7B

AUTOMATIC TRANSMISSION

Section

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1 General information

All vehicles covered by this manual come equipped with either a five-speed or six-speed manual transmission, or a four-speed automatic transmission. Information on the manual transmission is in Part A of this Chapter. Information on the automatic transmission is included in this Part of Chapter 7. You'll also find certain procedures common to both automatic and manual transmissions - such as oil seal replacement and transmission mount replacement - in this Part of Chapter 7.

The models covered by this manual use either a 4L60-E or a 4L80-E electronic four-speed automatic transmission. They are both similar in design and function, but typically the 4L60-E is used on the 4.3L V6, 4.8L V8 and 5.3L V8 engines. The 4L80-E transmission is typically used on the 6.0L V8 engines. These transmissions are equipped with a torque converter clutch (TCC) that engages in fourth gear, and in third gear when the overdrive switch is turned off. The TCC provides a direct connection between the engine and the drive wheels for improved efficiency and economy. The TCC consists of a solenoid controlled by the Powertrain Control Module (PCM) that locks the converter in third or fourth when the vehicle is cruising on level ground and the engine is fully warmed up. Some models are also equipped with an auxiliary transmission cooler that is mounted in front of the radiator and air conditioning condenser, if equipped.

Due to the complexity of the automatic transmissions covered in this manual and the need for specialized equipment to perform most service operations, this Chapter contains only general diagnosis, routine maintenance, adjustment and removal and installation procedures.

If the transmission requires major repair work, it should be left to a dealer service department or an automotive or transmission repair shop. You can, however, remove and install the transmission yourself and save the expense, even if the repair work is done by a transmission shop.

2 Diagnosis - general

➡Note: Automatic transmission malfunctions may be caused by five general conditions: poor engine performance, improper adjustments, hydraulic malfunctions, mechanical malfunctions or malfunctions in the Powertrain Control Module or its signal network. Diagnosis of these problems should always begin with a check of the easily repaired items: fluid level and condition (see Chapter 1), and shift cable adjustment (see Section 3). Next, perform a road test to determine if the problem has been corrected or if more diagnosis is necessary. Because the transmission relies on many sensors in the engine control system, and since the transmission shift points are controlled by the Powertrain Control Module, you'll also want to check to see if any trouble codes have been stored in the PCM (see Chapter 6 for a list of trouble codes and how to extract them). If the problem persists after the preliminary tests and corrections are completed, additional diagnosis should be done by a dealer service department or transmission repair shop. Refer to the Troubleshooting section at the front of this manual for transmission problem diagnosis.

PRELIMINARY CHECKS

1 Drive the vehicle to warm the transmission to normal operating temperature.

2 Check the fluid level as described in Chapter 1:

a) If the fluid level is unusually low, add enough fluid to bring the level within the designated area of the dipstick, then check for external leaks.

b) If the fluid level is abnormally high, drain off the excess, then check the drained fluid for contamination by coolant. The presence of engine coolant in the automatic transmission fluid indicates that a failure has occurred in the internal radiator walls that separate the coolant from the transmission fluid (see Chapter 3).

c) If the fluid is foaming, drain it and refill the transmission, then check for coolant in the fluid or a high fluid level.

3 Check the engine idle speed.

➡Note: If the engine is malfunctioning, do not proceed with the preliminary checks until it has been repaired and runs normally.

4 Inspect the shift control cable (see Section 3). Make sure that it's properly adjusted and that it operates smoothly.

5 Check the Park/Neutral Position (PNP) switch adjustment (see Section 5).

FLUID LEAK DIAGNOSIS

6 Most fluid leaks are easy to locate visually. Repair usually consists of replacing a seal or gasket. If a leak is difficult to find, the following procedure may help.

7 Identify the fluid. Make sure it's transmission fluid and not engine oil or brake fluid (automatic transmission fluid is a deep red color).

8 Try to pinpoint the source of the leak. Drive the vehicle several miles, then park it over a large sheet of cardboard. After a minute or two, you should be able to locate the leak by determining the source of the fluid dripping onto the cardboard.

9 Make a careful visual inspection of the suspected component and the area immediately around it. Pay particular attention to gasket mating surfaces. A mirror is often helpful for finding leaks in areas that are hard to see.

10 If the leak still cannot be found, clean the suspected area thoroughly with a degreaser or solvent, then dry it.

11 Drive the vehicle for several miles at normal operating temperature and varying speeds. After driving the vehicle, visually inspect the suspected component again.

12 Once the leak has been located, the cause must be determined before it can be properly repaired. If a gasket is replaced but the sealing flange is bent, the new gasket will not stop the leak. The bent flange must be straightened.

13 Before attempting to repair a leak, check to make sure that the following conditions are corrected or they may cause another leak.

➡Note: Some of the following conditions cannot be fixed without highly specialized tools and expertise. Such problems must be referred to a transmission shop or a dealer service department.

Gasket leaks

14 Check the pan periodically. Make sure the bolts are tight, no bolts are missing, the gasket is in good condition and the pan is flat (dents in the pan may indicate damage to the valve body inside).

15 If the pan gasket is leaking, the fluid level or the fluid pressure may be too high, the vent may be plugged, the pan bolts may be too tight, the pan sealing flange may be warped, the sealing surface of the transmission housing may be damaged, the gasket may be damaged or the transmission casting may be cracked or porous. If sealant instead

of gasket material has been used to form a seal between the pan and the transmission housing, it may be the wrong sealant.

Seal leaks

16 If a transmission seal is leaking, the fluid level or pressure may be too high, the vent may be plugged, the seal bore may be damaged, the seal itself may be damaged or improperly installed, the surface of the shaft protruding through the seal may be damaged or a loose bearing may be causing excessive shaft movement.

17 Make sure the dipstick tube seal is in good condition and the tube is properly seated. Periodically check the area around the speedometer gear or vehicle speed sensor for leakage. If transmission fluid is evident, check the O-ring for damage. Also inspect the driveshaft oil seal for leakage.

Case leaks

18 If the case itself appears to be leaking, the casting is porous and will have to be repaired or replaced.

19 Make sure the oil cooler hose fittings are tight and in good condition. The transmission oil cooler lines on these models are equipped with quick connect fittings - always inspect the O-rings if a leak is suspected.

Fluid comes out vent pipe or fill tube

20 If this condition occurs, the transmission is overfilled, there is coolant in the fluid, the case is porous, the dipstick is incorrect, the vent is plugged or the drain back holes are plugged.

3 Shift cable - removal, installation and adjustment

REMOVAL

➡Note: The shift cable on these models is a two piece design, therefore one end of the cable can be replaced without replacing the other.

1 Disconnect the cable from the negative terminal of the battery.

***** CAUTION:**

On models equipped with the Theftlock audio system, be sure the lockout feature is turned off before performing any procedure which requires disconnecting the battery (see the information at the front of this manual).

