

Diagnostic Information and Procedures

Transmission Shifts Hard

Step	Action	Value(s)	Yes	No
DEFINITION: The transmission does not shift smoothly or without difficulty into another gear.				
1	Check the clutch pedal travel. Is there sufficient clutch pedal travel?	—	Go to Step 3	Go to Step 2
2	Remove any clutch pedal restrictions. Does the transmission shift hard?	—	Go to Step 3	System OK
3	Check for air in the clutch hydraulic system. Is there air in the hydraulic system?	—	Go to Step 4	Go to Step 5
4	Bleed the air from the clutch hydraulic system. Refer to <i>Hydraulic Clutch Bleeding</i> in Clutch. Does the transmission still shift hard?	—	Go to Step 5	System OK
5	Inspect the transmission shift control for binding. Is the transmission shift control binding?	—	Go to Step 6	Go to Step 7
6	Replace the transmission shift control. Refer to <i>Shift Control Assembly Replacement</i> . Does the transmission still shift hard?	—	—	System OK
7	Check the transmission for the correct type transmission fluid. Is the correct type fluid being used?	—	Go to Step 9	Go to Step 8
8	Drain and refill the transmission with the correct type fluid. Refer to <i>Transmission Oil Drain and Fill</i> . Does the transmission still shift hard?	—	—	System OK
9	Inspect the clutch pressure plate and/or clutch driven plate. Is the clutch pressure plate and/or clutch driven plate worn or faulty?	—	Go to Step 10	Go to Step 11
10	Replace the clutch pressure plate and/or clutch driven plate. Refer to <i>Clutch Pressure Plate and Clutch Driven Plate (3.8 L)</i> in Clutch. Does the transmission still shift hard?	—	—	System OK
11	1. Remove the transmission. Refer to <i>Transmission Replacement</i> . 2. Inspect the transmission for an internal bind possibly caused by one of the following: • Shift forks • selector plates • synchronizers Is there an internal bind?	—	Go to Step 12	
12	1. Replace worn or damaged components as necessary. Refer to <i>Transmission/Transaxle/Transfer Case Unit Repair Manual</i> . 2. Install the transmission. Refer to <i>Transmission Replacement</i> . Does the transmission shift hard?	—	—	System OK

Gear Clash When Shifting Gears

Step	Action	Value(s)	Yes	No
DEFINITION: The transmission gear clash when shifting from one gear into another gear.				
1	Check for proper clutch operation. Refer to <i>Preliminary Checking Procedure</i> in Clutch. Does the clutch operate properly?	—	Go to Step 2	—
2	Verify that the clutch is releasing properly. Refer to <i>Clutch Spin Down Time</i> in Clutch. Is the clutch releasing properly?	—	Go to Step 4	Go to Step 3
3	Repair the clutch system. Refer to <i>Clutch Does Not Disengage</i> in Clutch. Does the clutch release?	—	System OK	—
4	Check for air in the clutch hydraulic system. Is there air in the hydraulic system?	—	Go to Step 5	Go to Step 6
5	Bleed the clutch hydraulic system. Refer to <i>Hydraulic Clutch Bleeding</i> in Clutch. Do the gears still clash?	—	Go to Step 6	System OK
6	Inspect the transmission control for wear. Is the transmission control worn?	—	Go to Step 7	Go to Step 8
7	Replace the transmission control. Refer to <i>Shift Control Assembly Replacement</i> . Do the gears still clash?	—	Go to Step 8	System OK
8	Check the transmission fluid level. Refer to <i>Manual Transmission Fluid Level Check</i> . Do the gears still clash?	—	Go to Step 9	System OK
9	Check for the correct type transmission fluid. Is the correct type transmission fluid being used?	—	Go to Step 11	Go to Step 10
10	Drain and refill the transmission. Refer to <i>Transmission Oil Drain and Fill</i> . Do the gears clash?	—	Go to Step 11	System OK
11	1. Remove the transmission. Refer to <i>Transmission Replacement</i> . 2. Disassemble and inspect the gear shift components and/or synchronizers for damage or wear. Refer to <i>Transmission/Transaxle/Transfer Case Unit Repair Manual</i> . Are the gear shift and/or synchronizers worn or damaged?	—	Go to Step 12	Go to Step 13
12	1. Replace worn and/or damaged components as necessary. 2. Install the transmission. Refer to <i>Transmission Replacement</i> . Do the gear still clash?	—	—	System OK
13	Inspect the clutch pilot bearing for binding. Is the pilot bearing binding?	—	Go to Step 14	—
14	1. Replace the clutch pilot bearing. Refer to <i>Pilot Bearing Replacement</i> in Clutch. 2. Install the transmission. Refer to <i>Transmission Replacement</i> . Do the gears still clash?	—	—	System OK

Transmission Noisy

Step	Action	Value(s)	Yes	No
DEFINITION: The transmission is noisy and the noise may carry into the passenger compartment.				
1	Check the transmission fluid level. Is the fluid level correct?	—	Go to Step 3	Go to Step 2
2	Add transmission fluid. Refer to <i>Manual Transmission Fluid Level Check</i> . Is the transmission noisy?	—	Go to Step 3	System OK
3	Check the transmission for the correct fluid type. Is the transmission the correct type?	—	Go to Step 5	Go to Step 4
4	Drain and refill the transmission with the correct type fluid. Refer to <i>Transmission Oil Drain and Fill</i> . Is the transmission noisy?	—	Go to Step 5	System OK
5	Inspect the shift control closeout boot. Is the closeout boot loose or damaged?	—	Go to Step 6	Go to Step 7
6	Position and tighten the closeout boot to specification, or replace the boot as necessary. Refer to <i>Shift Control Closeout Boot Replacement</i> . Is the transmission noisy?	—	Go to Step 6	System OK
7	Inspect the clutch housing for loose bolts and/or misalignment with the engine. Is there any loose bolts or misalignment with the engine?	—	Go to Step 8	Go to Step 9
8	Tighten the clutch housing bolts to specifications. Refer to <i>Clutch Housing Replacement</i> . Is the transmission noisy?	—	Go to Step 8	System OK
9	1. Remove the transmission. Refer to <i>Transmission Replacement</i> . 2. Disassemble and inspect the following transmission components: • Gear shift components for wear or damage • Transmission gears for wear or damage • Bearings for wear or damage Is there any wear or damage?	—	Go to Step 10	Go to Step 10
10	1. Replace worn or damaged components as necessary. Refer to <i>Transmission/Transaxle/Transfer Case Unit Repair Manual</i> . 2. Install the transmission. Refer to <i>Transmission Replacement</i> . Is the transmission noisy?	—	Go to Step 10	System OK

Transmission Jumps Out of Gear

Step	Action	Value(s)	Yes	No
DEFINITION: Gear disengagement occurs during normal operation.				
1	Inspect the transmission shift control closeout boot. Is the closeout boot out of position?	—	Go to Step 2	Go to Step 3
2	Reposition or replace the closeout boot. Refer to <i>Shift Control Closeout Boot Replacement</i> . Does the transmission jump out of gear?	—	Go to Step 3	System OK
3	Inspect the transmission shift control. Is the shift control loose or damaged?	—	Go to Step 4	Go to Step 5
4	Replace the transmission shift control. Refer to <i>Shift Control Assembly Replacement</i> . Does the transmission jump out of gear?	—	Go to Step 5	System OK
5	Inspect the engine and/or transmission mounts. Are the engine and/or transmission mounts worn or damaged?	—	Go to Step 6	Go to Step 7
6	Replace the engine mounts and/or transmission mounts. Refer to <i>Engine Mount Replacement</i> in Engine Mechanical - 3.8L or <i>Transmission Support and Mount Assembly</i> . Does the transmission jump out of gear?	—	Go to Step 9	System OK
7	Inspect the engine and/or transmission mounts for loose fasteners. Are there any loose fasteners?	—	Go to Step 8	Go to Step 9
8	Tighten the engine mount and/or transmission mount fasteners to specifications. Refer to <i>Fastener Tightening Specifications</i> in Engine Mechanical - 3.8L or <i>Fastener Tightening Specifications</i> . Does the transmission still jump out of gear?	—	—	System OK
9	Inspect the clutch housing for loose bolts or misalignment. Are there any loose bolts or misalignment?	—	Go to Step 10	Go to Step 11
10	Tighten any loose housing bolts and/or align the housing. Refer to <i>Clutch Housing Replacement</i> . Does the transmission still jump out of gear?	—	—	System OK
11	1. Remove the transmission. Refer to <i>Transmission Replacement</i> . 2. Disassemble and inspect the following internal components for wear or damage: • Gearshift components • Transmission gears • Bearings Is there any worn or damaged components?	—	Go to Step 12	—
12	1. Replace any worn or damaged components. Refer to <i>Transmission/Transaxle/Transfer Case Unit Repair Manual</i> . 2. Install the transmission. Refer to <i>Transmission Replacement</i> . Does the transmission still jump out of gear?	—	—	System OK

Transmission Does Not Shift into One Gear

Step	Action	Value(s)	Yes	No
DEFINITION: The transmission does not shift into a gear.				
1	Check the operation of the transmission shift control. Is the control worn, binding, or damaged?	—	Go to Step 2	Go to Step 3
2	Replace the transmission shift control. Refer to <i>Shift Control Assembly Replacement</i> . Will the transmission shift into gear?	—	System OK	
3	Inspect the hydraulic clutch operation. Is the clutch operating properly? Refer to <i>Preliminary Checking Procedure</i> .	—	Go to Step 5	Go to Step 4
4	Replace the clutch actuator cylinder. Refer to <i>Clutch Actuator Cylinder Replacement</i> . Will the transmission shift into gear?	—	System OK	
5	1. Remove the transmission. Refer to <i>Transmission Replacement</i> . 2. Inspect the transmission input shaft and the clutch pilot bearing. Is there signs of the input shaft binding in the pilot bearing?	—	Go to Step 6	Go to Step 7
6	1. Replace the clutch pilot bearing. Refer to <i>Pilot Bearing Replacement</i> . 2. Install the transmission. Refer to <i>Transmission Replacement</i> . Will the transmission shift into gear?	—	System OK	
7	Disassemble and inspect the following transmission internal components for wear or damage: • Gearshift components • Transmission gears • Bearing components Are any of the components worn or damaged?	—	Go to step 8	
8	1. Replace all worn or damaged components. Refer to <i>Transmission/Transaxle/Transfer Case Unit Repair Manual</i> . 2. Install the transmission. Refer to <i>Transmission Replacement</i> . Will the transmission shift into gear now?	—	System OK	

