# Installing a Sherman Overdrive Transmission

By:  Mark Welling (aka wwildhorse2k)

I thought that I would share some photos of the installation of my Sherman Overdrive transmission (“OD”). I did an overhaul of the transmission and replaced all the bearings and seals, reconditioned the shifter fork and re-shimmed the rear bearing cup and replaced the countershaft pin and detent ball. I followed the excellent instructions provided by John Smith at http://www.oldfordtractors.com/surebuild.htm. When I bought the tractor it had a bungee cord on the shift lever and the previous owner said that it would pop out of gear under heavy load. I used a brass wedge clamped to the shifter fork to help with building up the wear on the shifter fork.  I used a hand grinder and a belt sander to grind the fork to the final, renewed dimensions.

I was worried about the shimming of the rear bearing cup out of curiosity of how many shims it would take and the existing shims looked hammered.

I removed the rear cup and the existing shims and installed the new cup partially in the housing without the shims.

I installed the rear housing of the OD in the 8N transmission without the gaskets but with the OD rear shaft installed.

I torqued the mounting bolts evenly and then removed them and turned the OD housing 180 degrees and then replaced the bolts and re-torqued the bolts. By doing this I used the existing bearing to press the new cup into the OD rear housing until the OD housing stopped against the transmission housing.

I then removed the OD housing and measured the space between the bearing seat on the OD housing and the bearing cup to get the thickness of the shims required. I needed 0.050" of shims and I made new ones out of some 0.010 Galvanized Steel.  The shims measure 2 13/16” (2.8125) OD x 2 7/16” (2.4375) ID.  I used a pair of aviator snips to cut them and then sanded the edges for burrs. I used a vise with smooth jaws the make sure they were flat with no kinks.

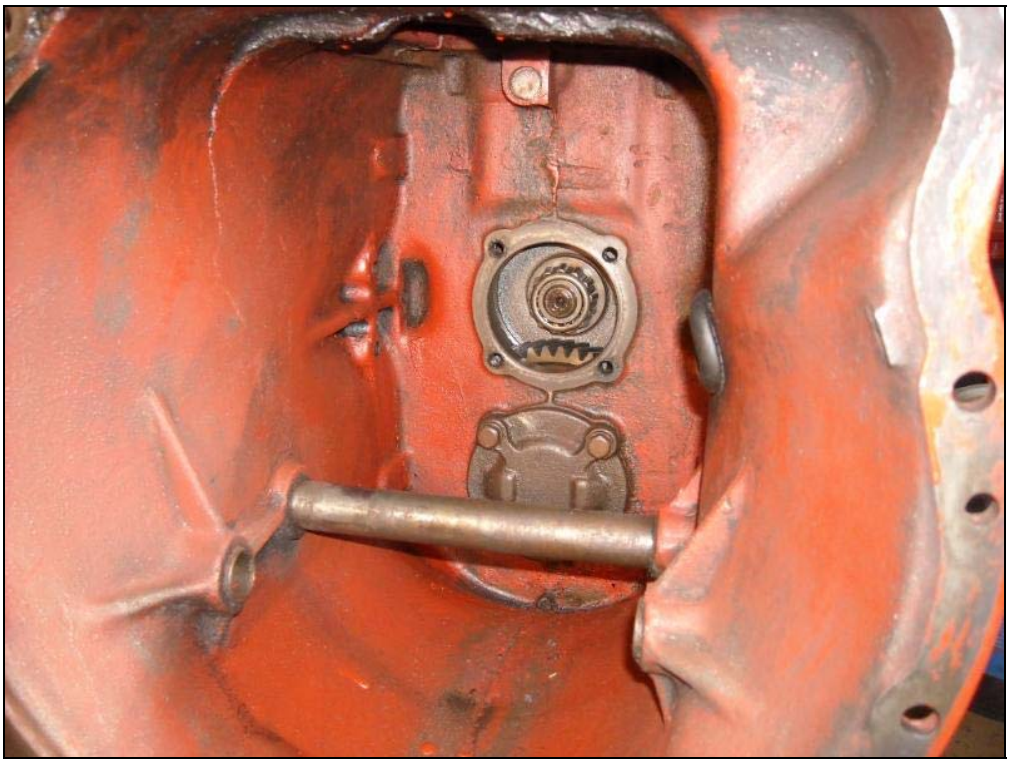
I put the shims in and installed the bearing cup.

