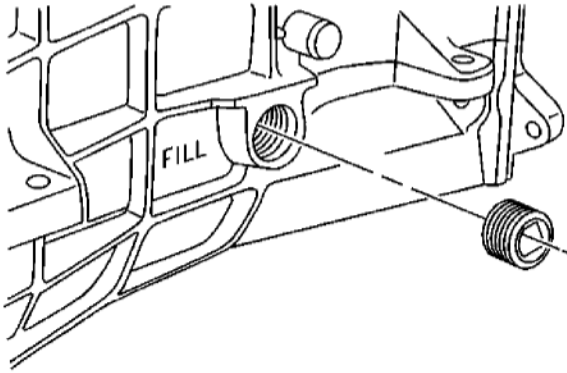
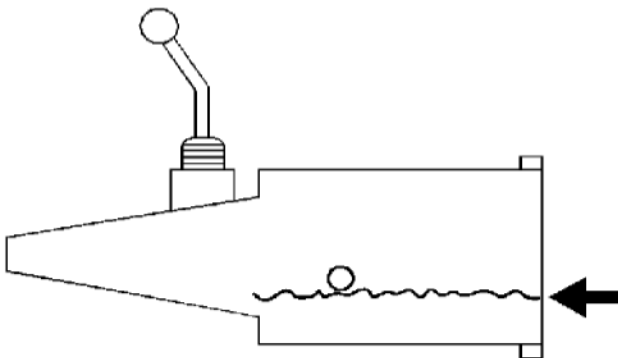


Transmission Fluid Level Inspection

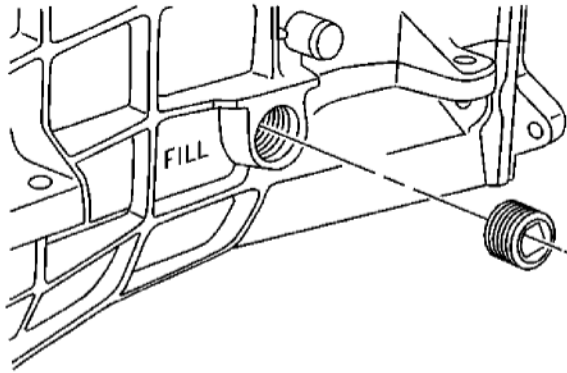


1. Raise and suitably support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
2. Clean any dirt from around the fill plug.
3. Remove the transmission fill plug from the transmission.



4. Check that the transmission fluid level is even with the bottom of the fill plug hole.
5. Add Dexron-III transmission fluid, if necessary.

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



6. Install the transmission fill plug to the transmission and tighten the fill plug to **18 N·m (13 lb ft)**.
7. Lower the vehicle.

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

Note: Before replacing any transmission mount due to suspected fluid loss, verify that the source of the fluid is the transmission mount, not the engine, transmission or accessories.

2. Raise the transmission in order to remove the weight from the transmission mount and create slight tension in the rubber.
3. Observe the transmission mount while raising the transmission. Replace the transmission mount if the transmission mount exhibits any of the following conditions:
 - The hard rubber surface is covered with heat check cracks.
 - The rubber is separated from the metal plate of the transmission mount.
 - The rubber is split through the center of the transmission mount.
4. If there is movement between the metal plate of the transmission mount and its attaching points, lower the transmission on the transmission mount. Tighten the bolts or nuts attaching the transmission mount to the frame or transmission mount bracket. Refer to [Transmission Rear Mount Replacement](#).
5. Lower the vehicle.

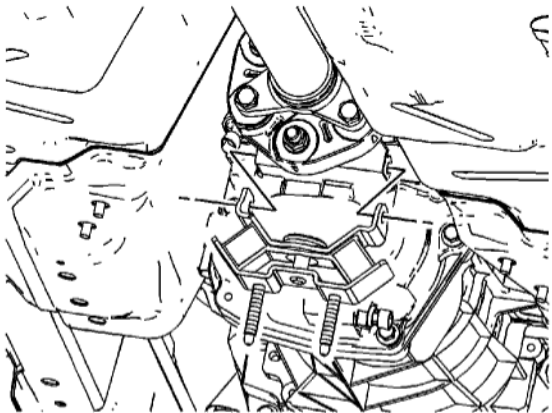
Transmission Rear Mount Replacement

Removal Procedure

1. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
2. Remove the transmission support. Refer to [Transmission Support Replacement](#).



3. Remove the transmission mount upper mounting bolts.

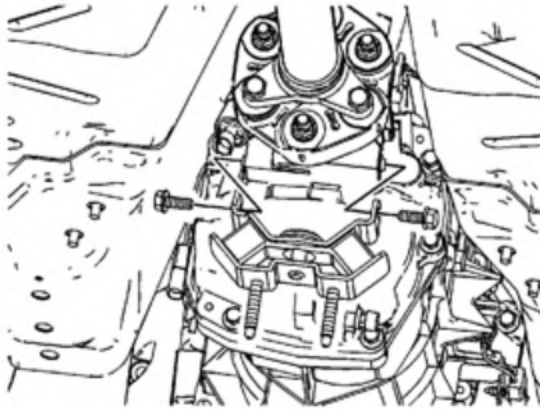


4. Remove the transmission mount.

Installation Procedure

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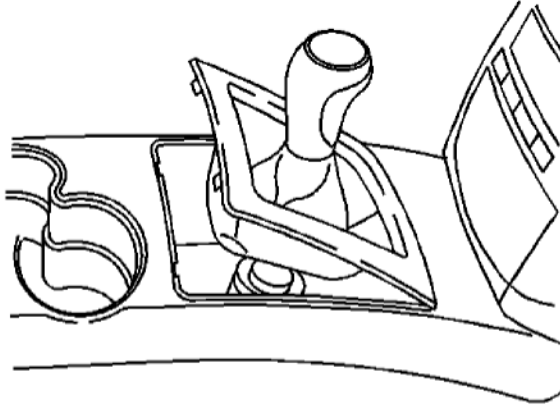
Caution: Refer to [Fastener Caution](#) in the Preface section.



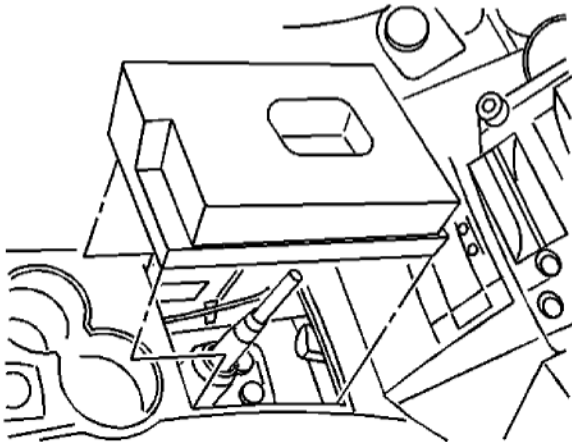
1. Install the transmission mount and upper mounting bolts and tighten to **60 N·m (44 lb ft)**.
2. Install the transmission support. Refer to [Transmission Support Replacement](#).
3. Lower the vehicle.

Shift Control Assembly Replacement

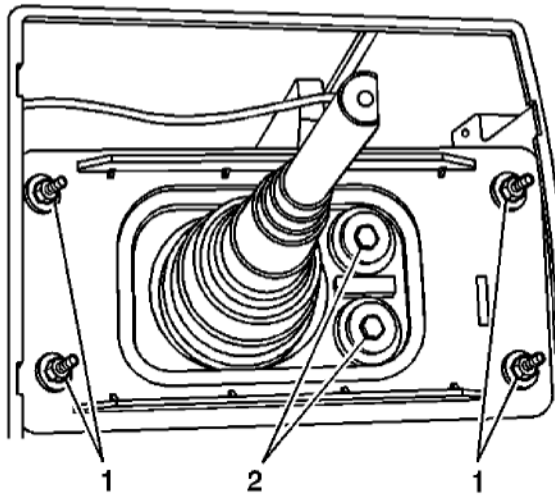
Removal Procedure



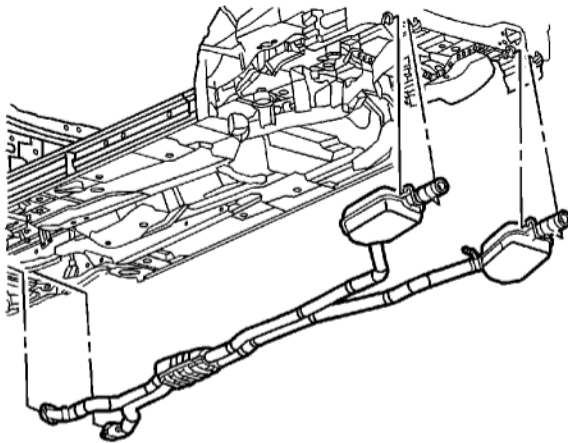
1. Remove the shift control knob. Refer to [Transmission Control Lever Knob Replacement](#).



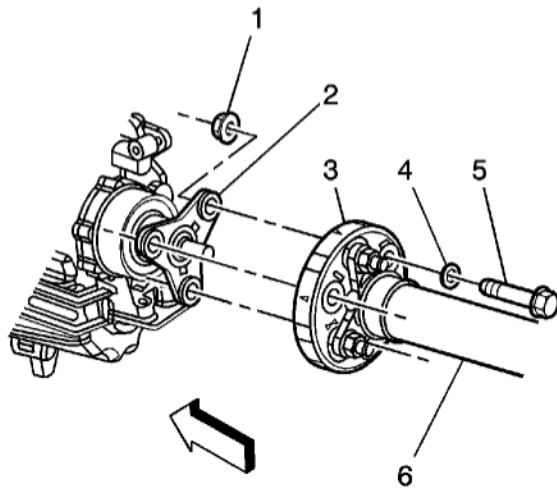
2. Remove the sound insulator foam block from the console.



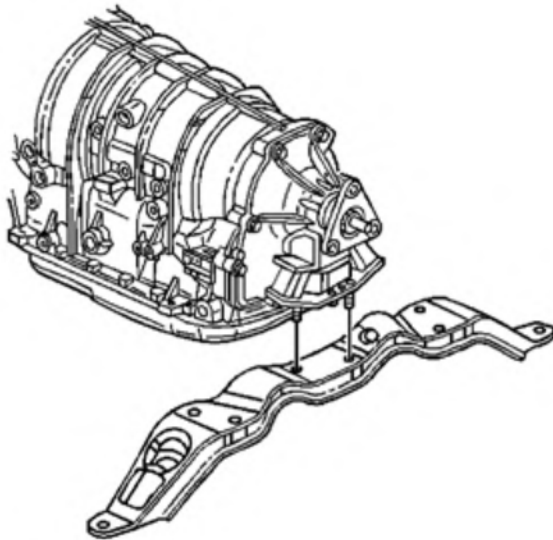
3. Remove the bolts (2) securing the shift control assembly to the shift control adapter plate.
4. Raise the vehicle. Refer to [Lifting and Jacking the Vehicle](#).



