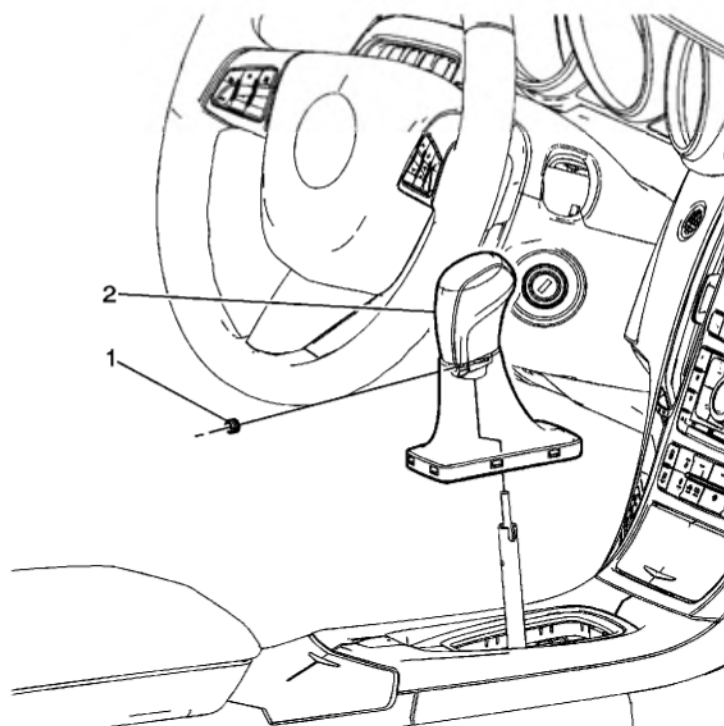


Transmission Control Lever Knob Replacement

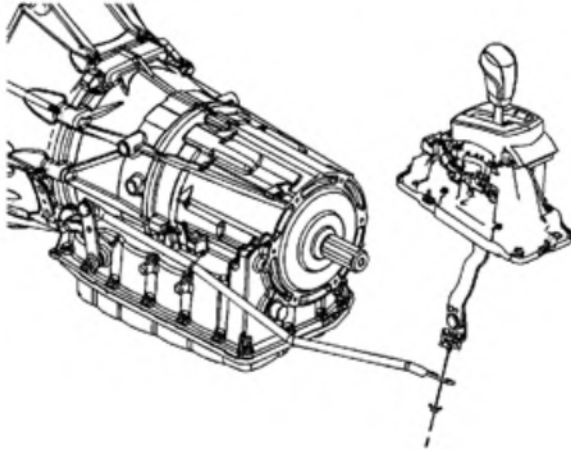


Callout	Component Name
	Automatic Transmission Control Lever Knob Screw
1	Procedure Insert a flat bladed plastic trim tool between the boot and the knob releasing the retaining tab securing the boot to the knob in order to expose the screw. Caution: Refer to Fastener Caution in the Preface section. Tighten 3 N·m (27 lb in)
2	Automatic Transmission Control Lever Knob

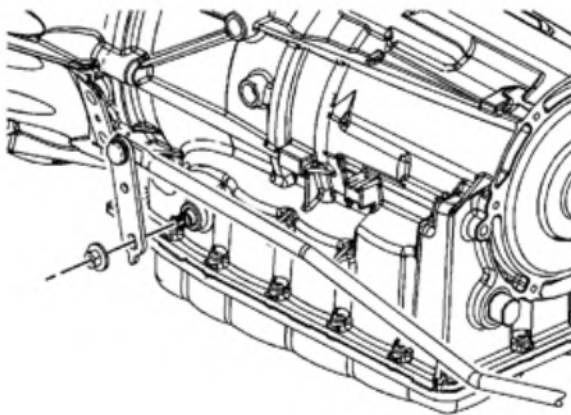
Shift Control Linkage Replacement (All Wheel Drive)

Removal Procedure

1. Position the shift lever in PARK.
2. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).

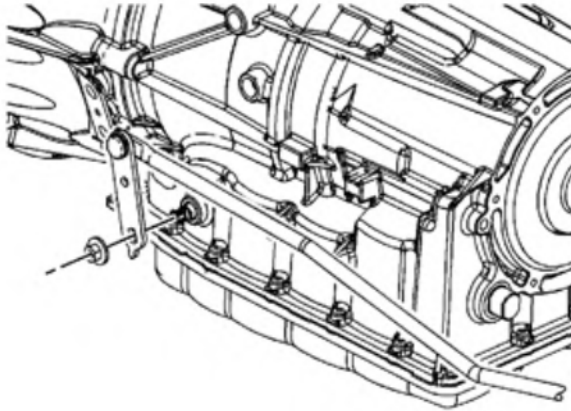


3. Remove the nut from the shift control linkage rod.
4. Disconnect the shift control linkage rod from the shift control assembly.



5. Remove the manual shift shaft nut.
6. Remove the shift control linkage from the vehicle.

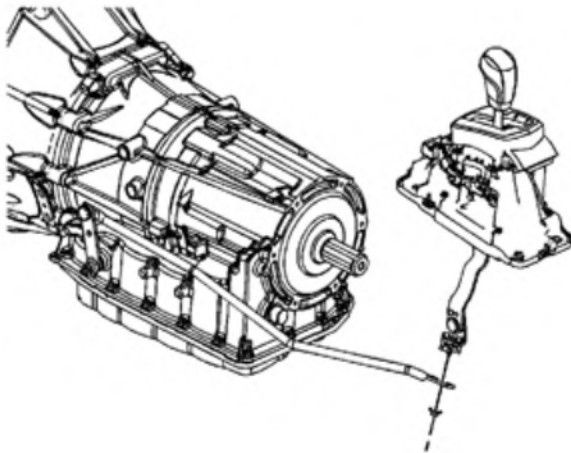
Installation Procedure



1. Install the shift control linkage to the vehicle.

Caution: Refer to [Fastener Caution](#) in the Preface section.

2. Install the manual shift shaft nut and tighten to **20 N·m (15 lb ft)**.

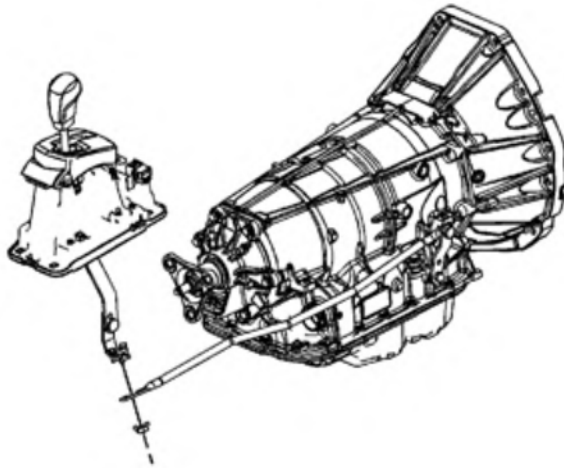


3. Connect the shift control linkage rod to the shift control assembly.
4. Install the nut to the shift control linkage rod.
5. Adjust the shift control linkage. Refer to [Shift Control Linkage Adjustment](#).
6. Lower the vehicle.

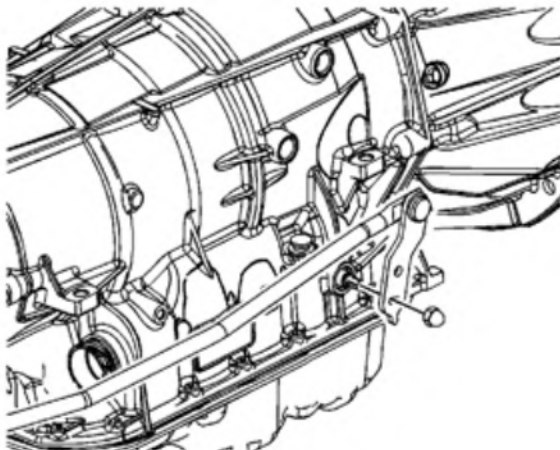
Shift Control Linkage Replacement (Rear Wheel Drive)

Removal Procedure

1. Position the shift lever in PARK.
2. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).

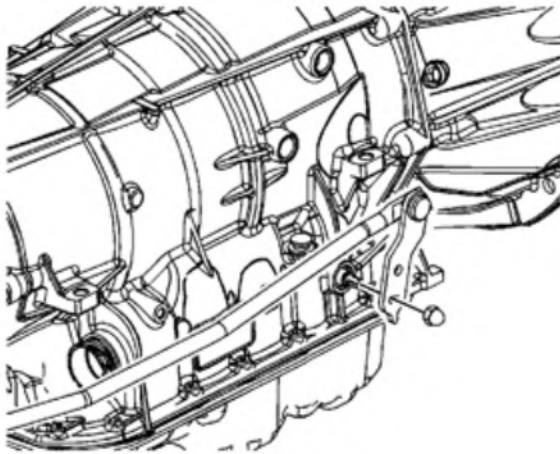


3. Remove the nut from the shift control linkage rod.
4. Disconnect the shift control linkage rod from the shift control assembly.



5. Remove the manual shift shaft nut.
6. Remove the shift control linkage from the vehicle.

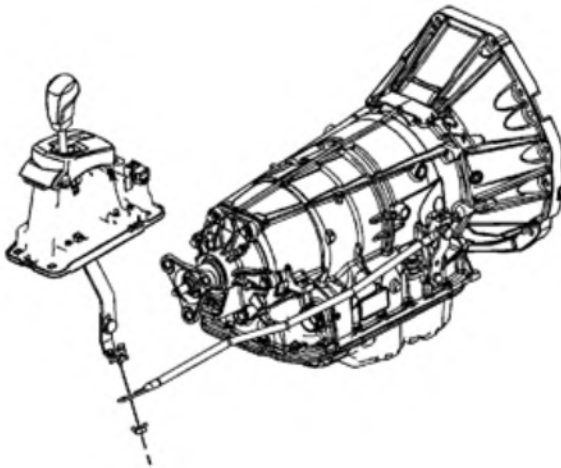
Installation Procedure



1. Install the shift control linkage to the vehicle.

Caution: Refer to [Fastener Caution](#) in the Preface section.

2. Install the manual shift shaft nut and tighten to **15 N·m (11 lb ft)**.

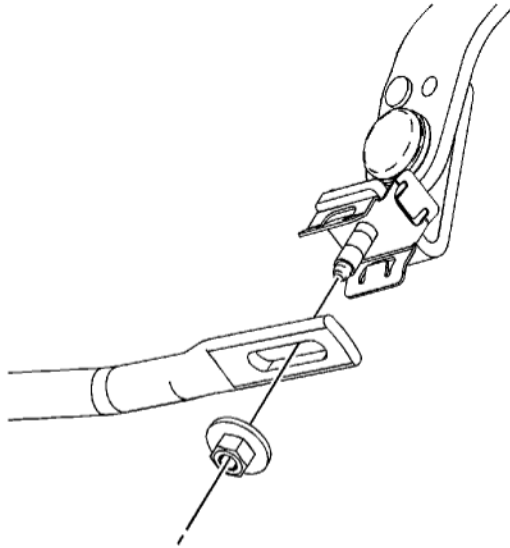


3. Connect the shift control linkage rod to the shift control assembly.
4. Install the nut to the shift control linkage rod.
5. Adjust the shift control linkage. Refer to [Shift Control Linkage Adjustment](#).
6. Lower the vehicle.

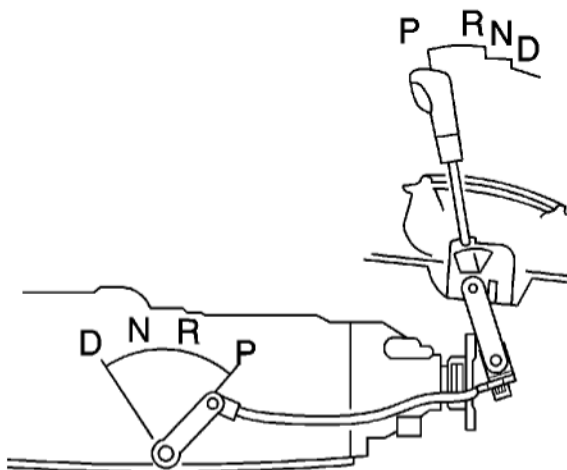
Shift Control Linkage Adjustment (All Wheel Drive)

1. Position the shift lever in PARK.
2. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).

Caution: Refer to [Fastener Caution](#) in the Preface section.



3. Loosen the shift control linkage adjustment nut to allow the adjuster to slide freely.
4. Hold the selector lever on transmission against the rear stop to eliminate any play. Tighten the shift control linkage adjustment nut to **9 N·m (80 lb in)**.
5. Lower the vehicle.



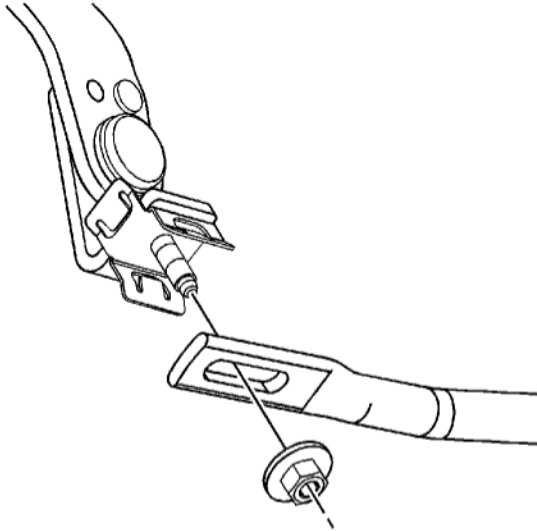


6. Inspect the operation of the starting system with the shift lever in each position. The engine should only crank when the lever is in the PARK or NEUTRAL position.
7. If the key is stuck or hard to remove from the lock cylinder or there is a high button effort, the linkage may not be adjusted properly. Re-adjust as necessary.
8. Ensure that the shifter detentes align with the gear indicators.
9. Return to the PARK position and check for proper engagement. PARK position should feel solid and not spongy. The shift lever should not be bottomed out on the stop bumper when engaging the PARK position. Readjust and retest if necessary.
10. With the ignition on and the engine not running, ensure a smooth transition from position D to tap mode and back. Ensure that the odometer changes to the gear indicator mode. If the odometer does not change to gear indicator mode, or any binding or rough spots are felt, repeat the linkage adjustment procedure and retest the system.

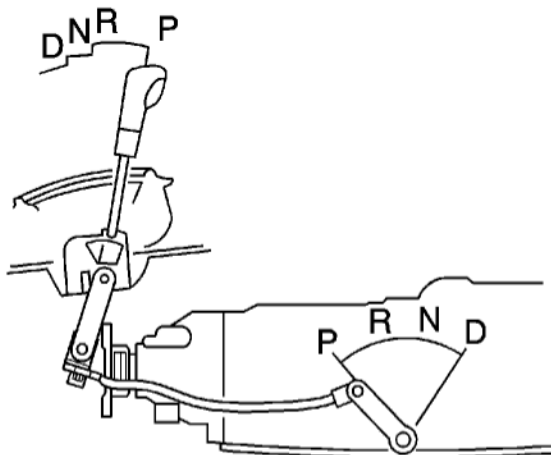
Shift Control Linkage Adjustment (Rear Wheel Drive)

1. Position the shift lever in PARK.
2. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).

Caution: Refer to [Fastener Caution](#) in the Preface section.



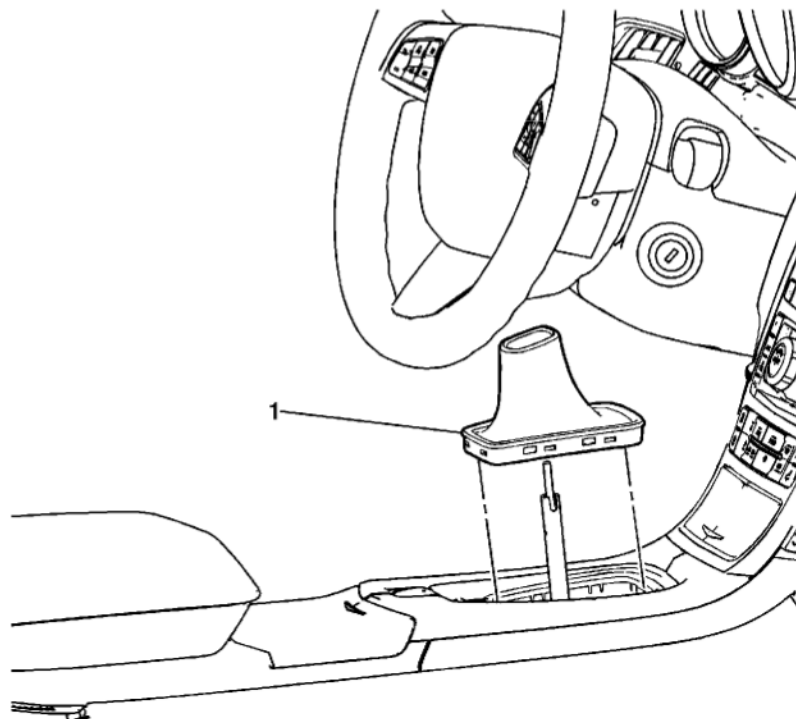
3. Loosen the shift control linkage adjustment nut to allow the adjuster to slide freely.
4. Hold the selector lever on transmission against the rear stop to eliminate any play. Tighten the shift control linkage adjustment nut to **9 N·m (80 lb in)**.
5. Lower the vehicle.





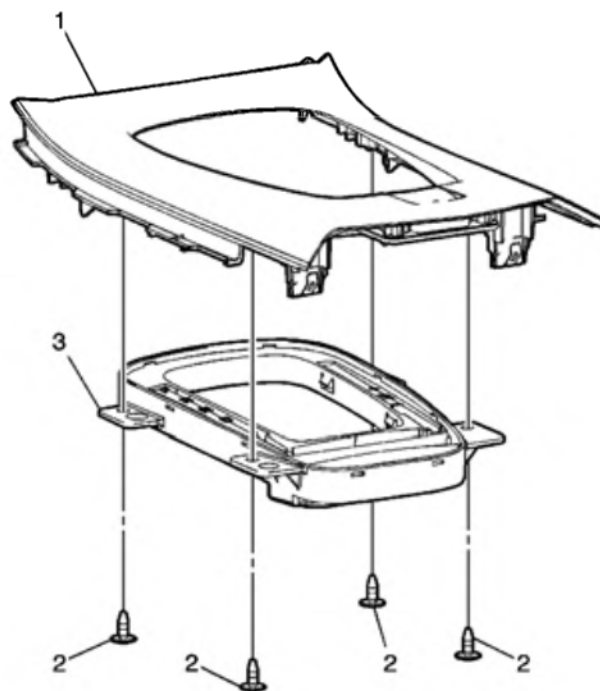
6. Inspect the operation of the starting system with the shift lever in each position. The engine should only crank when the lever is in the PARK or NEUTRAL position.
7. If the key is stuck or hard to remove from the lock cylinder or there is a high button effort, the linkage may not be adjusted properly. Re-adjust as necessary.
8. Ensure that the shifter detents align with the gear indicators.
9. Return to the PARK position and check for proper engagement. PARK position should feel solid and not spongy. The shift lever should not be bottomed out on the stop bumper when engaging the PARK position. Readjust and retest if necessary.
10. With the ignition on and the engine not running, ensure a smooth transition from position D to tap mode and back. Ensure that the odometer changes to the gear indicator mode. If the odometer does not change to gear indicator mode, or any binding or rough spots are felt, repeat the linkage adjustment procedure and retest the system.

Transmission Control Lever Boot Replacement



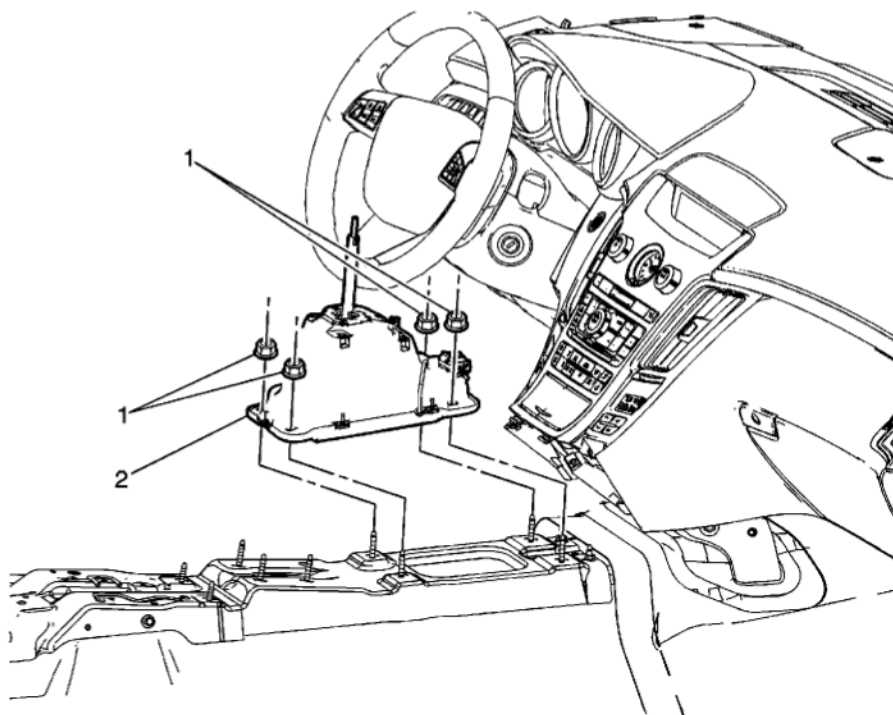
Callout	Component Name
Preliminary Procedure	
Remove the automatic transmission control knob. Refer to Transmission Control Lever Knob Replacement .	
1	Automatic Transmission Control Boot Assembly Procedure Use a flat bladed plastic trim tool in order to release the retaining tabs securing the boot assembly to the front floor console transmission shift opening trim plate.