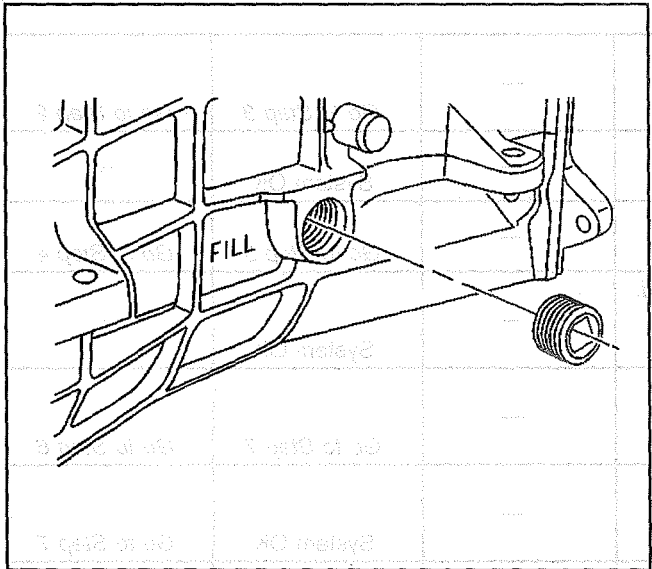
Transmission Locked in One Gear

Step	Action	Value(s)	Yes	No
DEFINITION: The transmission cannot be shifted out of a gear.				
1	Check the transmission fluid level. Refer to <i>Manual Transmission Fluid Level Check</i> . Is the transmission fluid level correct?	—	Go to Step 3	Go to Step 2
2	Add transmission fluid if necessary. Can the transmission be shifted out of gear?	—	System OK	—
3	Check for the correct type transmission fluid. Is the correct type transmission fluid being used?	—	Go to Step 5	Go to Step 4
4	Drain and refill the transmission with the correct type fluid. Refer to <i>Transmission Oil Drain and Fill</i> . Can the transmission be shifted out of gear?	—	System OK	—
5	Check the clutch actuator cylinder operation. Refer to <i>Preliminary Checking Procedure</i> . Is the clutch actuator operating properly?	—	Go to Step 7	Go to Step 6
6	Replace the clutch actuator cylinder. Refer to <i>Clutch Actuator Cylinder Replacement</i> . Can the transmission be shifted out of gear?	—	System OK	Go to Step 7
7	1. Remove the transmission. Refer to <i>Transmission Replacement</i> . 2. Disassemble and inspect the transmission for a dented or damaged shift fork. Is there a dented or damaged shift fork?	—	Go to Step 8	Go to Step 9
8	1. Replace the worn or damaged components as necessary. Refer to <i>Transmission/Transaxle/Transfer Case Unit Repair Manual</i> . 2. Install the transmission. Refer to <i>Transmission Replacement</i> . Can the transmission be shifted out of gear?	—	System OK	—
9	Disassemble and inspect the transmission for an incorrectly assembled or broken shift mechanism. Is there an incorrectly assembled or broken shift mechanism?	—	Go to Step 10	Go to Step 11
10	1. Replace worn or damaged components as necessary. Refer to <i>Transmission/Transaxle/Transfer Case Unit Repair Manual</i> . 2. Install the transmission. Refer to <i>Transmission Replacement</i> . Can the transmission be shifted out of gear?	—	System OK	—
11	Disassemble and inspect the transmission for a worn or damaged geartrain component. Are there any worn or damaged geartrain components?	—	Go to Step 12	—
12	1. Replace worn or damaged geartrain components as necessary. Refer to <i>Transmission/Transaxle/Transfer Case Unit Repair Manual</i> . 2. Install the transmission. Refer to <i>Transmission Replacement</i> . Can the transmission be shifted out of gear?	—	System OK	—

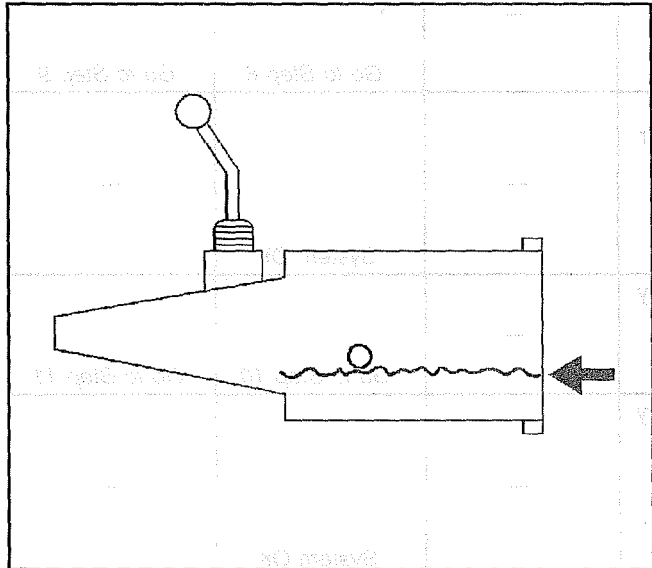
Repair Instructions

Manual Transmission Fluid Level Check

1. Raise and suitably support the vehicle. Refer to *Lifting and Jacking the Vehicle* in General Information.
2. Clean any dirt from around the fill plug.
3. Remove the transmission case fill plug.
4. Check for the correct type transmission fluid.
5. Is the correct type transmission fluid being used?
6. Drain and refill the transmission with the correct type fluid.
7. Refer to Transmission Oil Drain and Fill.
8. Can the transmission be shifted out of gear?
9. Check the clutch actuator cylinder operation. Refer to Preliminary Checking Procedures.
10. Is the clutch actuator operating properly?
11. Replace the clutch actuator cylinder. Refer to Clutch Actuator Cylinder Replacement.
12. Can the transmission be shifted out of gear?
13. Remove the transmission. Refer to Transmission Replacement.
14. Check that the transmission fluid level is even with the bottom of the fill plug hole.
15. Add Dexron-III transmission fluid, if necessary.



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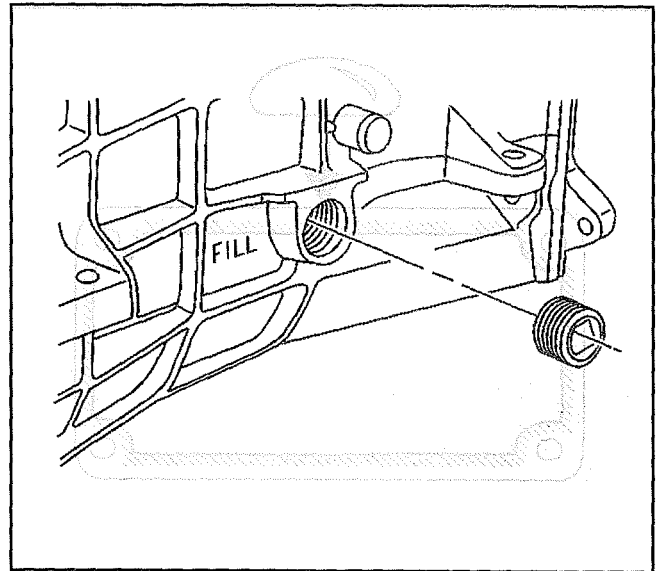
Notice: Refer to *Fastener Notice* in Cautions and Notices.

6. Install the transmission case fill plug.

Tighten

Tighten the transmission case fill plug to 27 N·m (20 lb ft).

7. Lower the vehicle.



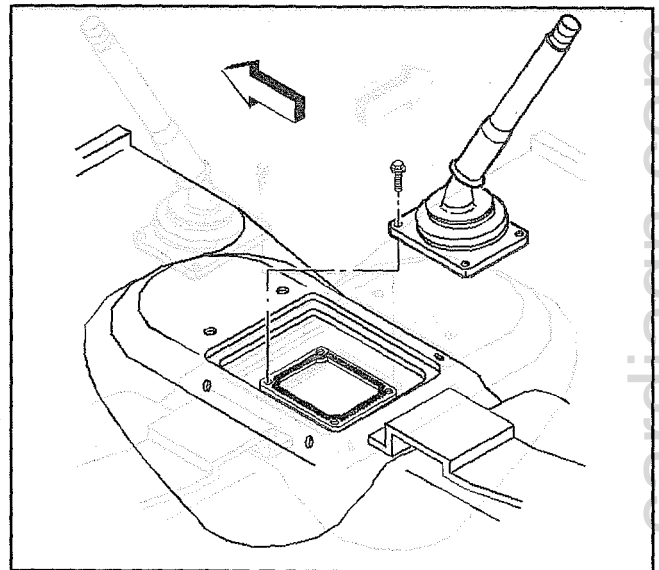
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Shift Control Assembly Replacement

Removal Procedure

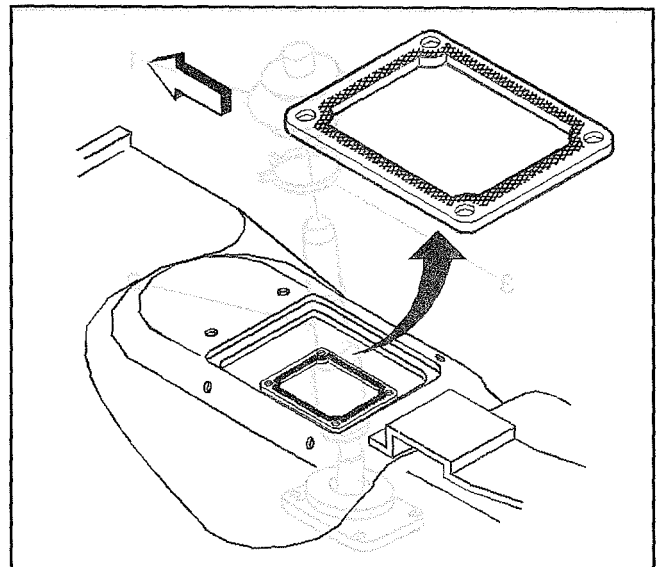
1. Remove the control lever boot. Refer to *Shift Control Boot Replacement*.
2. Remove the transmission control bolts.



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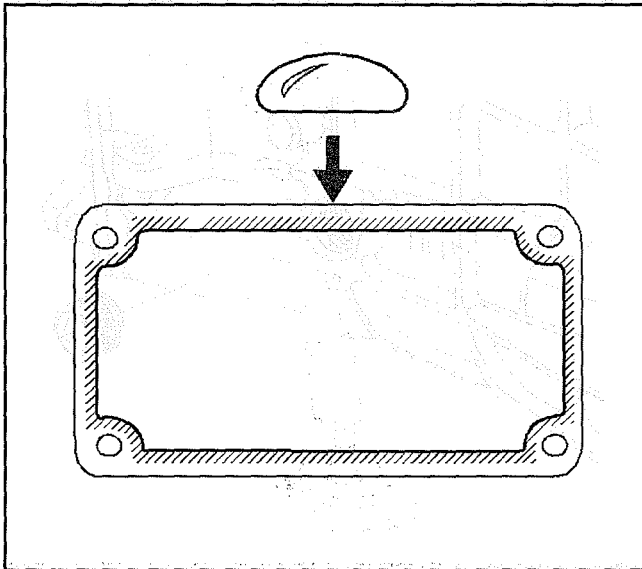
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3. Clean the old sealant from the extension housing and the transmission control sealing surface.

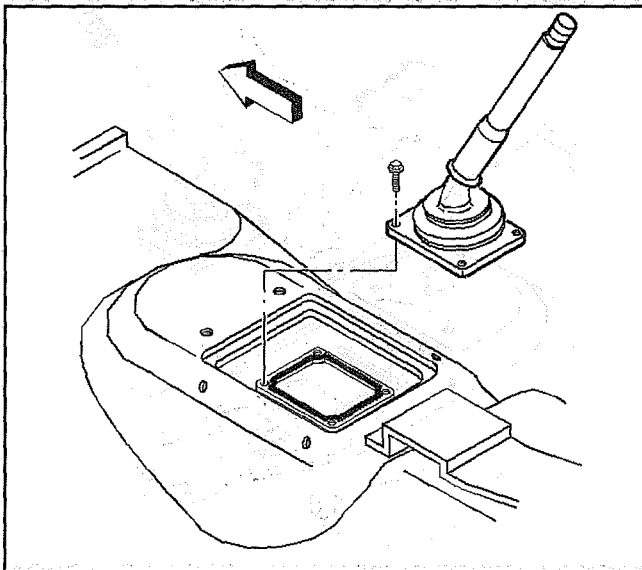


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Installation Procedure

1. Apply a continuous 3 mm (0.125 in) bead of RTV sealant on the extension housing-to-control sealing surface. Use GM P/N 12345739 or equivalent.

Notice: Refer to *Fastener Notice* in Cautions and Notices.

