

240 Automatic Transmission

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GENERAL

This repair group covers basic automatic transmission service, including fluid service and unit removal and installation. Transmission tear down and overhaul is not covered here.

Due to different power characteristics and performance requirements, three different automatic transmissions are used on the cars covered by this manual. All transmissions are electronically-controlled and fully adaptive. See **Table a**.

NOTE —

Additional automatic transmission application information is given in **200 Transmission-General**.

Automatic transmissions are identified by code letters located on a data plate on the left side of the transmission housing, just behind the manual valve lever.

Table a. Automatic Transmission Applications

Model	735i/iL (1988-92)	740i/iL (1993-94)	750iL (1988-94)
Type	4 HP 22 EH	A5S 560Z	4 HP 24
Forward speeds	4-speed	5-speed	4-speed

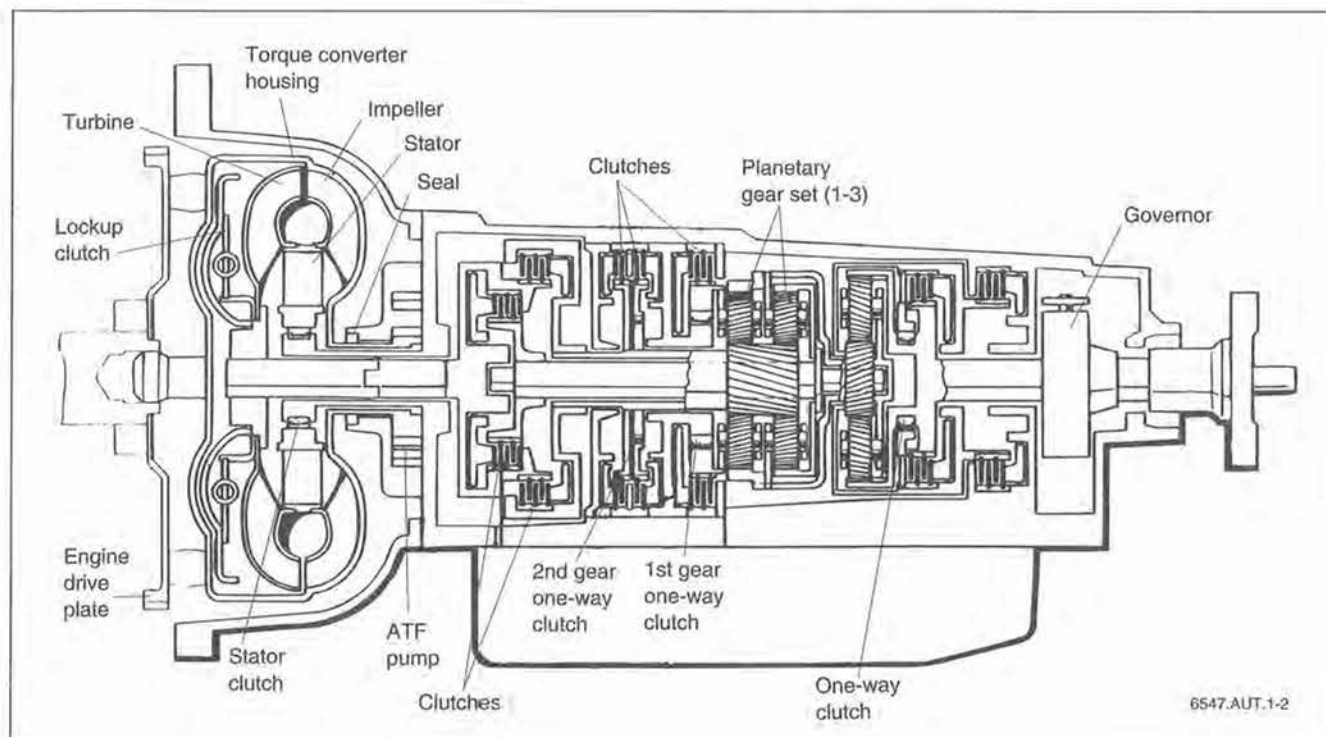
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NOTE—

• Internal repairs to the automatic transmission require special service equipment and knowledge. If it is determined that internal service is needed, consult an authorized BMW dealer about a factory reconditioned unit or a transmission rebuild.

• Driveshaft and final drive repair information is covered in 260 Driveshaft.

The transmission case contains the automatic transmission fluid (ATF) pump, the hydraulic controls, and the planetary gear system. The planetary gear system is lubricated by ATF, circulated through the transmission by the ATF pump. The ATF does not circulate unless the engine is running.



GENERAL

TROUBLESHOOTING

Begin troubleshooting by checking the ATF condition and level. Check to see if the fluid is dirty or has a burned odor. A burned odor usually indicates overheated fluid. This may be accompanied by burned clutches, as well as friction material that may be clogging valve body passages. Minor automatic transmission problems can often be corrected by draining and refilling the transmission with new ATF.

NOTE—

*The A5S 560Z transmission used on a 740i/L is not equipped with a fluid level dipstick. Checking the ATF level on these transmissions must be done while monitoring the ATF temperature with the engine idling. The BMW dealer is equipped with the special equipment to make this check. If in doubt about the fluid level, one option is to completely drain the old fluid and add the specified amount of new fluid. See **ATF Service**.*

Inspect the transmission for external damage, loose or missing fasteners or electrical connectors and obvious leaks. Many automatic transmission problems can be traced to an incorrect ATF level, or faulty electronic controls.

Table b lists symptoms of automatic transmission problems, their probable causes, and recommended corrective actions. The repair headings or repair groups where the appropriate test and repair procedures can be found are also listed.

