

230 Manual Transmission

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GENERAL

This repair group covers external transmission service, including removal and installation of the transmission unit. Internal transmission repair is not covered here. Special press tools and procedures are required to disassemble and service the internal geartrain. For additional transmission application information, see **200 Transmission-General**.

Table a. Manual Transmission Application

Model	735i (1988-)
Type	Getrag 260/6

TRANSMISSION SERVICE

Transmission oil, checking and replacing

Manual transmissions installed on the E32 cars are normally filled with automatic transmission fluid (ATF), although alternative lubricants may be used depending on transmission type, gear noise levels, and shifting effort in cold climates.

NOTE—

Manual transmissions filled with ATF use 17mm external hex drain and fill plugs. In addition, a red fluid specification label with the markings "ATF-OIL!" is attached to the right-hand side of the bellhousing.

- Drive car a few miles to warm up transmission oil.

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5020

◀ Oil filler plug (A) and oil drain plug (B).

- Remove filler plug on side of transmission and check oil level.
- Oil level should be just flush with bottom of filler plug hole (i.e. if more oil is added it would run out of hole).

NOTE—

Check and fill transmission with the car on level surface.

- Place drain pan below oil drain plug. Remove drain plug. Reinstall and torque drain plug when oil is completely drained.
- Slowly add oil through filler hole until it begins to overflow. When no more oil can be added, reinstall and tighten filler plug.

Oil Capacity

- Getrag 260/6 1.25 liter (1.3 qts.)
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Tightening Torques

- Manual transmission drain or fill plug
Getrag 260/6 50 Nm (37 ft-lb)
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NOTE—

One method of filling the transmission is to use a length of clear plastic tubing (approx. 5 feet) inserted into the fill hole and extended up into the engine compartment. Attach a funnel to one end and slowly fill the transmission from above.

Transmission Oil Seals

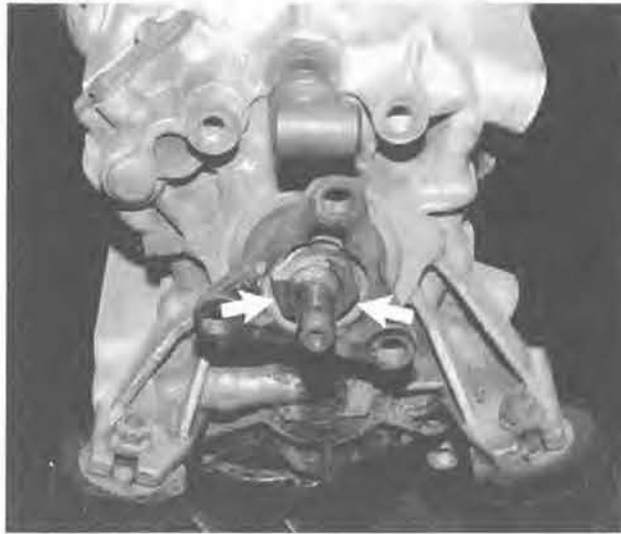
The output shaft, selector shaft and input shaft oil seals can be replaced without any major disassembly of the transmission. In addition, two of the three seals can be replaced with the unit installed in the car.

Low gear oil level due to a faulty oil seal may cause problems such as hard shifting, jumping out of gear, and transmission noise. Note that oil at the bottom of the bellhousing can also be due to a leaking rear crankshaft seal.

NOTE—

Before assuming faulty transmission seals, check the vent on the top of the case. A clogged or damaged vent can cause excess internal pressure and oil loss.

Output shaft oil seal, replacing (transmission installed)



6261

- Remove complete exhaust system. See **180 Exhaust System**.
- Disconnect driveshaft from transmission. See **260 Driveshaft**.

- ◀ Remove output shaft flange.
 - Bend back and remove nut lockplate (**arrows**).
 - Hold flange steady and remove the collar nut (use 30 mm thin-walled, deep socket).
 - Remove flange. If necessary, use a puller.

NOTE—

A thin-wall socket can be made by grinding the outer surface of an ordinary socket.