Automatic Transmission Control Indicator Replacement



Callout	Component Name
1	Front Floor Console Transmission Opening Trim Plate Refer to Front Floor Console Transmission Shift Opening Trim Plate Replacement .
2	Automatic Transmission Control Indicator Screw (Qty: 4) Caution: Refer to Fastener Caution in the Preface section. Tighten 2.5 N·m (22 lb in)
3	Automatic Transmission Control Indicator Assembly

Transmission Control Replacement



Callout	Component Name
Preliminary Procedures	
1. Ensure that the shift control linkage is correctly adjusted before replacing the shift control. Many transmission shift related complaints can be corrected with linkage adjustment. Refer to Shift Control Linkage Adjustment. 2. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle. 3. Disconnect the automatic transmission shift control linkage from the automatic transmission shift control assembly. Refer to Shift Control Linkage Replacement. 4. Lower the vehicle. 5. Remove the automatic transmission control boot assembly. Refer to Transmission Control Lever Boot Replacement. 6. Remove the front floor console assembly. Refer to Front Floor Console Replacement.	
1	Shift Control Nut (Qty: 4) Caution: Refer to Fastener Caution in the Preface section. Tighten 9 N·m (80 lb in)
	Automatic Transmission Shift Control Assembly

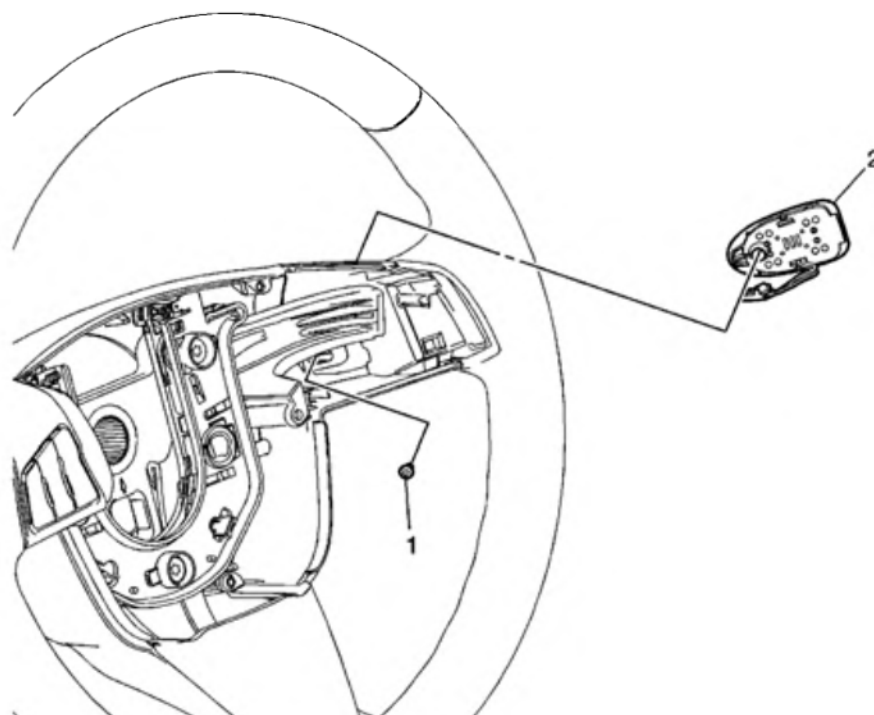
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Procedure

2

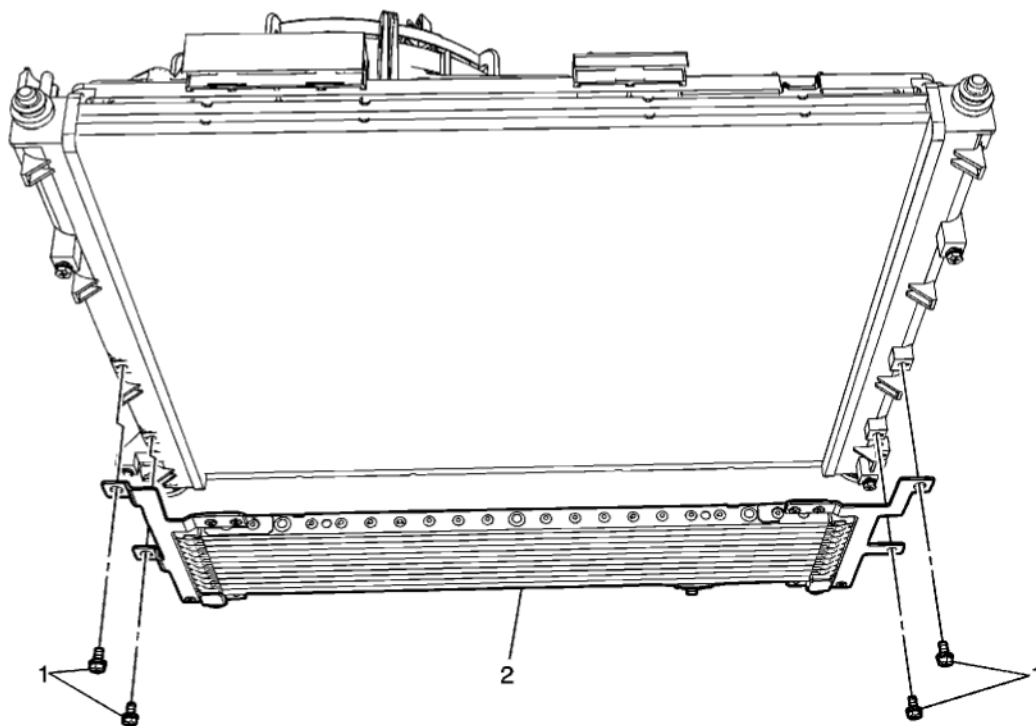
1. Disconnect the electrical connector from the shift control.
2. Adjust the automatic transmission shift control linkage after installing the automatic transmission shift control assembly. Refer to [Shift Control Linkage Adjustment](#).

Manual Shift Auxiliary Position Switch Replacement - Steering Wheel



Callout	Component Name
Preliminary Procedure	
Remove the steering wheel control switch assembly. Refer to Steering Wheel Control Switch Assembly Replacement .	
1	Steering Wheel Manual Shift Position Switch Bolt Caution: Refer to Fastener Caution in the Preface section. Tighten 2 N·m (18 lb in)
2	Steering Wheel Manual Shift Position Switch Procedure 1. Disconnect any electrical connectors as needed. 2. Make sure the steering wheel manual shift position switch is properly seated to the steering wheel during installation.

Transmission Fluid Auxiliary Cooler Replacement

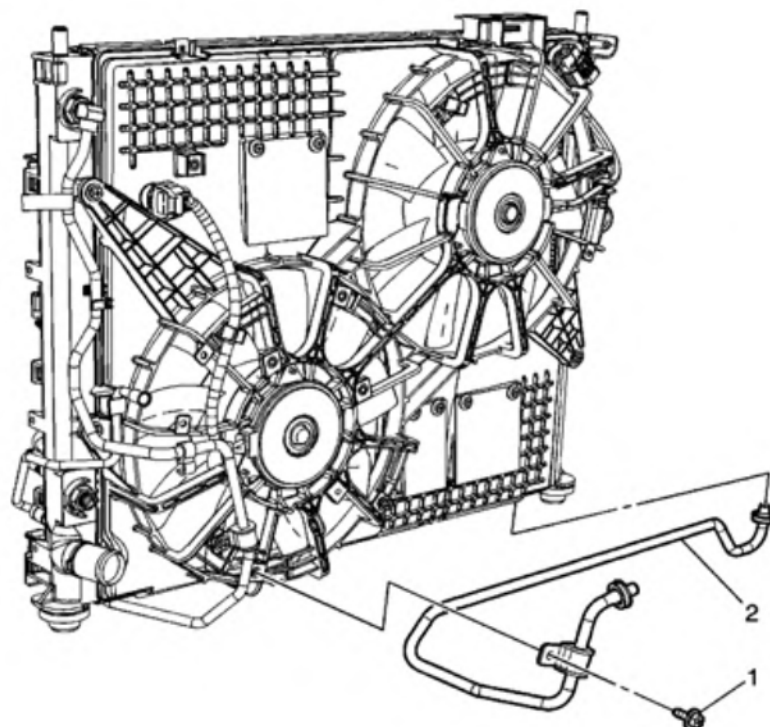


Callout	Component Name
Preliminary Procedures	
Important: It is not necessary to discharge the refrigerant from the air conditioning (A/C) system during auxiliary transmission oil cooler (TOC) replacement. Remove the A/C condenser mounting bolts and reposition the condenser. 1. Reposition the condenser to access the transmission oil cooler. Refer to Air Conditioning Condenser Replacement. 2. Remove the air cleaner assembly. Refer to Air Cleaner Assembly Replacement. 3. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle. 4. Remove the front air deflector. Refer to Front Air Deflector Replacement. 5. Remove front compartment sight shield. Refer to Front Compartment Sight Shields Replacement. 6. Remove transmission fluid cooler pipes. Refer to Transmission Fluid Auxiliary Cooler Inlet Pipe Replacement , and Transmission Fluid Auxiliary Cooler Outlet Hose Replacement.	
1	Transmission Oil Cooler Bolts (Qty: 4) Caution: Refer to Fastener Caution in the Preface section.

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	Tighten 5 N·m (44 lb in)
2	Transmission Oil Cooler

Transmission Fluid Auxiliary Cooler Inlet Pipe Replacement

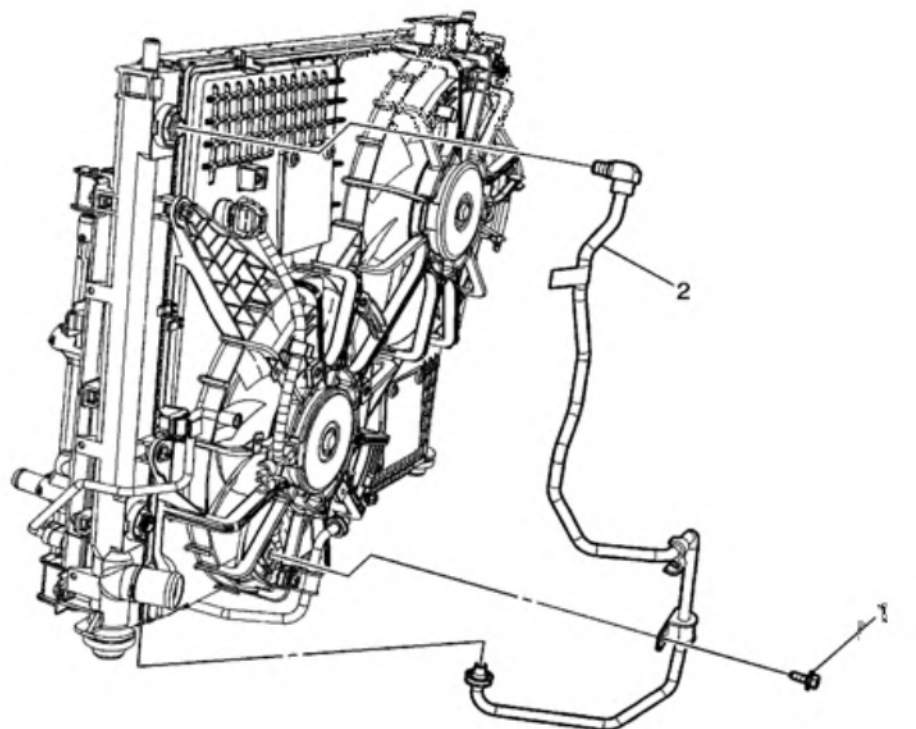


Callout	Component Name
Preliminary Procedures	
Important: It is not necessary to discharge the refrigerant from the air conditioning (A/C) system during auxiliary transmission oil cooler (TOC) auxiliary inlet pipe replacement. Remove the A/C condenser mounting bolts and reposition the condenser.	
1. Reposition the condenser to access the transmission oil cooler auxiliary inlet pipe. Refer to Air Conditioning Condenser Replacement. 2. Remove the air cleaner assembly. Refer to Air Cleaner Assembly Replacement. 3. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle. 4. Remove the front air deflector. Refer to Front Air Deflector Replacement. 5. Remove front compartment sight shield. Refer to Front Compartment Sight Shields Replacement. 6. Remove transmission fluid cooler pipes. Refer to Transmission Fluid Cooler Hose/Pipe Replacement.	
1	Transmission Fluid Auxiliary Oil Cooler Inlet Pipe Bolt
Caution: Refer to Fastener Caution in the Preface section.	

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	Tighten 5 N·m (44 lb in)
2	Transmission Fluid Auxiliary Oil Cooler Inlet Pipe

Transmission Fluid Auxiliary Cooler Outlet Hose Replacement

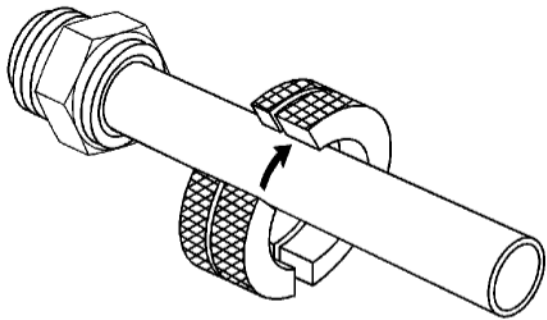


Callout	Component Name
Preliminary Procedures Important: It is not necessary to discharge the refrigerant from the air conditioning (A/C) system during auxiliary transmission oil cooler (TOC) auxiliary outlet pipe replacement. Remove the A/C condenser mounting bolts and reposition the condenser. 1. Reposition the condenser to access the transmission oil cooler auxiliary inlet pipe. Refer to Air Conditioning Condenser Replacement. 2. Remove the air cleaner assembly. Refer to Air Cleaner Assembly Replacement. 3. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle. 4. Remove the front air deflector. Refer to Front Air Deflector Replacement. 5. Remove front compartment sight shield. Refer to Front Compartment Sight Shields Replacement.	
1	Transmission Fluid Auxiliary Oil Cooler Outlet Pipe Bolt Caution: Refer to Fastener Caution in the Preface section. Tighten 5 N·m (44

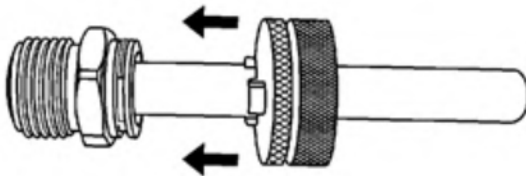
2	Transmission Fluid Auxiliary Oil Cooler Outlet Pipe
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Transmission Fluid Cooler Hose / Pipe Quick-Connect Fitting Disconnection and Connection

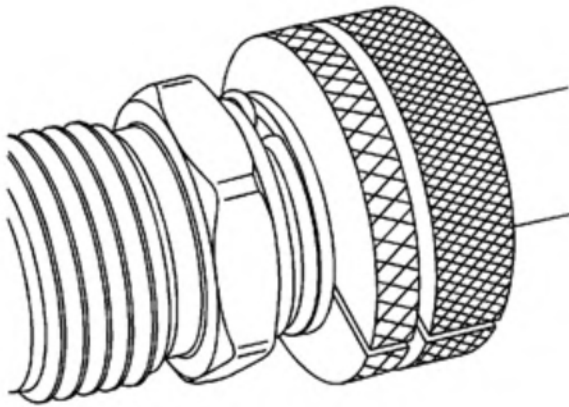
Removal Procedure



1. Install the [J 41623-B](#) onto the transmission oil cooler (TOC) pipe.



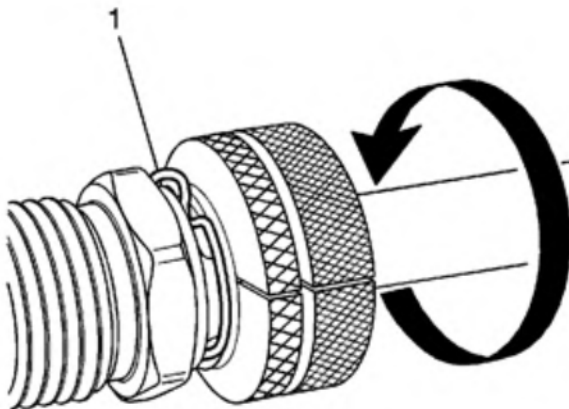
2. Slide the [J 41623-B](#) toward the TOC pipe fitting.



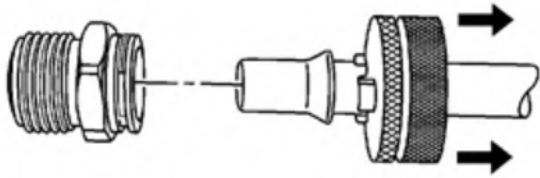
Important: Rotate the [J 41623-B](#) to engage the TOC pipe fitting's retainer slots.

The [J 41623-B](#) should be nearly flush with the fitting.

3. Connect the [J 41623-B](#) onto the TOC pipe fitting.

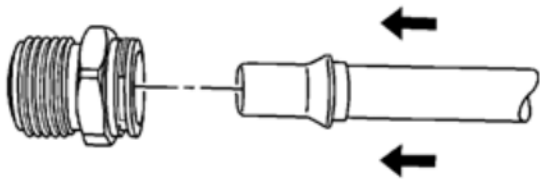


4. Rotate the [J 41623-B](#) until the retainer clip (1) rises above the fitting retainer seat.



5. Pull back on the TOC pipe to disengage the pipe from the TOC pipe fitting.
6. Remove the [J 41623-B](#) from the TOC pipe.

Installation Procedure



Important: Inspect the TOC pipe fitting and retaining clip for signs of wear or damage. Replace the components if necessary.

1. Install the TOC pipe into the TOC pipe fitting.

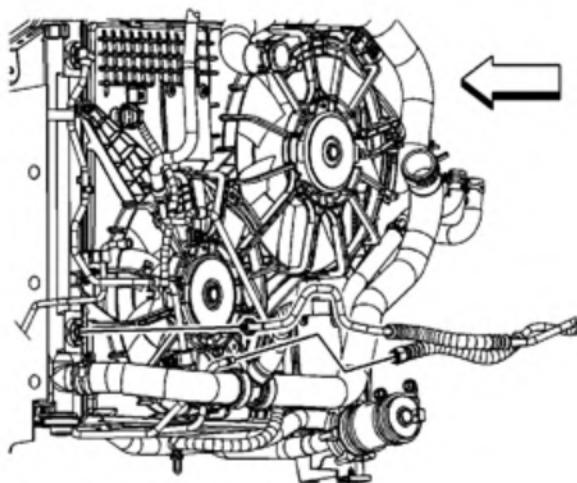
A distinct snap should be heard or felt when assembling the TOC pipe to the fitting.

