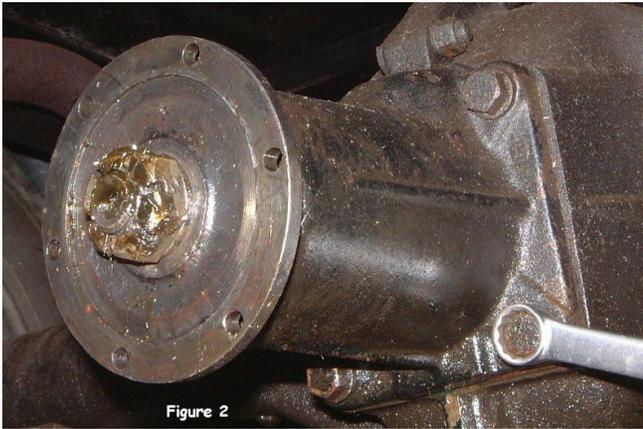


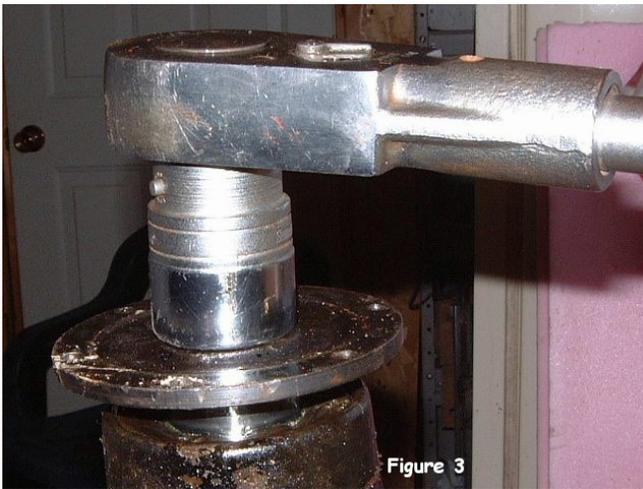
Differential Pinion Seal – 1930 Durant 4-07

By [Ron Jaremkow](#)

Figure 1 shows the problem. Advantage? Undercoats your fuel tank. Disadvantage? Eats holes in your neighbour's asphalt. Cure? Replace the old felt seal with a modern neoprene seal!!!!



Before removing the drive shaft, mark the pinion flange and the drive shaft for original re-assembly. The seal could be replaced with the pinion in the differential carrier, but it is much easier to work with the pinion carrier up on the workbench. It's as simple as removing the four bolts holding the carrier onto the differential carrier. Use a criss-cross pattern to loosen and remove the bolts. No problem with oil leaking out once the bolts are loose, but have a catch can handy just in case the oil level is high. If you see a gasket that wants to hang up as you remove the pinion carrier, be careful and try to keep the gasket intact. Figure 2 shows the ease of getting at the bolts.



With the carrier up on the bench, remove the cotter pin from the pinion nut and discard the cotter pin. The pinion nut may be very tight. Clamping the flange across the edges in a vise is a good way of holding the pinion from turning. That is a $\frac{3}{4}$ " drive socket being used to loosen the nut as shown in Figure 3.



Once the nut is loose, turn the nut off until it is flush with the top of the pinion. Leave the nut on to protect the top of the threaded pinion shaft when you use the puller to remove the flange in the next step. See Figure 4. The flange maybe fairly tight and will require a good two jaw or even better, a three jaw puller. As the flange is drawn up the shaft, turn the nut up and off as required until you can tap the flange off with a soft hammer.



Figure 5

With the flange removed, examine the sealing surface for any wear that the felt seal has caused. If any amount of wear is evident, consider having a good machine shop weld the worn section up and then turn the welded area down to the original diameter. Set the flange aside; replace the nut back on the pinion so it is flush with the top. Support the assembly in such a way that the entire pinion gear can be removed from the bottom of the carrier. The outer cone will be snug on the drive pinion. Using a decent hammer, 3 pound isn't too big; tap the pinion gear out of the upper (outer) bearing so the pinion gear can be removed from the assembly. Again, be very watchful for the shims that belong between the upper bearing and the bearing spacer. The original shims must go back in their original position. They are used to control the pinion bearing pre-load and are very important!!!! Make sure none are stuck to the spacer or the bottom of the outer bearing. See Figure 5.