NOTE—

*Selector lever and gearshift linkage repair information is covered in **250 Gearshift Linkage**.*

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Table b. Automatic Transmission Troubleshooting

Symptom	Probable cause	Corrective action
1. Park does not hold	a. Selector lever linkage misadjusted. b. Parking pawl or pawl spring broken.	a. Adjust selector lever linkage. 250 Gearshift Linkage b. Transmission must be removed and partially disassembled to access parking pawl.
2. No Drive (car will not move)	a. ATF level low. b. Selector lever linkage misadjusted. c. Sticking pressure valves, faulty ATF pump, or broken gear or shaft.	a. Check and if necessary correct ATF level. ATF Service b. Adjust linkage. 250 Gearshift Linkage c. Test ATF main pressure. See Diagnostic Testing
3. Irregular drive in all forward gears	a. ATF level low. b. ATF pump strainer (filter) partially clogged. c. Gear position/neutral safety switch faulty. d. Internal transmission damage.	a. Check ATF level. ATF Service b. Remove ATF sump. Clean or replace filter screen. ATF Service c. Replace gear position/neutral safety switch. Transmission Service d. Overhaul or replace transmission.
4. Transmission slips during cornering	a. ATF level low. b. Clogged ATF strainer.	a. Check ATF level. ATF Service b. Clean/replace strainer. ATF Service
5. ATF smells burned, dark colored	a. Damaged clutch friction linings, internal faults.	a. Overhaul or replace transmission.
6. Selector lever will not move	a. Selector lever linkage binding. b. Internal transmission failure. c. Shift-lock faulty.	a. Check and adjust linkage. 250 Gearshift Linkage b. Overhaul or replace transmission. c. Check shift-lock solenoid. 250 Gearshift Linkage
7. Hard jolt when moving selector lever from N to D or R	a. Idle speed too high. b. ATF level low. c. Faulty gear position/neutral safety switch. d. Internal transmission fault.	a. Check engine idle speed. 130 Fuel Injection b. Check and correct ATF level. ATF Service c. Replace gear position/neutral safety switch. 250 Gearshift Linkage d. Overhaul or replace transmission
8. Hard jolt on upshift or downshift	a. Faulty clutch(es). b. Valve body faulty. c. Transmission electronics faulty.	a. Overhaul or replace transmission b. Replace valve body. <i>Dealer service recommended</i> c. Check transmission electronic controls. <i>Dealer service recommended</i>
9. Vibration when accelerating quickly from a stop	a. Driveshaft vibration. b. Faulty clutch(es).	a. Check driveshaft U-joints, driveshaft center bearing, driveshaft alignment. 260 Driveshaft b. Overhaul or replace transmission. <i>Dealer service recommended</i>
10. Car cannot be started in N or P	a. Faulty gear position/neutral safety switch.	a. Replace gear position/neutral safety switch. 250 Gearshift Linkage
11. No upshift into 2nd, 3rd or 4th gear	a. Faulty gear position/neutral safety switch. b. Transmission electronics faulty (valve body solenoid faulty). c. Valve body faulty. d. Transmission electronics faulty. e. Valve body solenoids faulty.	a. Replace gear position/neutral safety switch. 250 Gearshift Linkage b. Test valve body solenoid operation. <i>Dealer service recommended</i> c. Replace valve body. <i>Dealer service recommended</i> d. Check transmission electronic controls. <i>Dealer service recommended</i> e. Repair or replace valve body. <i>Dealer service recommended</i>
12. Upshift delayed in all gears	a. ATF level low. b. Valve body contaminated or plugged. c. Internal pressure valves sticking or faulty. d. Transmission electronics faulty.	a. Check and correct ATF level. ATF Service . b. Remove valve body and clean or replace. <i>Dealer service recommended</i> c. Overhaul or replace transmission. d. Check transmission electronic controls. <i>Dealer service recommended</i>

DIAGNOSTIC TESTING

NOTE—

In order for automatic transmission diagnostic testing to provide meaningful results, the engine must be running correctly (i.e., no mechanical faults and properly tuned).

Although most internal transmission problems cannot be fully diagnosed unless the unit is removed and disassembled, the tests given here may be helpful in pinpointing faults. To obtain accurate test results, the ATF must be clean, the correct type, in good condition (not previously overheated or burned), and at the proper level.

Stall speed, checking

The stall speed test is used mainly to check the torque converter and planetary gear system when there is no other apparent cause for transmission slippage. The term is somewhat misleading as the car is not actually stalled during the test. A precise tachometer should be used for the rpm measurement.

CAUTION—

The stall speed test should be as short as possible—never longer than 10 seconds. Prolonging the test will overheat the transmission and possibly damage the seals or internal components.

- Drive car to warm engine and transmission to normal operating temperature. Turn engine off.
- Connect tachometer according to instrument manufacturer's instructions. Start engine.

NOTE—

Position tachometer so that it can be read from the driver's seat.

- Set parking brake and depress foot brake firmly.
- Select transmission **Drive (D)** range.
- Press accelerator to floor for no more than 10 seconds. Record maximum rpm (stall speed).
 - Engine rpm should increase, then hold steady. **Table c** lists stall speed specifications.

WARNING—

Do not stand in front of or behind the car when the engine is running and tests are being made.

NOTE—

It is normal for the stall speed to be 125 rpm lower than specified for each 1,000 meters (3,200 ft.) above sea level. High ambient air temperature can also cause a drop in stall speed.

Table c. A/T Stall Speed Specifications

Transmission	Stall speed (rpm)
4 HP 22 EH	2,100-2,300
4 HP 24	2,000-2,200
A5S 560Z	1,850-2,050

Stall speed that is below the specified range by a few hundred rpm is probably due to reduced engine performance. Stall speed that is below the specified range by 400 rpm or more indicates a faulty torque converter stator or ATF pump. Check the pump pressure as described below.

Stall speed above the specified range is caused either by low ATF level, or by slippage in the hydraulic or one-way clutches.

ATF main pressure, checking

A main pressure test will reveal internal leaks, sticking control valves, or other troubles in the hydraulic controls. The pressure gauge should have a range of 0 to 20 bar (0 to 300 psi) with a hose long enough to reach into the passenger compartment.

NOTE—
Engine idle speed must be correct when making a main pressure check.

