

SECTION 7B

MANUAL TRANSMISSION ON-VEHICLE SERVICE

RPO MM6 AND M49

NOTICE: When fasteners are removed, always reinstall them at the same location from which they were removed. If a fastener needs to be replaced, use the correct part number fastener for that application. If the correct part number fastener is not available, a fastener of equal size and strength (or stronger) may be used. Fasteners that are not reused, and those requiring thread locking compound will be called out. The correct torque value must be used when installing fasteners that require it. If the above conditions are not followed, parts or system damage could result.

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GENERAL DESCRIPTION

The 5-speed manual transmission assembly (RPO M49) is the only manual transmission assembly available for the 3.4L L32 V6 engine assembly. The 6-speed manual transmission assembly (RPO MM6) is available for the 5.7L LT1 V8 engine assembly. Manual transmission assemblies are identified by the number of forward gears and the measured distance between the centerline of the output shaft and the counter gear.

5-SPEED MANUAL TRANSMISSION ASSEMBLY (RPO M49)

The 5-speed 77 mm manual transmission assembly is a fully synchronized unit with blocker ring synchronizers and a sliding mesh reverse gear. First and second gears have three-piece synchronizer rings, 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. The cones are independent of the gears and can be replaced separately. Third and fourth gear blocker rings are more conventional in appearance,

but are also lined with friction material. The fifth gear blocker ring is brass.

NOTICE: No lubricant other than DEXRON®-II GM P/N 1051855 should be used in this manual transmission assembly. Other lubricants or additives may damage the blocker ring friction material or its adhesive.

The mainshaft and countershaft are supported on tapered roller bearings and must be shimmed for proper end play. First through fourth speed mainshaft gears ride on caged roller bearings. An aluminum transmission case houses the various gears and bearings. The manual transmission control assembly is mounted on top of the extension housing. The manual transmission control assembly cannot be adjusted and can be serviced independently of the manual transmission assembly.

6-SPEED MANUAL TRANSMISSION ASSEMBLY (RPO MM6)

The 6-speed 85 mm manual transmission assembly is a fully synchronized unit with blocker ring synchronizers and sliding mesh reverse gears.

NOTICE: No lubricant other than DEXRON®-II GM P/N 1051855 should be used in this manual transmission assembly. Other lubricants or additives may damage the blocker ring friction material or its adhesive.

The 6-speed manual transmission assembly has a reverse lockout solenoid, which operates a reverse lockout assembly to prevent the operator from accidentally shifting into reverse when the vehicle is moving forward at a speed of 5 km/h (3 mph) or more.

The 6-speed manual transmission assembly is equipped with a skip shift solenoid. This is to ensure good fuel economy and compliance with federal fuel economy standards. When shifting out of first gear, second and third gears are inhibited by the use of an electric solenoid. The following conditions must be present for this to occur:

- Coolant temperature is above 77°C (162°F).
- Vehicle speed is between 24 and 29 km/h (15 and 21 mph).
- Throttle is opened 35 percent or less.

The 6-speed manual transmission assembly also utilizes an electronic speed sensor.

Each forward gear synchronizer assembly is made up of a splined hub with three synchronizer keys, a sleeve,

and two synchronizer springs. The reverse synchronizer has a splined hub with three synchronizer keys, a sleeve, two synchronizer springs, and a reverse synchronizer retainer.

The mainshaft and countershaft are supported on tapered roller bearings. All speed gears ride on caged roller bearings. An aluminum transmission case houses the various gears and bearings.

Like the 5-speed manual transmission assembly, the 6-speed manual transmission control assembly is mounted on top of the extension housing, and can be serviced independently of the manual transmission assembly. The manual transmission control assembly cannot be adjusted. Unlike the 5-speed manual transmission assembly, the manual transmission control lever handle assembly on the 6-speed manual transmission assembly can be removed from the manual transmission control assembly. This allows for removal of the 6-speed manual transmission assembly with the manual transmission control assembly intact.

DIAGNOSIS

For diagnosis of the 5-speed 77 mm manual transmission assembly or the 6-speed 85 mm manual transmission assembly refer to the following diagnosis chart.

CONDITION	POSSIBLE CAUSE	CORRECTION
Transmission Assembly Shifts Hard	1. Incorrect clutch travel.	1. Refer to SECTION 7C.
	2. Misaligned clutch housing bore to crankshaft pilot.	2. Check alignment as necessary.
	3. Binding shift rail.	3. 5-Speed Manual Transmission Assembly – remove transmission cover and check for mispositioned selector arm roll pin, loose cover bolts, worn shift rail bores, worn shift rail, distorted oil seal, or extension housing not aligned with case. Replace worn or damaged components as necessary. 6-Speed Manual Transmission Assembly – remove, disassemble and inspect transmission. Check for worn shift bores, worn shift rail or worn shift rail bushings. Replace worn or damaged components as necessary.
	4. Internal bind in transmission assembly caused by shift forks, selector plates, or synchronizer assemblies.	4. Remove, disassemble and inspect manual transmission assembly. Replace worn or damaged components as necessary.
	5. Incorrect lubricant.	5. Drain and refill manual transmission assembly.

CONDITION	POSSIBLE CAUSE	CORRECTION
Manual Transmission Assembly Shifts Hard Into Reverse or Does Not Shift Into Reverse (6-Speed Manual Transmission Assembly)	1. No power to reverse lockout solenoid. 2. Damaged reverse lockout solenoid. Worn or broken reverse lockout mechanism. 3. Worn or broken shift linkage components. Worn or damaged synchronizer sleeve or hub.	1. Turn ignition switch to "RUN" position and check for voltage (12 volts) at the reverse lockout. 2. Remove and check function of reverse lockout assembly. Replace worn or damaged parts as necessary. 3. Remove, disassemble, and inspect manual transmission assembly. Replace worn or damaged components as necessary.
Gear Clash When Shifting From One Gear to Another	1. Incorrect clutch travel. 2. Low lubricant level or incorrect lubricant. 3. Worn or damaged control or synchronizer assemblies.	1. Refer to SECTION 7C. 2. Drain and refill manual transmission assembly. If lubricant level was low, check for leaks and repair as necessary. 3. Remove, disassemble and inspect manual transmission assembly. Replace worn or damaged components as necessary.
Noisy Transmission	1. Low lubricant level or incorrect lubricant. 2. Loose clutch housing-to-engine, or transmission-to-clutch, housing bolts. 3. Misaligned clutch housing bore to crankshaft pilot. 4. Worn or damaged control assembly, transmission gears, or bearing components.	1. Drain and refill manual transmission assembly. If lubricant level was low, check for leaks and repair as necessary. 2. Check for correct bolt torque and torque as necessary. 3. Check alignment. 4. Remove, disassemble and inspect manual transmission assembly. Replace worn or damaged components as necessary.
Jumps Out of Gear	1. Worn offset lever plastic insert or loose lever. 2. Worn or damaged control assembly, shift forks, selector plates, interlock plate, selector arm, shift rail, springs or shift cover. 3. Worn or tapered gear teeth, worn or damaged synchronizer assemblies, excessive end play caused by worn thrust washers or output shaft gears.	1. Remove control assembly and check for loose offset lever or worn insert. Replace worn or damaged components as necessary. 2. Remove, disassemble, and inspect manual transmission assembly. Replace worn or damaged components as necessary. 3. Remove, disassemble and inspect manual transmission assembly. Replace worn or damaged components as necessary.
Will Not Shift Into One Gear	1. Worn, damaged, or incorrectly assembled control assembly, selector plates, interlock plate, or selector arm. 2. Damaged or worn synchronizer sleeves or hubs.	1. Remove, disassemble, and inspect manual transmission assembly. Replace worn or damaged components as necessary. 2. Remove, disassemble, and inspect manual transmission assembly. Replace worn or damaged components as necessary.

CONDITION	POSSIBLE CAUSE	CORRECTION
Locked In One Gear, Cannot Be Shifted Out	1. Worn or broken shift rail(s). Bent or damaged shift fork.	1. Remove, disassemble, and inspect manual transmission assembly.
	2. Worn control assembly. Incorrectly assembled or broken shift mechanism. Worn or damaged gear train components.	2. Remove, disassemble, and inspect manual transmission assembly. Replace worn or damaged parts or assemble correctly.

ON-VEHICLE SERVICE

CHECKING MANUAL TRANSMISSION ASSEMBLY FLUID LEVEL

Figure 1

Remove or Disconnect

1. Raise and suitably support vehicle. Refer to SECTION 0A.

Clean

- All dirt and oil from around fill plug (10 or 11).
 - Fill plug (11) is located on right side of 5-speed manual transmission assembly.
 - Fill plug (10) is located on left side of 6-speed manual transmission assembly.
2. Fill plug (10 or 11).
 3. Fluid level should be even with bottom of fill plug hole.

Install or Connect

NOTICE: No lubricant other than DEXRON®-II GM P/N 1051855, should be used in this manual transmission assembly. Other lubricants or additives may damage the blocker ring friction material or its adhesive.

NOTICE: See “Notice” on page 7B-1 of this section.