2. To ensure the cooler line is properly installed, give the cooler pipe a gentle pull.

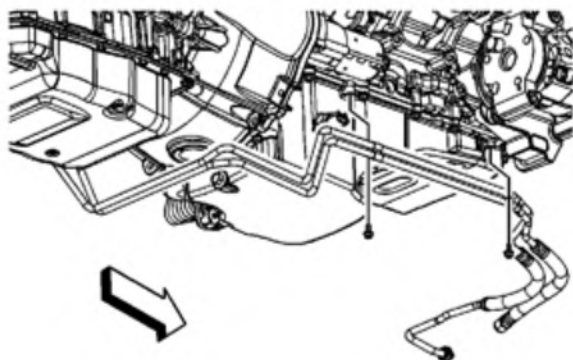
Transmission Fluid Cooler Hose / Pipe Replacement

Removal Procedure

1. Remove the air cleaner assembly. Refer to [Air Cleaner Assembly Replacement](#)
2. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#)
3. Remove the front air deflector. Refer to [Front Air Deflector Replacement](#)
4. Remove the front compartment lower noise shield. Refer to [Front Compartment Lower Noise Shield Replacement](#)

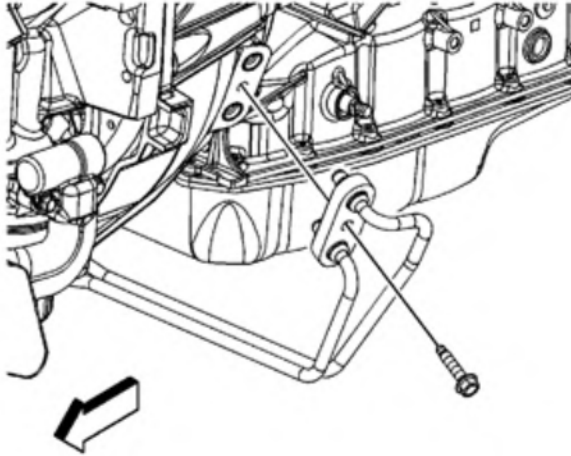


5. Disconnect the transmission cooler lines. Refer to [Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection](#)



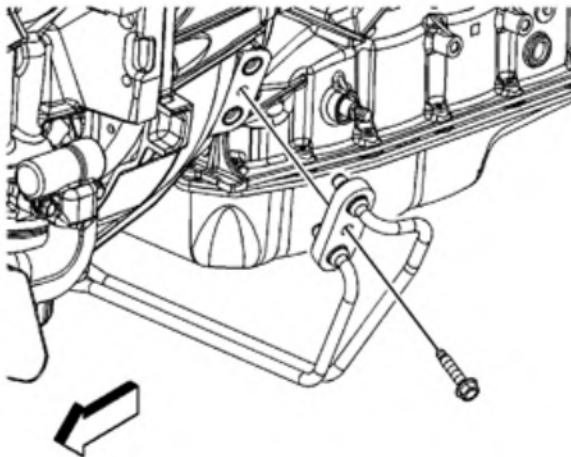


6. Remove the transmission cooler line bolts.



7. Remove the transmission cooler lines bolt.
8. Remove the transmission cooler lines from the vehicle.

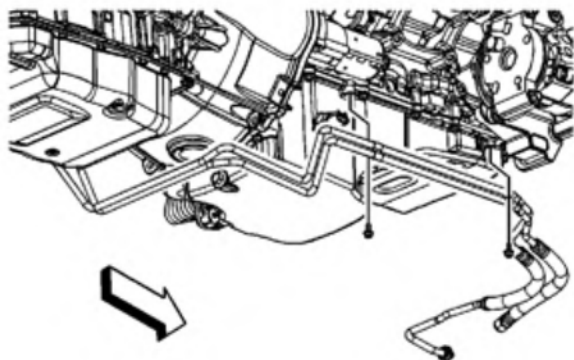
Installation Procedure



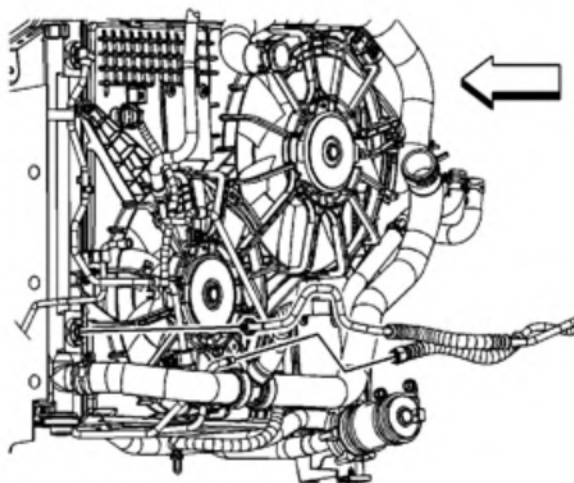
1. Install the transmission cooler lines to the vehicle.

Caution: Refer to [Fastener Caution](#) in the Preface section.

2. Install the transmission cooler lines bolt and tighten to **50 N·m (37 lb ft)**.



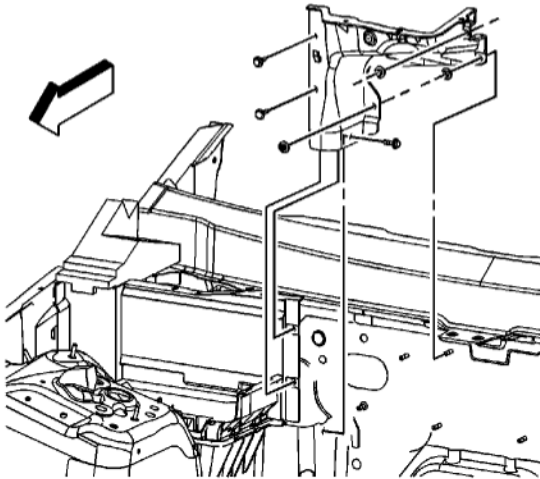
3. Install the the transmission cooler line bolts.



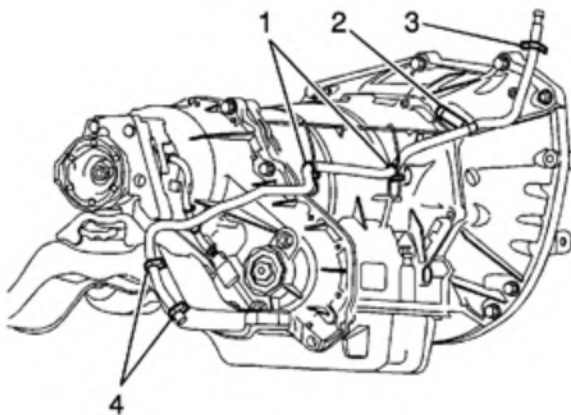
4. Connect the transmission cooler lines. Refer to [Transmission Fluid Cooler Hose/Pipe Quick-Connect Fitting Disconnection and Connection](#)
5. Reposition the heater hose clamps (1) at the engine using *J 38185* Hose Clamp Pliers .
6. Install the front compartment lower noise shield. Refer to [Front Compartment Lower Noise Shield Replacement](#)
7. Install the front air deflector. Refer to [Front Air Deflector Replacement](#)
8. Lower the vehicle. Refer to [Lifting and Jacking the Vehicle](#)
9. Install the air cleaner assembly. Refer to [Air Cleaner Assembly Replacement](#)

Vent Hose Replacement (All Wheel Drive)

Removal Procedure



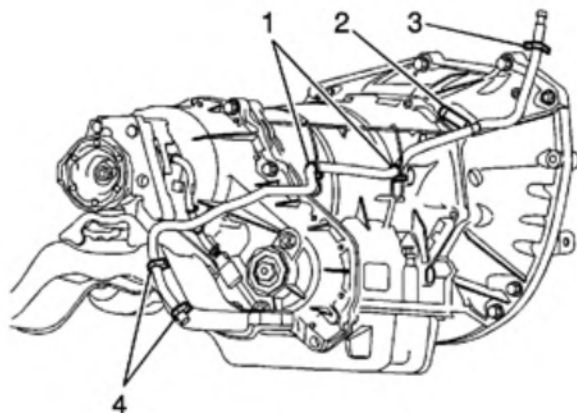
1. Remove the air inlet housing front panel to gain access to the vent hose upper retainer. Refer to [Air Inlet Grille Panel Replacement](#).



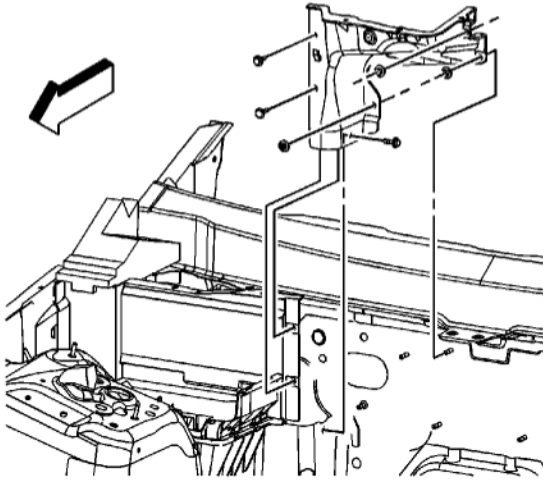
2. Remove the vent hose from the retainer (3) located on the rear of the right cylinder head.
3. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
4. Remove the vent hose from the retainers (4) located on the transmission mount assembly.

5. Support the transmission with a suitable jack.
6. Remove the transmission mount assembly. Refer to [Transmission Mount Replacement](#) .
7. Cut the tie straps (1) that secure the vent hose to the transmission wiring harness.
8. Lower the transmission and remove the vent hose from the vent tube (2).
9. Remove the vent hose assembly from the vehicle.

Installation Procedure



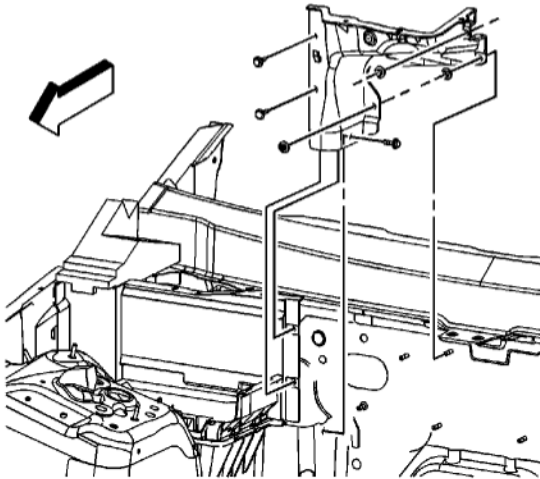
1. Install the vent hose assembly to the vehicle.
2. Connect the vent hose to the vent tube (2).
3. Raise the transmission to the installed position.
4. Install new tie straps (1) to secure the vent hose to the transmission wiring harness. Do not collapse the vent hose while tightening the tie straps.
5. Install the transmission mount assembly. Refer to [Transmission Mount Replacement](#) .
6. Remove the jack.
7. Install the vent hose to the retainers (4) located on the mount assembly.
8. Lower the vehicle.
9. Install the vent hose to the retainer (3) located on the rear of the right cylinder head.



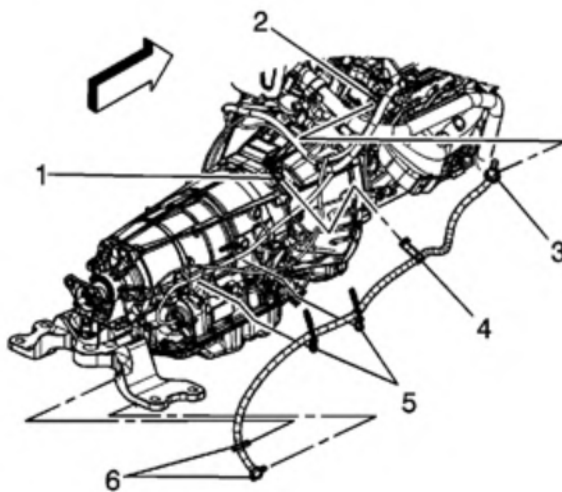
10. Install the air inlet housing front panel. Refer to [Air Inlet Grille Panel Replacement](#) .

Vent Hose Replacement (Rear Wheel Drive)

Removal Procedure



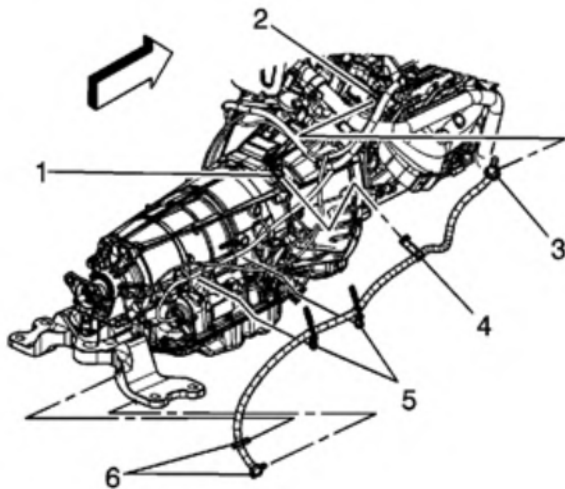
1. Remove the air inlet housing front panel to gain access to the vent hose upper retainer. Refer to [Air Inlet Grille Panel Replacement](#).



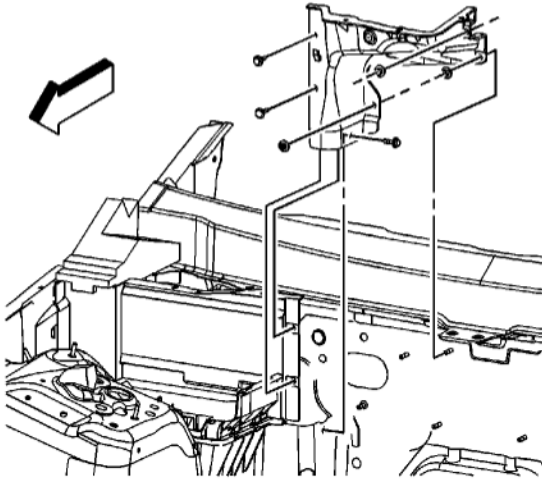
2. Remove the vent hose retainer (3) from the rear of the right cylinder head (2).
3. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
4. Remove the vent hose retainers (6) located on the transmission support.

5. Support the transmission with a suitable jack.
6. Remove the transmission support. Refer to [Transmission Support Replacement](#).
7. Cut the tie straps (5) that secure the vent hose to the transmission wiring harness.
8. Lower the transmission and remove the vent hose (4) from the vent tube (1).
9. Remove the vent hose assembly from the vehicle.

Installation Procedure



1. Install the vent hose assembly to the vehicle.
2. Connect the vent hose (4) to the vent tube (1).
3. Raise the transmission to the installed position.
4. Install new tie straps (5) to secure the vent hose to the transmission wiring harness. Do not collapse the vent hose while tightening the tie straps.
5. Install the transmission support. Refer to [Transmission Support Replacement](#).
6. Remove the jack.
7. Install the vent hose retainers (6) located on the mount assembly.
8. Lower the vehicle.
9. Install the vent hose to the retainer (3) to the rear of the right cylinder head (2).

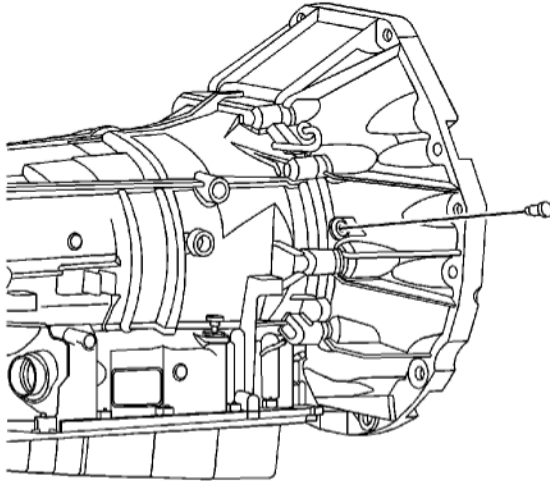


10. Install the air inlet housing front panel. Refer to [Air Inlet Grille Panel Replacement](#).

Automatic Transmission Fluid Pressure Test Hole Plug Replacement

Removal Procedure

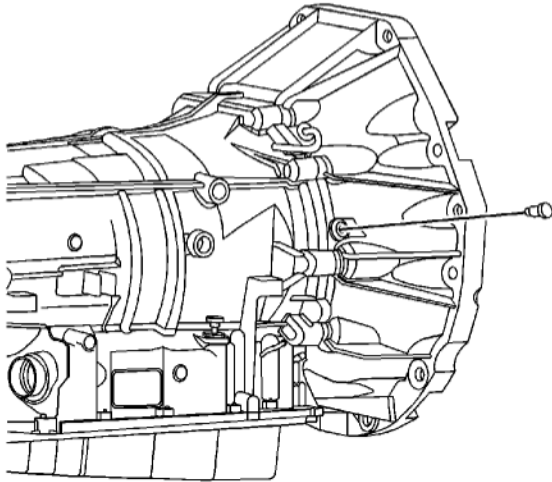
1. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).



2. Clean the surrounding area of the oil pressure test plug.
3. Remove the oil pressure test plug.

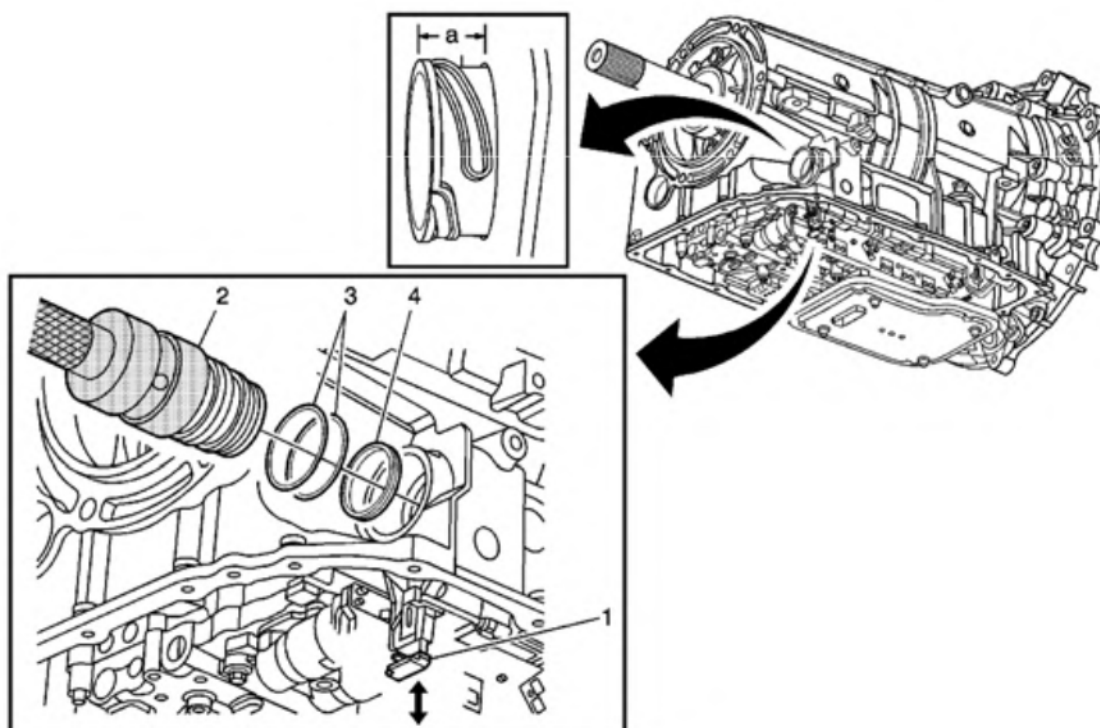
Installation Procedure

Caution: Refer to [Fastener Caution](#) in the Preface section.



1. Install the oil pressure test plug and tighten to **11 N·m (97 lb in)**.
2. Check the transmission fluid level (fill if necessary). Refer to [Transmission Fluid Check](#) and [Transmission Fluid Fill Procedure](#).
3. Lower the vehicle.

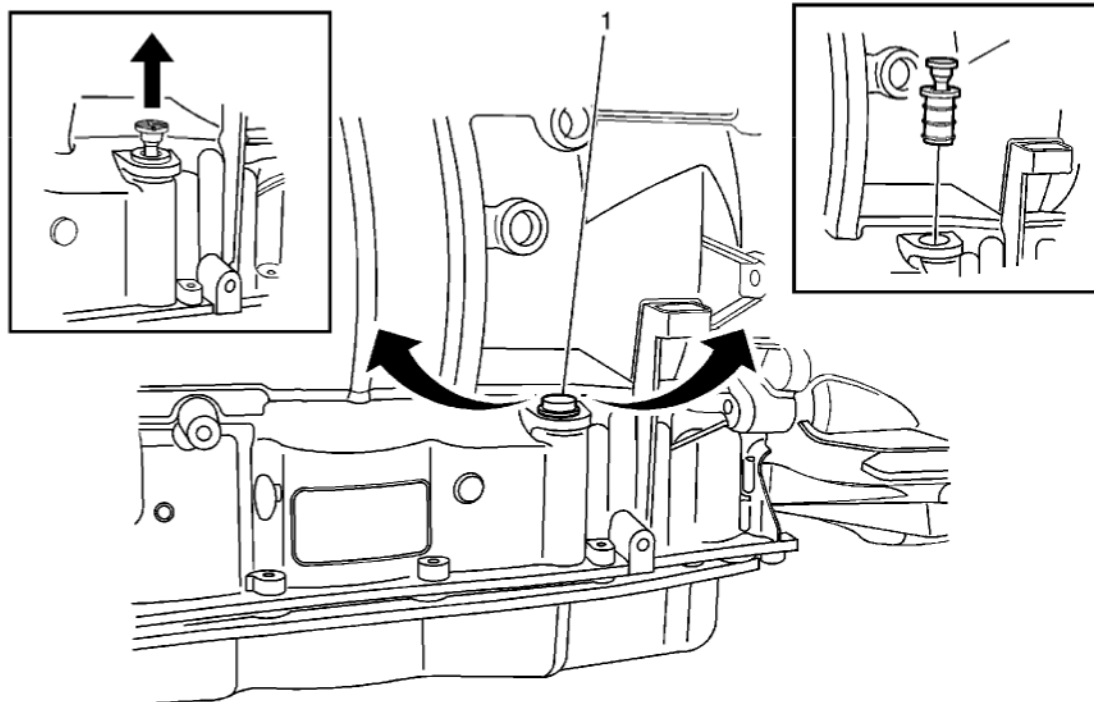
Automatic Transmission Electrical Connector Passage Sleeve Replacement



Callout	Component Name
Caution: Orientate the alignment tab inside the passage sleeve with the slot in the electrical connector of the control solenoid valve assembly. Push the sleeve straight into the case bore and connector. Do NOT rotate the sleeve at any time. Ensure the sleeve is fully seated into the case. When the sleeve is properly installed, the distance from the case surface to the end of the sleeve should be 14-16 mm. Even though the correct electrical connections may still be maintained, failure to ensure proper installation of the sleeve may result in a fluid leak around the sleeve lip seal and into the sleeve cavity. Preliminary Procedures 1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle. 2. Remove the transmission oil pan. Refer to Automatic Transmission Fluid, Fluid Pan and/or Filter Replacement. 3. Disconnect the vehicle wire harness electrical connector from the transmission electrical connector passage sleeve.	
1	Electrical Connector Slide Lock Tip Pull down on the slide lock to remove the sleeve. Push up on the slide lock after

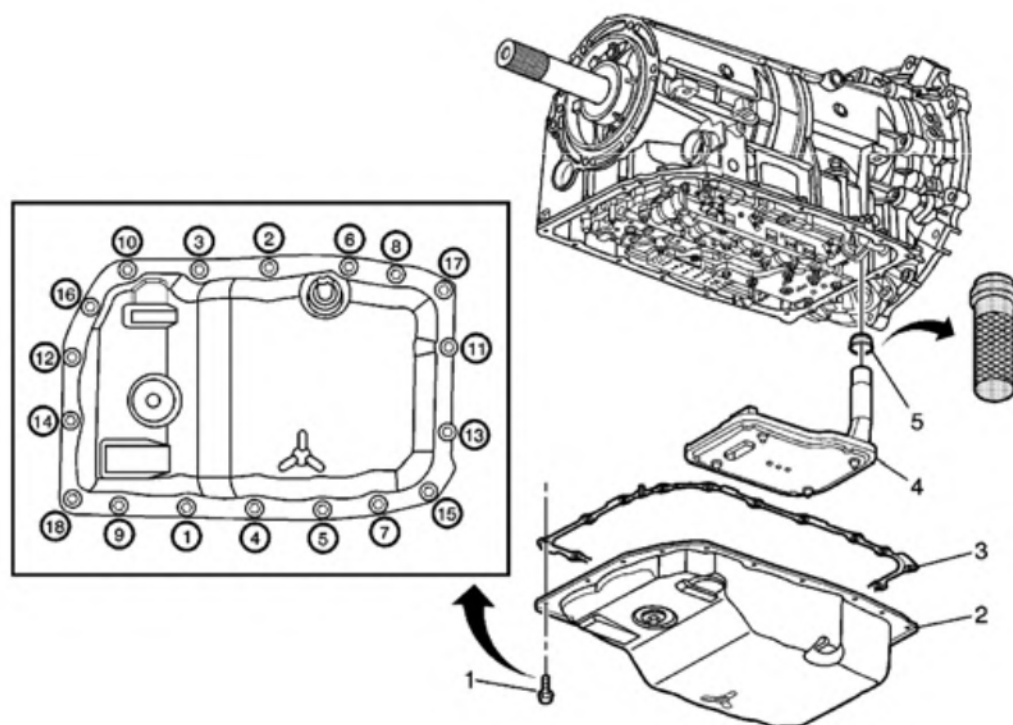
	sleeve installation.
2	Electrical Connector Passage Sleeve Tip • Use the DT 47715 Electrical Connector Passage Sleeve Remover/Installer and J 42183 Driver Handle to remove and install the electrical connector passage sleeve. • The distance (a) from the case surface to the end of the sleeve should be 14-16 mm. Special Tools • DT 47715 Electrical Connector Passage Sleeve Remover/Installer • J 42183 Driver Handle
3	O-Ring Seal (Qty: 2) Tip Use a NEW O-ring seal.
4	Lip Seal Tip Use a NEW lip seal.