2 Place the transmission in PARK and apply the parking brake.

3 Block the rear wheels so the vehicle will not accidentally roll in either direction.

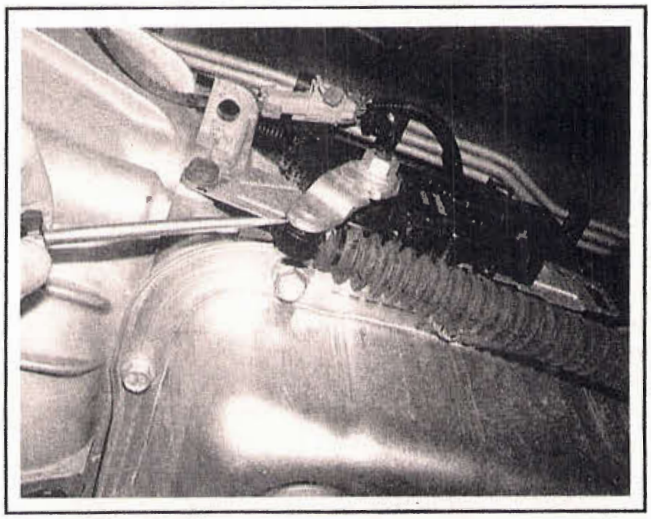
Lower cable - transmission end

♦ Refer to illustrations 3.4, 3.5, 3.6, 3.7 and 3.8

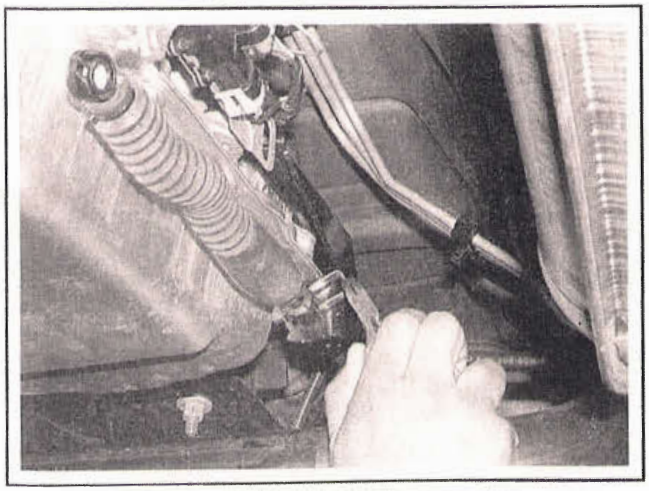
4 Disconnect the shift cable from the transmission shift lever (see illustration).

5 Disengage the shift cable from the cable bracket on the transmission (see illustration).

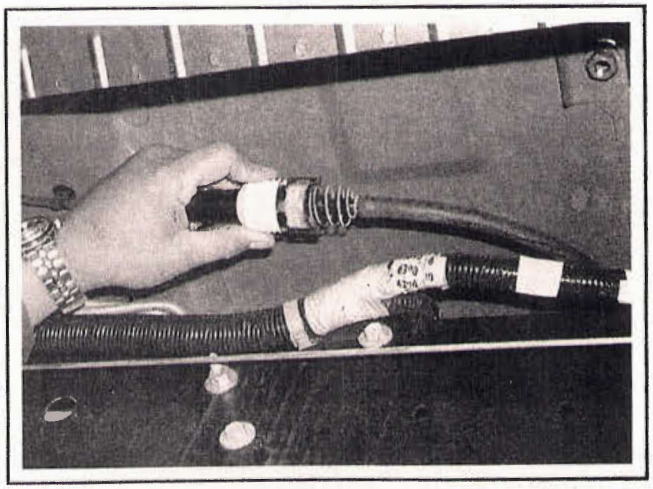
6 Locate the cable connector at the center of the cable. Pull back the white plastic collar to expose the cable connector retaining clip (see illustration).



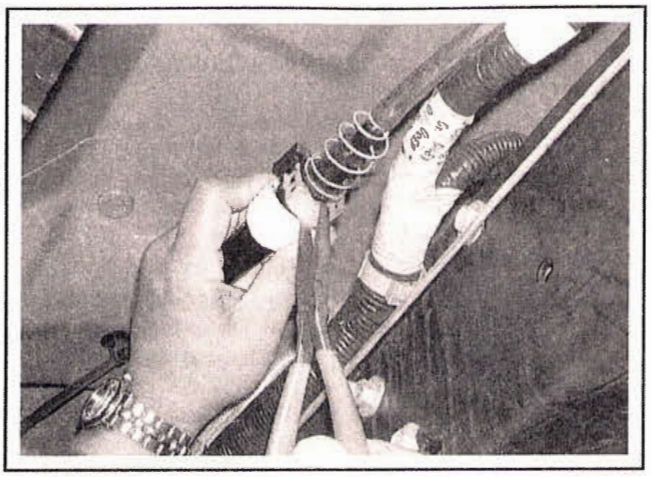
3.4 Use a screwdriver to pry the shift cable off the shift lever at the transmission



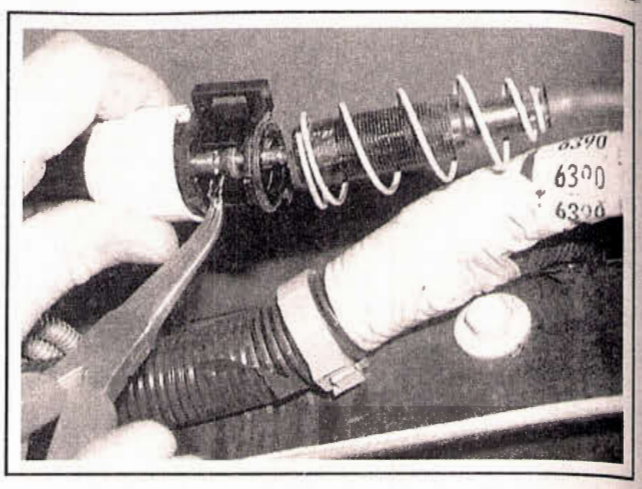
3.5 Remove the retaining clip and detach the shift cable from the bracket



3.6 Pull back the white plastic collar to expose the cable connector retaining clip



3.7 Pull downward on the center tabs of the connector retaining clip to remove it



3.8 Detach the cable retaining clip, separate the cable halves and remove the transmission end of the cable from the vehicle

7 Remove the cable connector retaining clip (see illustration).

8 Remove the cable retaining clip (see illustration).

➡Note: Always replace the cable retaining clip (E-clip) with a new one upon installation.

9 Separate the cable halves and remove the transmission end of the shift cable from the vehicle.

Upper cable - steering column end

♦ Refer to illustrations 3.11, 3.12a, 3.12b, 3.13 and 3.16

10 Remove the steering column trim covers and the knee bolster from below the steering column (see Chapter 11).

➡Note: It will be easier to access the shift cable and the surrounding components if the drivers seat is also removed, but it's not absolutely necessary.

