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Detailed Topics

Differential Leaks



Oil leaks in rear differentials are fairly common. They are also sometimes mis-diagnosed and sometimes **improperly repaired.** The former is annoying and the latter can be extremely expensive. When driving, wind under the vehicle tends to blow oil to the rear. This can often disguise the true source of the leakage.



The above photo may appear to be a leaking rear cover. This would be a mis-diagnosis of the true source of the leak.

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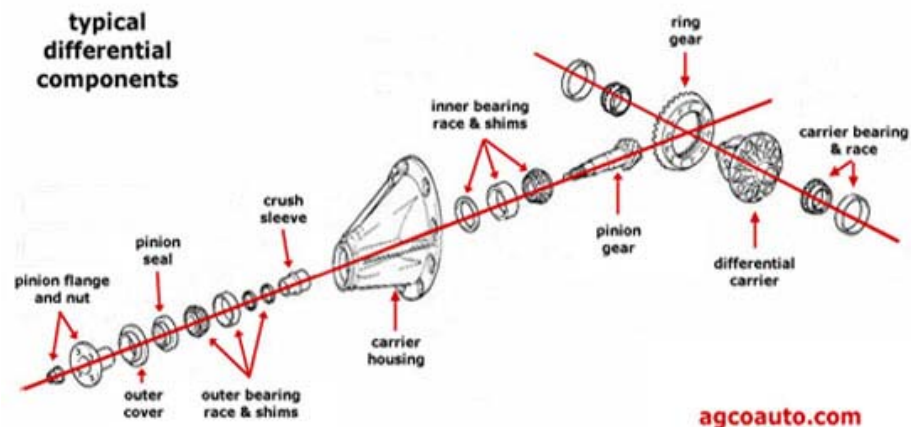


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Closer inspection and from another angle reveals the true source of the leakage. The differential pinion seal is leaking oil, which is blowing back onto the rear cover. Simply replacing the cover seal would do no good. Replacing only the pinion seal can damage certain vehicles and also present a very dangerous situation.

The pinion gear is supported by a pair of bearings which lie behind the seal. A pinion nut holds the assembly together. If the nut is not sufficiently tight, it could loosen in use. This would affect the alignment of the pinion gear with the ring gear and quickly destroy both. It can also result in the flange coming loose and the driveshaft coming out of the vehicle. This too can be extremely costly as well as quite dangerous.



To help maintain pinion alignment and retaining nut tension, some differentials employ a crush sleeve. This metal sleeve is placed between the two pinion bearings. The extreme force of tightening the pinion nut causes it to crush. This is a very precise operation and end-play as well as rotational force are measured to set the amount of crush precisely. The alignment of the ring and pinion gears is critical to prevent damage.

When the pinion nut on such a differential is removed, in order to replace the seal, the crush sleeve must also be replaced. This involves disassembly of the differential and resetting of the ring and pinion gears. Surprisingly some shops simply replace the seal, thinking they are saving money. The cost of a proper repair is many times

more than simply replacing the seal. It is also a fraction of the cost of a damaged ring and pinion.

As with so many other things, often the cheapest way out is the more expensive way in. Don't learn an expensive lesson the hard way. [Proper service](#) is always less expensive service. AGCO, it's the place to go.

For more on differential leaks, also see our Detailed Topic Article, [Differential Axle Seals and Water Damage](#).

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