

331 Final Drive

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GENERAL

This repair group covers repair operations that do not require complicated disassembly of the final drive. Internal repairs and final drive disassembly are not covered in this manual.

FINAL DRIVE SERVICE

All final drive work requires some method of raising the car and supporting it securely while the work is performed. Jack stands and a floor jack can easily be used, but use extreme caution when working beneath the car. See **010 Fundamentals for the Do-It-Yourself Owner**.

NOTE —

Removal of final drive carrier is covered in **330 Rear Suspension**.

Final drive oil, draining and filling

1. Drive car to warm final drive fluid.
2. Raise car and support safely.

WARNING —

Make sure that the car is firmly supported on jack stands designed for the purpose. Place the jack stands beneath a structural chassis point. Do not place jack stands under suspension parts.

3. Place a drain pail below final drive and remove drain and fill plug from final drive. See Fig. 1.

NOTE —

- Use a 14 mm allen bit socket to remove the drain plug. Alternatively, cut approximately 30 mm (1.2 in) from an allen key and use a box end wrench on the key stub.

4. Install and tighten drain plug.
5. Fill final drive with appropriate type and quantity of lubricant. Install and tighten fill plug.

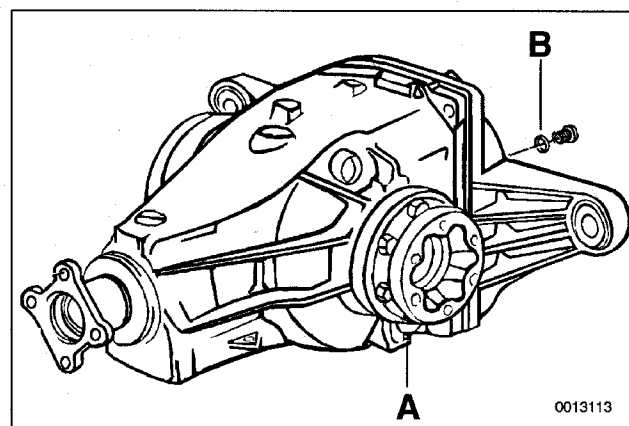


Fig. 1. Final drive drain plug (A) and fill plug (B).

NOTE —

The final drive fluid level is correct when the fluid begins to spill from the fill plug.

Final Drive Drain and Fill

- Oil specifications
 - w/o limited slip BMW SAF-XO Synthetic Oil
 - with limited slip BMW SAF-XLS Synthetic Oil
- Final drive oil capacity
 - 4-cylinder 1.1 liters (1.2 qt)
 - 6-cylinder 1.7 liters (1.8 qt)

Final Drive Oil Seals

Low oil level caused by faulty oil seals may be the cause of noisy final drive operation or limited-slip chatter. The drive flange (side) and input shaft (front) oil seals can be replaced while the final drive is installed.

NOTE —

Do not mistake leaking CV joints for flange seal leaks. It may be helpful to degrease the final drive to pinpoint the source of the leak prior to replacing seals.

FINAL DRIVE SERVICE

Final drive flange oil seal, replacing

1. Raise car and support safely.

WARNING —

Make sure that the car is firmly supported on jack stands designed for the purpose. Place the jack stands beneath a structural chassis point. Do not place jack stands under suspension parts.

2. Detach drive axle(s) from final drive. See **330 Rear Suspension**.

CAUTION —

Suspend the detached drive axle from the car body with a stiff wire hook to prevent damage to the outer CV joint.

3. Pry drive flange from final drive. See Fig. 2.

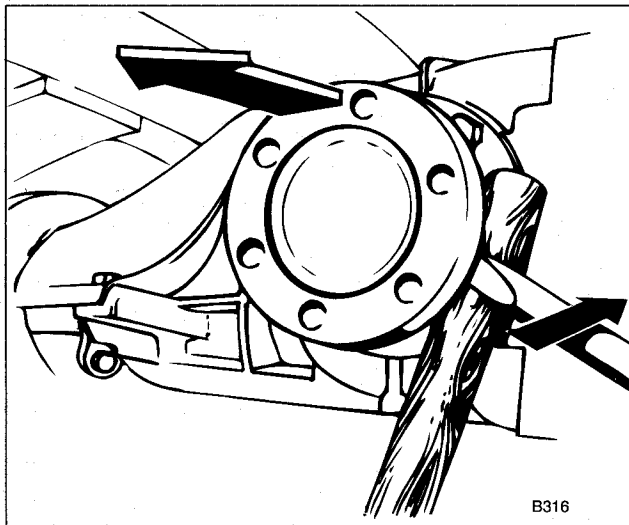


Fig. 2. Drive flange being pried off. For leverage, use a wooden dowel as shown.