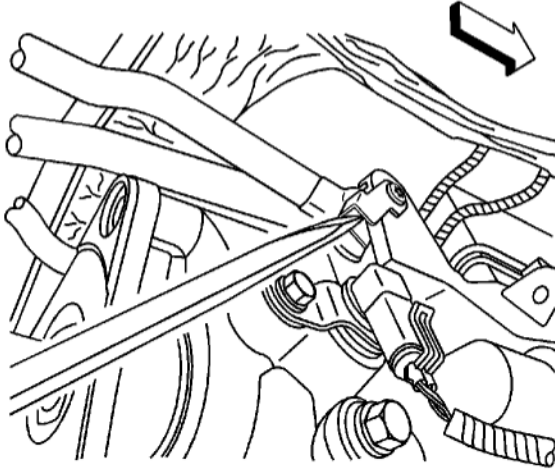
5. Remove the exhaust system. Refer to [Exhaust System Replacement](#).



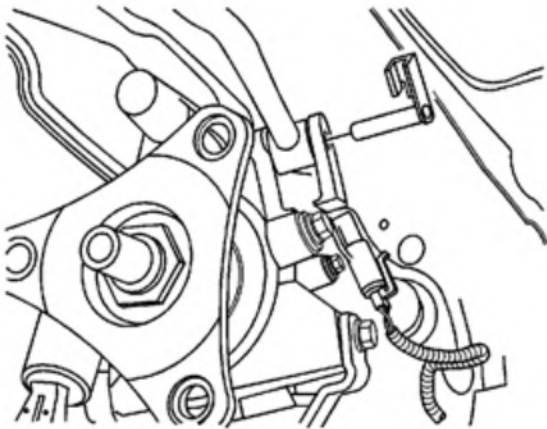
6. Remove the propeller shaft (6). Refer to [Rear Propeller Shaft Replacement](#).
7. Support the transmission with a suitable jack.



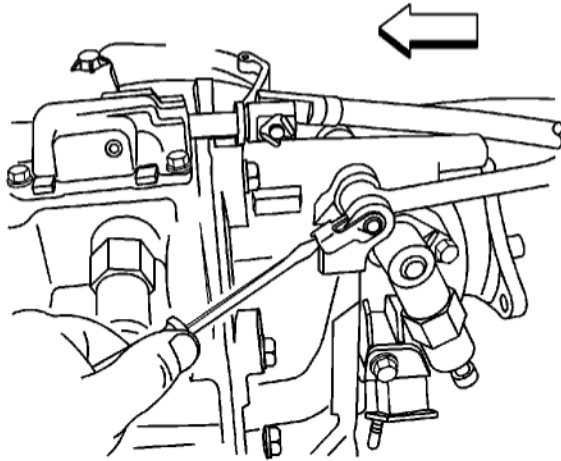
8. Remove the transmission support. Refer to [Transmission Support Replacement](#).
9. Lower the transmission assembly to gain access to the top of the transmission.



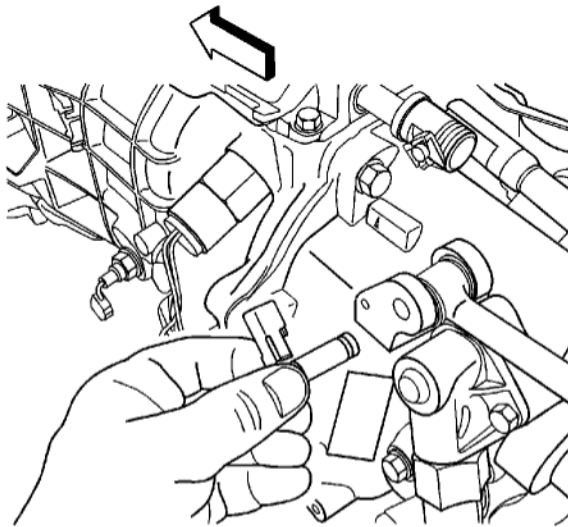
10. Using a flat-blade tool, release the right side shift control rod pin retainer.



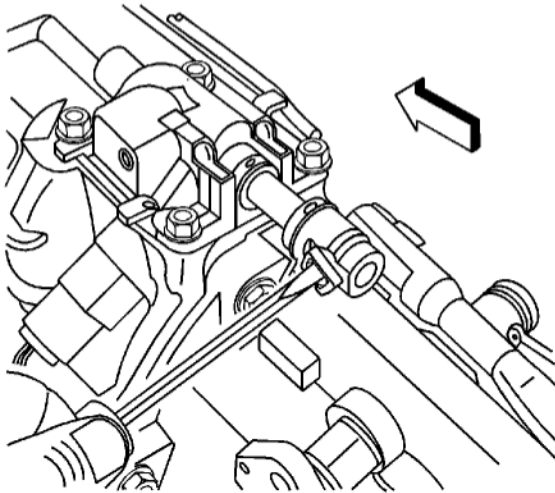
11. Remove the shift control rod pin.



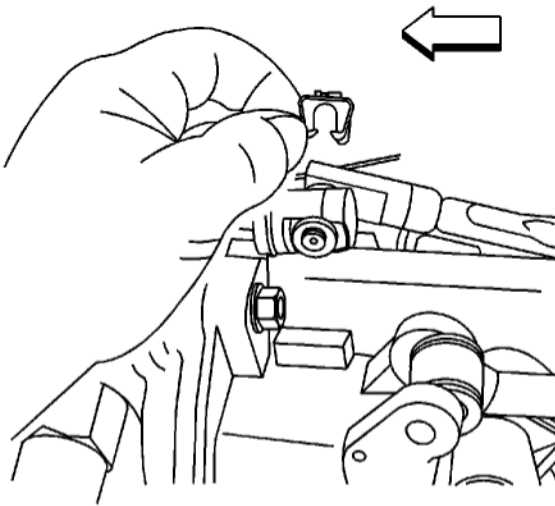
12. Using a flat-blade tool, release the left side shift control rod pin retainer. The graphic shows the transmission removed for clarity.



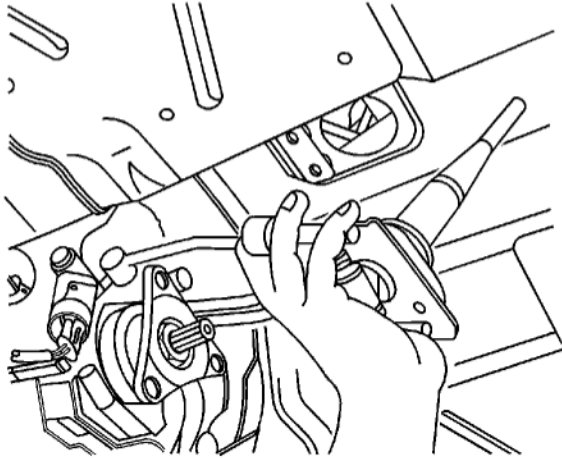
13. Remove the shift control rod pin.



14. Using a flat-blade tool, release the center shift control rod pin retainer. The graphic shows the transmission removed for clarity.

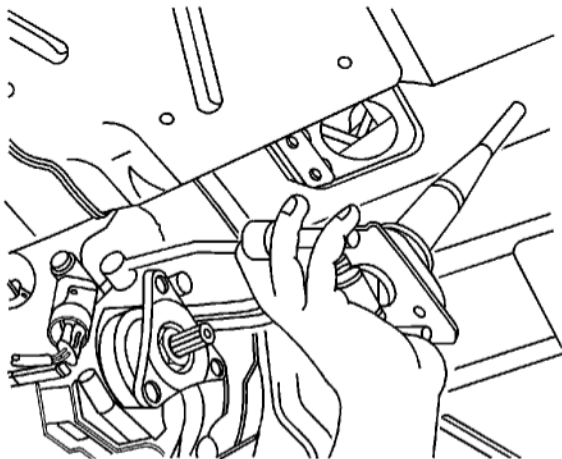


15. Remove the center shift control rod pin retainer.

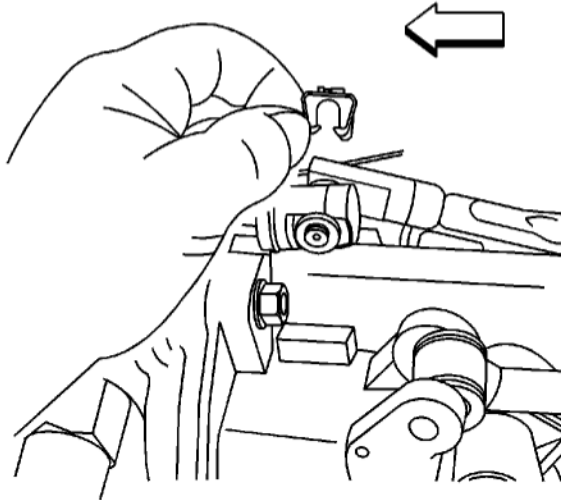


16. Remove the shift control assembly from the transmission. Remove the shift control assembly from the vehicle.

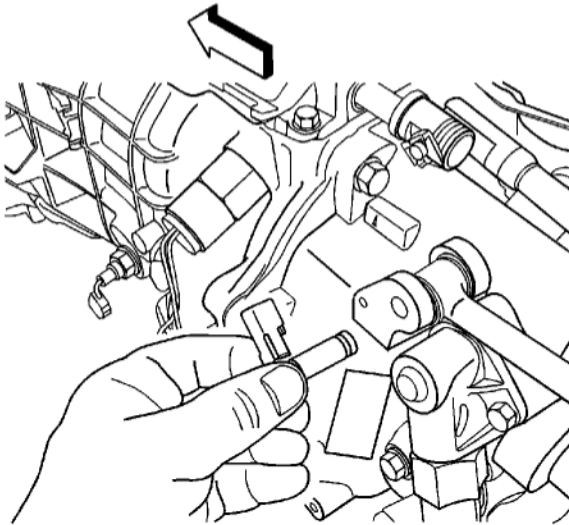
Installation Procedure



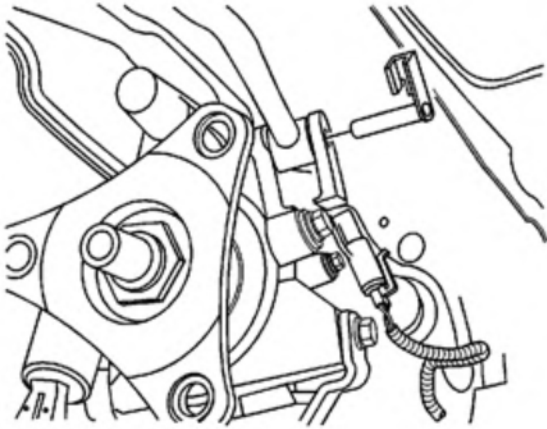
1. Install the shift control assembly to the transmission.



