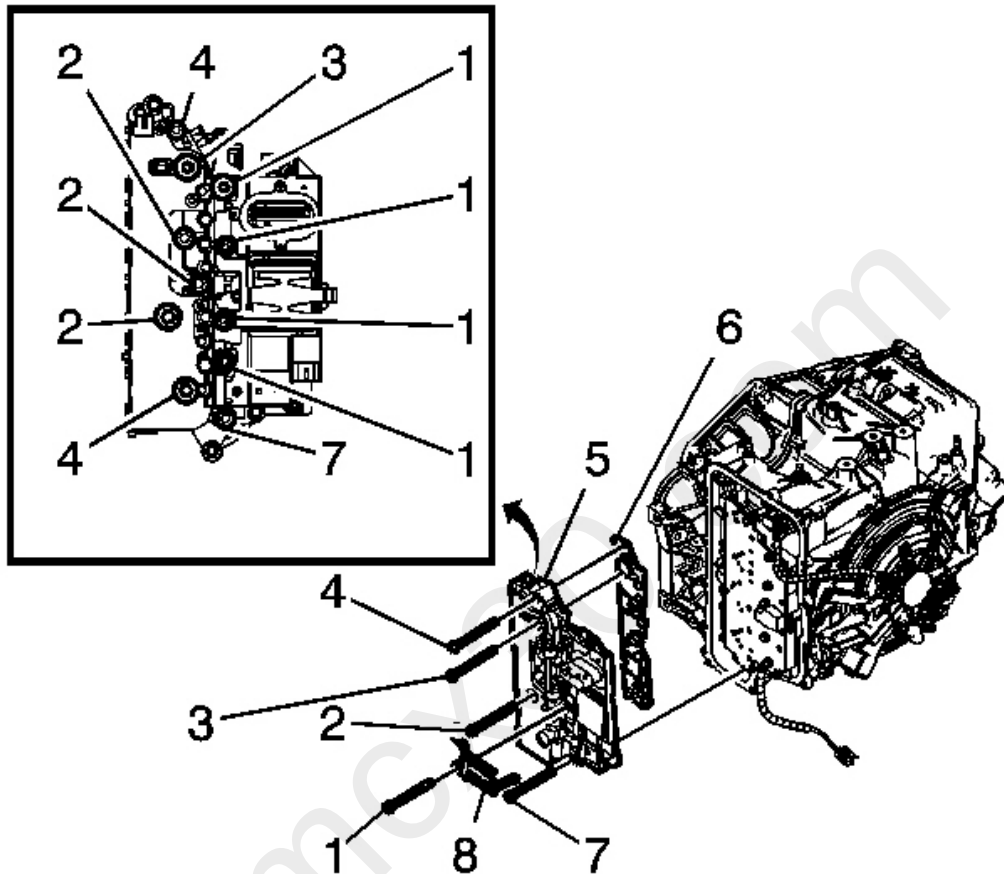


Fig. 43: Identifying Control Valve Body Bolts
Courtesy of GENERAL MOTORS CORP.

5. Remove the 4 control valve body bolts (1) M6 x 80.
6. Position the control solenoid valve spring (8) to the side. Spring will be released with the removal of the control valve body assembly.
7. Remove the 2 control valve body bolts (4) M6 x 65.
8. Remove the control valve body bolt (3) M6 x 42.
9. Remove the 3 control valve body bolts (2) M6 x 95.
10. Remove the control valve body bolt (7) M6 x 55.
11. Remove the control solenoid valve body and transmission control module (TCM) assembly (5).

CAUTION: Use care when removing or installing the filter plate assembly. A broken or missing retaining tab may not adequately secure the filter plate to the control solenoid valve assembly, resulting in possible damage or contamination.

12. Remove the control solenoid valve assembly filter plate (6).

- Discard the filter plate. It is not reusable.
- Inspect the pressure switch manifold seals for damage or contamination. Replace the control solenoid valve assembly as necessary.
- Inspect the upper channel plate bolt holes for damage, peening or burnelling. Any damage around the bolt holes near the pressure control switch (PCS) feed holes could cause leakage around the PCS seals. Replace the upper channel plate as necessary.

Installation Procedure

CAUTION: Use care when removing or installing the filter plate assembly. A broken or missing retaining tab may not adequately secure the filter plate to the control solenoid valve assembly, resulting in possible damage or contamination.

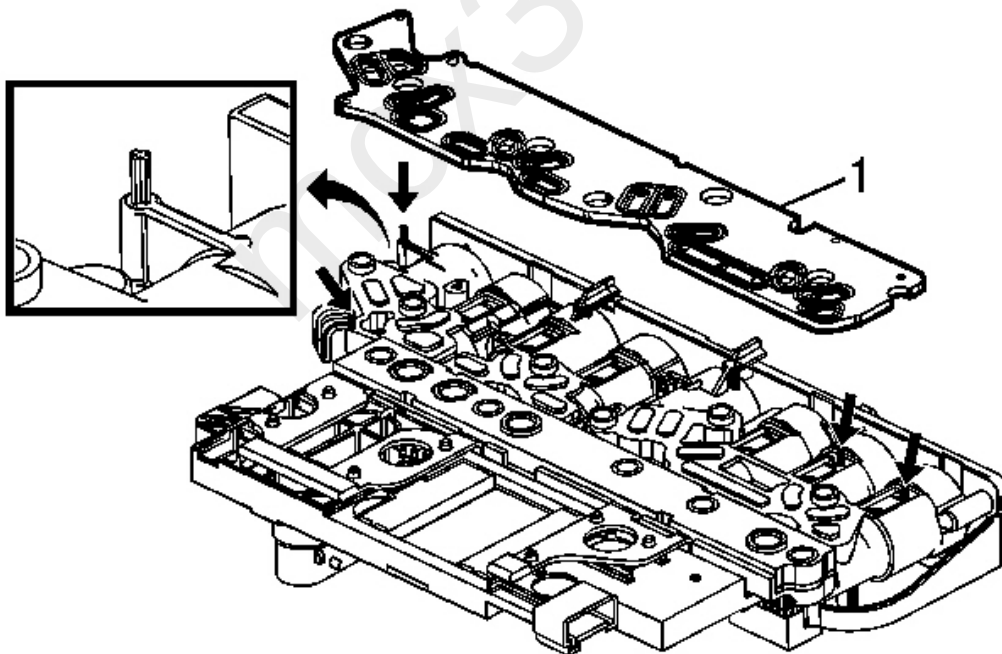


Fig. 44: Identifying Control Solenoid Valve Assembly Filter Plate

Courtesy of GENERAL MOTORS CORP.

1. Install a NEW control solenoid valve assembly filter plate (1).

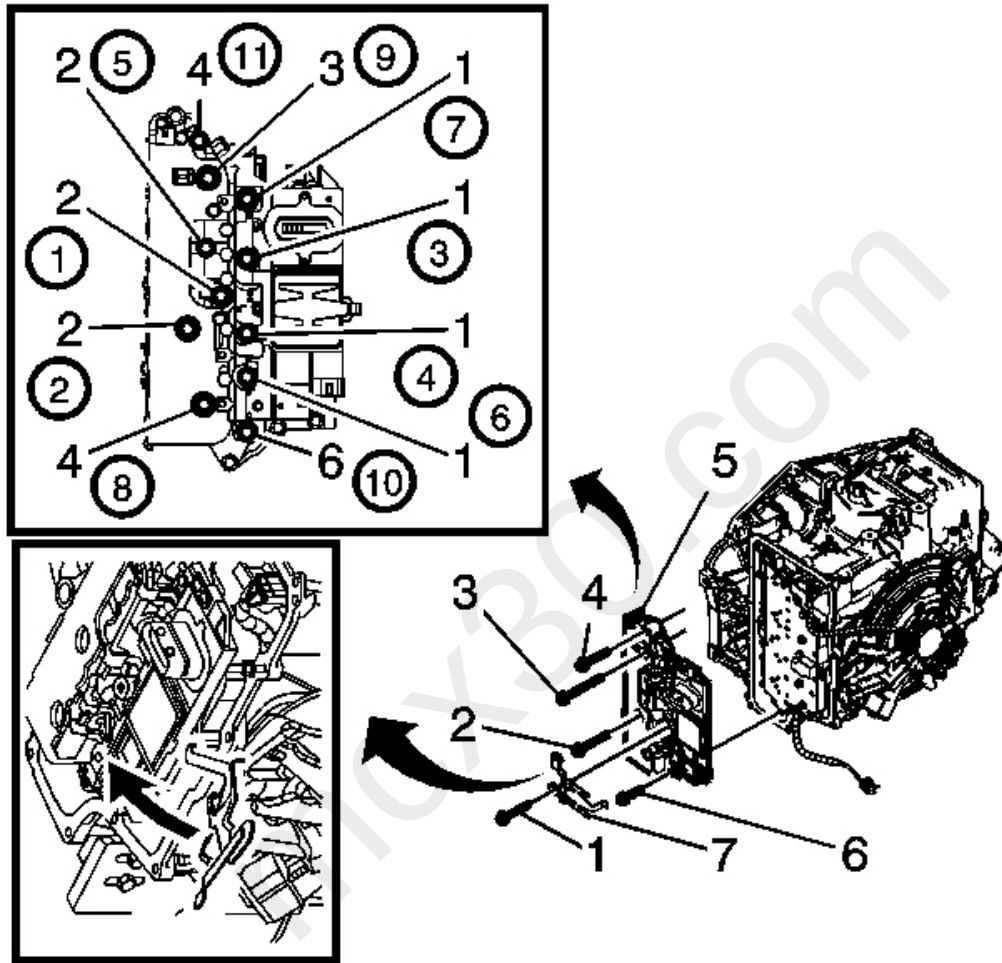


Fig. 45: Identifying Control Valve Body Bolt Tightening Sequence
Courtesy of GENERAL MOTORS CORP.

2. Install the control solenoid valve body and TCM assembly (5).
3. Rotate the control solenoid valve spring (7) into position.

CAUTION: Refer to Fastener Caution .

NOTE: Install all bolts before tightening, then tighten in specified sequence.

4. Install the 4 control valve body bolts (1) M6 x 80.
5. Install the control valve body bolt (6) M6 x 55.
6. Install the 3 control valve body bolts (2) M6 x 95.
7. Install the control valve body bolt (3) M6 x 42.
8. Install the 2 control valve body bolts (4) M6 x 65 and tighten to 12 N.m (106 lb in).

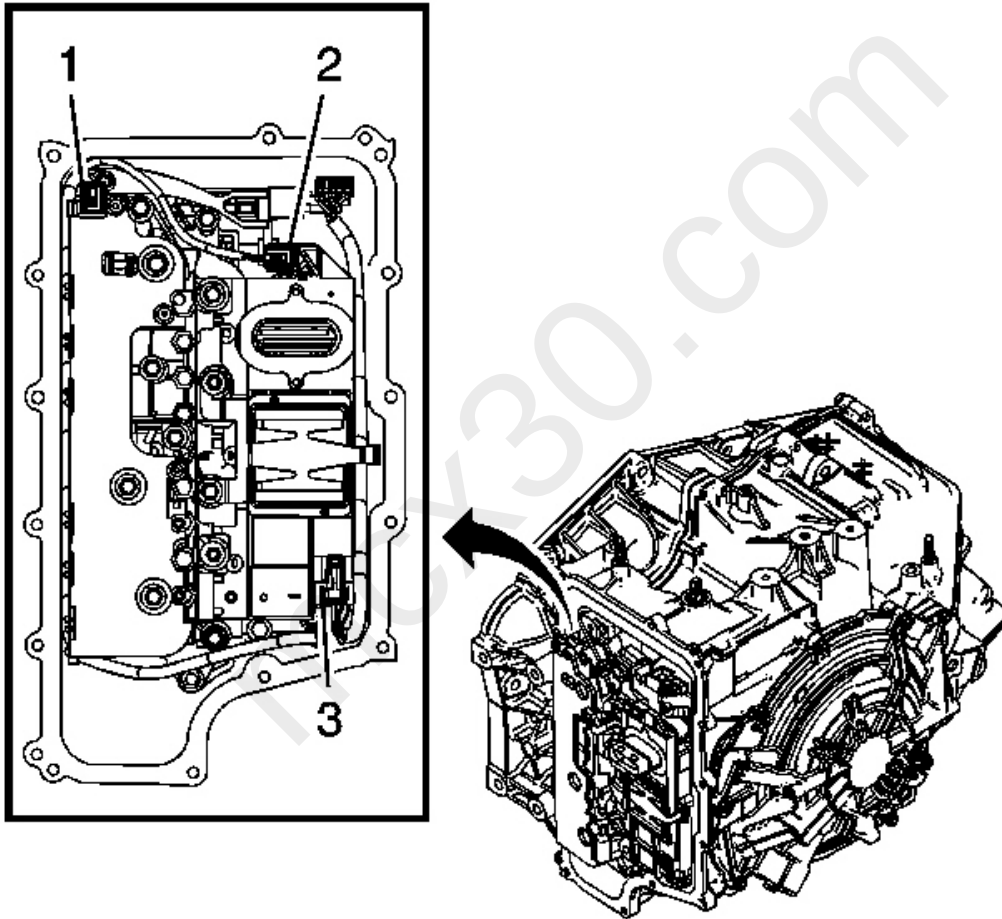


Fig. 46: Identifying Speed Sensor & Shift Position Switch Electrical Connectors
Courtesy of GENERAL MOTORS CORP.

9. Connect the input speed sensor electrical connector (1).
10. Connect the output speed sensor electrical connector (2).

11. Connect the shift position switch electrical connector (3).
12. Install the control valve body cover. Refer to **Control Valve Body Cover Replacement**.
13. For transmission control module programming and setup. Refer to **Control Module References** .

NOTE: **After an internal transmission repair or internal part replacement the service fast learn adapt procedure should be performed.**

14. Perform the transmission adaptive values learn procedure. Refer to **Transmission Adaptive Values Learn** .

CONTROL VALVE LOWER BODY AND UPPER BODY REPLACEMENT

Removal Procedure

1. Remove the control valve body cover. Refer to **Control Valve Body Cover Replacement**.

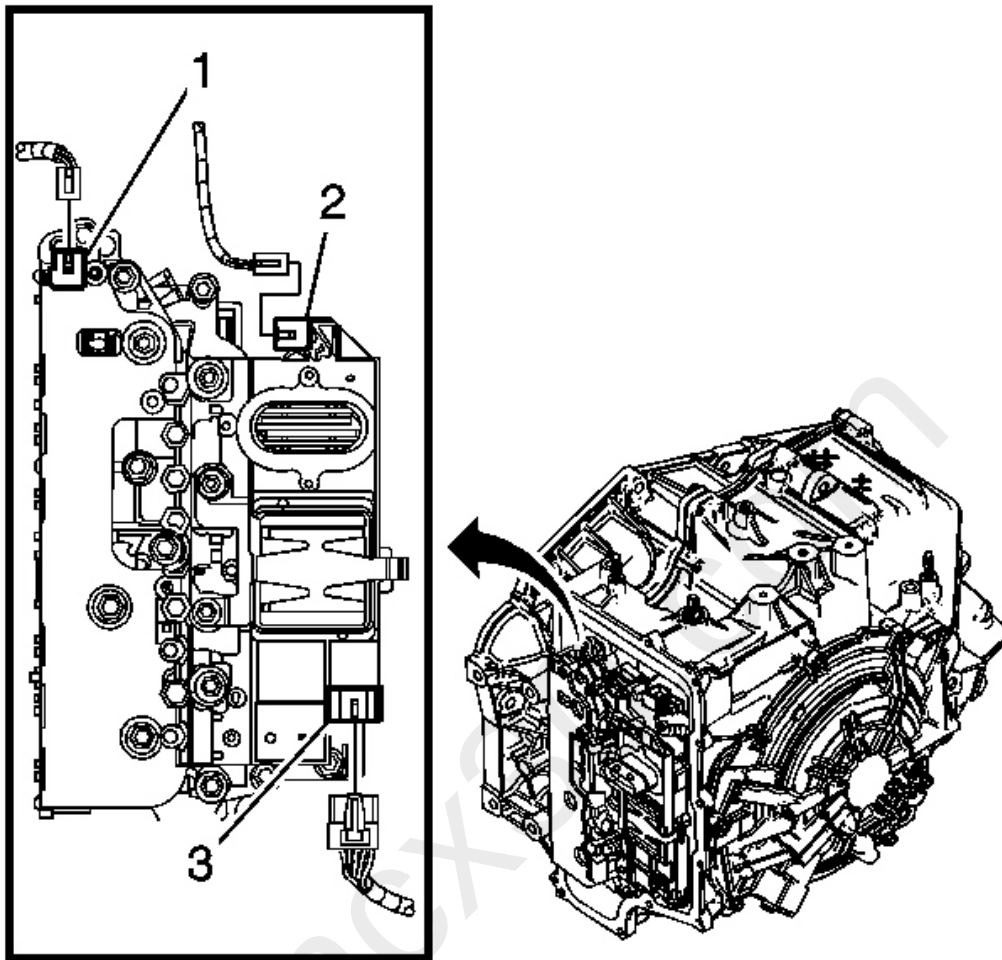


Fig. 47: Identifying Speed Sensor & Shift Position Switch Electrical Connectors
Courtesy of GENERAL MOTORS CORP.

2. Disconnect the input speed sensor electrical connector (1).
3. Disconnect the output speed sensor electrical connector (2).
4. Disconnect the shift position switch electrical connector (3).

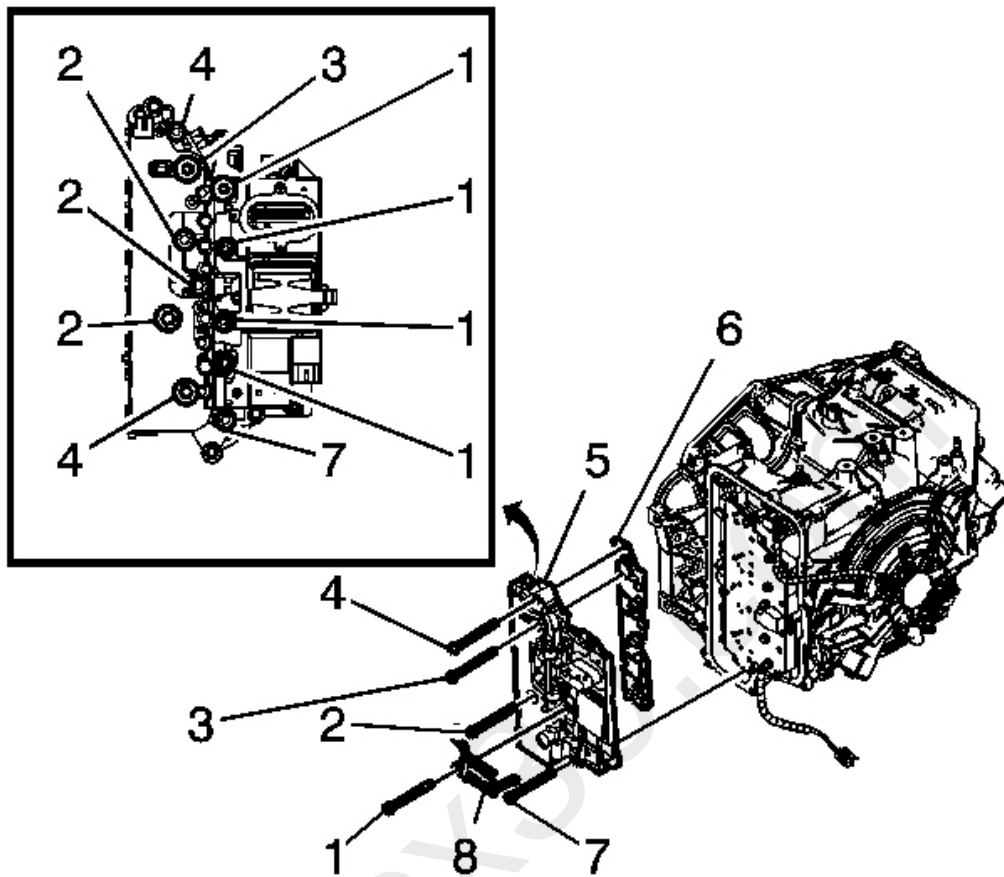


Fig. 48: Identifying Control Valve Body Bolts
Courtesy of GENERAL MOTORS CORP.

5. Remove the 4 control valve body bolts (1) M6 x 80.
6. Position the control solenoid valve spring (8) to the side. Spring will be released with removal of lower control valve body.
7. Remove the 2 control valve body bolts (4) M6 x 65.
8. Remove the control valve body bolt (3) M6 x 42.
9. Remove the 3 control valve body bolts (2) M6 x 95.
10. Remove the control valve body bolt (7) M6 x 55.
11. Remove the control solenoid valve body and transmission control module (TCM) assembly (5).

CAUTION: Use care when removing or installing the filter plate assembly. A broken or missing retaining tab may not adequately secure the filter

plate to the control solenoid valve assembly, resulting in possible damage or contamination.

12. Remove the control solenoid valve body assembly filter plate (6).
- Discard the filler plate. It is not reusable.
 - Inspect the pressure switch manifold seals for damage or contamination. Replace the control solenoid valve assembly as necessary.
 - Inspect the upper channel plate bolt holes for damage, peening or burnelling. Any damage around the bolt holes near the PCS switch feed holes could cause leakage around the PCS switch seals. Replace the upper channel plate as necessary.