11 Pry the shift cable ball socket from the shift lever ball pivot (see illustration).

12 Remove the retaining clip securing the cable to the steering column bracket. Depress the tangs and slide the cable out of the steering column bracket (see illustrations).

13 Working below the steering column, remove the bolt and the cable support wire securing the cable to the lower half of the steering column (see illustration).

14 Working under the vehicle, perform Steps 6 through 8 to separate the upper shift cable from the lower shift cable.

15 Working back inside the passenger compartment, remove the door sill plate and the left kick panel from the vehicle, then peel back the carpeting.

16 Trace the cable to the cable grommet (the point at which it goes through the floor board). Pry out the grommet and pull the upper cable up through the hole in the floor to remove it (see illustration).

INSTALLATION AND ADJUSTMENT

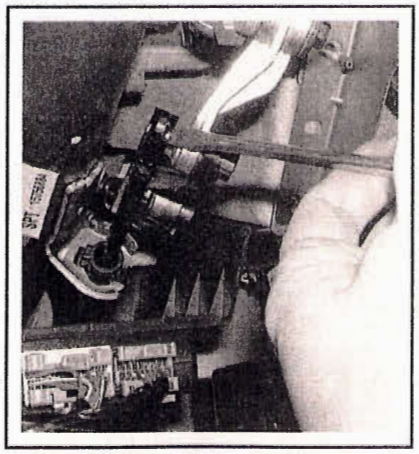
♦ Refer to illustration 3.20

17 Installation of the either cable is the reverse of removal with the following exceptions:

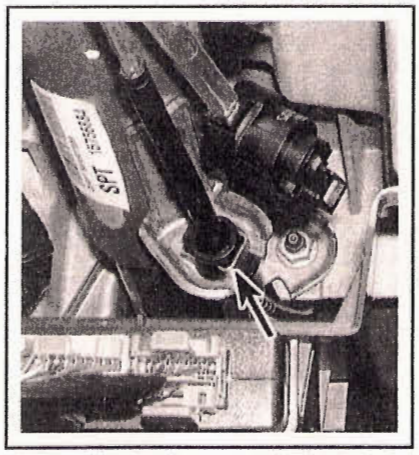
18 Make sure the driver's shift lever and the transmission shift lever are in the Park position.

19 Before joining the cable halves together it will be necessary to insert a new cable retaining clip (E-clip) onto the female half of the cable at the cable connector (see illustration 3.8).

20 Using two hands, align the male half of the cable with the female

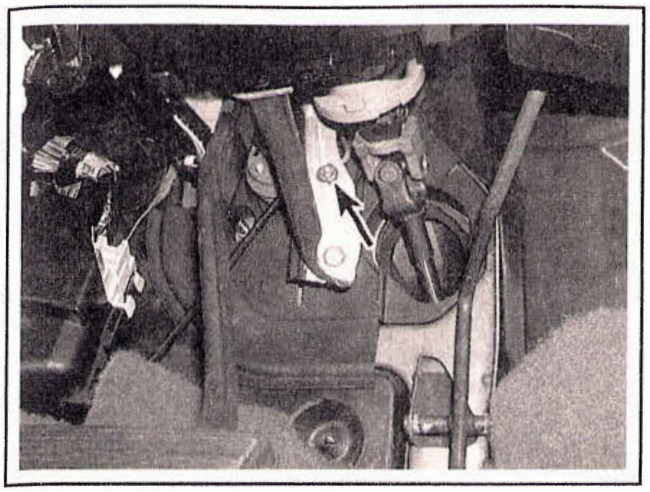


3.11 Pry the end of the shift cable off the shift lever arm

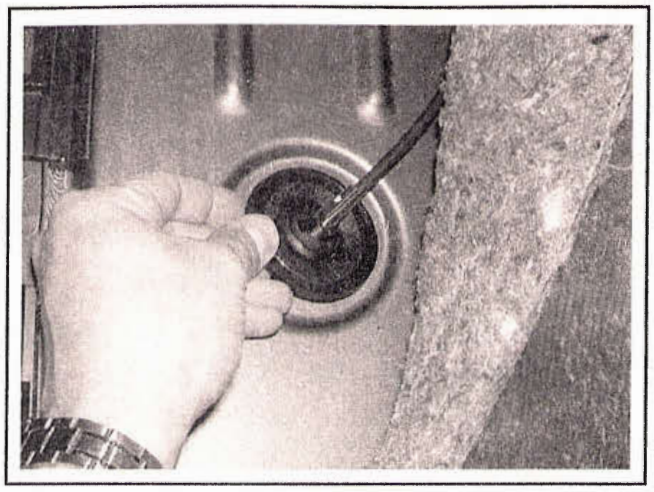


3.12a Detach the cable retaining clip (arrow) . . .

3.12b . . . depress the tangs and push the cable back through the hole in the steering column bracket



3.13 Unscrew the bolt (arrow) from the rear of the bracket and lift the wire upward until the hook at the other end of the wire disengages from the steering column support bracket



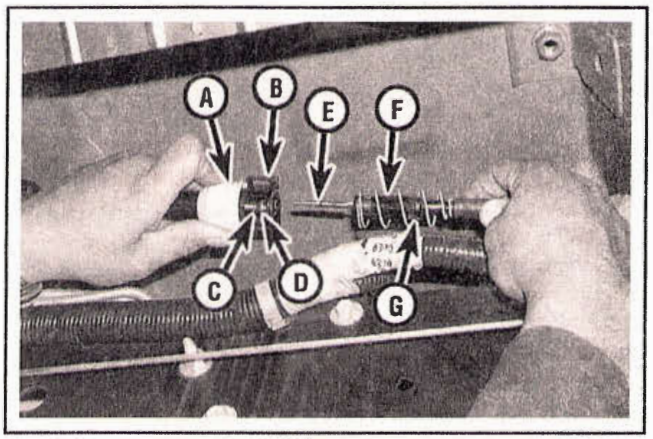
3.16 The cable grommet is located on the floorboard just in front of the drivers seat

half of the cable and push the connector halves together until the blue adjustment spring is fully compressed. This engages the male end of the cable into the E-clip on the female end of the cable and locks the cable together (see illustration).

21 Release the lower (transmission) end of the cable and allow the blue spring to self-adjust the cable. The blue spring must be free standing with no help to properly adjust the cable.

22 Pull back the white plastic collar on the upper (steering column) end of the cable connector and insert the cable connector retaining clip (see illustration 3.6).

23 Verify that the cable connector retaining clip is fully seated and that the white plastic collar slides back over the cable connector retaining clip. Test the vehicle for proper shift operation.