- Using a seal remover or screwdriver, pry out old seal. Lubricate new seal with oil and drive into place.

CAUTION—

Do not damage the transmission case housing when prying out the old seal. A damaged case can result in oil leaks.

- Reinstall flange to output shaft (and shims, if applicable). Coat bearing surface of collar nut with sealer and install nut.

NOTE—

BMW recommends the use of a sealer such as Loctite® 242 when installing the collar nut to prevent oil from leaking past the threaded shaft.

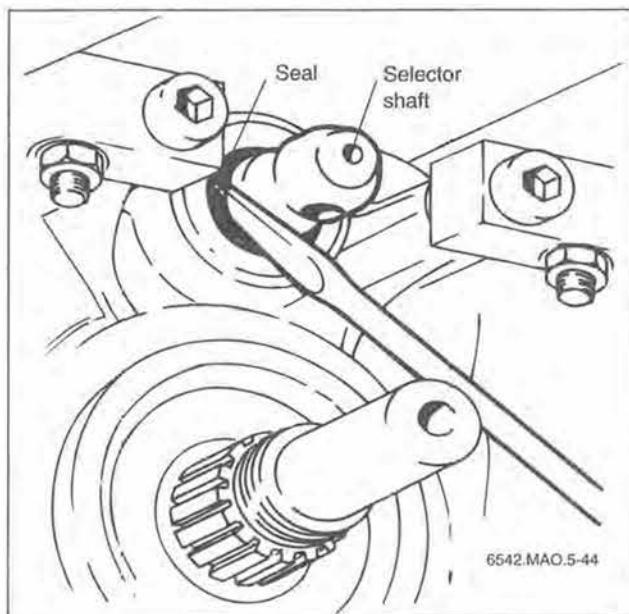
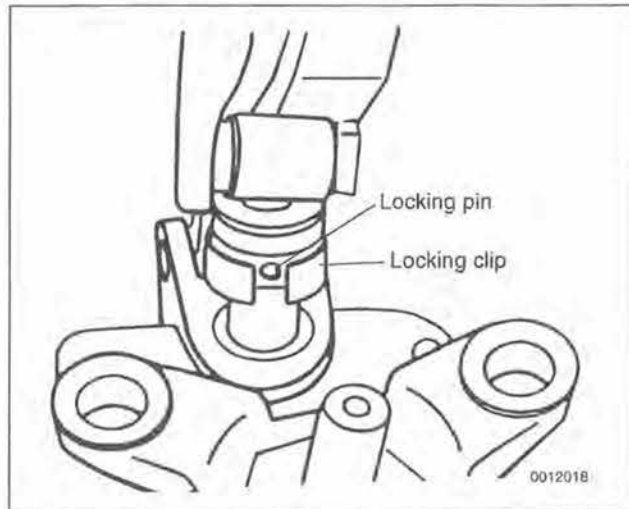
- Tighten collar nut in two stages. Install new lockplate. Bend tabs into flange grooves.

Tightening Torques

- Output flange to output shaft

stage I	170 Nm (125 ft-lb)
stage II (after loosening)	120 Nm (89 ft-lb)

- Reinstall the driveshaft and exhaust system.
- Check gear oil level, topping up as necessary. See **Transmission oil, checking and replacing**.



Selector shaft oil seal, replacing (transmission installed)

- Remove complete exhaust system. See **180 Exhaust System**.
- Disconnect driveshaft from transmission. See **260 Driveshaft**.

- Remove selector rod coupling.
 - Slide locking clip and push pin through to remove coupling.
 - Place transmission in 5th gear. Disconnect selector rod coupling from selector shaft by releasing spring sleeve and pushing out pin.

WARNING —

Do not mar the housing when removing oil seal.

NOTE —

To improve access to the selector shaft, support the transmission from below and remove the bolts from the transmission crossmember. Then lower the transmission for better access the selector shaft.

- Pry out selector shaft oil seal with screwdriver.

WARNING —

Do not mar the housing when removing the seal.

- Lubricate new seal with oil and drive into place.
- Reinstall selector rod coupling, driveshaft, and exhaust system.