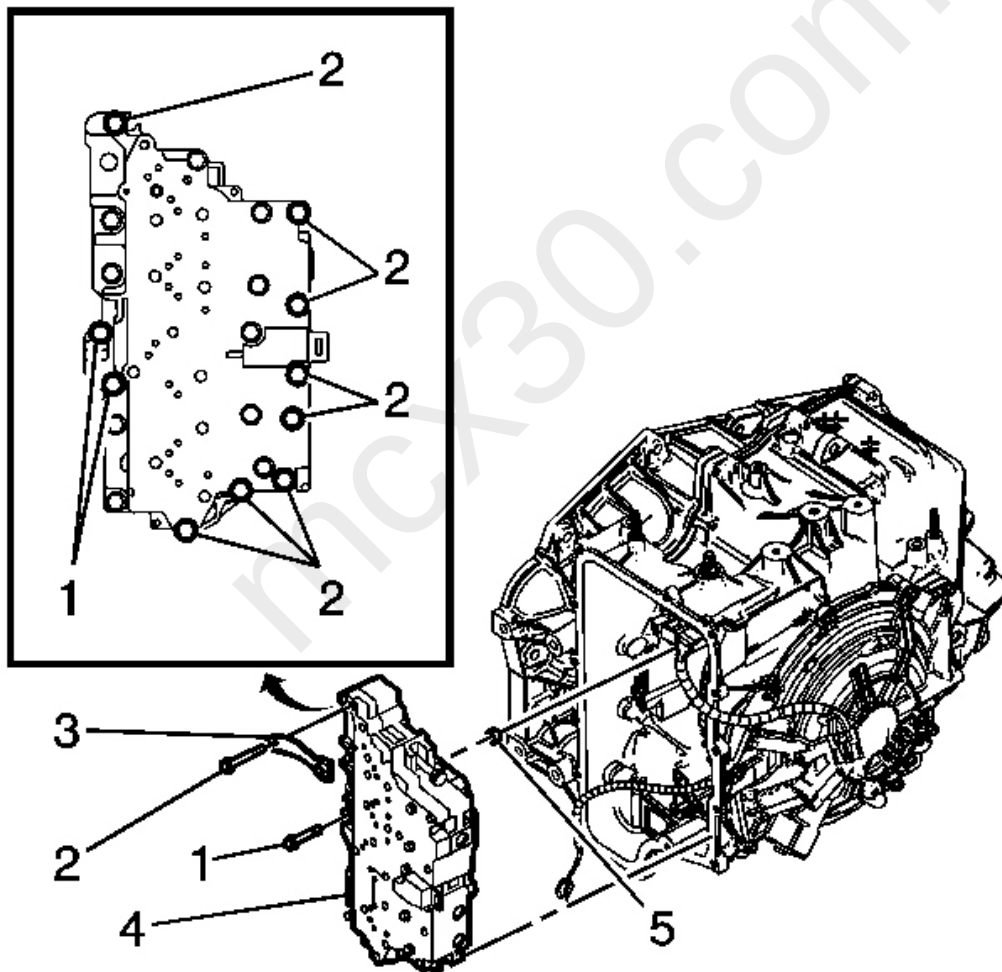


Fig. 49: Identifying Control Valve Body Bolts

Courtesy of GENERAL MOTORS CORP.

13. Remove the 8 control valve body bolts (2) M6 x 65.
14. Remove the 2 control valve body bolts (1) M6 x 55.
15. Remove the manual shaft detent assembly (3).
16. Remove the control valve body assembly (4).
17. The control solenoid valve spring can now be fully removed from the lower control valve body assembly.

NOTE: The clutch fluid passage seal is not reusable.

18. Remove the 1-2-3-4 clutch fluid passage seal (5).

Installation Procedure

mcx30.com

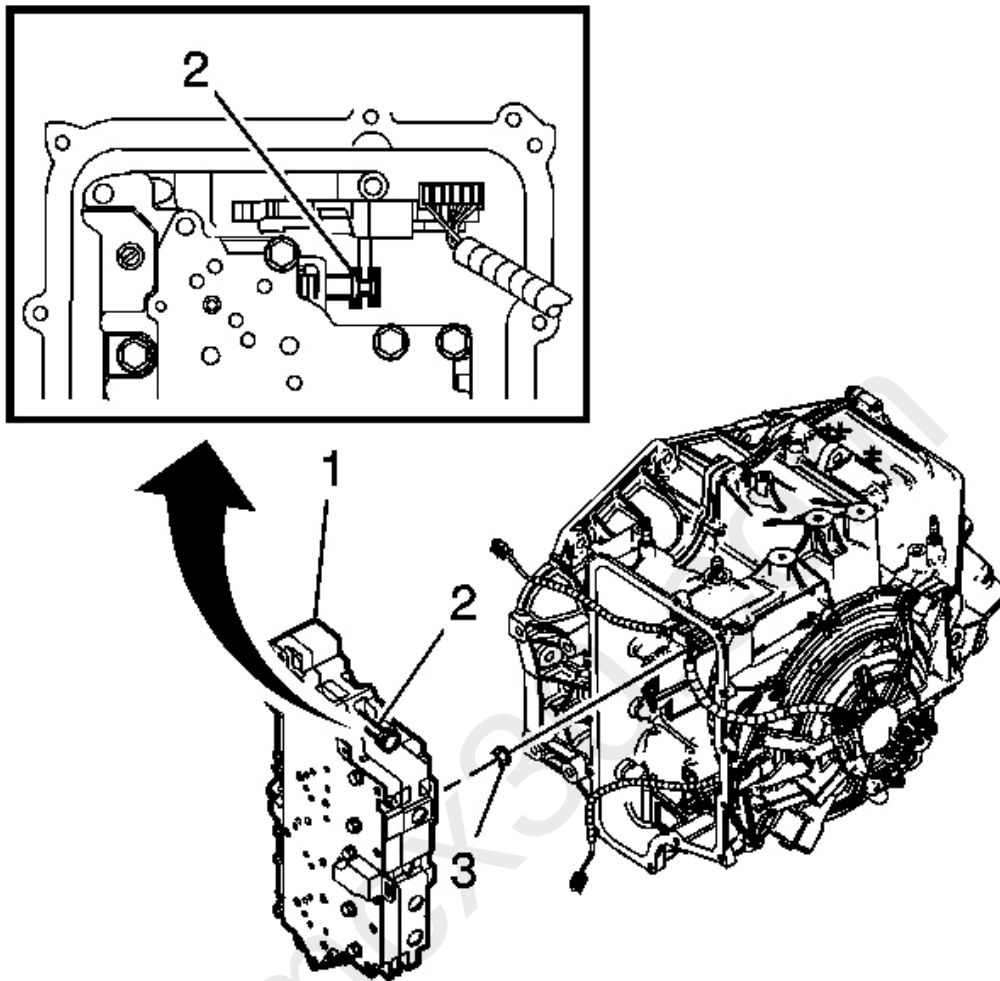


Fig. 50: Identifying Control Valve Body Components
Courtesy of GENERAL MOTORS CORP.

NOTE: The clutch fluid passage seal is not reusable.

1. Install a NEW 1-2-3-4 clutch fluid passage seal (3).

NOTE:

- Ensure the control solenoid valve spring is attached to the lower control valve body assembly.
- Align the manual valve (2) to the detent lever assembly while installing the lower control valve body assembly.

2. Install the control valve body assembly (1).

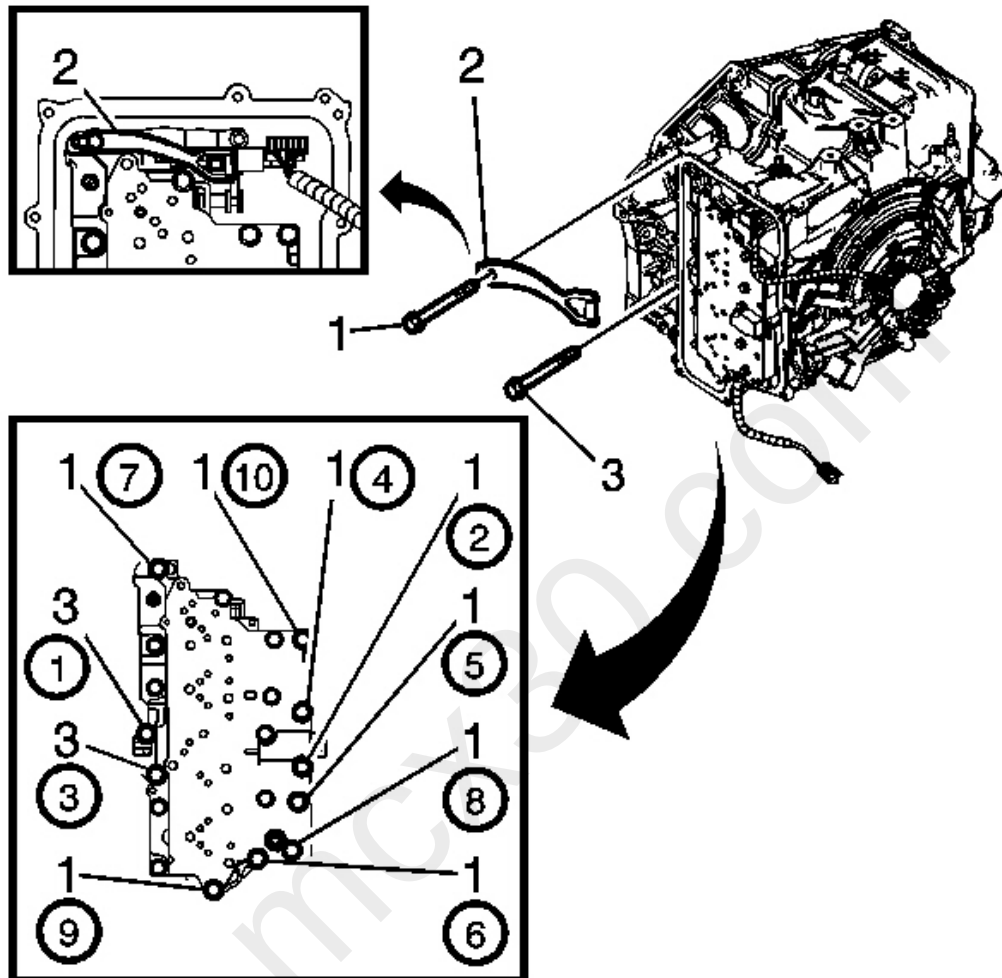


Fig. 51: Identifying Control Valve Body Bolt Tightening Sequence
Courtesy of GENERAL MOTORS CORP.

NOTE: Ensure proper alignment of the detent assembly to the detent lever assembly with position switch while tightening the bolt. The detent assembly can move and hit the valve body assembly that could cause improper engagement with the detent lever assembly.

3. Install the manual shaft detent assembly (2).

CAUTION: Refer to Fastener Caution .

NOTE: Install all bolts before tightening, then tighten in specified sequence.

4. Install the 8 control valve body bolts (1) M6 x 65 and tighten to 12 N.m (106 lb in).
5. Install the 2 control valve body bolts (3) M6 x 55 and tighten to 12 N.m (106 lb in).

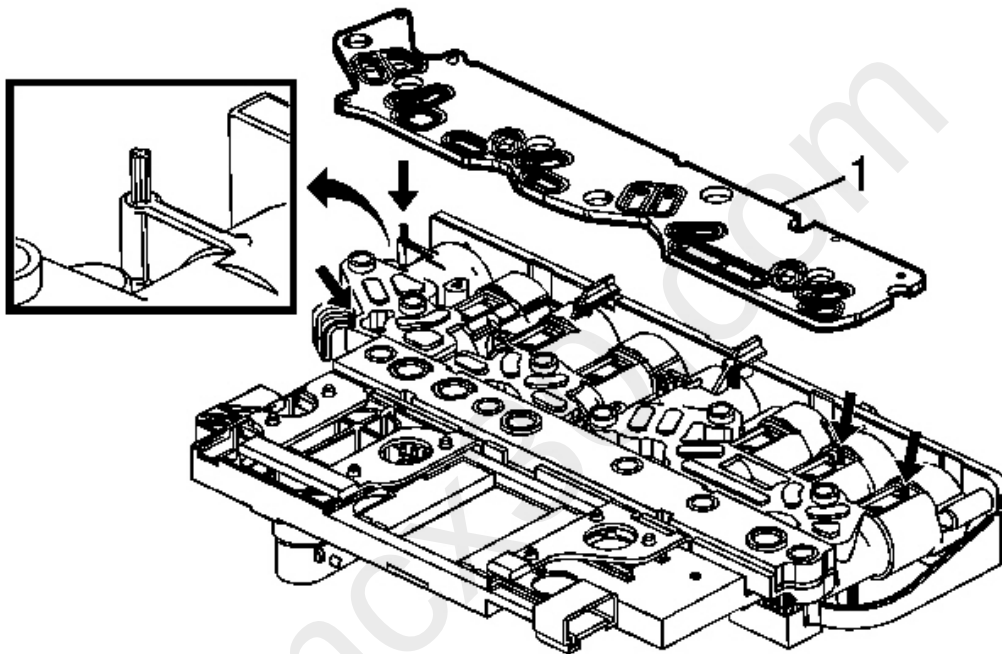


Fig. 52: Identifying Control Solenoid Valve Assembly Filter Plate
Courtesy of GENERAL MOTORS CORP.

CAUTION: Use care when removing or installing the filter plate assembly. A broken or missing retaining tab may not adequately secure the filter plate to the control solenoid valve assembly, resulting in possible damage or contamination.

6. Install a NEW control solenoid valve assembly filter plate (1).

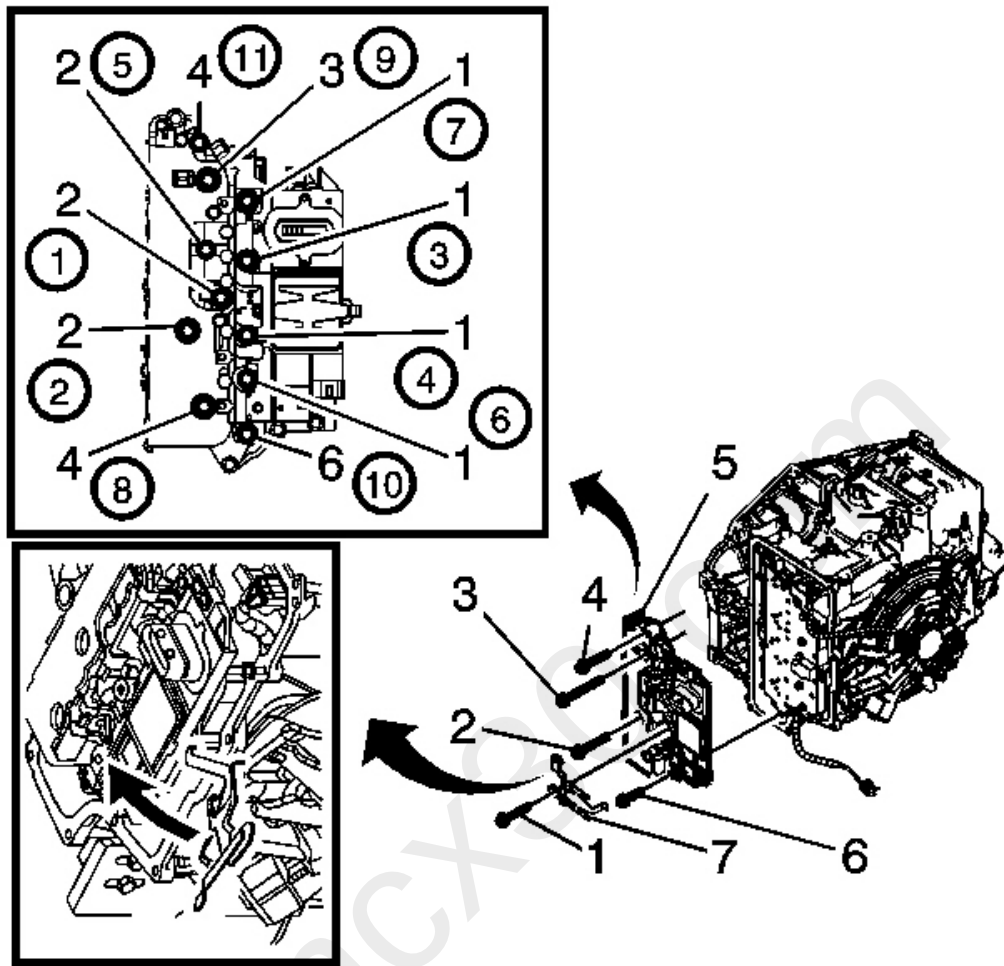


Fig. 53: Identifying Control Valve Body Bolt Tightening Sequence
 Courtesy of GENERAL MOTORS CORP.

7. Install the control solenoid valve body and TCM assembly (5).
8. Rotate the control solenoid valve spring (7) into position.

NOTE: **Install all bolts before tightening, then tighten in specified sequence.**

9. Install the 4 control valve body bolts (1) M6 x 80.
10. Install the control valve body bolt (6) M6 x 55.
11. Install the 3 control valve body bolts (2) M6 x 95.
12. Install the control valve body bolt (3) M6 x 42.

13. Install the 2 control valve body bolts (4) M6 x 65.

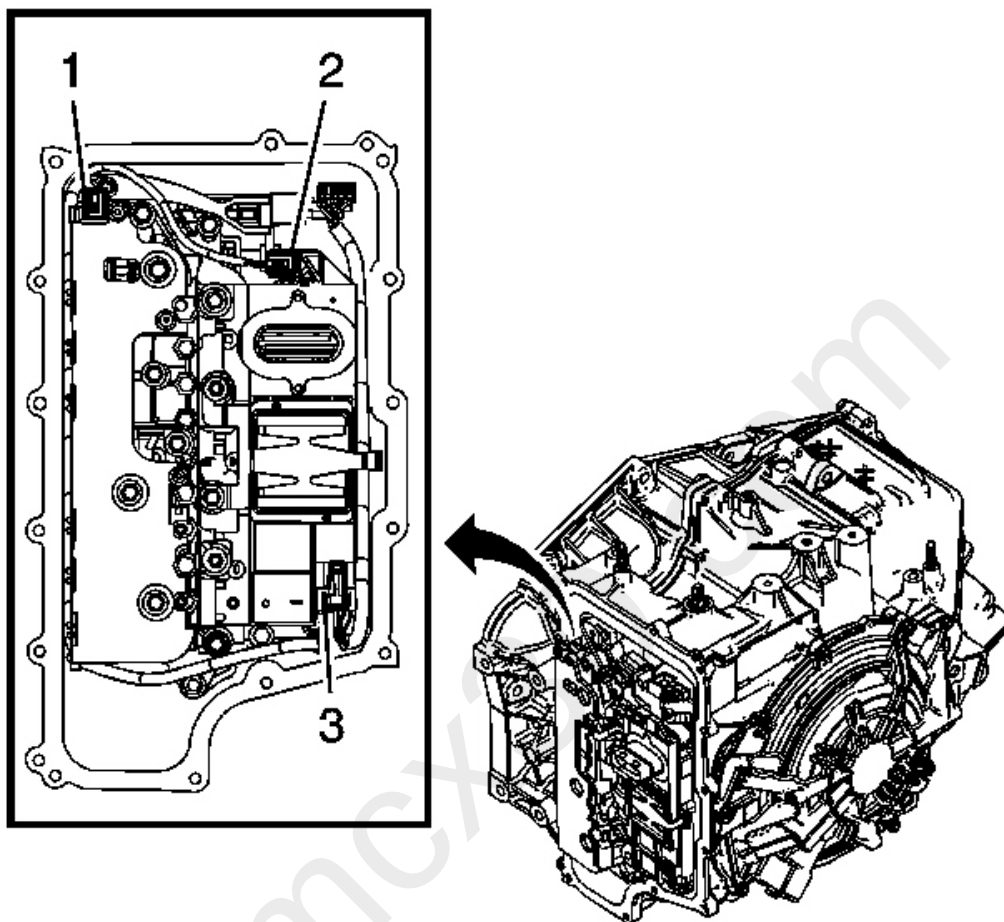


Fig. 54: Identifying Speed Sensor & Shift Position Switch Electrical Connectors
Courtesy of GENERAL MOTORS CORP.

14. Connect the input speed sensor electrical connector (1).
15. Connect the output speed sensor electrical connector (2).
16. Connect the shift position switch electrical connector (3).
17. Install the control valve body cover. Refer to **Control Valve Body Cover Replacement**.
18. For transmission control module programming and setup. Refer to **Control Module References**.

NOTE: After an internal transmission repair or internal part replacement the service fast learn adapt procedure should be performed.

19. Perform the transmission adaptive values learn procedure. Refer to **Transmission Adaptive Values Learn** .

OUTPUT SPEED SENSOR REPLACEMENT

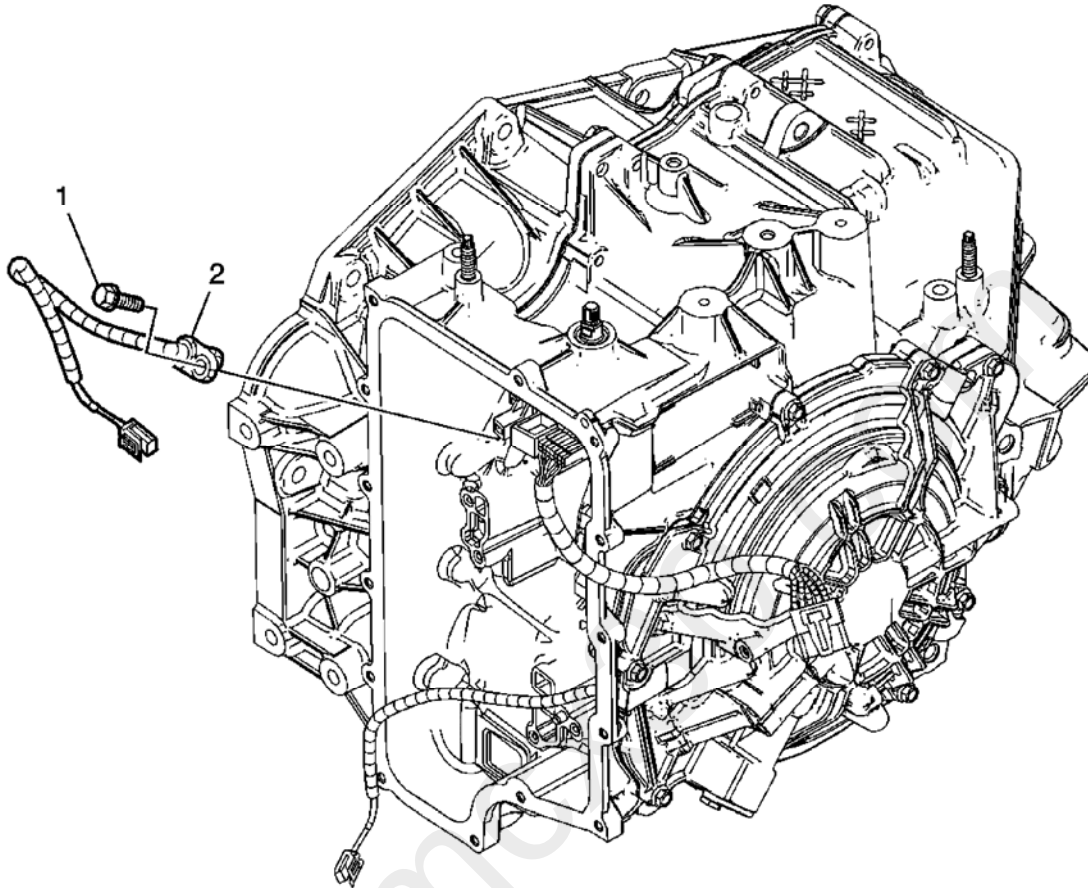


Fig. 55: Output Speed Sensor
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedures	
1. Raise and support the vehicle. Refer to <u>Lifting and Jacking the Vehicle</u> .	
2. Remove the control valve lower body and upper body. Refer to <u>Control Valve Lower Body and Upper Body Replacement</u> .	
1	Output Speed Sensor Bolt M6 x 25 CAUTION: Refer to <u>Fastener Caution</u> .