I then tested the clearance by re-installing the rear housing, rear shaft and one gasket. I snugged the bolts while turning the shaft. I wiggle and turn the shaft several times while torquing the bolts. When the bolts are torqued down there should be no side play on the end of the OD rear shaft and the shaft should still be easy to turn. Slightly loose is better that tight. I ended up using two gaskets.  If you need gaskets, click this link: http://www.ntractorclub.com/eds_stuff/ford%20tractors/Accessory%20Info/Sherman%20Transmissions/Sherman%20Step-Up/Mark%20Welling's%20SHERMAN_OD_GASKETS.pdf and it will download an Adobe file that you can print out as-is, and use the resulting template to trace and cut your gaskets. I cut the sheet gasket to 8 ½ x 11 and print it directly on the sheet gasket with my laser printer.  I used 1/64" Fel-Pro Karropak  Paper gasket -- available at NAPA:
http://www.napaonline.com/Search/Detail.aspx?R=FPG3045_0297477910

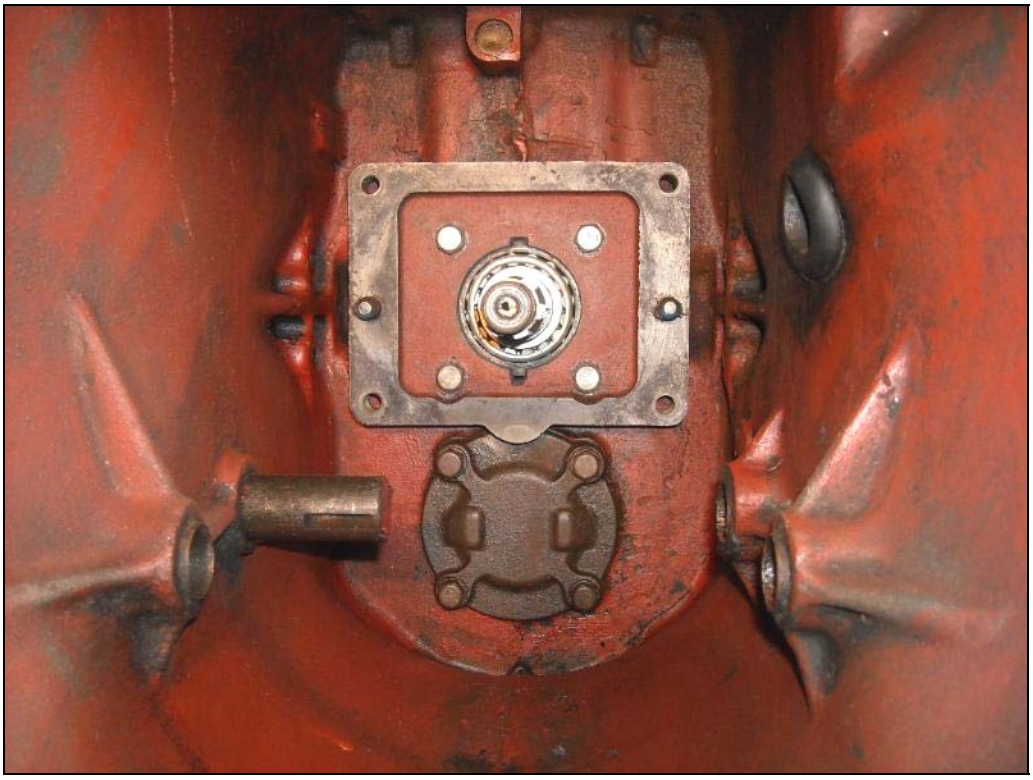
I torqued the mounting bolts to 33 ft-lbs and the clearance was close enough.

