# *Transfer Case Pump Upgrade Instructions*

Using these instructions, I hope you can easily install the pump upgrade kit. First, lets briefly discuss the problem. The pumps purpose in the transfer case is to supply lube oil to the drive sleeve and range planetary set. These items need pressurized oil due to the tight tolerances and normal 'splash' oil is not sufficient. The pump rides on the main shaft and the pump body indexes into the rear housing of the transfer case. There is a anti-rattle clip in the case that is used to take up the tolerance between the pump body and the case. The pump body has a tendency to cut through the clip and eventually the rear housing.

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The differences are quite obvious in the upgraded pump body over the stock unit. The part is CNC machined from aircraft quality T-6061 Aluminum. Tolerances for the part are with in .0001". The larger tabs provide more surface area on the case to virtually eliminate rub through

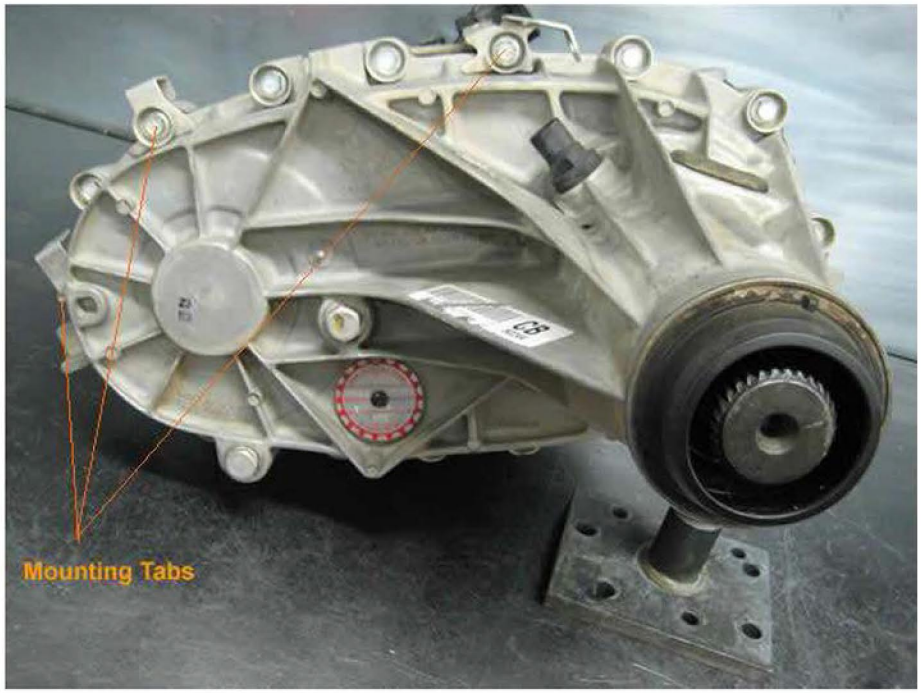
Here is an inside shot of the condition. Also pictured is the anti-rattle clip designed to keep the pump from rubbing on the rear housing. Notice its worn right through. You can also see the little pin hole that is the greatest problem of all. Through that hole, your fluid is slowly leaking out, causing a slow death of your transfer case.

The highlighted box shows what you would expect to see when looking from the outside. Also notice the grime buildup from the fluid leaking and catching road debris. This hole is pretty obvious, but you may start noticing oily buildup towards the back.

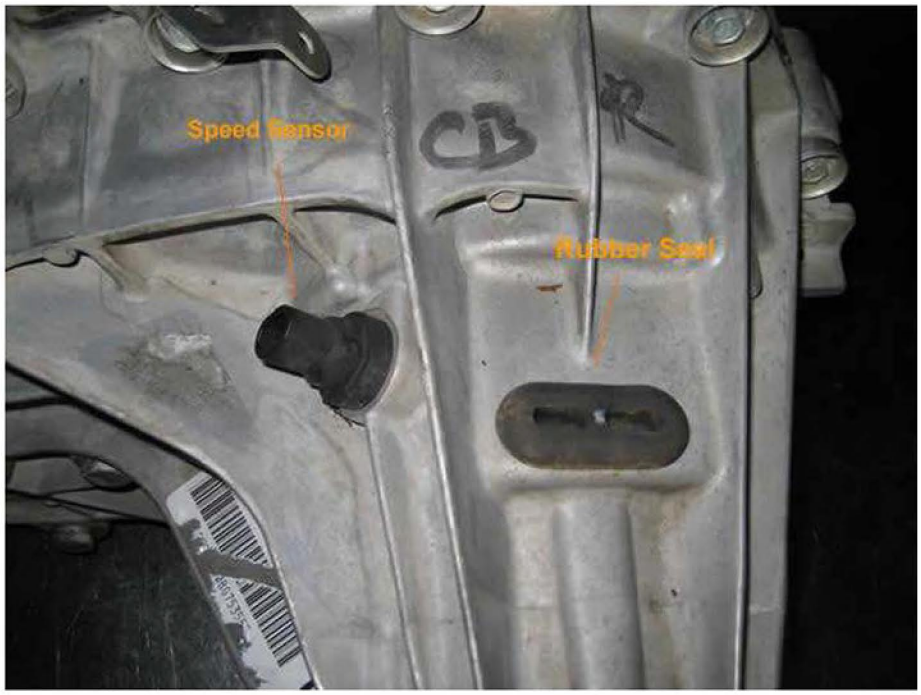
Here is what you will get with the upgrade kit.