1. Lubricant, if required.
2. Fill plug (10 or 11).

Tighten

- Fill plug (11) on 5-speed manual transmission assembly to 27 N•m (20 lb. ft.).
 - Fill plug (10) on 6-speed manual transmission assembly to 30 N•m (22 lb. ft.).
3. Lower vehicle.

TRANSMISSION SUPPORT AND TRANSMISSION MOUNT ASSEMBLY

Figure 2

The transmission mount assembly for the 5-speed manual transmission assembly is similar to the transmission mount assembly for the 6-speed manual transmission assembly. The difference between the two mount assem-

blies is the shape. The removal and installation procedure for the two different mount assemblies will be the same.

Remove or Disconnect

CAUTION: Refer to “Caution” under “Disconnecting the Battery Negative Cable Assembly” in SECTION 0A.

1. Battery negative cable assembly.
2. Raise and suitably support vehicle. Refer to SECTION 0A.
3. Support manual transmission assembly (1 or 2) with transmission stand.
4. Transmission mount nut (16) and washer (17) from transmission mount assembly (13).
5. Transmission support bolts/screws (15) from rail assembly.
6. Transmission support (14).
7. Transmission mount bolts/screws (18) from manual transmission assembly (1 or 2).
8. Transmission mount assembly (13).

Install or Connect

NOTICE: See “Notice” on page 7B-1 of this section.

1. Transmission mount assembly (13) to manual transmission assembly (1 or 2).
2. Transmission mount bolts/screws (18).

Tighten

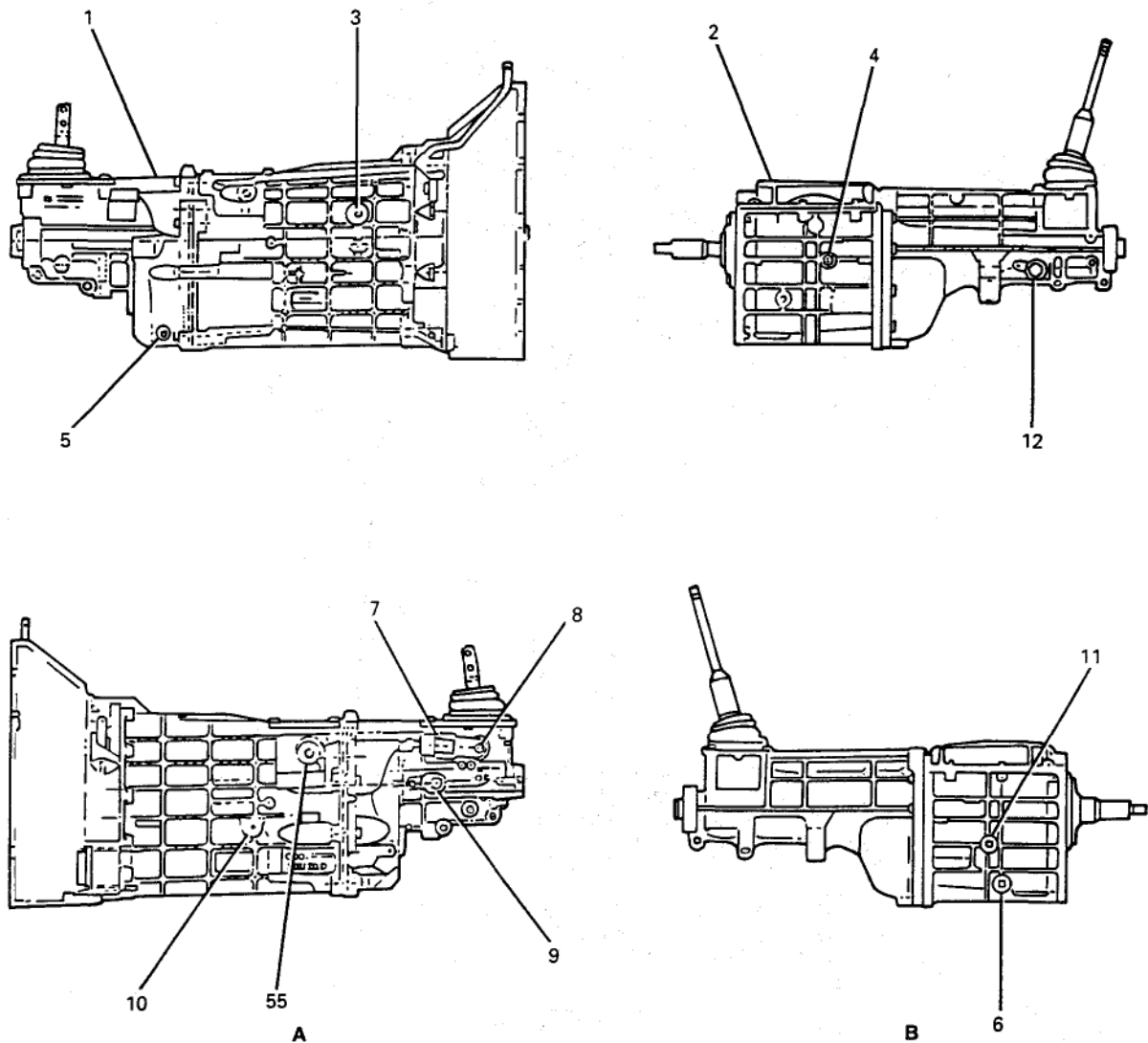
- Transmission mount bolts/screws (18) to 54 N•m (40 lb. ft.).
3. Transmission support (14) to rail assemblies.
 4. Transmission support bolts/screws (15).

Tighten

- Transmission support bolts/screws (15) to 58 N•m (43 lb. ft.).
5. Transmission mount washer (17) and nut (16).

Tighten

- Transmission mount nut (16) to 47 N•m (35 lb. ft.).
6. Remove transmission stand supporting manual transmission assembly (1 or 2).
 7. Lower vehicle.

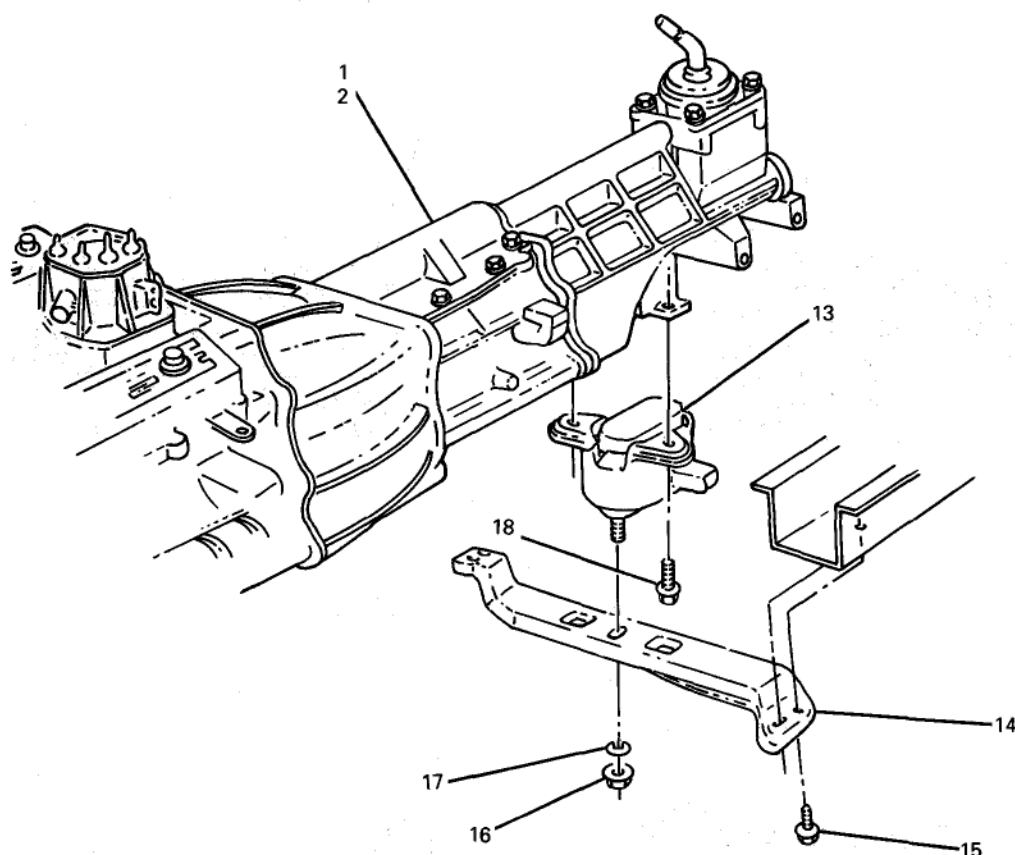


A 6-SPEED MANUAL TRANSMISSION COMPONENT LOCATIONS

B 5-SPEED MANUAL TRANSMISSION COMPONENT LOCATIONS

- 1 TRANSMISSION ASSEMBLY, 6-SPEED MANUAL
- 2 TRANSMISSION ASSEMBLY, 5-SPEED MANUAL
- 3 SWITCH ASSEMBLY, BACKUP LAMP (6-SPEED)
- 4 SWITCH ASSEMBLY, BACKUP LAMP (5-SPEED)
- 5 PLUG, TRANSMISSION OIL DRAIN (6-SPEED)
- 6 PLUG, TRANSMISSION OIL DRAIN (5-SPEED)
- 7 SOLENOID, REVERSE LOCKOUT (6-SPEED)
- 8 LOCKOUT ASSEMBLY, REVERSE (6-SPEED)
- 9 SENSOR, ELECTRONIC SPEED (6-SPEED)
- 10 PLUG, TRANSMISSION OIL FILL (6-SPEED)
- 11 PLUG, TRANSMISSION OIL FILL (5-SPEED)
- 12 SENSOR ASSEMBLY, SPEED (5-SPEED)
- 55 SOLENOID, SKIP SHIFT (6-SPEED)