Transmission Fluid Filler Tube Plug Replacement



Callout	Component Name
<i>Fastener Tightening Specifications:</i> Refer to Fastener Tightening Specifications .	
Preliminary Procedures	
Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle .	
1	Transmission Fluid Filler Tube Plug Tip 1. Clean the area around the filler tube plug before removal. 2. Use a door trim tool to release the filler tube plug interlock.

Automatic Transmission Fluid, Fluid Pan and/or Filter Replacement



Callout	Component Name
Caution: Use Dexron VI transmission fluid only. Failure to use the proper fluid may result in transmission internal damage. Preliminary Procedures 1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle. 2. Place a suitable drain pan under the transmission.	
1	Transmission Fluid Pan Bolt (Qty: 18) Caution: Refer to Fastener Caution in the Preface section. Tip Tighten the bolts in the sequence shown and tighten to 9 N·m (80 lb in).
2	Transmission Fluid Pan Assembly Tip • Check the condition of the draining fluid. Refer to Transmission Fluid Check.

	• Fill the transmission with the proper fluid. Refer to Transmission General Specifications and Transmission Fluid Fill Procedure. • Fill the transmission with the proper amount of transmission fluid. Refer to Fluid Capacity Specifications and Transmission Fluid Check.
3	Transmission Fluid Pan Gasket Tip The fluid pan gasket is reusable. Inspect the gasket to determine if it may be reused.
4	Fluid Filter Assembly Tip • Pull the fluid filter assembly straight out. Do not bend or twist the filter neck. • Use a new fluid filter assembly.
5	Fluid Filter Seal Assembly Caution: Do not damage the case sealing surface when removing the filter seal assembly. Tip • Use a screwdriver or snap ring pliers to remove the filter seal. • Use the DT 47848 and the J 42183 to install the filter seal. • Use a new fluid filter seal assembly. • Lubricate the filter seal with transmission fluid before installing the filter. Special Tools • DT 47848 Seal Installer • J 42183 Driver Handle

Transmission Mount Inspection

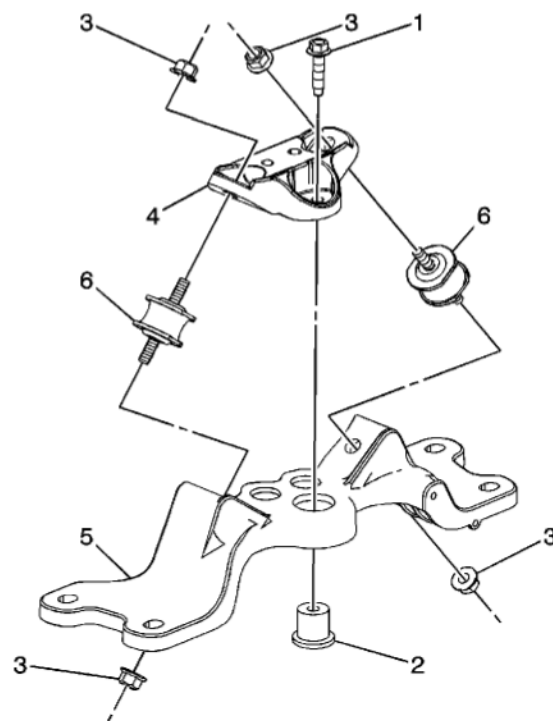
Caution: In order to avoid oil pan damage and possible engine failure, insert a block of wood that spans the width of the oil pan bottom between the oil pan and the jack support.

1. Raise the transmission/transaxle in order to remove the weight from the transmission/transaxle mount and create slight tension in the rubber.
2. Observe the transmission/transaxle mount while raising the transmission/transaxle. Replace the transmission/transaxle mount if the transmission/transaxle mount exhibits any of the following conditions:

Note: Black paint on the rubber will crack with time, this does not constitute a failure.

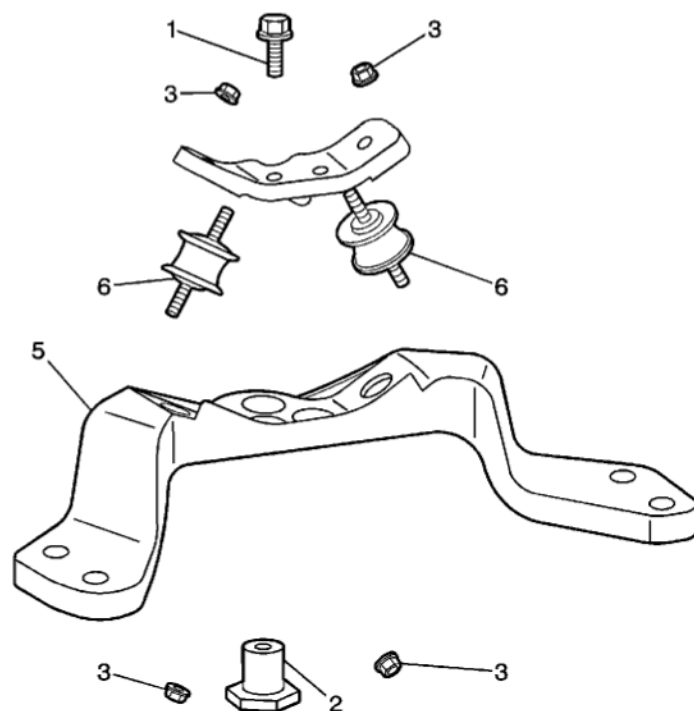
- The hard rubber surface is covered with heat check cracks.
 - The rubber is separated from the metal plate of the transmission/transaxle mount.
 - The rubber is split through the center of the transmission/transaxle mount.
3. If there is movement between the metal plate of the transmission/transaxle mount and its attaching points, lower the transmission/transaxle on the transmission/transaxle mount. Tighten the bolts or nuts attaching the transmission/transaxle mount to the frame or transmission/transaxle mount bracket.

Transmission Mount Replacement (Except CTS-V)



Callout	Component Name
Preliminary Procedures	
Remove the transmission support. Refer to Transmission Support Replacement .	
1	Transmission Mount Travel Restrictor Bolt Caution: Refer to Fastener Caution in the Preface section. Tighten 90 N·m (66 lb ft)
2	Transmission Mount Travel Restrictor
3	Transmission Mount Nut (Qty: 4) Tighten 58 N·m (43 lb ft)
4	Transmission Mount Adaptor
5	Transmission Support
6	Transmission Mount (Qty: 2)

Transmission Mount Replacement (CTS-V)



Callout	Component Name
Preliminary Procedure	
Remove the transmission support. Refer to Transmission Support Replacement .	
1	Transmission Mount Travel Restrictor Bolt Caution: Refer to Fastener Caution in the Preface section. Tighten 90 N·m (66 lb ft)
2	Transmission Mount Travel Restrictor
3	Transmission Mount Nut (Qty: 4) Tighten 58 N·m (43 lb ft)
4	Transmission Mount Adaptor
5	Transmission Support
6	Transmission Mount (Qty: 2)

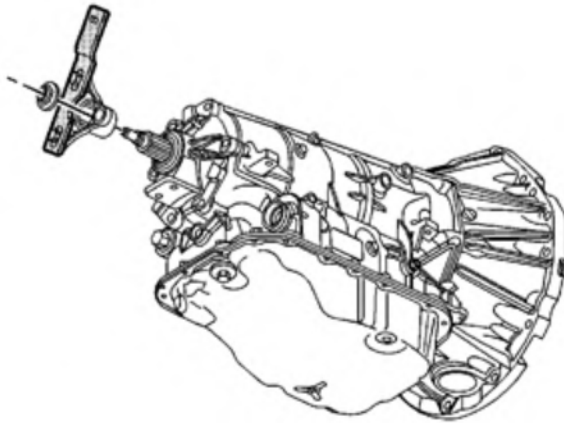
Case Extension and Gasket Replacement (6L50)

Special Tools

[J 45012](#) Holding Fixture

Removal Procedure

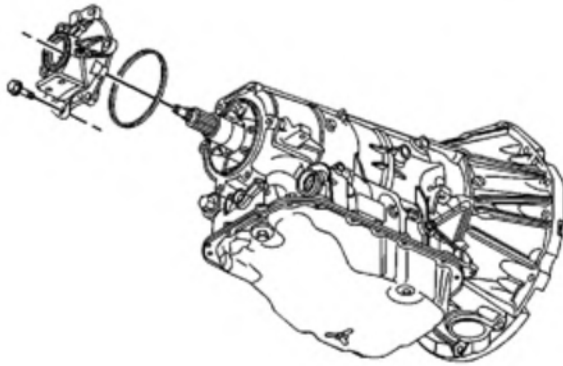
1. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
2. Remove the exhaust system. Refer to [Exhaust System Replacement](#).
3. Remove the drive shaft. Refer to [Rear Propeller Shaft Replacement](#).
4. Support the transmission with a suitable jack.
5. Remove the transmission mount assembly. Refer to [Transmission Mount Replacement](#).



6. Install the propeller shaft flange holding fixture [J 45012](#).

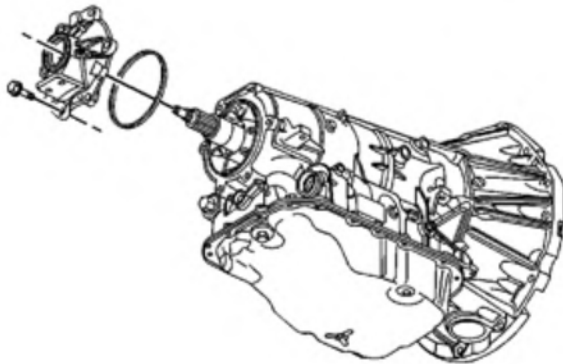
Caution: Do not reuse the flange nut. Reusing the flange nut may cause damage to the transmission.

7. Remove and discard the propeller shaft flange nut.
8. Remove the propeller shaft flange.



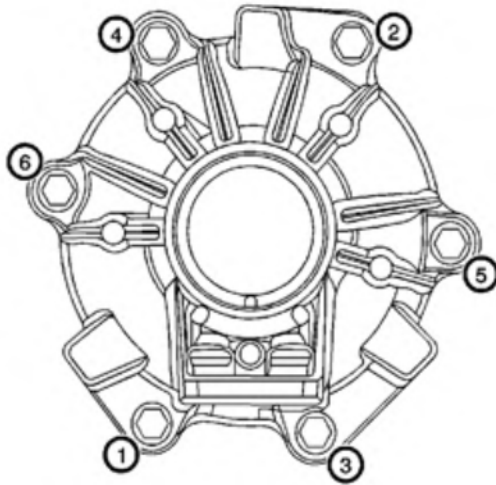
9. Remove the case extension housing bolts.
10. Remove the case extension housing.
11. Remove the case extension housing seal.

Installation Procedure

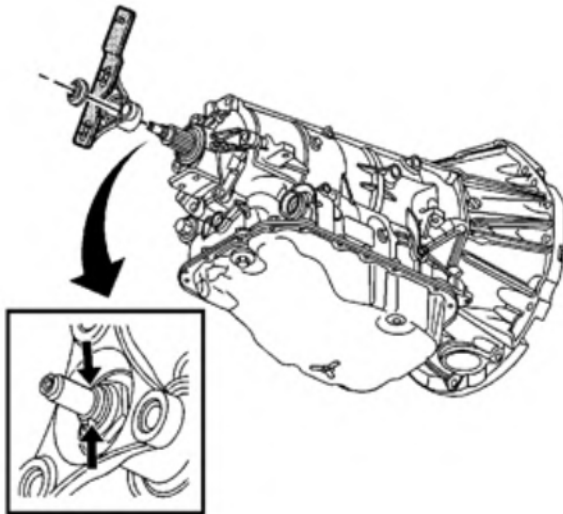


1. Install the case extension housing seal.
2. Install the case extension housing.
3. Install by hand the case extension housing bolts.

Caution: Refer to [Fastener Caution](#) in the Preface section.



4. Secure the case extension housing bolts in the specified sequence and tighten to **50 N·m (37 lb ft)**.



5. Install the prop shaft flange.

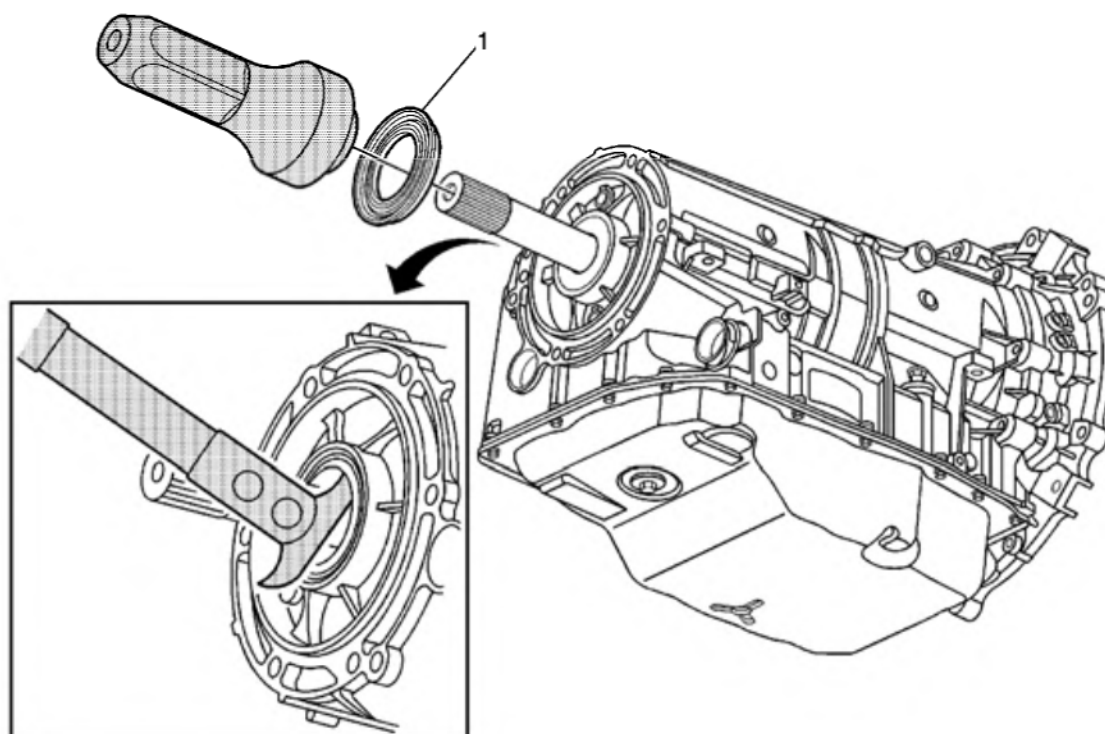
Caution: Stake the flange nut onto the output shaft. Use the two staking grooves on the shaft to locate the staking points. Failure to stake the flange nut may result in damage to the transmission.

Note: Use a NEW propeller shaft flange nut.

6. Install the NEW propeller shaft flange nut and tighten to **105 N·m (77 lb ft)**.
7. Remove the propeller shaft flange holding fixture [J 45012](#).

8. Install the transmission mount assembly. Refer to [Transmission Mount Replacement](#).
9. Remove the transmission jack.
10. Install the drive shaft. Refer to [Rear Propeller Shaft Replacement](#).
11. Install the exhaust system. Refer to [Exhaust System Replacement](#).
12. Lower the vehicle.

Transmission Output Shaft Seal Replacement (All Wheel Drive)



Callout	Component Name
Preliminary Procedures	
1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle. 2. Remove the exhaust system. Refer to Exhaust System Replacement. 3. Remove the drive shaft. Refer to Rear Propeller Shaft Replacement. 4. Support the transmission with a suitable jack. 5. Remove the transmission mount assembly. Refer to Transmission Mount Replacement. 6. Remove the transfer case. Refer to Transfer Case Assembly Replacement.	
1	Output Shaft Seal Procedure • Use the J 45000 to remove the seal. Use care in order to avoid scraping or gouging the output shaft bushing. • Lubricate the seal with clean transmission fluid. • Use the J 38

Special Tools

- [J 38693](#) Seal Installer
- [J 45000](#) Seal Remover

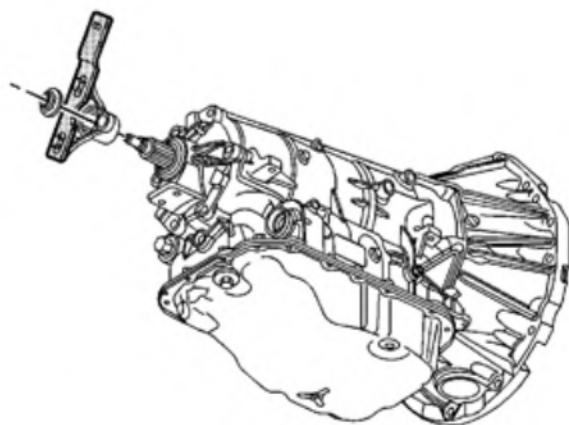
Transmission Output Shaft Seal Replacement (Rear Wheel Drive)

Special Tools

- [J 45012](#) Holding Fixture
- [J 45000](#) Seal Remover
- [J 37212](#) Front Output Shaft Seal Installer

Removal Procedure

1. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
2. Remove the exhaust system. Refer to [Exhaust System Replacement](#).
3. Remove the drive shaft. Refer to [Rear Propeller Shaft Replacement](#).
4. Support the transmission with a suitable jack.
5. Remove the transmission mount assembly. Refer to [Transmission Mount Replacement](#).

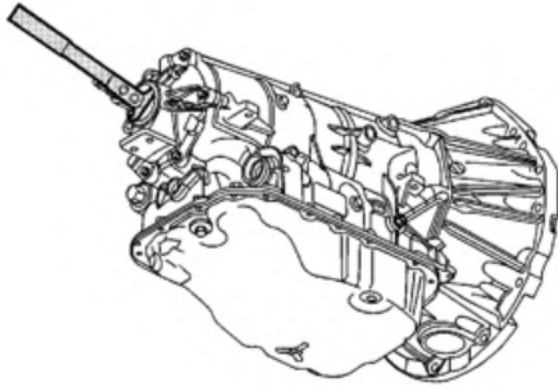


6. Install the propeller shaft flange holding fixture [J 45012](#).

Caution: Do not reuse the flange nut. Reusing the flange nut may cause damage to the transmission.

