

250 Gearshift Linkage

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GENERAL

This repair group covers transmission gearshift for manual, sequential manual gearbox (SMG) and automatic transmission models.

See also:

- 180 Exhaust System
- 260 Driveshafts
- 310 Front Suspension for front end reinforcement plate

Neutral safety switch function

In models with automatic transmission, starter operation is prevented unless the gear position is (P)ARK or (N)EUTRAL.

250-2 Gearshift Linkage

Gearshift knob, removing



Gearshift knob, removing

This procedure applies to the following:

- Manual transmission models
- Automatic models to 2007

Make sure the engine is OFF when removing gearshift knob.

- ⚠ Pull gearshift knob straight up (**arrow**) to remove. It may require up to 90 lbs. of force to do this.

CAUTION—

- Automatic transmissions for 2008 - 2009 models (starting with 03 / 2007 production) are equipped with gear shift switch (GWS) instead of a shift lever. The procedure given here for gearshift knob removal does not apply.
- Some versions of shift boot and knob are one piece. Release boot from console before removing knob.
- To prevent damage to shift knob locating tabs, do not twist while removing.

Caution

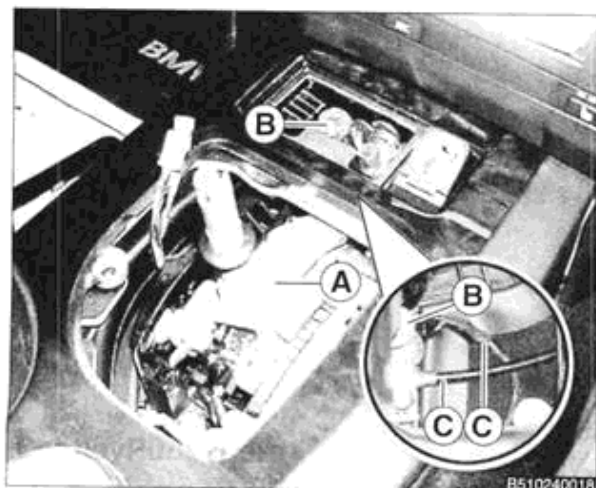
CAUTION—

- When removing interior trim clips, avoid damaging trim pieces by using a plastic prying tool or a screwdriver with the tip wrapped with masking tape.

TROUBLESHOOTING

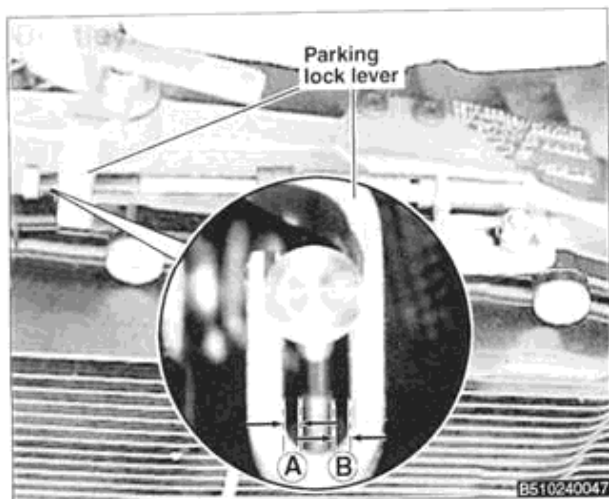
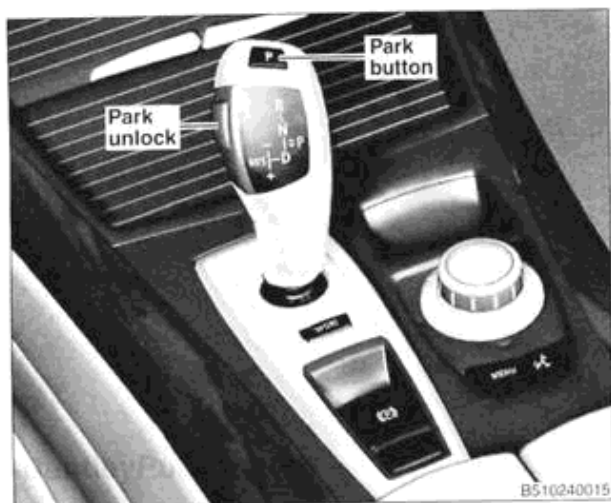
Shift lever blocked

- ⚠ Automatic transmission: If shift lever (**A**) cannot be moved to P or is otherwise blocked from moving, check to see if coins (**B**) from coin holder are lodged underneath shifter Bowden cable (**C**) pivots.