3.20 Shift cable (adjustment) connector installation details

A White plastic collar
B Shift cable connector (steering column end)
C Shift cable retaining clip (E-clip)
D Shift cable (female half)
E Shift cable (male half)
F Shift cable connector (transmission end)
G Adjustment spring

4 Park/Lock system - description and component replacement

DESCRIPTION

1 The Park/Lock system prevents the shift lever from being moved out of Park unless the brake pedal is depressed simultaneously. It also prevents the ignition key from being removed from the ignition switch unless the shift lever is in the Park position. When the car is started, a solenoid is energized, locking the shift lever in Park; when the brake pedal is depressed, the solenoid is deenergized, unlocking the shift lever so that it can be moved into some other gear.

CABLE REPLACEMENT

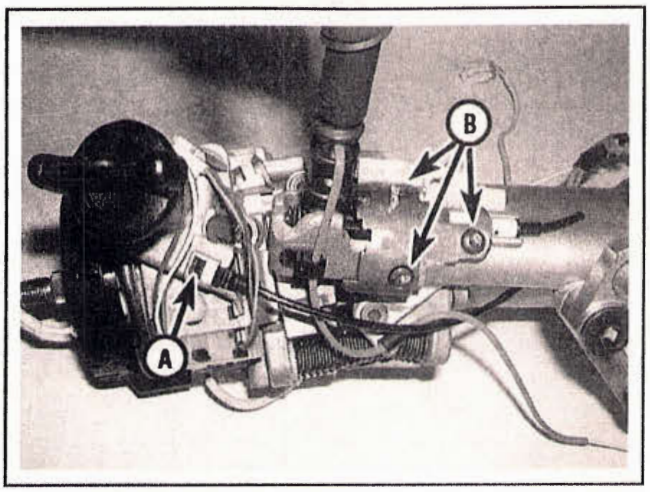
Refer to illustration 4.6

2 Remove the steering column covers (see Chapter 11).

3 Place the shift lever in the Park position.

4 Turn the ignition key to the Accessory position.

5 Insert a screwdriver blade into the slot in the lock cylinder housing, depress the cable latch and detach the cable from the lock cylinder housing.



4.6 With the ignition key in the Accessory position and the shifter in Park, depress the cable latch (A) and detach the cable from the lock cylinder housing, then remove the shift lever gate retaining screws (B) and remove the cable from the steering column housing

6 Remove the shift lever gate (see illustration).

7 Slide the opposite end of the cable out of the steering column housing and remove it from the vehicle. Note that the hooked end of the cable was removed from the lock cylinder housing and the round end of the cable was removed from the steering column housing.

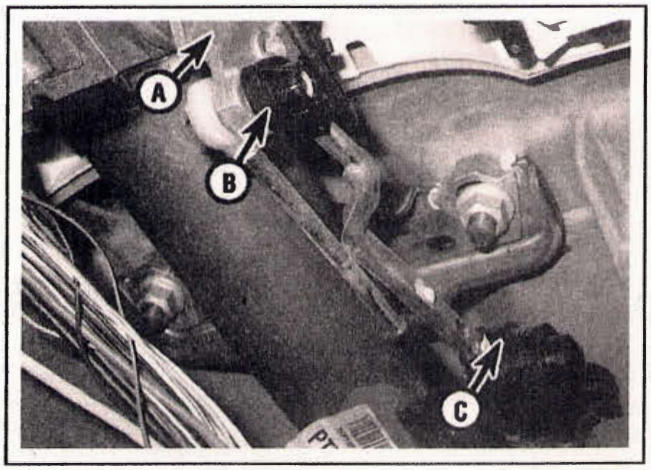
8 Make sure the ignition key is in the Accessory position and the shift lever is in the Park position before installing the cable.

9 When installing the steering column end of the cable, insert the cable into the guide in the steering column housing, then align the plastic tab on the cable with the slot in the shift lever gate and install the shift lever gate.

10 When installing the lock cylinder end of the cable, be sure to push the locking tab on the cable connector into the lock cylinder housing until it clicks back into place.

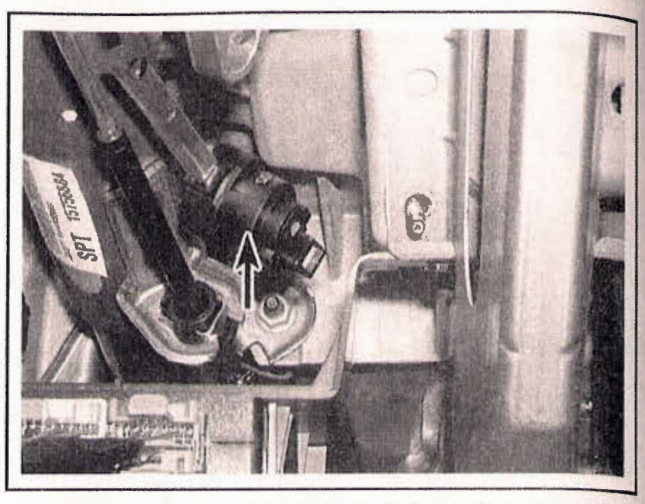
11 Check the operation of the park/lock cable and make sure the ignition key can not be removed without the shift lever in Park.

12 The remainder of the installation is the reverse of removal.



4.19 Details of the Brake Transmission Shift Interlock (BTSI) solenoid assembly

A Shift lever
B Grommet and mounting pin
C BTSI solenoid



4.15 The Brake/Transmission Shift Interlock (BTSI) solenoid (arrow) is located on the right side of the steering column just above the shift cable

BRAKE/TRANSMISSION SHIFT INTERLOCK (BTSI) SOLENOID REPLACEMENT

Refer to illustration 4.15

13 Remove the steering column covers (see Chapter 11).

14 Unplug the electrical connector from the solenoid.

15 Pry off each end of the solenoid from its mounting pins and remove it from the steering column (see illustration).

16 Installation is the reverse of removal.

BTSI ADJUSTMENT

Refer to illustrations 4.19 and 4.20

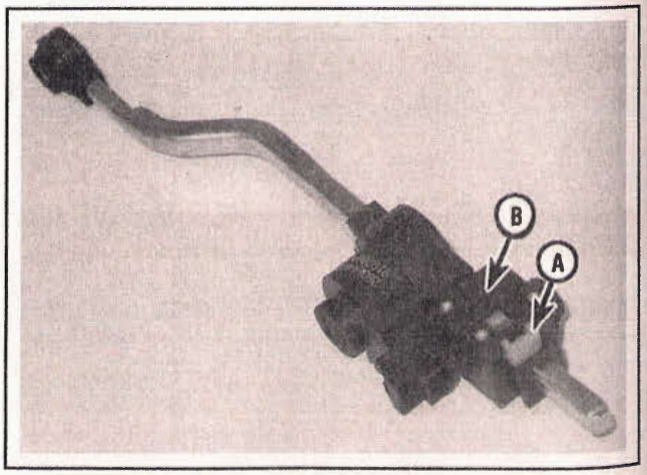
17 Remove the steering column covers (see Chapter 11).