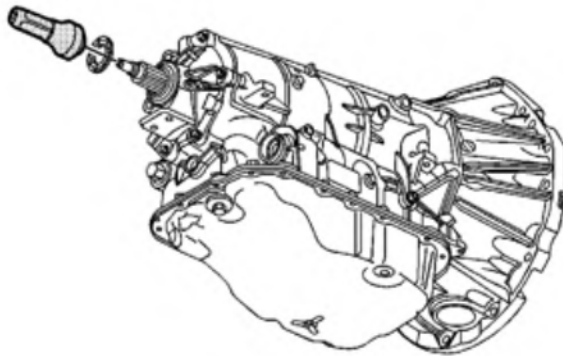
7. Remove and discard the propeller shaft flange nut.
8. Remove the propeller shaft flange.

Note: Be careful not to scrape or gouge the case extension housing while removing the output shaft seal.

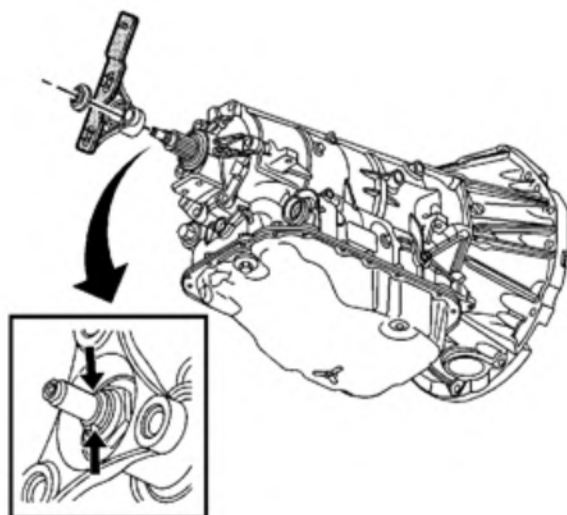


9. Use the [J 45000](#) to remove the output shaft seal from the case extension housing.

Installation Procedure



1. Lubricate the new seal with clean transmission fluid.
2. Use the [J 37212](#) to install the output shaft seal to the case extension housing.



3. Install the prop shaft flange.

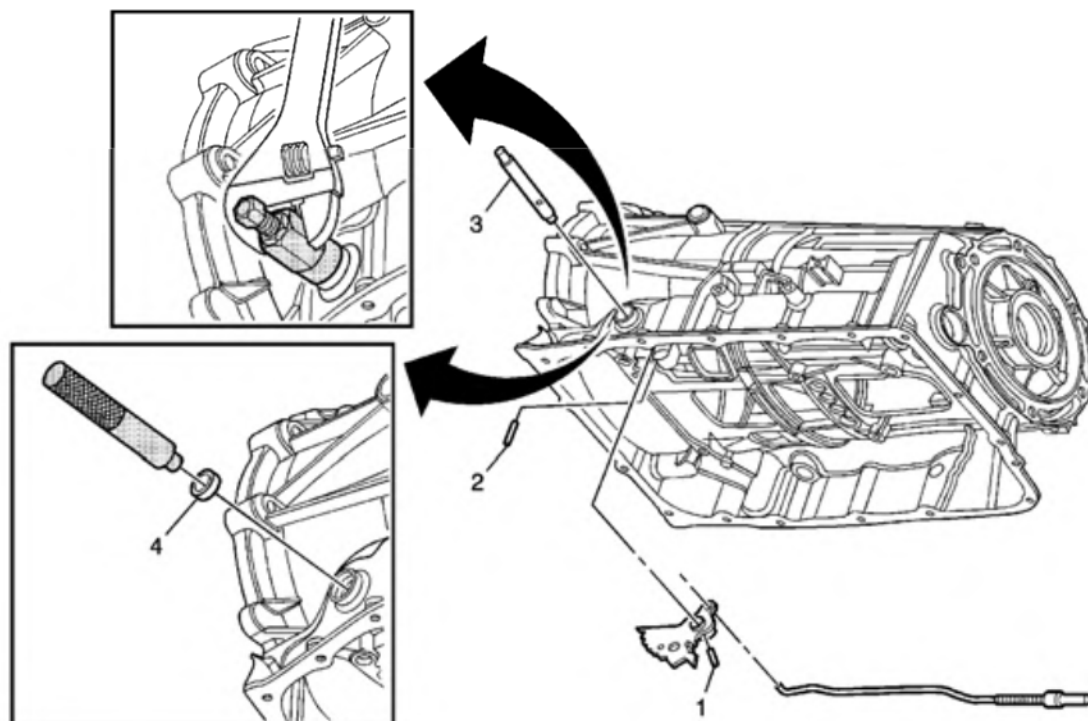
Caution: Refer to [Fastener Caution](#) in the Preface section.

Caution: Stake the flange nut onto the output shaft. Use the two staking grooves on the shaft to locate the staking points. Failure to stake the flange nut may result in damage to the transmission.

Note: Use a NEW propeller shaft flange nut.

4. Install the NEW propeller shaft flange nut and tighten to **105 N·m (77 lb ft)**.
5. Remove the propeller shaft flange holding fixture [J 45012](#).
6. Install the transmission mount assembly. Refer to [Transmission Mount Replacement](#).
7. Remove the transmission jack.
8. Install the drive shaft. Refer to [Rear Propeller Shaft Replacement](#).
9. Install the exhaust system. Refer to [Exhaust System Replacement](#).
10. Lower the vehicle.

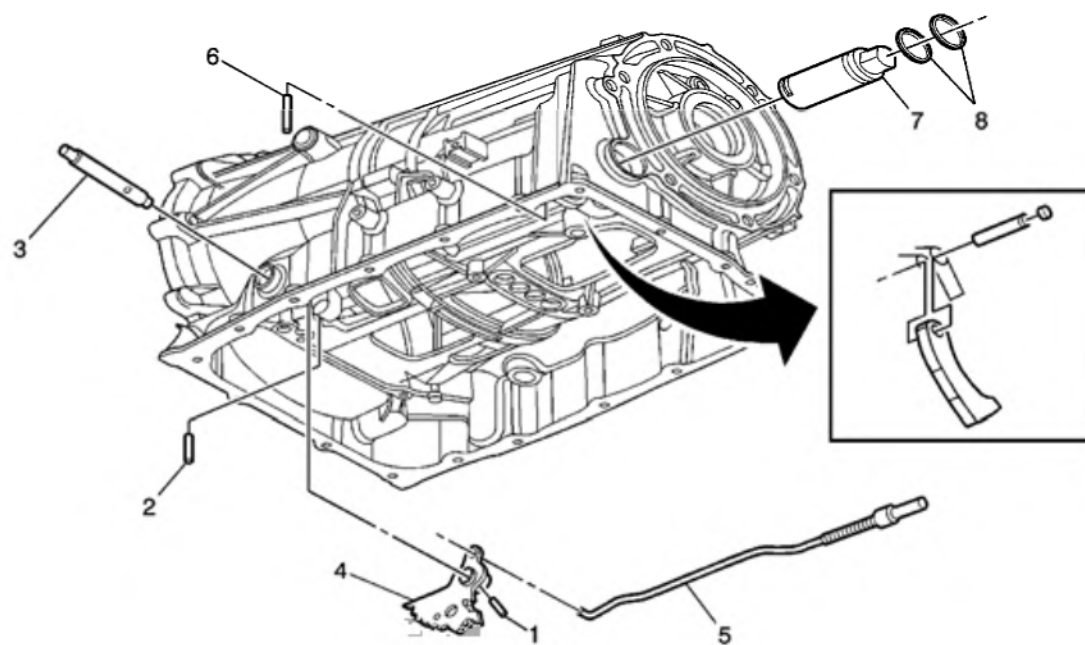
Manual Shift Shaft and Seal Replacement



Callout	Component Name
Preliminary Procedures 1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle. 2. Remove the transmission fluid pan. Refer to Automatic Transmission Fluid, Fluid Pan and/or Filter Replacement. 3. Remove the manual shaft detent assembly roller. Refer to Control Valve Lower Body and Upper Body Replacement.	
1	Manual Shaft Detent Lever Hub Pin Procedure 1. Discard the pin. Replace with a NEW pin. 2. "Walk" the pin out using side cutters.
2	Manual Shift Shaft Pin Procedure 1. Discard the pin. Replace with a NEW pin. 2. "Walk" the pin out using side cutters.

3	Manual Shift Shaft
4	Manual Shift Shaft Seal Procedure 1. The manual shaft must be removed to replace the manual shaft seal. 2. Use the J 45201 to remove the seal from the transmission case. 3. Use the DT 47770 to install the seal into the transmission case. Special Tools • DT 47770 Seal Installer • J 45201 Cooler Line Seal Remover

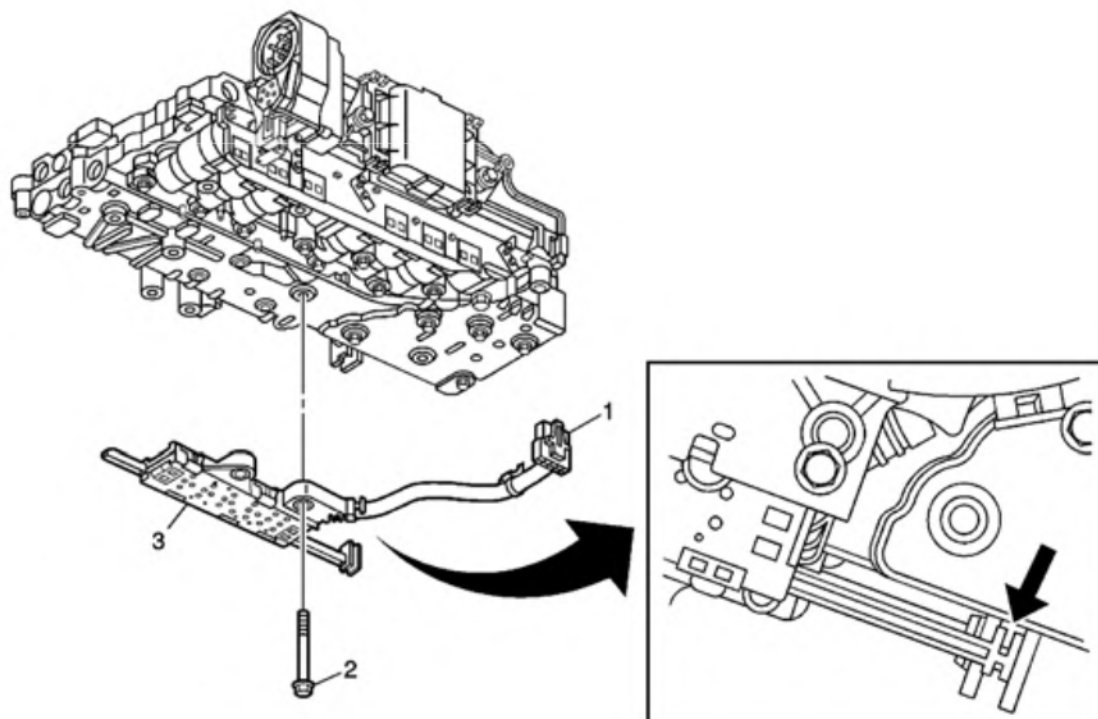
Manual Shift Detent Lever and Park Pawl Actuator Replacement



Callout	Component Name
Important: Do not remove the park pawl or park pawl spring. The park pawl and park pawl spring are not serviceable components. Preliminary Procedures 1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle . 2. Remove the transmission fluid pan. Refer to Automatic Transmission Fluid, Fluid Pan and/or Filter Replacement . 3. Remove the manual shaft detent assembly roller. Refer to Control Valve Lower Body and Upper Body Replacement .	
1	Manual Shaft Detent Lever Hub Pin Tip • Discard the pin. Replace with NEW pin. • "Walk" the pin out using side cutters.
	Manual Shift Shaft Pin

2	Tip • Discard the pin. Replace with NEW pin. • "Walk" the pin out using side cutters.
3	Manual Shift Shaft
4	Manual Shaft Detent Lever Assembly
5	Park Pawl Actuator Assembly
6	Park Pawl Actuator Guide Pin Tip • Discard the pin. Replace with NEW pin. • "Walk" the pin out using side cutters.
7	Park Pawl Actuator Guide
8	Park Pawl Actuator Guide (O-Ring) Seals (Qty: 2) Tip Discard the seals. Replace with NEW seals.

Manual Shift Shaft Position Switch Replacement



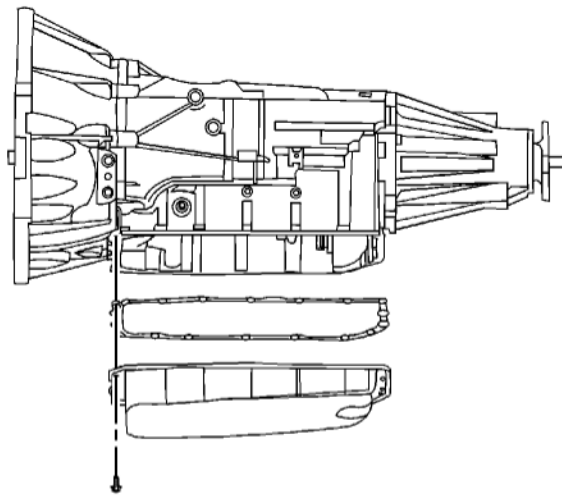
Callout	Component Name
Preliminary Procedures 1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle. 2. Remove the transmission fluid pan and filter. Refer to Automatic Transmission Fluid, Fluid Pan and/or Filter Replacement.	
1	Manual Shift Shaft Position Switch Assembly Electrical Connector Tip • Release the connector lock before disconnecting. Engage the connector lock after connecting. • The wiring harness clip near the connector does not need to be replaced if broken or missing. The clip is used during manufacturing to keep the wire harness clear during an automated bolt installation process. If the clip is damaged, simply remove and discard.
2	Manual Shift Shaft Position Switch Assembly Bolt Caution: Refer to Fastener Caution in the Preface section. Tighten

	8 N·m (71 lb in)
3	Manual Shift Shaft Position Switch Assembly Procedure Align the switch activator slide with the manual valve link.

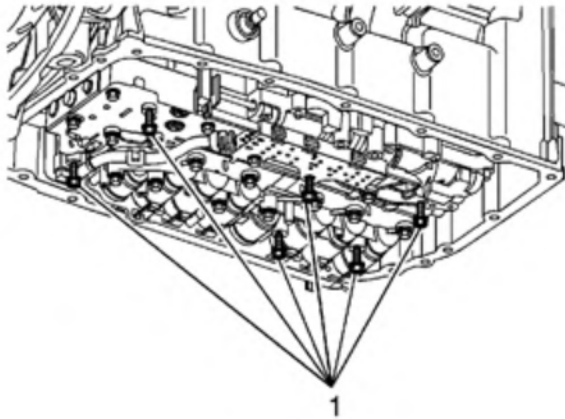
Control Solenoid Valve and Transmission Control Module Assembly Replacement

Removal Procedure

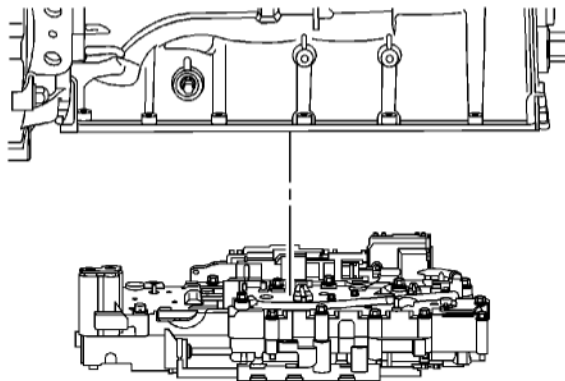
Note: The valve body must be removed from the transmission to replace the control solenoid valve and transmission control module assembly.



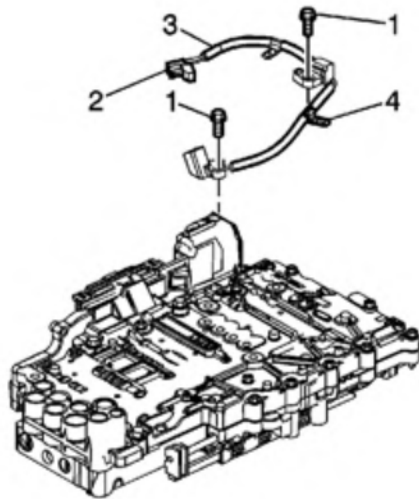
1. Remove the transmission oil pan and filter. Refer to [Automatic Transmission Fluid, Fluid Pan and/or Filter Replacement](#).
2. Remove the electrical connector passage sleeve. Refer to [Automatic Transmission Electrical Connector Passage Sleeve Replacement](#).



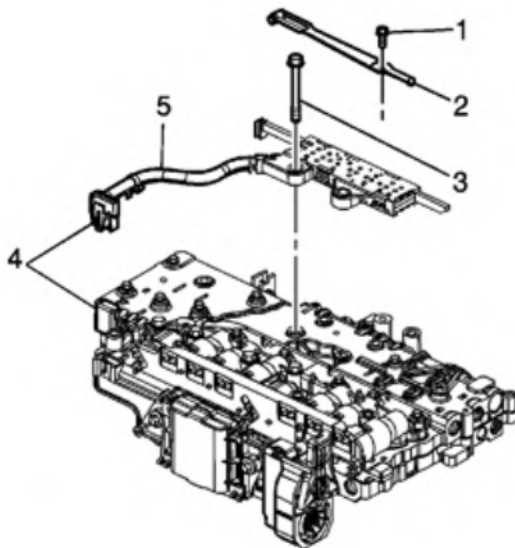
3. Remove the valve body bolts (1).



4. Remove the upper and lower control valve body assembly.

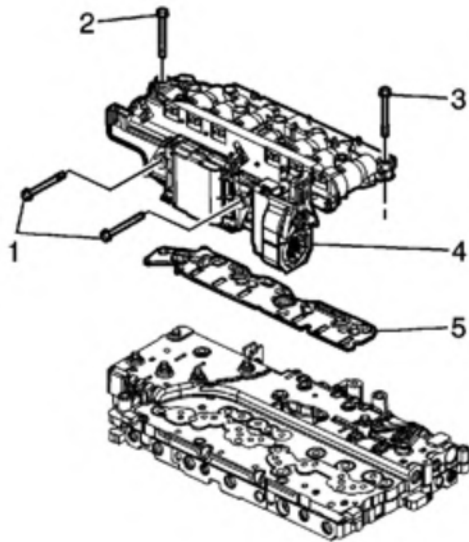


5. Disconnect the speed sensor electrical connector (2) from the control solenoid valve assembly.
6. Turn the control valve body assembly over.

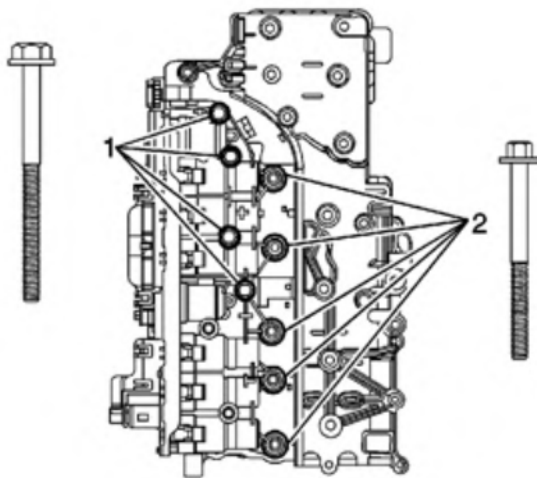


Note: Release the connector lock before disconnecting.

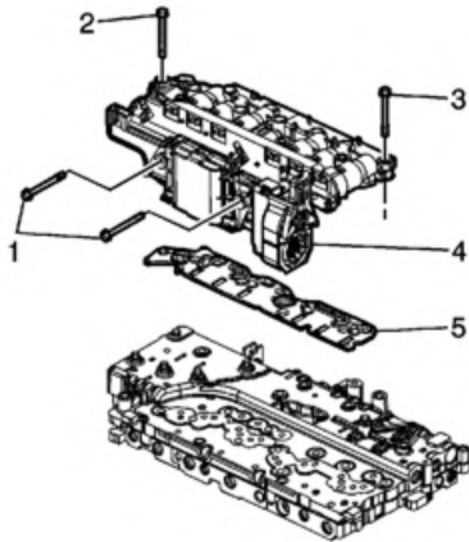
7. Disconnect the manual shift shaft position switch connector (4) from the control solenoid valve assembly.
8. Remove the bolt (3) and remove the manual shift shaft position switch assembly.



9. Remove the 2 bolts (1) from the "heat sink" side of the control solenoid valve assembly.



10. Remove the 5 bolts (2) and the 4 bolts (1) securing the control solenoid valve assembly to the control valve body assembly.

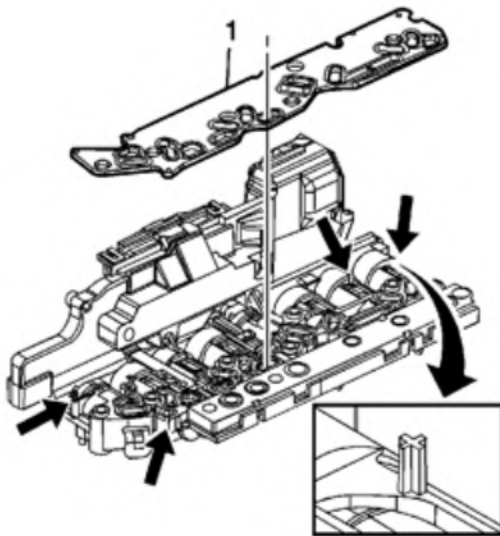


11. Remove the control valve body assembly.

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.