Transmission does not shift to P

- 2008 - 2009 models (starting production date 03 / 2007) with automatic transmission: Transmission parking lock is engaged using a dedicated cable. Parking lock is triggered when P button is pressed on shift lever.



- If P button is pressed but transmission does not shift into parking lock (BMW fault code 507B), inspect position of parking lock cable end in parking lock lever (left side of transmission, underneath vehicle):

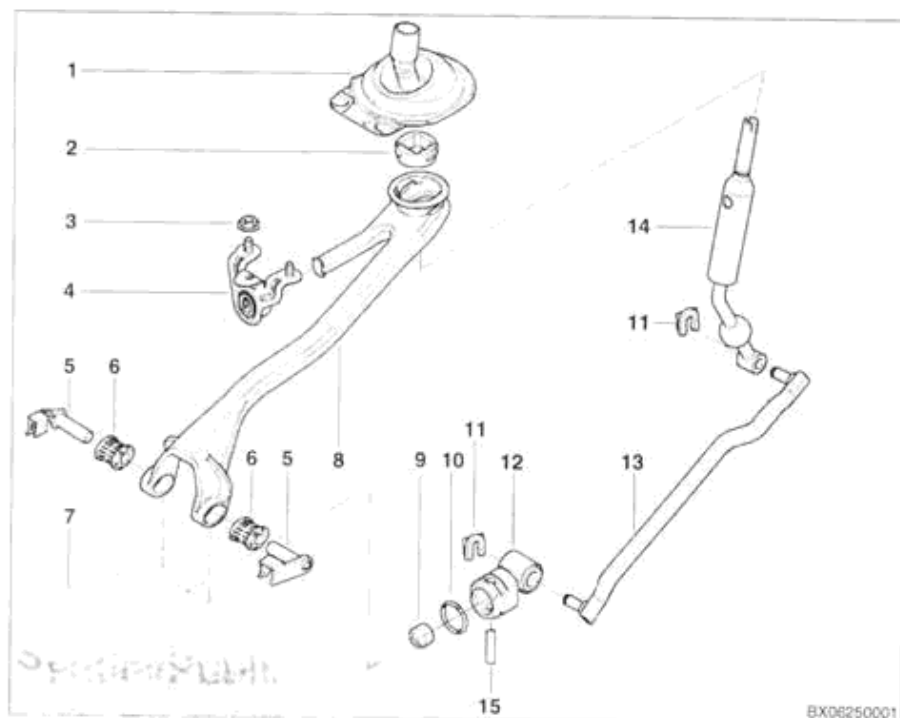
- If cable end button is centered in lever hook (dimensions **A** and **B** are equal), parking lock lever is OK.
- If cable end button is offset (dimension **A** and **B** are unequal), parking lock lever is bent.

250-4 Gearshift Linkage

Manual gearshift linkage

MANUAL TRANSMISSION GEARSHIFT

Manual gearshift linkage



1. Rubber boot
2. Shift lever bearing
3. M8 nut
4. Shift arm support bearing
5. Lock pin
6. Bushing
7. Transmission housing
8. Shift arm
9. Bushing
10. Lock ring
11. Circlip
12. Shifter coupling
13. Selector rod
14. Shift lever
15. Dowel

Gearshift lever, removing and installing (manual transmission)

- Remove shift boot and shift knob. See **Gearshift knob, removing** in this repair group.

CAUTION—

- Some versions of shift boot and knob are one piece. Release boot from console before removing knob.
- To prevent damage to locating tabs on shift knob, do not twist while removing.

- Remove sound insulation at base of shift lever.
- Raise and safely support vehicle.

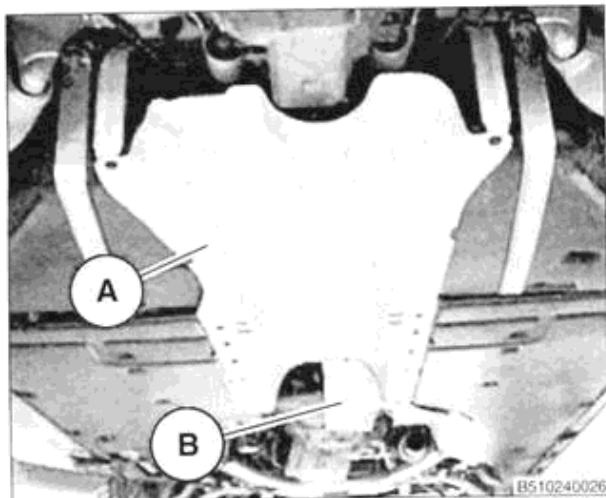
WARNING—

- Make sure the vehicle 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.