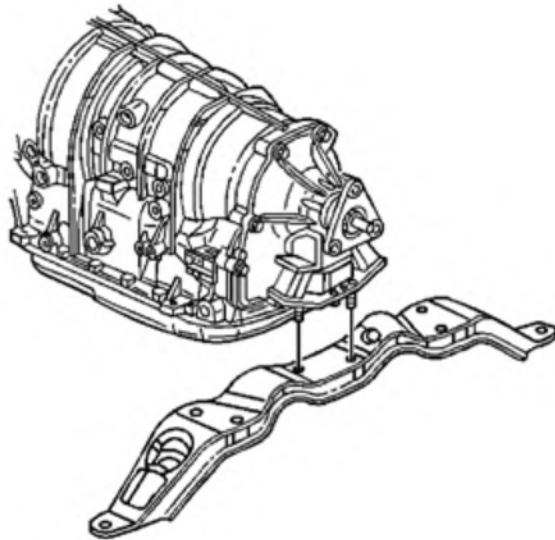
2. Install the center shift control rod pin retainer.



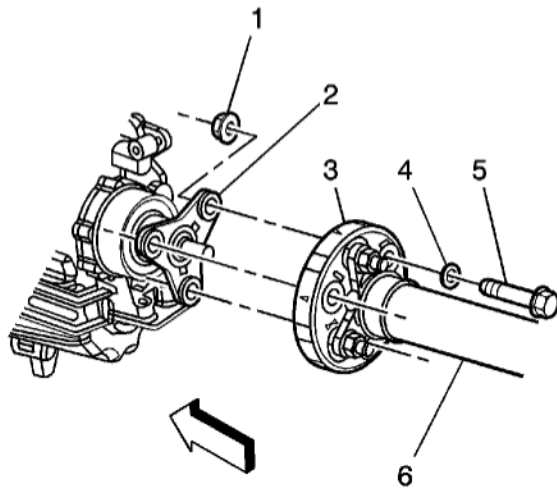
3. Install the left side shift control rod pin. Rotate the pin in order to lock the retainer into place on the transmission.



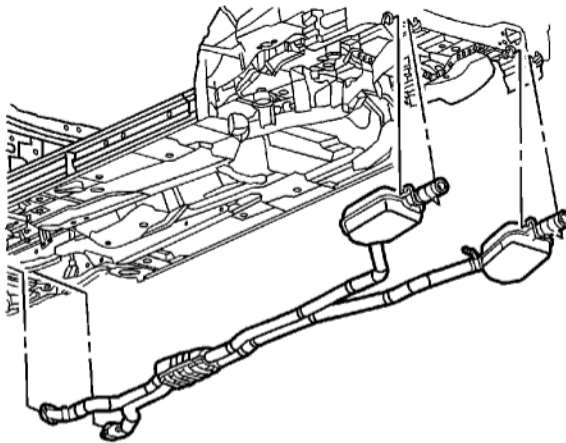
4. Install the right side shift control rod pin. Rotate the pin in order to lock the retainer into place on the transmission.



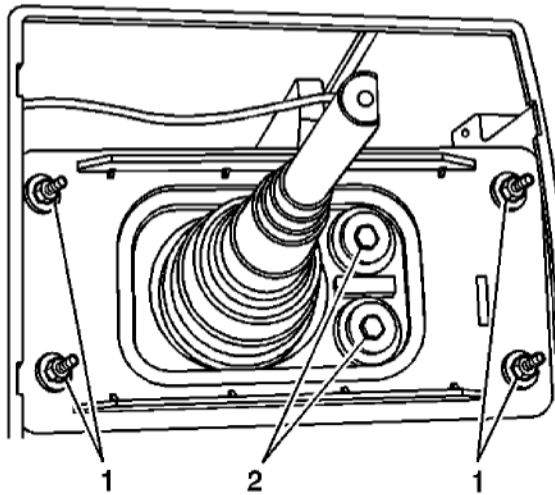
5. Raise the transmission.
6. Install the transmission support. Refer to [Transmission Support Replacement](#).



7. Remove the jack supporting the transmission.
8. Install the propeller shaft (6). Refer to [Rear Propeller Shaft Replacement](#).



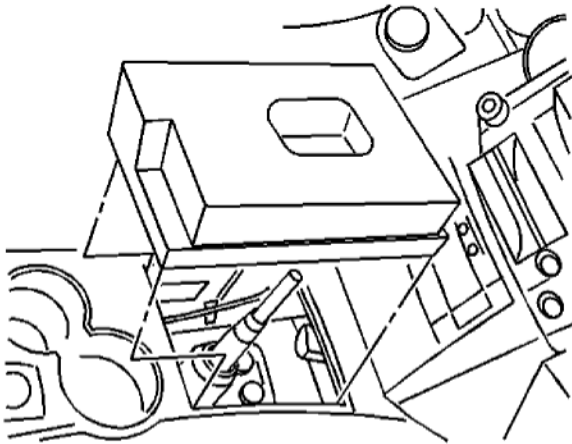
9. Install the exhaust system. Refer to [Exhaust System Replacement](#).



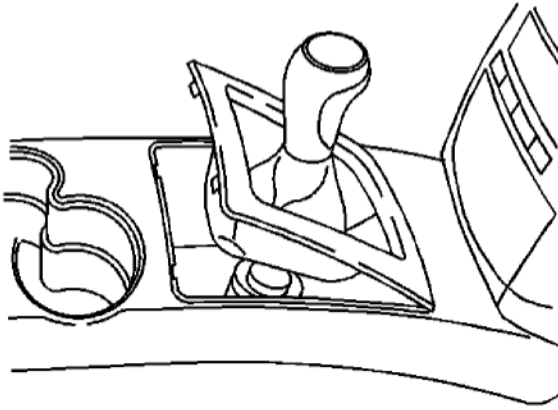
10. Lower the vehicle.

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

11. Install the bolts (2) securing the shift control assembly to the adapter plate and tighten the bolts to **18 N·m (13 lb ft)**.



12. Install the sound insulator foam block into the console.

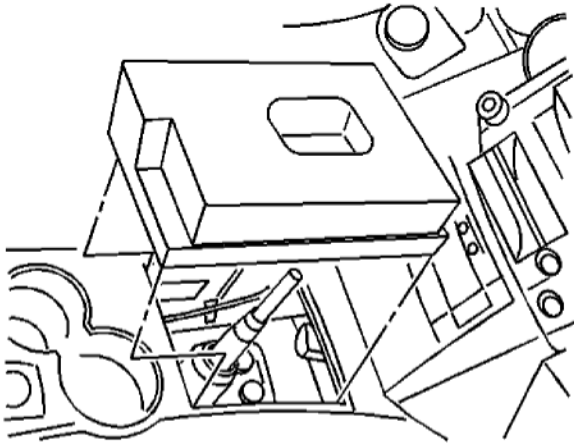


13. Install the shift control knob. Refer to [Transmission Control Lever Knob Replacement](#).

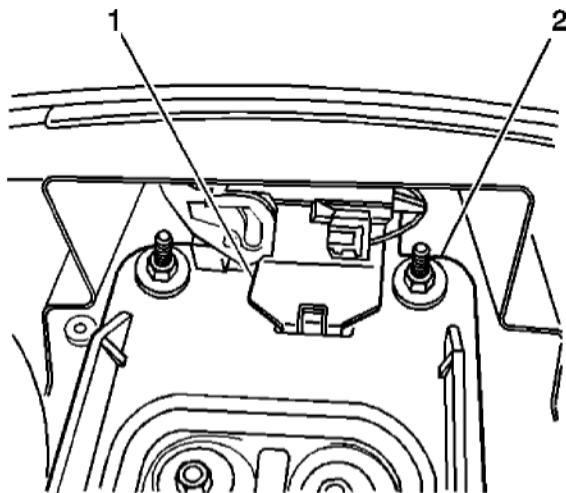
Shift Control Shift Closeout Boot Replacement

Removal Procedure

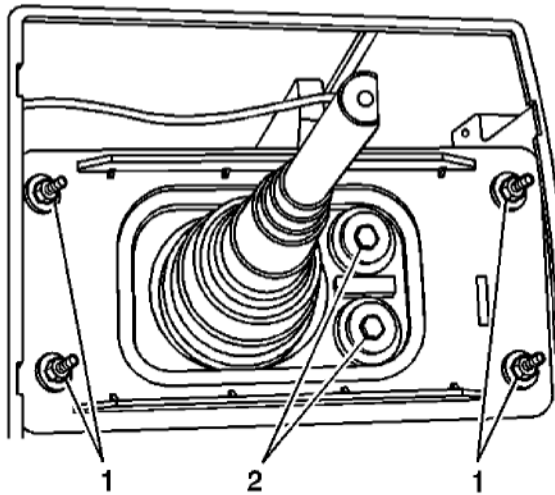
1. Remove the shift control knob/ boot assembly. Refer to [Transmission Control Lever Knob Replacement](#).



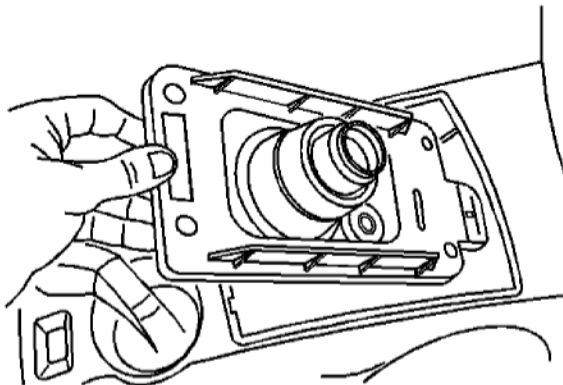
2. Remove the sound insulator foam block from the console.



3. Remove the electrical connector (1) from the shift control adaptor plate (2).
4. Position the electrical connector (1) out of the way.

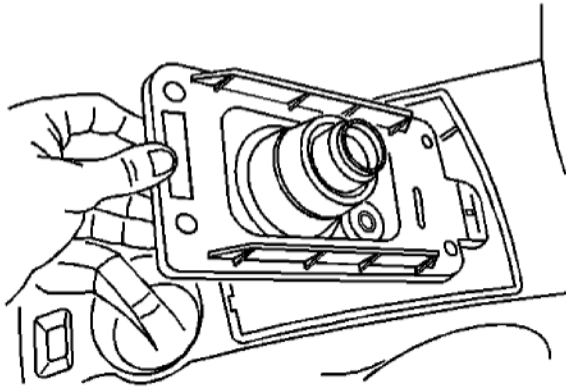


5. Remove the 2 bolts (2) attaching the shift control assembly to the shift control adaptor plate.
6. Remove the 4 nuts (1) securing the shift control adaptor plate to the tunnel reinforcement.