2. Install the transmission control bolts.

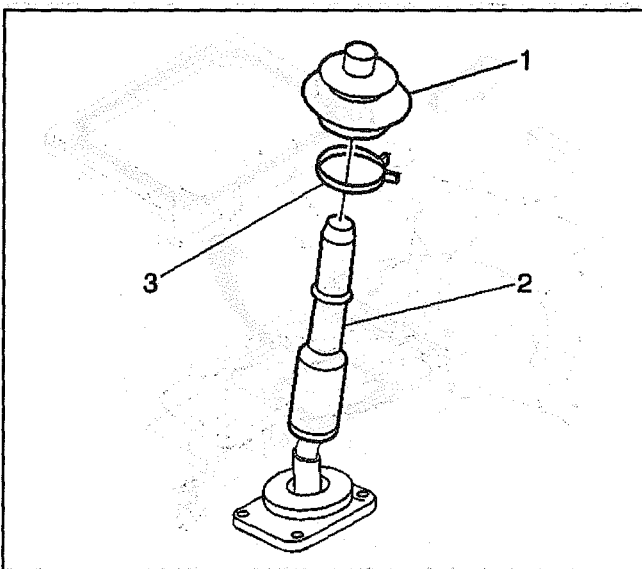
Tighten

Tighten the transmission control lever bolts to 17 N·m (13 lb ft).

3. Install the control lever boot. Refer to *Shift Control Boot Replacement*.

Shift Control Boot Replacement**Removal Procedure**

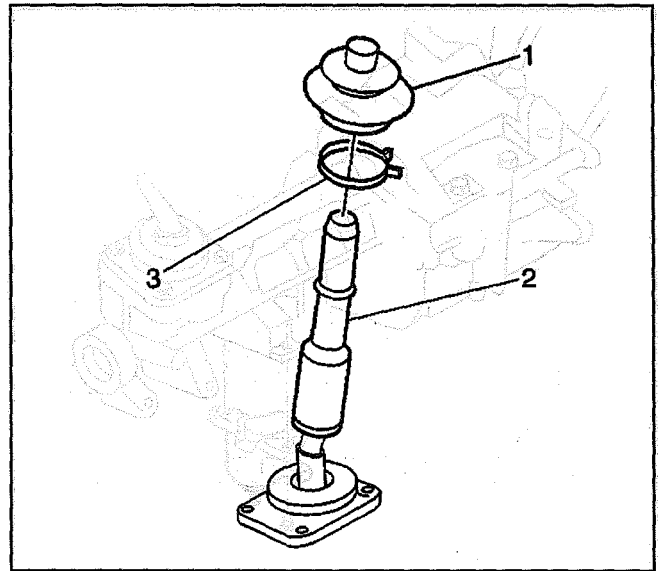
1. Remove the shift control closeout boot. Refer to *Shift Control Closeout Boot Replacement*.
2. Remove the control lever boot retainer (3).
3. Remove the control lever boot (1) from the control (2).



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Installation Procedure

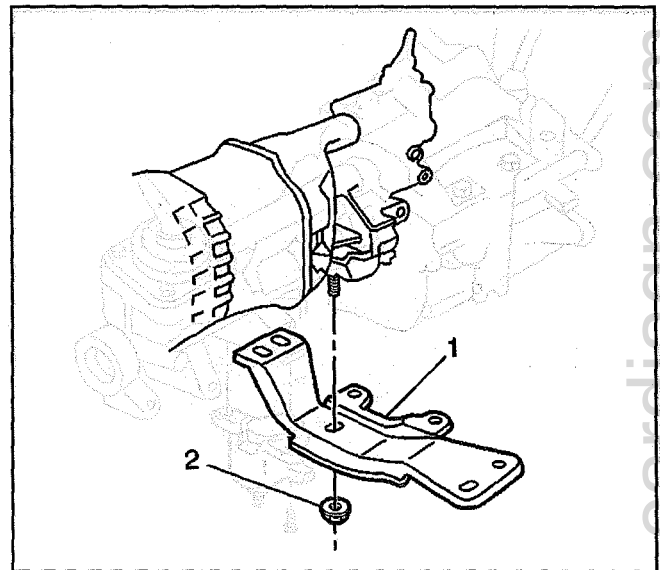
1. Install the control lever boot (1) to the control (2).
2. Install the control lever boot retainer (3).
3. Install the shift control closeout boot. Refer to *Shift Control Closeout Boot Replacement*.



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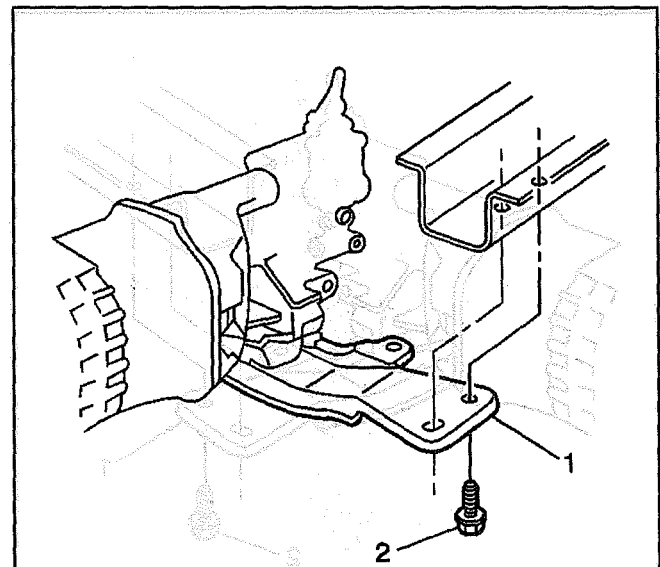
Transmission Support and Mount Assembly**Removal Procedure**

1. Raise and suitably support the vehicle. Refer to *Lifting and Jacking the Vehicle* in General Information.
2. Support the vehicle with safety stands.
3. Support the transmission with a transmission stand.
4. Remove the transmission mount nut (2).

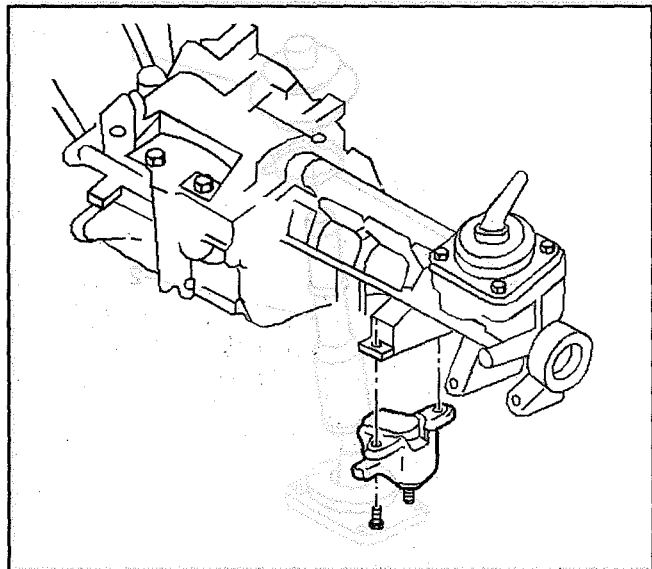


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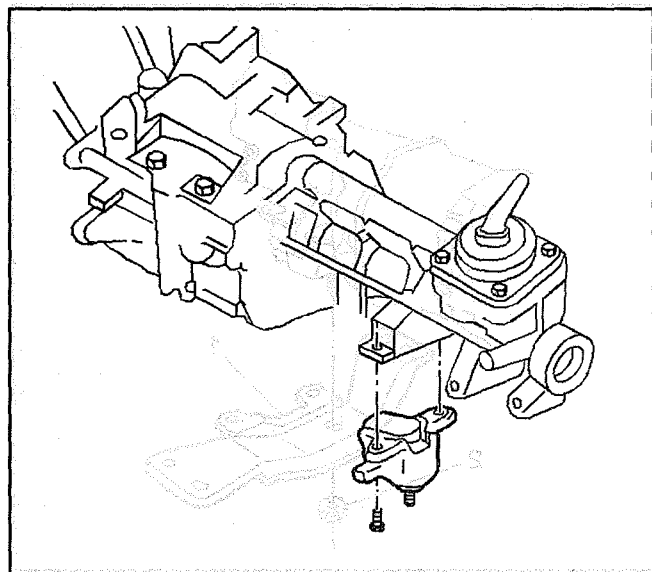
5. Remove the transmission support bolts (2).
6. Remove the transmission support (1).



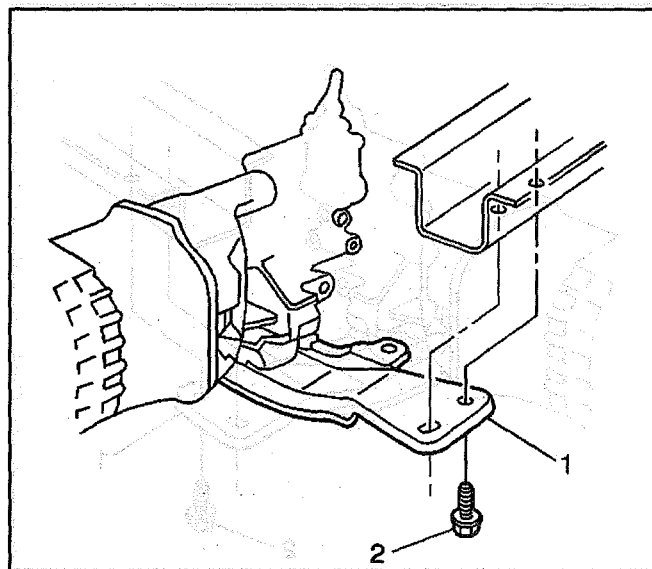
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7. Remove the transmission mount bolts.

8. Remove the transmission mount.

Installation Procedure

1. Install the transmission mount.

Notice: Refer to *Fastener Notice* in Cautions and Notices.

2. Install the transmission mount bolts

Tighten

Tighten the transmission mount bolts to 48 N·m (36 lb ft).

3. Install the transmission support (1).

4. Install the transmission support bolts (2).

Tighten

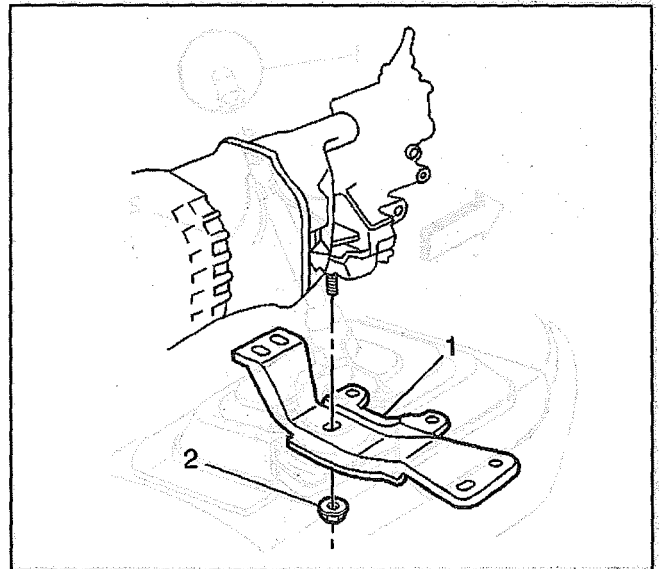
Tighten the transmission support bolts (2) to 57 N·m (43 lb ft).

5. Install the transmission mount nut (2).

Tighten

Tighten the transmission mount nut (2) to 57 N·m (43 lb ft).

6. Remove the support from the transmission.
7. Remove the vehicle safety stands.
8. Lower the vehicle.



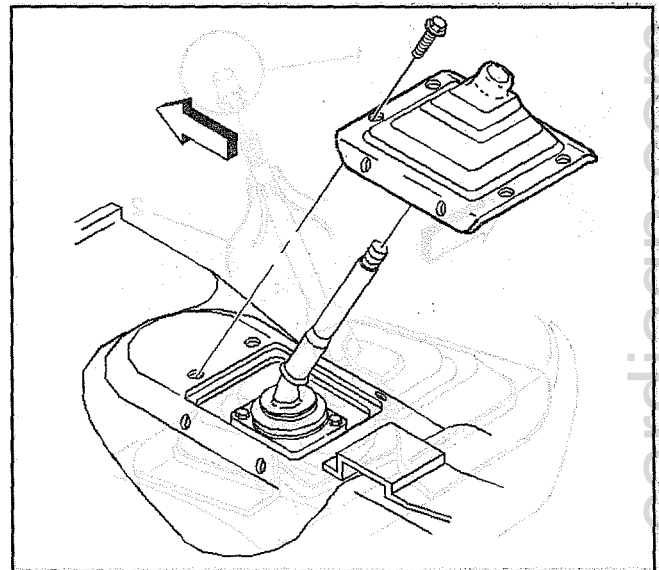
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Shift Control Closeout Boot Replacement

Removal Procedure

1. Remove the front floor console. Refer to *Console Replacement - Front Floor* in Instrument Panel, Gauges and Console.
2. Remove the control closeout boot bolts.
3. Remove the shift control closeout boot.