Figure 1 – Manual Transmission Assembly Component Locations



- 1 TRANSMISSION ASSEMBLY, 6-SPEED MANUAL
- 2 TRANSMISSION ASSEMBLY, 5-SPEED MANUAL
- 13 MOUNT ASSEMBLY, TRANSMISSION
- 14 SUPPORT, TRANSMISSION
- 15 BOLT/SCREW, TRANSMISSION SUPPORT, 58 N•m (43 LB. FT.)
- 16 NUT, TRANSMISSION MOUNT, 47 N•m (35 LB. FT.)
- 17 WASHER, TRANSMISSION MOUNT
- 18 BOLT/SCREW, TRANSMISSION MOUNT, 54 N•m (40 LB. FT.)

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Figure 2 – Transmission Support and Transmission Mount Assembly (Typical)

8. Battery negative cable assembly.

MANUAL TRANSMISSION CONTROL LEVER BOOT ASSEMBLY

Figures 3 and 4

Remove or Disconnect

1. Front floor console trim plate assembly. Refer to SECTION 8C.
2. Handle bolts/screws (27), for 6-speed manual transmission assembly.
3. Handle assembly (26), for 6-speed manual transmission assembly.
4. Boot bolts/screws (22 or 23).
5. Boot assembly (24 or 25) from front compartment floor pan assembly (44 or 51).

Install or Connect

NOTICE: See "Notice" on page 7B-1 of this section.

1. Boot assembly (24 or 25) to front compartment floor pan assembly (44 or 51).
2. Boot bolts/screws (22 or 23).

Tighten

- Boot bolts/screws (22 or 23) to 1.7 N•m (15 lb. in.).
3. Handle assembly (26) to control assembly (20).
 4. Handle bolts/screws (27).

Tighten

- Handle bolts/screws (27) to 25 N•m (18 lb. ft.).
5. Front floor console trim plate assembly. Refer to SECTION 8C.

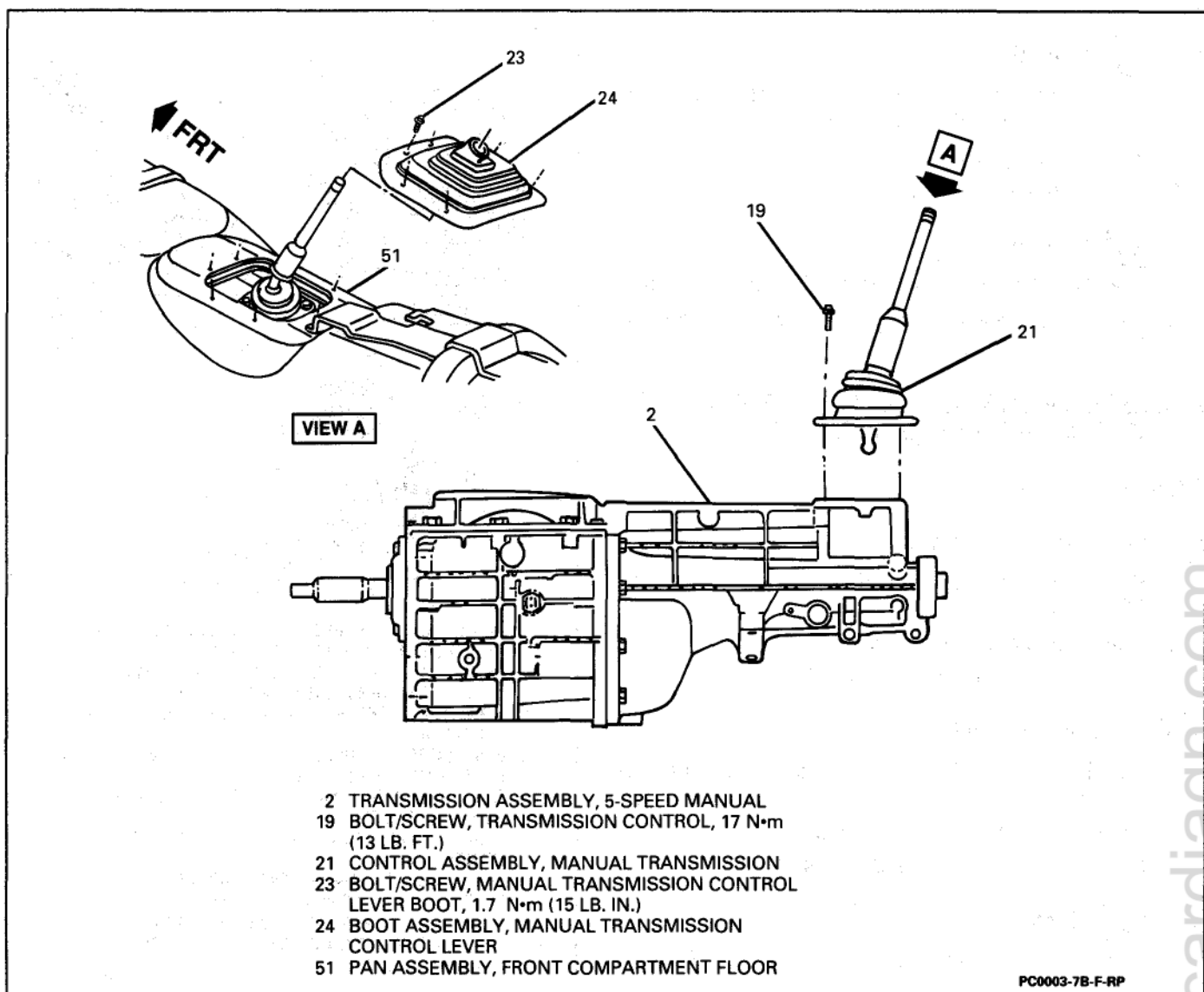


Figure 3 – Manual Transmission Control Lever Boot Assembly (5-Speed)

MANUAL TRANSMISSION CONTROL ASSEMBLY (5-SPEED)

Figure 3

Remove or Disconnect

1. Front floor console trim plate assembly. Refer to SECTION 8C.
2. Boot bolts/screws (23).
3. Boot assembly (24).
4. Transmission control bolts/screws (19).
5. Control assembly (21).

NOTICE: The upper and lower transmission control levers are bonded together. Separation of the levers will cause damage, requiring replacement of the transmission control assembly.

Install or Connect

NOTICE: See "Notice" on page 7B-1 of this section.

Clean

- Sealant from manual transmission extension housing.
 - Sealant from control assembly (21), if reinstalling.
1. Apply a continuous 3 mm (1/8-inch) bead of RTV Sealant GM P/N 12345739, or equivalent to manual transmission extension housing-to-control assembly sealing surface.
 2. Control assembly (21).
 3. Transmission control bolts/screws (19).

Tighten

- Transmission control bolts/screws (19) to 17 N•m (13 lb. ft.).
4. Boot assembly (24).
 5. Boot bolts/screws (23).

Tighten

- Boot bolts/screws (23) to 1.7 N•m (15 lb. in.).
6. Front floor console trim plate assembly. Refer to SECTION 8C.

MANUAL TRANSMISSION CONTROL LEVER HANDLE ASSEMBLY (6-SPEED)

Figure 4

Remove or Disconnect

1. Front floor console trim plate assembly. Refer to SECTION 8C.
2. Control lever handle bolts/screws (27).
3. Control lever handle assembly (26).

Install or Connect

NOTICE: See "Notice" on page 7B-1 of this section.

1. Control lever handle assembly (26).
2. Control lever handle bolts/screws (27).

Tighten

- Control lever handle bolts/screws (27) to 25 N•m (18 lb. ft.).
3. Front floor console trim plate assembly. Refer to SECTION 8C.