- Remove splash shield under transmission. See **020 Maintenance**.
- Remove complete exhaust system. See **180 Exhaust System**.

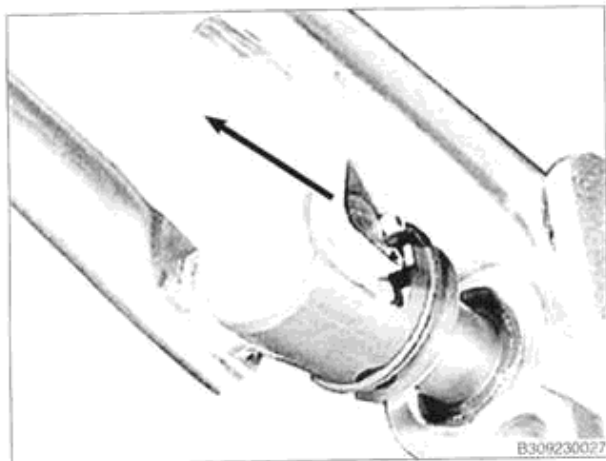
CAUTION—

- To avoid damaging oxygen sensors, transport and store exhaust system carefully.



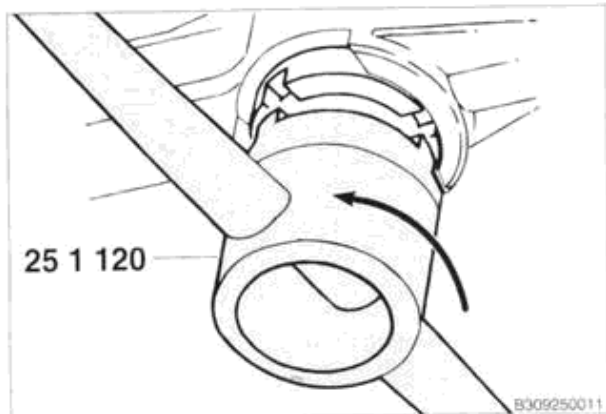
➤ Remove heat shields (A, B).

- Support transmission with a suitable jack. Remove transmission rear support and lower transmission slightly to gain access to gearshift lever.



➤ Working above transmission, disconnect selector rod:

- Pull off selector rod retaining circlip (**arrow**) and discard.
- Disengage selector rod from shifter coupling to.



➤ Release shift lever bearing from below using BMW special spanner 25 1 120. Turn tool 90° (¼ turn) counterclockwise.

- Push shift lever and bearing up to remove from shift arm.

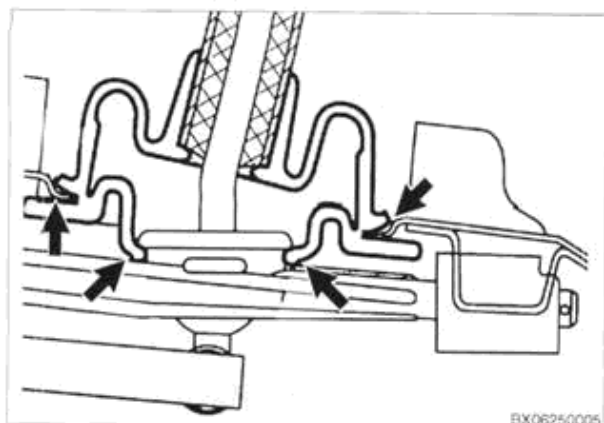
- Lower vehicle. Working from inside passenger compartment, pull up on shift lever to remove it together with inner rubber boot and shift lever bearing.

- Clean old grease from shift lever ball and mounting ring. Also clean shift arm bowl. Lubricate with molybdenum disulfide grease.

- Insert shift lever together with inner boot and bearing into shift arm.