	Tighten: 12 N.m (106 lb in)
2	Output Speed Sensor Procedure: Perform the service programming system procedure. Refer to <u>Service Programming System (SPS)</u> . Tip: After an internal transmission repair or internal part replacement the service programming system procedure should be performed.

INPUT SPEED SENSOR REPLACEMENT

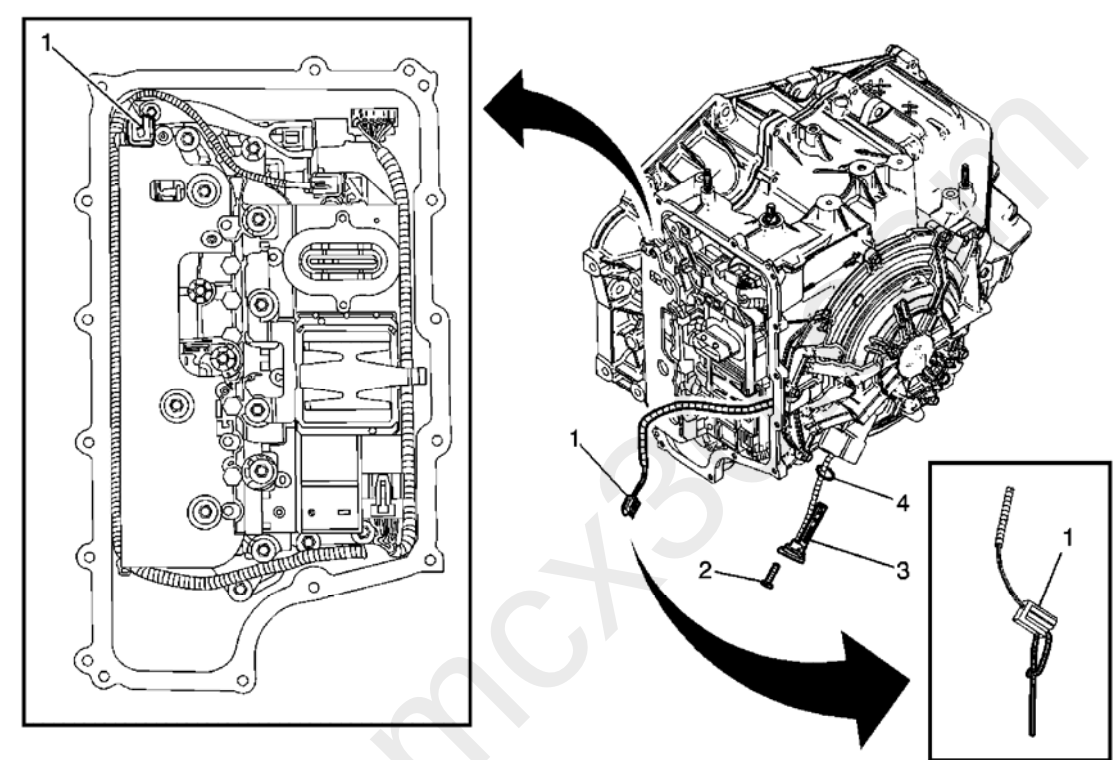


Fig. 56: Input Speed Sensor
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedures	
1.	Raise and support the vehicle. Refer to <u>Lifting and Jacking the Vehicle</u> .
2.	Drain the transmission, refill when repair is completed. Refer to <u>Transmission Fluid Replacement</u> .
3.	Remove the radiator air lower baffle and deflector assembly. Refer to <u>Radiator Air Lower Baffle and Deflector Replacement</u> .
4.	Remove the front transmission mount and bracket. Refer to <u>Transmission Front Mount Replacement</u> .

5. Remove the control valve body cover. Refer to **Control Valve Body Cover Replacement**.
6. Perform the service programming system procedure. Refer to **Service Programming System (SPS)**.

1	Input Speed Sensor (ISS) Wire Harness Procedure: Attach the DT-47734: tether to the ISS electrical connector locking tab before removal of old ISS to assist in installation of the new ISS. Special Tools: DT-47734: Speed Sensor Harness Tether
2	Input Speed Sensor Bolt M6 x 25 CAUTION: Refer to <u>Fastener Caution</u> . Procedure: Apply threadlocker GM P/N 12345382 (Canadian P/N 10953489) or equivalent to the input speed sensor bolt. Tighten: 9 N.m (80 lb in)
3	Input Speed Sensor Tip: After an internal transmission repair or internal part replacement the service programming system procedure should be performed.
4	Input Speed Sensor Seal

INPUT SPEED SENSOR SEAL REPLACEMENT

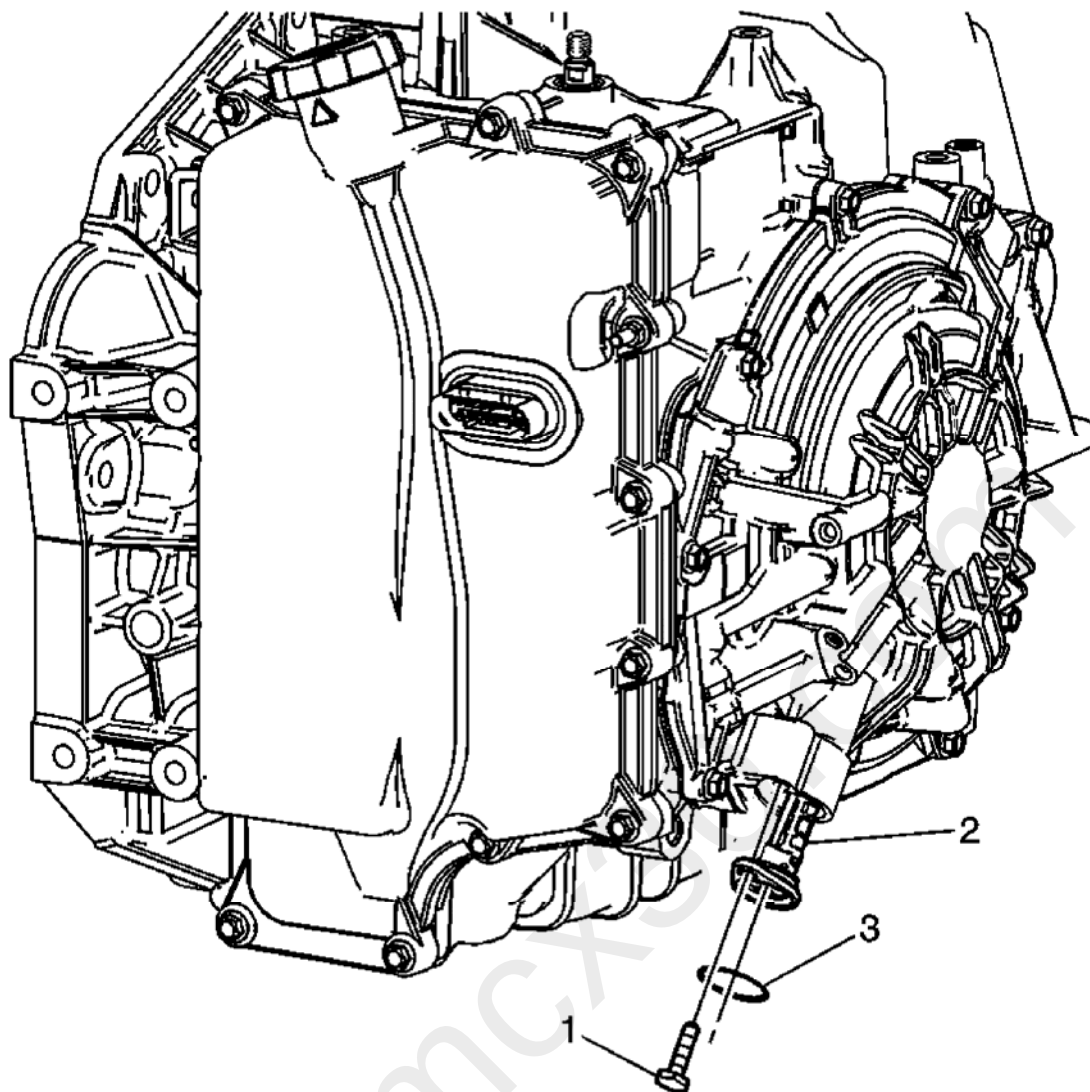


Fig. 57: Input Speed Sensor Seal
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedures	
1. Raise and support the vehicle. Refer to <u>Lifting and Jacking the Vehicle</u> . 2. Drain the transmission, refill when repair is completed. Refer to <u>Transmission Fluid Replacement</u> . 3. Remove the left wheel house. Refer to <u>Front Wheelhouse Liner Replacement (Equinox)</u> or <u>Front Wheelhouse Liner Replacement (Terrain)</u> .	
	Input Speed Sensor Bolt M6 x 25
	CAUTION:

	Refer to <u>Fastener Caution</u> .
1	Tip: Apply threadlocker to the input speed sensor bolt. Refer to <u>Adhesives, Fluids, Lubricants, and Sealers</u> for the recommended threadlock material. Tighten: 9 N.m (80 lb in)
2	Input Speed Sensor (ISS) Tip: Pull the ISS out of the case cover just far enough to gain access to the ISS seal.
3	Input Speed Sensor Seal Tip: • Remove the ISS seal by pulling it over the end of the ISS base. • Install the new ISS seal by gently stretching it over the ISS base. Overstretching the seal will cause it to not seal properly. The seal is coated with a dry lubricant. If the coating is missing, lubricate the seal with automatic transmission fluid prior to installation.

TRANSMISSION MOUNT REPLACEMENT - LEFT SIDE

Removal Procedure

1. Remove the battery tray. Refer to **Battery Tray Replacement** .
2. Remove the underhood electrical center.
3. Support the engine and transmission.
4. Raise and support the vehicle. Refer to **Lifting and Jacking the Vehicle** .

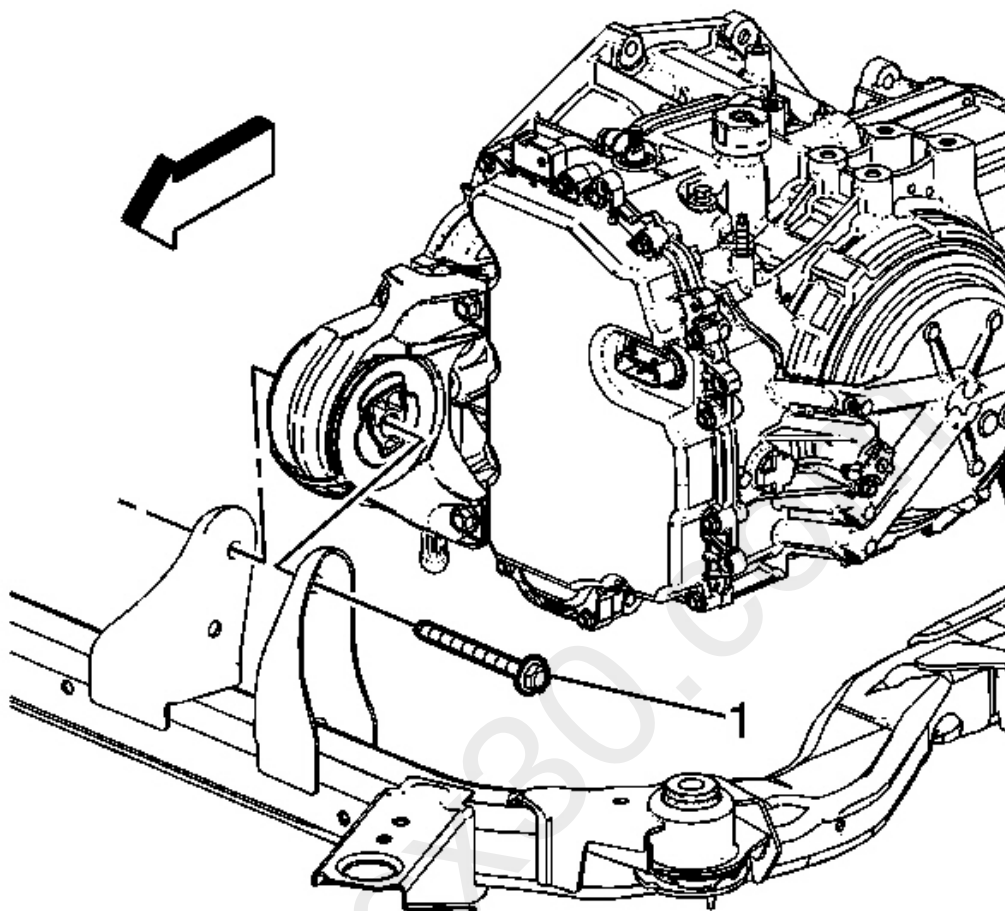


Fig. 58: Front Transmission Mount To Frame Bolt
Courtesy of GENERAL MOTORS CORP.

5. Remove the front transmission mount to frame bolt (1).

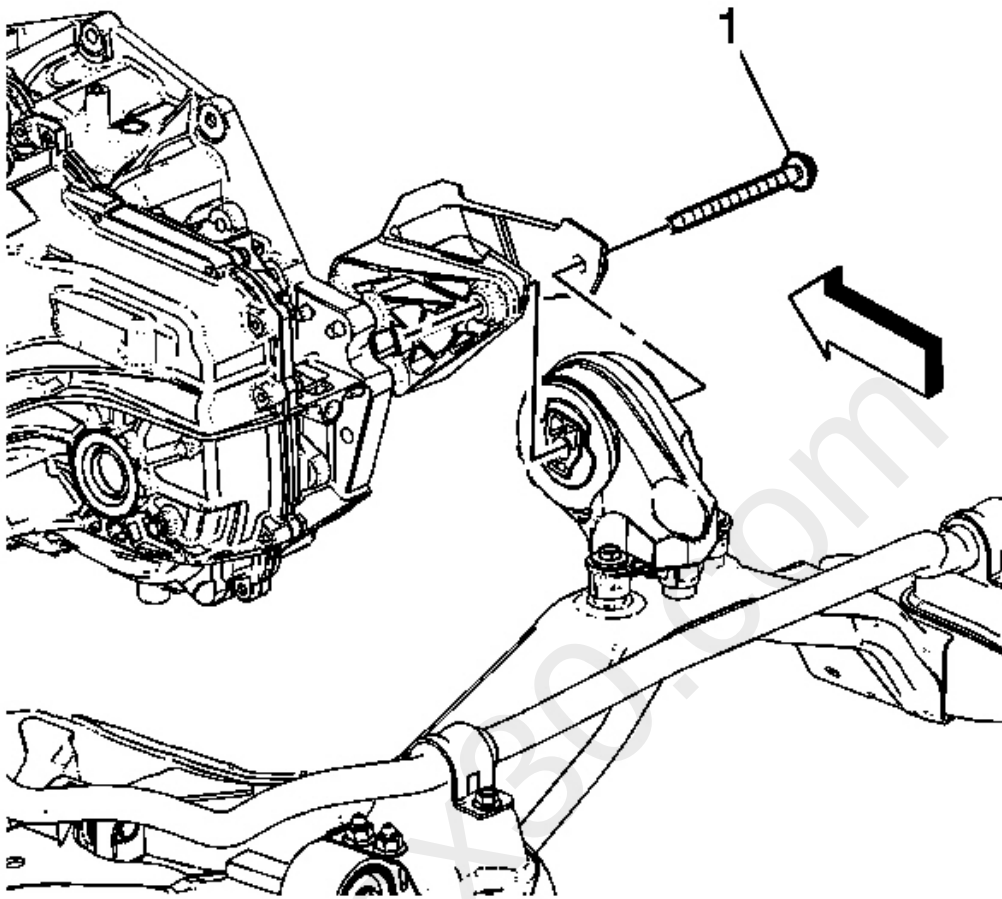


Fig. 59: Rear Transmission Mount To Rear Transmission Mount Bracket Bolt
Courtesy of GENERAL MOTORS CORP.

6. Remove the rear transmission mount to rear transmission mount bracket bolt (1).
7. Lower the vehicle.

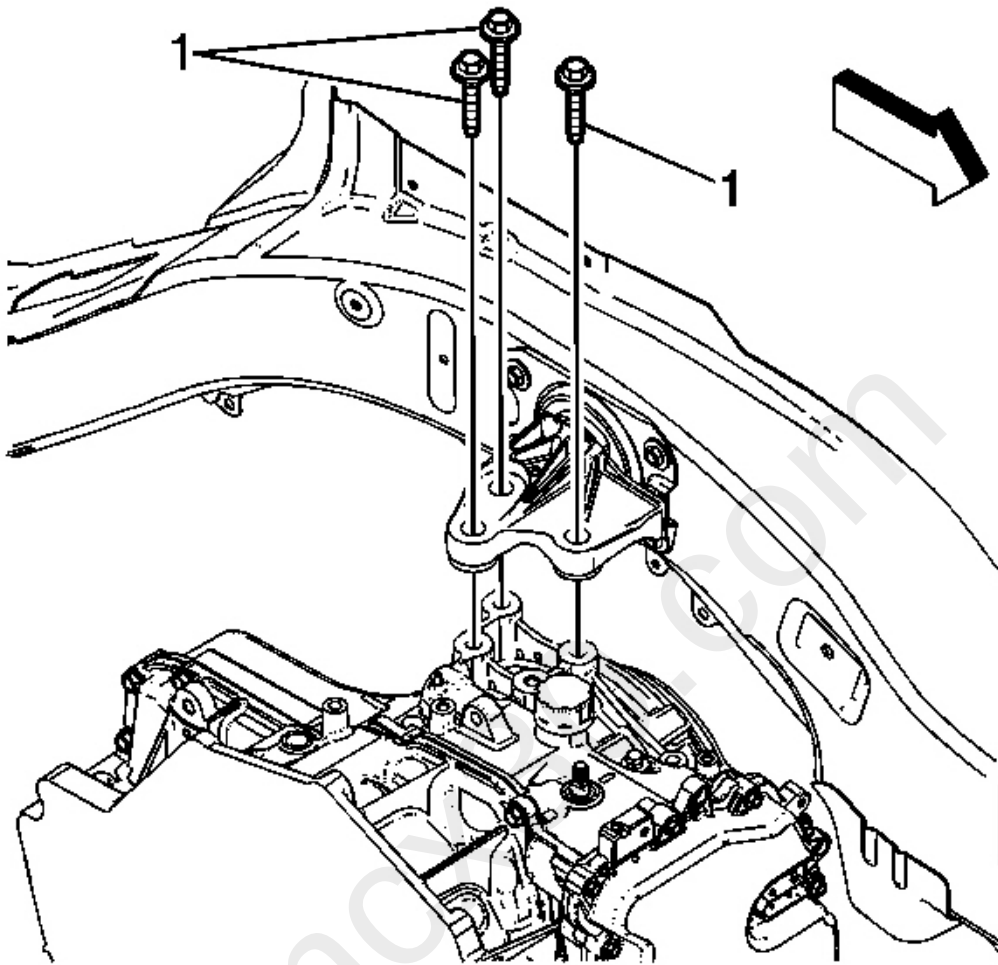


Fig. 60: Left Transmission Mount To Transmission Bolts
Courtesy of GENERAL MOTORS CORP.

8. Remove the left transmission mount to transmission bolts (1).

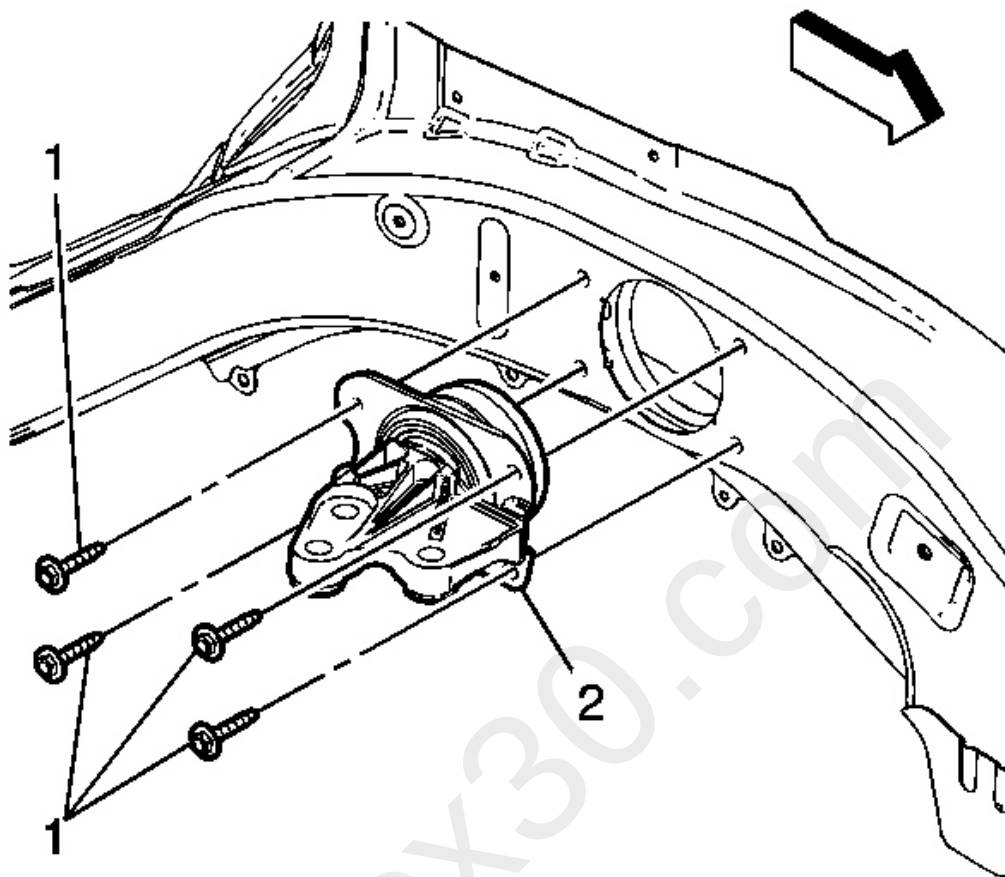


Fig. 61: Left Transmission Mount To Frame Rail Bolts
Courtesy of GENERAL MOTORS CORP.

