

250 Gearshift Linkage

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GENERAL

This repair group covers transmission gearshift and linkage service.

Special service tools are required for some of the procedures given here. To gain access to the complete gearshift mechanism it is necessary to remove the exhaust system and the driveshaft as described in **180 Exhaust System** and **260 Driveshaft**.

MANUAL TRANSMISSION GEARSHIFT

Gearshift lever, removing (manual transmission)

The manual transmission gearshift linkage is shown in Fig. 1. Use this illustration as a guide when removing and installing the linkage.

1. Pull straight up on shift knob to remove it from shift lever.

NOTE —

Removal of the shift knob will require about 90 lbs. of force.

2. Pry up on rear of shift boot to unclip, then remove boot from front retainers.
3. Raise vehicle to gain access to underside of vehicle.

WARNING —

Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose. A floor jack is not adequate support.

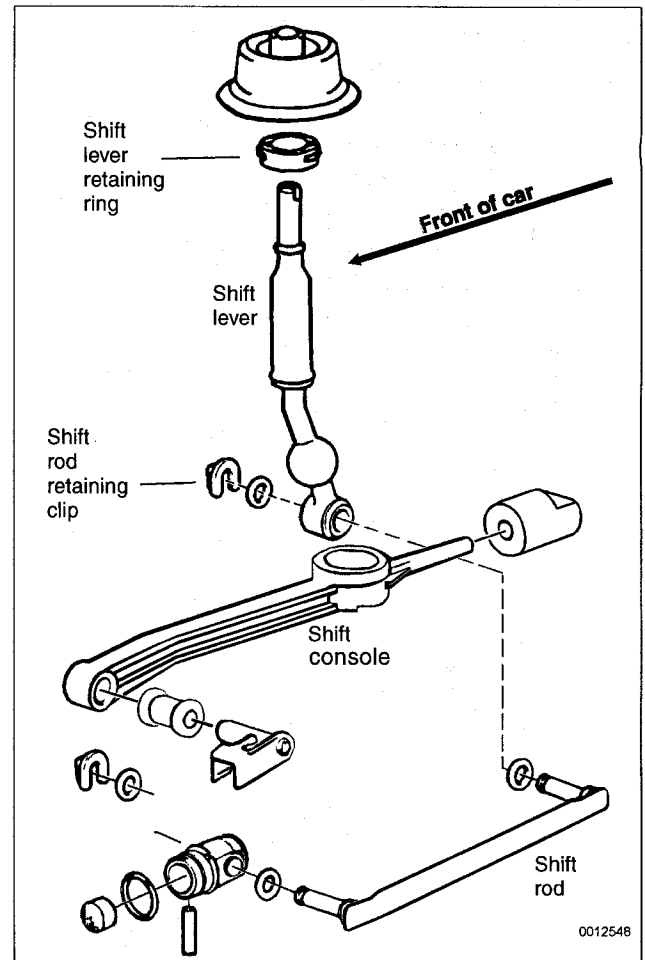


Fig. 1. Manual transmission gearshift linkage.

4. Disconnect oxygen sensor harness connectors. Remove complete exhaust system. See **180 Exhaust System**.

MANUAL TRANSMISSION GEARSHIFT

250-2 GEARSHIFT LINKAGE

5. Remove driveshaft. See **260 Driveshaft**.
6. Support transmission with transmission jack. Remove crossmember from rear of transmission. See Fig. 2.

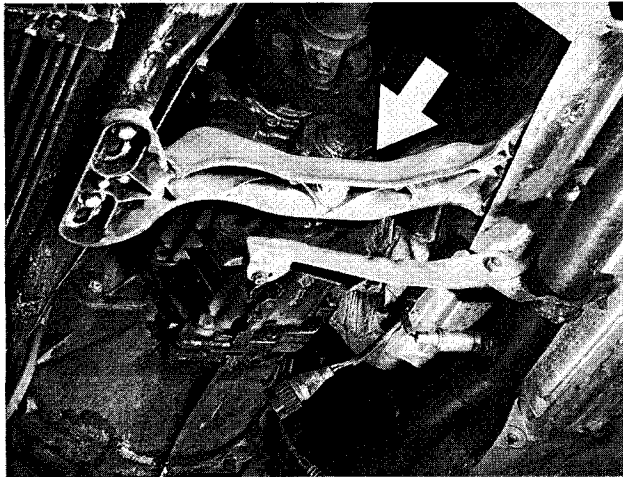


Fig. 2. Rear transmission crossmember (arrow).