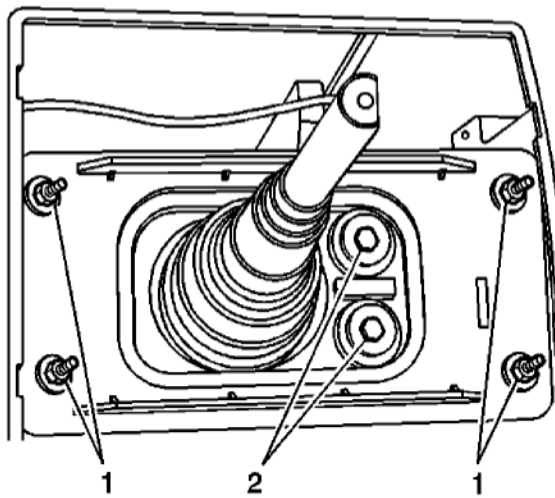
7. Remove the shift control boot and adaptor plate assembly from the vehicle.

Installation Procedure

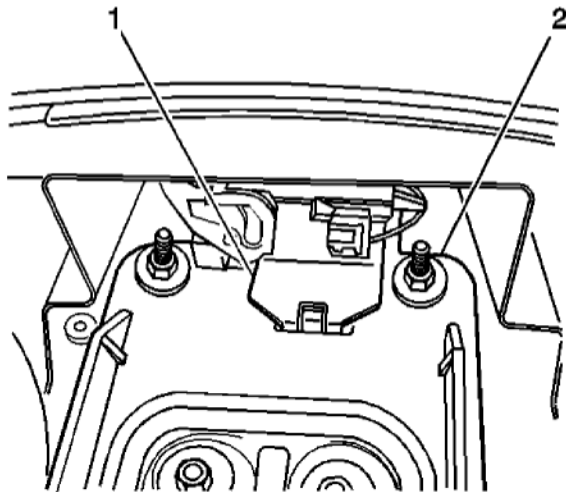


1. Install the shift control boot and adaptor plate assembly to the vehicle.

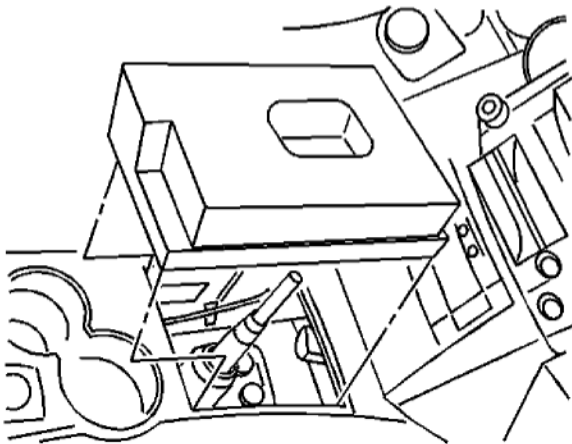
Caution: Refer to [Fastener Caution](#) in the Preface section.



2. Install the 4 nuts (1) securing the shift control adaptor plate to the tunnel reinforcement and tighten the nuts to **12 N·m (106 lb in)**.
3. Lift up on the shift control lever to bring the shift control assembly in contact with the shift control adaptor plate.
4. Install the 2 bolts (2) securing the shift control assembly to the shift control adaptor plate and tighten the bolts to **18 N·m (13 lb ft)**.



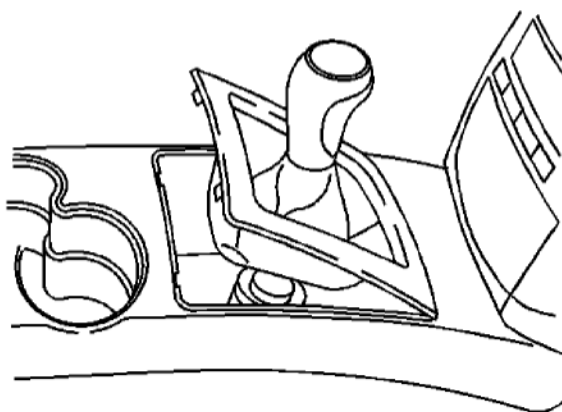
5. Install the electrical connector (1) to the shift control adaptor plate (2).



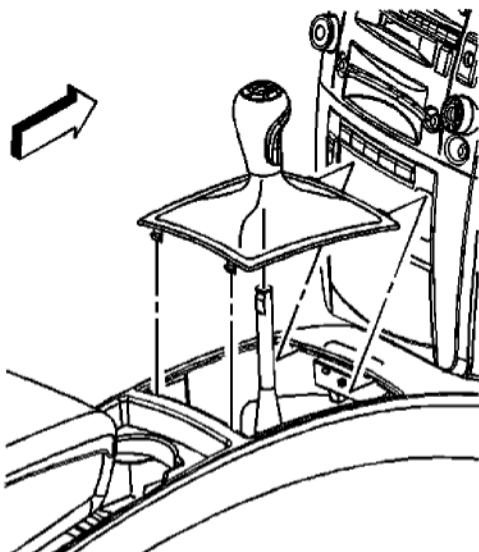
6. Install the sound insulator foam block into the console.
7. Install the shift control knob/ boot assembly. Refer to [Transmission Control Lever Knob Replacement](#).

Transmission Control Lever Knob Replacement

Removal Procedure



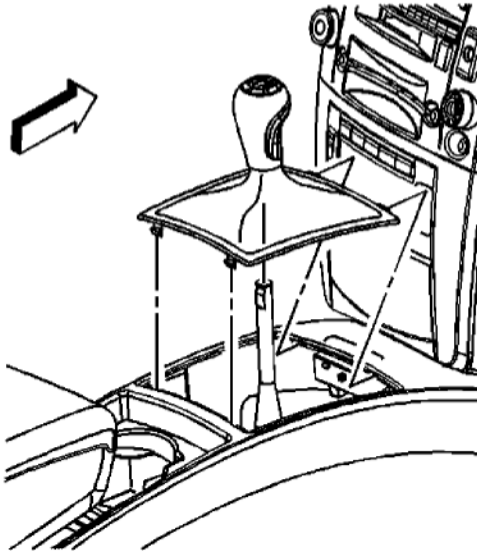
1. Lift up on the rear portion of the shift control closeout boot retaining ring and detach the retaining ring from the console.



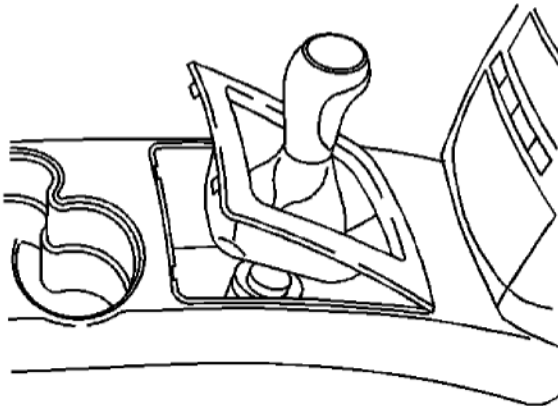
Note: Detaching the shift control knob from the shift lever may require a large amount of physical effort.

2. Firmly grasp the shift control knob and pull straight up to detach the shift control knob from the shift lever.
3. Remove the shift control closeout boot and knob assembly.

Installation Procedure



1. Install the shift control closeout boot and knob assembly to the shift lever.
2. Firmly press down on the shift control knob in order to attach the shift control knob to the shift lever.



3. Insert the front tabs of the shift control closeout boot retaining ring to the console.
4. Press the rear portion of the shift control closeout boot retaining ring down into the console.
5. Tug lightly to insure the shift control closeout boot retaining ring is securely attached to the

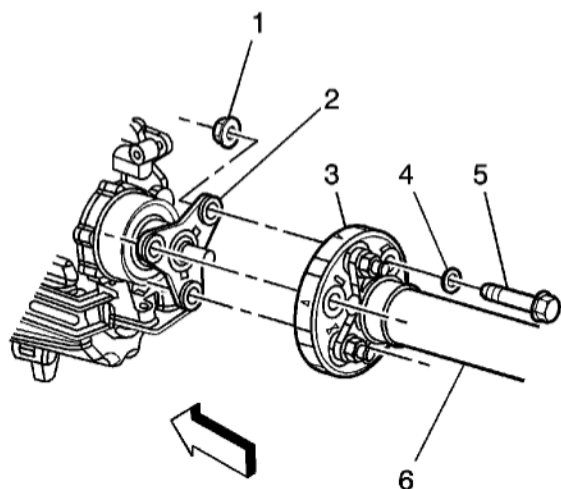
console.

Mainshaft Rear Oil Seal Replacement

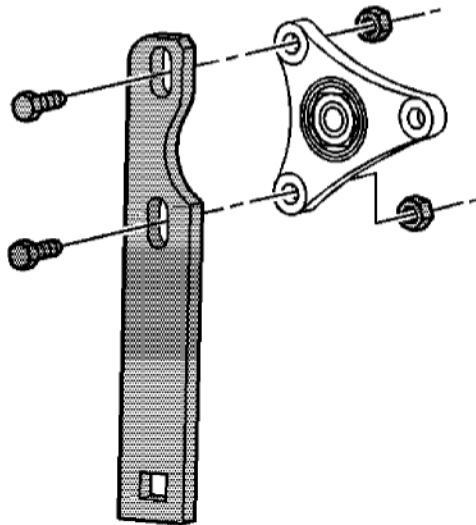
Special Tools

- [J 6125-1B](#) Slide Hammer
- [J 23129](#) Universal Seal Remover
- [J 29873](#) Injector Nozzle Socket 30 mm
- [J 44765](#) Seal Installer
- [J 45012](#) Holding Fixture
- [J 45019](#) Flange and Pinion Gage Remover

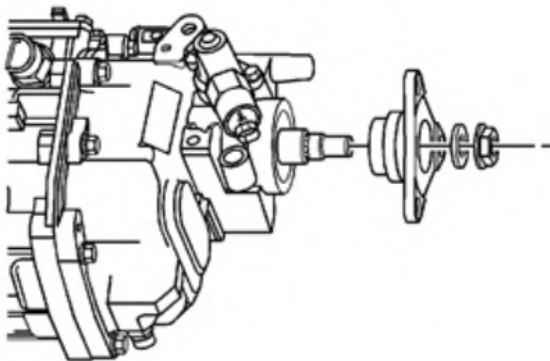
Removal Procedure



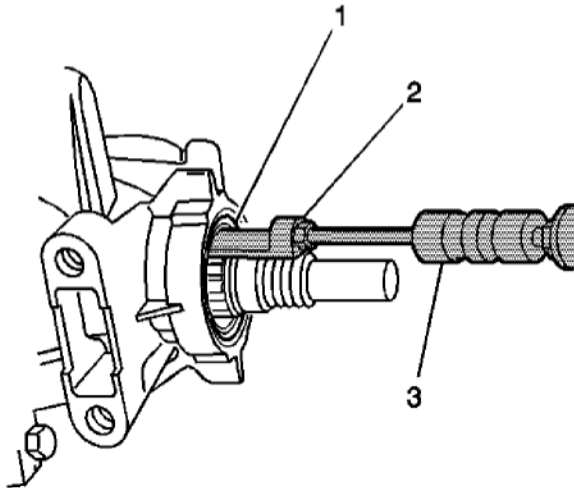
1. Place the transmission in neutral.
2. Raise and support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
3. Remove the propeller shaft (6). Refer to [Rear Propeller Shaft Replacement](#).