18 Place the shift lever in the Park position.

19 Disconnect the BTSI solenoid electrical connector from the BTSI solenoid (see illustration).

20 Pull out the tab from the BTSI solenoid block (see illustration).

21 Press the BTSI solenoid block down and simultaneously slide



4.20 Pry the BTSI solenoid actuator tab out (A), press the block (B) and slide the block assembly away from the steering column - BTSI assembly removed for clarity

the assembly away from the BTSI solenoid actuator as far as possible.

22 Push the tab in to lock the BTSI solenoid into position. Be sure to push the locking tab into the BTSI solenoid housing until it clicks back into place.

23 Install the electrical connector.

24 Check the operation of the Park/Lock system and make sure the ignition key cannot be removed without the shift lever in Park.

25 The remainder of the installation is the reverse of removal.

5 Park/Neutral Position (PNP) switch/back-up light switch - replacement and adjustment

REPLACEMENT

Refer to illustrations 5.6, 5.7 and 5.8

1 Disconnect the cable from the negative terminal of the battery.

CAUTION:

On models equipped with the Theftlock audio system, be sure the lockout feature is turned off before performing any procedure which requires disconnecting the battery (see the front of this manual).

2 Apply the parking brake and put the shift lever in Neutral.

3 Locate the Park/Neutral Position (PNP) switch which is mounted on the transmission at the manual lever.

4 Disconnect the shift cable from the manual lever.

5 Unplug the electrical connectors from the PNP switch.

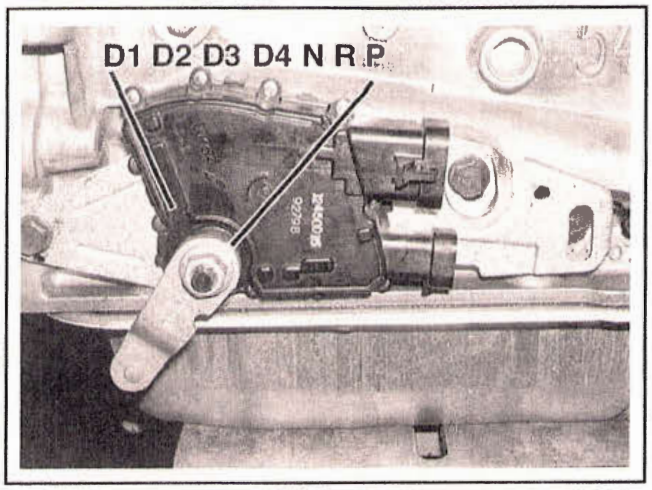
6 Remove the manual lever retaining nut and remove the manual lever.

Note: Be careful not to move the manual lever from the Neutral position while doing this. If the lever moves, insert the manual lever back on the shift shaft loosely and reposition the lever in the Neutral position before removing the PNP switch (see illustration).

7 Remove the switch retaining bolts and detach the switch from the transmission (see illustration).

8 If you're installing a new switch, align the slots on the switch (where the shaft is inserted) with the notch on the switch body (see illustration). Then install the switch onto the shaft.

9 If you're installing the old switch, simply align the flats of the shift shaft with the flats of the Park/Neutral Position switch and install the switch.



5.6 Transmission manual lever position details

10 Install the switch mounting bolts and tighten them to the torque listed in this Chapter's Specifications.

11 Install the manual lever, tightening the nut to the torque listed in this Chapter's Specifications.

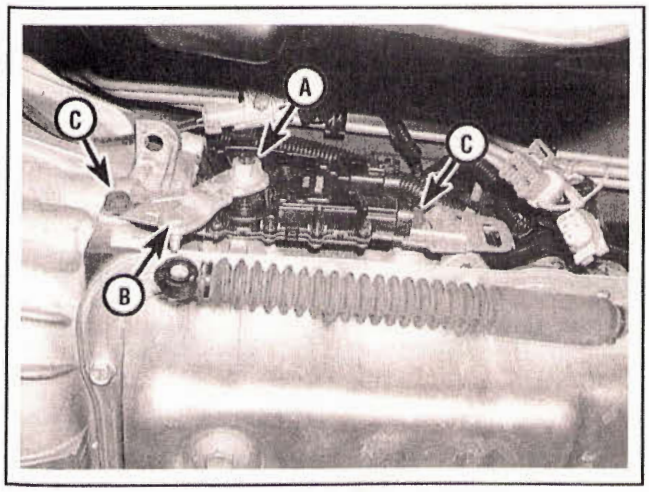
12 Attach the shift cable and reconnect the electrical connectors.

13 The remainder of installation is the reverse of removal.

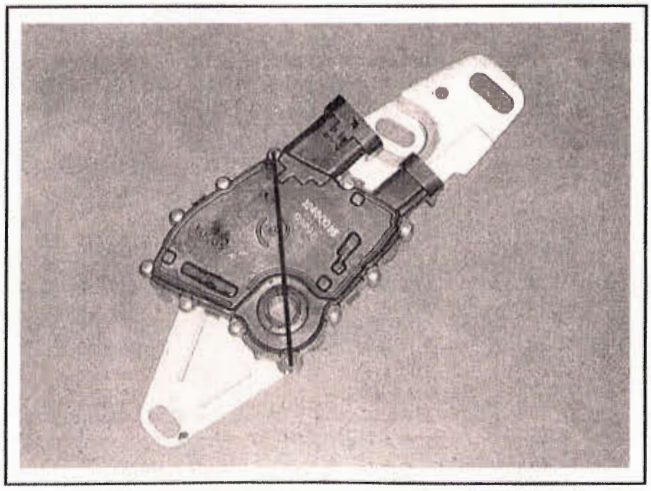
ADJUSTMENT

14 Verify that the engine will start only in Park or Neutral. If it starts in any other gear, it will be necessary to readjust the switch.

15 To adjust the switch, loosen the switch mounting bolts and turn it slightly one way or the other until the engine now only starts in Park or Neutral. Then tighten the mounting bolts.



5.7 Remove the manual lever retaining nut (A), the manual lever (B) and the switch mounting bolts (C)



5.8 Before installing the PNP switch, align the tabs on the switch with notch on the switch body - this is the Neutral position

6 Extension housing oil seal (2WD) - replacement

Refer to illustrations 6.4 and 6.5

1 Oil leaks frequently occur due to wear of the extension housing oil seal. Replacement of this seal is relatively easy, since it can be performed without removing the transmission from the vehicle.

2 The extension housing oil seal is located at the extreme rear of the transmission, where the driveshaft is attached. If leakage at the seal is suspected, raise the vehicle and support it securely on jackstands. If the seal is leaking, transmission lubricant will be built up on the front of the driveshaft and may be dripping from the rear of the transmission.