- CNC machined pump housing
- 3 oz tube of Silicone Sealer with applicator nozzle
- Transfer case adapter housing gasket
- Loctite 242 threadlocker

Take note of the position of the brackets on the housing. Use the handy picture for reference upon reassemble to ensure they all go back in the proper place. There is a series of bolts around the perimeter of the case. On some models, these may be 10mm head, other models will use 15mm head.




Viewed from the top of the transfer case, you will find the output speed sensor as well as a rubber plug.




Start by using a screwdriver to pry the plug out of the case. You will see a snap ring under the plug as shown far right

Then use a ¾" wrench to remove the speed sensor. You can see the reluctor wheel inside the case.

Using snap ring pliers and a straight blade screwdriver, open the snap ring then gently pry on the reluctor gear pushing it forward. This releases the rear support bearing from the rear housing

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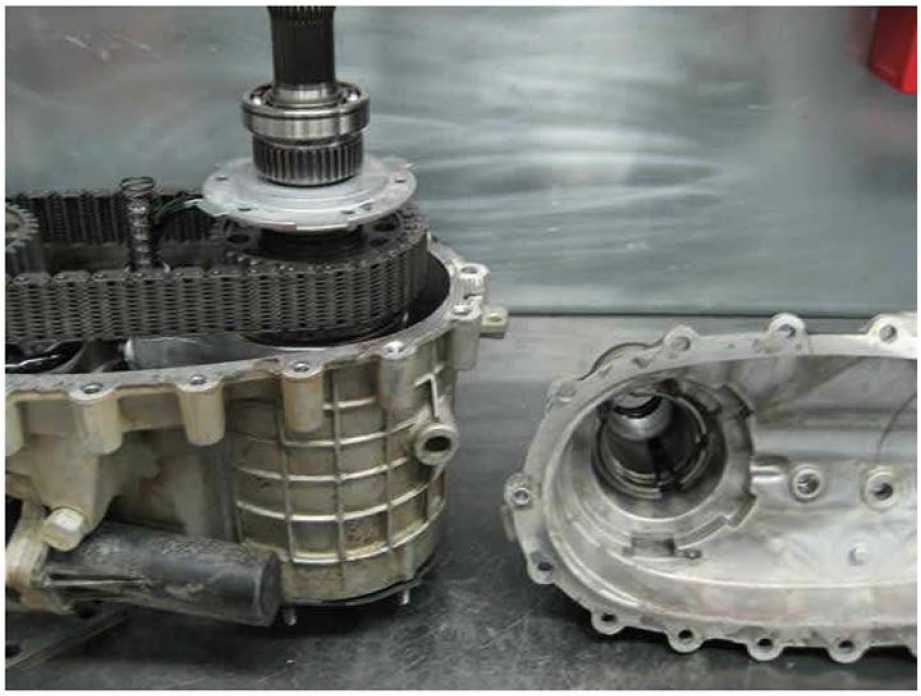
Make sure that the bearing is free of the snap ring completely.

Remove all of the perimeter case bolts at this time.

Pry the case halves apart with a flat blade screwdriver at the spots shown.