4. Install the [J 45012](#) to the drive flange.
5. While holding the [J 45012](#) , remove the flange nut using the [J 29873](#) .
6. Remove the [J 45012](#) .

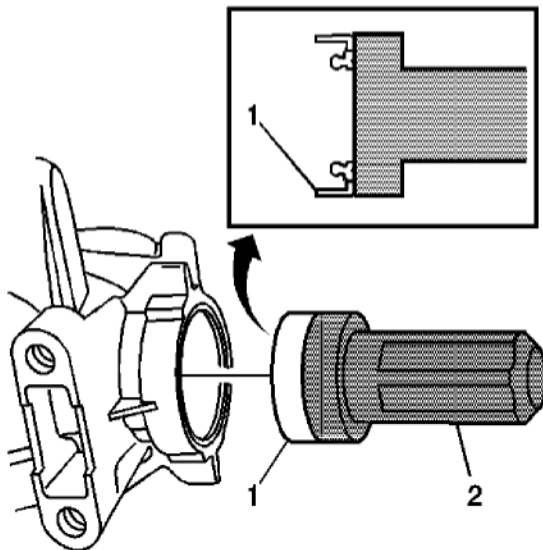


7. Remove the drive flange thrust washer.
8. Remove the drive flange using the [J 45019](#) .



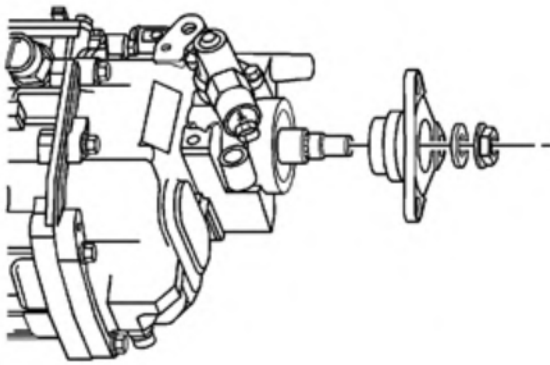
9. Use the [J 6125-1B](#) and [J 23129](#) to remove the transmission case extension seal (1).

Installation Procedure

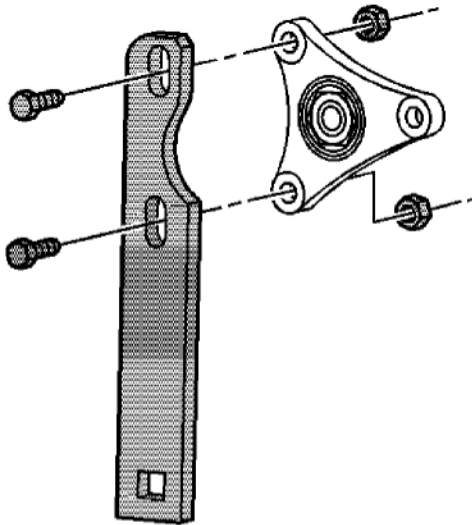


Note: Install the seal onto the tool before installing into the case to prevent damage to the seal.

1. Using [J 44765](#) install the new transmission case extension seal (1).



2. Install the drive flange to the transmission output shaft.
3. Install a NEW drive flange thrust washer.



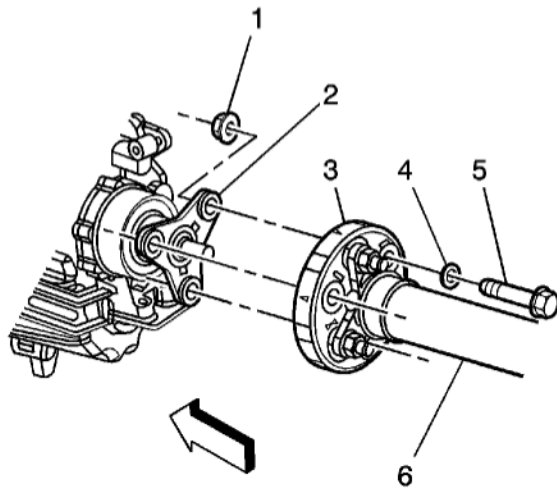
4. Install the [J 45012](#) to the drive flange.

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

5. While holding [J 45012](#) , install a NEW drive flange nut using [J 29873](#) .

Tighten the drive flange nut to 57 N·m (42 lb ft).

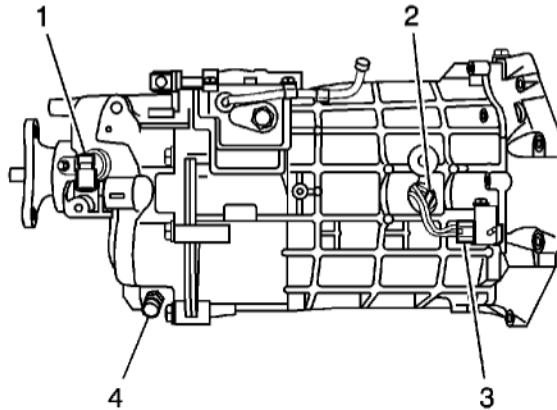
6. Remove the [J 45012](#) from the drive flange.



7. Install the propeller shaft (6). Refer to [Rear Propeller Shaft Replacement](#).
8. Lower the vehicle.

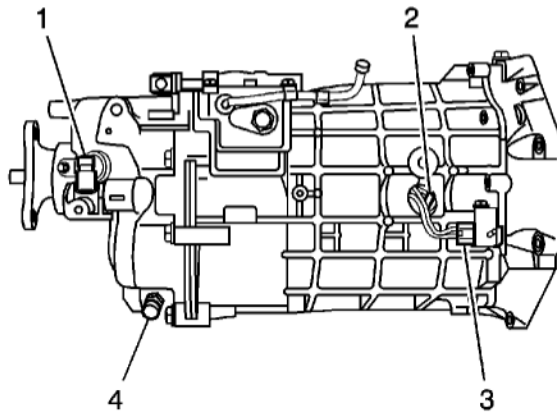
Backup Lamp Switch Replacement

Removal Procedure



1. Raise and suitably support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
2. Disconnect the backup lamp switch electrical connector (3).
3. Remove the backup lamp switch wire harness from the bracket.
4. Using a Snap-On™VSM5222 22 mm angle head open end wrench, or equivalent, remove the backup lamp switch (2).

Installation Procedure



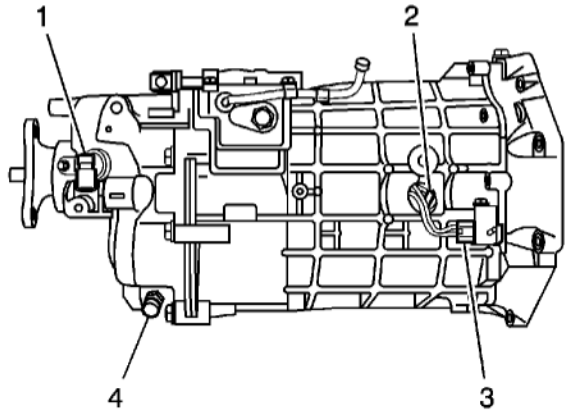
1. Apply pipe sealant with Teflon® to the threads of the backup lamp switch. Use GM P/N 1052080 or equivalent.

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

2. Install the backup lamp switch (2) and tighten the switch to **27 N·m (20 lb ft)**.
3. Install the backup lamp switch wire harness to the bracket.
4. Connect the backup lamp switch electrical connector (3).
5. Lower the vehicle.

Transmission Fluid Temperature Sensor Replacement

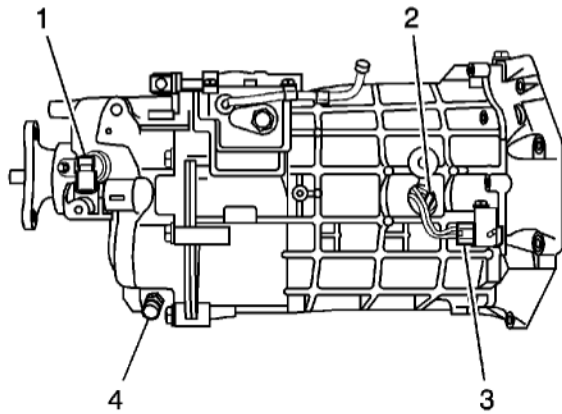
Removal Procedure



1. Raise and suitably support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
2. Disconnect the transmission fluid temperature (TFT) sensor electrical connector.
3. Clean away all dirt and debris from the TFT sensor.
4. Place a suitable drain pan under the transmission.
5. Remove the TFT sensor (4).

Installation Procedure

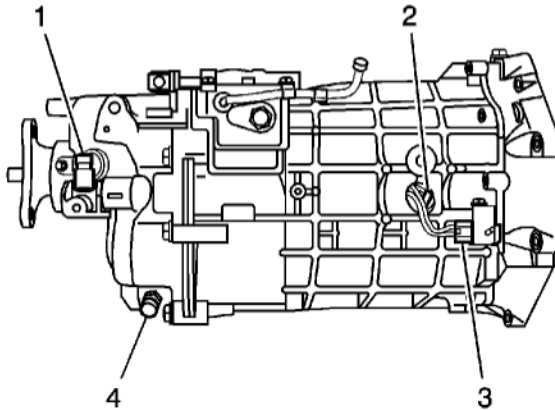
Caution: Refer to [Fastener Caution](#) in the Preface section.



1. Install the TFT sensor (4) and tighten the sensor to **18 N·m (13 lb ft)**.
2. Connect the TFT sensor electrical connector.
3. Fill the transmission to the proper level. Refer to [Transmission Fluid Replacement](#).
4. Remove the drain pan.
5. Lower the vehicle.

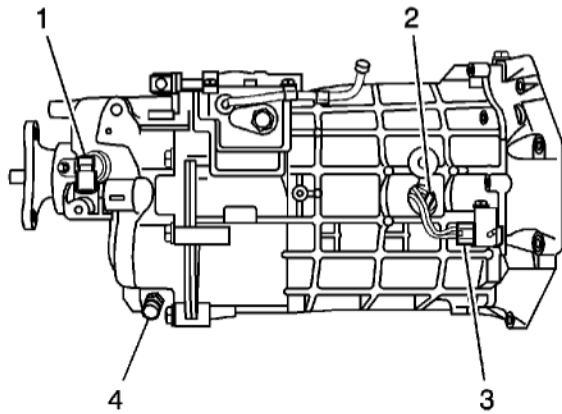
Vehicle Speed Sensor Replacement

Removal Procedure



1. Raise and suitably support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
2. Disconnect the vehicle speed sensor electrical connector.
3. Remove the attaching bolt and the vehicle speed sensor.
4. Remove the vehicle speed sensor (1).