3 Remove the driveshaft (see Chapter 8).

4 Using a seal removal tool or a large screwdriver, carefully pry the oil seal out of the rear of the transmission (see illustration). Do not damage the splines on the transmission output shaft.

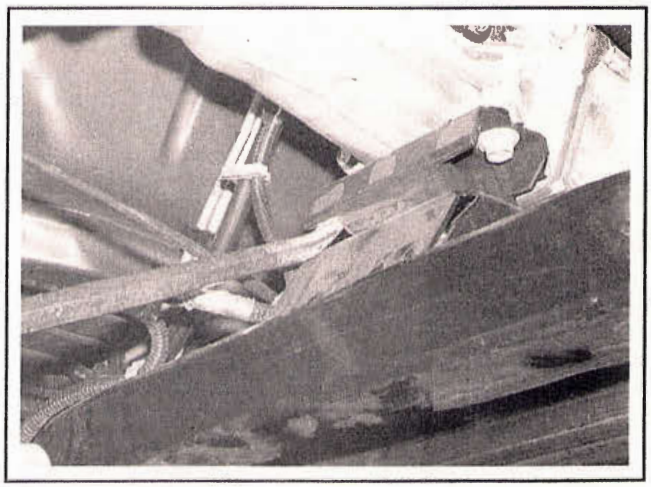
5 Using a seal driver, a large section of pipe or a very large deep socket as a drift, install the new oil seal (see illustration). Drive it into the bore squarely and make sure it's completely seated.

6 Lubricate the splines of the transmission output shaft and the outside of the driveshaft yoke with lightweight grease, then install the driveshaft (see Chapter 8). Be careful not to damage the lip of the new seal.

6.4 Carefully pry the old seal out of the extension housing - don't damage the splines on the output shaft

6.5 Drive the new seal into place with a seal driver or a large socket and hammer

7 Transmission mount - check and replacement



7.2 To check the transmission mount, insert a large screwdriver or prybar between the crossmember and the transmission and try to pry the transmission up - it should move very little (2WD model shown)

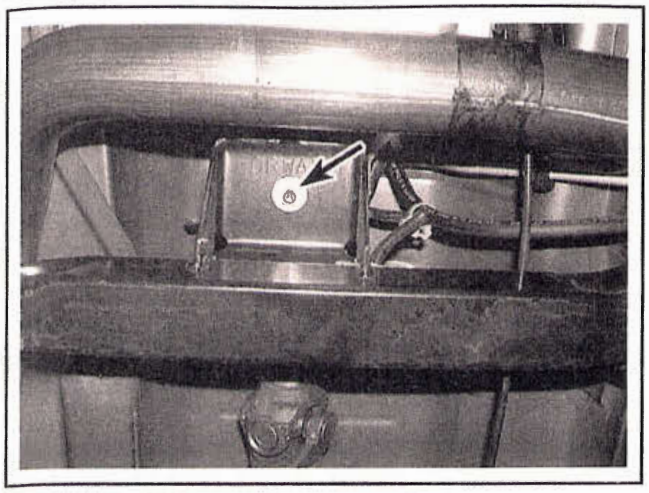
CHECK

Refer to illustration 7.2

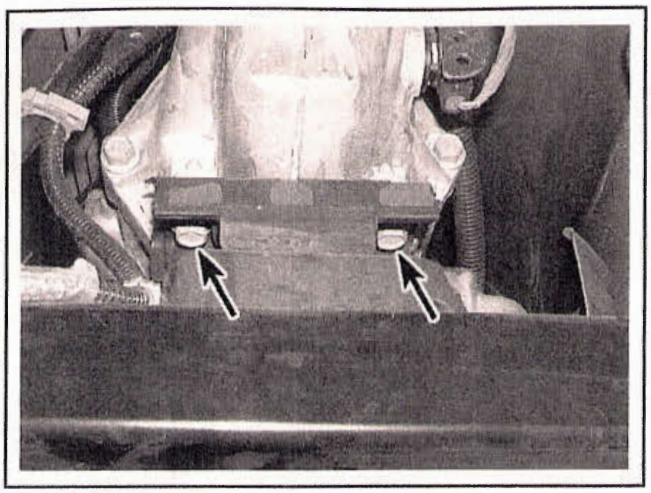
1 Raise the vehicle and support it securely on jackstands.

2 Insert a large screwdriver or prybar into the space between the transmission extension housing and the crossmember and try to pry the transmission up slightly (see illustration).

3 The transmission should not move much at all - if the mount is cracked or torn, replace it.



7.4a Transmission mount-to crossmember bolt



7.4b Transmission mount-to transmission bolts (arrows)

REPLACEMENT

Refer to illustrations 7.4a and 7.4b

4 To replace the mount, remove the bolts or nuts attaching the mount to the crossmember and the bolts attaching the mount to the transmission (see illustrations).

5 Raise the transmission slightly with a jack and remove the mount.

6 Installation is the reverse of the removal procedure. Be sure to tighten all nuts and bolts securely.

8 Automatic transmission - removal and installation

REMOVAL

Refer to illustrations 8.6, 8.8a, 8.8b, 8.9, 8.11, 8.12, 8.13a, 8.13b, 8.17, 8.18a and 8.18b

CAUTION:

The transmission and torque converter must be removed as a single assembly. If you try to leave the torque converter attached to the driveplate, the converter driveplate, pump bushing and oil seal will be damaged. The driveplate is not designed to support the load, so none of the weight of the transmission should be allowed to rest on the plate during removal.

1 Disconnect the cable from the negative terminal of the battery.

CAUTION:

On models equipped with the Theftlock audio system, be sure the lockout feature is turned off before performing any procedure which requires disconnecting the battery (see the front of this manual).

2 Raise the vehicle and support it securely on jackstands. Remove the skid plate and skid plate crossmember, if equipped.

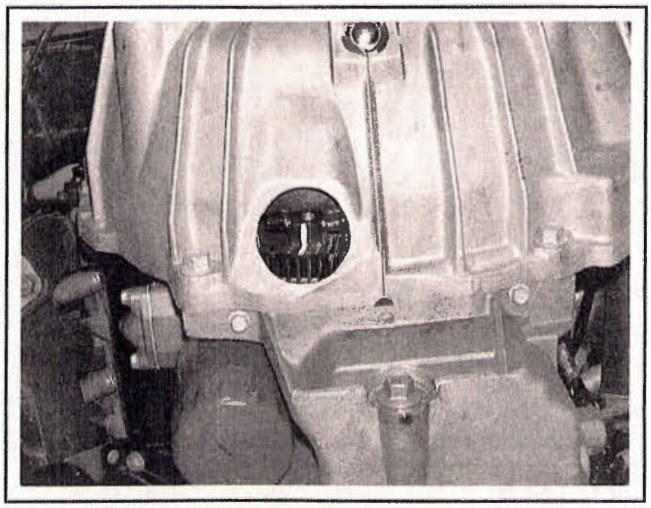
3 Remove the transmission oil pan drain plug and drain the transmission fluid (see Chapter 1).