9. Remove the left transmission mount to frame rail bolts (1).
10. Lower the transmission enough to provide clearance for the left transmission mount.
11. Remove the left transmission mount (2).

Installation Procedure

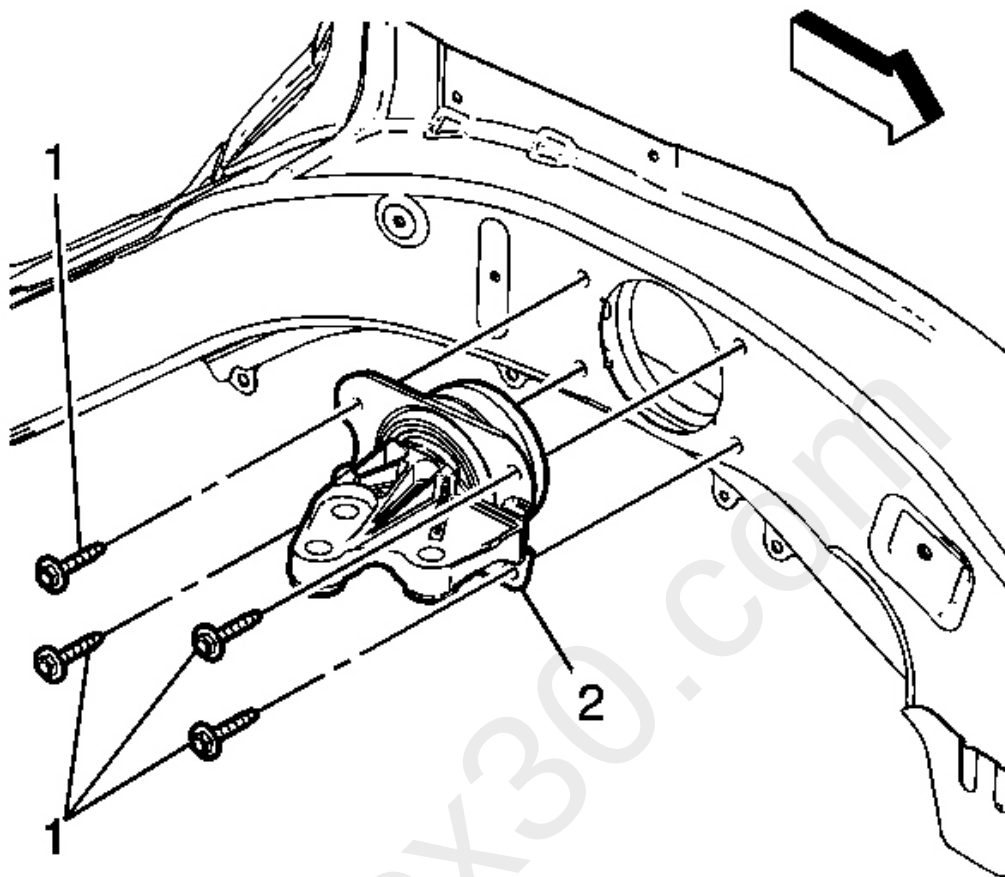


Fig. 62: Left Transmission Mount To Frame Rail Bolts
Courtesy of GENERAL MOTORS CORP.

1. Install the left transmission mount (2).

CAUTION: Refer to Fastener Caution .

2. Install the left transmission mount to frame rail bolts (1) and tighten to 27 N.m (20 lb ft).
3. Raise the transmission until the transmission contacts the left transmission mount.

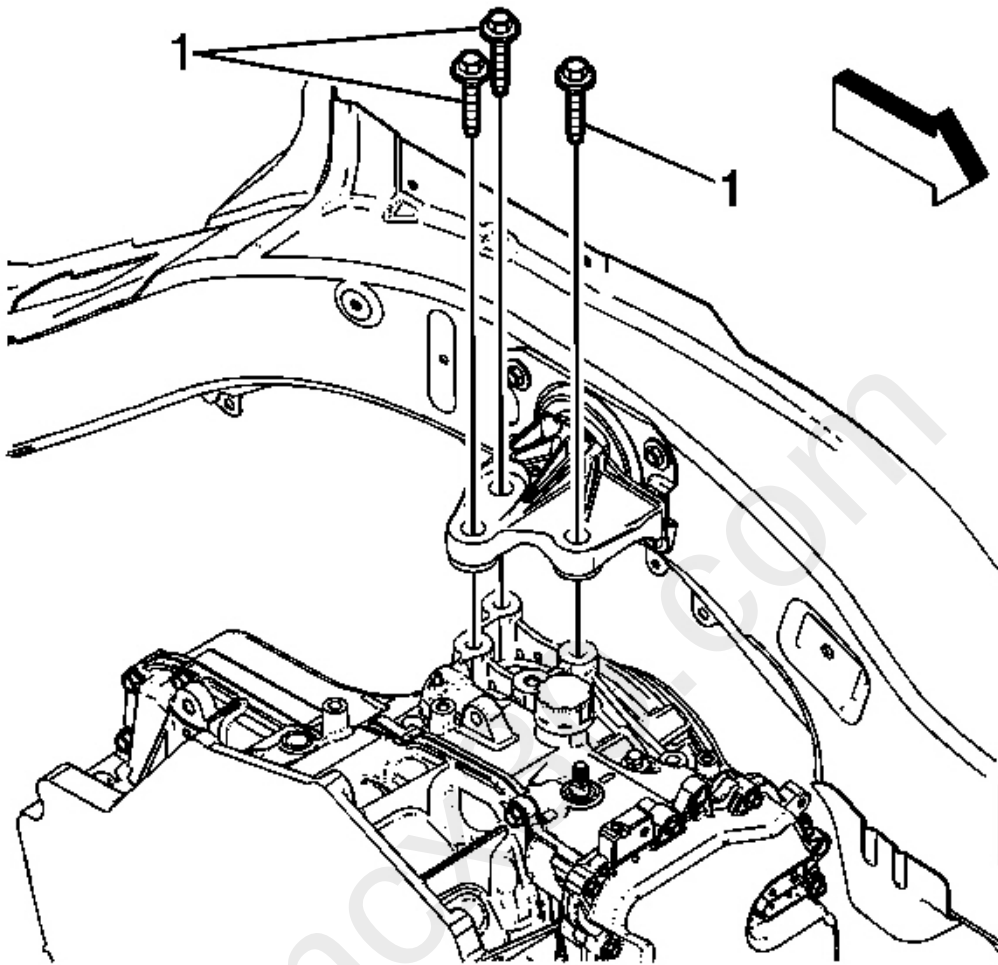


Fig. 63: Left Transmission Mount To Transmission Bolts
Courtesy of GENERAL MOTORS CORP.

4. Install the left transmission mount to transmission bolts (1) and tighten to 50 N.m (37 lb ft).
5. Raise the vehicle.

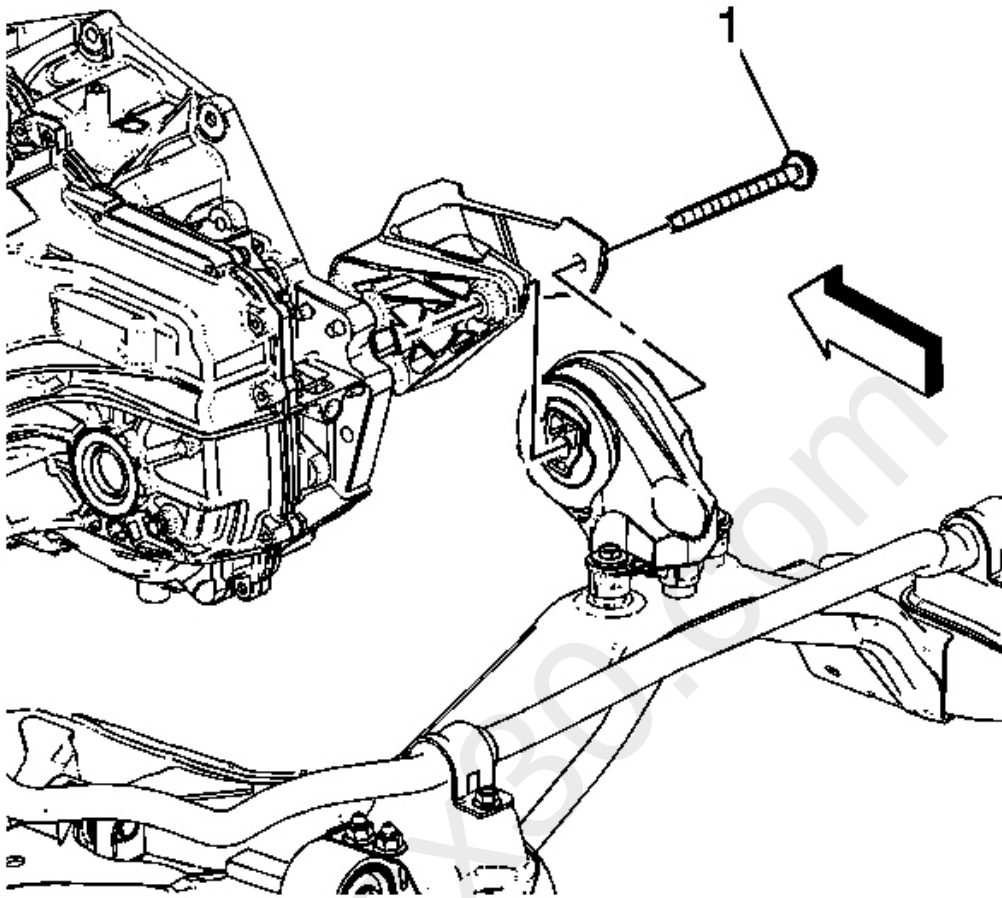


Fig. 64: Rear Transmission Mount To Rear Transmission Mount Bracket Bolt
Courtesy of GENERAL MOTORS CORP.

6. Install the rear transmission mount to rear transmission mount bracket bolt (1) and tighten to 110 N.m (81 lb ft).

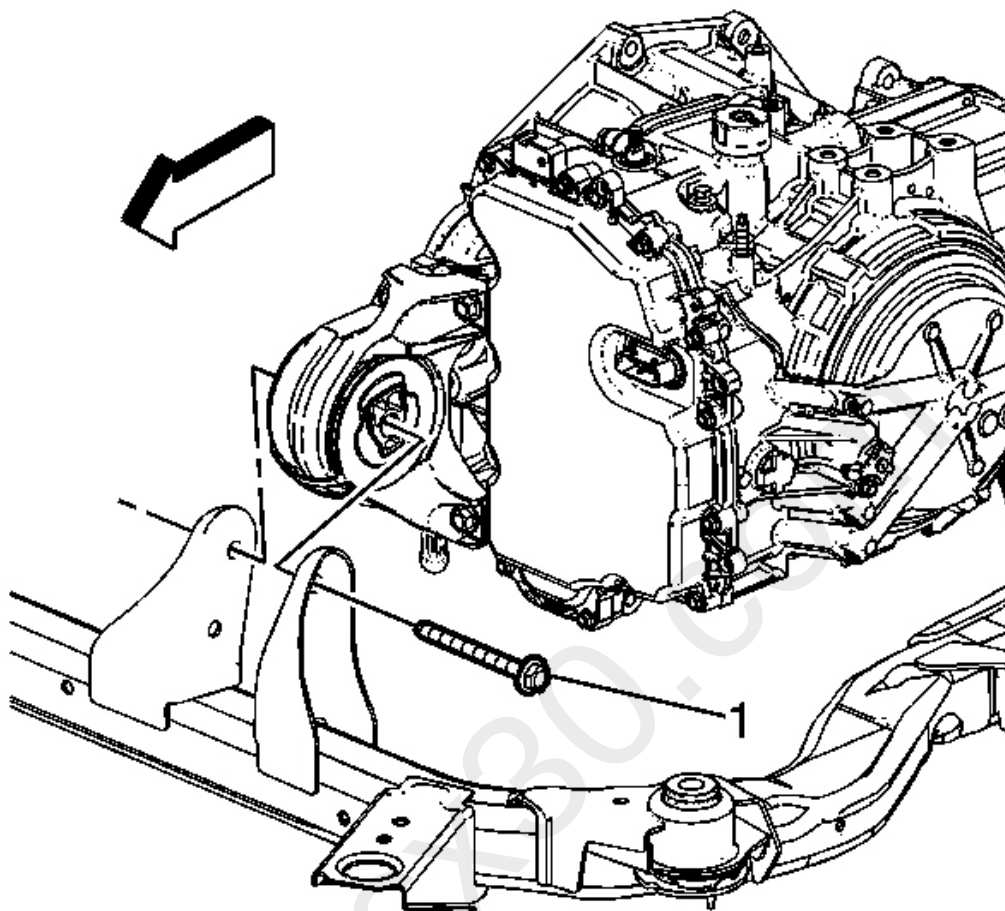


Fig. 65: Front Transmission Mount To Frame Bolt
Courtesy of GENERAL MOTORS CORP.

7. Install the front transmission mount to frame bolt (1) and tighten to 110 N.m (81 lb ft).
8. Lower the vehicle.
9. Remove the engine and transmission support.
10. Install the battery tray. Refer to **Battery Tray Replacement** .
11. Install the underhood electrical center.

TRANSMISSION FRONT MOUNT REPLACEMENT

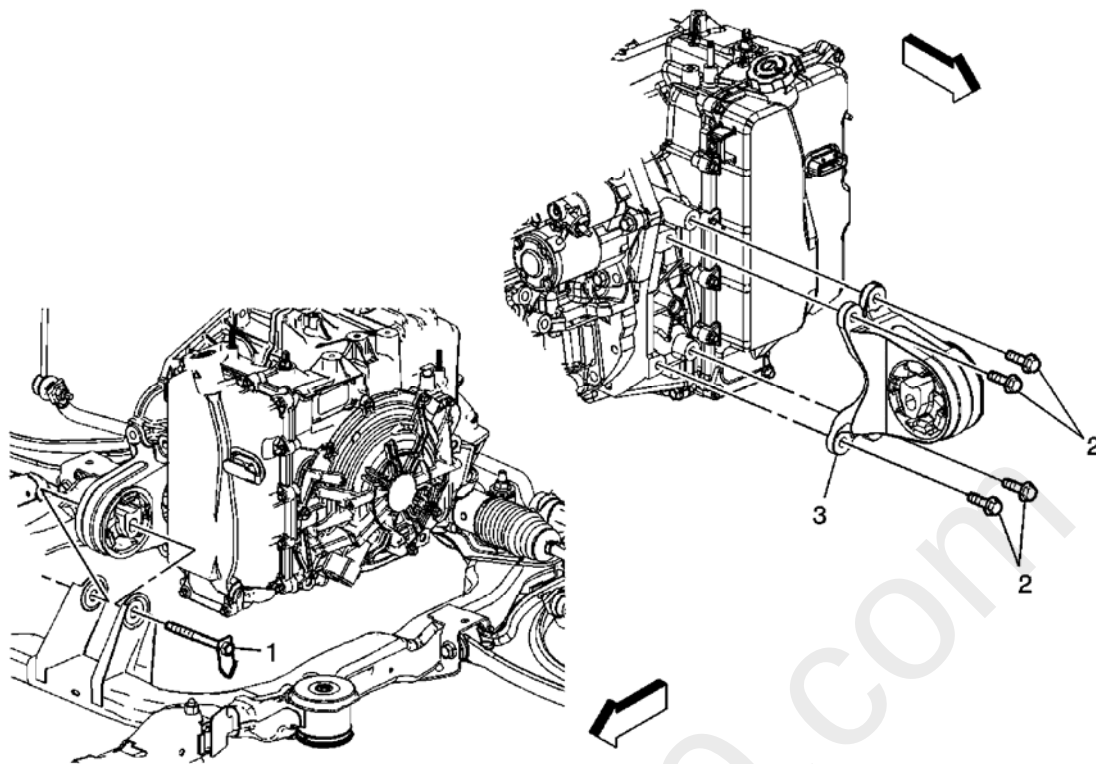


Fig. 66: Transmission Front Mount
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
Preliminary Procedures	
1. Raise and support the vehicle. Refer to <u>Lifting and Jacking the Vehicle</u> .	
2. Support the transmission with a transmission jack.	
1	Front Transmission Mount Thru Bolt
2	Front Transmission Mount Bolt (Qty: 4) Tighten: 50 N.m (37 lb ft)
3	Front Transmission Mount

TRANSMISSION REAR MOUNT REPLACEMENT

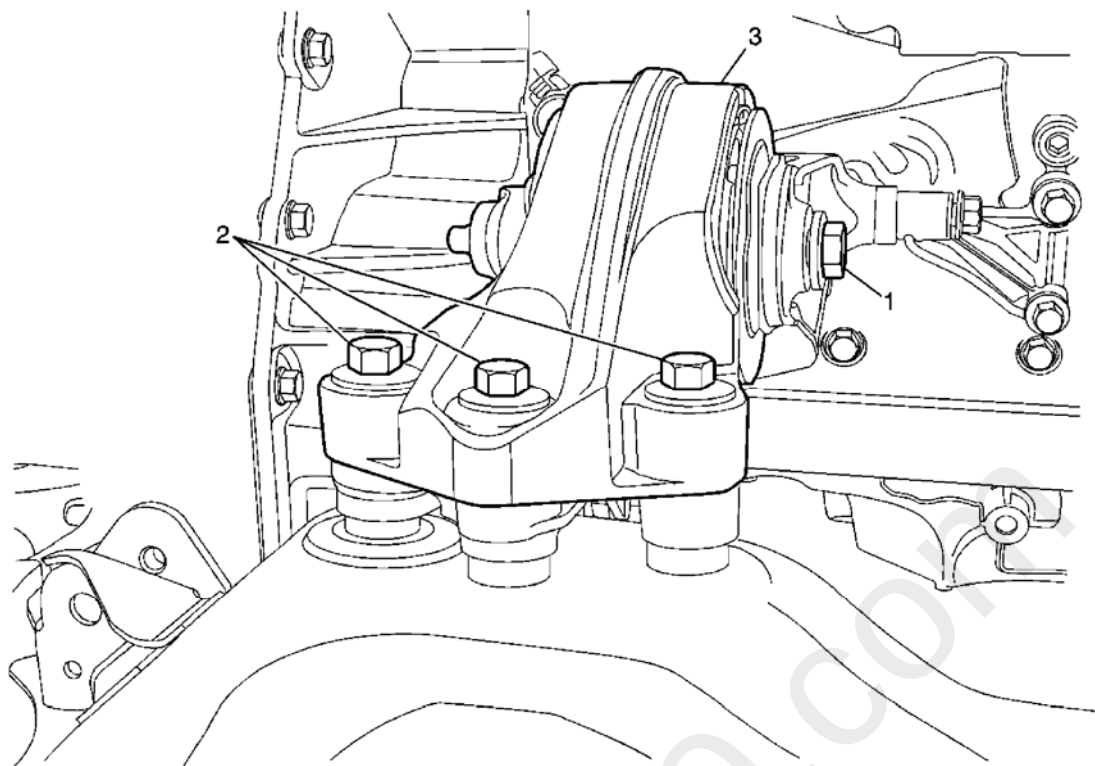


Fig. 67: Transmission Rear Mount
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
WARNING: To avoid any vehicle damage, serious personal injury or death when major components are removed from the vehicle and the vehicle is supported by a hoist, support the vehicle with jack stands at the opposite end from which the components are being removed and strap the vehicle to the hoist.	
WARNING: Refer to <u>Safety Glasses Warning</u> .	
Preliminary Procedures	
1. Raise and suitably support the vehicle. Refer to <u>Lifting and Jacking the Vehicle</u> . 2. Remove the left front tire and wheel assembly. Refer to <u>Tire and Wheel Removal and Installation</u> .	
1	Transmission Rear Thru Bolt (Qty: 1) CAUTION: Refer to <u>Fastener Caution</u> .

	Procedure: Support the transmission. Tighten: 100 N.m (74 lb ft)
2	Transmission Rear Mount Fastener (Qty: 3) CAUTION: Refer to <u>Fastener Caution</u> . Tighten: 100 N.m (74 lb ft)
3	Transmission Rear Mount

TRANSMISSION REAR MOUNT BRACKET REPLACEMENT (FWD)

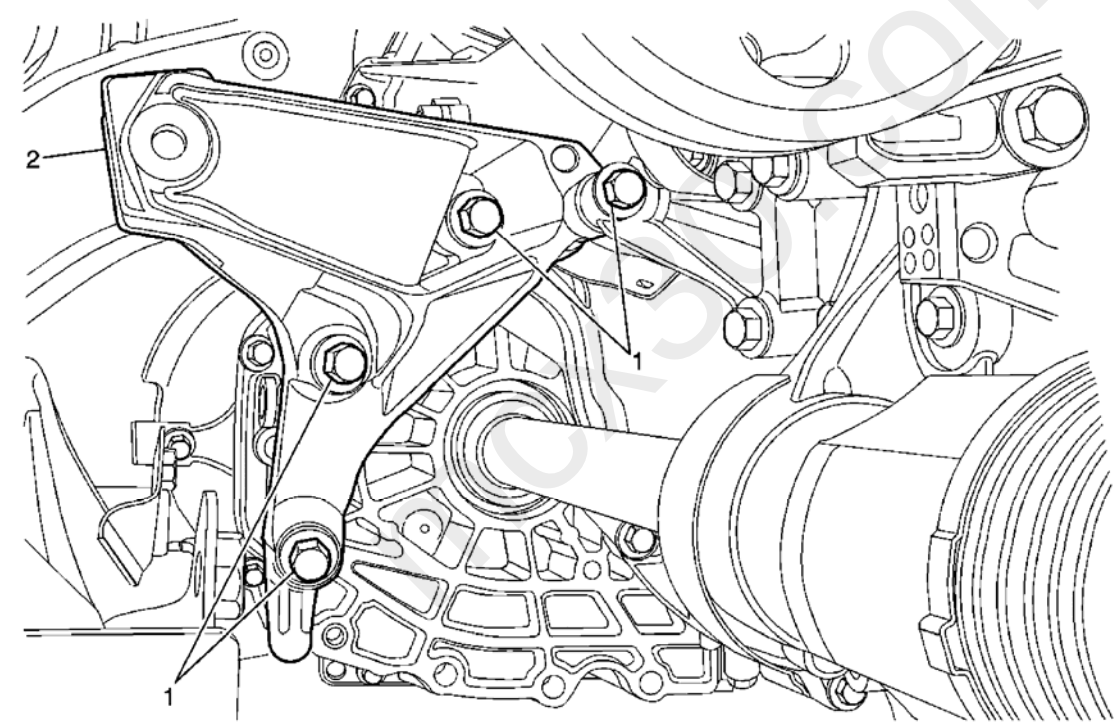


Fig. 68: Transmission Rear Mount Bracket (FWD)
Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
WARNING: To avoid any vehicle damage, serious personal injury or death when major components are removed from the vehicle and the vehicle is supported by a hoist, support the vehicle with jack stands at the opposite end from which the components are being removed and strap the vehicle to the hoist.	