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Installation Procedure

1. Install the shift control closeout boot.

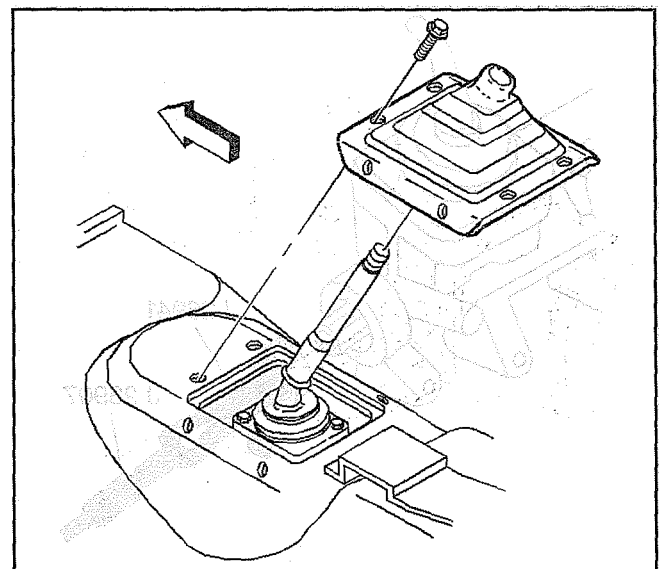
Notice: Refer to *Fastener Notice* in Cautions and Notices.

2. Install the shift control closeout boot bolts.

Tighten

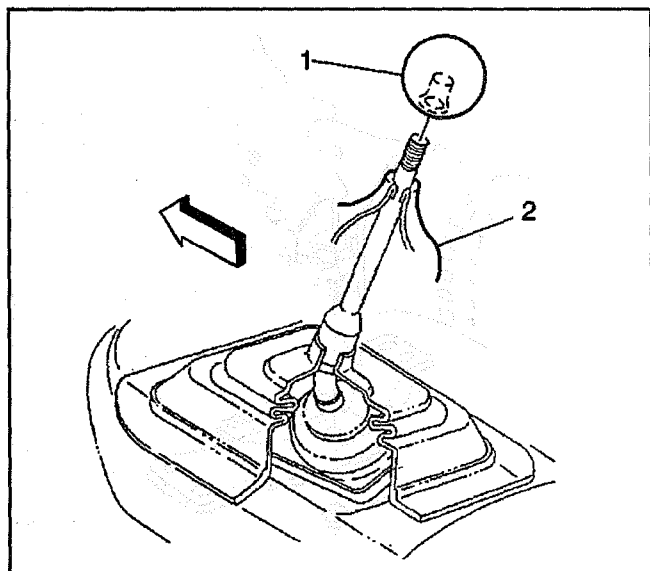
Tighten the shift control closeout boot bolts to 2 N·m (18 lb in).

3. Install the front floor console trim plate. Refer to *Console Replacement - Front Floor* in Instrument Panel, Gauges and Console.



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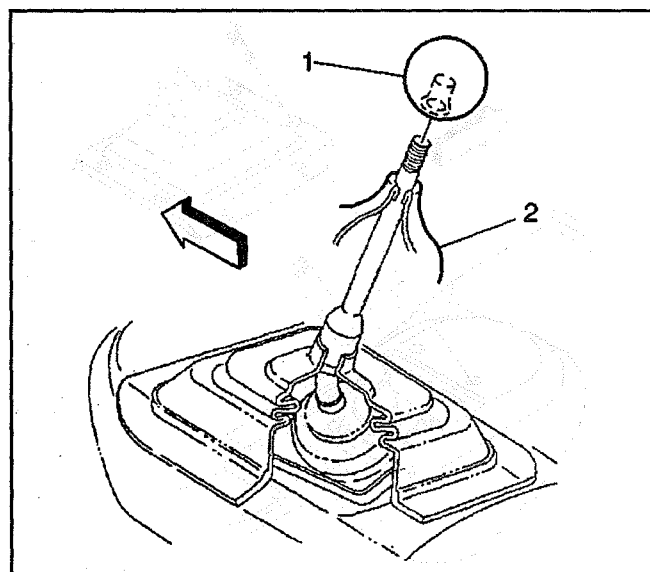


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Shift Control Knob Replacement

Removal Procedure

1. Set the park brake.
2. Place the transmission in neutral.
3. Unscrew the shift control knob (1) from the control.



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Installation Procedure

1. Push the boot (2) down to access the control threads.

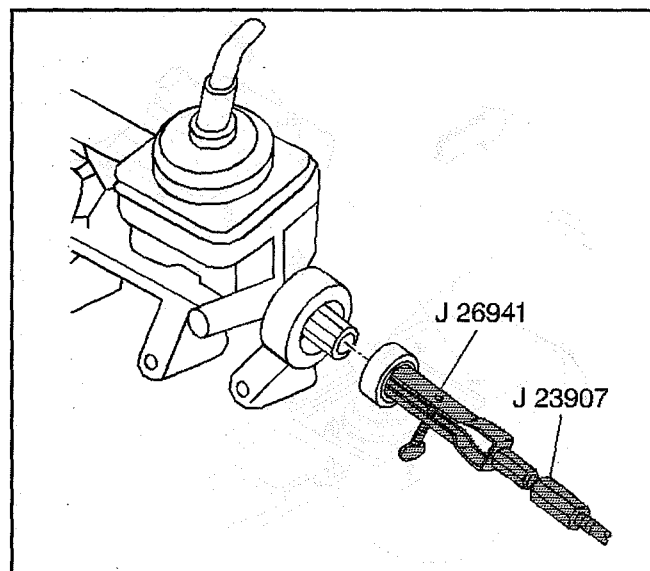
Notice: Refer to *Fastener Notice* in Cautions and Notices.

2. Install the shift control knob (1) to the control.

Tighten

Tighten the shift control knob to 3 N·m (27 lb in).

3. Release the park brake.



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Mainshaft Rear Oil Seal

Removal Procedure

Tools Required

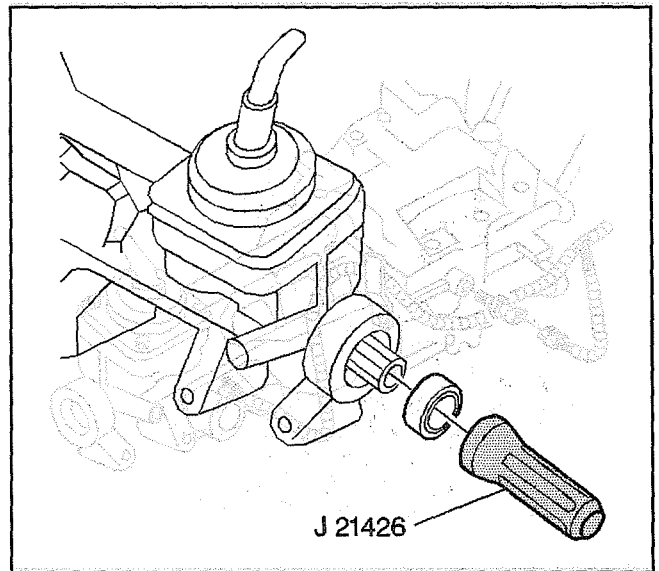
- J 23907 Slide Hammer
- J 26941 Extension Housing Seal Remover

1. Remove the propeller shaft. Refer to *Propeller Shaft Replacement - One Piece* or *Propeller Shaft Replacement - Two Piece* in Propeller Shaft.
2. Remove the output shaft seal using J 23907 and J 26941.

Installation Procedure**Tools Required**

J 21426 Extension Housing Seal Installer

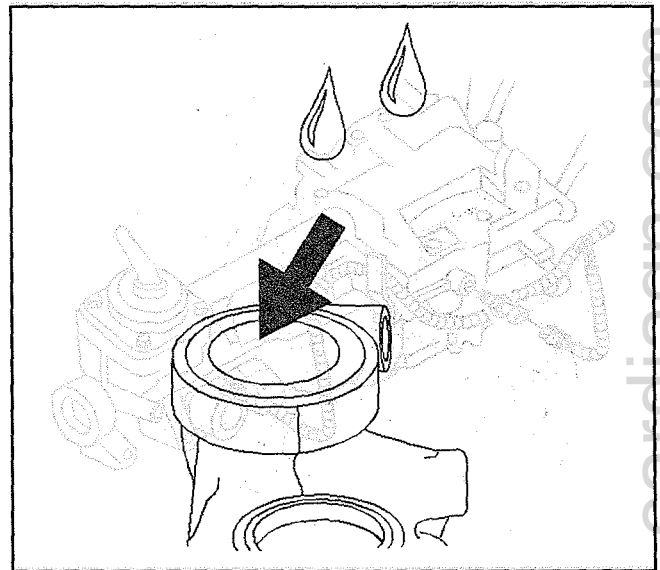
1. Install the output shaft seal using J 21426.



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2. Lubricate the inside diameter of the seal. Use Dexron III automatic transmission fluid or equivalent.
3. Install the propeller shaft. Refer to *Propeller Shaft Replacement - Two Piece* or *Propeller Shaft Replacement - One Piece* in Propeller Shaft.
4. Check the transmission fluid level. Refer to *Manual Transmission Fluid Level Check*.

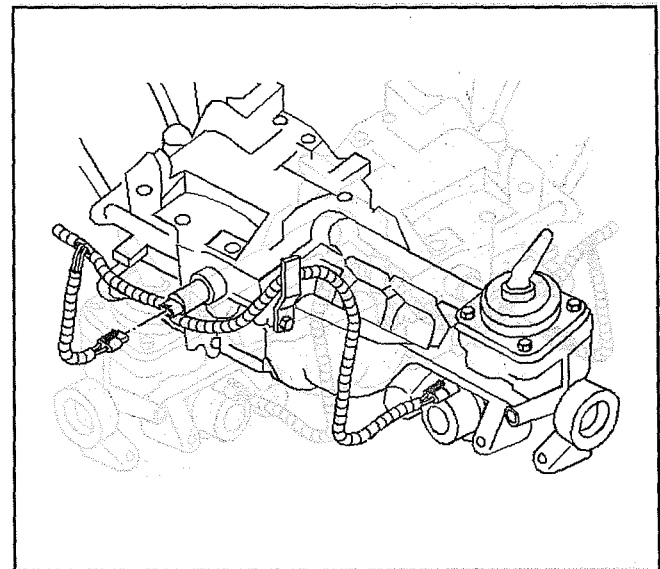


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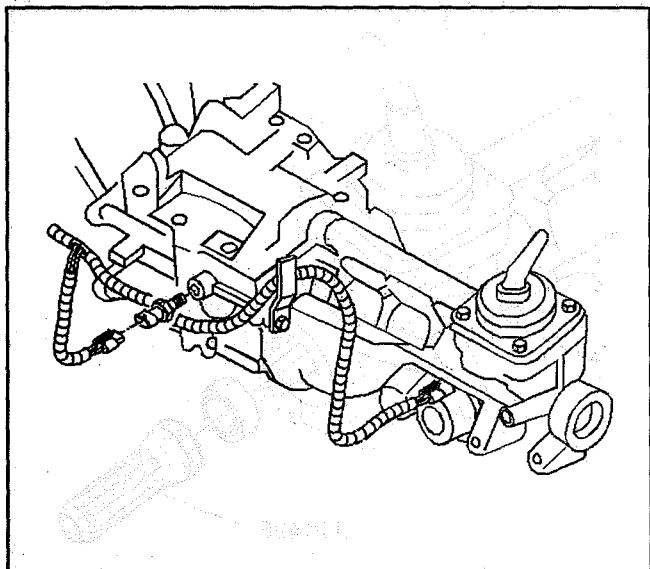
Backup Lamp Switch Replacement**Removal Procedure**

1. Disconnect the backup lamp switch electrical connector.
2. Raise and suitably support the vehicle. Refer to *Lifting and Jacking the Vehicle*.