7. Lower rear of transmission to access gearshift linkage.

CAUTION —

Tilting the engine to lower the transmission can lead to damage to various components due to lack of clearance.

- On cars with AST remove throttle body.
- Remove brake fluid reservoir if necessary.

8. Working below transmission, disconnect shift rod from gearshift lever. Note washers on either side of shift rod end. See Fig. 3.

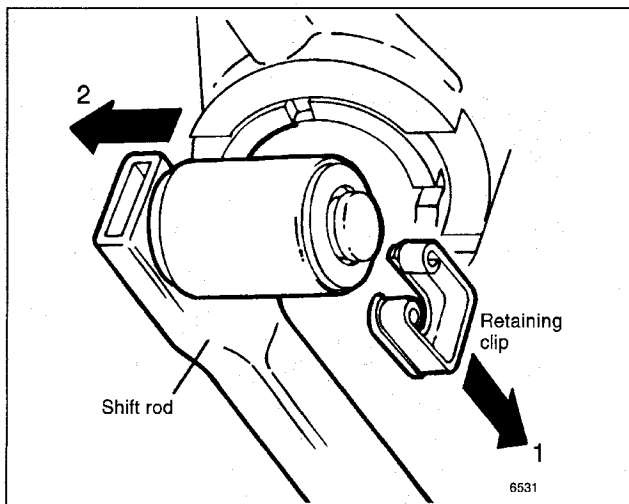


Fig. 3. Pull off shift rod retaining clip in direction of arrow (1); disengage shift rod from gearshift lever (2).

9. Release gearshift lever retaining ring from below by turning special tool 90° (¼ turn) counterclockwise. See Fig. 4.

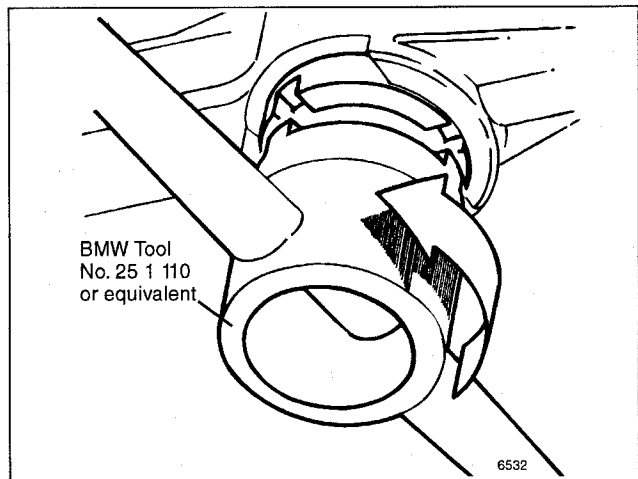


Fig. 4. Shift lever retaining ring being removed using BMW special tool 25 1 110.

10. Raise transmission and temporarily install transmission crossmember.
11. Lower vehicle. Working from inside passenger compartment, pull up on gearshift lever to remove it together with retaining ring and rubber grommet.

Gearshift lever, installing (manual transmission)

1. Install shift lever, aligning locking tabs with openings in shift console. Press down on retaining ring until it clicks into place. See Fig. 5.

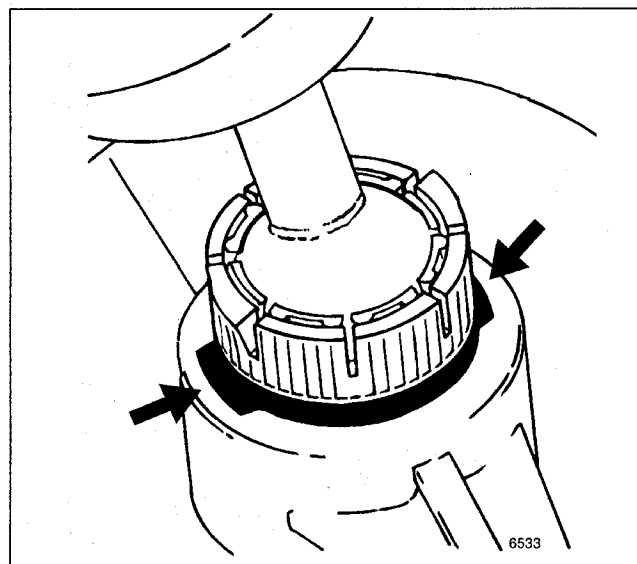


Fig. 5. Shift lever retaining ring. Fit plastic tabs into slots of shift console (arrows).