Installation Procedure



1. Install the vehicle speed sensor (1).

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

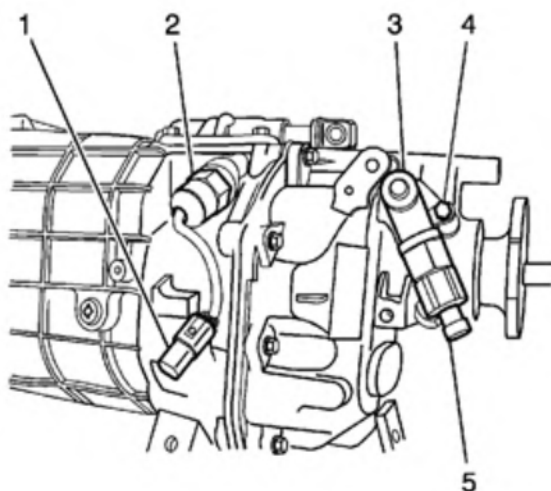
2. Install the vehicle speed sensor bolt and tighten to **10 N·m (89 lb in)**.
3. Connect the vehicle speed sensor electrical connector.
4. Lower the vehicle.

Reverse Lockout Solenoid Replacement

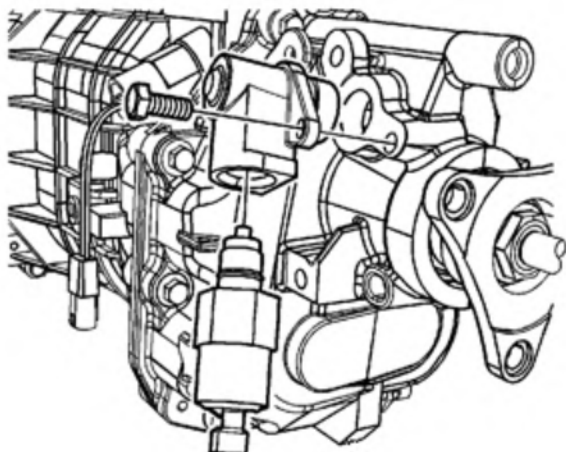
Special Tools

[J 41099](#) Skip Shift Sensor Remover/Installer

Removal Procedure

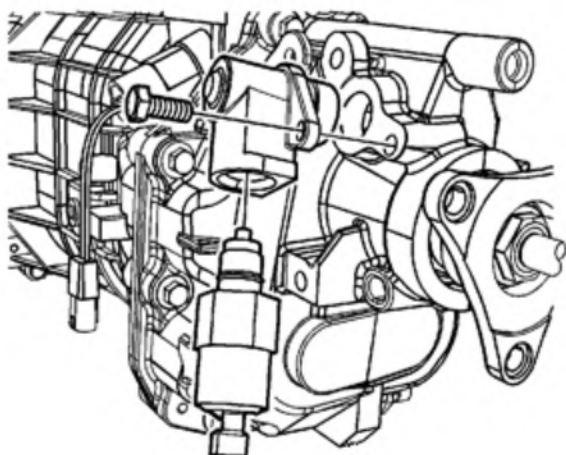


1. Raise and suitably support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
2. Remove the exhaust system. Refer to [Exhaust System Replacement](#).
3. Support the transmission with a suitable jack.
4. Remove the transmission support. Refer to [Transmission Support Replacement](#).
5. Remove the transmission mount. Refer to [Transmission Rear Mount Replacement](#).
6. Disconnect the reverse lockout solenoid electrical connector (5).



7. Using the [J 41099](#) , remove the reverse lockout solenoid.
8. Remove the bolt and the reverse lockout assembly , if necessary.

Installation Procedure



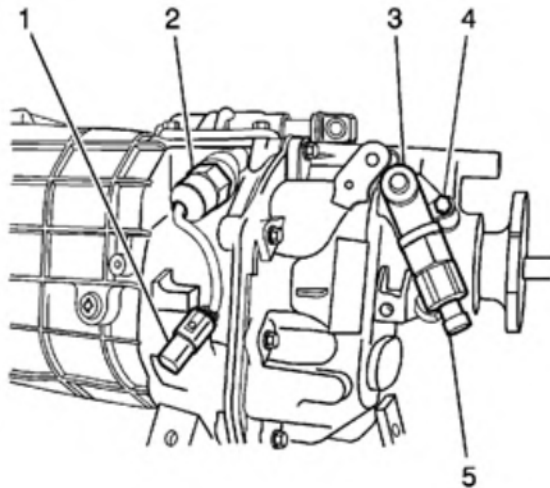
1. If removed, inspect the reverse lockout assembly O-ring. Replace the reverse lockout assembly O-ring if necessary.

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

2. Install the reverse lockout assembly and bolt and tighten to **18 N·m (13 lb ft)**.
3. Install the reverse lockout solenoid using the [J 41099](#) . Inspect and replace the O-ring if

necessary.

Tighten the reverse lockout solenoid to **40 N·m (30 lb ft)**.



4. Connect the reverse lockout solenoid electrical connector (5).
5. Install the transmission mount. Refer to [Transmission Rear Mount Replacement](#).
6. Install the transmission support. Refer to [Transmission Support Replacement](#).
7. Remove the transmission jack.
8. Install the exhaust system. Refer to [Exhaust System Replacement](#).
9. Lower the vehicle.

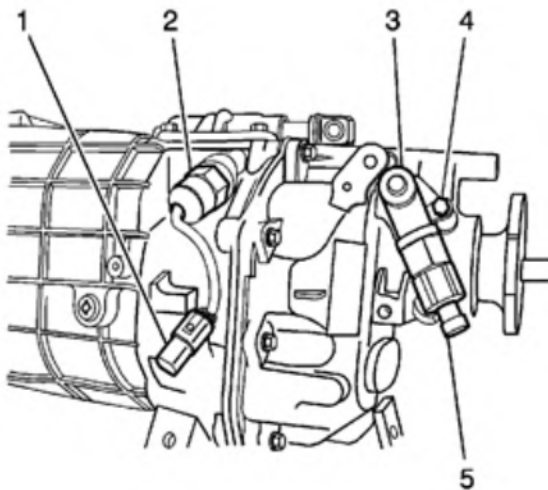
Gear Select / Skip Shift Solenoid Replacement

Special Tools

[DT-49293](#)

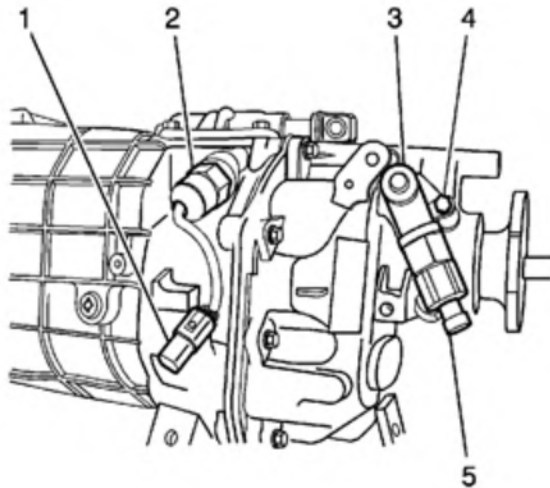
Removal Procedure

1. Raise and suitably support the vehicle. Refer to [Lifting and Jacking the Vehicle](#)
2. Remove the exhaust system. Refer to [Exhaust System Replacement](#)
3. Remove the propeller shaft Refer to [Rear Propeller Shaft Replacement](#)
4. Support the transmission with a suitable jack.
5. Remove the transmission support retaining fasteners from the vehicle body. Refer to [Transmission Support Replacement](#)
6. Slightly lower the transmission to gain access to the solenoid. Refer to [Transmission Rear Mount Replacement](#)
7. Disconnect the solenoid electrical connector (2).



8. Using the [DT-49293](#) loosen the retaining bolt, then remove the bolt and the solenoid.

Installation Procedure



1. If removed, inspect the solenoid O-ring. Replace the O-ring if necessary.

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

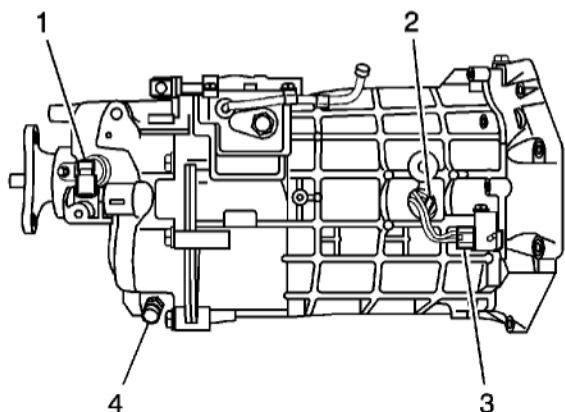
2. Install the solenoid and bolt.

Tighten the solenoid retaining bolt to **40 N·m (30 lb ft)**.

3. Connect the solenoid electrical connector (2).
4. Install the transmission support to body retaining bolts. Refer to [Transmission Support Replacement](#)
5. Remove the transmission jack.
6. Install the propeller shaft Refer to [Rear Propeller Shaft Replacement](#)
7. Install the exhaust system. Refer to [Exhaust System Replacement](#)
8. Lower the vehicle.

Transmission Fluid Replacement

Draining Procedure

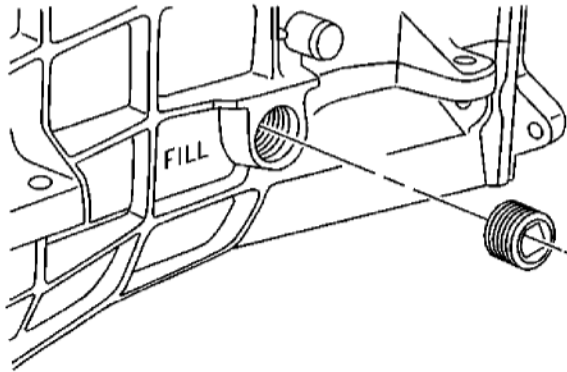


1. Raise and suitably support the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
2. Clean away all dirt and debris from the transmission fluid temperature sensor/drain plug area.
3. Place a suitable drain pan under the transmission.
4. Disconnect the electrical connector from the transmission fluid temperature sensor/drain plug.
5. Remove the fluid temperature sensor/drain plug (4).
6. Allow the system to drain.

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

7. Install the transmission fluid temperature sensor/drain plug (4) and tighten to **18 N·m (13 lb ft)**.
8. Connect the electrical connector to the transmission fluid temperature sensor/drain plug.