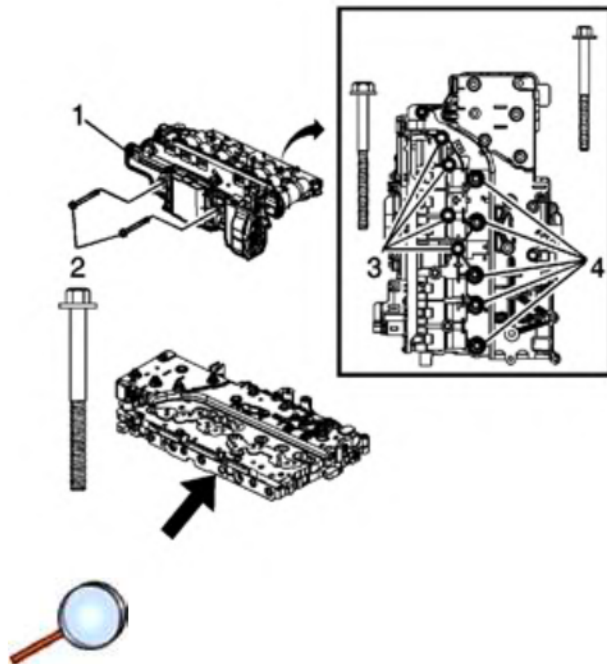
12. Carefully remove and discard the filter plate assembly (5).

Installation Procedure



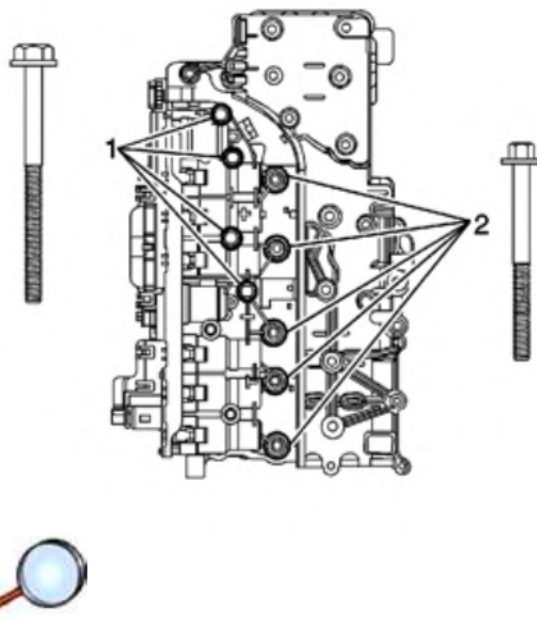
Note: Inspect the 4 filter plate retaining tabs on the control solenoid valve assembly. A broken or missing tab may not adequately secure the filter plate to the control solenoid valve assembly.

1. Install a NEW filter plate assembly (1).

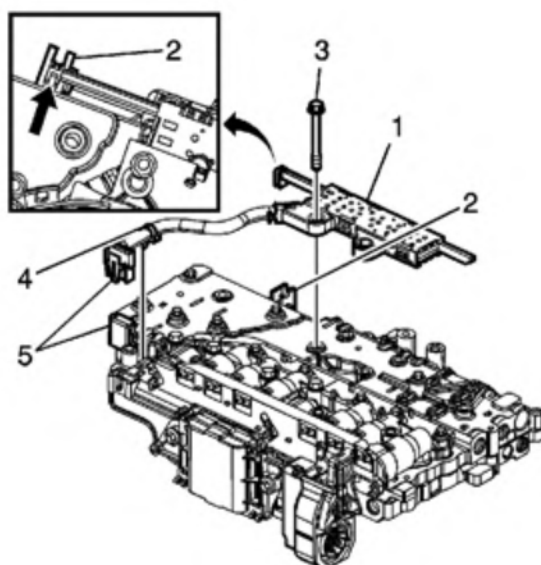


Note: Note the locator pin on the control valve lower body assembly.

2. Align the control solenoid valve assembly (1) to the control valve lower body assembly.
3. Install the 2 bolts (2), through the "heat sink" side of the control solenoid valve assembly (1). Hand tighten only.



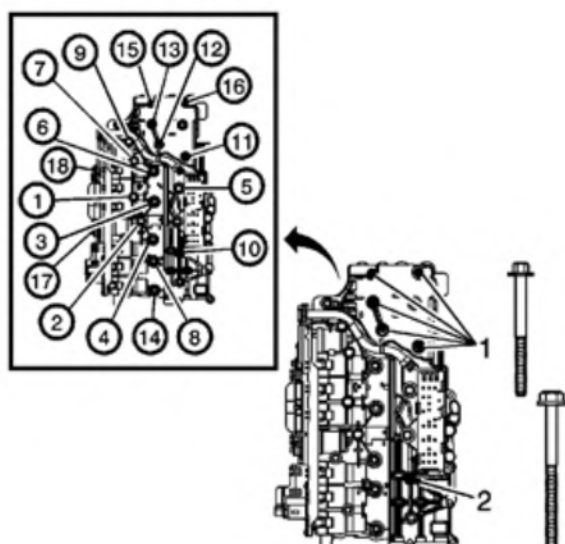
4. Install the 4 bolts (1) and 5 bolts (2) securing the control solenoid valve assembly to the control valve lower body assembly. Hand tighten only.



5. Install the manual shift shaft position switch assembly (1). Align the switch activator slide with the manual valve link. Secure with 1 bolt (3). Hand tighten only.

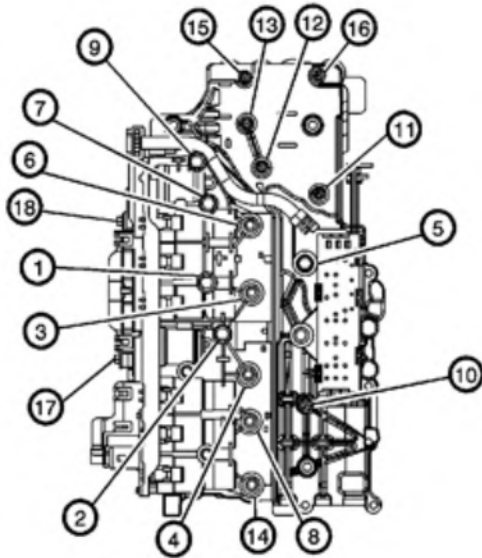
Note: The wiring harness clip (4) on the manual shift shaft position switch does not need to be replaced if damaged or missing. The clip functions only as a manufacturing assembly aid to keep the harness clear during an automated bolt installation process. If the clip is damaged, simply remove and discard.

6. Connect and lock the manual shift shaft position switch electrical connector (5) to the control solenoid valve assembly and attach the wiring harness clip (4).



7. Install the 5 remaining bolts (1) and 1 remaining bolt (2). Hand tighten only.

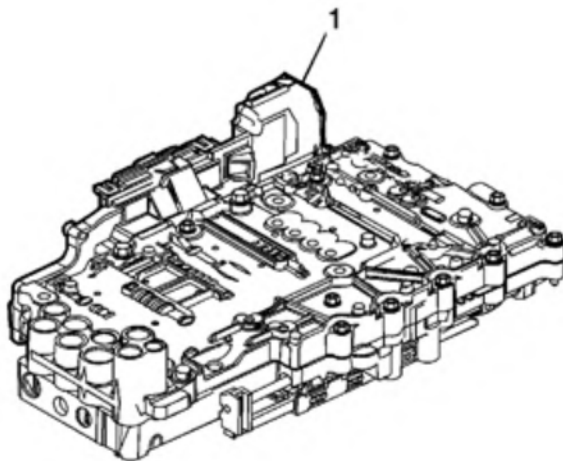
Caution: Refer to [Fastener Caution](#) in the Preface section.



Caution: Bolt torque sequencing is critical to the proper function of the control solenoid valve assembly. Failure to follow the required sequencing may result in transmission malfunction.

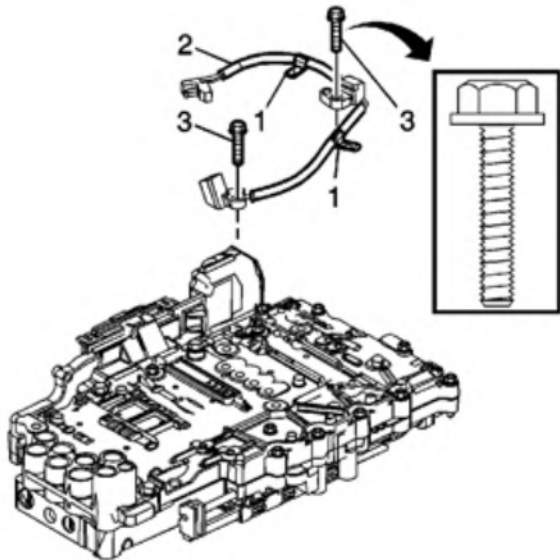
8. Tighten all bolts in the sequence shown. The 2 "heat sink" bolts (17,18) must be tightened last.

Tighten bolts to 8 N·m (6 lb ft)..

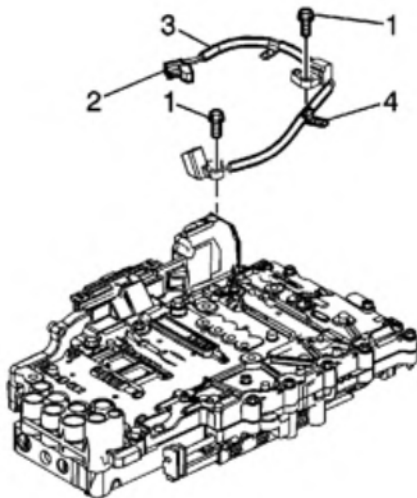


9. Inspect the contact area between the "heat sink" area of the control solenoid valve

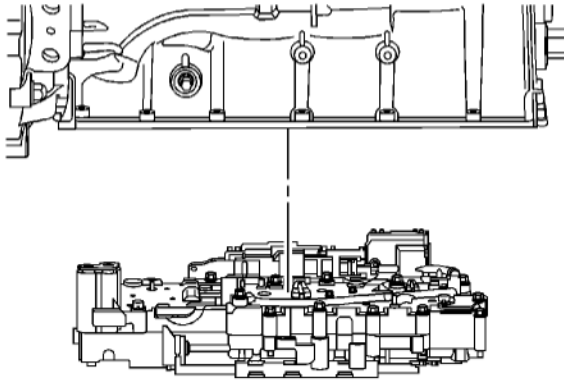
assembly (1) and the valve body. There should be no visible gap. If a gap exists, loosen all 18 bolts and retighten in the sequence shown.



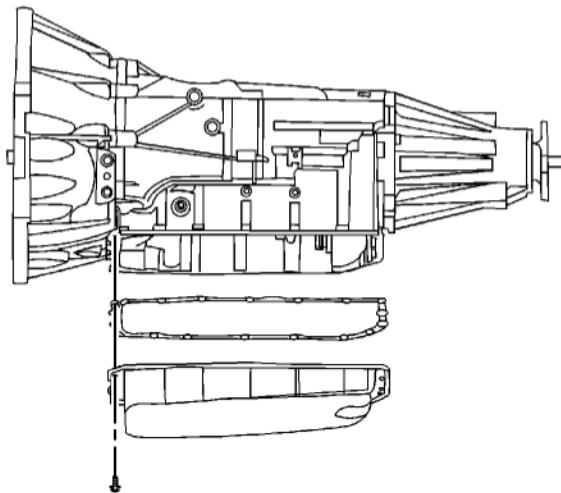
10. Inspect the 2 input and output speed sensor wiring harness clips (1) for damage. Replace if damaged.



11. Connect the speed sensor electrical connector (2) to the control solenoid valve assembly.



12. Install the upper and lower control valve body assembly. Refer to [Control Valve Lower Body and Upper Body Replacement](#).
13. Install the electrical connector passage sleeve. Refer to [Automatic Transmission Electrical Connector Passage Sleeve Replacement](#).

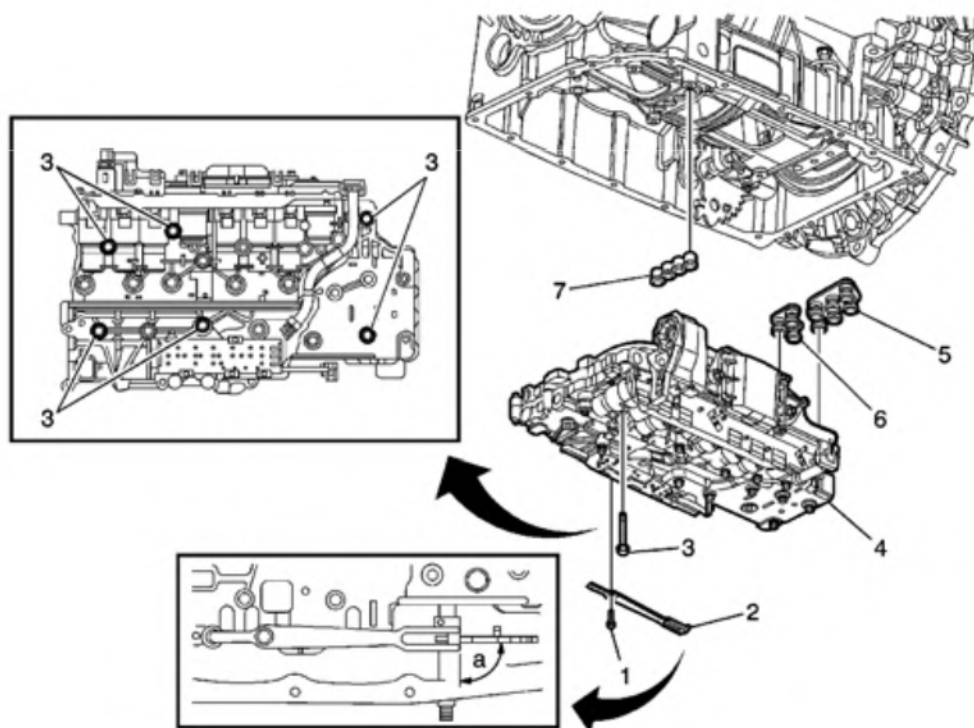


14. Install the transmission oil pan and filter. Refer to [Automatic Transmission Fluid, Fluid Pan and/or Filter Replacement](#).

Note: After an internal transmission repair or internal part replacement, the Service Fast Learn Adapt procedure should be performed. Refer to [Service Fast Learn Adapts](#).

15. Reset the transmission TAP values. Refer to [Service Fast Learn Adapts](#).
16. Refer to [Control Module References](#) for programming and setup information.

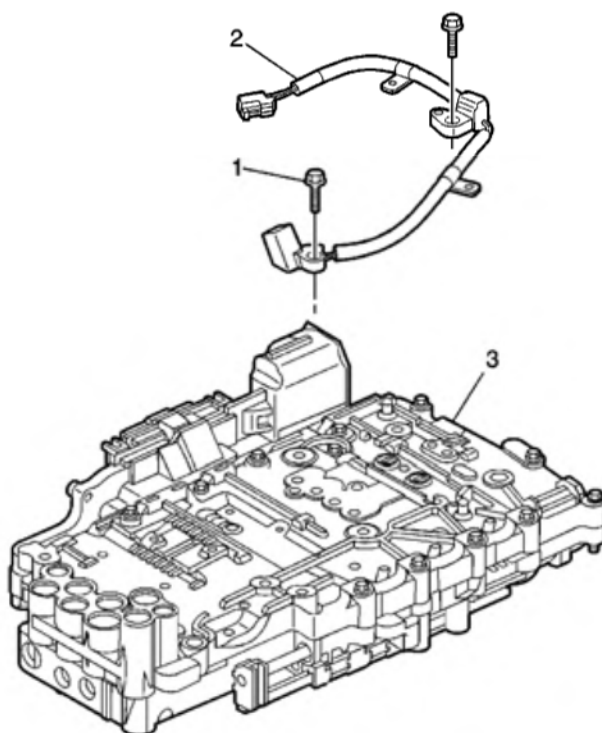
Control Valve Lower Body and Upper Body Replacement



Callout	Component Name
Preliminary Procedures 1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle. 2. Remove the transmission fluid pan, gasket and filter. Refer to Automatic Transmission Fluid, Fluid Pan and/or Filter Replacement. 3. Remove the electrical connector sleeve. Refer to Automatic Transmission Electrical Connector Passage Sleeve Replacement.	
1	Manual Shaft Detent Assembly Bolt Caution: Refer to Fastener Caution in the Preface section. Tighten 12 N·m (106 lb in)
2	Manual Shaft Detent Assembly Tip Ensure the manual shaft detent assembly roller is centered (a) over the manual shaft detent lever assembly. Failure to center the roller may cause hard or no shift lever operation.

3	Control Valve Assembly Bolt (Qty: 6) Tip - Do not remove all the bolts in the control valve body assembly. Remove only the bolts indicated. - Tighten the bolts in the proper order. Refer to Control Valve Body Assembly Installation. Tighten 8 N·m (71 lb in)
4	Control Valve Assembly Tip - For control valve body disassembly, refer to Control Valve Body Assembly Disassemble. - For control valve body cleaning and inspection, refer to Control Valve Lower Body Assembly Cleaning and Inspection and Control Valve Upper Body Assembly Cleaning and Inspection. - For ball check valve locations, refer to Ball Check Valve Locations. - For control valve body assembly, refer to Control Valve Body Assembly Assemble. - Align the manual shift shaft position switch activator slide with the detent lever guide pin during control valve body installation.
5	Fluid Pump Seal Assembly Tip Do not reuse the seal assembly.
6	Fluid Pump Seal Assembly Tip Do not reuse the seal assembly.
7	Center Support Fluid Passage Seal Assembly Tip - Do not reuse the seal assembly. - It is recommended that transmission adaptive pressure (TAP) information be reset. Resetting the TAP values using a scan tool will erase all learned values in all cells. As a result, the engine control module (ECM), powertrain control module (PCM) or transmission control module (TCM) will need to relearn TAP values. Transmission performance may be affected as new TAP values are learned. Reset the TAP values. Refer to Transmission Adaptive Functions.

Input and Output Speed Sensor Replacement



Callout	Component Name
Preliminary Procedures	
1. Raise and support the vehicle. Refer to Lifting and Jacking the Vehicle. 2. Remove the transmission fluid pan and filter. Refer to Automatic Transmission Fluid, Fluid Pan and/or Filter Replacement. 3. Remove the upper and lower valve body assembly. Refer to Control Valve Lower Body and Upper Body Replacement. 4. Disconnect the speed sensor electrical connector from the control solenoid valve assembly.	
1	Input and Output Speed Sensor Assembly Bolt (Qty: 2) Caution: Refer to Fastener Caution in the Preface section. Tighten 12 N·m (106 lb in)
2	Input and Output Speed Sensor Assembly Procedure

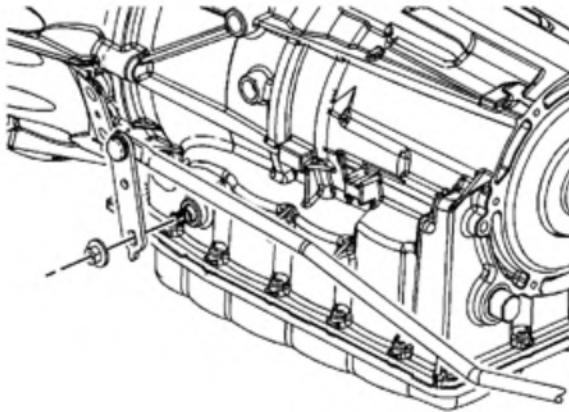
	Disconnect the speed sensor wiring harness clips. Inspect the clips for damage. Replace if damaged.
3	Control Valve Body Assembly

Transmission Replacement (All Wheel Drive)

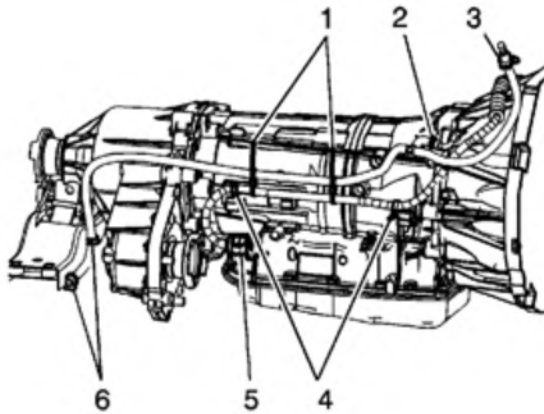
Note: NEW cooler pipe O-rings and torque converter bolts will be required each time the transmission is removed and installed.