WARNING:
Refer to Safety Glasses Warning .

Preliminary Procedure

- 1. Raise and suitably support the vehicle. Refer to Lifting and Jacking the Vehicle .
- 2. Remove the right front tire and wheel assembly. Refer to Tire and Wheel Removal and Installation
- 3. Remove the rear mount. Refer to Transmission Rear Mount Replacement

1	Transmission Rear Mount Bracket Fastener (Qty: 4) CAUTION: Refer to <u>Fastener Caution</u> . Procedure: Support the transmission. Tighten: 100 N.m (74 lb ft)
2	Transmission Rear Mount Bracket

TRANSMISSION REAR MOUNT BRACKET REPLACEMENT (AWD)

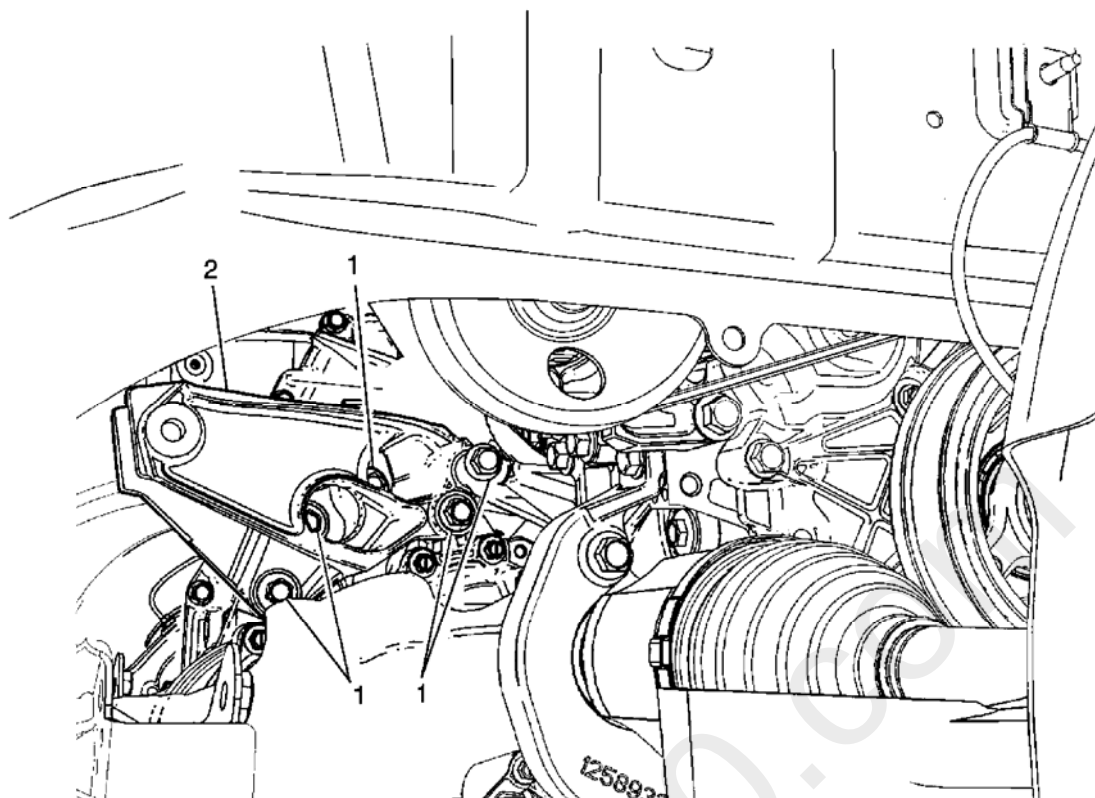


Fig. 69: Transmission Rear Mount Bracket (AWD)
 Courtesy of GENERAL MOTORS CORP.

Callout	Component Name
WARNING: To avoid any vehicle damage, serious personal injury or death when major components are removed from the vehicle and the vehicle is supported by a hoist, support the vehicle with jack stands at the opposite end from which the components are being removed and strap the vehicle to the hoist.	
WARNING: Refer to <u>Safety Glasses Warning</u> .	
Preliminary Procedure	
1. Raise and suitably support the vehicle. Refer to <u>Lifting and Jacking the Vehicle</u> .	
2. Remove the right front tire and wheel assembly. Refer to <u>Tire and Wheel Removal and Installation</u>	
3. Remove the right side catalytic converter. Refer to <u>Catalytic Converter Replacement - Right Side (LF1)</u>	
4. Remove the rear mount. Refer to <u>Transmission Rear Mount Replacement</u>	
	Transmission Rear Mount Fastener (Qty: 5)

1	CAUTION: Refer to <u>Fastener Caution</u> . Tighten: 100 N.m (74 lb ft)
2	Transmission Rear Mount Bracket

TRANSMISSION REPLACEMENT (FWD)

Removal Procedure

1. Remove the battery tray. Refer to **Battery Tray Replacement** .
2. Remove the transmission range select lever cable and bracket.
3. Drain the transmission fluid. Refer to **Transmission Fluid Replacement**.

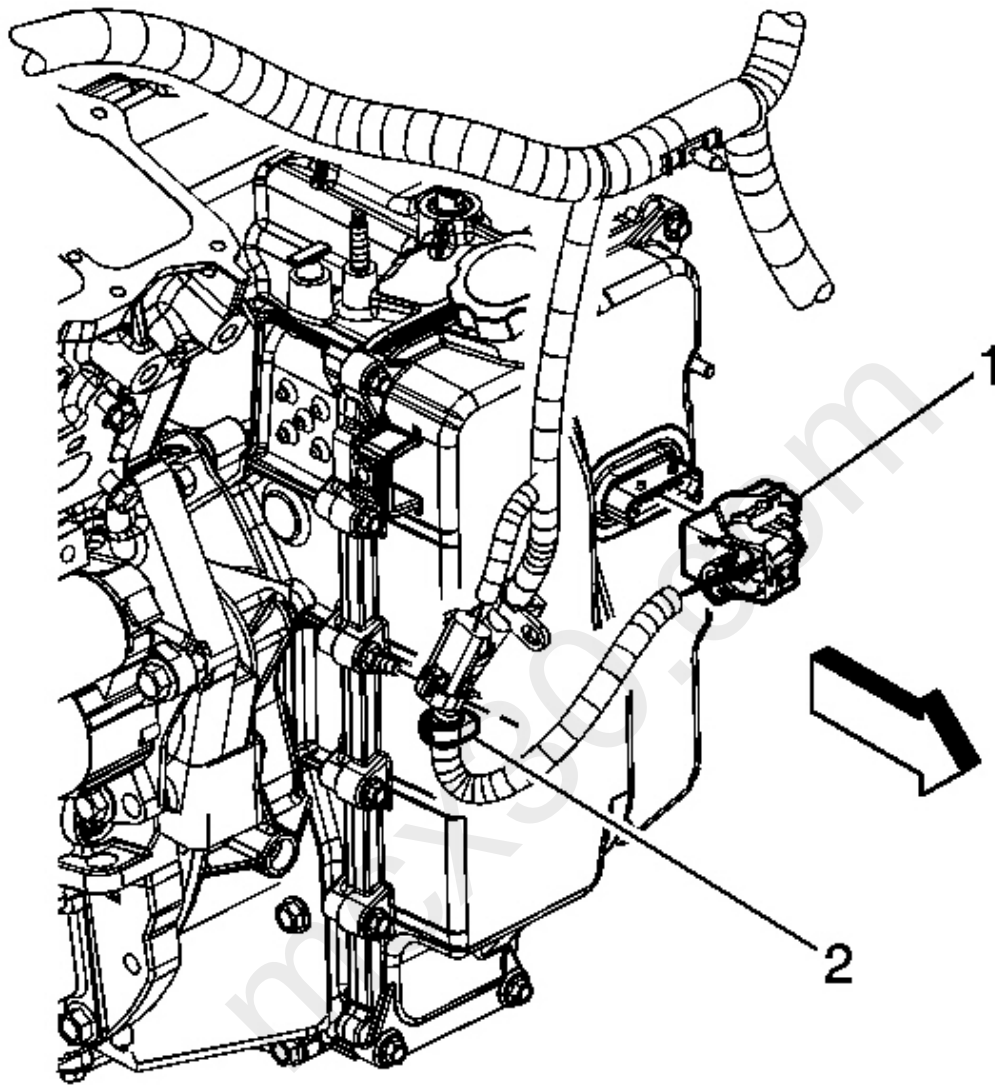


Fig. 70: Identifying Wire Harness Retainer & TCM Electrical Connector
Courtesy of GENERAL MOTORS CORP.

4. Remove the wire harness retainer (2) from the control valve body cover stud.
5. Disconnect the control valve body transmission control module (TCM) electrical connector (1).

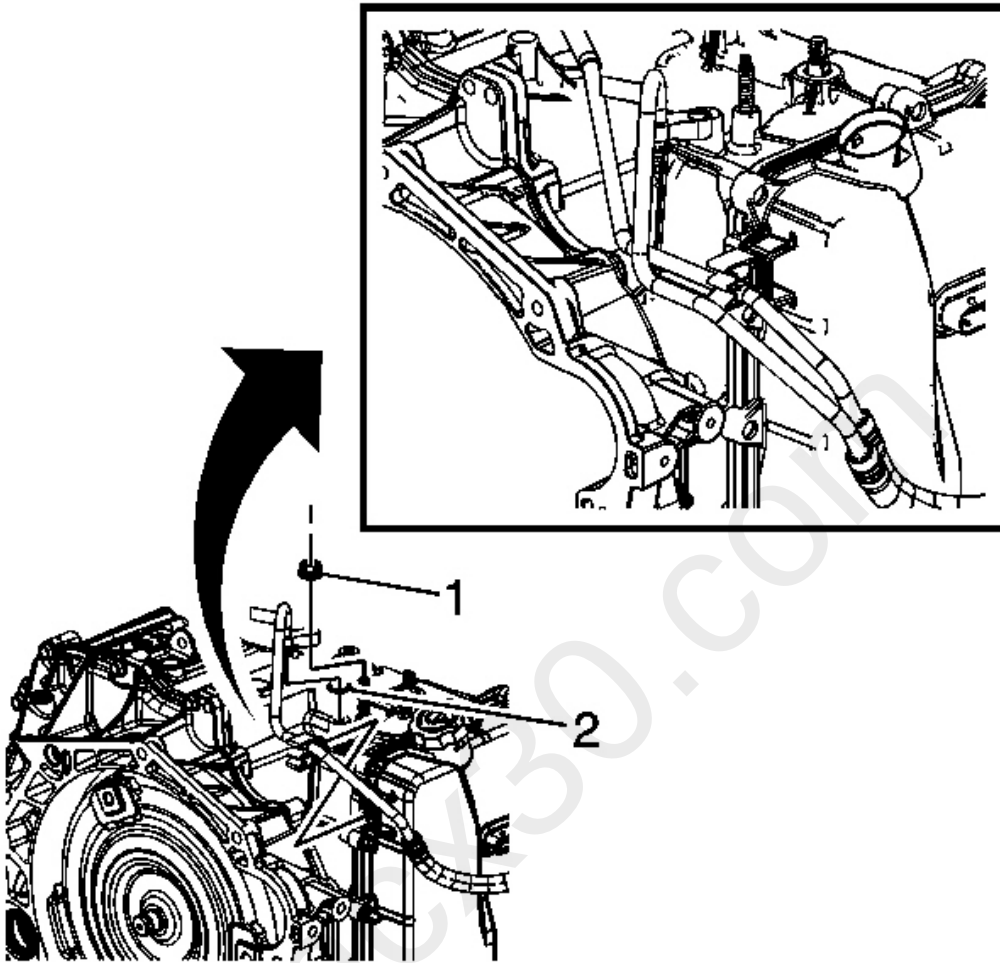


Fig. 71: Identifying Transmission Fluid Cooler Inlet Hose Components
Courtesy of GENERAL MOTORS CORP.

6. Remove the transmission fluid cooler pipe retainer nut (1).
7. Remove the transmission fluid cooler inlet hose and seal (2) from the transmission.
8. Plug and/or cap the hose and transmission to prevent contamination.

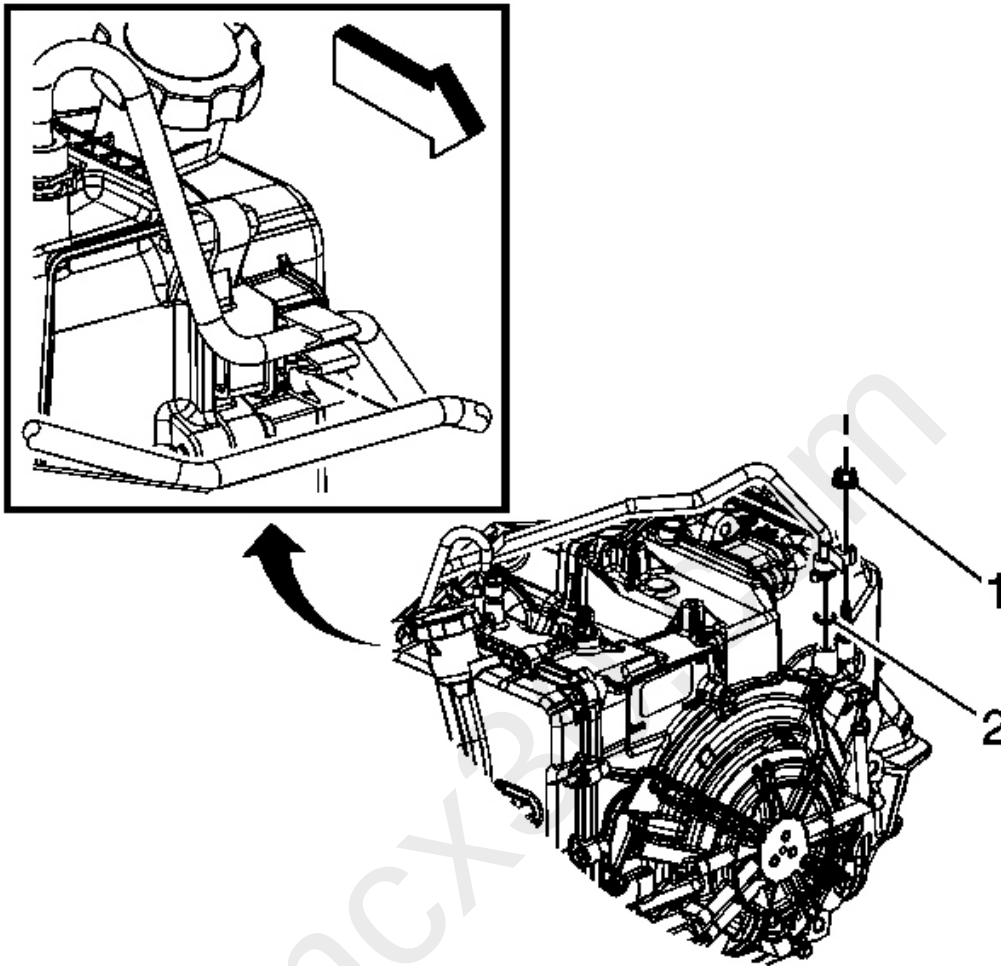


Fig. 72: Identifying Transmission Fluid Cooler Pipe Components
Courtesy of GENERAL MOTORS CORP.

9. Remove the transmission fluid cooler pipe retainer nut (1).
10. Remove the transmission fluid cooler outlet hose and seal (2) from the transmission.
11. Plug and/or cap the hose and transmission to prevent contamination.
12. Disconnect both pipes from the retainer.
13. Install the engine support fixture. Refer to **Engine Support Fixture**.
14. Remove the rear transmission mount from the transmission. Refer to **Transmission Rear Mount Replacement**.
15. Remove the front transmission mount from the transmission. Refer to **Transmission Front Mount Replacement**.

16. Remove the left transmission mount from the transmission. Refer to **Transmission Mount Replacement - Left Side**.

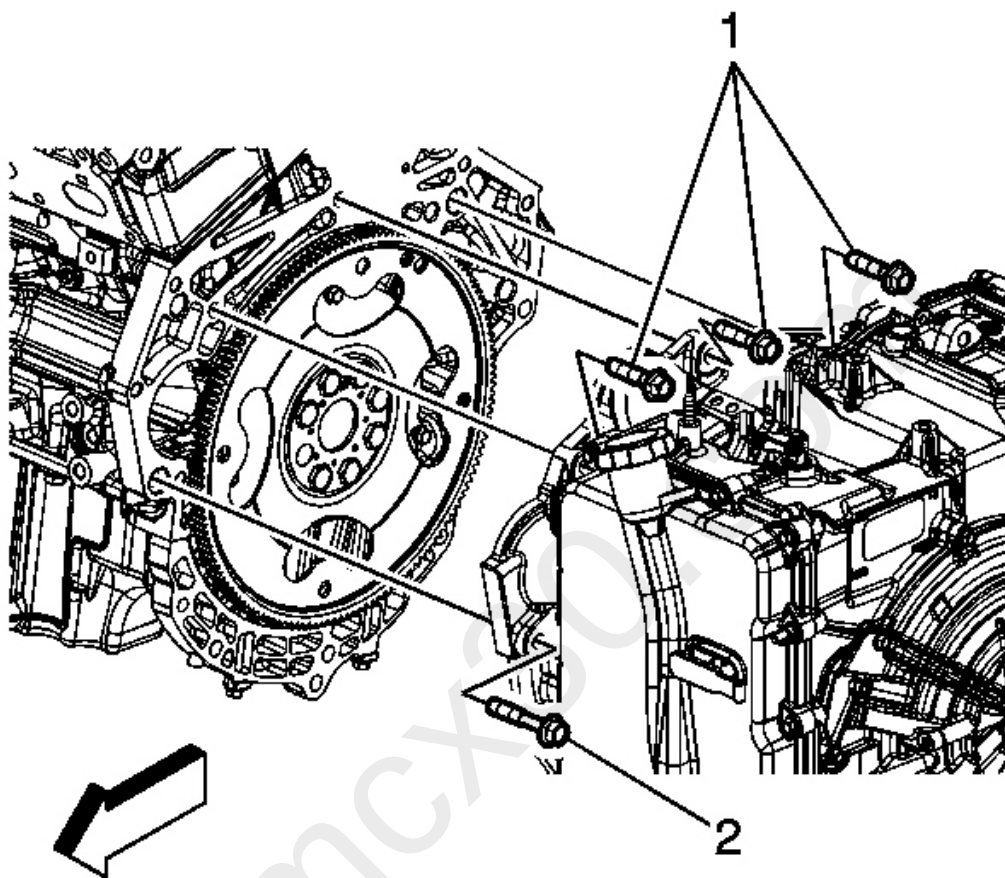


Fig. 73: Identifying Upper Transmission To Engine Bolts
Courtesy of GENERAL MOTORS CORP.

17. Remove the upper transmission to engine bolts (1, 2).
18. Remove the frame. Refer to **Drivetrain and Front Suspension Frame Replacement**.
19. Disconnect the wheel drive shafts from the transmission. Refer to **Front Wheel Drive Shaft Replacement**.
20. Remove the intermediate drive shaft. Refer to **Front Wheel Drive Intermediate Shaft Replacement**.

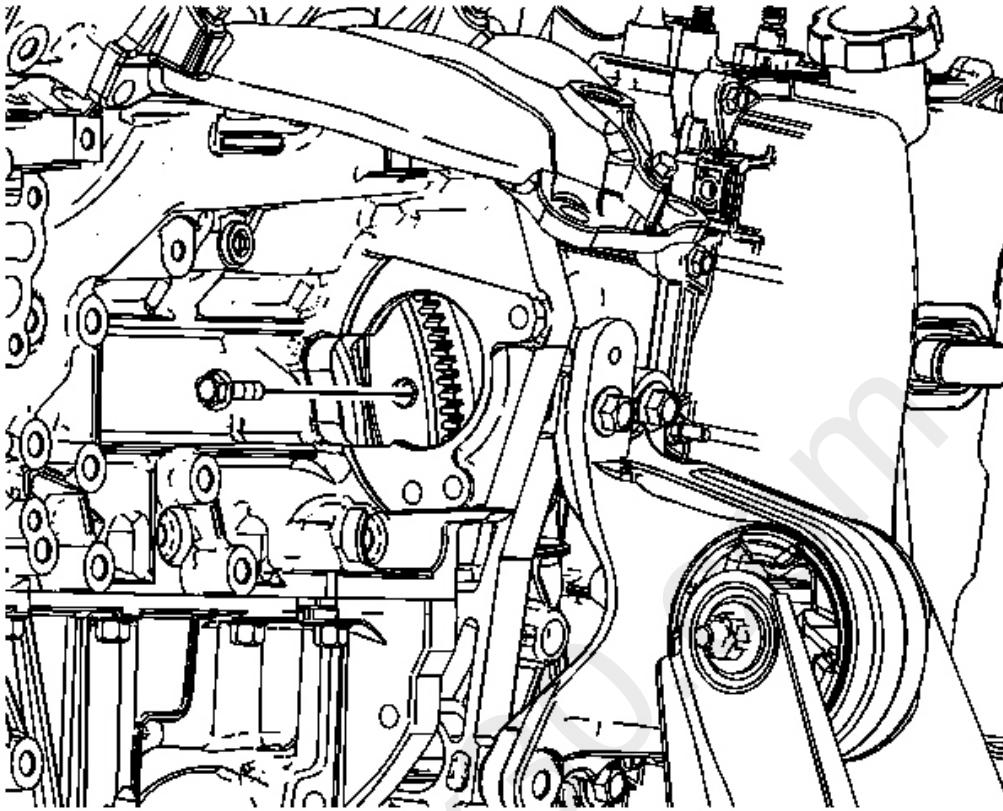


Fig. 74: View Of Torque Converter To Flywheel Bolts
Courtesy of GENERAL MOTORS CORP.