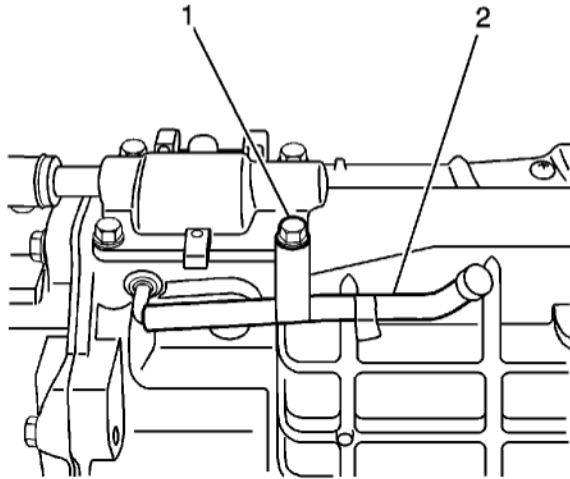
Filling Procedure



1. Clean away all dirt and debris from the transmission fluid fill plug area.
2. Remove the transmission fluid fill plug.
3. Fill the transmission with DEXRON®-III transmission fluid, until even with the bottom of the fill plug hole.
4. Install the transmission fluid fill plug and tighten to **18 N·m (13 lb ft)**.
5. Remove the drain pan.
6. Lower the vehicle.

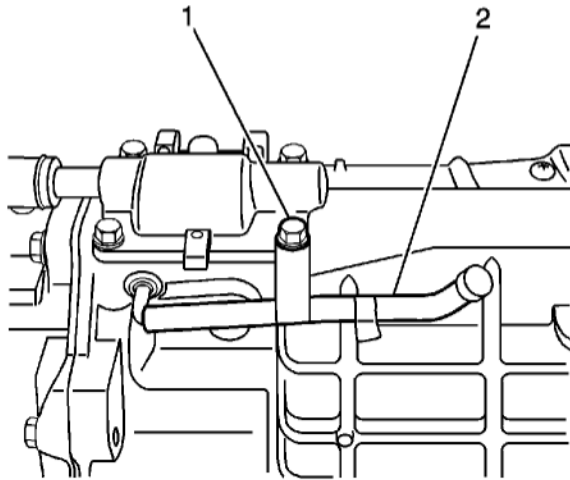
Transmission Vent Tube Replacement

Removal Procedure



1. Raise the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
2. Remove the propeller shaft. Refer to [Rear Propeller Shaft Replacement](#).
3. Support the transmission with a suitable jack.
4. Remove the transmission support. Refer to [Transmission Support Replacement](#).
5. Lower the jack to gain access to the top of the transmission.
6. Remove the bolt (1) securing the vent hose to the transmission.
7. Remove the vent hose (2) from the vent pipe.

Installation Procedure



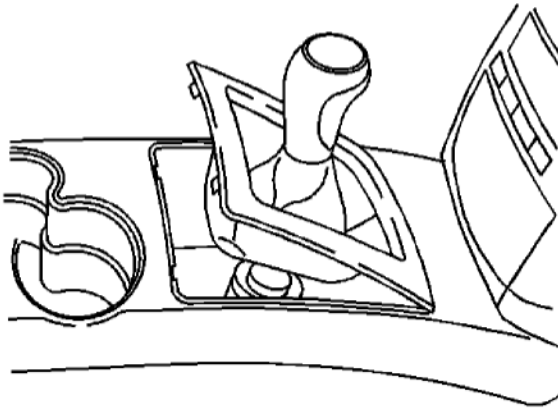
1. Install the vent hose (2) to the vent pipe.

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

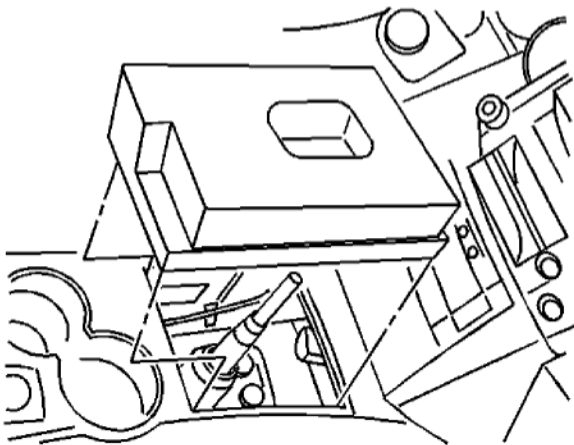
2. Install the shift guide plate bolt securing the vent hose (1) to the transmission and tighten the bolt to **22 N·m (16 lb ft)**.
3. Raise the jack.
4. Install the transmission support. Refer to [Transmission Support Replacement](#).
5. Remove the jack.
6. Install the propeller shaft. Refer to [Rear Propeller Shaft Replacement](#).
7. Lower the vehicle.

Transmission Replacement

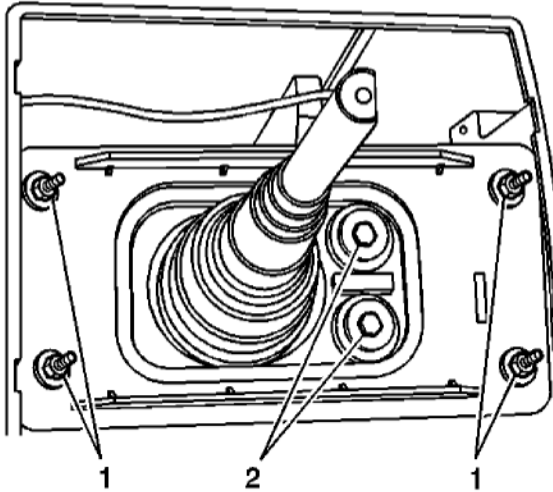
Removal Procedure



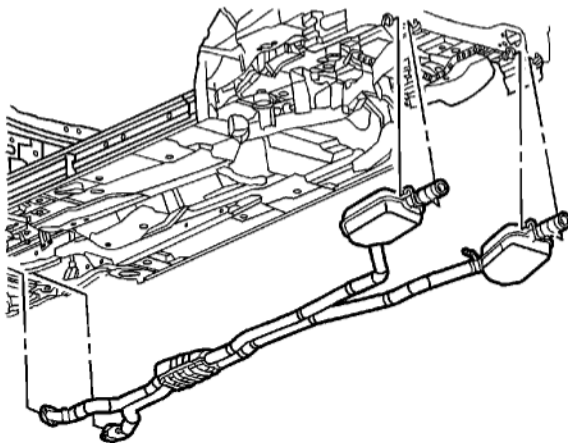
1. Remove the shift control knob. Refer to [Transmission Control Lever Knob Replacement](#).



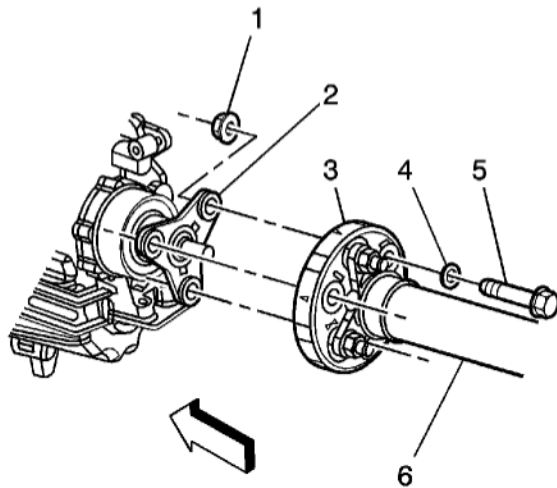
2. Remove the sound insulator foam block from the console.



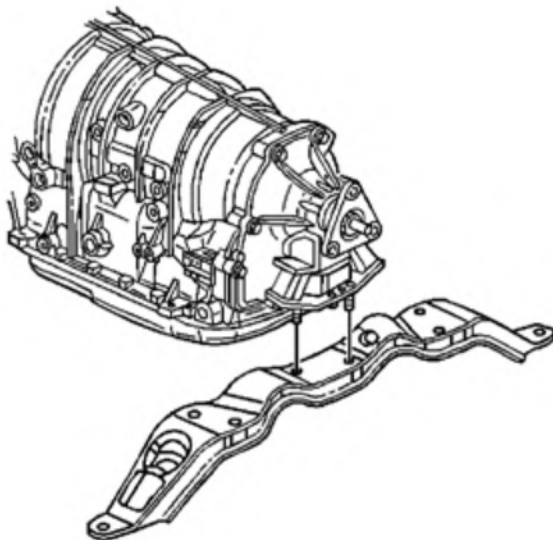
3. Remove the bolts (2) securing the shift control assembly to the shift control adapter plate.
4. Raise the vehicle. Refer to [Lifting and Jacking the Vehicle](#).
5. Remove both front oxygen sensor. Refer to [Heated Oxygen Sensor Replacement - Bank 1 Sensor 1](#) and [Heated Oxygen Sensor Replacement - Bank 2 Sensor 1](#).



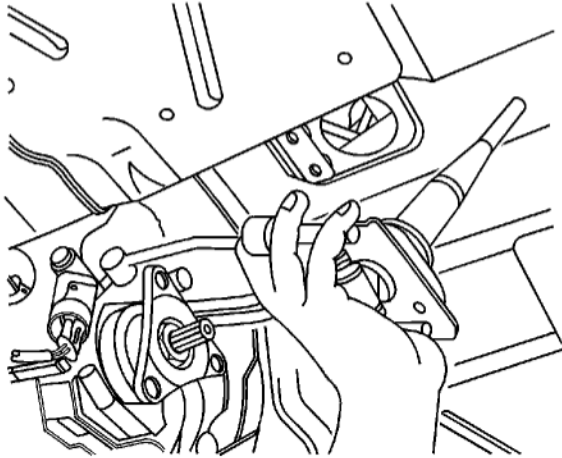
6. Remove the exhaust system. Refer to [Exhaust System Replacement](#).



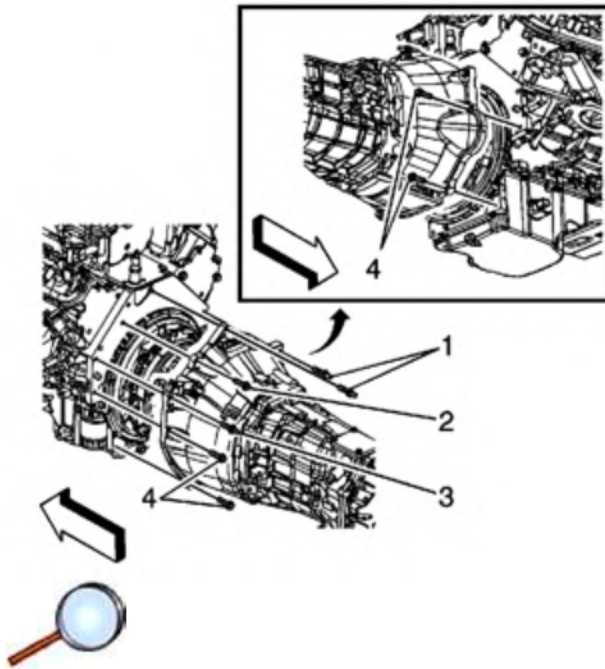
7. Remove the propeller shaft (6). Refer to [Rear Propeller Shaft Replacement](#).
8. Support the transmission with a suitable jack.