2. Install rubber grommet with arrow pointing forward. Install shift rod and shift boot.

NOTE —

Install rubber grommet correctly so that it seals out water.

3. Connect shift rod to shift lever. Install transmission crossmember. Lift transmission and tighten crossmember bolts.

NOTE —

Before connecting the shift rod to the lever, be sure the gearshift lever is facing the correct way as illustrated in Fig. 1.

4. Install driveshaft and heat shield. See **260 Driveshaft**.
5. Reinstall exhaust system. See **180 Exhaust System**. Connect oxygen sensor harness connectors.
6. Lower vehicle. Install shift boot cover. Push shift knob onto lever.

Tightening Torques

- Driveshaft to final drive flange (with U-joint) See **250 Driveshaft**
- Flex-disc to driveshaft or transmission flange See **250 Driveshaft**
- Transmission crossmember to body (M8) 21 Nm (16 ft-lb)

AUTOMATIC TRANSMISSION GEARSHIFT

The automatic transmission shift mechanism is shown in Fig. 6. Use the illustration as a guide when servicing the gearshift mechanism, including shift cable replacement.

Gearshift mechanism, adjusting (automatic transmission)

1. Position selector lever in **Park**.
2. Raise vehicle to gain access to shift linkage.

WARNING —

Make sure the car is stable and well supported at all times. Use a professional automotive lift or jack stands designed for the purpose.

3. Loosen selector cable clamping nut. See Fig. 7.
4. Push shift lever forward toward engine (**Park** position) while applying light pressure on cable end. Tighten cable clamping nut.

NOTE —

Do not overtighten the nut so that it twists the cable.

Tightening Torque

- Shift cable clamping nut 10-12 Nm (7.5-9 ft-lb)