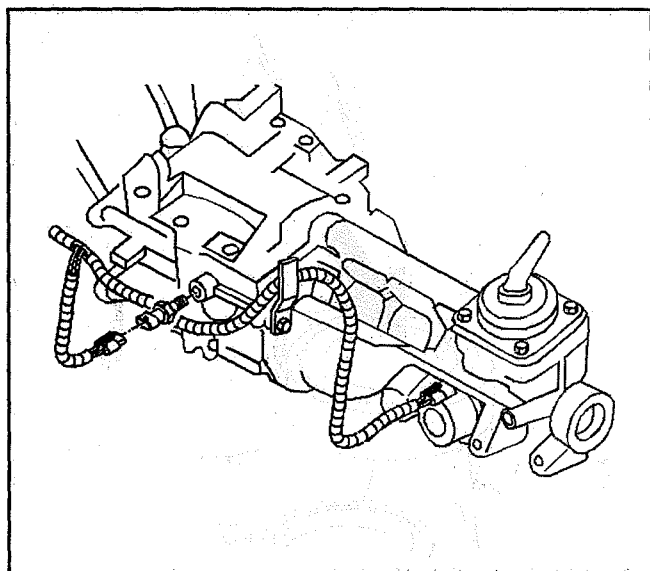


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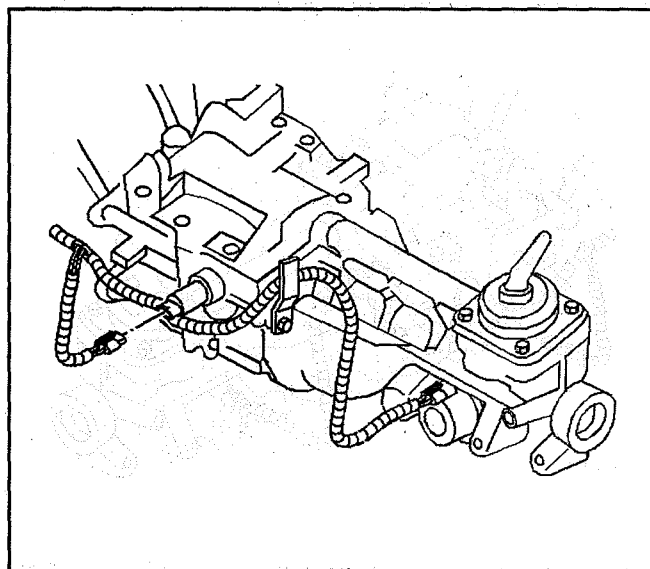
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3. Remove the backup lamp switch.

Installation Procedure

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

Notice: Refer to *Fastener Notice* in Cautions and Notices.

2. Install the backup lamp switch.

Tighten

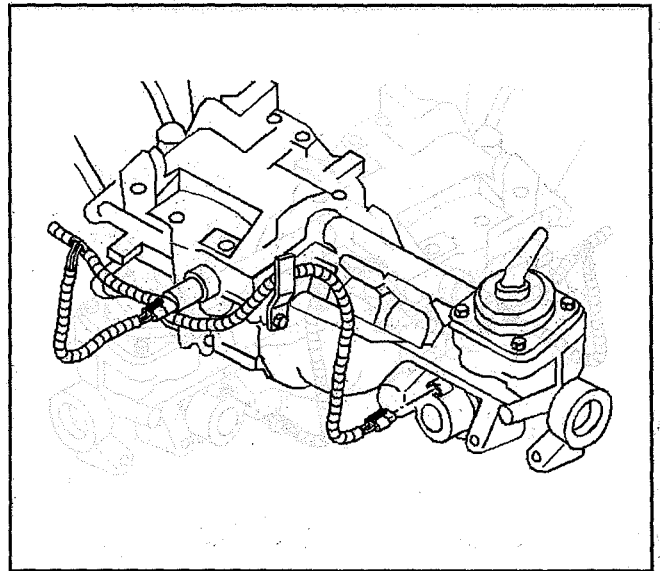
Tighten the backup lamp switch to 38 N·m (28 lb ft).

3. Connect the backup lamp switch electrical connector.
4. Lower the vehicle.

Vehicle Speed Sensor

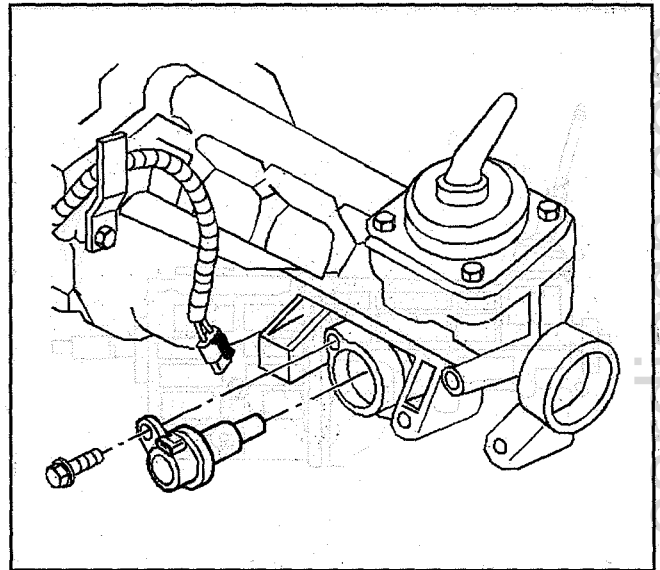
Removal Procedure

1. Raise and suitably support the vehicle. Refer to *Lifting and Jacking the Vehicle* in General Information.
2. Disconnect the speed sensor electrical connector.



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3. Remove the speed sensor bolt.
4. Remove the vehicle speed sensor.
5. Remove the speedometer driven gear, if necessary.



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Installation Procedure

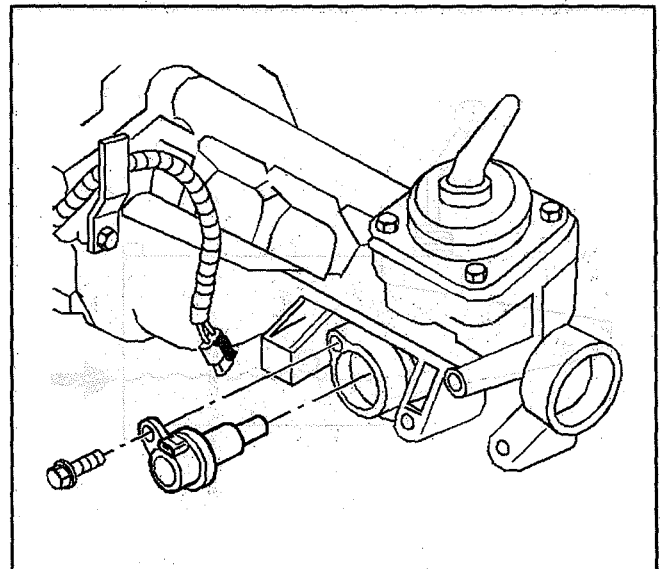
1. Install the speedometer driven gear, if necessary.
2. Install the vehicle speed sensor.

Notice: Refer to *Fastener Notice* in Cautions and Notices.

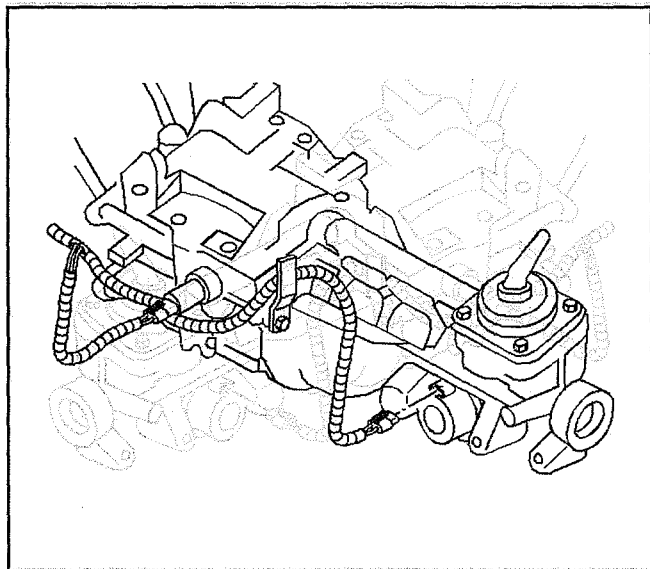
3. Install the speed sensor bolt.

Tighten

Tighten the speed sensor bolt to 10 N·m (89 lb in).

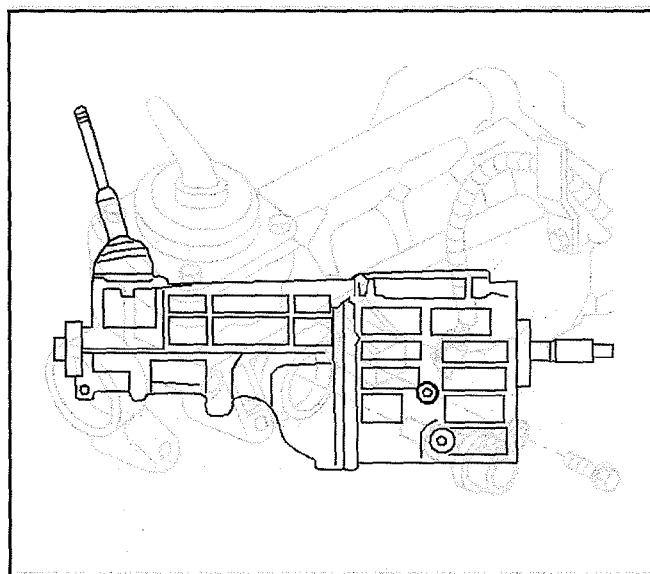


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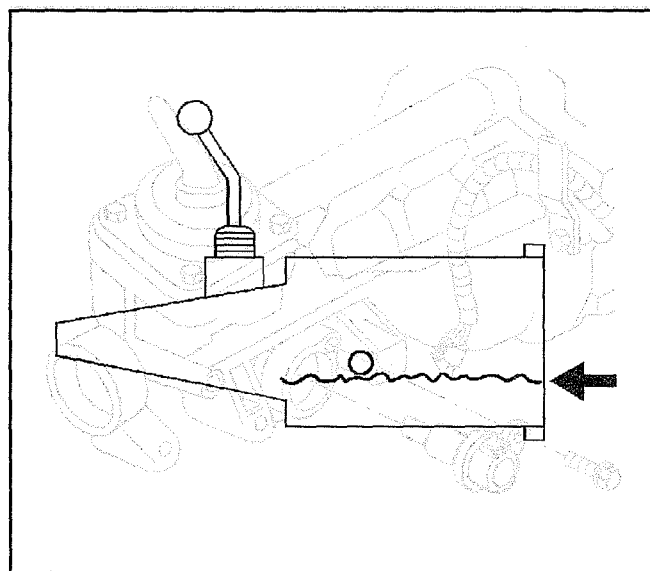
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4. Connect the speed sensor electrical connector.

5. Lower the vehicle.

1. Raise and suitably support the vehicle. Refer to *Lifting and Jacking the Vehicle* in General Information.
2. Disconnect the speed sensor electrical connector.

Transmission Oil Drain and Fill

Draining Procedure

1. Raise and suitably support the vehicle. Refer to *Lifting and Jacking the Vehicle* in General Information.
2. Clean away all dirt and debris from the transmission fluid drain plug area.
3. Remove the drain plug.
4. Allow the system to drain.