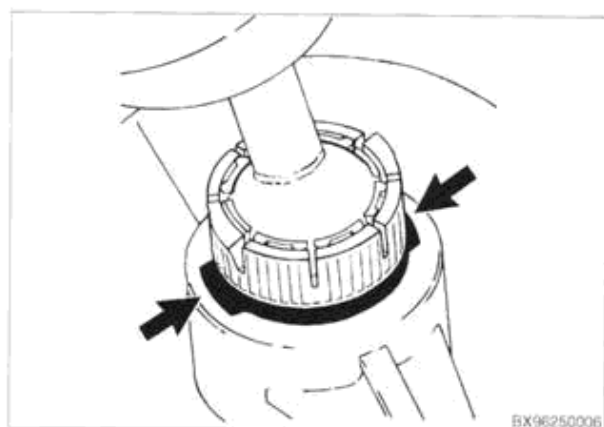
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Gearshift lever, removing and installing (manual transmission)



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- Pull inner rubber boot over shift arm bowl (**arrows**) to seal base of shift lever. Install rubber boot with arrow pointing toward front of vehicle.



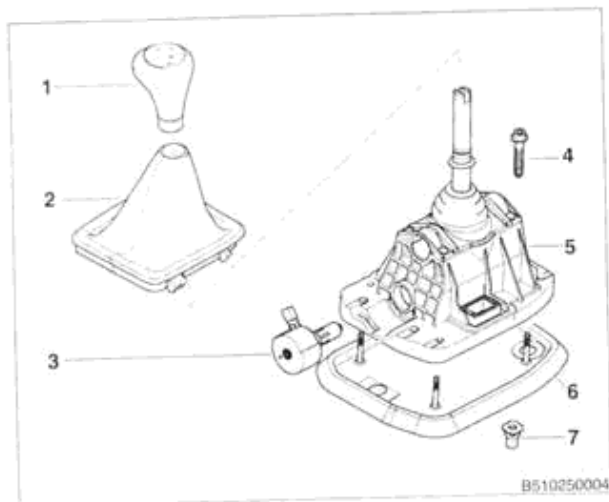
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- When installing shift lever bearing:
- Align locking tabs with slots (**arrows**) in shift arm bowl.
 - Make sure arrow on shift lever bearing points to front of vehicle.
 - Press down until bearing snaps into place.



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- When reinstalling selector rod, be sure to use new shift rod circlip with locking tang (**arrow**).



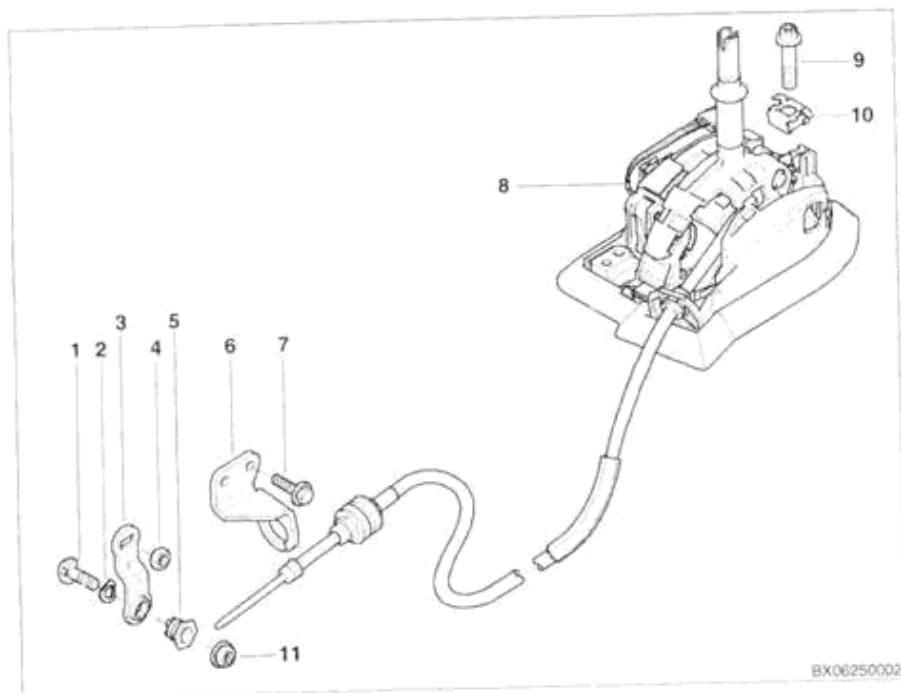
SMG GEARSHIFT

SMG gearshift assembly

1. Shift lever knob
2. Shift lever boot
3. Shiftlock magnetic solenoid
4. M6 x 35 mm bolt
5. Gearshift housing
6. Sealing frame
7. Blind rivet

AUTOMATIC TRANSMISSION GEARSHIFT

Steptronic gearshift assembly (2004 - 2007)



1. Clamping bolt
2. Washer
3. Transmission shift arm on side of transmission
4. M8 self-locking nut
5. Bushing
6. Support bracket
7. M6 bolt
8. Steptronic shift mechanism
9. M6 Torx screw
10. Cage nut
11. M8 self-locking nut

Gearshift mechanism, adjusting (2004 - 2007)

Automatic gearshift mechanism varies with model. Adjustment is similar.