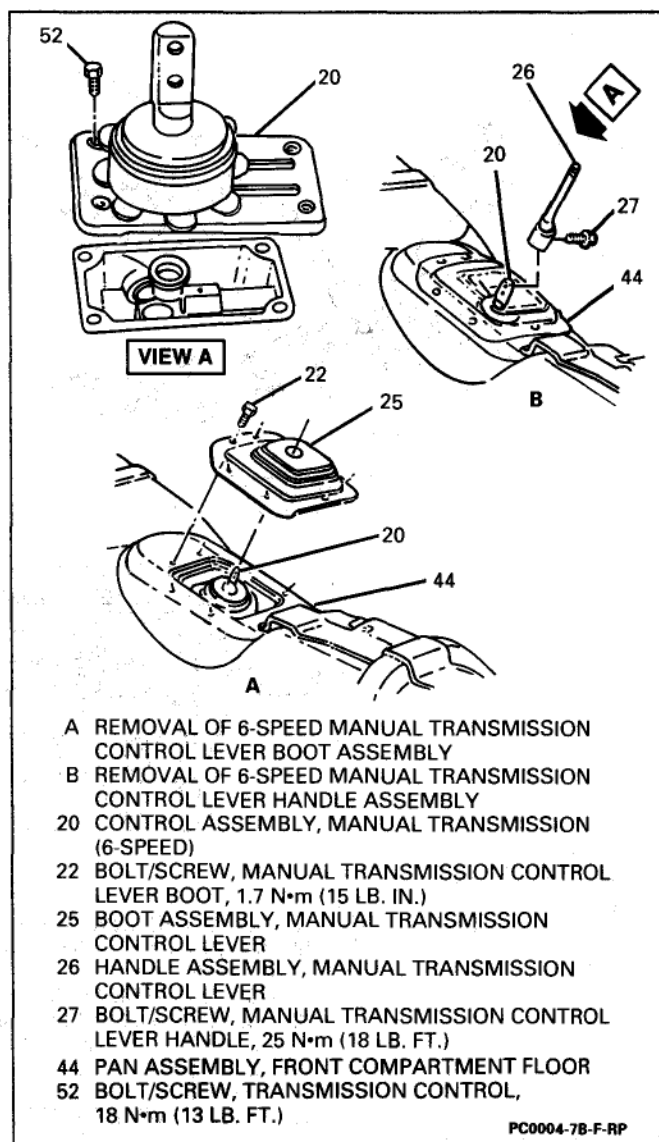


Figure 4 – Manual Transmission Control, Handle, and Boot Assemblies (6-Speed)

MANUAL TRANSMISSION CONTROL ASSEMBLY (6-SPEED)

Figure 4

Remove or Disconnect

1. Front floor console trim plate assembly. Refer to SECTION 8C.
2. Handle bolts/screws (27).
3. Handle assembly (26).
4. Boot bolts/screws (22).
5. Boot assembly (25).
6. Transmission control bolts/screws (52).
7. Control assembly (20).

Install or Connect

NOTICE: See "Notice" on page 7B-1 of this section.

Clean

- Sealant from manual transmission extension housing.
 - Sealant from control assembly (20), if reinstalling.
1. Apply a continuous 3 mm (1/8-inch) bead of RTV Sealant GM P/N 12345739, or equivalent to manual transmission extension housing-to-control assembly sealing surface.
 2. Control assembly (20).
 3. Transmission control bolts/screws (52).

Tighten

- Transmission control bolts/screws (52) to 18 N•m (13 lb. ft.).
4. Boot assembly (25).
 5. Boot bolts/screws (22).

 Tighten

- Boot bolts/screws (22) to 1.7 N•m (15 lb. in.).
6. Handle assembly (26) to control assembly (20).
 7. Handle bolts/screws (27).

 Tighten

- Handle bolts/screws (27) to 25 N•m (18 lb. ft.)
8. Front floor console trim plate assembly. Refer to SECTION 8C.

OUTPUT SHAFT SEAL

The output shaft seal for the 5-speed manual transmission assembly is similar to the output shaft seal for the 6-speed manual transmission assembly. While there are differences in the design, the removal and installation procedures for the two different output shaft seals is essentially the same. The only difference is the installation tool used to install the different seals.

Figures 5 and 6

Tools Required:

- J 23907 Slide Hammer
- J 26941 Extension Housing Seal Remover
- J 21426 Extension Housing Seal Installer, 5-Speed Manual Transmission Assembly

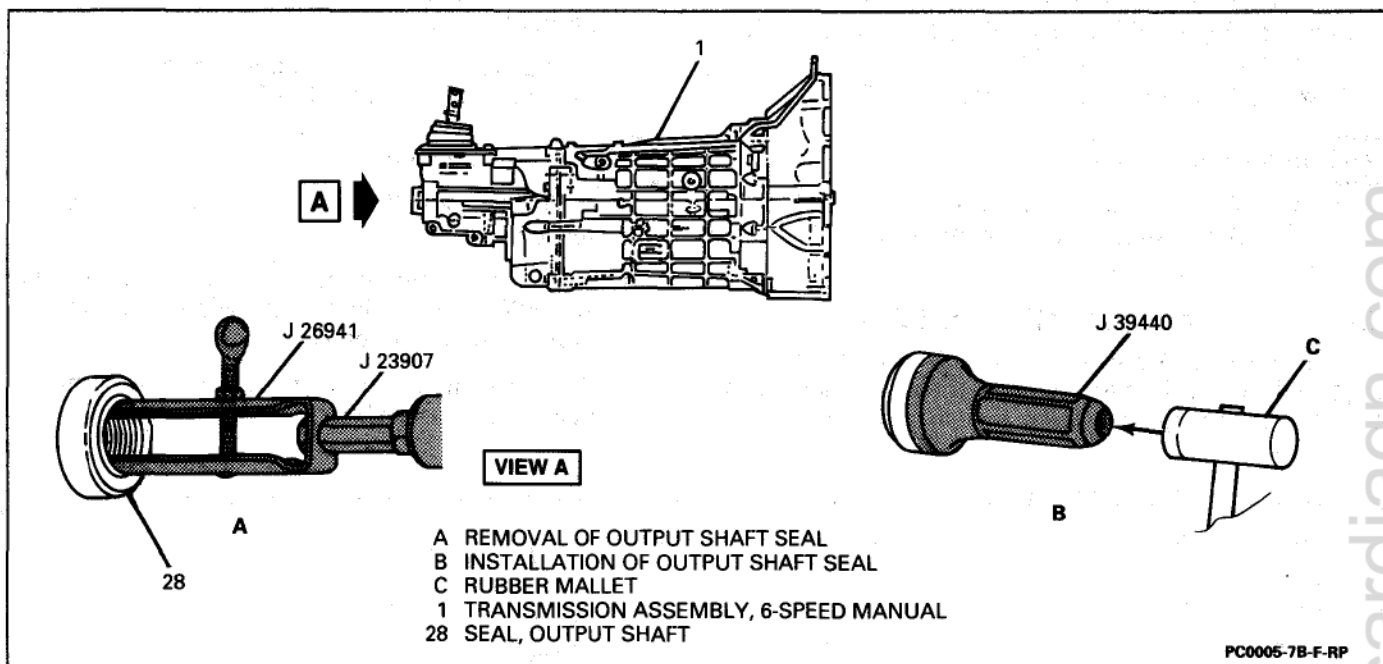


Figure 5 – Manual Transmission Output Shaft Seal (6-Speed)

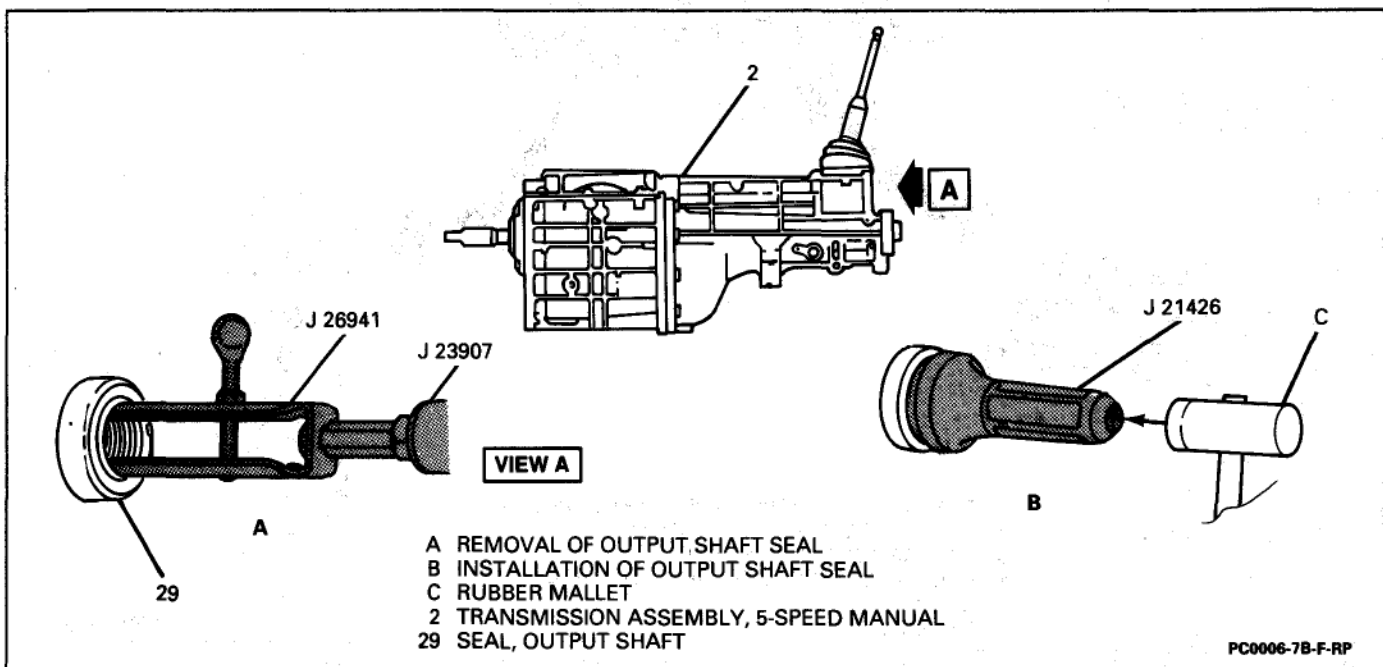


Figure 6 – Manual Transmission Output Shaft Seal (5-Speed)

J 39440 Extension Housing Seal Installer, 6-Speed Manual Transmission Assembly

Remove or Disconnect

1. Propeller shaft assembly. Refer to SECTION 4A.
2. Output shaft seal (28 or 29) using J 26941 with J 23907.

Install or Connect

NOTICE: See "Notice" on page 7B-1 of this section.