Notice: Refer to *Fastener Notice* in Cautions and Notices.

5. Install the transmission fluid drain plug.

Tighten

Tighten the transmission case drain plug to 27 N·m (20 lb ft).

Filling Procedure

1. Clean away all dirt and debris from the transmission fluid fill plug area.
2. Remove the 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.

Tighten

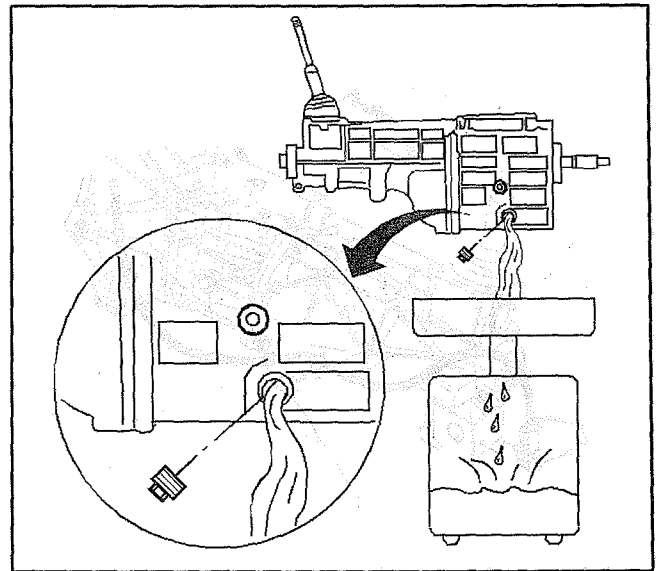
Tighten the transmission case fill plug to 27 N·m (20 lb ft).

5. Lower the vehicle.

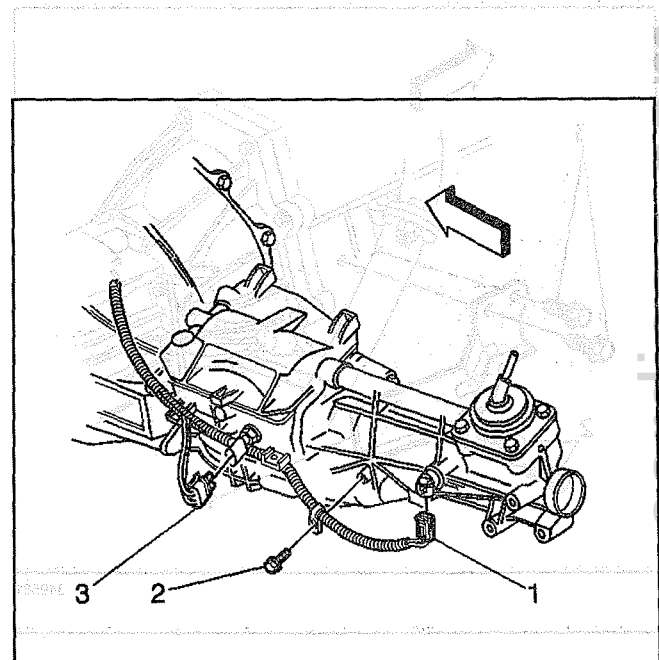
Transmission Replacement

Tools Required

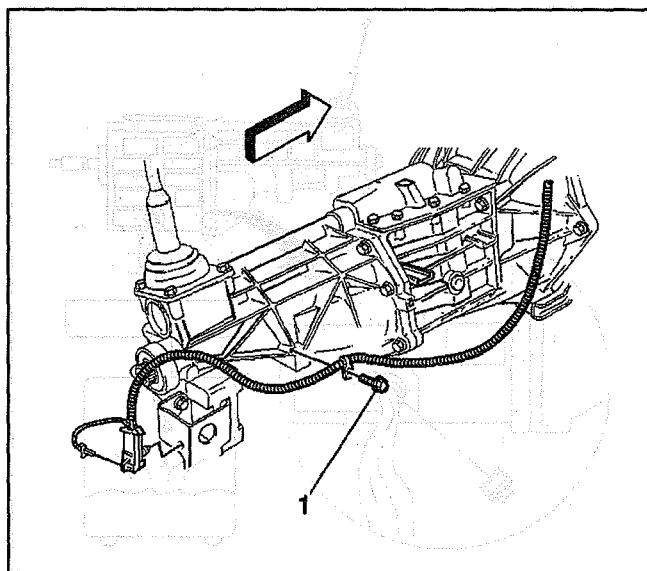
- J 3289-20 Bench Mount Holding Fixture Base
 - J 36842 Transmission Holding Fixture
 - J 42055 Transmission Support Fixture
 - J 36221 Hydraulic Clutch Line Separator
1. Remove the control assembly. Refer to *Shift Control Assembly Replacement*.
 2. Raise and suitably support the vehicle. Refer to *Lifting and Jacking the Vehicle* in General Information.
 3. Drain the transmission fluid.
 4. Remove the propeller shaft. Refer to *Propeller Shaft Replacement - One Piece* or *Propeller Shaft Replacement - Two Piece* in Propeller Shaft.
 5. Support the rear axle with jack stands.
 6. Remove the rear axle torque arm. Refer to *Torque Arm Replacement* in Rear Suspension.
 7. Remove the catalytic converter. Refer to *Catalytic Converter Replacement (3.8 L)* in Engine Exhaust.
 8. Disconnect the wire harness connectors from the speed sensor (1) and the backup lamp switch (3) on the left side.
 9. Remove the wiring harness clip bolt (2).



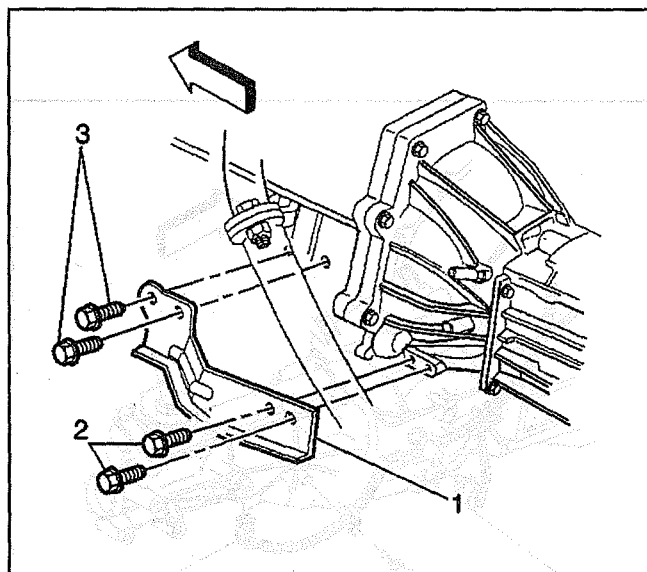
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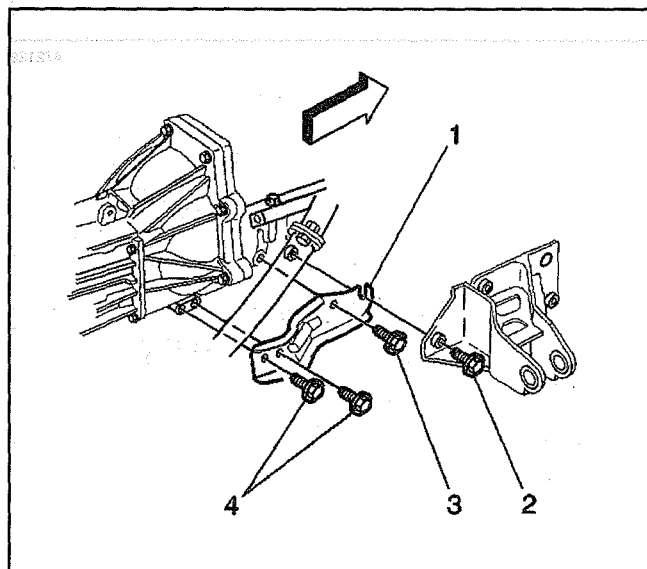
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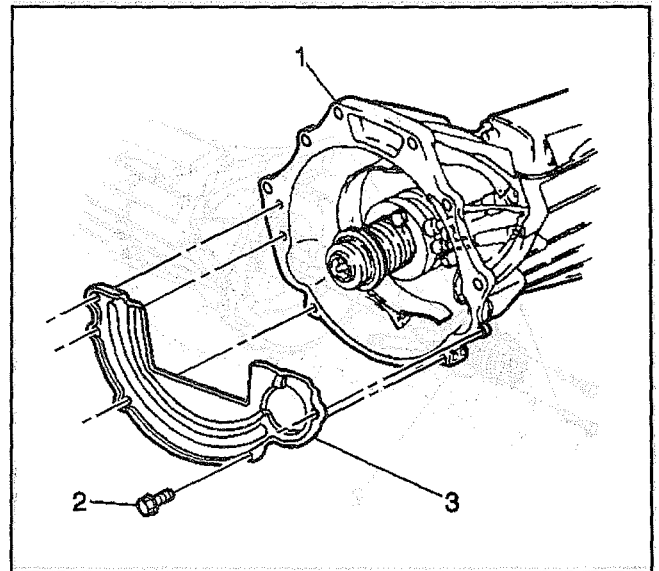
448855

10. Remove the wiring harness clip bolt (1) from the right side.
11. Remove the starter motor. Refer to *Starter Motor Replacement (3.8 L)* in Engine Electrical.

12. Remove the left transmission brace bolts (2, 3).
13. Remove the left transmission brace (1).

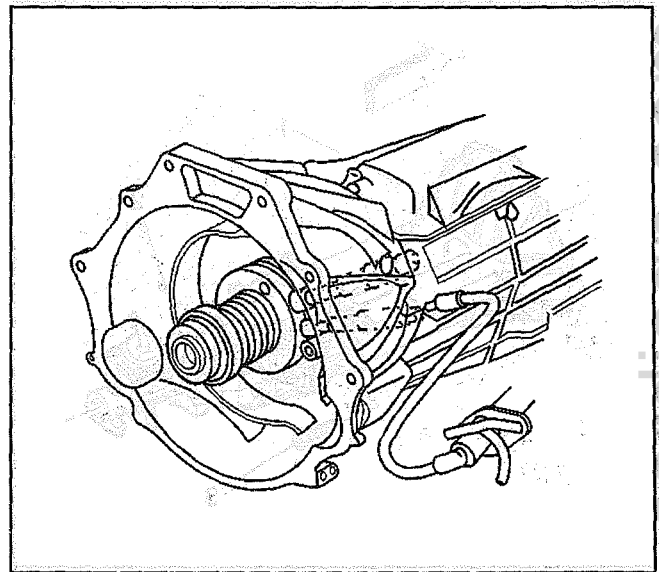
14. Remove the right transmission brace bolts (2, 3, 4).
15. Remove the right transmission brace (1).

16. Remove the flywheel housing cover bolts (2).
17. Remove the flywheel housing cover (3) from the transmission (1).



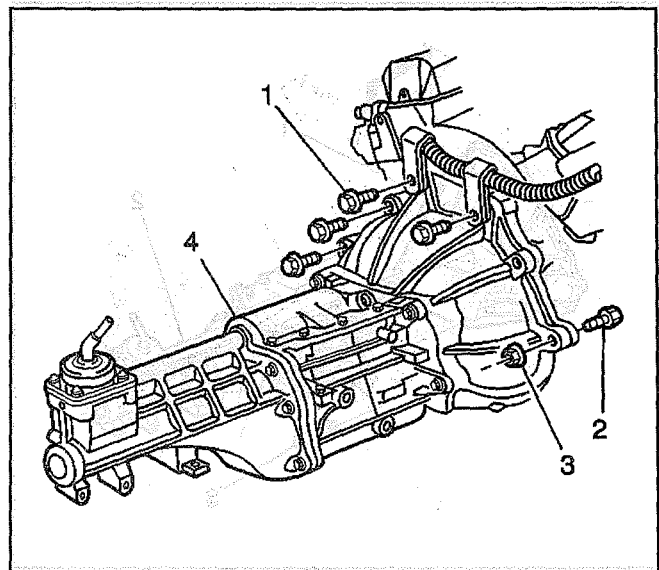
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18. Using *J 36221*, depress the white circular release ring on the actuator cylinder hose and simultaneously pull lightly on the master cylinder hose to disconnect.
19. Protect both hose coupling ends from dirt and damage.
20. Support the engine with a safety stand.
21. Install the *J 42055* to the transmission jack.
22. Support the transmission with the transmission jack.
23. Remove the transmission support and mount. Refer to *Transmission Support and Mount Assembly*.