4 Remove all exhaust components which interfere with transmission removal (see Chapter 4).

5 Remove the engine-to-transmission struts, if equipped.

6 Remove the inspection plug at the bottom of the bellhousing and mark the relationship of the torque converter to the driveplate so they can be installed in the same position (see illustration).

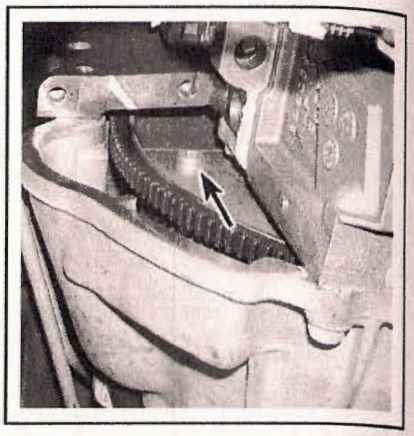
7 Remove the starter motor (see Chapter 5).



8.6 Pry off the inspection plug and mark the relationship between the torque converter and the driveplate

8.8a Passenger side bellhousing cover retaining bolt (arrow)

8.8b Driver's side bellhousing cover retaining bolt (arrow)



8.9 With a large screwdriver wedged between the teeth of the driveplate ring gear and the bellhousing, remove the torque converter-to-driveplate bolts - arrow shows one of three bolts

8 Detach the plastic covers on each side of the bellhousing (see illustrations).

9 Remove the torque converter-to-driveplate bolts (see illustration). Turn the crankshaft for access to each bolt. Turn the crankshaft in a clockwise direction only (as viewed from the front).

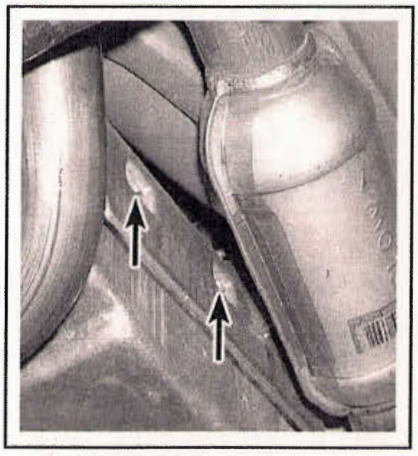
10 Mark the yokes and remove the driveshaft (see Chapter 8). On 4WD models, remove both driveshafts.

11 Working on the left side of the transmission, disconnect the shift cable from the transmission (see Section 3) and unplug the electrical connectors from the Park/Neutral position switch (see Section 5). Also remove the bolt securing the wiring harness bracket to the left side of the transmission (see illustration). On the 4L60-E models, unbolt the fuel line support bracket from the transmission.

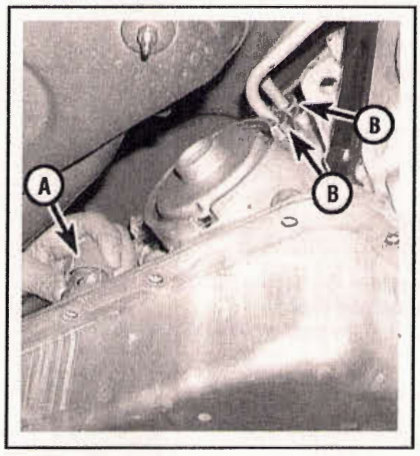
12 Working on the right side of the transmission, remove the heat shield (see illustration). Then unplug the electrical connectors from the transmission solenoid and the vehicle speed sensor (see Chapter 6).

13 Disconnect the transmission cooler lines from the right side of the transmission and the engine (see illustrations). To disconnect the lines from the transmission, simply unsnap the plastic collar from the quick connect fitting, then pry off the quick connect fitting retaining

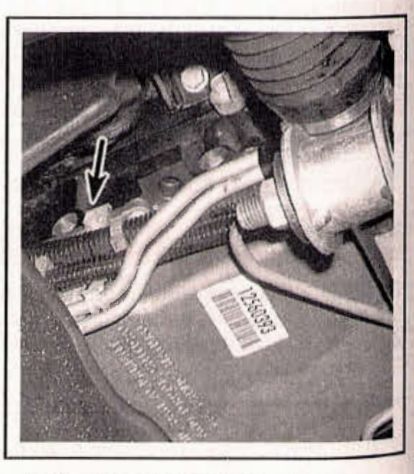
8.11 Remove the bolt (arrow) securing the wiring harness bracket to the left side of the transmission



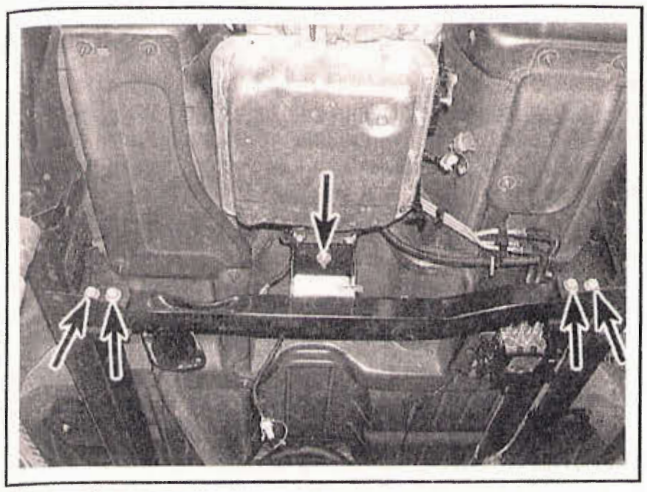
8.12 Remove the heat shield mounting bolts (arrows)



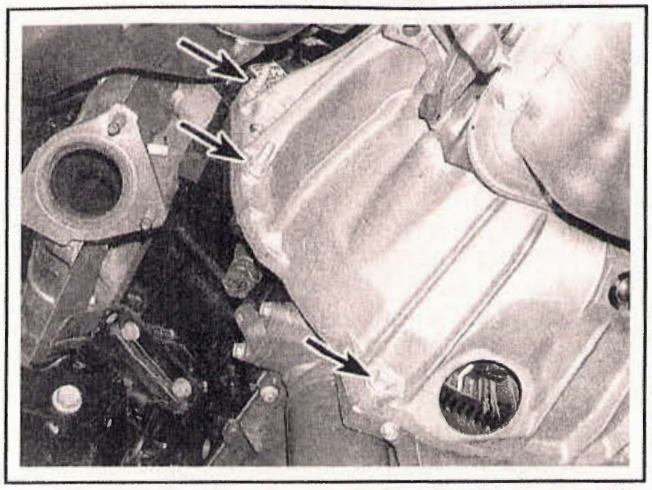
8.13a Working on the passenger side, disconnect the electrical connector from the solenoid (A) and the transmission oil cooler lines (B)



8.13b Also disconnect the bracket (arrow) securing the transmission oil cooler lines to the oil pan



8.17 Transmission crossmember mounting bolts (arrows)



8.18a Driver's side bellhousing bolts (arrows)

clip and remove the lines. Plug the ends of the lines to prevent fluid from leaking out after you disconnect them. Always be sure to inspect the O-rings on the cooler lines before reinstallation.