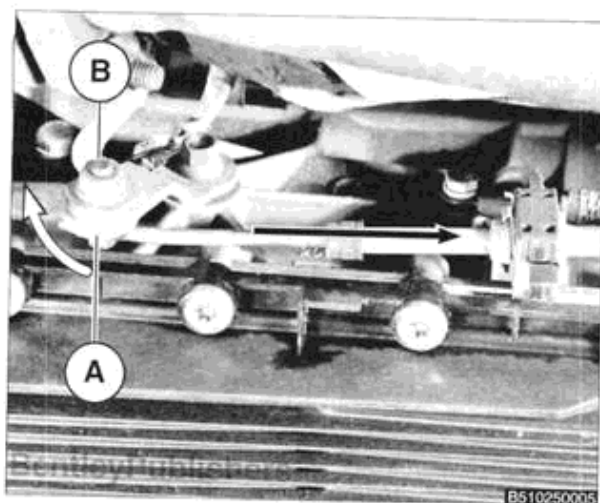
- Position gearshift lever in P(ARK).
- Raise vehicle to gain access to shift linkage.

WARNING —

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

250-8 Gearshift Linkage

Automatic shiftlock, checking function (2004 - 2007)



- Working at transmission selector lever at side of transmission:
- Counterhold cable clamping bushing (A).
 - Loosen cable clamping nut (B).
 - Push transmission shift arm forward toward engine (curved arrow) (PARK position).
 - Push shifter cable end backward away from engine (arrow). Release pressure on cable.
 - Tighten clamping nut.

CAUTION—

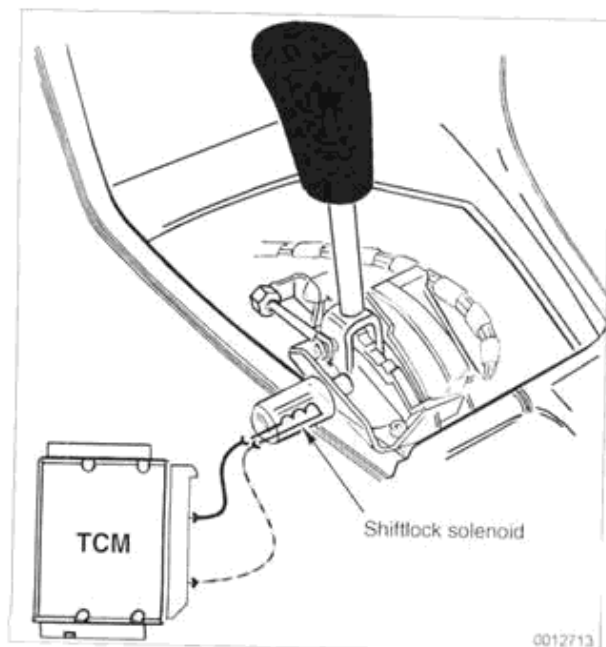
- Do not overtighten the nut so that it twists the cable.

Tightening torque

Shift cable clamping nut	10 Nm (7 ft-lb)
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Automatic shiftlock, checking function (2004 - 2007)

The automatic shiftlock uses an electric solenoid to lock the selector lever in P(ARK) or N(EUTRAL). Depressing the foot brake with the ignition ON energizes the solenoid, allowing the lever to be moved into R(EVERSE) or D(RIVE). The solenoid is energized only when engine speed is below 2,500 rpm and vehicle speed is below 5 kph (3 mph). The solenoid is mounted in the right side of the selector lever housing.



- Automatic shiftlock prevents drive gear selection until brake pedal is depressed.
- With engine running and vehicle stopped, place selector lever in P.
 - Without depressing brake pedal, check that selector lever is locked in P.
 - Depress brake pedal firmly and listen to solenoid clicking audibly.
 - Check that selector lever can now be moved out of P.