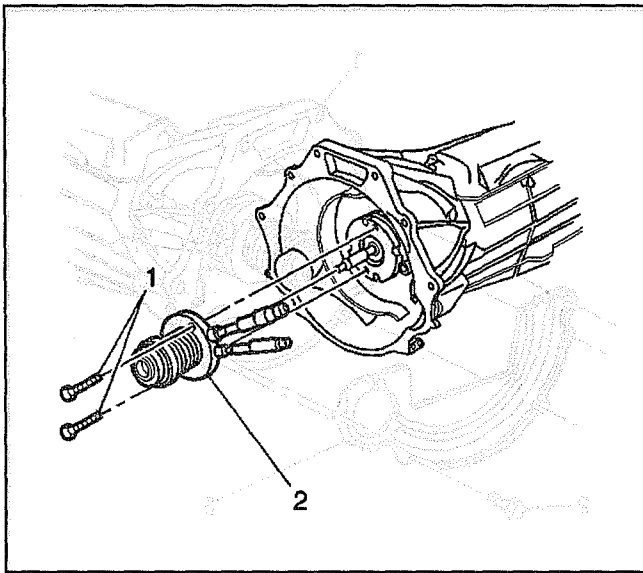


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24. Remove the flywheel housing bolts (1, 2) and nuts (3).
25. Slowly lower the manual transmission (4) from the vehicle.
26. Remove the vent hose from the transmission.
27. Remove the clutch bleeder from the actuating cylinder.
28. Remove the clutch line from the actuating cylinder.

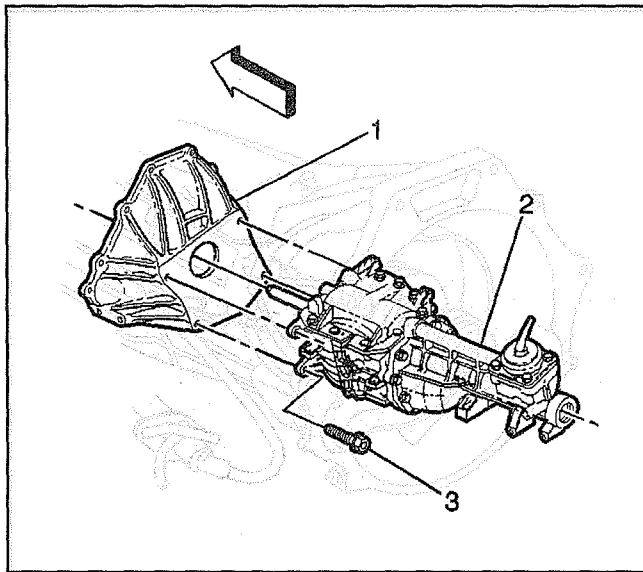


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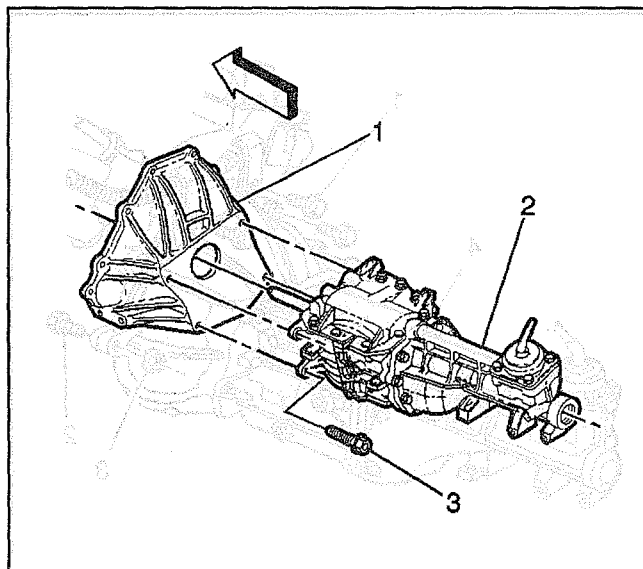
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29. Remove the clutch actuator cylinder bolts (1).
30. Remove the clutch actuator cylinder (2).



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31. Remove the transmission bolts (3).
32. Remove the bellhousing (1) from the transmission (2).
33. Install the J 36842 to the transmission, if necessary.
34. Remove the transmission from the transmission stand.
35. Install the transmission to the J 3289-20, if necessary.



472967

Installation Procedure

1. Remove the transmission from the J 3289-20, if necessary.
2. Mount the transmission to the jack stand.
3. Remove the J 36842 from the transmission, if necessary.
4. Install the bellhousing (1) to the transmission (2).

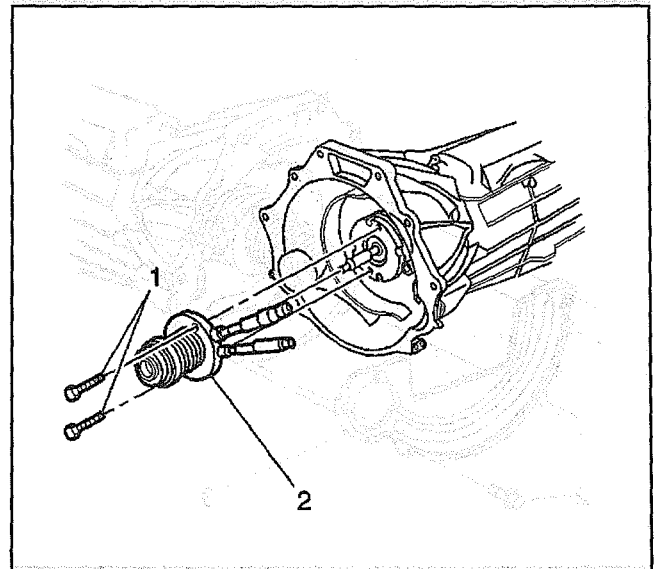
Notice: Refer to *Fastener Notice* in *Cautions and Notices*.

5. Install the transmission bolts (3).

Tighten

Tighten the transmission bolts (3) to 75 N·m (55 lb ft).

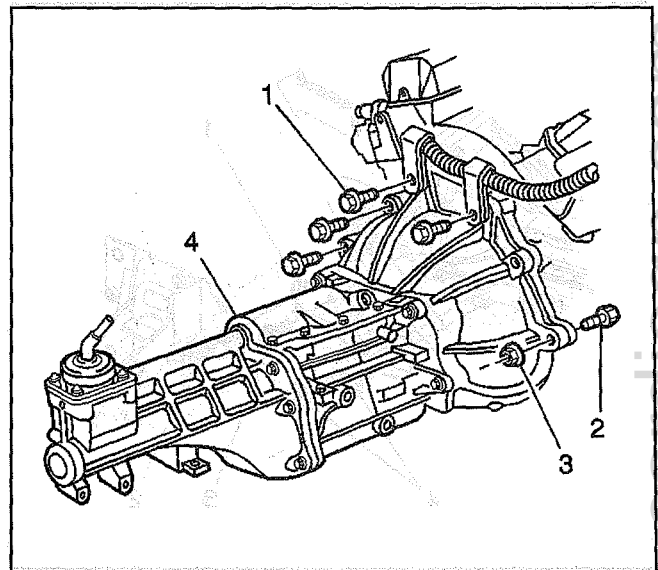
6. Install the clutch actuator cylinder (2).
 7. Install the clutch actuator cylinder bolts (1).
- Tighten**
Tighten the clutch actuator cylinder bolts (1) to 8 N·m (71 lb in).
8. Install the clutch line to the actuating cylinder.
 9. Install the clutch bleeder to the actuating cylinder.



43256

43256

10. Slowly raise the manual transmission (4) to the vehicle.
 11. Install the flywheel housing bolts (1, 2) and nuts (3).
- Tighten**
Tighten the flywheel housing bolts (1, 2) and nuts (3) to 95 N·m (70 lb ft).
12. Install the transmission support and mount. Refer to *Transmission Support and Mount Assembly*.
 13. Remove the transmission jack.
 14. Remove the J 42055 from the transmission jack.
 15. Remove the engine safety stand.

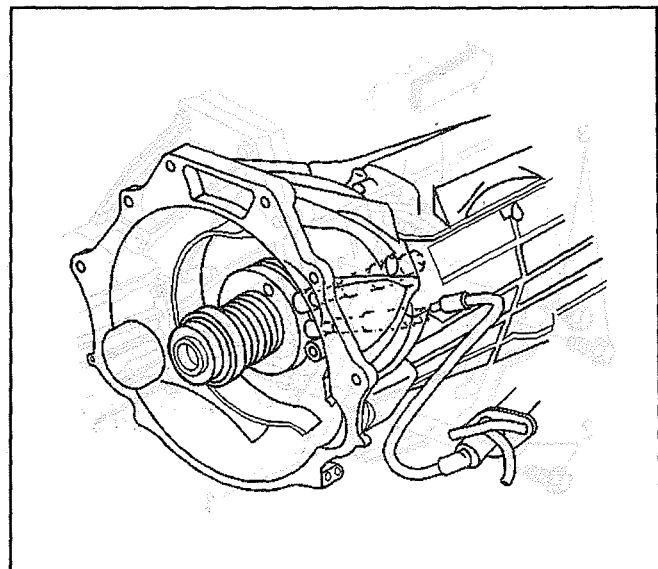


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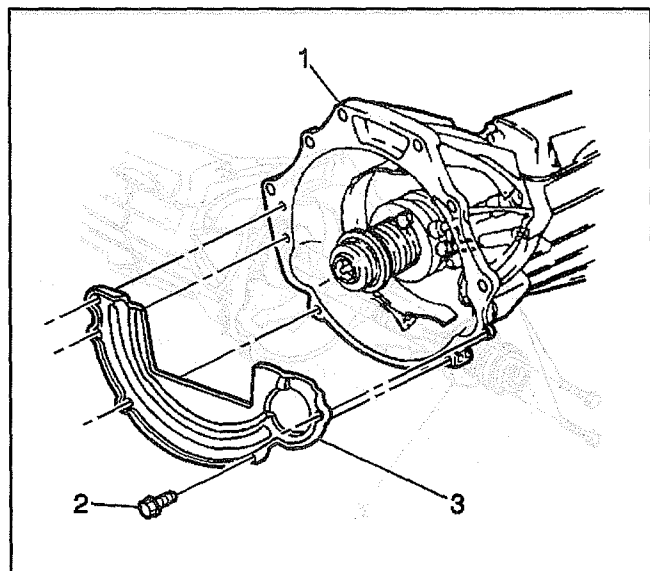
Important: DO NOT rely on an audible click or a visual verification of the clutch hydraulic hose quick connect fitting connection.

16. Connect the clutch actuator cylinder hose to the clutch master cylinder hose.
17. Push together the clutch hydraulic hose quick connect fittings, then pull back on the fittings to verify engagement.
18. Check the clutch hydraulic hoses for twists or kinks.