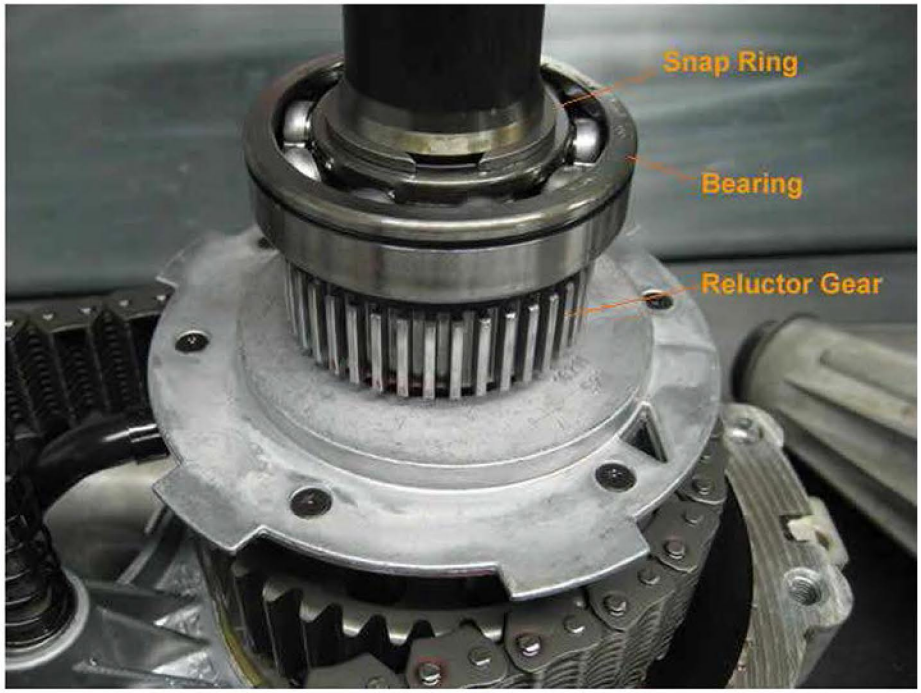
Separate the rear housing be pulling it away from the rest of the case. I find it easier to work on by propping the unit in an upright position as shown.



Hopefully this is the condition of your clip. This one is in great shape and shows no signs of wear at all.

***This clip needs to be thrown away regardless of its condition as it is not necessary.***

Here is a closer look at what you will see inside the case. The snap ring holds the bearing on the shaft. Using snap ring pliers, remove the snap ring and slide it up and off the shaft, expanding only enough to slide it off. The bearing will lift off, it is a bit of a snug fit, but a little wiggling is all that is needed to remove it.




After the bearing is removed, slide the reluctor wheel up and off, notice the orientation of the reluctor. There is a stepped edge that must be reinstalled towards the pump.


The orange box highlights where the oil pump pickup slides into the pump body. This is easily removed by simply pulling it out of the pump. The pickup can stay in the case after sliding the tube out of the pump.

Pump assembly removed for upgrade installation

Take note of the o-ring seal in the pump that seals the pickup tube. This must be in place during reassemble, it may be easier to assemble if you install the o-ring on the pickup tube for reassembly.

Using a T-15 Torx bit, remove the 6 screws holding the pump together. Here is a disassembled view of the pump. Clean and dry all parts. The pump body may be discarded, it will not be reused.

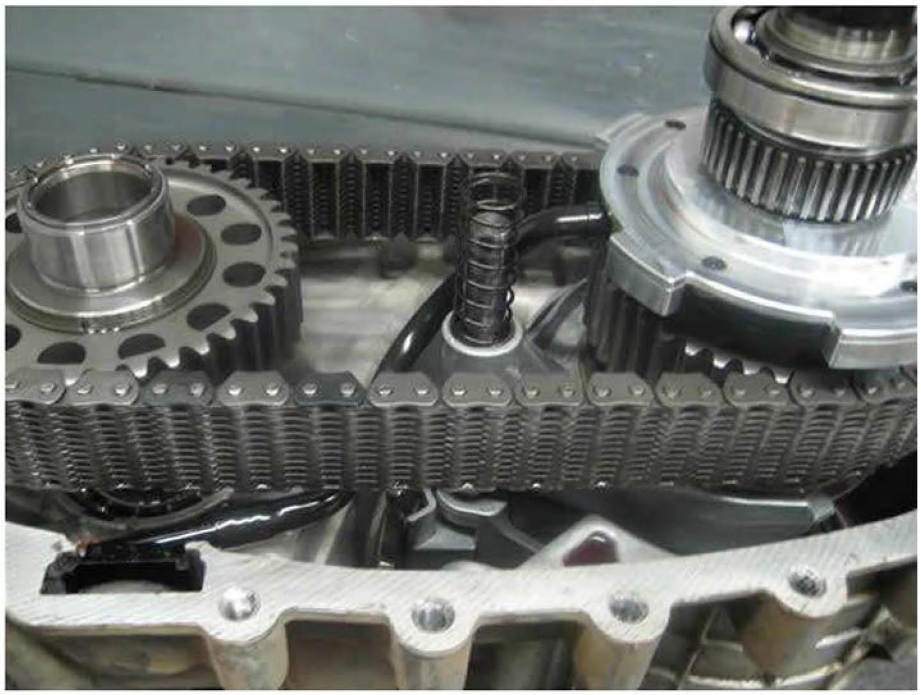
Place the pump upgrade with the tabs up and place the gears back in. After installing the gears, put a few drops of oil on the gears to help with initial lubrication.