1. Output shaft seal (28 or 29), using J 21426 for 5-speed manual transmission assembly, or J 39440 for 6-speed manual transmission assembly.
2. Lubricate inside diameter of output shaft seal (28 or 29) with transmission fluid.
3. Propeller shaft assembly. Refer to SECTION 4A.

Inspect

- Manual transmission assembly fluid level. Refer to "Checking Manual Transmission Assembly Fluid Level" in this section.

BACKUP LAMP SWITCH ASSEMBLY

The backup lamp switch assembly is located on the left-hand side of the 5-speed manual transmission assembly, while the backup lamp switch assembly on the

6-speed manual transmission assembly is located on the right-hand side.

Figures 7 and 8

Remove or Disconnect

CAUTION: Refer to "Caution" under "Disconnecting the Battery Negative Cable Assembly" in SECTION 0A.

1. Battery negative cable assembly.
2. Raise and suitably support vehicle. Refer to SECTION 0A.
3. Electrical connector from backup lamp switch assembly (3 or 4).
4. Backup lamp switch assembly (3 or 4) from manual transmission assembly (1 or 2).

Install or Connect

NOTICE: See "Notice" on page 7B-1 of this section.

1. Apply thin coating of teflon sealant, GM P/N 1052080 or equivalent to threads of backup lamp switch assembly (3 or 4).
2. Backup lamp switch assembly (3 or 4) to manual transmission assembly (1 or 2).

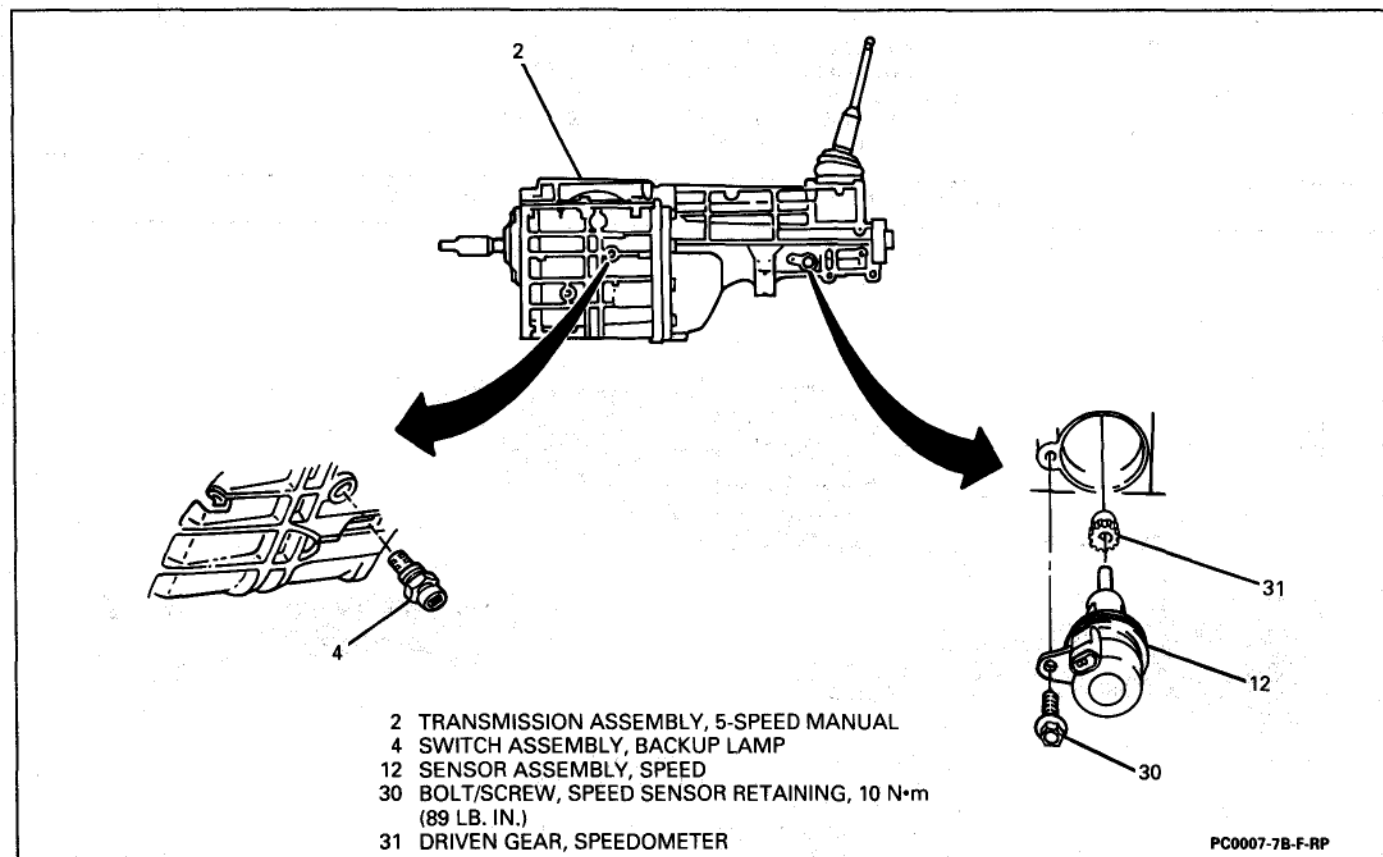


Figure 7 – Manual Transmission Backup Lamp Switch and Speed Sensor Assemblies (5-Speed)

Tighten

- Backup lamp switch assembly (4) 38 N•m (28 lb. ft.) for 5-speed manual transmission assembly.
 - Backup lamp switch assembly (3) to 20 N•m (15 lb. ft.) for 6-speed manual transmission assembly.
3. Electrical connector to backup lamp switch assembly (3 or 4).
 4. Lower vehicle.
 5. Battery negative cable assembly.

SPEED SENSOR ASSEMBLY (5-SPEED)

Figure 7

Install or Connect

CAUTION: Refer to “Caution” under “Disconnecting the Battery Negative Cable Assembly” in SECTION 0A.

1. Battery negative cable assembly.
2. Raise and suitably support vehicle. Refer to SECTION 0A.
3. Electrical connector from speed sensor assembly (12).
4. Speed sensor retaining bolt/screw (30) from 5-speed manual transmission assembly (2).
5. Speed sensor assembly (12) and speedometer driven gear (31) from 5-speed manual transmission assembly (2).

Install or Connect

NOTICE: See “Notice” on page 7B-1 of this section.

1. Speedometer driven gear (31) and speed sensor assembly (12) to 5-speed manual transmission assembly (2).
2. Speed sensor retaining bolt/screw (30) to 5-speed manual transmission assembly (2).

Tighten

- Speed sensor retaining bolt/screw (30) to 10 N•m (89 lb. in.).
3. Electrical connector to speed sensor assembly (12).
 4. Lower vehicle.
 5. Battery negative cable assembly.

ELECTRONIC SPEED SENSOR (6-SPEED)

Figure 8

Remove or Disconnect

CAUTION: Refer to “Caution” under “Disconnecting the Battery Negative Cable Assembly” in SECTION 0A.

1. Battery negative cable assembly.
2. Raise and suitably support vehicle. Refer to SECTION 0A.
3. Electrical connector from electronic speed sensor (9).
4. Electronic speed sensor retaining bolt/screw (32) from 6-speed manual transmission assembly (1).
5. Electronic speed sensor (9) from 6-speed manual transmission assembly (1).

Install or Connect

NOTICE: See “Notice” on page 7B-1 of this section.

1. Electronic speed sensor (9) to 6-speed manual transmission assembly (1).
2. Electronic speed sensor retaining bolt/screw (32) to 6-speed manual transmission assembly (1).

Tighten

- Electronic speed sensor retaining bolt/screw (32) to 10 N•m (89 lb. in.).
3. Electrical connector to electronic speed sensor (9).
 4. Lower vehicle.
 5. Battery negative cable assembly.

REVERSE LOCKOUT SOLENOID (6-SPEED)

Figures 8 and 9

Remove or Disconnect

CAUTION: Refer to “Caution” under “Disconnecting the Battery Negative Cable Assembly” in SECTION 0A.