NOTE—

- Perform the next test in an open area with the parking brake ON and with extreme caution.

- With selector lever in P and brake pedal depressed, raise engine above 2,500 rpm. Check that selector lever cannot be moved out of P.
- If any faults are found:
 - Check electrical operation of shiftlock solenoid
 - Check for wiring faults to or from transmission control module (TCM). See **ECL Electrical Component Locations** and **ELE Electrical Wiring Diagrams**.

NOTE—

- The solenoid is controlled via the transmission control module (TCM), using brake pedal position, engine speed, and road speed as controlling inputs.

Automatic shiftlock, releasing manually (2004 - 2007)

Normally, the automatic transmission shift lever can only be moved out of P if ignition is ON (or engine running) and brake pedal depressed. In case of power failure (such as dead battery), release move gearshift manually and shift to N before moving vehicle or working.

CAUTION—

- Attempting to move vehicle without taking transmission out of P may cause transmission damage.

- Engage parking brake so that vehicle cannot roll.
- Unclip and pull up shift lever bezel.

Working at shift lever:

- Switch ignition ON to disengage ignition interlock pawl (curved arrow).
- Using thin screwdriver, depress shiftlock solenoid plunger and move shifter to N.

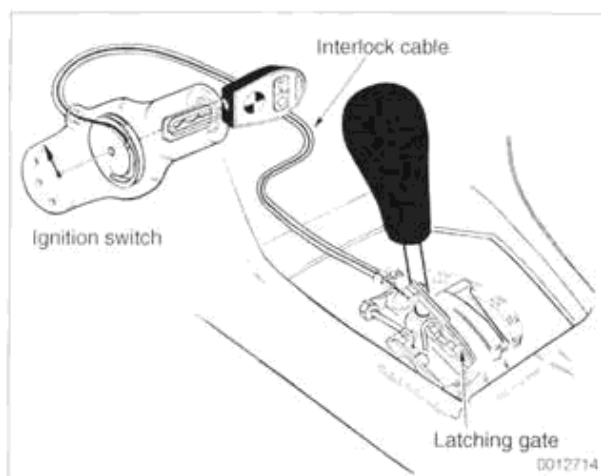
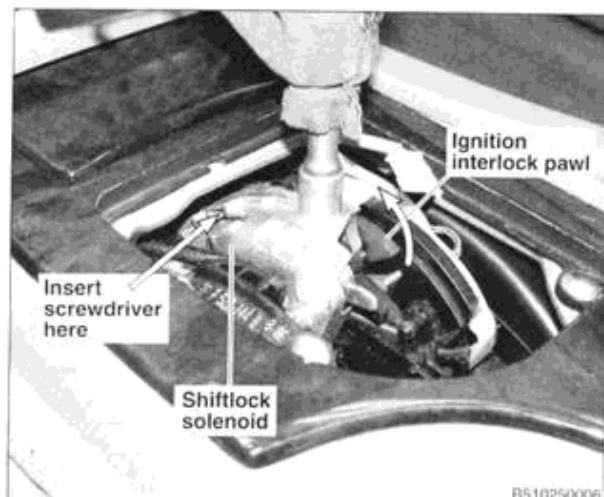
Ignition interlock, checking function (2004 - 2006)

- Ignition interlock uses a cable between ignition switch and selector lever to lock lever in P(ARK) position when ignition key is OFF or removed. This feature also prevents key from being removed from ignition lock unless selector lever is in P.

- Shift selector lever to P and switch ignition OFF.
- Remove ignition key. Check that selector lever cannot be shifted out of P.
- Switch ignition ON and depress brake pedal. Check that selector lever moves freely from gear to gear.
- With selector lever in a gear position other than P, attempt to turn key to OFF position and remove. Key should not go into OFF position.
- If any faults are found:
 - Check interlock cable for kinks.
 - Check cable attachment points for damage or faults.