21. Remove the starter. Refer to **Starter Replacement (LAF)** or **Starter Replacement (LF1)** .
22. Mark the relationship of the flywheel to the torque converter for reassembly.
23. Remove the torque converter to flywheel bolts.
24. Use a transmission jack in order to support the transmission.

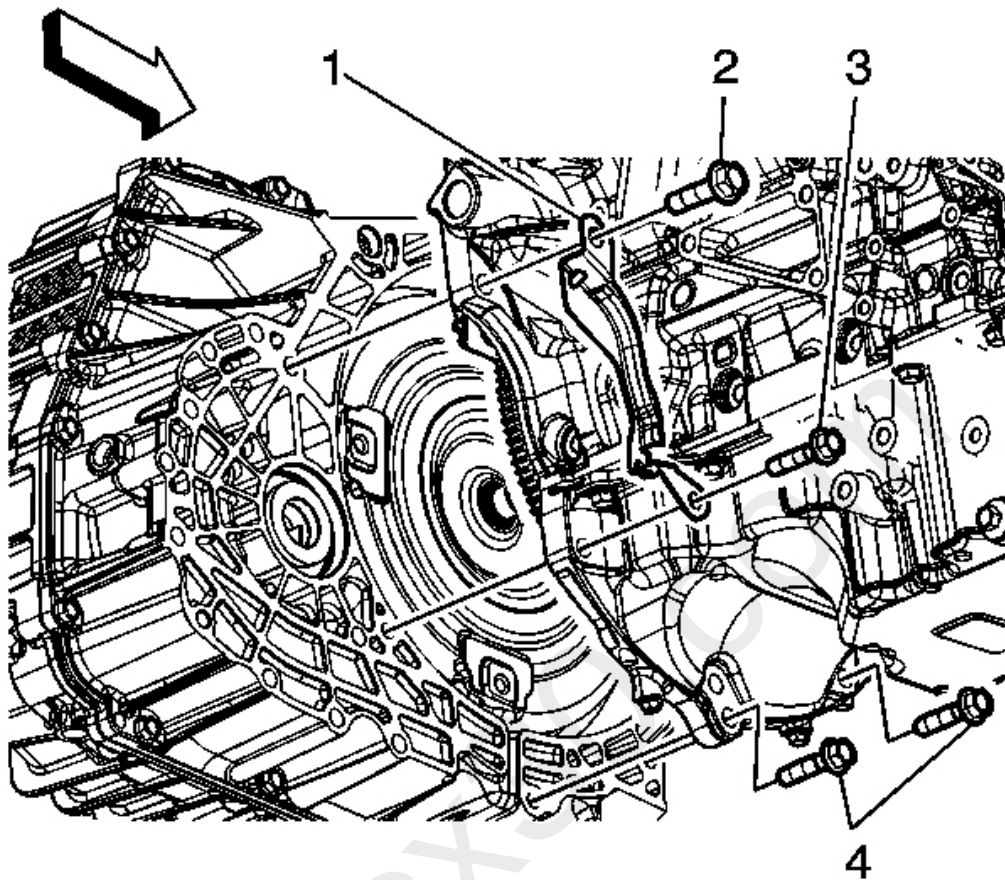


Fig. 75: Identifying Transmission Bolts
Courtesy of GENERAL MOTORS CORP.

25. Remove the flywheel inspection cover bolts (2, 3).
26. Remove the flywheel inspection cover (1).
27. Remove the remaining transmission bolts (4).

NOTE: Insure the torque converter remains securely in place on the transmission input shaft while separating and removing the transmission.

28. Separate the transmission from the engine.
29. Lower the transmission with the transmission jack far enough to remove the transmission.

Installation Procedure

1. Raise the transmission with the transmission jack and position the transmission to the engine.

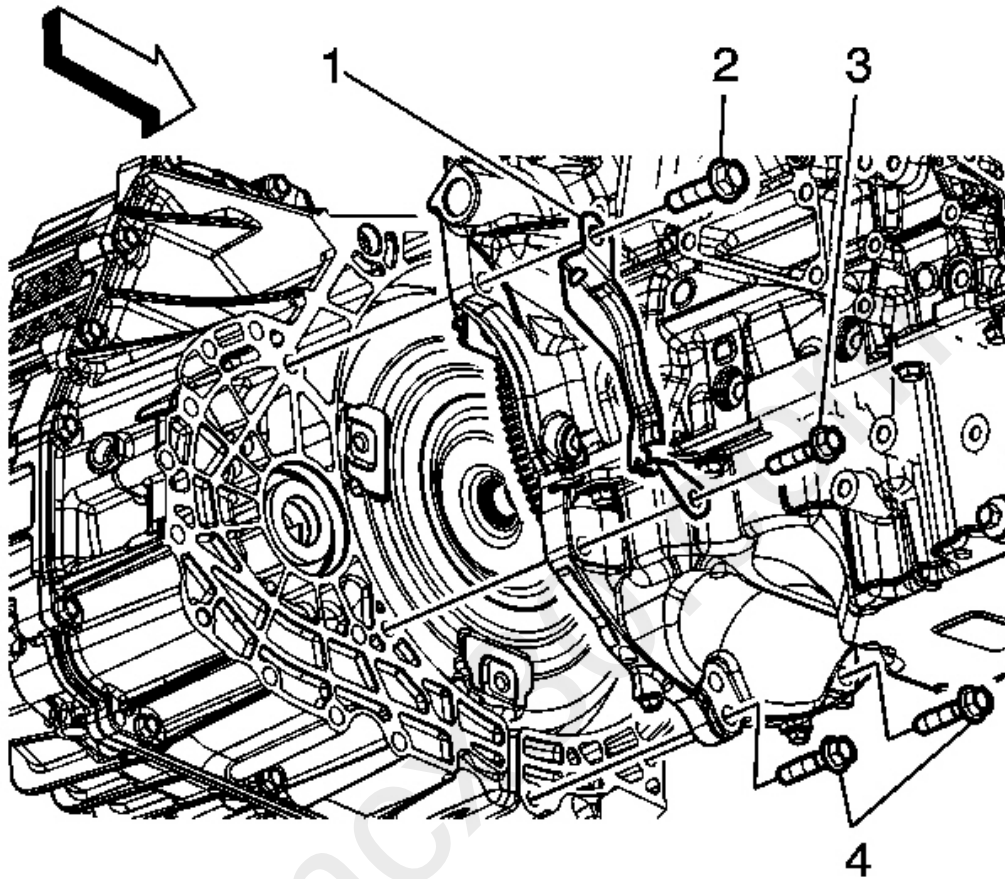


Fig. 76: Identifying Transmission Bolts
Courtesy of GENERAL MOTORS CORP.

CAUTION: Refer to Fastener Caution .

2. Install the transmission bolts (4) and tighten to 75 N.m (55 lb ft).
3. Install the flywheel inspection cover (1).
4. Install the flywheel inspection cover bolts (2, 3) and tighten to 75 N.m (55 lb ft).
5. Remove the transmission jack.

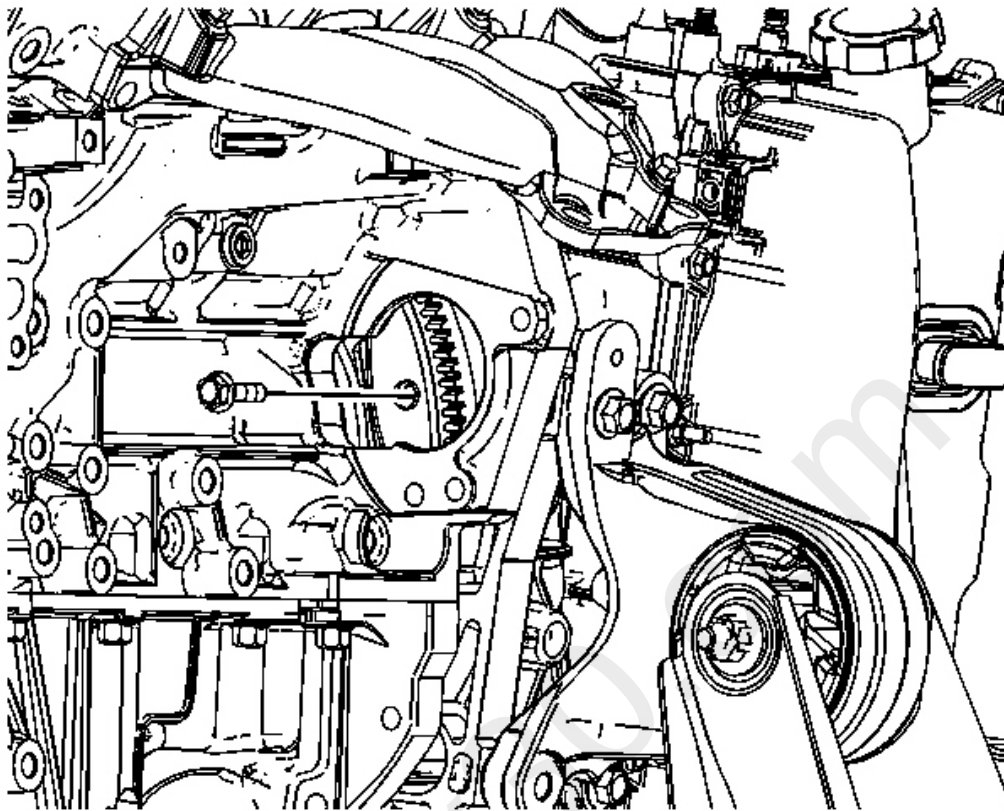


Fig. 77: View Of Torque Converter To Flywheel Bolts
Courtesy of GENERAL MOTORS CORP.

NOTE: If reusing the torque converter bolts, clean the threads and apply **LOCTITE™ 242**, GM P/N 12345382 (Canadian P/N 10953489) or equivalent to the threads prior to installation.

6. Install the torque converter to flywheel bolts and tighten to 62 N.m (46 lb ft).
7. Install the starter. Refer to **Starter Replacement (LAF)** or **Starter Replacement (LF1)** .
8. Install the front transmission mount to the transmission. Refer to **Transmission Front Mount Replacement**.
9. Install the rear transmission mount to the transmission. Refer to **Transmission Rear Mount Replacement**.
10. Install the left transmission mount to the transmission. Refer to **Transmission Mount Replacement - Left Side** .
11. Install the intermediate drive shaft. Refer to **Front Wheel Drive Intermediate Shaft Replacement** .

12. Install the wheel drive shafts to the transmission. Refer to **Front Wheel Drive Shaft Replacement**.
13. Install the frame. Refer to **Drivetrain and Front Suspension Frame Replacement**.

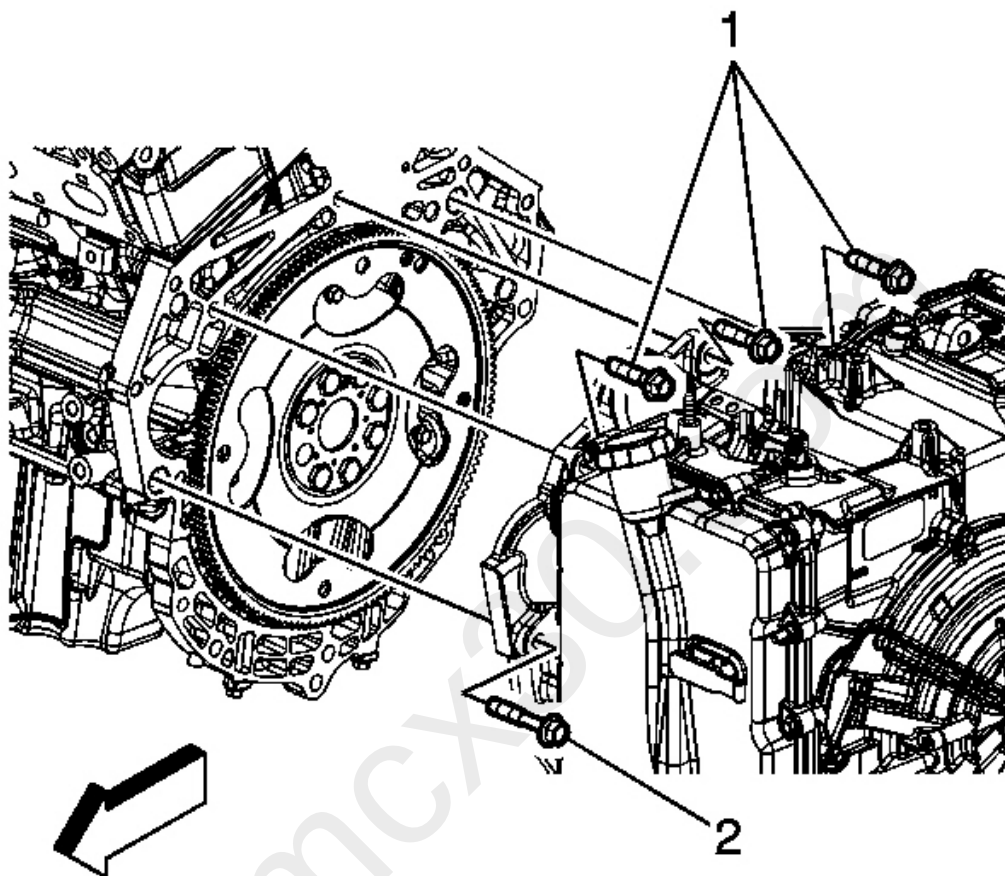


Fig. 78: Identifying Upper Transmission To Engine Bolts
Courtesy of GENERAL MOTORS CORP.

14. Install the upper transmission to engine bolt (1, 2) and tighten to 75 N.m (55 lb ft).
15. Remove the engine support fixture.

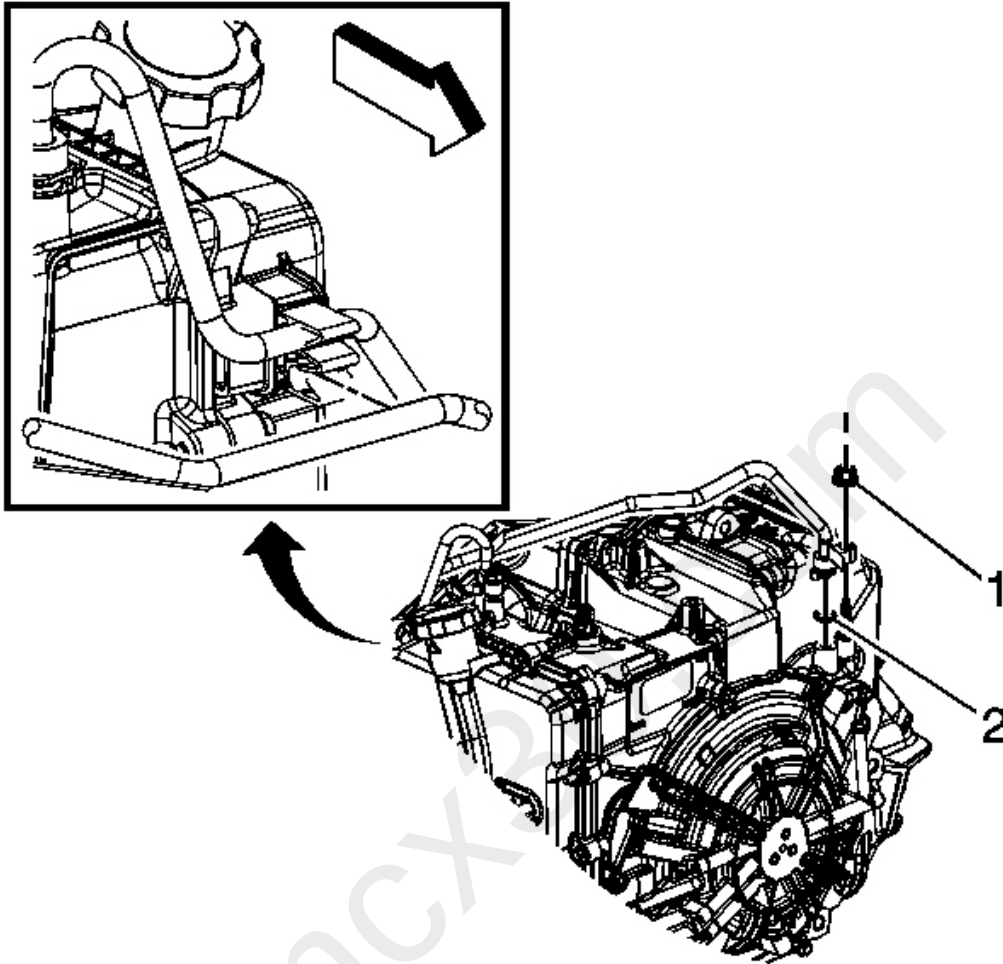


Fig. 79: Identifying Transmission Fluid Cooler Pipe Components
Courtesy of GENERAL MOTORS CORP.

16. Install the transmission fluid cooler outlet hose and seal (2) to the transmission.
17. Install the transmission fluid cooler pipe retainer nut (1) and tighten to 22 N.m (16 lb ft).

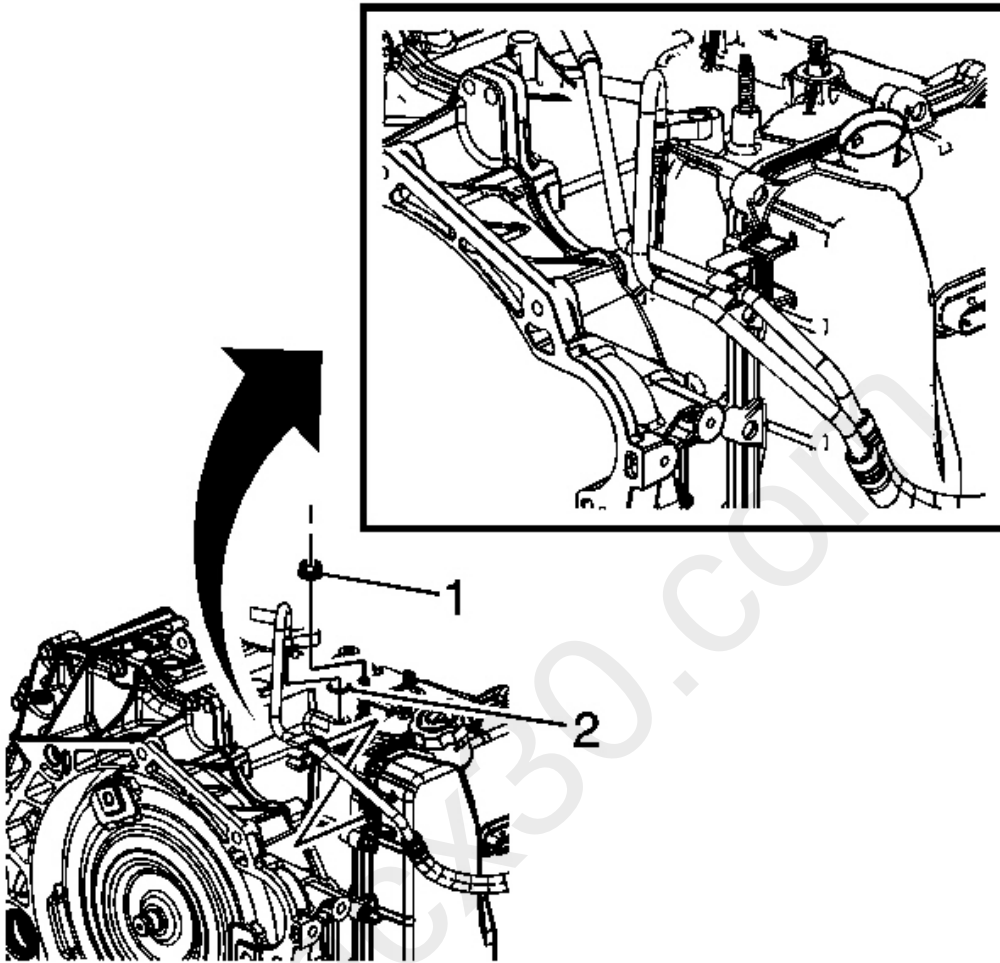


Fig. 80: Identifying Transmission Fluid Cooler Inlet Hose Components
Courtesy of GENERAL MOTORS CORP.

18. Install the transmission fluid cooler inlet hose and seal (2) to the transmission.
19. Install the transmission fluid cooler pipe retainer nut (1) and tighten to 22 N.m (16 lb ft).

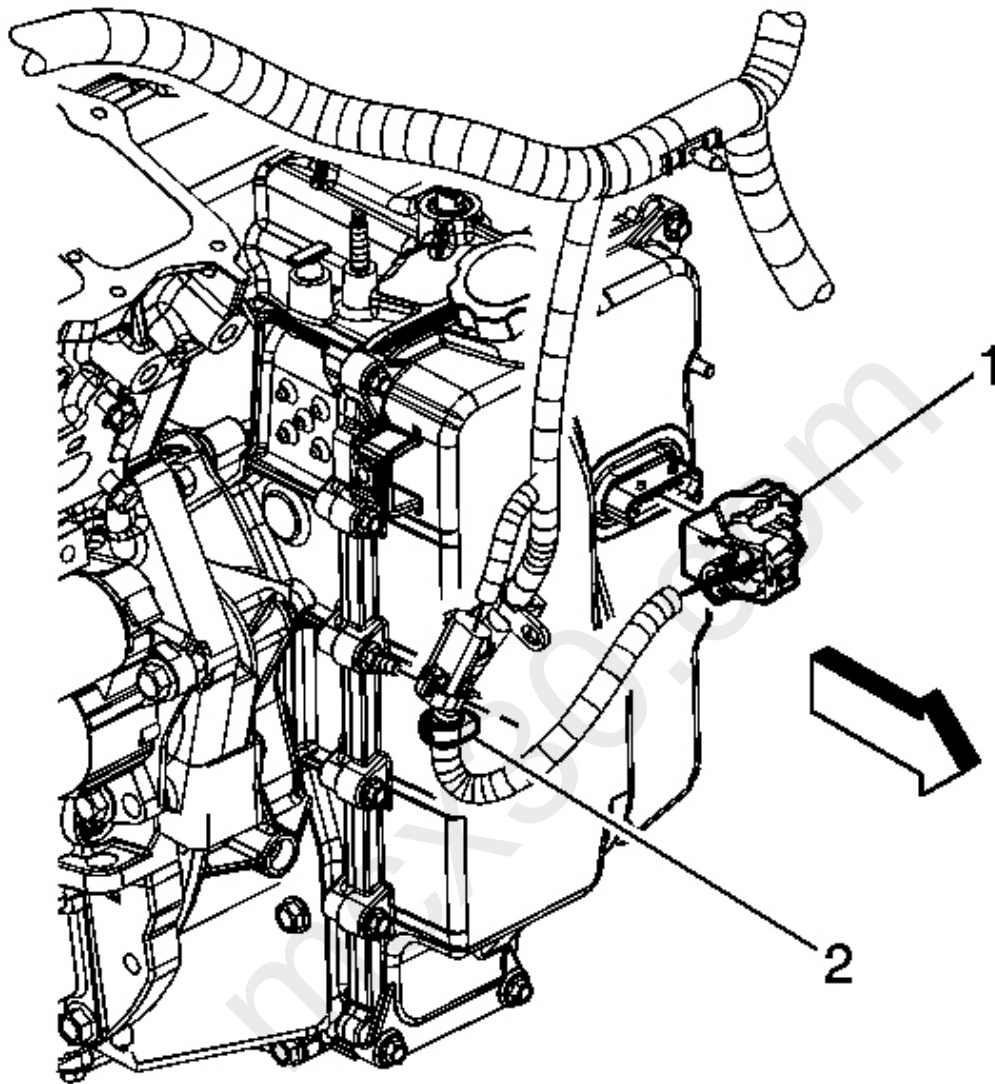


Fig. 81: Identifying Wire Harness Retainer & TCM Electrical Connector
Courtesy of GENERAL MOTORS CORP.