Use the supplied Loctite and apply a small drop to each of the 6 screws that hold the pump together.

Reassemble the pump, first starting all the screws a few threads and then draw them tight in a diagonal pattern to ensure the housing pulls together evenly. The screws only need to be snugged, do not use excessive force to tighten them. Torque should be about 80 in lbs, but rule of thumb would be to tighten with screwdriver type driver handle firmly. After tightening, make sure that the pump gears still rotate in the housing.

Reassemble the transfer case by reinstalling the pump, reluctor gear and support bearing followed by the snap ring. Reinstall the pickup tube into the pump making sure that the o-ring is in tact.

Here is what you should see after reassembly. Make sure that the spring is in place on the shift shaft as well.

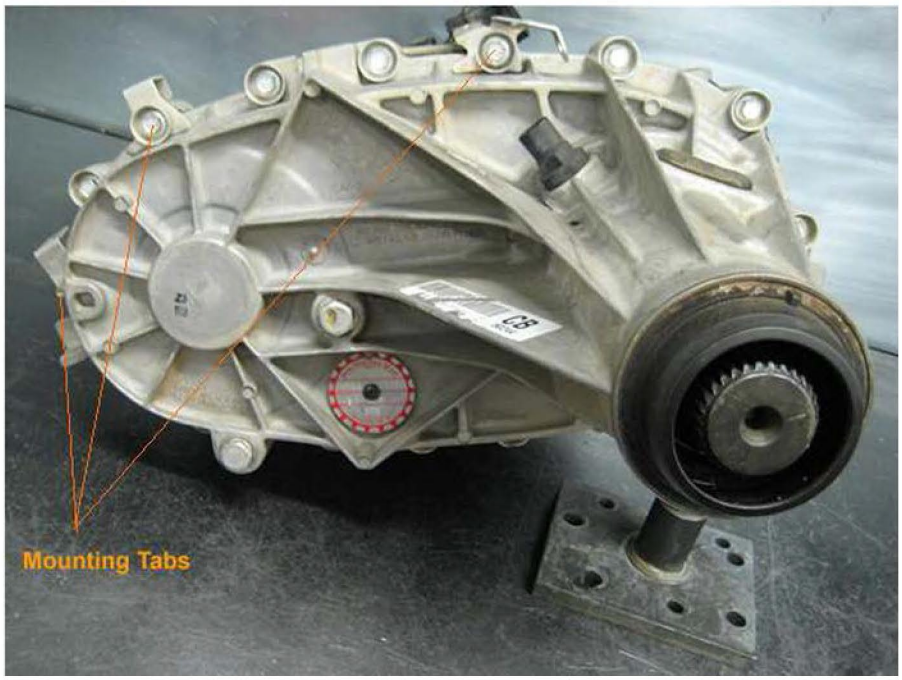


Locate the dowel pins and place them in the front half of the transfer case. They may be in place or they may have come out with the rear half during disassemble. There is one dowel pin on each side, identified by a counter bore in the case. Both of these must be in place or severe damage to transfer case could occur.

Cleaning the old silicone sealer off the case is actually pretty easy. Use a rag and simply scrub it off as shown in the picture. You will notice that the flange has a rough finish, this is intentional to promote a good bond with the sealer between the halves. Thoroughly clean the flanges with brake clean or similar to remove all oil. Silicone will not seal properly when oil is present. Failure to ensure area is clean could result in a leak.

Use the supplied silicone sealer with the dispensing nozzle and apply a 3/16" wide bead of silicone sealer around perimeter of case on center of flange. It is not necessary to go around the bolt holes. Apply the sealer in board of the bolt holes as shown.


Reinstall the rear housing and install and tighten the housing bolts. Torque to 27 ft lbs in a diagonal pattern. Don't forget to reinstall the brackets as shown.



Spread open the snap ring and using a screwdriver, slide the mainshaft into place, locking the bearing into the rear housing.

Make sure that the snap ring is locked into place in the bearing and in the housing.

Reinstall the speed sensor and rubber plug. Use a bit of the silicone sealer to seal the threads on the sensor as well as around the rubber seal for a tight, leak proof seal.

Congratulations! You have successfully upgraded your transfer case and prevented any rub through ever again. Reinstall in truck and refill case with 2 quarts of quality ATF fluid. I recommend changing the fluid once a year