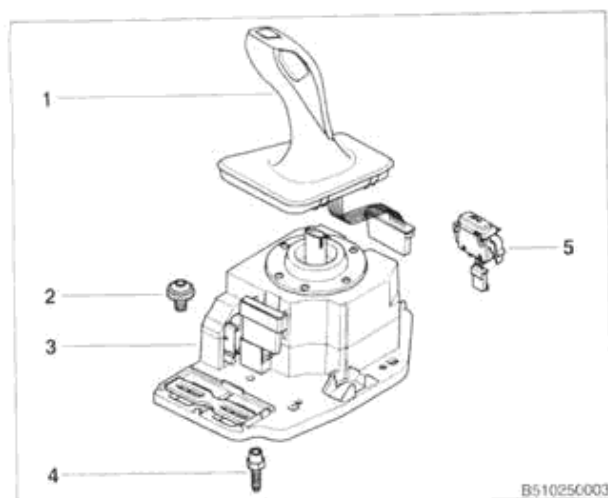
NOTE—

- Make sure ignition key can only be removed with selector lever in P(ARK).
- Do not kink shift interlock cable.
- Ignition interlock cable replacement is covered in 320 Steering and Wheel Alignment.



250-10 Gearshift Linkage

Gear shift switch (GWS) (2008 - 2009)



Gear shift switch (GWS) (2008 - 2009)

➤ In models built from 03 / 2007 (2008 model year), the shift lever is configured as a control module (referred to as gear shift switch or GWS). Transmission gear range selection in these models is actuated electronically instead of via shift cable.

1. Shift lever handle
2. M6 x 18 mm screw
3. Gear shift switch (GWS) housing
4. Spacer pin
5. SPORT switch

Parking lock cable bracket, adjusting (2007 - 2008)

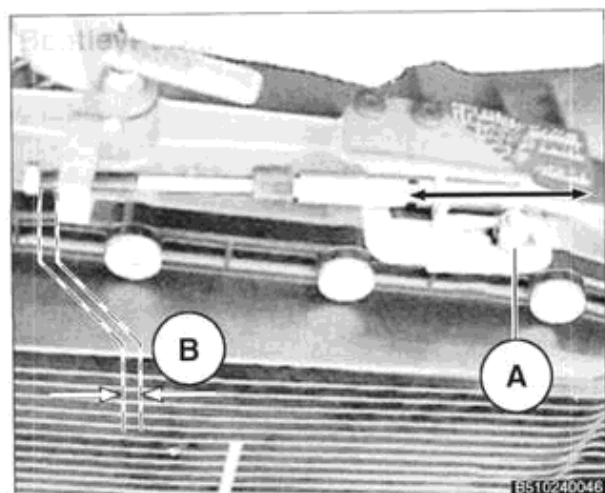
On 2008 - 2009 models (starting production date 03 / 2007), transmission parking lock is engaged using a dedicated cable. To adjust cable correctly:

➤ Loosen cable bracket fastener (A) and slide bracket to achieve correct free play.

Parking lock cable end free play

Gap B	1 mm (0.04 in)
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See also **Transmission does not shift to P** in this repair group.



Parking lock, releasing manually (2008 - 2009)

Normally, the automatic transmission shift lever can only be moved out of P if ignition is ON (or engine running) and brake pedal depressed. In case of power failure (such as dead battery), release transmission parking lock before moving vehicle or working on transmission.

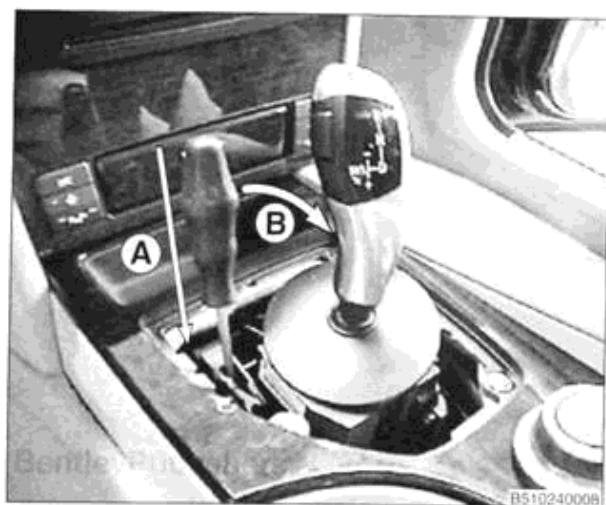
CAUTION—

- Attempting to move vehicle without releasing parking lock may cause transmission damage.

- Engage parking brake so that vehicle cannot roll.
- Unclip and pull up shift lever bezel.

Gearshift Linkage 250-11

Parking lock, releasing manually (2008 - 2009)



◀ Insert screwdriver into opening (A). Pull screwdriver toward rear until it is heard to engage (B). Leave screwdriver inserted in opening. This releases transmission park lock.

— To relock parking lock, pull out screwdriver.