20. Connect the control valve body TCM electrical connector (1).
21. Install the wire harness retainer (2) to the control valve body cover stud and tighten the nut to 12 N.m (106 lb in).
22. Install the transmission range select lever cable and bracket.
23. Install the battery tray. Refer to **Battery Tray Replacement**.

24. Adjust the automatic transmission range selector lever cable. Refer to **Range Selector Lever Cable Adjustment** .
25. Fill the transmission with fluid. Refer to **Transmission Fluid Replacement**.
26. For transmission control module programming and setup, refer to **Transmission Control Module Programming and Setup (6T30/6T40/6T45/6T50)** or **Transmission Control Module Programming and Setup (6T70)** .

NOTE: **After an internal transmission repair or internal part replacement the service fast learn adapt procedure should be performed.**

27. Perform the transmission adaptive values learn procedure. Refer to **Transmission Adaptive Values Learn** .
28. Road test the vehicle.

TRANSMISSION REPLACEMENT (AWD)

Removal Procedure

1. Remove the battery tray. Refer to **Battery Tray Replacement** .
2. Remove the transmission range select lever cable and bracket.
3. Drain the transmission fluid. Refer to **Transmission Fluid Replacement**.

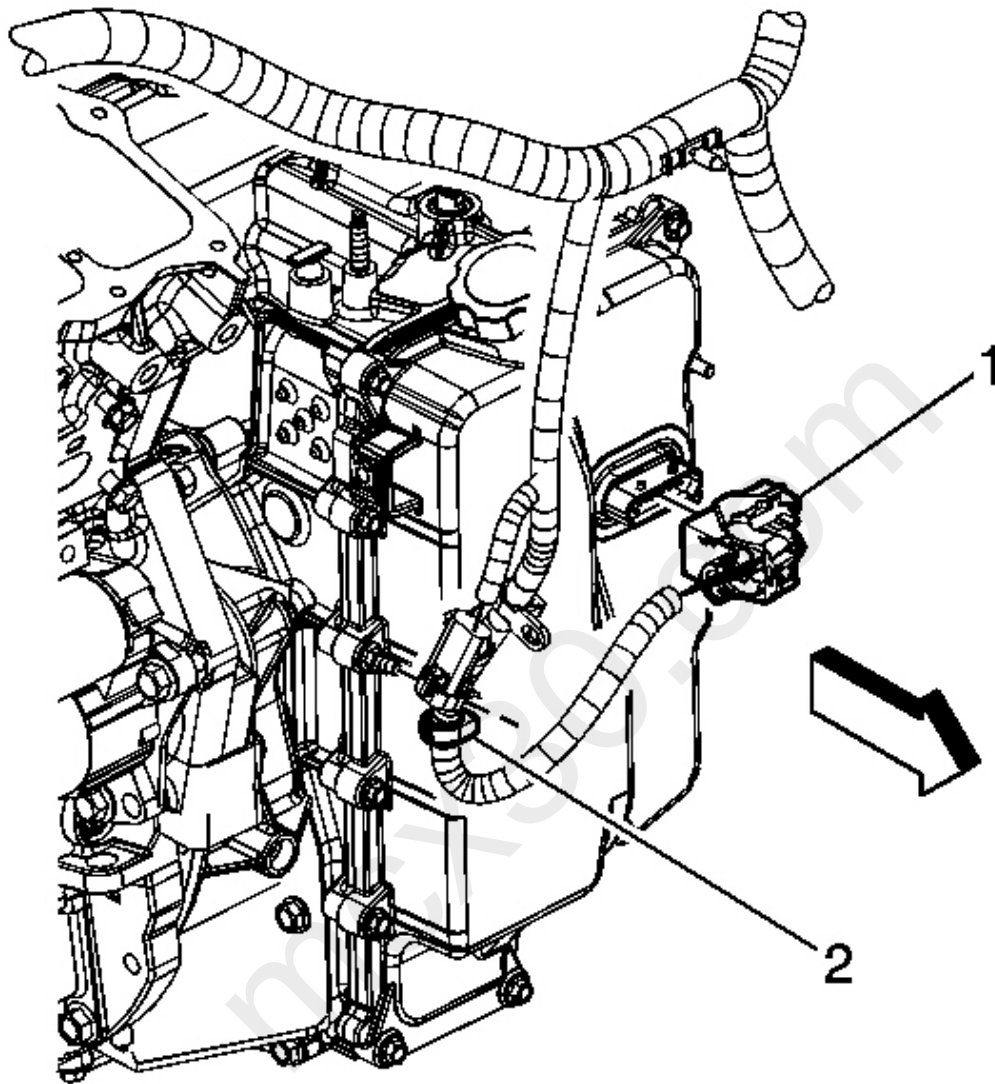


Fig. 82: Identifying Wire Harness Retainer & TCM Electrical Connector
Courtesy of GENERAL MOTORS CORP.

4. Remove the wire harness retainer (2) from the control valve body cover stud.
5. Disconnect the control valve body transmission control module (TCM) electrical connector (1).

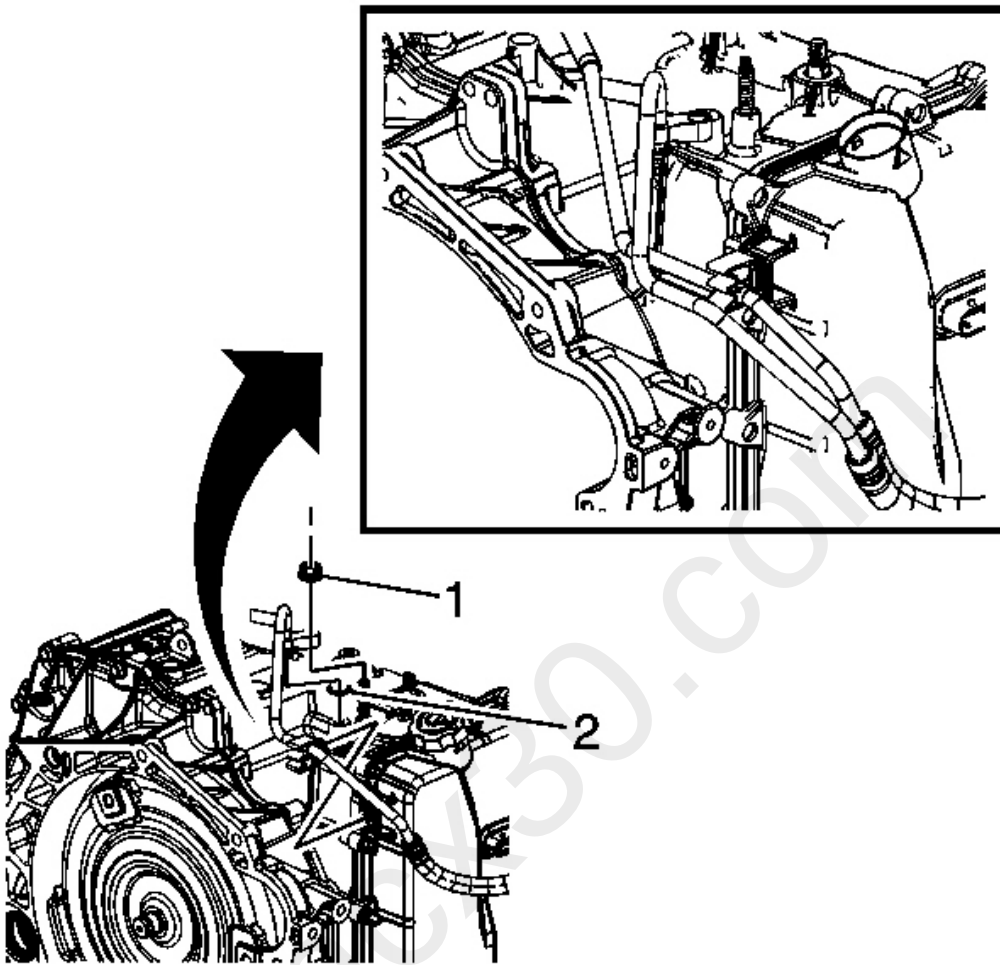


Fig. 83: Identifying Transmission Fluid Cooler Inlet Hose Components
Courtesy of GENERAL MOTORS CORP.

6. Remove the transmission fluid cooler pipe retainer nut (1).
7. Remove the transmission fluid cooler inlet hose and seal (2) from the transmission.
8. Plug and/or cap the hose and transmission to prevent contamination.

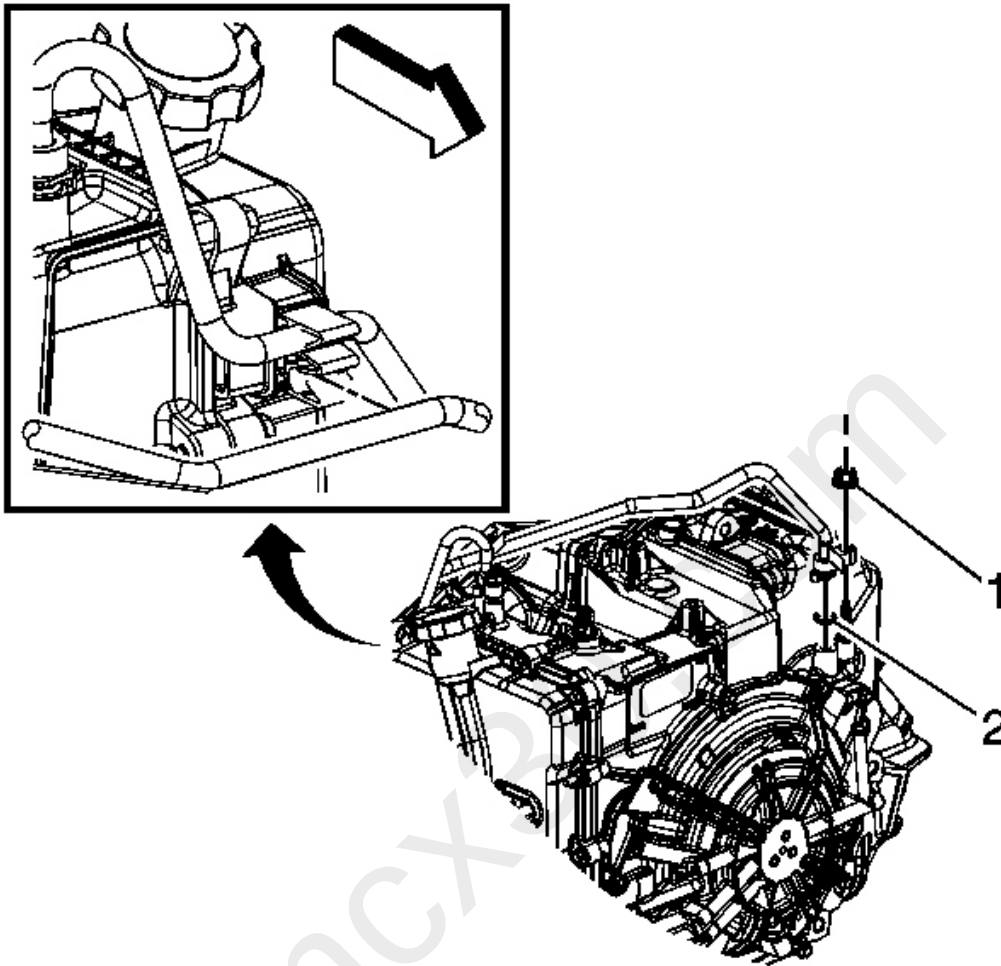


Fig. 84: Identifying Transmission Fluid Cooler Pipe Components
Courtesy of GENERAL MOTORS CORP.

9. Remove the transmission fluid cooler pipe retainer nut (1).
10. Remove the transmission fluid cooler outlet hose and seal (2) from the transmission.
11. Plug and/or cap the hose and transmission to prevent contamination.
12. Disconnect both pipes from the retainer.
13. Install the engine support fixture. Refer to **Engine Support Fixture** .
14. Remove the right catalytic converter and pipe assembly. Refer to **Catalytic Converter Replacement - Right Side (LF1)** .
15. Use a transmission jack in order to support the transmission.
16. Remove the rear transmission mount from the transmission. Refer to **Transmission Rear Mount**

Replacement.

17. Remove the front transmission mount from the transmission. Refer to **Transmission Front Mount Replacement.**
18. Remove the left transmission mount from the transmission. Refer to **Transmission Mount Replacement - Left Side .**

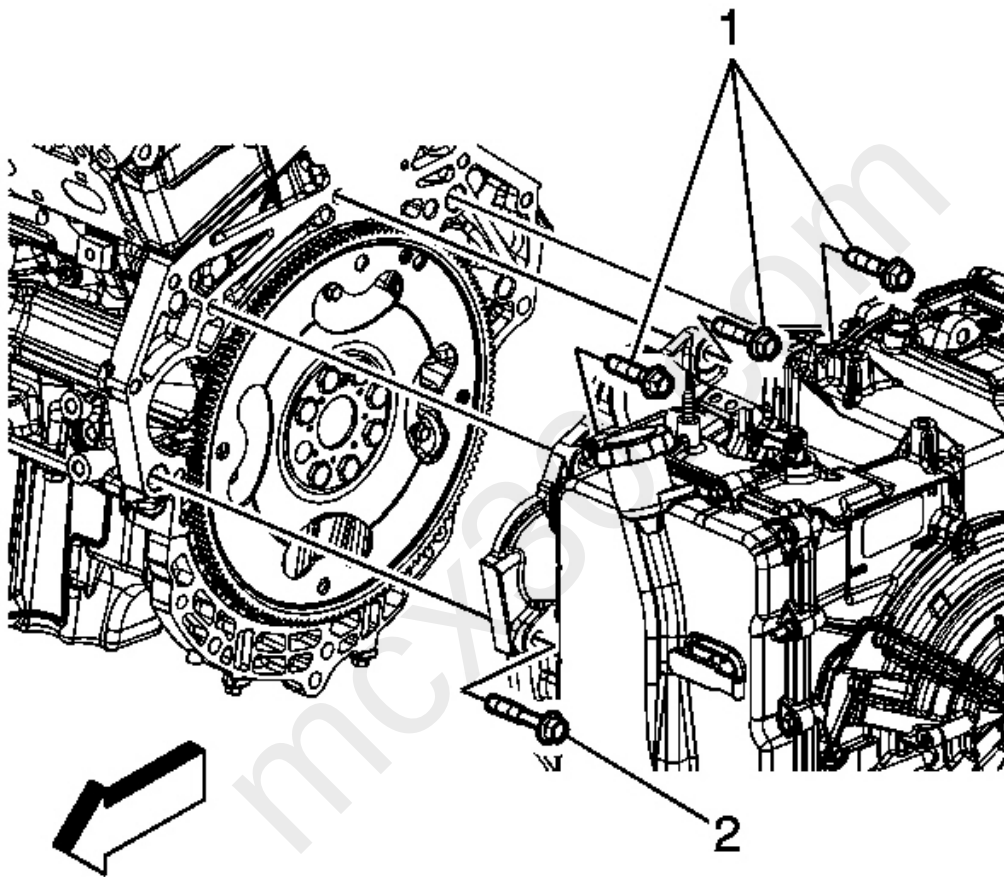


Fig. 85: Identifying Upper Transmission To Engine Bolts
Courtesy of GENERAL MOTORS CORP.

19. Remove the upper transmission to engine bolts (1, 2).
20. Remove the frame. Refer to **Drivetrain and Front Suspension Frame Replacement .**
21. Disconnect the wheel drive shafts from the transmission and transfer case. Refer to **Front Wheel Drive Shaft Replacement .**
22. Remove the transfer case from the transmission. Refer to **Transfer Case Assembly Replacement .**

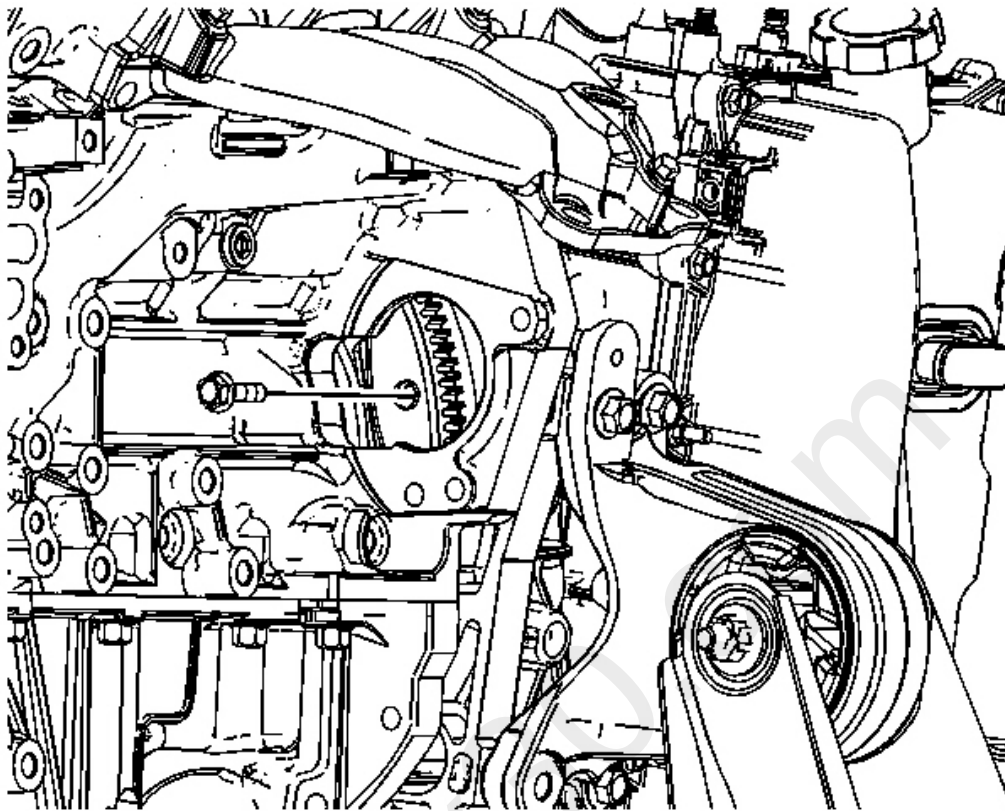


Fig. 86: View Of Torque Converter To Flywheel Bolts
Courtesy of GENERAL MOTORS CORP.

23. Remove the starter. Refer to **Starter Replacement (LAF)** or **Starter Replacement (LF1)** .
24. Mark the relationship of the flywheel to the torque converter for reassembly.
25. Remove the torque converter to flywheel bolts.

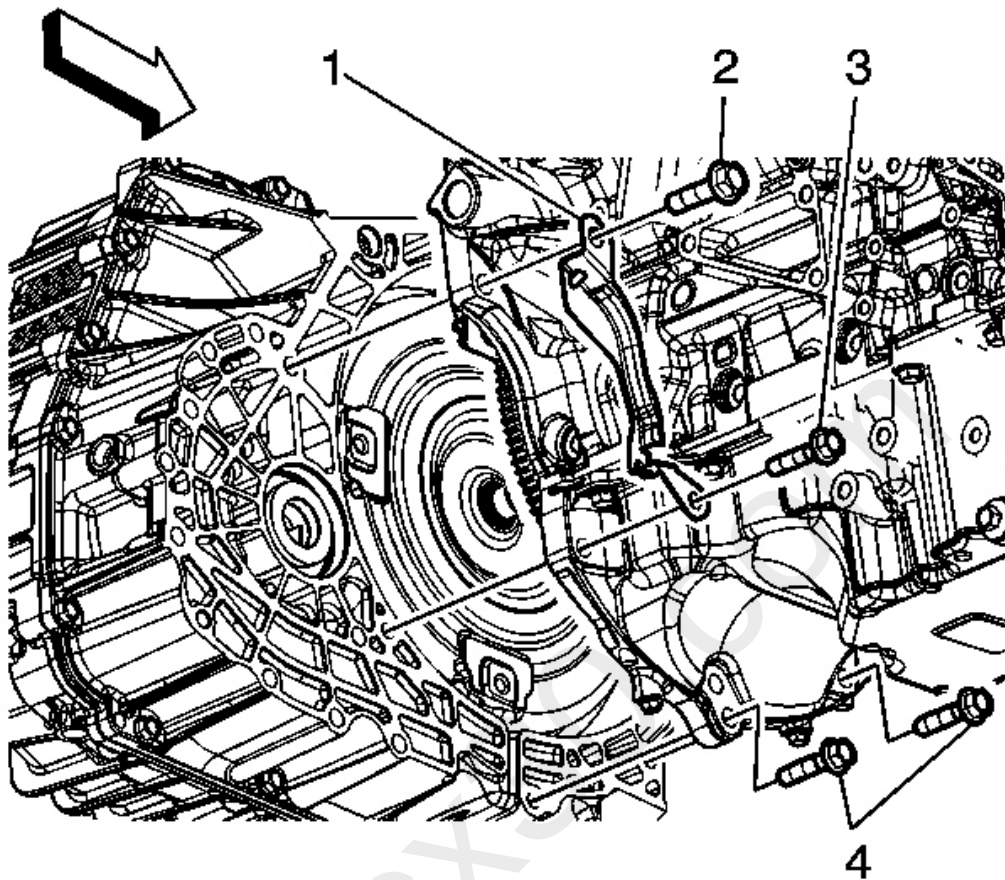


Fig. 87: Identifying Transmission Bolts
Courtesy of GENERAL MOTORS CORP.