Removal Procedure

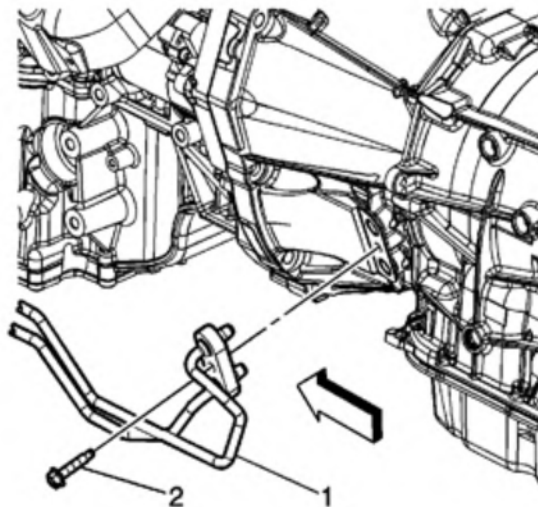
1. Remove the thermostat housing. Refer to [Engine Coolant Thermostat Housing Replacement](#).
2. Remove the exhaust system. Refer to [Exhaust System Replacement](#).
3. Remove the catalytic converters. Refer to [Catalytic Converter Replacement - Left Side](#) and [Catalytic Converter Replacement - Right Side](#).
4. Remove the front and rear propeller shafts. Refer to [Front Propeller Shaft Replacement](#) and [Rear Propeller Shaft Replacement](#).



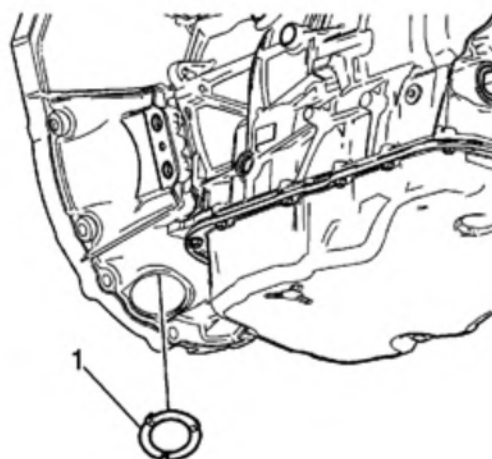
5. Disconnect the shift linkage from the transmission.



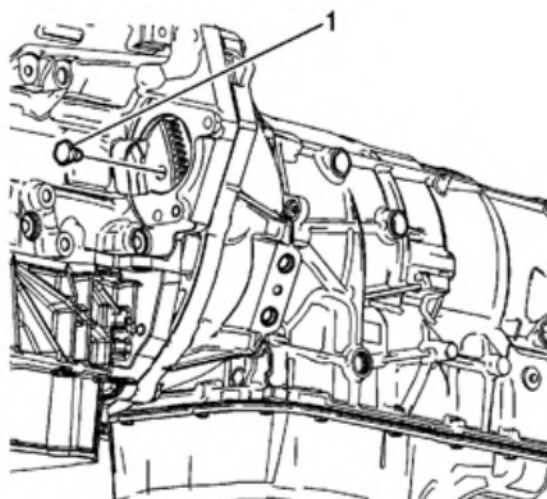
6. Disconnect the transmission wiring harness connector (5) from the transmission by releasing the locking mechanism and rotating the latch counterclockwise.
7. Disconnect the wiring harness retainers (4) from the transmission.
8. Remove the transmission vent hose from the retaining clips (6) on the transmission mount assembly.
9. Remove the oxygen sensor wiring harness retainer from the transmission.
10. Place an oil drain pan under the transmission fluid cooler pipes.



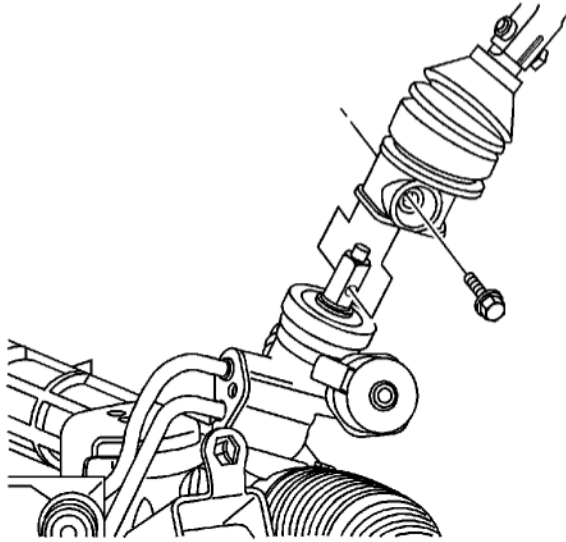
11. Remove the transmission fluid cooler pipes (1) from the transmission, and position aside. Refer to [Transmission Fluid Cooler Hose/Pipe Replacement](#).
12. Remove and discard the O-rings. Do NOT reuse the O-rings.
13. Plug the open outlet ports to prevent fluid loss and contamination.



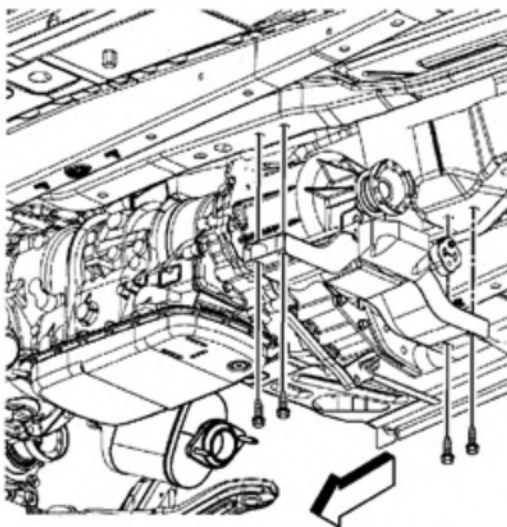
14. Remove the transmission close out plug (1).
15. Mark the torque converter to flexplate/flywheel orientation to ensure proper realignment.
16. Remove the starter motor. Refer to [Starter Motor Replacement](#).



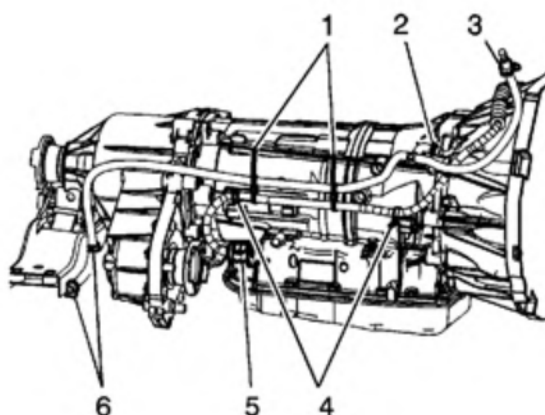
17. Repeat the following steps for all torque converter bolts (1):
 - 17.1. Rotate the harmonic balancer center bolt clockwise ONLY, in order to align the torque converter bolt with the access hole.
 - 17.2. Remove and discard the torque converter bolt.



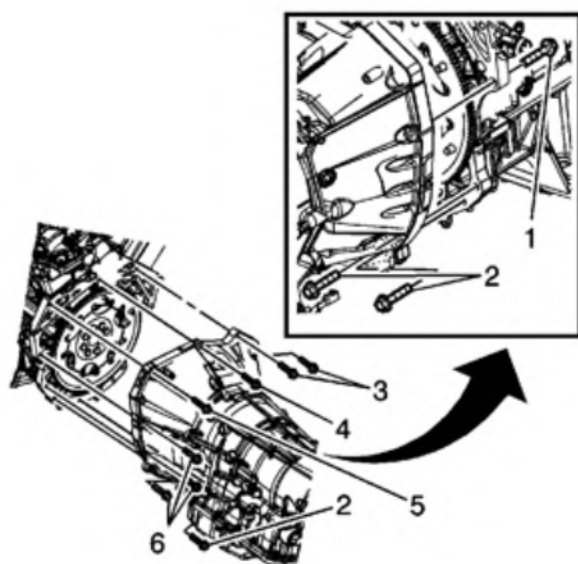
18. Disconnect the intermediate shaft from the power steering gear. Refer to [Steering Gear Replacement](#).



19. Support the transmission with a suitable transmission jack.
20. Remove the transmission mount assembly. Refer to [Transmission Mount Replacement](#).
21. Support the rear of the front frame with adjustable jack stands.
22. Remove the bolts at the rear of the front frame.
23. Loosen the bolts at the front of the front frame two turns but do NOT remove the bolts.
24. Lower the rear of the front frame and the transmission.



25. Lower the transmission and remove the vent hose (2) from the vent tube.
26. Position the wire harness and vent tube aside.
27. Remove the transfer case. Refer to [Transfer Case Assembly Replacement](#).



28. Remove the transmission mounting bolts (1-6).
29. Pull the transmission free from the engine dowels.

Note: Ensure clearance is maintained between the transmission and the following:

- The wiring harness
- The vent tube
- The cooler pipes

30. Carefully lower the transmission from the vehicle.

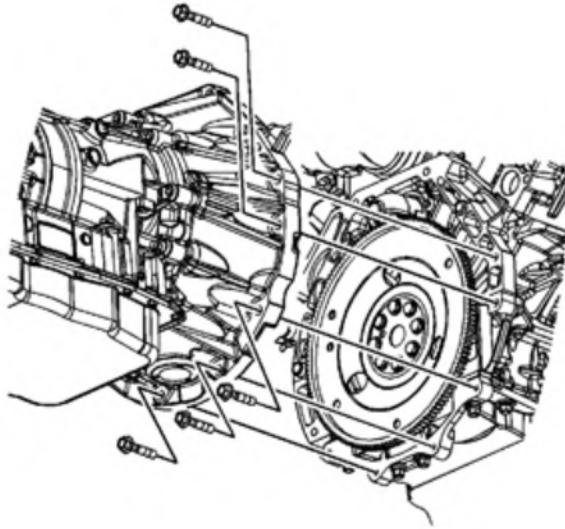
31. Flush the transmission oil cooler if necessary. Refer to [Transmission Fluid Cooler Flushing and Flow Test](#).

Installation Procedure

Note: Ensure clearance is maintained between the transmission and the following:

- The wiring harness
- The vent tube
- The cooler pipes

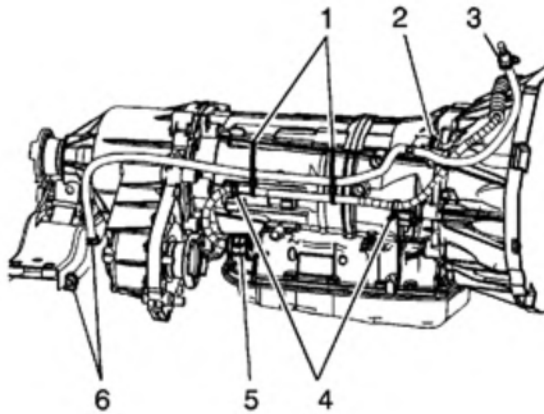
1. Using the transmission jack, carefully raise the transmission to the engine.



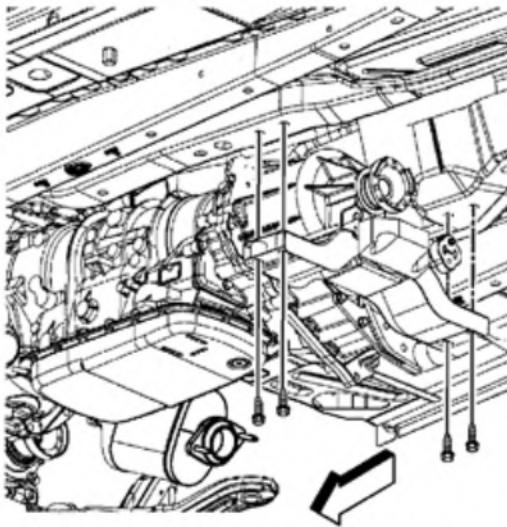
2. Align the transmission with the engine dowels.

Caution: Refer to [Fastener Caution](#) in the Preface section.

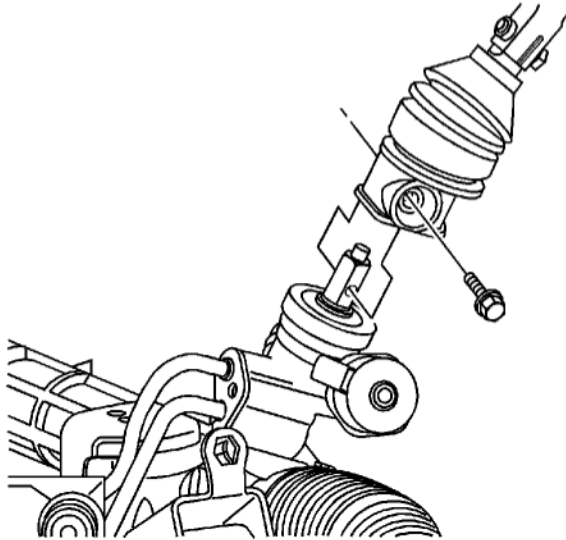
3. Install the transmission mounting bolts and tighten to **50 N·m (37 lb ft)**.
4. Install the transfer case. Refer to [Transfer Case Assembly Replacement](#).



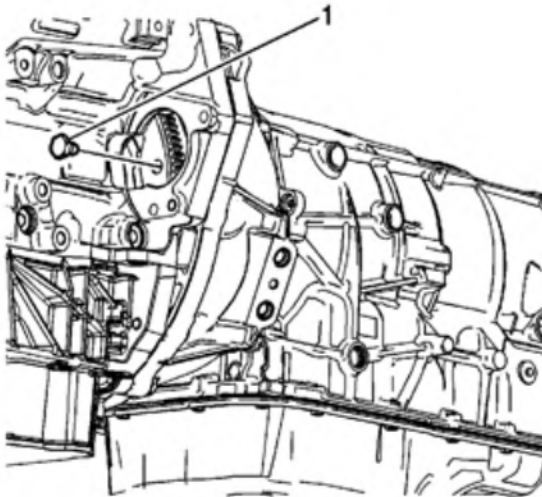
5. Remove the support stand from under the engine oil pan.
6. Using the transmission jack. Lower the engine and transmission assembly only enough to gain access to the vent hose tube.
7. Install the vent hose (2) to the vent tube.
8. Position the engine wiring harness to the original location.
9. Raise the transmission to the installed position.
10. Install the bolts at the rear of the front frame and properly torque all frame bolts. Refer to [Front Frame Replacement](#) for proper frame bolt tightening information.



11. Install the transmission mount assembly. Refer to [Transmission Mount Replacement](#).
12. Remove the transmission jack.

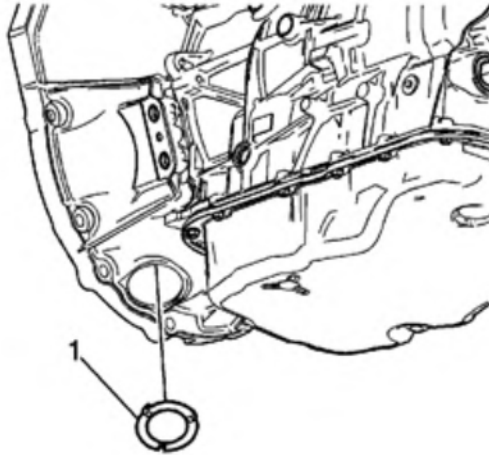


13. Connect the intermediate shaft to the power steering gear. Refer to [Steering Gear Replacement](#).
14. Align the torque converter to flexplate/flywheel orientation marks made during the removal procedure.

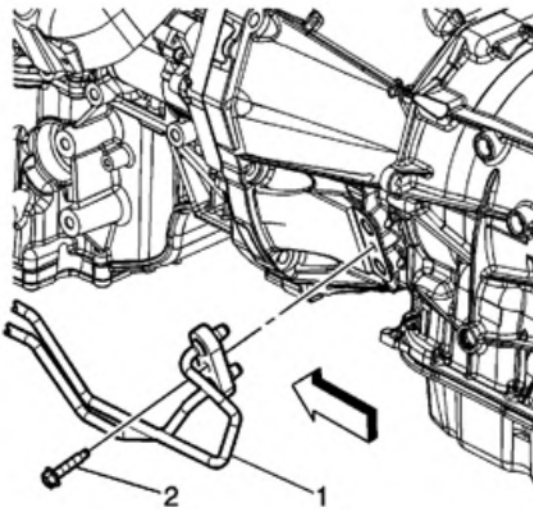


Note: Torque converter bolts are self locking and must be replaced with NEW torque converter bolts every time the bolts are removed.

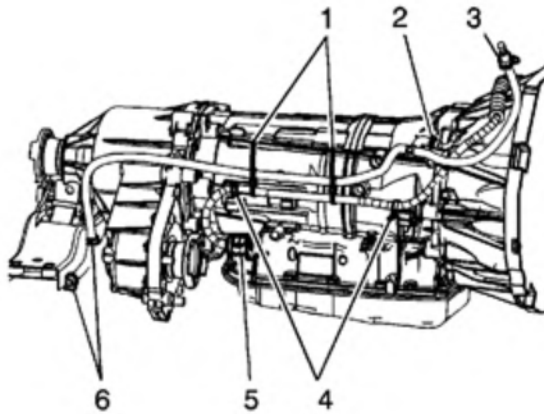
15. Complete the following steps for all torque converter bolts (1):
 - 15.1. Rotate the harmonic balancer center bolt clockwise ONLY, in order to align the torque converter bolt holes in the flexplate/flywheel with the access hole in the engine block.
 - 15.2. To aid in alignment of the torque converter to the flexplate/flywheel. Install all NEW torque converter bolts (1) before fully tightening to **63 N·m (46 lb ft)**.



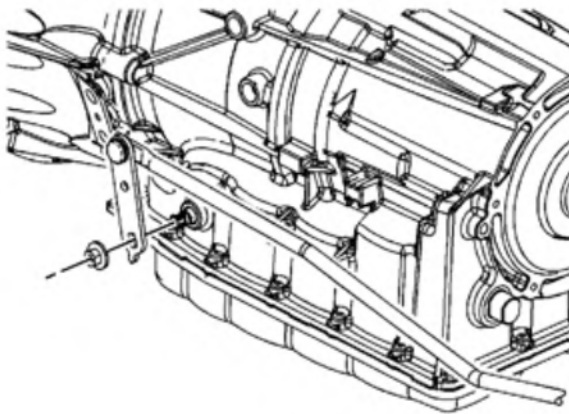
16. Install the transmission close out plug (1).
17. Install the starter motor. Refer to [Starter Motor Replacement](#).



18. Place NEW O-rings over the transmission fluid cooler pipes.
19. Install the transmission fluid cooler pipes (1) to the transmission. Refer to [Transmission Fluid Cooler Hose/Pipe Replacement](#).



20. Install the transmission vent hose to the retaining clips (6) on the transmission mount assembly.
21. Install the wiring harness retainers (4) to the transmission.
22. Connect the transmission wiring harness connector (5) to the transmission by rotating the locking latch clockwise.
23. Install the oxygen sensor wiring harness retainer to the transmission.



24. Install the shift linkage to the transmission.
25. Install the transmission manual shift shaft nut and tighten to **15 N·m (11 lb ft)**.
26. Install the front and rear propeller shafts. Refer to [Front Propeller Shaft Replacement](#) and [Rear Propeller Shaft Replacement](#).
27. Install the catalytic converters. Refer to [Catalytic Converter Replacement - Left Side](#) and [Catalytic Converter Replacement - Right Side](#).
28. Install the exhaust system. Refer to [Exhaust System Replacement](#).
29. Lower the vehicle.

30. Install the thermostat housing. Refer to [Engine Coolant Thermostat Housing Replacement](#).
31. Check the transmission fluid level and fill if necessary. Refer to [Transmission Fluid Check](#).
32. Adjust the shift control linkage. Refer to [Shift Control Linkage Adjustment](#).

Transmission Final Test and Inspection

Complete the following procedure after the transmission is installed in the vehicle:

1. With the ignition OFF or disconnected, crank the engine several times. Listen for any unusual noises or evidence that any parts are binding.
2. Start the engine and listen for abnormal conditions.
3. While the engine continues to idle, raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
4. Inspect for fluid leaks while the engine is idling.
5. Perform a final inspection for the proper fluid level.
6. Lower the vehicle.
7. Calibrate the transmission control module (TCM). Refer to [Control Module References](#).

Note: It is recommended that transmission adaptive pressure (TAP) information be reset.

Resetting the TAP values using a scan tool will erase all learned values in all cells. As a result, the ECM, PCM or TCM will need to relearn TAP values. Transmission performance may be affected as new TAP values are learned.

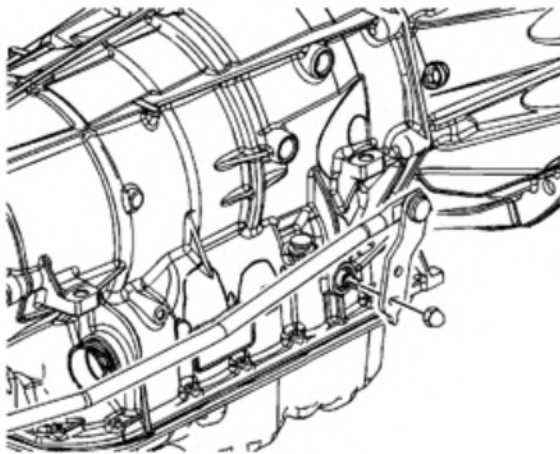
8. Reset the TAP values. Refer to [Transmission Adaptive Functions](#).
9. Road test the vehicle.