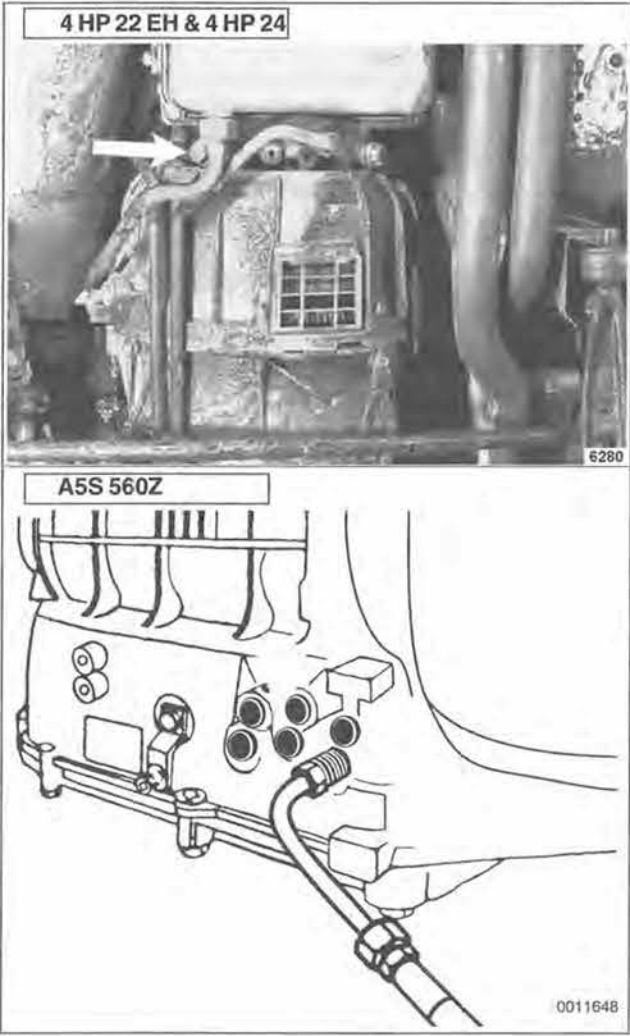
- Main pressure tap on transmissions.
- Remove main pressure tap plug and connect pressure gauge to transmission tap.

NOTE—
Position pressure gauge so that it can be read from the driver's seat.

- Drive car to warm transmission to normal operating temperature.
- Park car and firmly set parking brake and block wheels. Have an assistant firmly push brake pedal. Be prepared to shut off engine.

WARNING—
Never stand in front of or behind the car when the engine is running and tests are being made.

- Place selector lever in **D**. Pressure should be as shown in **Table d**.
- On 4 HP 22 EH and 4 HP 24 transmissions, shift transmission into **R**. Pressure should increase as listed.
- Shift back to **D** and road test car. Test pressures are given in **Table d**.



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Table d. A/T Main Pressures

Transmission	Test pressure @ engine rpm
4 HP 22 / 4 HP 24 D (Drive)	5.5-7.7 bar (80-111 psi) at idle 9.0-11.0 bar (130-160 psi) at kickdown
R (Reverse)	11-14 bar (160-189 psi) at idle 17.0-20.0 bar (246-290 psi) at kickdown
2,3,4	4.6-5.8 bar (67-84 psi) at idle
A5S 560Z P (Park)	5.4-6.4 bar (78-93 psi) at idle

- When finished, stop engine, remove gauge and replace pressure tap plug. Replace any lost fluid.

Tightening Torque

- Pressure tap plug 43 Nm (32 ft-lb)

Pressure that is higher or lower than specified usually indicates a malfunctioning valve body or valve body solenoid valves. The valve body can be removed, cleaned, and reinstalled with the transmission in place by removing ATF sump and filter screen.

CAUTION—

The valve body contains many precision parts that must be reassembled in their exact locations. It is recommended that valve body repairs be left to an authorized BMW dealer or other qualified repair shop.

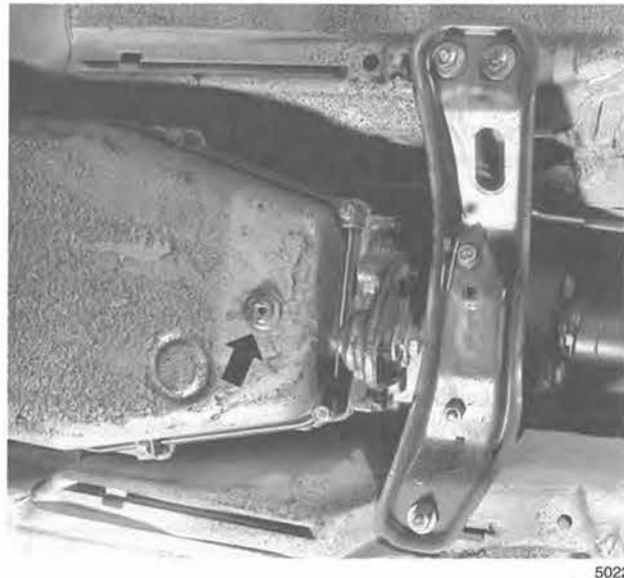
Low pressure may also indicate a worn ATF pump or internal ATF pump leak past seals, gaskets or metal mating surfaces. These repairs require that the transmission be removed and disassembled.

ATF SERVICE

4 HP 22 EH or 4 HP 24 transmission ATF service

- Remove dipstick.

- Remove ATF drain plug (**arrow**) and drain fluid into container. 4 HP 22 EH transmission shown, 4 HP 24 transmission is similar.



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WARNING—

The ATF should be warm when draining. Do not drain the ATF if the engine is hot. Hot ATF can scald.

- Disconnect oil filler pipe (**arrow**) from oil sump. 4 HP 22 EH transmission shown, 4 HP 24 transmission is similar.

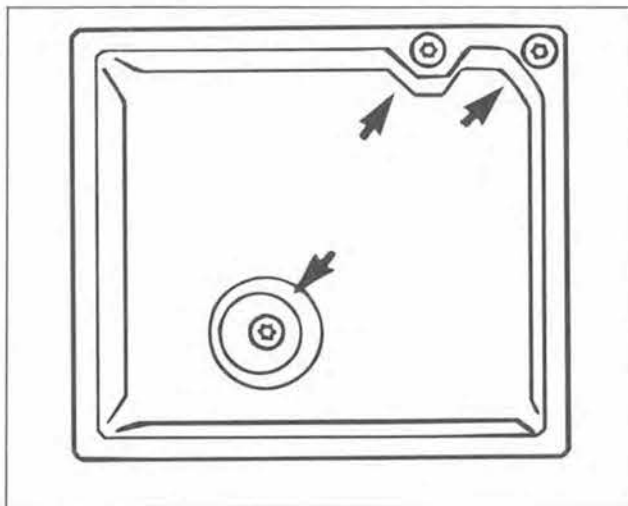


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- Remove ATF sump mounting bolts and clamping brackets (arrows), and remove sump.



- Remove ATF fluid strainer mounting bolts (arrows) on 4 HP 22 EH transmission. 4 HP 24 transmission is similar.

NOTE—

Make sure the O-ring is attached to top of strainer when removing.