NOTE —

Install selector rod coupling with the offset toward the left when looking at the rear of the transmission.

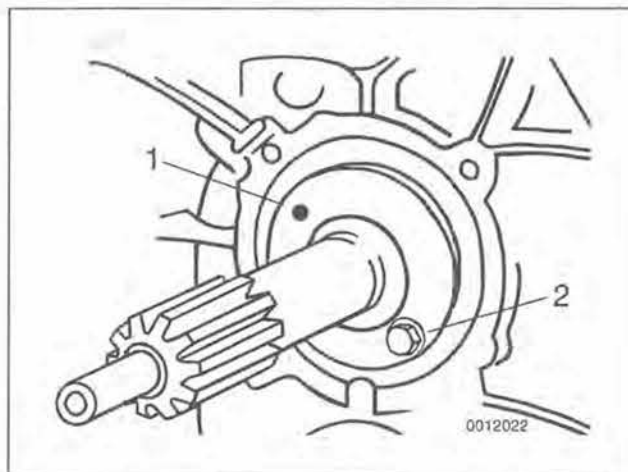
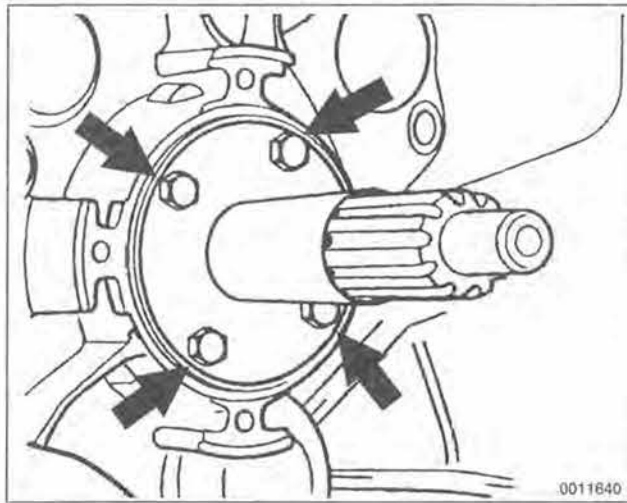
Tightening Torque

- Rear transmission support to body (bolt) 23 Nm (17 ft-lb)

- Check gear oil level, topping up as necessary. See **Transmission oil, checking and replacing**.

**Input shaft oil seal, replacing
(transmission removed)**

- Remove transmission as described later.
- Remove clutch release bearing and release lever from inside bellhousing.
- Remove bolts for clutch release bearing guide sleeve, noting bolt lengths. Remove the sleeve and any spacers under it.



- Locate two indents (1) in seal housing. Use a punch or scribe to punch holes in housing at indents. Thread two sheet metal screws (2) into holes and pull seal out using screws.

NOTE —

Use care not to scratch or damage input shaft. Use a protective sleeve or tape the shaft when removing and installing the input shaft seal.

- Drive old seal from guide tube.
- Lubricate new seal with transmission oil and drive into place.
- Thoroughly clean guide sleeve mounting bolts, sealing surfaces, and threads in case. Apply sealer (Loctite® 243 or equivalent) to guide sleeve sealing surface and bolts. Reinstall guide sleeve and spacer(s).

Tightening Torques

• Guide sleeve to transmission	
M8x22	18 Nm (13 ft-lb)
M8x30	25 Nm (18 ft-lb)
M6x10	10 Nm (89 in-lb)

Back up light switch, replacing

- Raise 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.

- Working on the side of the transmission, disconnect harness connector from switch and unscrew switch from transmission.
- Install and tighten new switch. Reconnect harness connector.

CAUTION—

Do not overtighten back-up light switch.

Tightening Torque

- Back-up light switch
to transmission 6–10 Nm (53–89 in-lb)

- Check gear oil level. See **Transmission oil, checking and replacing**.

**TRANSMISSION REMOVAL
AND INSTALLATION****Transmission, removing and installing**

Removal of the transmission is best accomplished on a lift using a transmission jack. Use caution and safe workshop practices when working beneath the car and lowering the transmission.