14 On 4WD models, remove the transfer case (see Chapter 7C).

➡Note: If you are not planning to replace the transmission, but are removing it in order to gain access to other components such as the torque converter, it isn't really necessary to remove the transfer case. However, the transmission and transfer case are awkward and heavy when removed and installed as a single assembly; they're much easier to maneuver off and on as separate units.

If you decide to leave the transfer case attached, disconnect the shift rod (manual shift models only) from the transfer case shift lever. Also disconnect the electrical connectors from the transfer case speed sensors and detach the transfer case vent tube (see Chapter 7C).

WARNING:

If you decide to leave the transfer case attached to the transmission, be sure to use safety chains to help stabilize the transmission and transfer case assembly and to prevent it from falling off the jack head, which could cause serious damage to the transmission and/or transfer case and serious bodily injury to you.

15 Support the engine with a jack. Use a block of wood under the oil pan to spread the load.

16 Support the transmission with a jack - preferably a jack made for this purpose (available at most tool rental yards). Safety chains will help steady the transmission on the jack.

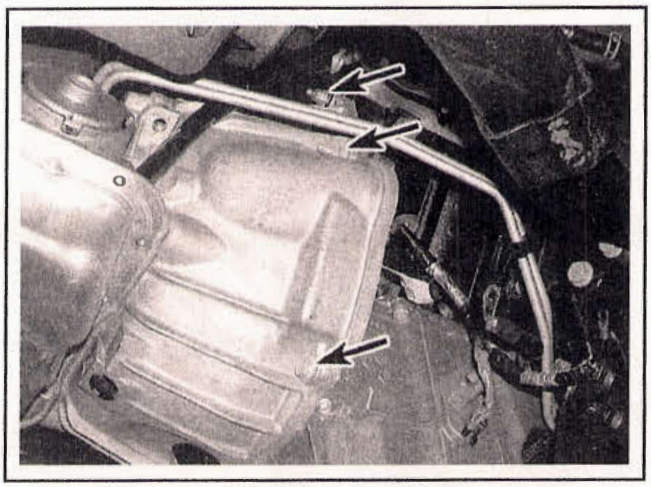
17 Remove the bolt securing the transmission mount to the crossmember. Then raise the transmission slightly and remove the crossmember (see illustration).

18 Remove the bolts securing the transmission to the engine (see illustrations). A long extension and a U-joint socket will greatly simplify this step.

➡Note: The upper bolts are easier to remove after the transmission has been lowered (see the next Step).

19 Lower the engine and transmission slightly and remove the fill/dipstick tube bracket bolt and pull the tube out of the transmission. Don't lose the tube seal (it can be reused if it's still in good shape).

20 Clamp a small pair of locking pliers on the bellhousing case



8.18b Passenger side bellhousing bolts (arrows) - there are three more bolts at the top of the bellhousing that are not visible in this photo

through the lower inspection hole. Clamp the pliers just in front of the torque converter, behind the driveplate. The pliers will prevent the torque converter from falling out while you're removing the transmission. Move the transmission to the rear to disengage it from the engine block dowel pins and make sure the torque converter is detached from the driveplate. Lower the transmission with the jack.

INSTALLATION

21 Prior to installation, make sure the torque converter is securely engaged in the pump. If you've removed the converter, apply a small amount of transmission fluid on the torque converter rear hub, where the transmission front seal rides. Install the torque converter onto the front input shaft of the transmission while rotating the converter back and forth. It should engage into the transmission front pump in stages. To make sure the converter is fully engaged, lay a straightedge across the transmission-to-engine mating surface and make sure the converter lugs are at least 3/4-inch below the straightedge. Reinstall the locking pliers to hold the converter in this position.

22 With the transmission secured to the jack, raise it into position.

23 Turn the torque converter to line up the holes with the holes in

the driveplate. The marks on the torque converter and driveplate made in Step 6 must line up.

24 Move the transmission forward carefully until the dowel pins and the torque converter are engaged. Make sure the transmission mates with the engine with no gap. If there's a gap, make sure there are no wires or other objects pinched between the engine and transmission and also make sure the torque converter is completely engaged in the transmission front pump. Try to rotate the converter - if it doesn't rotate easily, it's probably not fully engaged in the pump. If necessary, lower the transmission and install the converter fully.

25 Install the transmission dipstick tube and seal into the transmission housing, then install the transmission-to-engine bolts and tighten them securely. As you're tightening the bolts, make sure that the engine and transmission mate completely at all points. If not, find out why. Never try to force the engine and transmission together with the bolts or you'll break the transmission case!

26 Raise the rear of the transmission and install the transmission crossmember.

27 Remove the jacks supporting the transmission and the engine.

28 Install the torque converter-to-driveplate bolts. Tighten them to the torque listed in this Chapter's Specifications. Install the plastic bellhousing covers.

29 Install the starter motor (see Chapter 5).

30 Install new retaining rings onto the quick-connect fittings.

➡Note: Don't push the retaining rings onto the fittings. Instead, hook one of the ends of the clip into a slot in the fitting, then rotate the other end of the ring into the other slot. If the retaining ring isn't installed like this, it may become spread-out and won't be able to retain the cooler lines securely.

Connect the transmission fluid cooler lines to the fittings, making sure they click into place, then push the plastic caps onto the fittings.

31 Plug in the transmission electrical connectors and install the heat shield.

32 Connect the shift cable (see Section 3).

33 Install the torque converter inspection cover.

34 On 4WD models, install the transfer case, if removed (see Chapter 7C).

35 Install the driveshaft(s) (see Chapter 8).

36 Adjust the shift cable (see Section 3).

37 Install any exhaust system components that were removed or disconnected (see Chapter 4).

38 Remove the jackstands and lower the vehicle.

39 Fill the transmission with the specified fluid (see Chapter 1), run the engine and check for fluid leaks.

Specifications

General

Transmission fluid type	See Chapter 1

Torque specifications	Ft-lbs (unless otherwise indicated)
Park/Neutral Position (PNP) switch mounting bolts	18
Park/Neutral Position (PNP) switch lever nut	18
Transmission fluid pan bolts	See Chapter 1
Torque converter-to-driveplate bolts	44
Transmission- to engine block bolts	37
Transmission mount bolts	18