- Installation is reverse of removal.

- Always replace drain plug seal and all gasket(s).
- Clean sump and sump magnets using a lint-free cloth.
- When mounting sump, mount curved sump clamping brackets at front and rear corners of sump. Mount straight clamping brackets at sump sides. The short legs on clamps should contact oil sump.
- Fill transmission with specified amount of fluid.

NOTE—

Check the ATF level with the car on level surface, engine running, and selector lever in **Park**. The ATF level should be between the dipstick min. and max. marks when the ATF is at a temperature of approx. 80° C (175° F).

ATF Change Volume

- Dexron III 3.0 L (3.2 qt.)

Tightening Torques

- ATF drain plug to ATF sump 16 Nm (12 ft-lb)
- ATF strainer to valve body 8 Nm (71 in-lb)
- ATF sump to transmission. 6 Nm (53 in-lb)

A5S 560Z transmission ATF service

CAUTION—

The A5S 560Z transmission uses a semi-synthetic ATF, only available from an authorized BMW dealer. Dexron ATF must not be used in the A5S 560 Z.

- Remove drain plug and drain fluid into container.

WARNING—

The ATF should be warm when draining. Do not drain the ATF if the engine is hot. Hot ATF can scald.

- Remove oil sump mounting bolts and remove sump and sump gasket.

- Remove strainer mounting screws and remove strainer.

ATF fluid strainer and O-ring on A5S 560Z transmission.

- Make sure the O-ring is attached to top of strainer when removing.

- Installation is reverse of removal.

- Always replace drain plug seal and all gaskets and O-rings.
- Clean sump, expansion tank and sump magnets using a lint-free cloth.
- To remove expansion tank, lift it straight off sump.
- Fill transmission with specified fluid and check fluid level with ATF at temperature of

NOTE—

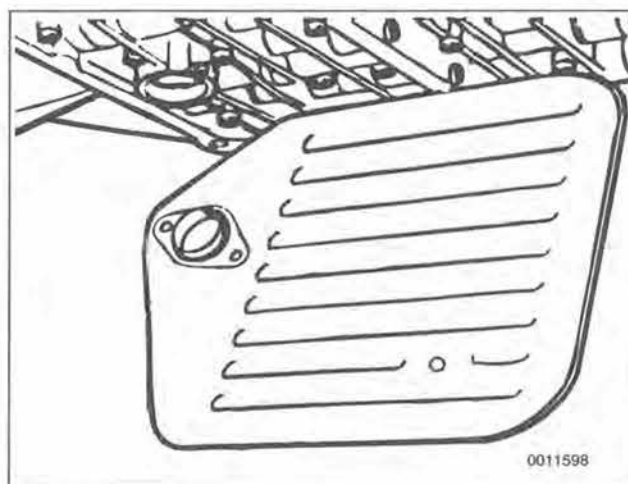
For the most accurate check of the ATF level, the car must be on level surface and unloaded, preferably on a lift. With the ATF at a temperature between 30-50°C (86-122°F), remove the ATF filler plug. Place the transmission in neutral and start the engine. Add ATF until it spills from the filler hole. Reinstall the filler plug.

ATF Change Volume

- BMW semi-synthetic fluid (Shell LA 2634) 5.5 L (5.8 qt.)

Tightening Torques

- ATF drain plug to ATF sump 50 Nm (37 ft-lb)
- ATF strainer to valve body 5 Nm (44 in-lb)
- ATF sump to transmission 10 Nm (7 ft-lb)



TRANSMISSION REMOVAL AND INSTALLATION

Removal of the transmission requires a transmission jack or a floor jack with transmission adaptor. Use extreme caution when working beneath the car and lowering the transmission. Torx® sockets will be needed to remove the bellhousing bolts.

When installing a new or rebuilt transmission, the ATF cooler and lines must be blown clean with compressed air and then thoroughly flushed twice with clean ATF.

4 HP 22 EH or 4 HP 24 transmission removing and installing

- Disconnect negative (–) battery cable. See 020 Maintenance.

CAUTION—

Prior to disconnecting the battery, read the battery disconnection cautions given at the front of this manual on page viii.

- Remove complete exhaust system and exhaust system heat shields. See 180 Exhaust System.
- ◀ Position selector lever in park. Counterhold clamping sleeve and loosen selector lever cable clamping nut (1) on lever. Remove cable from bracket (2) and slide cable out of selector lever.
- Support transmission from below using transmission jack. Unbolt transmission support crossmember from body.
- Disconnect driveshaft from transmission end.

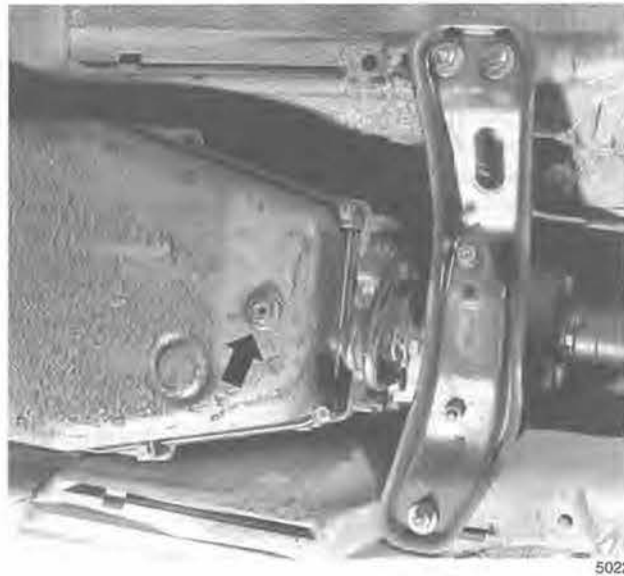
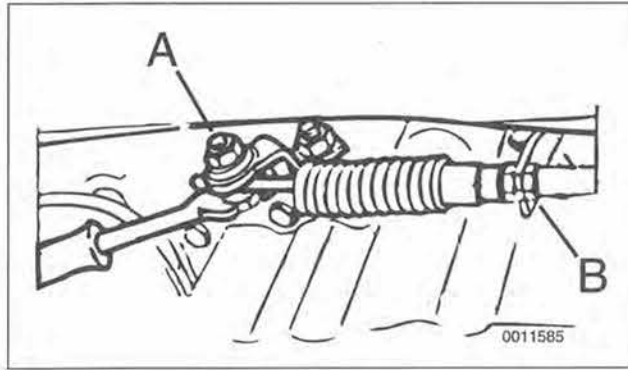
NOTE—

Discard driveshaft mounting nuts. They are single use self-locking nuts.