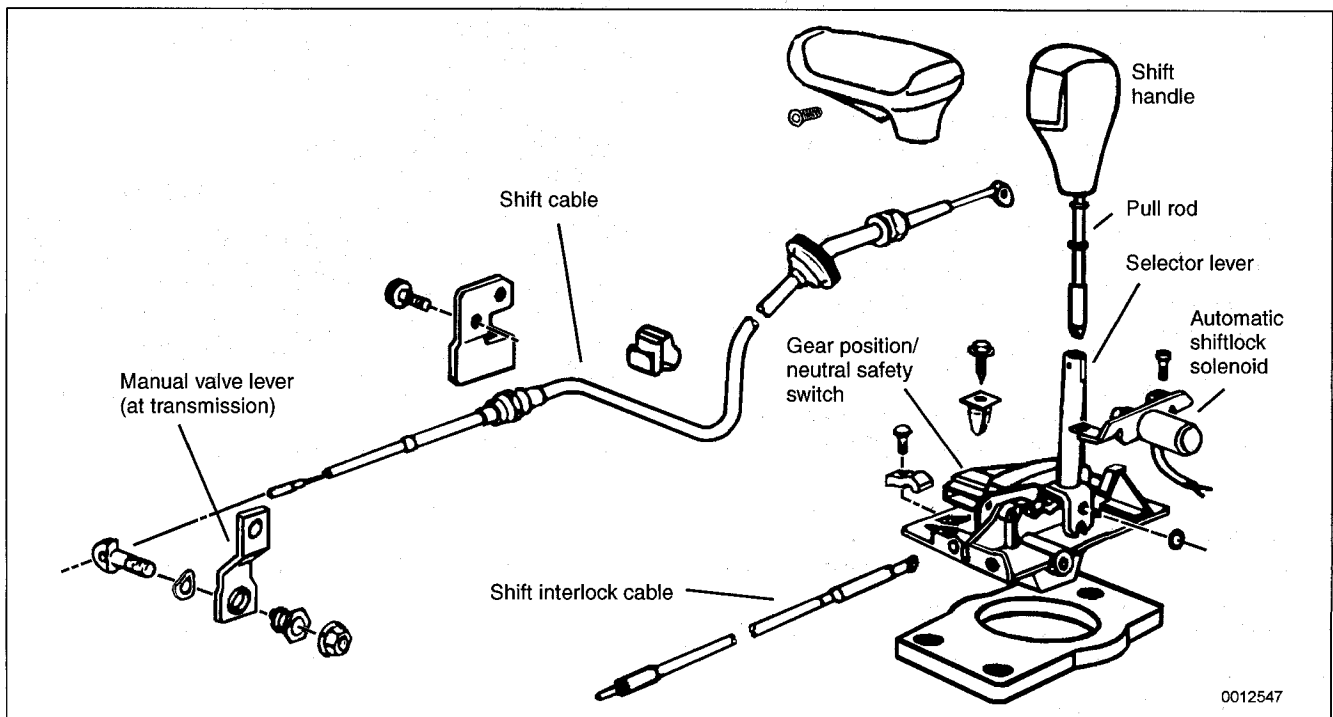


Fig. 6. Automatic transmission gearshift assembly.

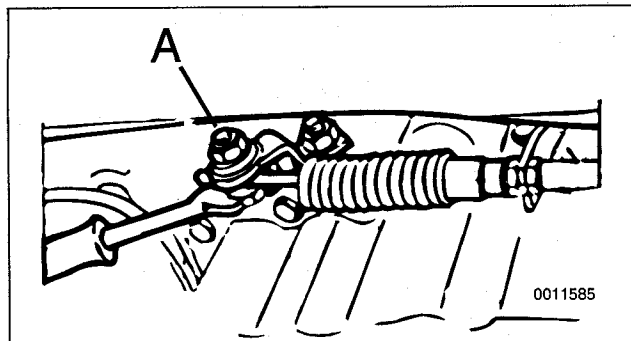


Fig. 7. Selector lever cable clamping nut (A). Counterhold clamping bolt when loosening nut.

Gear position/neutral safety switch, replacing (automatic transmission)

NOTE —

The gear-position/neutral safety switch is also sometimes referred to as the automatic transmission range switch.

Failure of the gear position/neutral safety switch can cause a no-start condition. In addition, since it signals gearshift position to the transmission control unit, a faulty switch can cause erratic transmission operation.

1. Remove hex-head screw (3mm allen key) from shift lever handle and remove handle. Carefully pry up cover from gearshift lever console.
2. Disconnect harness connector from gear position/neutral safety switch and remove mounting screws. See Fig. 8.
3. Remove gear position/neutral safety switch by moving selector until pin on lever aligns with slot on switch. Pull switch straight up and off. See Fig. 9.
4. Installation is reverse of removal, noting the following:
 - Before installing switch, align plastic contact slide inside switch with slot in switch. See Fig. 10.
 - Install switch so that contact slide on switch aligns with slot on switch. Then position gearshift lever pin to slot on switch and install switch.
 - When installing shift lever handle, engage pin on release button to hole in pull rod. See Fig. 11.

Tightening Torques

- Console to body 7 Nm (62 in-lb)
- Gear position/neutral safety switch to shift console 4.5 Nm (40 in-lb)