4. Remove wire (snap) ring from final drive opening. See Fig. 3.

NOTE —

Inspect flange at the point where the oil seal rides on the shaft. Replace the flange assembly if there is a groove worn in the shaft.

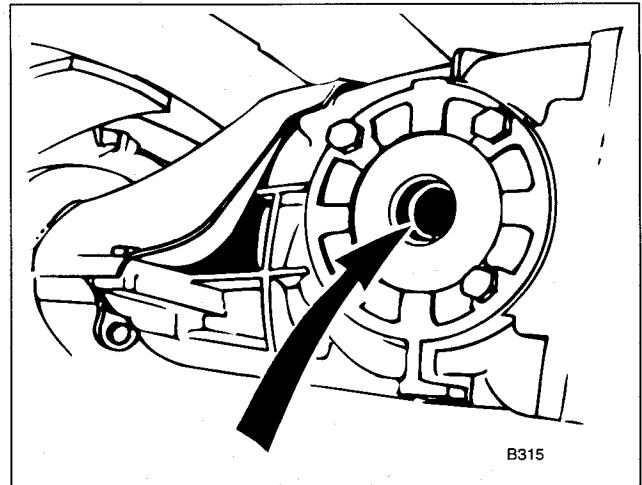


Fig. 3. Drive flange snap ring (arrow) to be removed from final drive housing.

5. Pry old oil seal from its recess using a hooked seal removal tool, or a large screwdriver. Use pan to catch draining fluid.

CAUTION —

Be careful not to mar the final drive housing when removing the seal.

6. Dip new seal in final drive lubricant and drive seal into place until fully seated.
7. Install new snap ring in groove of final drive housing. Make sure both ends of ring are fully seated in groove.
8. Install drive flange by pressing it in by hand until snap ring engages. It may be necessary to turn drive flange slightly while pushing.
9. Attach drive axle and tighten bolts.
10. Top off final drive with oil.

Tightening Torque

- Drive axle to final drive flange

M8 Torx bolt.	64 Nm (47 ft-lb)
M10 Torx bolt.	100 Nm (74 ft-lb)

Final drive input shaft oil seal, replacing

1. Raise car and support safely.
2. Drain final drive oil as described earlier.
3. Remove driveshaft from final drive input shaft flange. See **260 Driveshaft**.
4. Make matching marks on input shaft and input shaft collar nut. See Fig. 4.

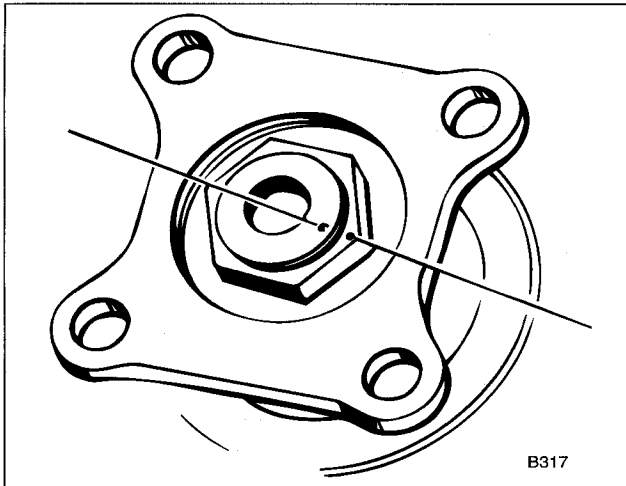


Fig. 4. Make matching marks on input shaft collar nut and flange.

5. Pry lockplate from nut. Hold input flange and remove collar nut. If necessary, use a puller to remove input flange.
6. Remove final drive front dust cover.
7. Pry faulty seal from its recess using a hooked seal removal tool or a large screwdriver. Dip new seal in final drive lubricant and drive it into position.

CAUTION —

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

8. Install new final drive front dust cover.
9. Lightly lubricate input shaft and press input flange back on. Install collar nut and slowly tighten until matching marks line up, coming as close as possible to specified torque.

