

## Removal and Installation of Rear Axle Pinion Oil Seal – 1937 to 1952

1. Drain oil from the rear axle.
2. Remove both rear wheels and brake drums. This is to eliminate brake drag when measuring the preload torque on the pinion bearings. As an alternate, back off on the brake adjustment to eliminate all drag.
3. Disconnect rear universal joint and optionally remove front so entire drive shaft can be removed. This is to get it out of the way for work to come.
4. Using a socket and adapters to go from the nut holding the yoke to a 50 inch-lb. (repeat *inch-lb*) torque wrench measure the resistance of the pinion shaft to rotation. Do not count the initial load to start the motion. One expects to see a reading of 10 to 20 inch-lbs. Note this value.
5. Mark the yoke location on the pinion shaft with a punch so it can be installed in the original location.
6. The yoke nut is staked. Remove as much of the stake as possible. As the nut is removed the staking will damage the threads of the nut.
7. Remove nut with an impact wrench. Use a 7/8 – 14 UNF tap to clean up the threads in the nut. It is important to have clean threads so a proper torque reading can be obtained later.
8. Remove yoke. To remove the seal first tap the seal toward the rear in the seal retainer (size adapter). This will expose a lip on the retainer that a typical slide hammer can catch. Using the slide hammer remove the seal retainer with seal. On the bench carefully remove the old seal from the retainer.
9. In a running change mid year in 1952 Cadillac eliminated the seal retainer design and used a seal with the same ID as the early seals and the same OD as the seal retainer. Due to the relationship of the seal housing to the yoke these will not fit on pre 1953 (some 1952) cars even though all of the diameters are correct.
10. Remove washer and tapered roller bearing.
11. Remove the collapsible sleeve using a small needle nose pliers. If the sleeve does not readily come out work the sleeve back and forth with the fingers while at the same time pulling with the needle nose pliers. Note the bulge on the rear end of the sleeve.
12. Using a thread file remove the stake marks from the pinion shaft.
13. In 1939 Cadillac started to use the collapsible sleeve design. For 1937 and 1938 cars see step 21. The purpose was to provide the factory with a simple method to preload the pinion tapered roller bearings. The preload in force is approximately 1200 to 1400 pounds. This force is provided by the designed deformation of a precisely machined collapsible sleeve. This results in the bulge noted in step 11. The risk on disassemble is that the sleeve will now be slightly short which will excessively load the bearings before the yoke nut is tight enough. On

- reassembly shims can be added to insure that this does not happen.
14. Typically, add a .005-inch or .010-inch shim on the pinion shaft between the sleeve and the rear bearing. This shim is 2.375" O.D. and 1.875" I.D. It is available as a shim pack for a Dana D44 30 spline rear end. This is available from Amazon part number Yukon SK 30214. This may also be available at other sources.
  15. Using emery cloth, clean the inside of the sleeve to insure that it can be installed and removed easily. Oil the sleeve on the ID and after adding the shims reinstall the sleeve, bearing and washer.
  16. At this time do not install the new seal but trial fit the bearing, bearing washer, yoke, and nut. Add .005 to .010 shim thickness. Tighten the nut snugly and check to see that there is some play and it rotates easily with no drag. If not, disassemble and add shims. This endplay will be removed when the nut is tightened and the sleeve collapses further.
  17. Remove the yoke one final time. Install the new seal in the retainer and install the complete seal assemble in the differential housing. A modern seal (National #473179, NAPA #18671, For mid 1952 and up SKF 18948 or equivalent) made with a single sealing surface is recommended over the original leather type. Install the yoke (aligned with previous mark on pinion splines). Before installing the yoke clean the seal surface with 400 grit wet and dry sand paper. If seal surface is damaged in any way use a speed-i-sleeve to repair (part # National 99187).
  18. Install the yoke and tighten the nut to snug and confirm again that endplay exists in the pinion shaft. The sleeve will now need to be collapsed further to eliminate the endplay. Tighten the nut to at least 225 ft-lbs. and measure the inch-lbs drag on the bearings. It should be roughly the same as before disassemble but if 10 inch-lbs are achieved with used bearings and the nut is tightened to at least 225 ft-lbs the job is done. Tool J-2659 is used to hold the yoke while torque is applied to the nut. If tool is unavailable, something needs to be adapted. Old U-joint cups can be welded to a piece of square tubing to make this tool. If drag is low tighten the nut one-half flat at a time beyond 225 ft-lbs and recheck drag. Continue until drag is correct.
  19. Stake pinion nut.
  20. Refill axle with oil and reinstall brake drums and wheels.
  21. On 1938 and small series 1937 cars a collapsible sleeve was not used. A fixed sleeve was used with factory-installed shims to obtain the correct preload. **DO NOT ADD SHIMS TO THESE CARS.** To replace the seal on these cars no special procedures are required. Just remove the yoke, install the seal and torque the nut. Be sure to follow the procedures on cleaning the nut and staking procedures.