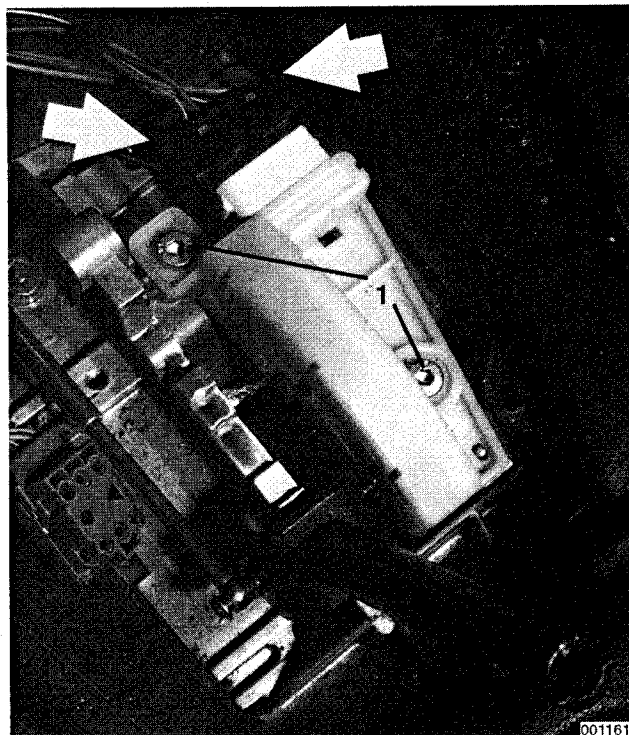


Fig. 8. Disconnect harness connector to gear position/neutral safety switch by pressing connector retaining clips together (arrows). Switch mounting screws shown at 1.

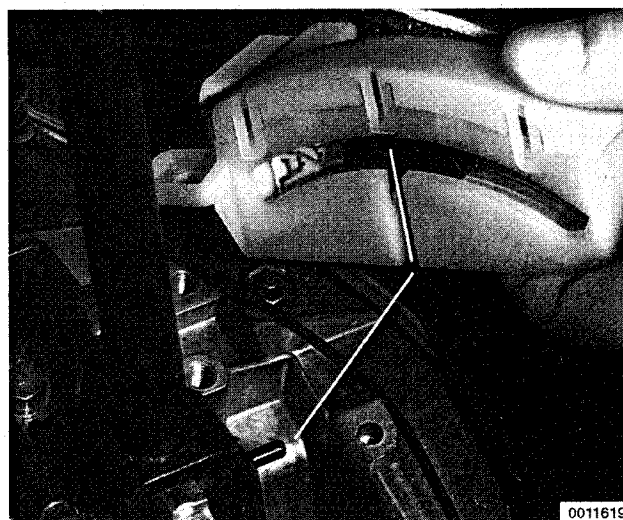


Fig. 9. Contact slide in switch aligns to slot on switch and pin on lever.

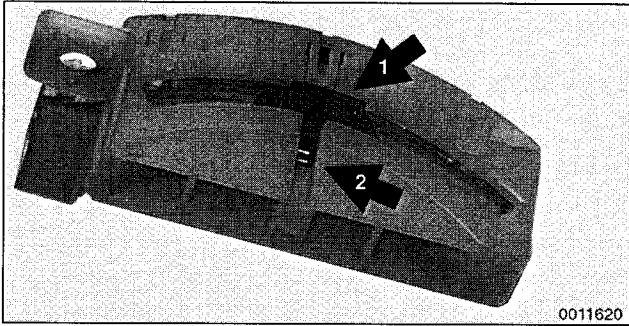


Fig. 10. Align contact slide (1) with slot in switch housing (2) before installing gear position/neutral safety switch.

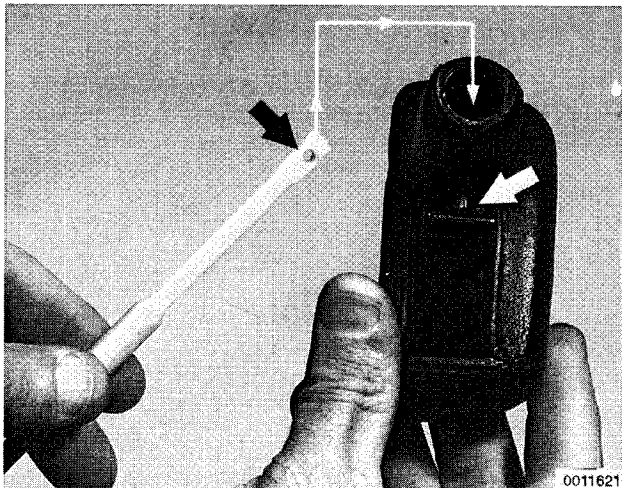


Fig. 11. Engage release button pin to hole in pull rod before installing shift lever handle.

Automatic shiftlock, checking function (automatic transmission)

The automatic shiftlock uses an electric solenoid to lock the selector lever in **P** or **N**. Depressing the foot brake with the ignition on energizes the solenoid, allowing the lever to be moved into a drive gear. The solenoid is energized only when the engine speed is below 2,500 rpm and the vehicle speed is below 3 mph. The solenoid is mounted in the right-hand side of the selector lever housing. See Fig. 12.