Tightening Torques

- Final drive input shaft flange to pinion with 4 bolt side covers. 175 Nm (129 ft-lb)
(or until match marks line up)
- Final drive input shaft flange to pinion with 6 bolt side covers. 185 Nm (137 ft-lb)
(or until match marks line up)

CAUTION —

If the input flange nut torque is exceeded, or the nut is tightened past the marks, the crushable collar sleeve behind the flange will need to be replaced. This operation requires disassembly of the final drive unit.

10. Install a new lockplate and refill final drive with lubricant.
11. Remaining assembly is reverse of disassembly.

Tightening Torques

- Driveshaft to final drive flange . . . See **260 Driveshaft**
- Flex-disc to driveshaft or transmission flange See **260 Driveshaft**
- Final drive drain and fill plugs. 70 Nm (52 ft-lb)

Final drive unit, removing and installing

1. Raise rear end of car and support it securely on jack stands. Remove rear wheels.
2. Remove driveshaft from final drive input flange. See **260 Driveshaft**.
3. Remove both drive axles from final drive unit. Suspend axle using stiff wire. See **330 Rear Suspension**.
4. Disconnect stabilizer bar from upper control arms. Remove left and right stabilizer bar mounts.
5. Disconnect speedometer harness connector on final drive (where applicable).
6. Support final drive with transmission jack. Remove mounting bolts at front and rear. See Fig. 5.
7. Slowly lower final drive unit and remove towards rear.

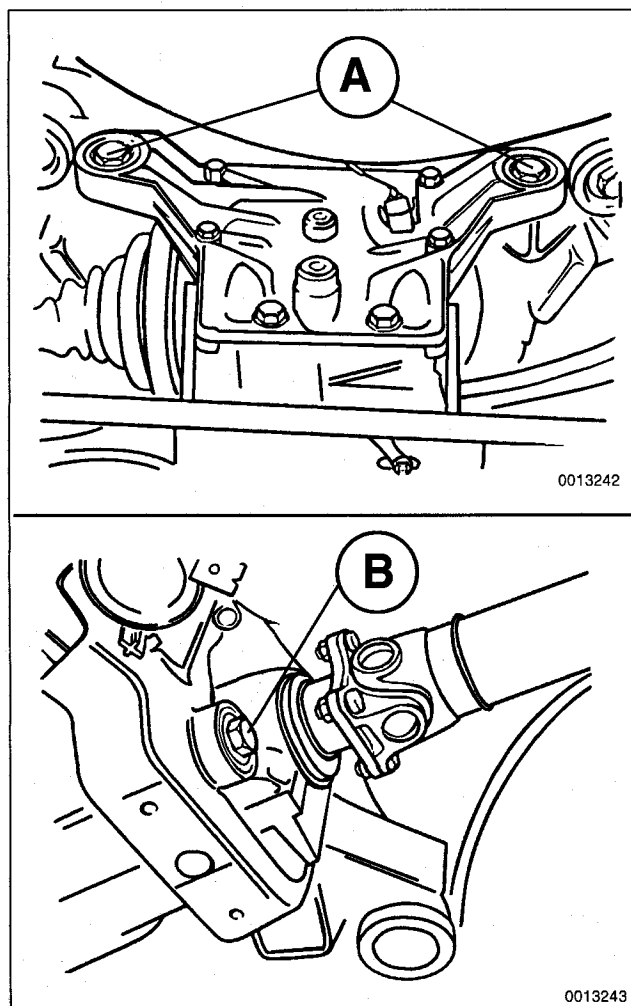


Fig. 5. Final drive to final drive carrier rear (A) and front mounting bolts (B).

8. Installation is reverse of removal.

- Check and adjust parking brake as described in **340 Brakes**.
- Always use new self-locking fasteners.
- Have car professionally aligned when job is complete.

Tightening Torques

- Drive axle to final drive flange
M8 Torx bolt 64 Nm (47 ft-lb)
M10 Torx bolt 100 Nm (74 ft-lb)
- Driveshaft to final drive flange . . . See **260 Driveshaft**
- Final drive carrier to body. 77 Nm (57 ft-lb)
- Final drive to final drive carrier (M12 bolts)
Front mount 95 Nm (70 ft-lb)
Rear mounts. 77 Nm (57 ft-lb)
- Road wheel to wheel hub. . . . 100±10 Nm (74±7 ft-lb)
- Upper or lower control arm
to final drive carrier (M12 bolts) 77 Nm (57 ft-lb))