1. Battery negative cable assembly.
2. Raise and suitably support vehicle. Refer to SECTION 0A.
3. Electrical connector from reverse lockout solenoid (7).
4. Reverse lockout bolt/screw (40).
5. Reverse lockout assembly (8).
6. Reverse lockout solenoid (7) from reverse lockout assembly (8).

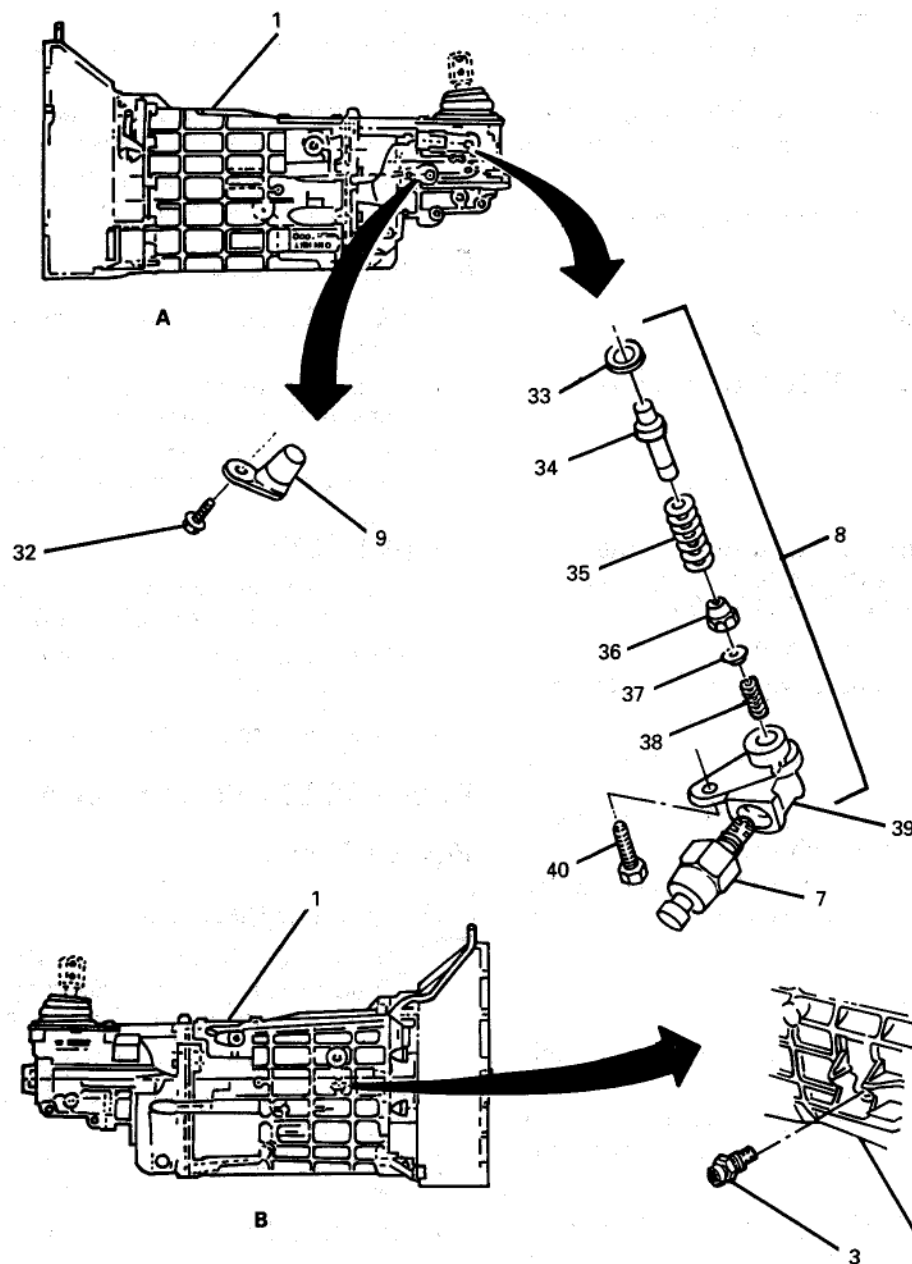
Install or Connect

NOTICE: See “Notice” on page 7B-1 of this section.

1. Reverse lockout solenoid (7) to reverse lockout assembly (8).

Tighten

- Reverse lockout solenoid (7) to 41 N•m (30 lb. ft.).
2. Reverse lockout assembly (8) to 6-speed manual transmission assembly (1).
 3. Reverse lockout bolt/screw (40).



- A LEFT-HAND SIDE
 B RIGHT-HAND SIDE
 1 TRANSMISSION ASSEMBLY, 6-SPEED MANUAL
 3 SWITCH ASSEMBLY, BACKUP LAMP
 7 SOLENOID, REVERSE LOCKOUT
 8 LOCKOUT ASSEMBLY, REVERSE
 9 SENSOR, ELECTRONIC SPEED
 32 BOLT/SCREW, ELECTRONIC SPEED SENSOR
 RETAINING, 10 N·m (89 LB. IN.)
 33 RING, REVERSE LOCKOUT SNAP
 34 PLUNGER, REVERSE LOCKOUT
 35 SPRING, REVERSE LOCKOUT OUTER
 36 SEAT, REVERSE LOCKOUT
 37 RETAINING RING, REVERSE LOCKOUT
 38 SPRING, REVERSE LOCKOUT INNER
 39 BODY, REVERSE LOCKOUT
 40 BOLT/SCREW, REVERSE LOCKOUT, 18 N·m (13 LB. FT.)

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Figure 8 – Manual Transmission Backup Lamp Switch, Electronic Speed Sensor, Reverse Lockout Solenoid, and Reverse Lockout Assembly (6-Speed)

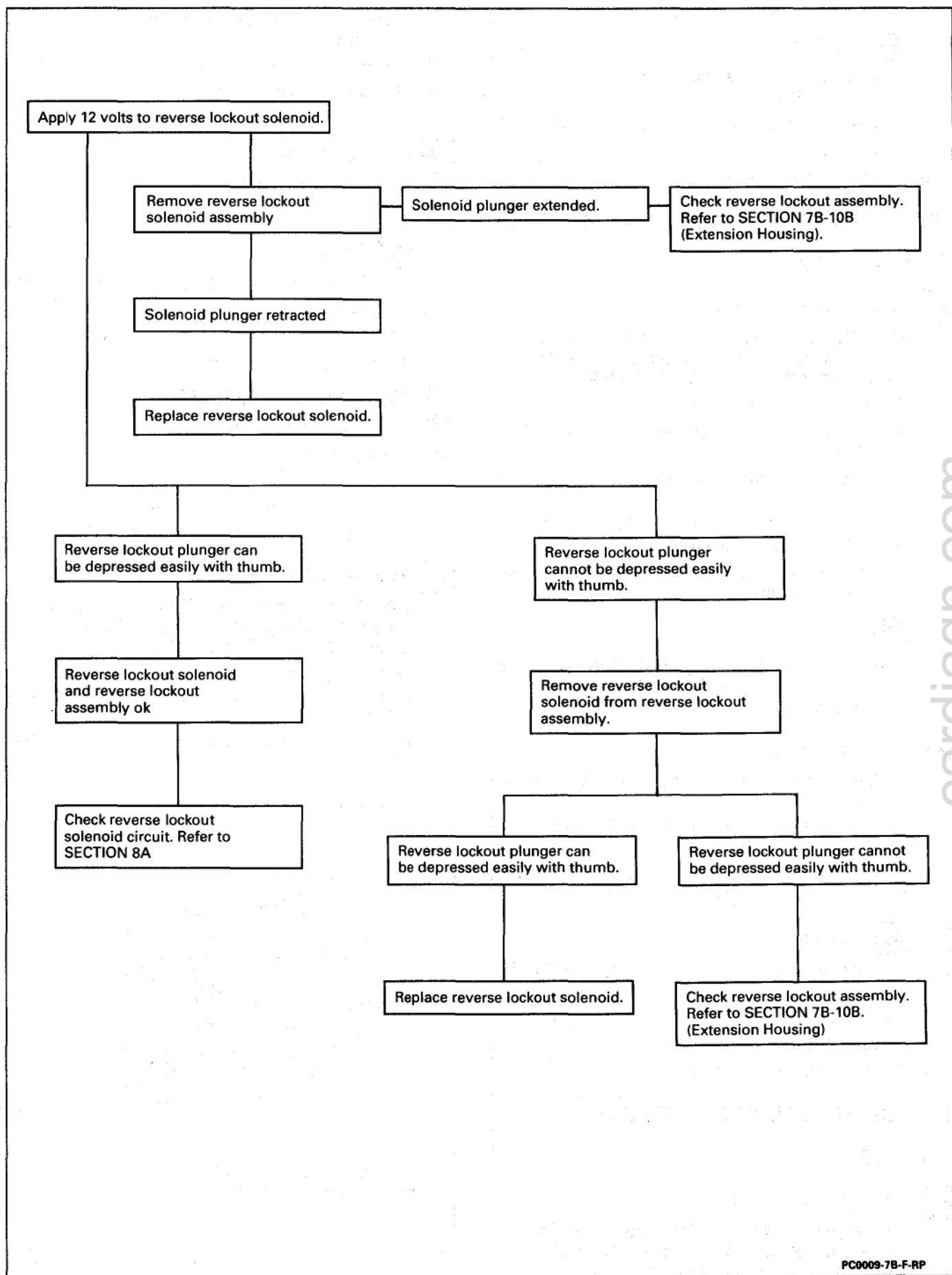


Figure 9 – Reverse Lockout Assembly Bench Check

Tighten

- Reverse lockout bolt/screw (40) to 18 N•m (13 lb. ft.).
4. Electrical connector to reverse lockout solenoid (7).
 5. Lower vehicle.
 6. Battery negative cable assembly.