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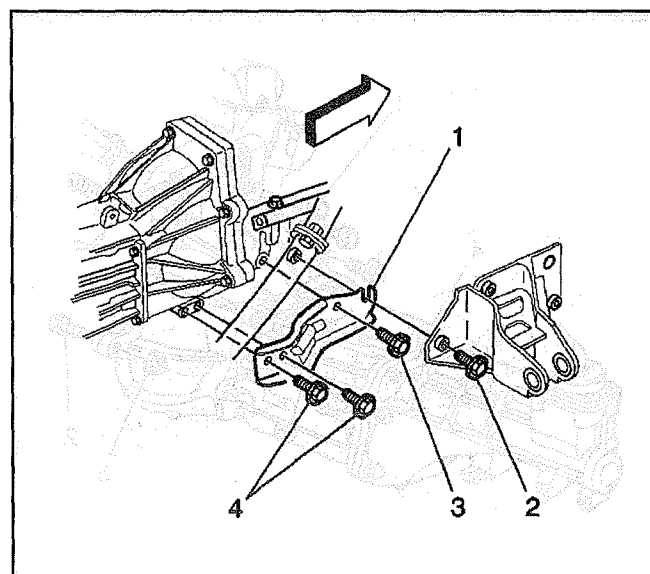


349560

19. Install the flywheel housing cover (3) to the transmission (1).
20. Install the flywheel housing cover bolts (2).

Tighten

Tighten the flywheel housing cover bolts (2) to 9 N·m (80 lb in).

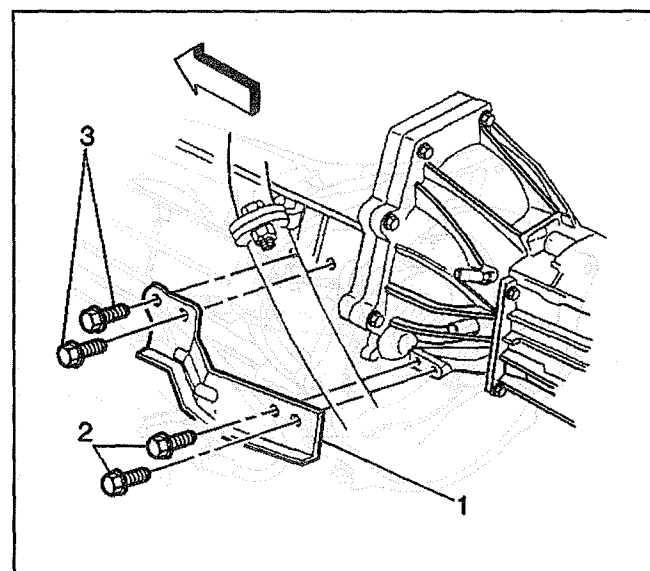


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21. Install the right transmission brace (1).
22. Install the right transmission brace bolts (2, 3, 4).

Tighten

Tighten the right transmission brace bolts (2, 3, 4) to 50 N·m (37 lb ft).



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23. Install the left transmission brace (1).
24. Install the left transmission brace bolts (2, 3).

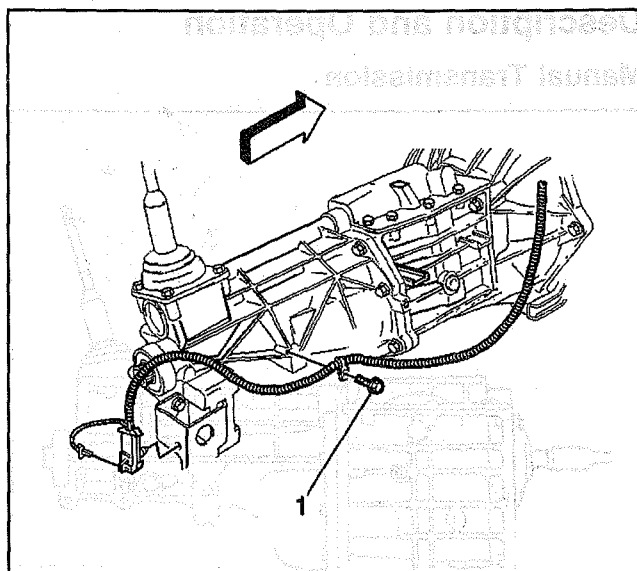
Tighten

- Tighten the left transmission brace bolts (2) (to transmission) to 50 N·m (37 lb ft).
- Tighten the left transmission brace bolts (3) (to engine) to 28 N·m (21 lb ft).

25. Install the wiring harness clip bolt (1) to the right side of the transmission.

Tighten

Tighten the wiring harness clip bolt (1) to 11 N·m (97 lb in).



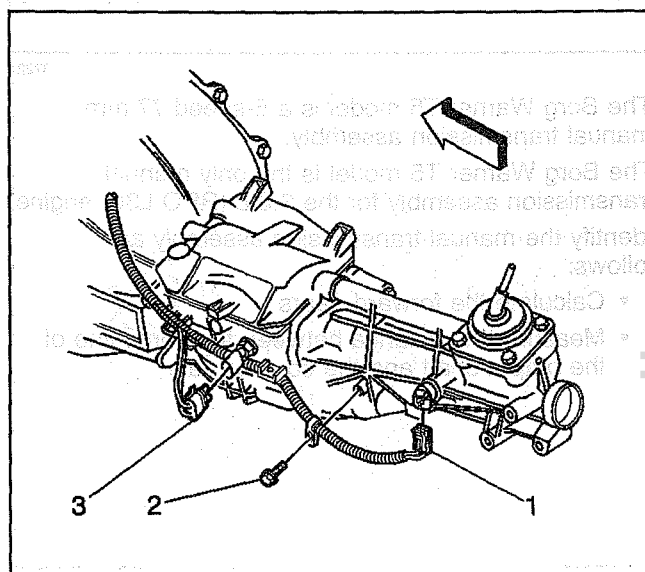
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26. Install the wiring harness clip bolt (2) to the left side of the transmission.

Tighten

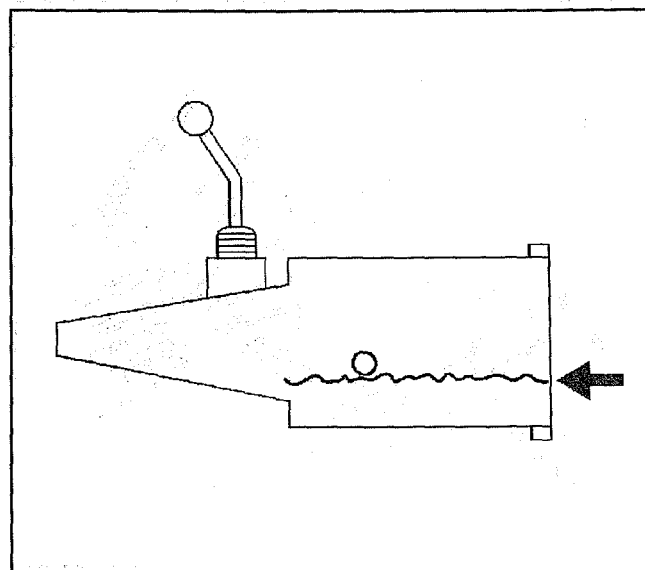
Tighten the wiring harness clip bolt (2) to 11 N·m (97 lb in).

27. Connect the speed sensor (1) and backup lamp switch (3) electrical connectors.
28. Install the catalytic converter. Refer to *Catalytic Converter Replacement (3.8 L) in Engine Exhaust*.
29. Install the propeller shaft. Refer to *Propeller Shaft Replacement - One Piece or Propeller Shaft Replacement - Two Piece in Propeller Shaft*.



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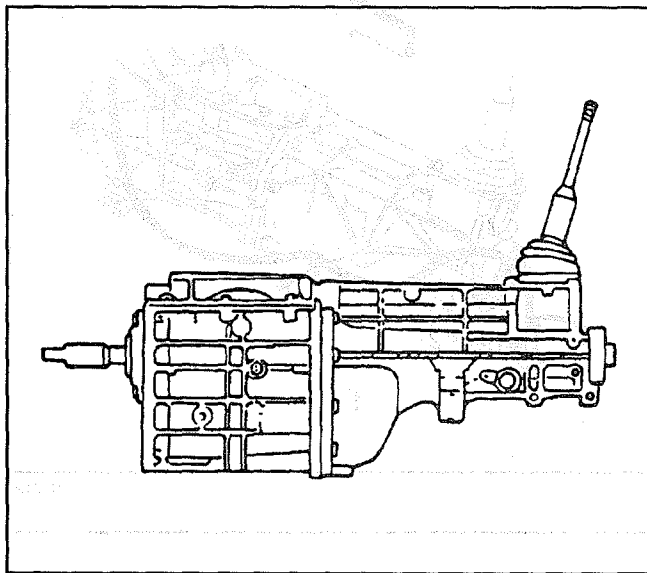
30. Fill transmission with fluid.
31. Lower the vehicle.
32. Install the control assembly. Refer to *Shift Control Assembly Replacement*.
33. Bleed the clutch hydraulic system. Refer to *Hydraulic Clutch Bleeding in Clutch*.



2327

Description and Operation

Manual Transmission



37221

The Borg Warner T5 model is a 5-speed 77 mm manual transmission assembly.

The Borg Warner T5 model is the only manual transmission assembly for the 3.8 L (RPO L36) engine.

Identify the manual transmission assembly as follows:

- Calculate the forward gears
- Measure the distance between the centerline of the output shaft and the counter gear

Notice: Use only DEXRON®-III Automatic Transmission Lubricant for this manual transmission assembly. Other lubricants or additives may damage the blocker ring friction material or the adhesives.

The Borg Warner model T5 5-speed manual transmission assembly has the following features:

- Fully synchronized
- Blocker ring synchronizers
- Sliding mesh reverse gear
- Three-piece synchronizer rings for first speed and second speed gears consisting of steel inner and outer cones and a tapered metal ring that is lined on both sides with friction material similar to automatic transmission friction plates
- Independent and separately replaced synchronizer cones
- 3RD speed and 4TH speed gear blocker rings that are conventional in appearance and are lined with friction material
- A brass 5TH speed gear blocker ring
- Tapered roller bearings that support the mainshaft and the countershaft (Must be shimmed for proper end play)
- Caged roller bearings for 1ST speed through 4TH speed gears
- A aluminum transmission case

The manual transmission control is mounted on top of the extension housing.

The manual transmission control cannot be adjusted.

The manual transmission control must be serviced independently of the manual transmission.

Special Tools and Equipment

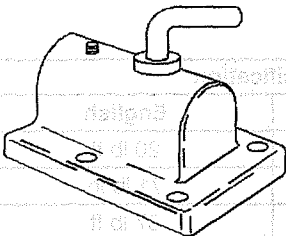
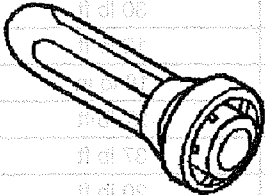
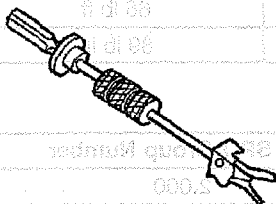
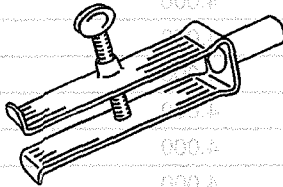
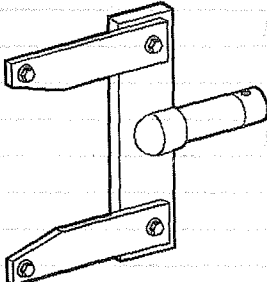
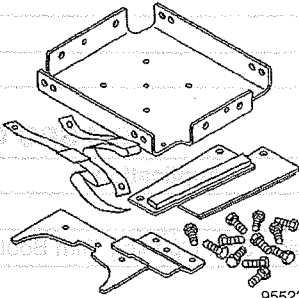
Illustration	Tool Number/ Description
 4850	J 3289-20 Bench Mount Holding Fixture Base
 1338	J 21426 Rear Extension Housing Seal Installer
 4855	J 23907 Slide Hammer
 163042	J 26941 Drive Sprocket Support Bearing Cup

Illustration	Tool Number/ Description
 105916	J 36221 Hydraulic Clutch Line Separator
 37234	J 36842 Transmission Holding Fixture
 95523	J 42055 Transmission Support Fixture

English	Metric	Application
4 7 cups	9.9 liter	Dexron™ III, IV