26. Remove the flywheel inspection cover bolts (2, 3).
27. Remove the flywheel inspection cover (1).
28. Remove the remaining transmission bolts (4).

NOTE: **Insure the torque converter remains securely in place on the transmission input shaft while separating and removing the transmission.**

29. Separate the transmission from the engine.
30. Lower the transmission with the transmission jack far enough to remove the transmission.

Installation Procedure

1. Raise the transmission with the transmission jack and position the transmission to the engine.

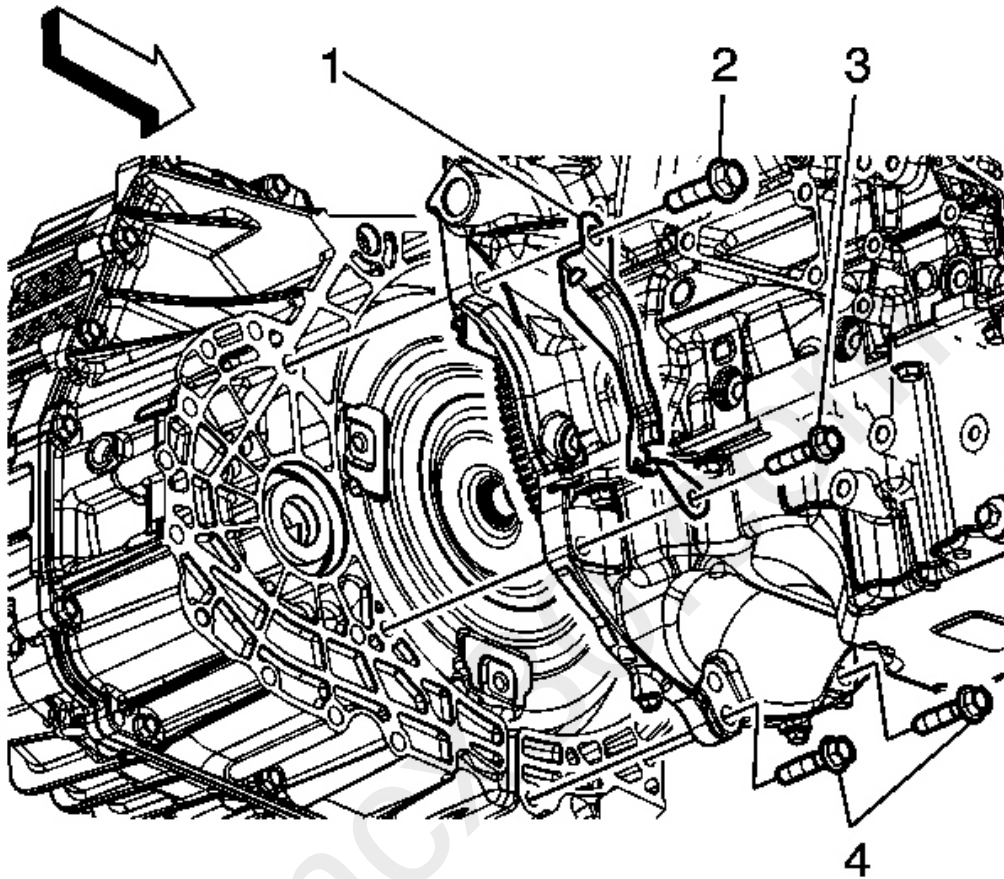


Fig. 88: Identifying Transmission Bolts
Courtesy of GENERAL MOTORS CORP.

CAUTION: Refer to Fastener Caution .

2. Install the transmission bolts (4) and tighten to 75 N.m (55 lb ft).
3. Install the flywheel inspection cover (1).
4. Install the flywheel inspection cover bolts (2, 3) and tighten to 75 N.m (55 lb ft).
5. Install the transfer case to the transmission. Refer to **Transfer Case Assembly Replacement** .
6. Remove the transmission jack.

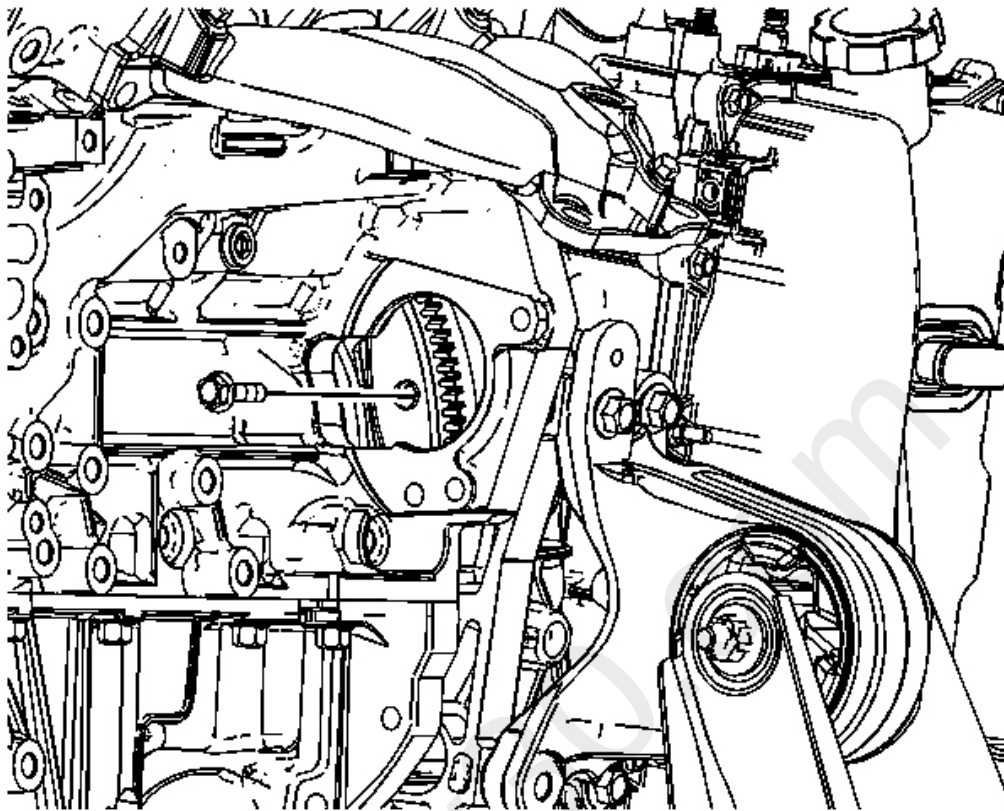


Fig. 89: View Of Torque Converter To Flywheel Bolts
Courtesy of GENERAL MOTORS CORP.

NOTE: If reusing the torque converter bolts, clean the threads and apply **LOCTITE™ 242**, GM P/N 12345382 (Canadian P/N 10953489) or equivalent to the threads prior to installation.

7. Install the torque converter to flywheel bolts and tighten to 62 N.m (46 lb ft).
8. Install the starter. Refer to **Starter Replacement (LAF)** or **Starter Replacement (LF1)**.
9. Install the front transmission mount to the transmission. Refer to **Transmission Front Mount Replacement**.
10. Install the rear transmission mount to the transmission. Refer to **Transmission Rear Mount Replacement**.
11. Install the left transmission mount to the transmission. Refer to **Transmission Mount Replacement - Left Side**.
12. Install the wheel drive shafts to the transmission. Refer to **Front Wheel Drive Shaft Replacement**.

13. Install the frame. Refer to **Drivetrain and Front Suspension Frame Replacement** .

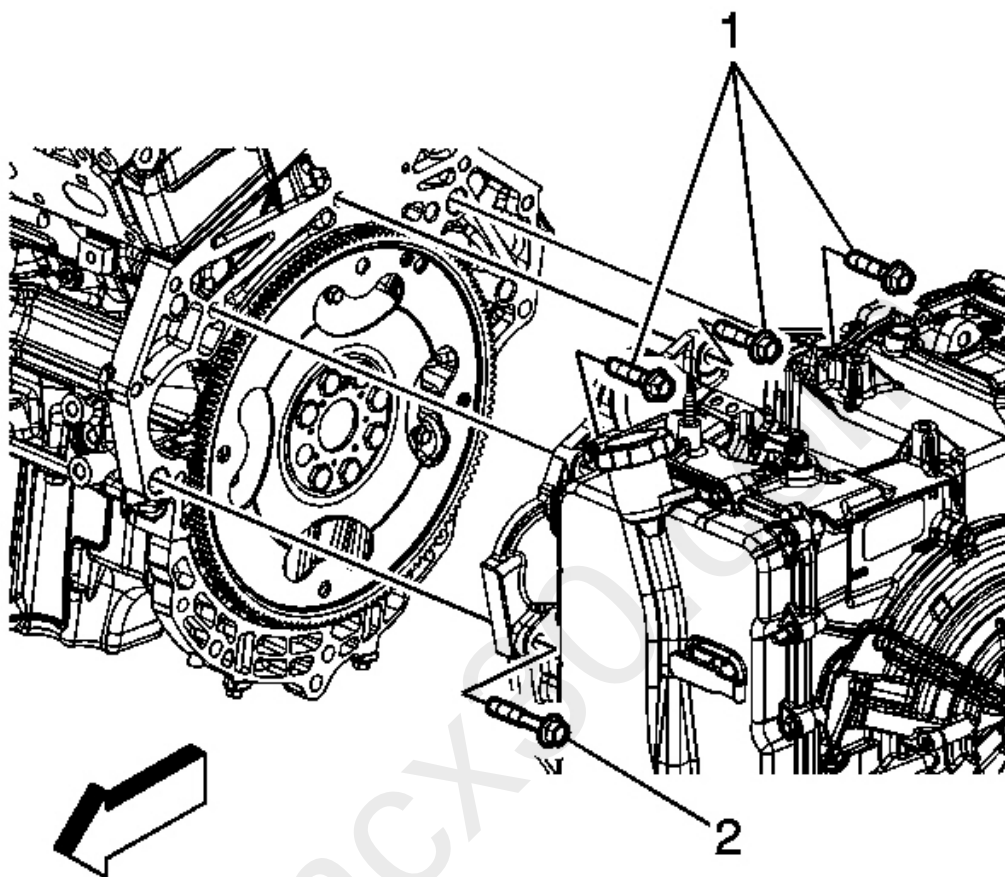


Fig. 90: Identifying Upper Transmission To Engine Bolts
Courtesy of GENERAL MOTORS CORP.

14. Install the upper transmission to engine bolt (1, 2) and tighten to 75 N.m (55 lb ft).
15. Install the right catalytic converter and pipe assembly. Refer to **Catalytic Converter Replacement - Right Side (LF1)** .
16. Remove the engine support fixture.
17. Lower the vehicle.

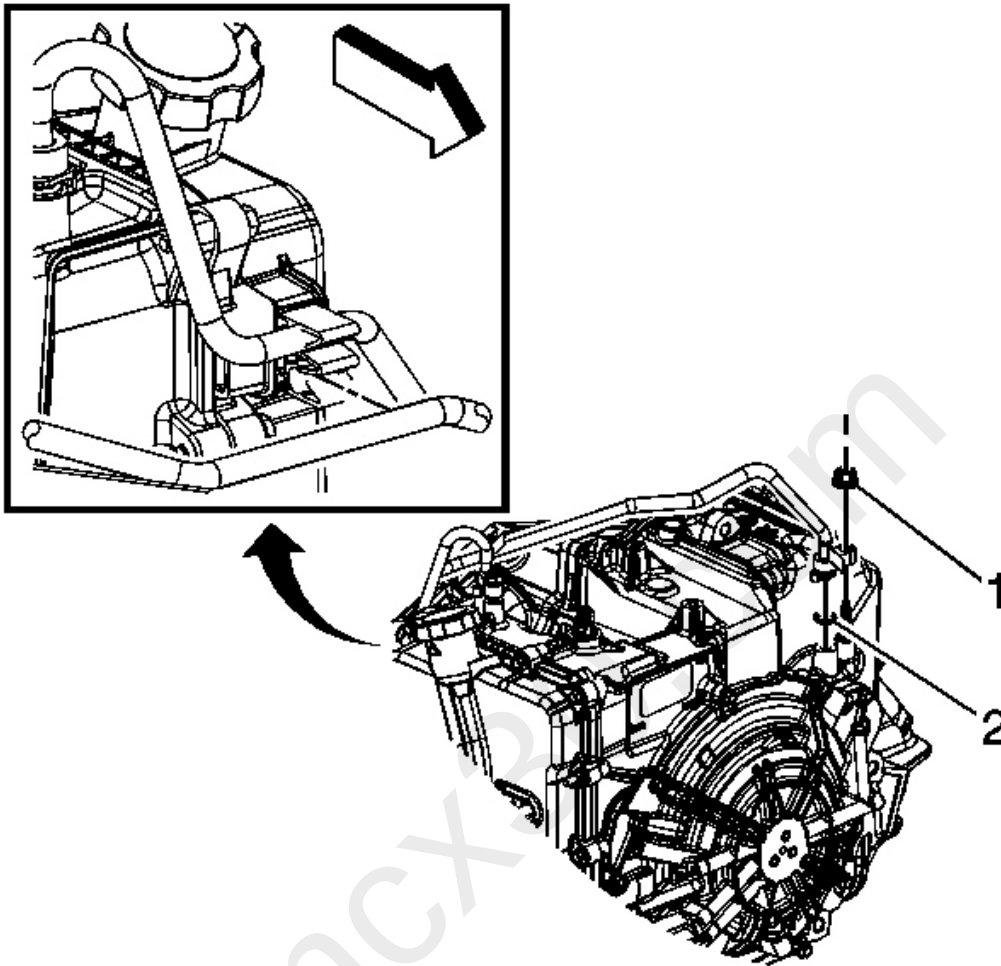


Fig. 91: Identifying Transmission Fluid Cooler Pipe Components
Courtesy of GENERAL MOTORS CORP.

18. Install the transmission fluid cooler outlet hose and seal (2) to the transmission.
19. Install the transmission fluid cooler pipe retainer nut (1) and tighten to 22 N.m (16 lb ft).

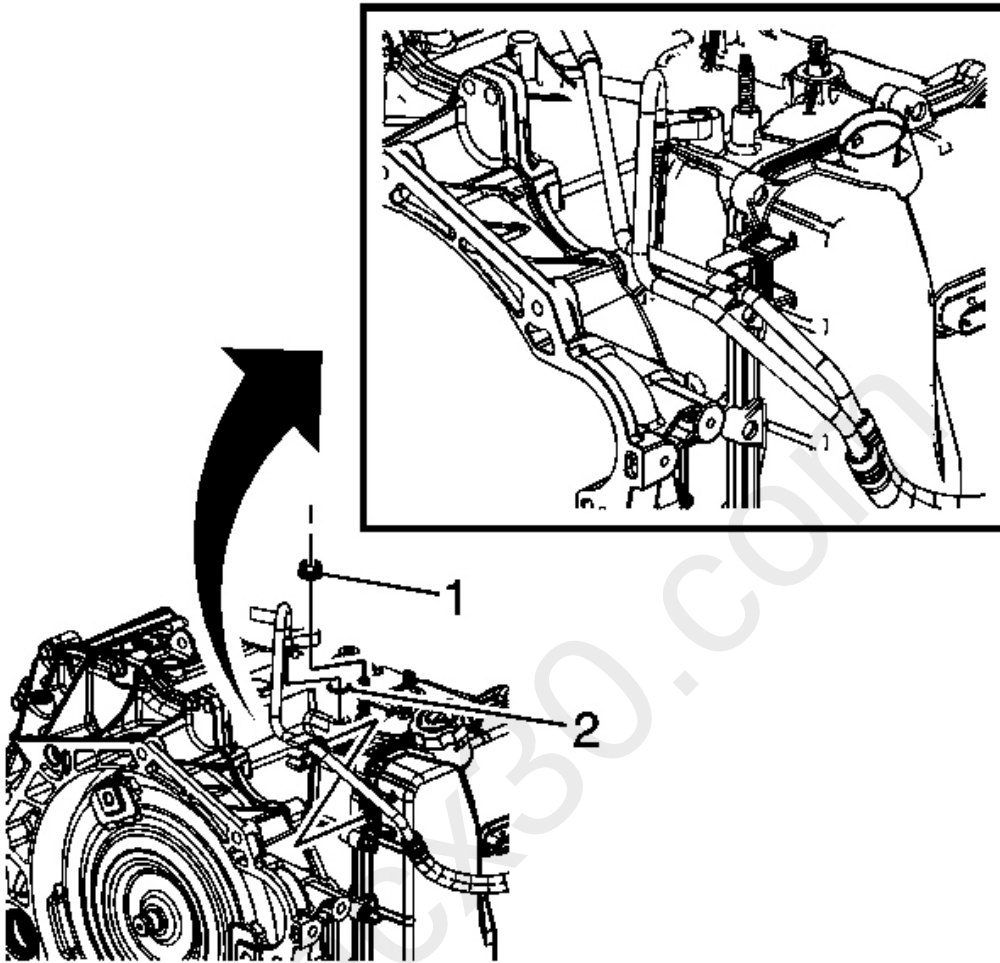


Fig. 92: Identifying Transmission Fluid Cooler Inlet Hose Components
Courtesy of GENERAL MOTORS CORP.

20. Install the transmission fluid cooler inlet hose and seal (2) to the transmission.
21. Install the transmission fluid cooler pipe retainer nut (1) and tighten to 22 N.m (16 lb ft).

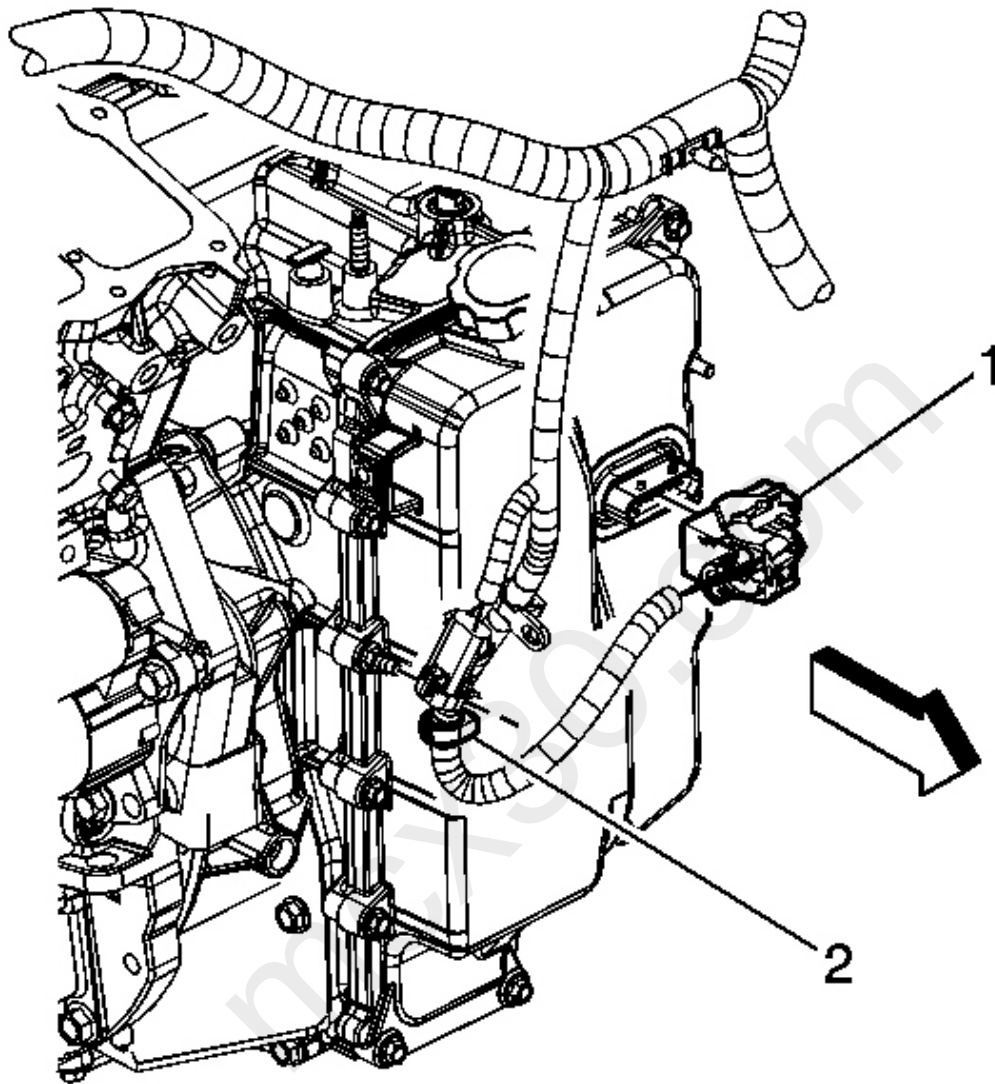


Fig. 93: Identifying Wire Harness Retainer & TCM Electrical Connector
Courtesy of GENERAL MOTORS CORP.

22. Connect the control valve body TCM electrical connector (1).
23. Install the wire harness retainer (2) to the control valve body cover stud and tighten the nut to 12 N.m (106 lb in).
24. Install the transmission range select lever cable and bracket.
25. Install the battery tray. Refer to **Battery Tray Replacement**.

26. Adjust the automatic transmission range selector lever cable. Refer to **Range Selector Lever Cable Adjustment** .
27. Fill the transmission with fluid. Refer to **Transmission Fluid Replacement**.
28. For transmission control module programming and setup, refer to **Transmission Control Module Programming and Setup (6T30/6T40/6T45/6T50)** or **Transmission Control Module Programming and Setup (6T70)** .

NOTE: **After an internal transmission repair or internal part replacement the service fast learn adapt procedure should be performed.**

29. Perform the transmission adaptive values learn procedure. Refer to **Transmission Adaptive Values Learn** .
30. Road test the vehicle.

mcx30.com