Torx® head bolts are used to mount the transmission to the bellhousing. Be sure to have the appropriate tools on hand before starting the job.

- 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.

- Raise 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.

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- Remove complete exhaust system and heat shields See **180 Exhaust System**.

NOTE —

Disconnect the oxygen sensor harness connector before lowering exhaust system.

- Disconnect harness connector from reverse light switch on transmission.
- Remove driveshaft. See **260 Driveshaft**.

NOTE —

It is not necessary to fully remove the driveshaft. As an alternative, unbolt the driveshaft flex-disc from the transmission flange and unbolt the driveshaft center bearing support from the body. Then bend the driveshaft downwards in the center to disconnect. Use stiff wire to hold the driveshaft in place.

- Disconnect shift rod from transmission selector shaft. Disconnect shift console from top of transmission. See **250 Gearshift Linkage**.
- Unbolt clutch slave cylinder from side of transmission. Do not disconnect fluid hose. Suspend slave cylinder from body using stiff wire.

CAUTION —

Do not operate clutch with slave cylinder removed from transmission.

- Support transmission from below with jack. Unbolt transmission cross-support and bracket. Lower transmission/engine assembly until it rests on front crossmember.

NOTE —

On cars with M30 engine, place a block of wood between the front stabilizer bar and the engine block before lowering the transmission/engine assembly.

- ◀ Remove transmission mounting bolts (**arrows**) (Torx® head). Note length and location of bolts.

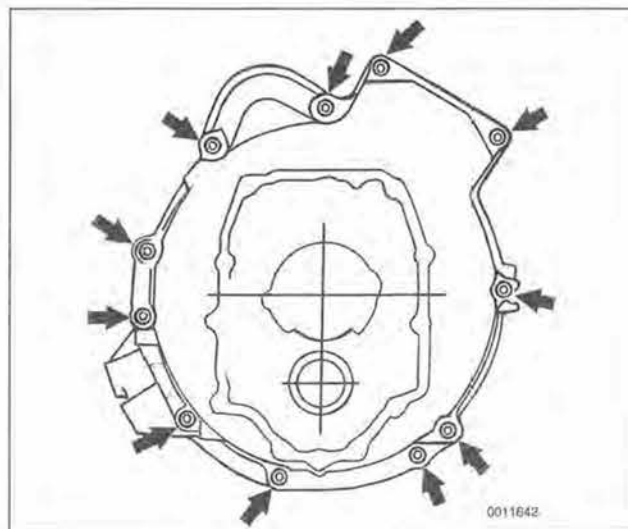
CAUTION —

At no time should the weight of the transmission be supported by the transmission input shaft.

- Separate transmission from engine. Do not place any strain on transmission input shaft. Lower jack and remove transmission. Mark location of aligning dowels in engine block.

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 alone is not adequate support.



TRANSMISSION REMOVAL AND INSTALLATION

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Installation is reverse of removal. Lightly lubricate transmission input shaft with Microlube GL 261 before installing. Be sure cylinder block dowels are correctly located. Center rear of transmission in driveshaft tunnel before tightening transmission support bracket. Installation tightening torques are given below.

CAUTION—

BMW recommends using Microlube GL 261 on the clutch disc and transmission input shaft splines. Otherwise the clutch disc may bind on the input shaft and cause hard shifting. This lubricant is available under the BMW Part No. 81 22 9 407 436.

NOTE—

Washers should always be used with Torx®-head bolts. Installing bolts without washers will make them difficult to loosen.

Tightening Torques

- Transmission to engine (Torx®-head)
 - M8 23 Nm (17 ft-lb)
 - M10 43 Nm (32 ft-lb)
 - M12 72 Nm (53 ft-lb)
- Rear transmission support to body (bolt) 23 Nm (17 ft-lb)
- Rubber mount to transmission or bracket (nut) 43 Nm (32 ft-lb)
- Transmission drain plug/fill plug 50 Nm (37 ft-lb)

Install driveshaft and preload center bearing bracket as described in **250 Driveshaft**. Refill transmission with appropriate lubricant before starting or towing the car. See **Transmission oil, checking and replacing**.