9. Remove the transmission support. Refer to [Transmission Support Replacement](#).
10. Lower the transmission assembly to gain access to the top of the transmission.



11. Remove the shift control assembly from the transmission. Remove the shift control assembly from the vehicle. Refer to [Shift Control Assembly Replacement](#).
12. Disconnect the following electrical connectors:
 - Transmission fluid temperature (TFT) sensor
 - Backup lamp switch
 - Vehicle speed sensor (VSS)
 - Reverse lockout solenoid
 - Gear select/skip shift solenoid
 - Oxygen sensor wiring harness
13. Disconnect the clutch hydraulic hose at the actuator cylinder. Refer to [Clutch Concentric Actuator Cylinder Replacement](#).
14. Disconnect the intermediate steering shaft. Refer to [Lower Intermediate Steering Shaft Replacement](#).
15. Support the frame with a suitable support. Lower the frame approximately 25 mm (1 inch) by loosening the frame bolts then lowering the jack.

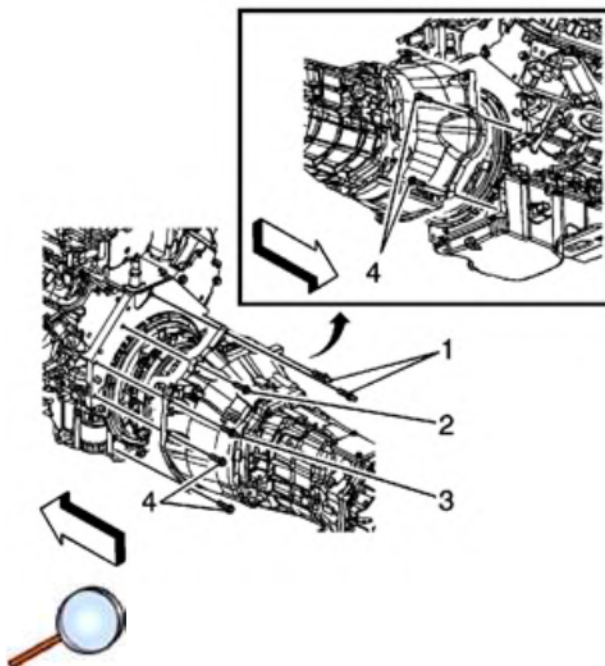


16. Remove the transmission clutch housing to engine bolts and studs (1, 4).
17. Remove the transmission from the vehicle by rotating the transmission to the right while sliding the transmission rearward.

Installation Procedure

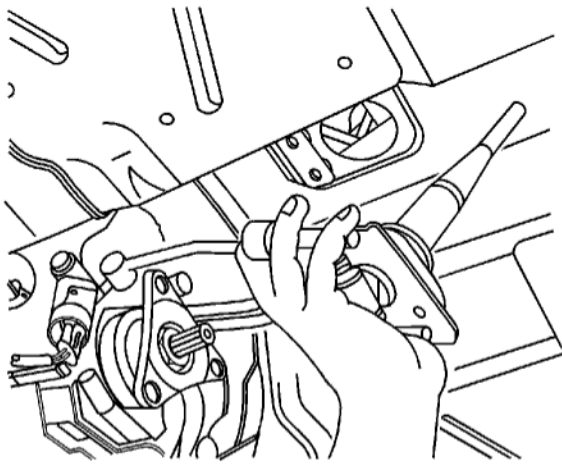
1. Install the transmission to the vehicle. Tilt the transmission to the right and slide forward.

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

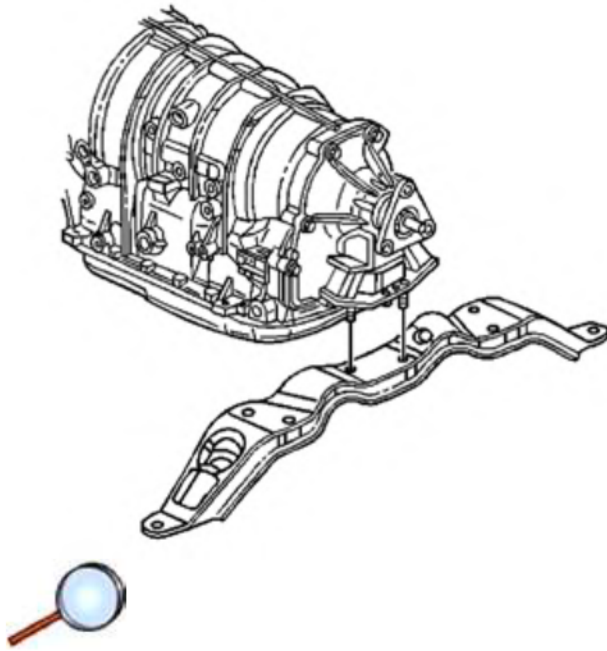


2. Install the transmission clutch housing to engine bolts and studs (1, 4) and tighten to 50 N·m (37 lb ft).

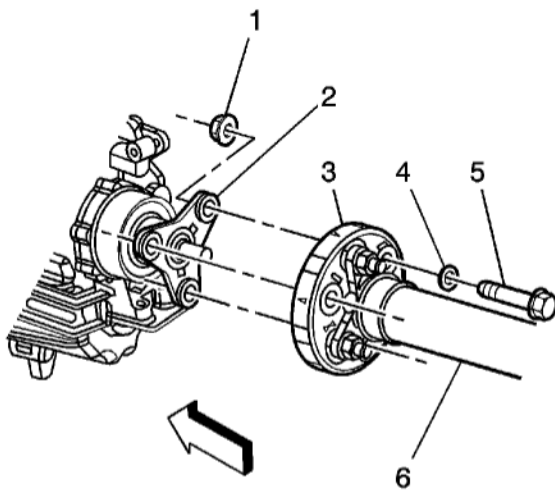
3. Raise the transmission back into place.
4. Connect the intermediate steering shaft. Refer to [Lower Intermediate Steering Shaft Replacement](#).
5. Connect the clutch hydraulic hose at the actuator cylinder. Refer to [Clutch Concentric Actuator Cylinder Replacement](#).
6. Connect the following electrical connectors:
 - TFT sensor
 - Backup lamp switch
 - VSS
 - Reverse lockout solenoid
 - Gear select/skip shift solenoid
 - Oxygen sensor wiring harness



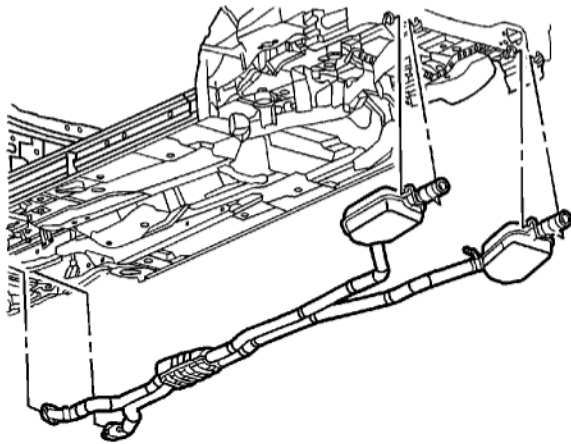
7. Install the shift control assembly to the transmission. Refer to [Shift Control Assembly Replacement](#).
8. Raise the transmission assembly.



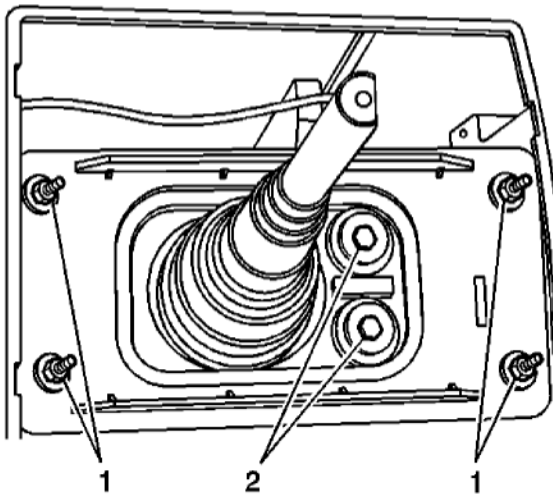
9. Install the transmission support. Refer to [Transmission Support Replacement](#).
10. Remove the transmission jack.



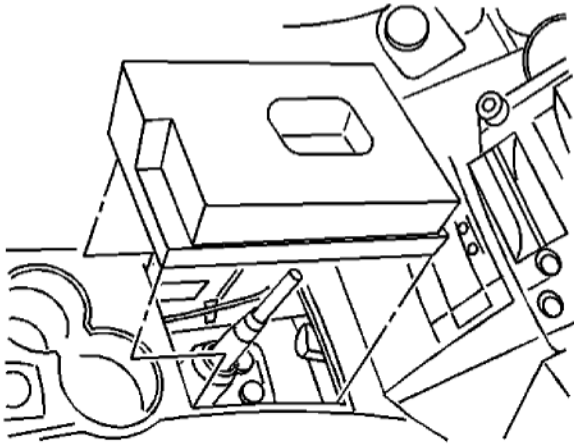
11. Install the propeller shaft (6). Refer to [Rear Propeller Shaft Replacement](#).
12. Check the transmission fluid and fill as necessary. Refer to [Transmission Fluid Level Inspection](#) and [Transmission Fluid Replacement](#).



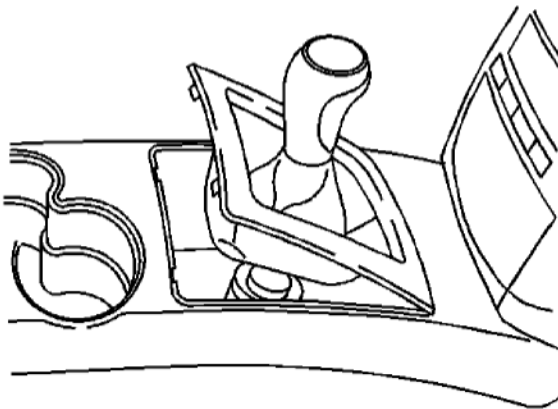
13. Install the exhaust system. Refer to [Exhaust System Replacement](#).
14. Install the front oxygen sensors. Refer to [Heated Oxygen Sensor Replacement - Bank 1 Sensor 1](#) and [Heated Oxygen Sensor Replacement - Bank 2 Sensor 1](#).
15. Lower the vehicle.



16. Install the bolts (2) securing the shift control assembly to the adapter plate and tighten the bolts to **18 N·m (13 lb ft)**.



17. Install the sound insulator foam block into the console.



18. Install the shift control knob. Refer to [Transmission Control Lever Knob Replacement](#).