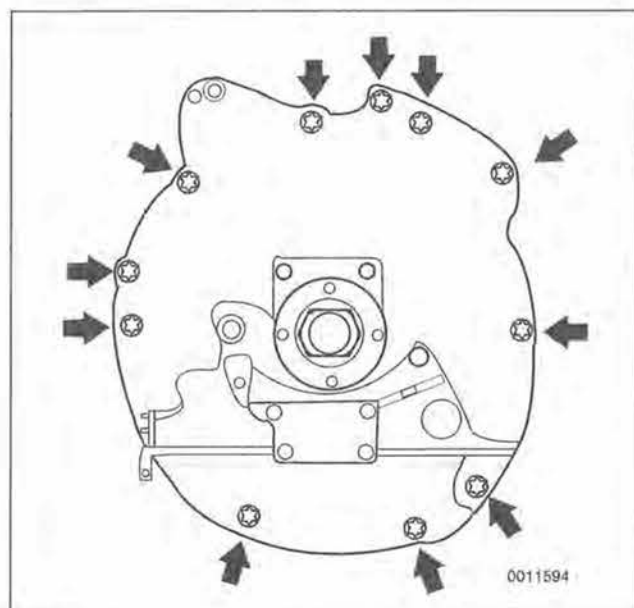
- ◀ Remove ATF sump drain plug (arrow) on 4 HP 22 EH transmission and drain transmission. 4 HP 24 transmission is similar.
- Remove ATF filler tube and ATF cooler lines from transmission. Plug open lines and holes to prevent contamination.
- Disconnect electrical harness connector(s) from transmission.
- Remove torque converter mounting bolts (3) from perimeter of driveplate. Turn driveplate to access bolts.

NOTE—

On 735/iL models, it is necessary to first remove the cap from the opening in the oil pan to access the torque converter bolts.



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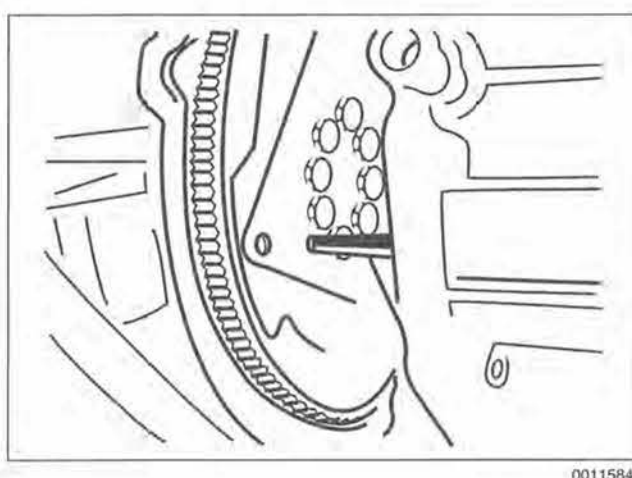
➤ Remove transmission bellhousing bolts (**arrows**).

- Remove transmission by pulling back and down. Lower jack to allow transmission to clear vehicle.

CAUTION —

Do not allow the torque converter to fall off the transmission input shaft.

- Installation is reverse of removal.
 - To avoid damage when installing transmission, rotate torque converter back and forth to check that it has engaged its splines and be sure to correctly align torque converter tabs to drive plate indents.
- When installing the transmission to engine, first turn drive plate and torque converter until one of three mounting bores is pointing straight down.



➤ Install BMW special tool 2 42 300 or a wooden dowel into the torque converter as an alignment guide. Remove tool or dowel once torque converter is seated on drive plate.

- Blow out oil cooler lines with low-pressure compressed air and flush cooler with clean ATF twice before reattaching lines to transmission.

CAUTION —

- Wear safety glasses when working with compressed air.
- Do not reuse ATF after flushing.

- Install new sealing washers on hollow bolts.
- Install new O-rings on transmission cooler lines, where applicable.
- Inspect drive plate for cracks or elongated holes. Replace if necessary. Use new bolts.
- Check to be sure torque converter is seated correctly in transmission during final installation.
- Fill transmission with clean ATF until oil level is even with fill hole. Then check fluid level as described earlier.
- When reinstalling driveshaft, always replace nuts securing flexible coupling with new ones. Torque nuts while holding bolt stationary. Do not torque bolt head as coupling will be damaged. See **260 Driveshaft**.
- Adjust gearshift mechanism. See **250 Gearshift linkage**.
- Be sure two dowel sleeves in engine block are not missing and firmly seated.
- Check torque converter installation once transmission is installed. When correctly installed, mounting surface of torque converter should be slightly below edge of transmission case.

AUTOMATIC TRANSMISSION 240-13

NOTE—

Torx bolts should be used with washers. Bolts without washers will increase the effort needed to remove them.

Tightening Torques

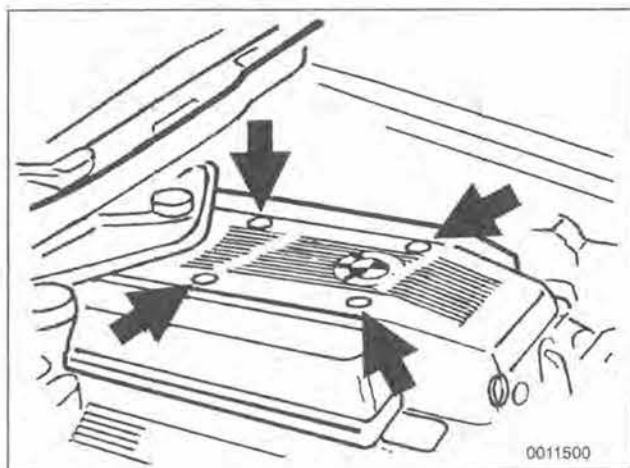
• ATF cooler line coupling nuts	21 Nm (15 ft-lb)
• ATF cooler line hollow bolt M14/M16	38 Nm (28 ft-lb)
• ATF filler tube to ATF sump	98 Nm (72 ft-lb)
• ATF sump drain plug (M10)	16 Nm (12 ft-lb)
• Driveplate to crankshaft	105 Nm (77 ft-lb)
• Rear transmission support (to body)	24 Nm (18 ft-lb)
• Torque converter to drive plate M8	26 Nm (19 ft-lb)
M10	49 Nm (36 ft-lb)
• Transmission reinforcement plate	24 Nm (18 ft-lb)
• Transmission to engine (Torx®-head) M8	21 Nm (15 ft-lb)
M10	42 Nm (31 ft-lb)
M12	63 Nm (46 ft-lb)

A5S 560 Z transmission, removing and installing

- Disconnect negative (–) battery cable. See **020 Maintenance**.