REVERSE LOCKOUT ASSEMBLY (6-SPEED)

Figures 8 and 9

Remove or Disconnect

CAUTION: Refer to "Caution" under "Disconnecting the Battery Negative Cable Assembly" in SECTION 0A.

1. Battery negative cable assembly.
2. Raise and suitably support vehicle. Refer to SECTION 0A.
3. Electrical connector from reverse lockout solenoid (7).
4. Reverse lockout bolt/screw (40) from 6-speed manual transmission assembly (1).
5. Reverse lockout assembly (8) from 6-speed manual transmission assembly (1).

Inspect

- Reverse lockout assembly. Refer to SECTION 7B-10B for inspection and disassembly procedures.

Install or Connect

NOTICE: See "Notice" on page 7B-1 of this section.

1. Reverse lockout assembly (8) to 6-speed manual transmission assembly (1).
2. Reverse lockout bolt/screw (40) to 6-speed manual transmission assembly (1).

Tighten

- Reverse lockout bolt/screw (40) to 18 N•m (13 lb. ft.).
3. Electrical connector to reverse lockout solenoid (7).
 4. Lower vehicle.
 5. Battery negative cable assembly.

SKIP SHIFT SOLENOID (6-SPEED)

Figure 10

Remove or Disconnect

CAUTION: Refer to "Caution" under "Disconnecting the Battery Negative Cable Assembly" in SECTION 0A.

1. Battery negative cable assembly.

2. Raise and suitably support vehicle. Refer to SECTION 0A.
3. Electrical connector from skip shift solenoid (55).
4. Skip shift solenoid (55) from transmission assembly (1).

Install or Connect

1. Skip shift solenoid (55) to transmission assembly (1).

Tighten

- Skip shift solenoid (55) to 40 N•m (30 lb. ft.).
2. Electrical connector to skip shift solenoid (55).
 3. Lower vehicle.
 4. Battery negative cable assembly.

5-SPEED MANUAL TRANSMISSION ASSEMBLY (RPO M49)

Figures 1,2,3 and 11

Tools Required:

- J 36842 Transmission Holding Fixture
- J 3289-20 Bench Mount Holding Fixture Base

Remove or Disconnect

CAUTION: Refer to "Caution" under "Disconnecting the Battery Negative Cable Assembly" in SECTION 0A.

1. Battery negative cable assembly.
2. Front floor console trim plate assembly. Refer to SECTION 8C.
3. Raise and suitably support vehicle. Refer to SECTION 0A.

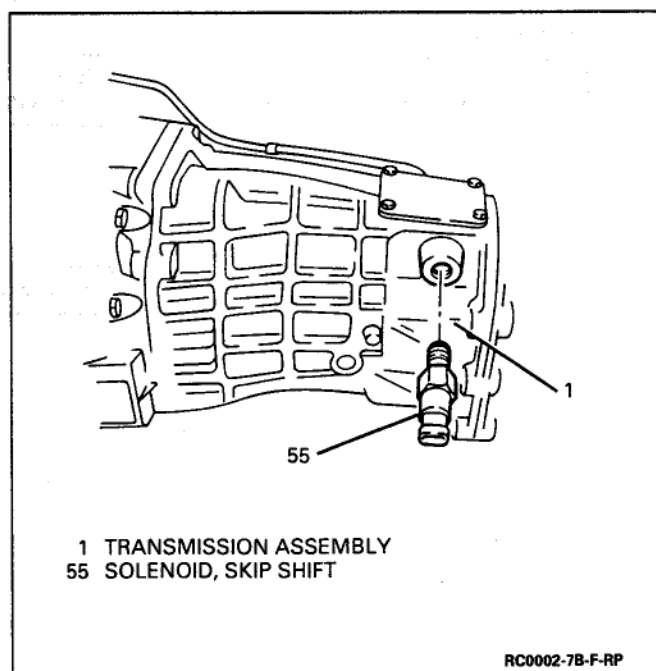


Figure 10 – Skip Shift Solenoid (6-Speed)

4. Drain fluid from 5-speed manual transmission assembly (2).
5. Propeller shaft assembly. Refer to SECTION 4A.
6. Support rear axle assembly with jack stand.
7. Rear axle torque arm assembly. Refer to SECTION 3D.
8. Catalytic converter hanger assembly. Refer to SECTION 6F.
9. Wiring harness connector from backup lamp switch assembly (4).
10. Wiring harness connector from speed sensor assembly (12).
11. Support engine assembly with a jack stand.
12. Support 5-speed manual transmission assembly (2) with jack stand.
13. Transmission support and transmission mount assembly. Refer to "Transmission Support and Transmission Mount Assembly" in this section.
14. Lower 5-speed manual transmission assembly (2), enough to reach transmission control bolts/screws (19), with aid of helper.
15. Transmission control bolts/screws (19).

NOTICE: Manual transmission control assembly must be held when lowering manual transmission assembly, as control assembly is not retained in vehicle. If control assembly is not held it could drop causing damage to the component.

16. Lower 5-speed manual transmission assembly (2).
17. Manual transmission control assembly (21).
18. Transmission bolts/screws (41).
19. 5-speed manual transmission assembly (2) to fly-wheel housing assembly (45) with aid of helper.
20. Place 5-speed manual transmission assembly (2) in J 36842.

Install or Connect

NOTICE: See "Notice" on page 7B-1 of this section.



Clean

- Sealant from manual transmission extension housing.
 - Sealant from control assembly (21), if reinstalling.
1. Control assembly (21) to installed position on vehicle.
 2. 5-speed manual transmission assembly (2) to fly-wheel housing assembly (45), with aid of helper.
 - Pilot splined input shaft assembly (53) into clutch disc hub assembly and pilot bearing.
 3. Support 5-speed manual transmission assembly (2) with jack stand.
 4. Transmission bolts/screws (41).

Tighten

- Transmission bolts/screws (41) to 75 N•m (55 lb. ft.).
5. Apply a continuous 3 mm (1/8-inch) bead of RTV Sealant GM P/N 12345739, or equivalent to manual transmission extension housing-to-control assembly sealing surface.
 6. Raise 5-speed manual transmission assembly (2) up engaging manual transmission control assembly (21).
 7. Transmission control bolts/screws (19).

Tighten

- Transmission control bolts/screws (19) to 17 N•m (13 lb. ft.).
8. Raise 5-speed manual transmission assembly (2) to installed position.

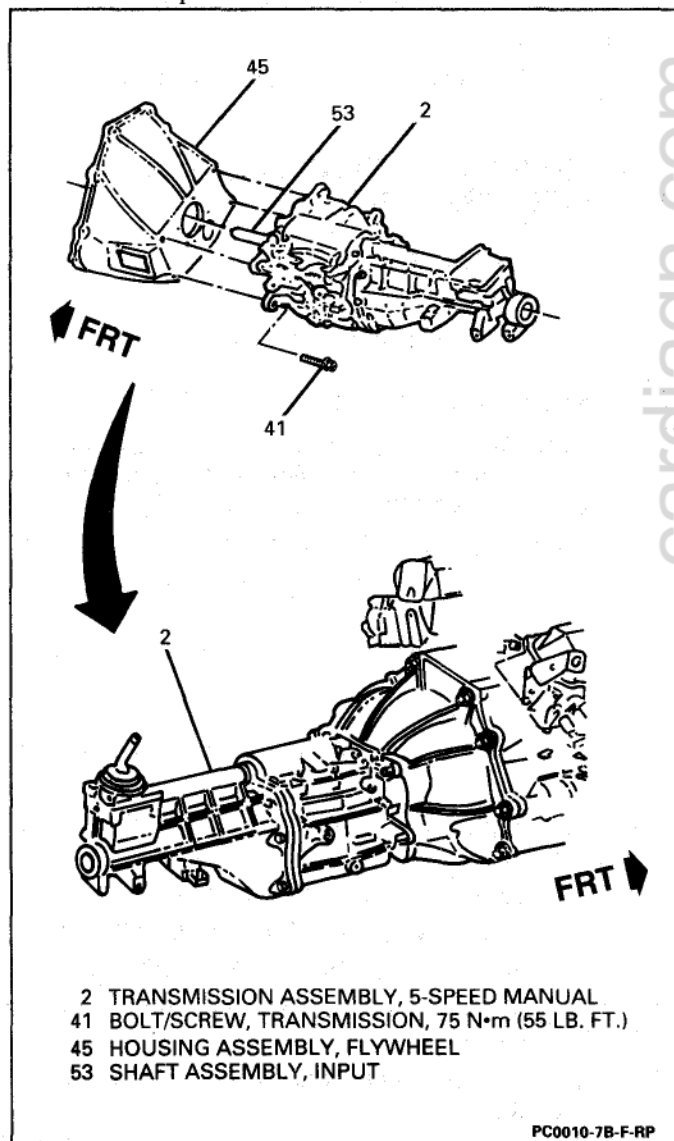


Figure 11 – Manual Transmission Assembly to Engine Assembly (5-Speed)

9. Transmission support and transmission mount assembly. Refer to "Transmission Support and Transmission Mount Assembly" in this section.
10. Remove jack stands from transmission and engine assemblies.
11. Wiring harness connector to speed sensor assembly (12).
12. Wiring harness connector to backup lamp switch assembly (4).
13. Catalytic converter hanger assembly. Refer to SECTION 6F.
14. Rear axle torque arm assembly. Refer to SECTION 3D.
15. Remove support from rear axle assembly.
16. Propeller shaft assembly. Refer to SECTION 4A.
17. Check and fill manual transmission assembly with fluid. Refer to "Checking Manual Transmission Assembly Fluid Level" in this section.
18. Lower vehicle.
19. Front floor console trim plate assembly. Refer to SECTION 8C.