Transmission Replacement (Rear Wheel Drive)

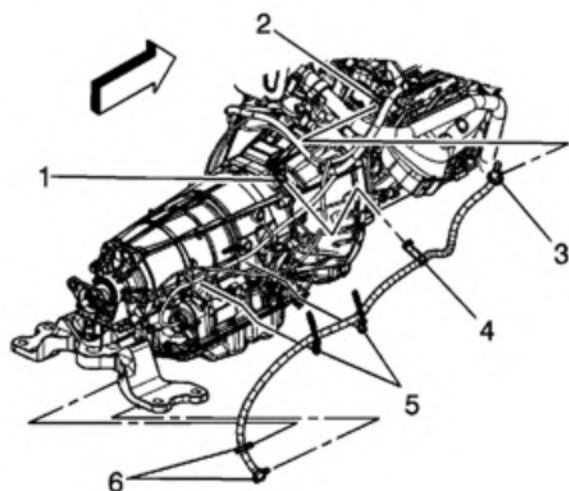
Note: NEW cooler pipe O-rings and torque converter bolts will be required each time the transmission is removed and installed.

Removal Procedure

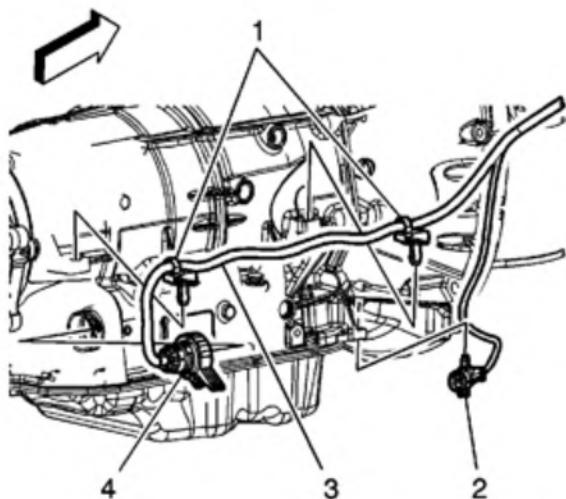
1. Remove the thermostat housing. Refer to [Engine Coolant Thermostat Housing Replacement](#).
2. Remove the exhaust system. Refer to [Exhaust System Replacement](#).
3. Remove the catalytic converters. Refer to [Catalytic Converter Replacement - Left Side](#) and [Catalytic Converter Replacement - Right Side](#).
4. Remove the propeller shaft. Refer to [Rear Propeller Shaft Replacement](#).



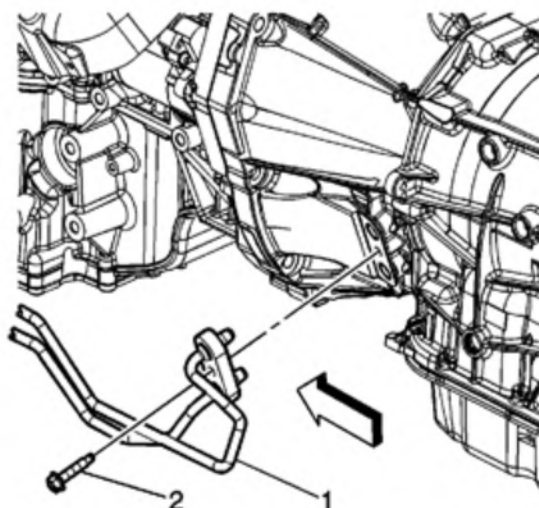
5. Disconnect the shift linkage from the transmission.



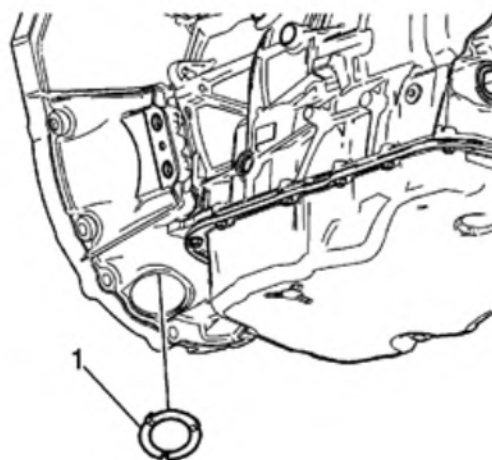
6. Remove the transmission vent hose from the retaining clips (6) on the transmission support.



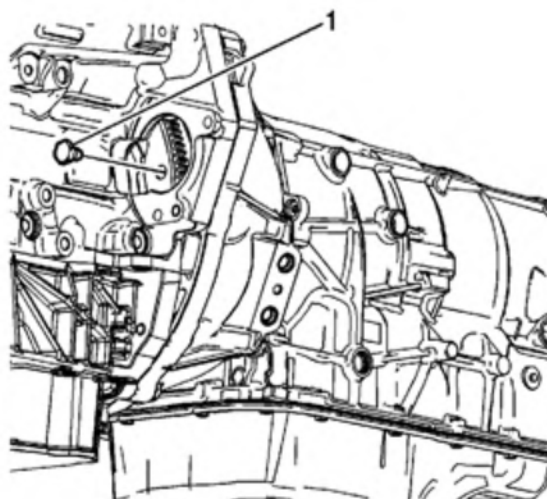
7. Disconnect the transmission wiring harness connector (4) from the transmission by releasing the locking mechanism and rotating the latch counterclockwise.
8. Remove the wiring harness retainers (1) from the transmission.
9. Remove the oxygen sensor wiring harness connector (2) from the transmission.
10. Place an oil drain pan under the transmission fluid cooler pipes.



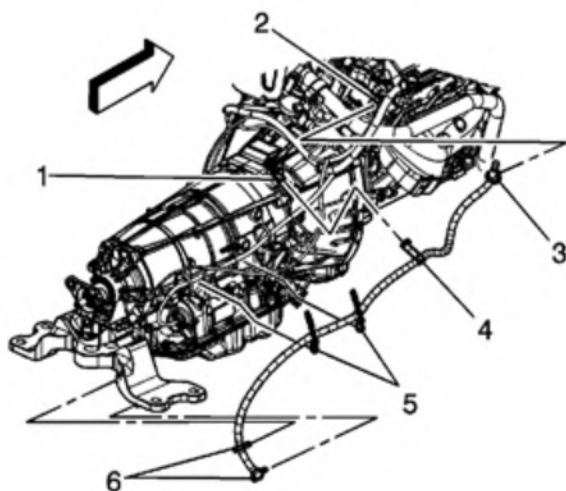
11. Remove the transmission fluid cooler pipes (1) from the transmission, and position aside. Refer to [Transmission Fluid Cooler Hose/Pipe Replacement](#).
12. Remove and discard the O-rings. Do NOT reuse the O-rings.
13. Plug the open outlet ports to prevent fluid loss and contamination.



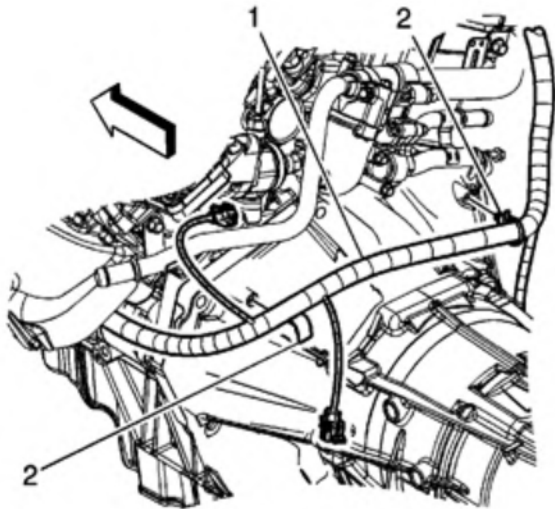
14. Remove the transmission close out plug (1).
15. Mark the torque converter to flexplate/flywheel orientation to ensure proper realignment.
16. Remove the starter motor. Refer to [Starter Motor Replacement](#).



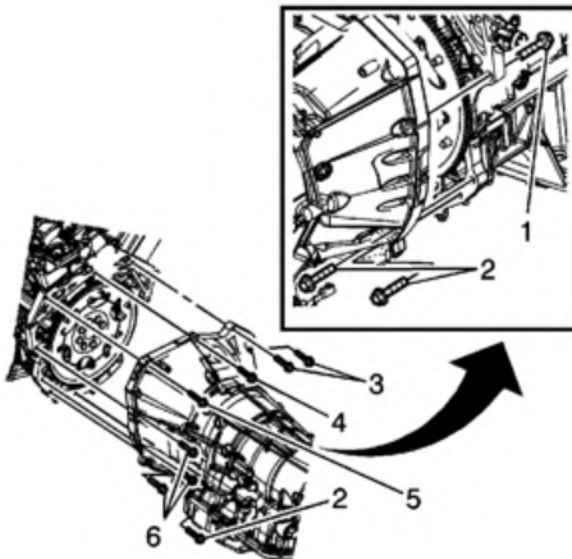
17. Repeat the following steps for all torque converter bolts (1):
 - 17.1. Rotate the harmonic balancer center bolt clockwise ONLY, in order to align the torque converter bolt with the access hole.
 - 17.2. Remove and discard the torque converter bolt.
18. Support the transmission with a suitable transmission jack.
19. Remove the transmission support. Refer to [Transmission Support Replacement](#).
20. Lower the transmission.



21. Disconnect the transmission vent hose (4) from the transmission vent pipe (1).



22. Remove the wiring harness retainers (2) from the transmission.
23. Position the transmission wiring harness (1) and vent tube out of the way.



24. Remove the transmission mounting bolts (1-6).
25. Pull the transmission free from the engine dowels.

Note: Ensure clearance is maintained between the transmission and the following:

- The wiring harness
- The vent tube
- The cooler pipes

26. Carefully lower the transmission from the vehicle.
27. Flush the transmission oil cooler if necessary. Refer to [Transmission Fluid Cooler Flushing and](#)

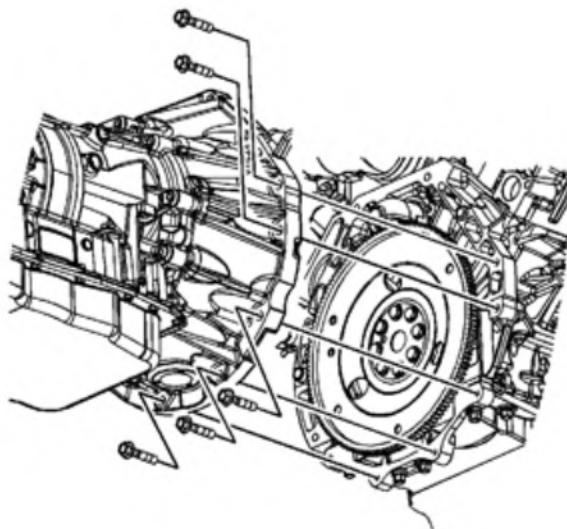
[Flow Test.](#)

Installation Procedure

Note: Ensure clearance is maintained between the transmission and the following:

- The wiring harness
- The vent tube
- The cooler pipes

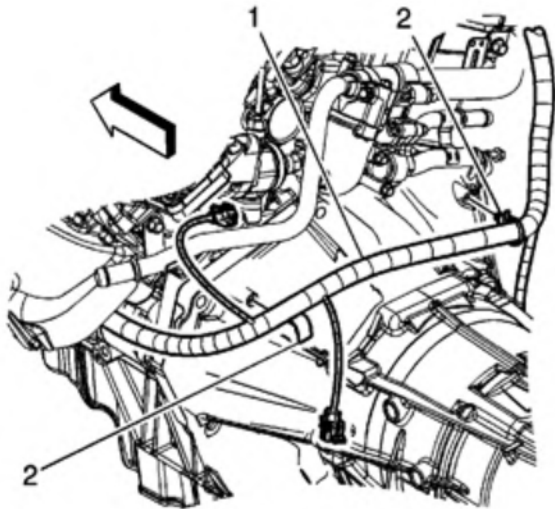
1. Using the transmission jack, carefully raise the transmission to the engine.



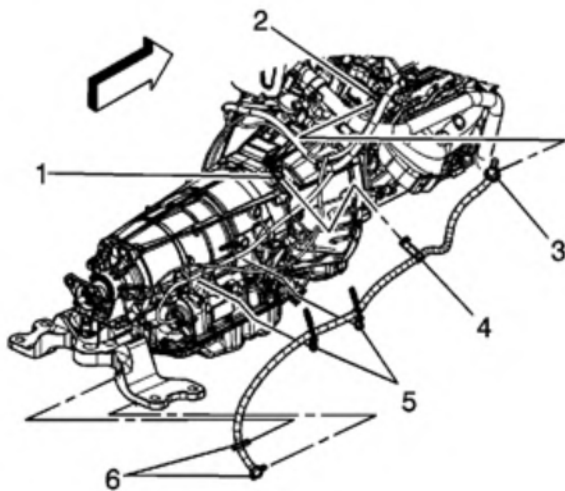
2. Align the transmission with the engine dowels.

Caution: Refer to [Fastener Caution](#) in the Preface section.

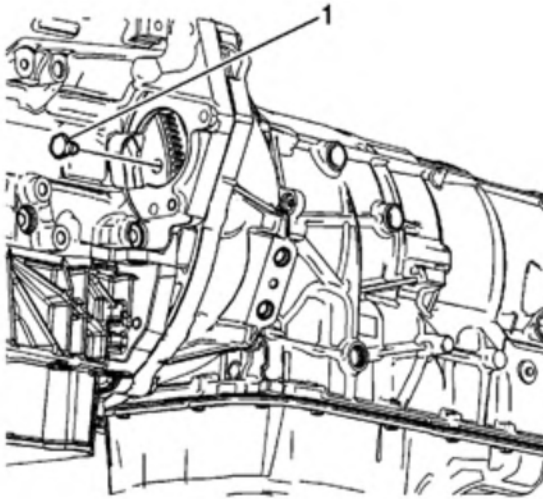
3. Install the transmission mounting bolts and tighten to **50 N·m (37 lb ft)**.



4. Position the engine wiring harness (1) to the original location.
5. Install the wiring harness retainers (2) to the transmission.

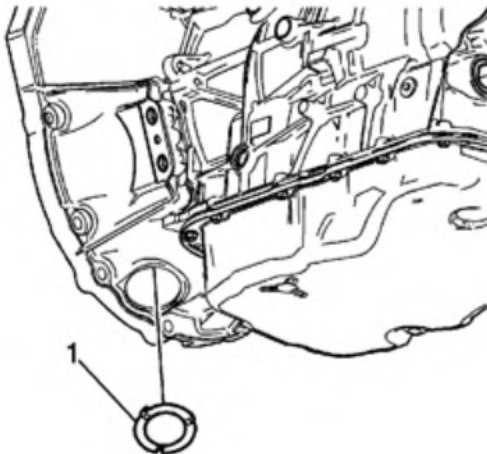


6. Connect the transmission vent hose (4) to the transmission vent pipe (1).
7. Raise the transmission to the installed position.
8. Install the transmission support. Refer to [Transmission Support Replacement](#).
9. Remove the jack from under the transmission.
10. Align the torque converter to flexplate/flywheel orientation marks made during the removal procedure.

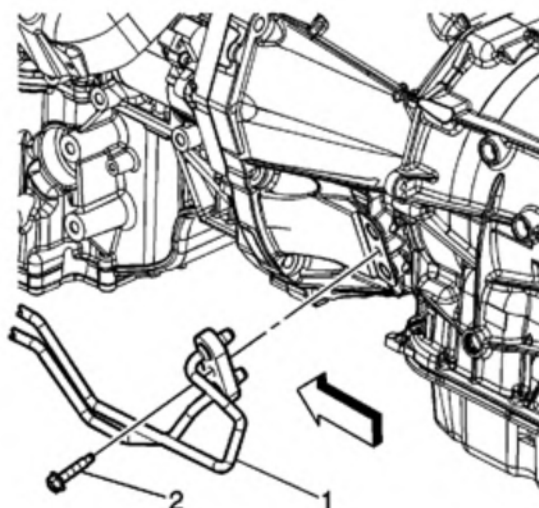


Note: Torque converter bolts are self locking and must be replaced with NEW torque converter bolts every time the bolts are removed.

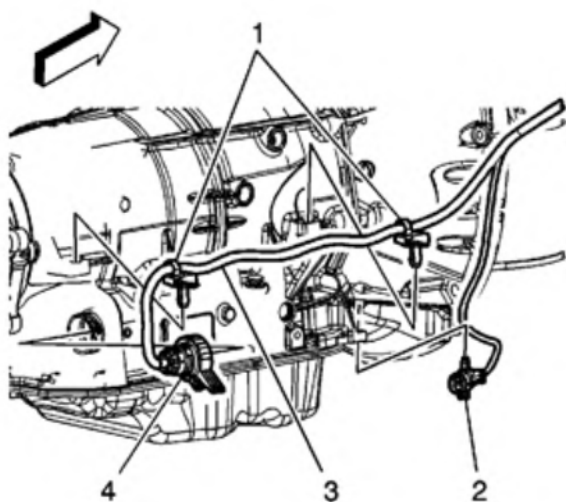
11. Complete the following steps for all torque converter bolts (1):
 - 11.1. Rotate the harmonic balancer center bolt clockwise ONLY, in order to align the torque converter bolt holes in the flexplate/flywheel with the access hole in the engine block.
 - 11.2. To aid in alignment of the torque converter to the flexplate/flywheel. Install all NEW torque converter bolts before fully tightening to **63 N·m (46 lb ft)**.
12. Remove the starter motor. Refer to [Starter Motor Replacement](#).



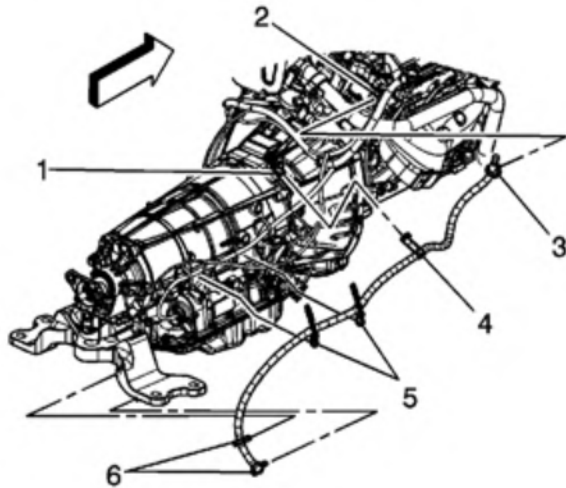
13. Install the transmission close out plug (1).



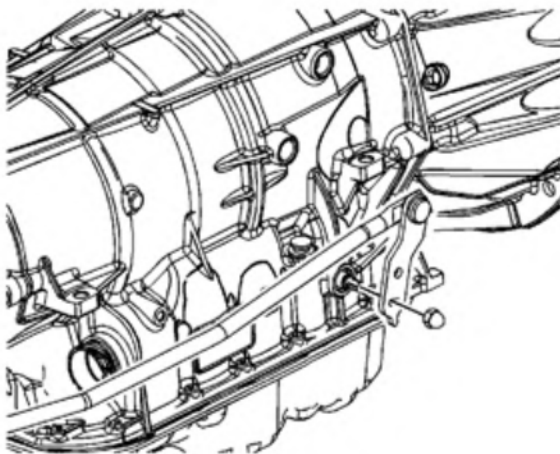
14. Place NEW O-rings over the transmission fluid cooler pipes.
15. Install the transmission fluid cooler pipes (1) to the transmission. Refer to [Transmission Fluid Cooler Hose/Pipe Replacement](#).



16. Install the oxygen sensor wiring harness connector (2) from the transmission.
17. Install the wiring harness retainers (1) to the transmission.
18. Connect the transmission wiring harness connector (5) to the transmission by rotating the locking latch clockwise.



19. Install the transmission vent hose to the retaining clips (6) on the transmission support.



20. Install the shift linkage to the transmission.
21. Install the transmission manual shift shaft nut and tighten to **15 N·m (11 lb ft)**.
22. Install the propeller shaft. Refer to [Rear Propeller Shaft Replacement](#).
23. Install the catalytic converters. Refer to [Catalytic Converter Replacement - Left Side](#) and [Catalytic Converter Replacement - Right Side](#).
24. Install the exhaust system. Refer to [Exhaust System Replacement](#).
25. Lower the vehicle.
26. Install the thermostat housing. Refer to [Engine Coolant Thermostat Housing Replacement](#).
27. Check the transmission fluid level and fill if necessary. Refer to [Transmission Fluid Check](#).
28. Adjust the shift control linkage. Refer to [Shift Control Linkage Adjustment](#).

Transmission Final Test and Inspection

Complete the following procedure after the transmission is installed in the vehicle:

1. With the ignition OFF or disconnected, crank the engine several times. Listen for any unusual noises or evidence that any parts are binding.
2. Start the engine and listen for abnormal conditions.
3. While the engine continues to idle, raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
4. Inspect for fluid leaks while the engine is idling.
5. Perform a final inspection for the proper fluid level.
6. Lower the vehicle.
7. Calibrate the transmission control module (TCM). Refer to [Control Module References](#).

Note: It is recommended that transmission adaptive pressure (TAP) information be reset.

Resetting the TAP values using a scan tool will erase all learned values in all cells. As a result, The ECM, PCM or TCM will need to relearn TAP values. Transmission performance may be affected as new TAP values are learned.

8. Reset the TAP values. Refer to [Transmission Adaptive Functions](#).
9. Road test the vehicle.