1. With engine running and car stopped, place selector lever in **P** or **N**.
2. Without depressing brake pedal, check that selector lever is locked in position **P** or **N**.
3. Depress brake pedal firmly. Solenoid should be heard to energize.

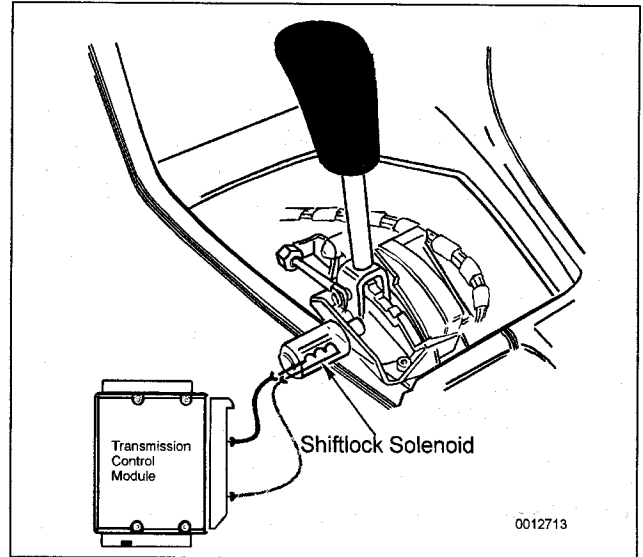


Fig. 12. Automatic shiftlock prevents drive gear selection until the brake pedal is depressed.

4. Check that selector lever can now be moved out of **P** or **N**.

NOTE —

The next test should be performed in an open area with the parking brake on and with extreme caution.

5. With selector lever in **P** or **N** and brake pedal depressed, raise engine above 2,500 rpm. Check that selector lever cannot be moved out of **P** or **N**.

If any faults are found check the electrical operation of the shiftlock solenoid and check for wiring faults to or from the transmission control module (TCM). See **610 Electrical Component Locations** and **Electrical Wiring Diagrams**.

NOTE —

The solenoid is controlled via the TCM, using brake pedal position, engine speed, and road speed as controlling inputs.

Shift interlock, checking function (automatic transmission)

The shift interlock uses a cable between the ignition switch and the shift lever to lock the shift lever in the park (P) position when the key is in the off position or removed. This feature also prevents the key from being removed from the ignition lock until the selector lever is in P. Fig. 13.

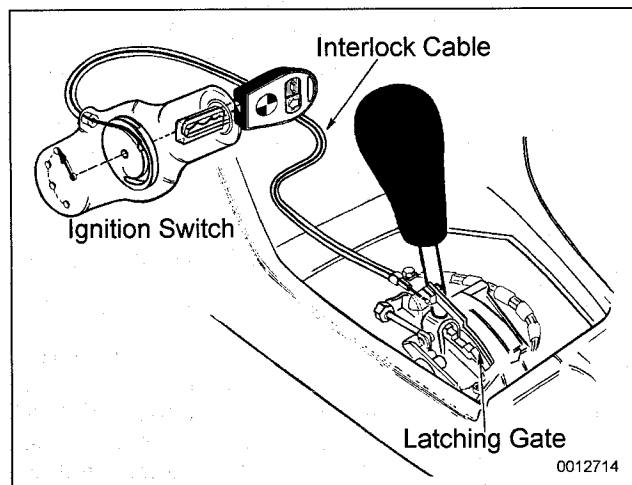


Fig. 13. Shift interlock serves two safety functions: 1) it locks shift lever in park (P) when the key is removed, and 2) it prevents removal of key until shift lever is moved into P.

1. Shift selector lever to park (P) position and turn ignition key to the "zero" (off) position.
2. Remove ignition key. Check that selector lever cannot be shifted out of P position.

NOTE —

- It must only be possible to remove ignition key with selector lever in P position.
- Shift interlock cable must not be kinked.

3. Turn ignition key on and depress brake pedal. Check that selector lever moves freely from gear to gear.
4. With the selector lever in a gear position other than P, attempt to move the key to the zero position. The key should not go into the zero position.

If any faults are found check the cable for kinks and the cable attachment points for damage or faults.