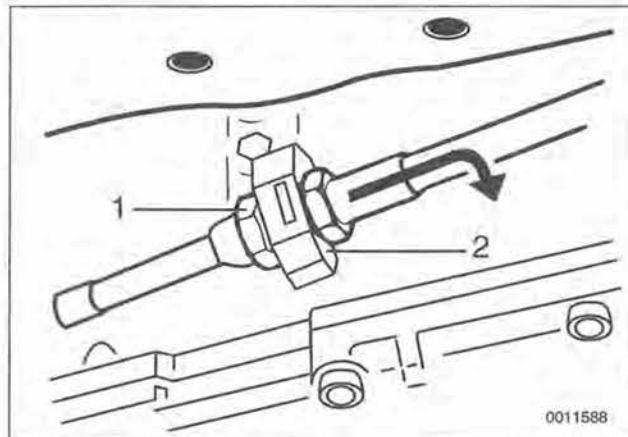
CAUTION—

Prior to disconnecting the battery, read the battery disconnection cautions given at the front of this manual on page viii.



- ◀ Pry off caps (**arrows**) and remove plastic cover from center top of engine. Remove both plastic covers from top of left and right cylinder head covers.
- Remove complete exhaust system, exhaust system heat shields, and underbody protection. See **180 Exhaust System**.

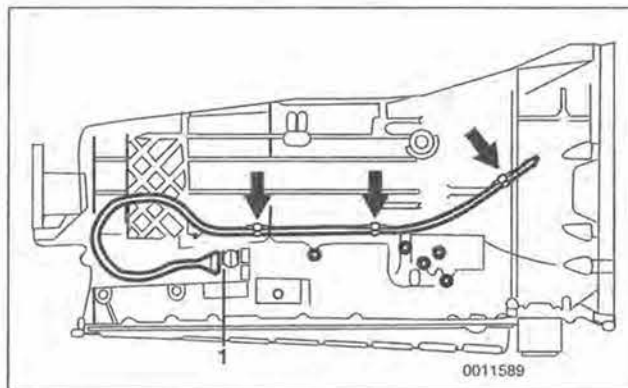
240-14 AUTOMATIC TRANSMISSION



- Position selector lever in park. Counterhold clamping sleeve and loosen selector lever cable clamping nut (1) on lever. Remove cable from bracket (2) and slide cable out of selector lever.

NOTE—

Counterhold selector cable clamping sleeve when loosening clamping nut. This will prevent bending or distorting cable.

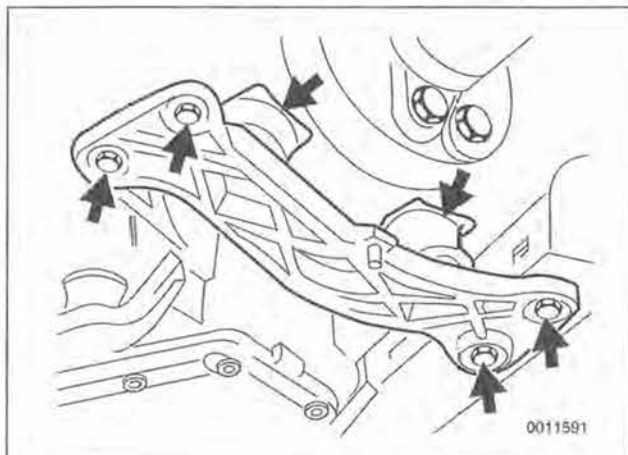


- Disconnect main harness connector (1) and clips (arrows).
- Disconnect left and right coolant pipes from ATF oil cooler.

NOTE—

Approximately one quart of coolant will drain from the cooler when the lines are removed. Use a clean drain pail to catch the fluid.

- Unbolt stabilizer bar U-brackets and lower stabilizer bar.



- Support transmission from below using transmission jack. Unbolt transmission support crossmember from body (arrows).

- Disconnect driveshaft from transmission. Unbolt driveshaft center support from body and suspend driveshaft using stiff wire.

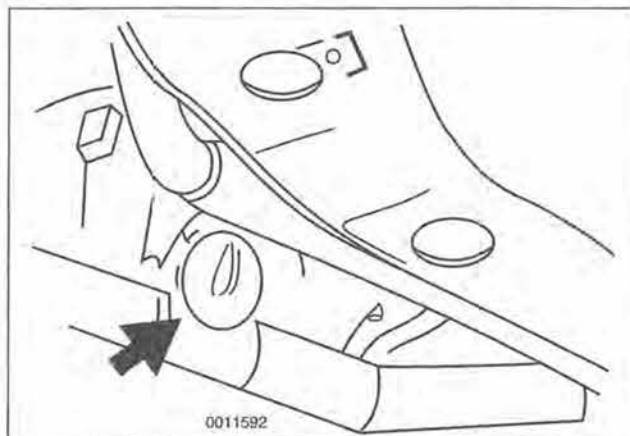
NOTE—

• When disconnecting the driveshaft, unbolt the flex disc from the transmission flange, and not the driveshaft from the flex disc.

• Discard driveshaft mounting nuts. They are single use self-locking nuts.

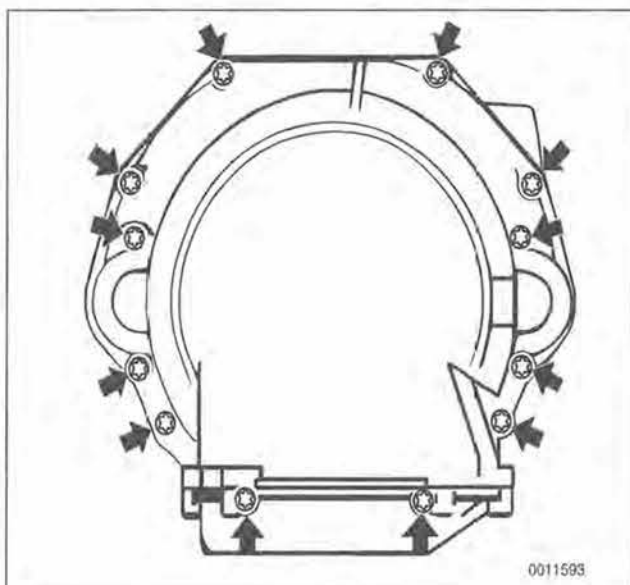
- Unbolt left and right heat shields from front lower sides of chassis. Slide heat shields forward as much as a possible.