Figure 6

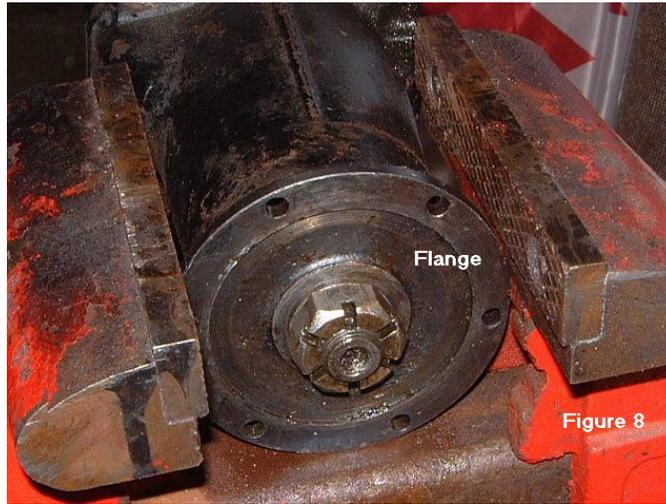
By using a long punch on the inner race of the outer bearing, the bearing and seal can be driven out the front of the carrier. Or, use a pry bar and try to lever the old seal out. It will be tight and difficult to pry. Now is the time to wash all the components to check for any problems with them. Examine bearings, cups and cones. If the cups show signs of bad wear or if time has broken through the hard cup surface, the bearing should be replaced. Now is the time to do it!!!

You should be able to get the seal at any automotive jobber. The seal is a current item. This one is a National Seal from Federal-Mogul, # 473446. The dimensions are 1.687" ID, 2.875" OD and .375" thick as shown on the box in figure 6.



Figure 7

Before installing the seal, place the clean, lubricated outer bearing cone on its race. Use grease such as wheel bearing grease and pack the grease into the neoprene lip of the seal. This helps provide initial seal lubrication and will keep the "garter" spring in place while the seal is being driven in. Coat the outside of the seal casing with a non-drying gasket sealer/shellac to prevent oil from seeping past the outside of the seal. To drive the seal into place, use a round piece of pipe; a socket works well, instead of tapping on the seal itself with a hammer. Tap the seal in evenly and squarely until it is just below the outer surface of the pinion housing. See figure 7.



With the seal in place, be sure that the small pinion pre-load shims are on top of the bearing spacer, see Figure 5, lubricate the inner bearing cone and insert the pinion assembly up through the outer bearing, which is already in place. Coat the splines in the flange lightly with a sealer to prevent leakage and lube the sealing surface on the flange. With the bottom of the pinion gear on the bench, using a suitable pipe/socket as a driver, tap the pinion flange down against the outer bearing. Place the flat washer over the pinion threads and then start the nut. You may have to hold the flange in a vise to keep it from turning. See Figure 8 above. This nut must be tight. It is not used to set the pre-load on the bearings, the shims determine the pre-load. If the pinion becomes very hard to turn as you tighten the flange, you may have lost a shim!!!! The pinion should be snug to turn, but not spin free or bind. It should be snug. Place a cotter pin through the castle nut to lock the nut. If need be, advance the nut to expose a hole. The shaft is cross-drilled to provide two possibilities. The assembly is now complete and ready to place back in the differential carrier!!!!!!



When replacing the assembly, clean the mating surfaces and be sure you replace the original two gaskets and shim. See Figure 8. They determine the depth of the pinion to the ring gear and must be correct!!! Coat the threads on the housing cap screws with sealer and tighten them gradually using a criss-cross pattern. Replace the drive shaft using your original marks as a guide. Check the oil level in the differential, top up if necessary.

You are now ready for thousands of miles of drip free motoring. Not a bad way to put in an afternoon, eh?