6-SPEED MANUAL TRANSMISSION ASSEMBLY (RPO MM6)

Figures 1,2,4 and 12

Tool Required:

J 39430 Transmission Holding Fixture

Remove or Disconnect

CAUTION: Refer to "Caution" under "Disconnecting the Battery Negative Cable Assembly" in SECTION 0A.

1. Battery negative cable assembly.
2. Front floor console trim plate assembly. Refer to SECTION 8C.
3. Manual transmission control lever handle bolts/screws (27).
4. Handle assembly (26).
5. Raise and suitably support vehicle. Refer to SECTION 0A.
6. Drain fluid from 6-speed manual transmission assembly (1).
7. Support rear axle assembly with jack stand.
8. Propeller shaft assembly. Refer to SECTION 4A.
9. Rear axle torque arm. Refer to SECTION 3D.
10. Catalytic converter hanger assembly. Refer to SECTION 6F.
11. Wiring harness connector from reverse lockout solenoid (7).
12. Wiring harness connector from skip shift solenoid (55).
13. Wiring harness connector from backup lamp switch assembly (3).
14. Actuator cylinder nuts (50).

NOTICE: Disconnect the clutch master cylinder pushrod before removing the actuator cylinder assembly. If not disconnected, permanent damage to the actuator cylinder will occur if the clutch pedal is depressed while the actuator is disconnected.

Important

- Do not let the actuator cylinder hang by hydraulic line.
15. Clutch actuator cylinder and retain with mechanic's wire.
 16. Actuator spacer (46).
 17. Pull clutch fork assembly (47) down to disengage from release bearing.
 18. Wiring harness connector from electronic speed sensor (9).
 19. Support engine assembly with jack stand.
 20. Support 6-speed manual transmission assembly (1) with jack stand.
 21. Transmission support and transmission mount assembly. Refer to "Transmission Support and Transmission Mount Assembly" in this section.
- NOTICE:** The clutch fork assembly (47) must be disengaged from the release bearing assembly to prevent damage to the clutch system.
22. Transmission bolts/screws (43).
 23. Six-speed manual transmission assembly (1) with aid of helper.
 24. Place 6-speed manual transmission assembly (1) in J 39430.

Install or Connect

NOTICE: See "Notice" on page 7B-1 of this section.

1. Six-speed manual transmission assembly (1) with aid of helper.
 - Pilot transmission input shaft through the release bearing, the clutch driven plate splines and into the clutch pilot bearing.
2. Support 6-speed manual transmission assembly (1) with jack stand.
3. Transmission bolts/screws (43).

Tighten

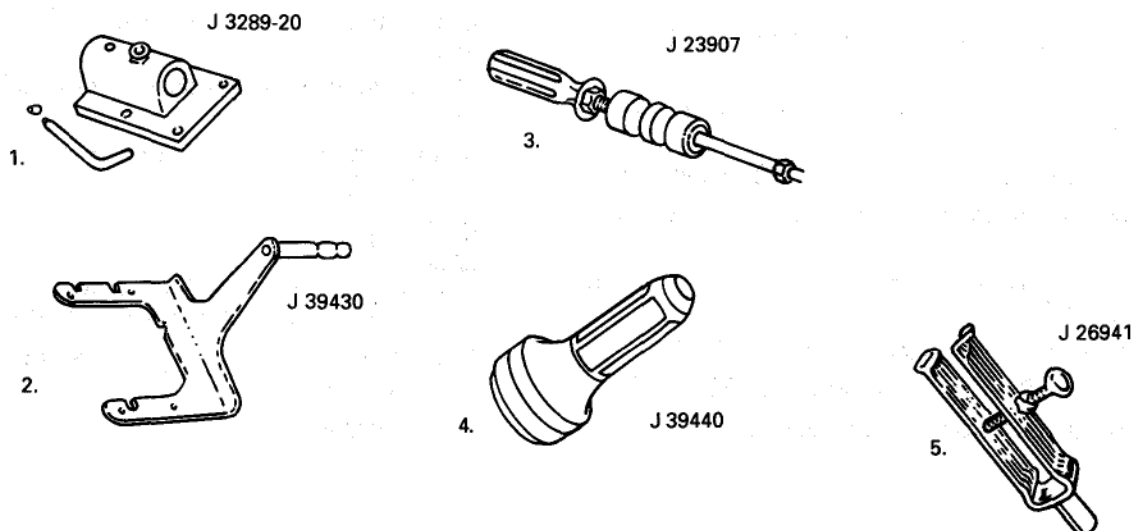
- Transmission bolts/screws (43) to 35 N•m (26 lb. ft.).
4. Transmission support and transmission mount assembly. Refer to "Transmission Support and Transmission Mount Assembly" in this section.
 5. Remove jack stands from transmission and engine assemblies.
 6. Push clutch fork assembly (47) up to engage release bearing.
 7. Actuator spacer (46).
 8. Actuator cylinder.
 9. Actuator cylinder nuts (50).

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

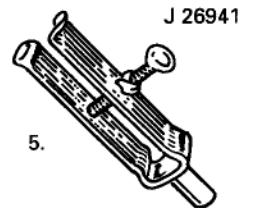
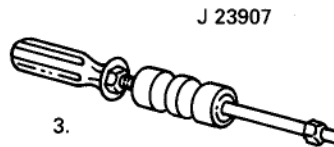
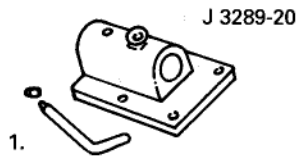
Backup Lamp Switch Assembly (5-Speed)	38 N•m (28 lb. ft.)
Backup Lamp Switch Assembly (6-Speed)	20 N•m (15 lb. ft.)
Clutch Actuator Cylinder Nut	20 N•m (15 lb. ft.)
Electronic Speed Sensor Retaining Bolt/Screw	10 N•m (89 lb. in.)
Manual Transmission Control Lever Boot Bolt/Screw (5-Speed)	1.7 N•m (15 lb. in.)
Manual Transmission Control Lever Boot Bolt/Screw (6-Speed)	1.7 N•m (15 lb. in.)
Manual Transmission Control Lever Handle Bolt/Screw	25 N•m (18 lb. ft.)
Reverse Lockout Bolt/Screw	18 N•m (13 lb. ft.)
Reverse Lockout Solenoid	41 N•m (30 lb. ft.)
Skip Shift Solenoid (6-Speed)	40 N•m (30 lb. ft.)
Speed Sensor Retaining Bolt/Screw	10 N•m (89 lb. in.)
Transmission Bolt/Screw (5-Speed)	75 N•m (55 lb. ft.)
Transmission Bolt/Screw (6-Speed)	35 N•m (26 lb. ft.)
Transmission Control Bolt/Screw (5-Speed)	17 N•m (13 lb. ft.)
Transmission Control Bolt/Screw (6-Speed)	18 N•m (13 lb. ft.)
Transmission Mount Bolt/Screw	54 N•m (40 lb. ft.)
Transmission Mount Nut	47 N•m (35 lb. ft.)
Transmission Oil Fill Plug (5-Speed)	27 N•m (20 lb. ft.)
Transmission Oil Fill Plug (6-Speed)	30 N•m (22 lb. ft.)
Transmission Support Bolt/Screw	58 N•m (43 lb. ft.)

SPECIAL TOOLS



6-SPEED MANUAL TRANSMISSION ASSEMBLY

1. BENCH MOUNT HOLDING FIXTURE BASE
2. TRANSMISSION HOLDING FIXTURE
3. SLIDE HAMMER
4. EXTENSION HOUSING SEAL INSTALLER
5. EXTENSION HOUSING SEAL REMOVER

**5-SPEED MANUAL TRANSMISSION ASSEMBLY**

1. BENCH MOUNT HOLDING FIXTURE BASE
2. TRANSMISSION HOLDING FIXTURE
3. SLIDE HAMMER
4. EXTENSION HOUSING SEAL INSTALLER
5. EXTENSION HOUSING SEAL REMOVER

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