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- Rotate steering wheel to left or right lock. Pry out cap from opening in oil sump (**arrow**) to access torque converter mounting bolts.

- Remove torque converter to drive plate mounting bolts (3) from perimeter of driveplate. Turn driveplate to access bolts.



- Remove transmission to engine mounting bolts (**arrows**). Bolts at top are T10 size. All others are T12 size. Note that bolts at starter are fitted with nuts at front.

- Pull transmission off engine and lower out of car.

CAUTION —

- Make sure the exhaust manifolds do not bear any weight when removing the transmission.
- Make sure the torque converter is secured in the transmission bellhousing during removal of the transmission.

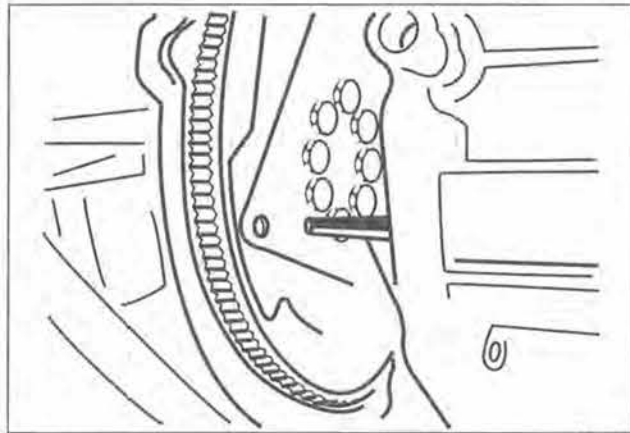
NOTE —

Before lowering transmission, wedge a block of hardwood between the engine oil pan and suspension crossmember pipe to hold the engine up.

- Installation is reverse of removal.

- Check driveplate for cracks or damage and replace if any faults are found. Use only new bolts when installing new driveplate.
- Check that torque converter is correctly and fully seated before installing transmission.
- To avoid damage when installing transmission, rotate torque converter back and forth to check that it has engaged its splines and be sure to correctly align torque converter tabs to drive plate indents.

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When installing transmission to the engine, first turn the drive plate and torque converter until one of the three mounting bores is pointing straight down. Install BMW special tool 2 42 300 or a wooden dowel into the torque converter as an installation alignment guide. Remove the tool or dowel through the opening in the oil pan once the transmission is seated.

- Use a new gasket on ATF sump drain plug, and new O-rings on ATF filler tube and cooler lines.
- Adjust transmission accelerator cable and selector lever linkage.
- When reinstalling driveshaft always replace nuts securing flexible coupling with new ones. Torque nuts while holding bolt stationary. Do not torque bolt head as the coupling will be destroyed. See **260 Driveshaft**.
- Check condition of O-ring on oil cooler pipes and replace if necessary.
- Fill transmission with ATF.

Tightening Torques(A5S 560Z)

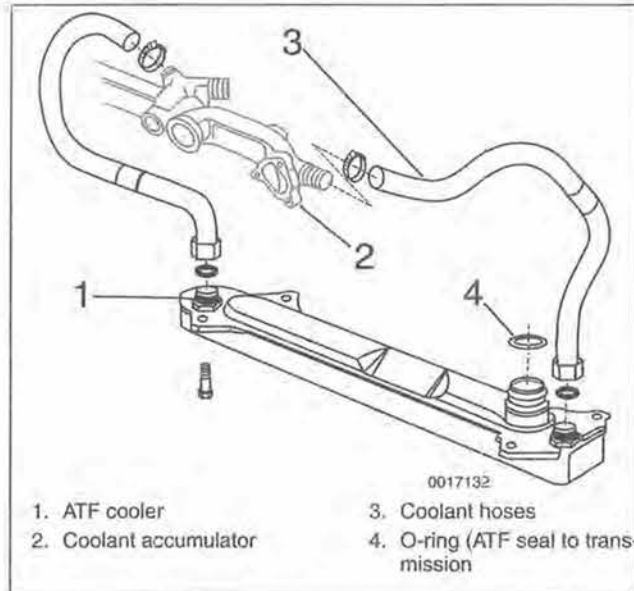
- ATF cooler line coupling nuts $18 \pm \frac{3}{0}$ Nm ($13 \pm \frac{2}{0}$ ft-lb)
- ATF cooler line hollow bolt (M16) $35 \pm \frac{3}{0}$ Nm ($26 \pm \frac{2}{0}$ ft-lb)
- ATF cooler line adaptor coupling M16 to M14 $35 \pm \frac{3}{0}$ Nm ($26 \pm \frac{2}{0}$ ft-lb)
- ATF sump drain plug (M 10) 50 Nm (37 ft-lb)
- Rear transmission support to body... 21 Nm (15 ft-lb)
- Torque converter to drive plate
 - M8..... 25–27 Nm (18–20 ft-lb)
 - M10..... 47–51 Nm (35–38 ft-lb)
- Transmission to engine (hex-head)
 - M8..... 24 Nm (18 ft-lb)
 - M10..... 45 Nm (33 ft-lb)
 - M12..... 78–86 Nm (58–63 ft-lb)
- Transmission to engine (Torx®-head)
 - M8..... 21 Nm (15 ft-lb)
 - M12..... 72 Nm (53 ft-lb)
- Transmission reinforcement plate 23 Nm (17 ft-lb)

TRANSMISSION SERVICE

ATF Cooler

ATF cooler for A5S 560Z transmission is installed to front of transmission.

- The ATF cooler for 4 HP 22 EH or 4 HP 24 transmission is integral with the radiator.



Automatic Transmission Seal Replacement

All of the external oil seals on automatic transmission can be replaced without extensive disassembly. It will however be necessary to remove the transmission to replace the torque converter seal. See **Transmission, Removing and Installing**. It will also be necessary to disconnect the driveshaft from the transmission to replace the output shaft oil seal. See **260 Driveshaft**.

NOTE—

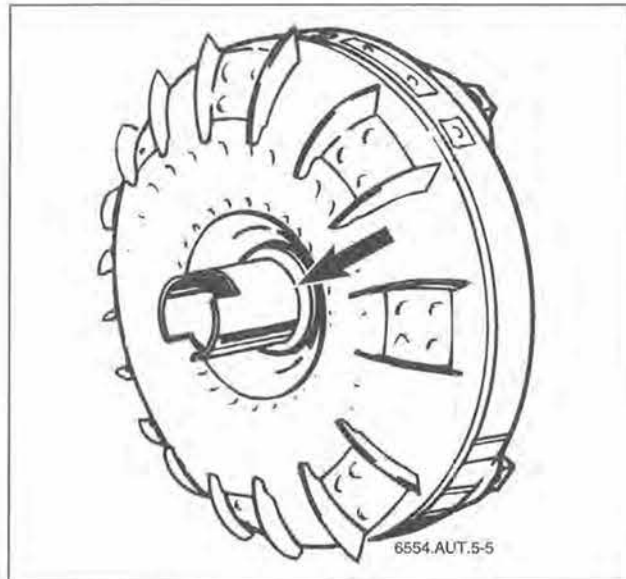
- To pinpoint the location of leaks, have the undercarriage and transmission degreased. Remember that air turbulence from driving can cause fluids to appear to be leaking from other locations.
- A clogged or inoperative transmission vent can cause fluid leaks at other seals in the transmission. If in doubt, replace the vent valve located on the extension housing.

Torque Converter Oil Seal

ATF leaking from the torque converter seal will usually be seen at the bottom of the bellhousing.

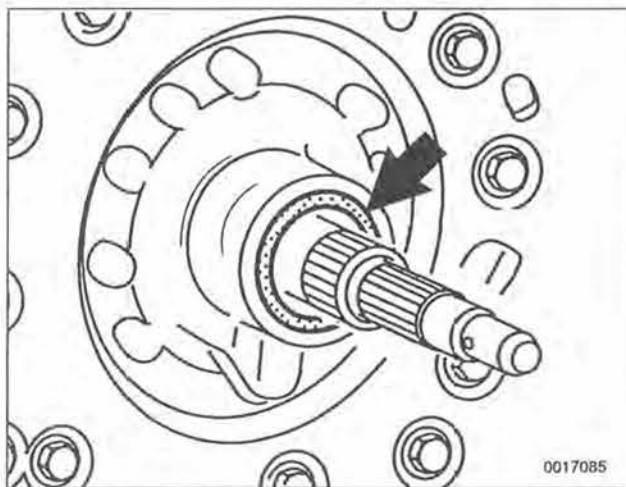
A leaking torque converter oil seal is often caused by a worn bushing in the torque converter hub. The bushing should always be checked when the seal is replaced. A worn bushing will promote rapid wear of the new seal.

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➤ Torque converter removed from engine showing bearing surface (**arrow**) that should be checked for scoring or wear.

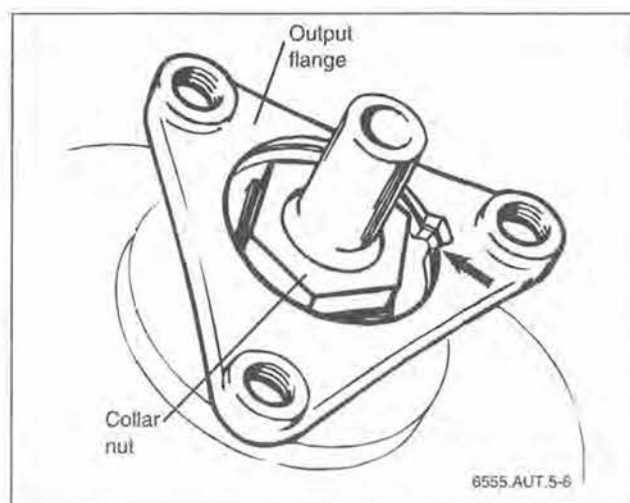
- Remove sharp edges and burrs with fine emery cloth. If the hub is deeply scored, the torque converter should be replaced.



➤ To replace seal, remove converter from transmission. Using a hooked seal tool or screwdriver, pry old seal out of ATF pump/transmission case. Lubricate new seal with ATF and drive into position.

CAUTION—

Be careful not to mar the surface of the housing when removing the seal.



Output Shaft Oil Seal

The output shaft oil seal can be replaced without removing the transmission from the car. A thin-walled 30 mm deep-well socket will be needed to remove the output flange collar nut.

Installation of the collar nut requires a new lockplate, and application of a sealant to prevent transmission fluid leakage. BMW specifies Curil® K2 or Loctite® 572.

➤ To replace output shaft oil seal, bend back locking tab (**arrow**) on lockplate. Hold output flange stationary and remove collar nut, then use a puller to pull off flange. Hold output flange stationary and put transmission in park.

— Pry old seal out of transmission, lubricate new seal with ATF, and drive into place.

— When installing collar nut, lightly coat side that faces output flange with sealer and torque nut.

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- Install new lockplate and bend tab into slot.

Tightening Torques

- Output flange collar nut
 - 4 HP 22 EH, 4 HP 24 100 Nm (74 ft-lb)
 - A5S 560Z1 120 Nm (89 ft-lb)

When reinstalling the drive shaft always replace the nuts securing the flexible coupling with new ones. Torque the nuts while holding the bolt stationary. Never torque the bolt head as the coupling will be destroyed. See **260 Driveshaft** for more information.

CAUTION—

Be careful not to mar the surface of the housing when removing the seal.

Manual Valve Oil Seal

The manual valve oil seal can be seen at the side of the transmission case and on the side of the ATF sump.

- ◀ To replace manual valve oil seal, remove manual valve lever from transmission. Pry out old seal using small screwdriver or hooked tool.

- Lubricate new seal with ATF and drive it into place.
- Install manual lever and torque the nut.

Tightening Torque

- Manual lever to selector . . . 8 to 10 Nm (71 to 89 in-lb)

If the linkage was not disconnected from the manual valve lever, it should not be necessary to adjust the shift linkage.

CAUTION—

Be careful not to mar the surface of the housing when removing the seal.