I removed them again and put a light coat of #2 Permatex sealer on the gaskets and re-installed the rear housing with the baffles under the bolts.

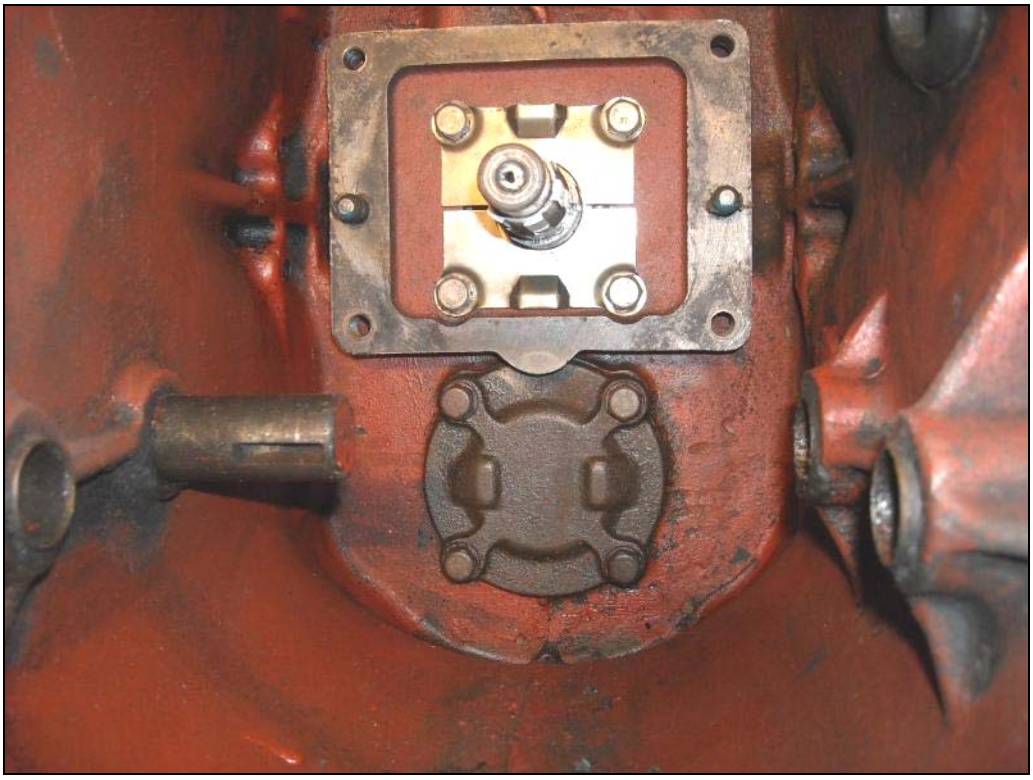
This is what you start with:



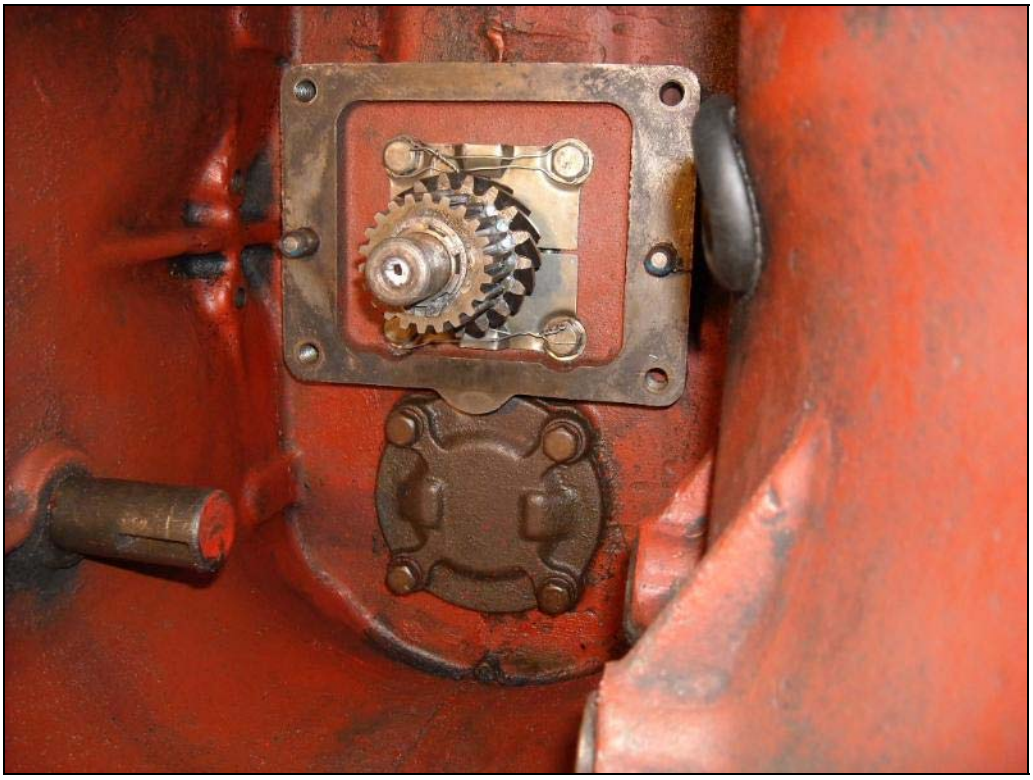
Testing the clearance on the rear bearing:



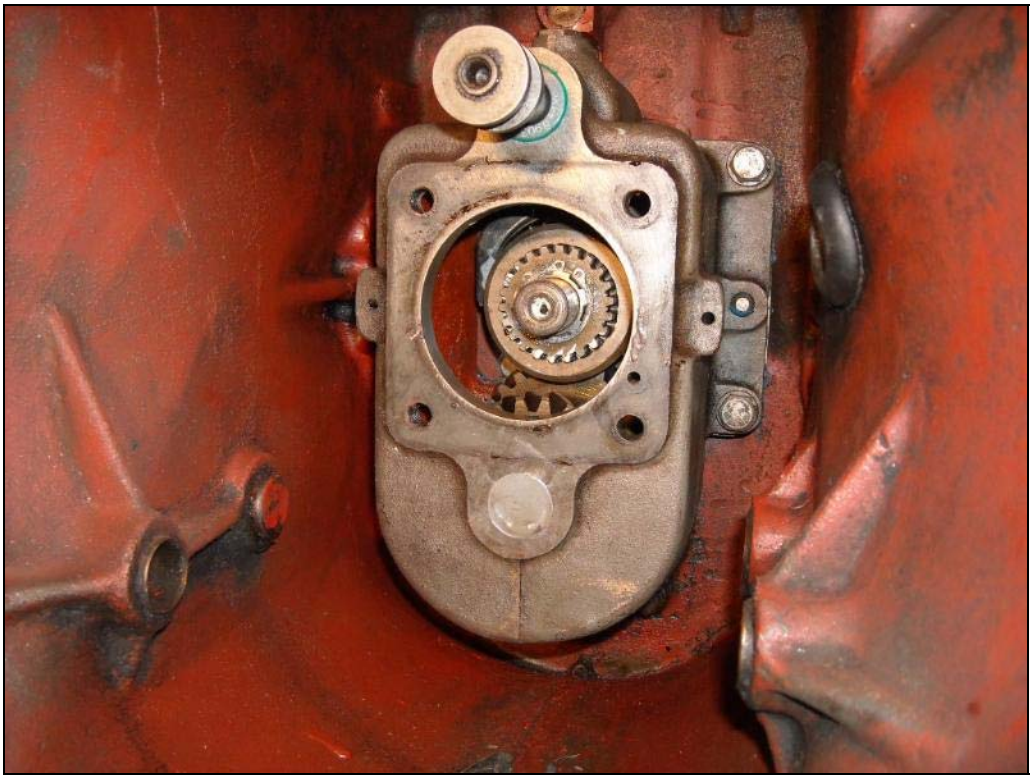
Final install of rear housing with the baffle plates:



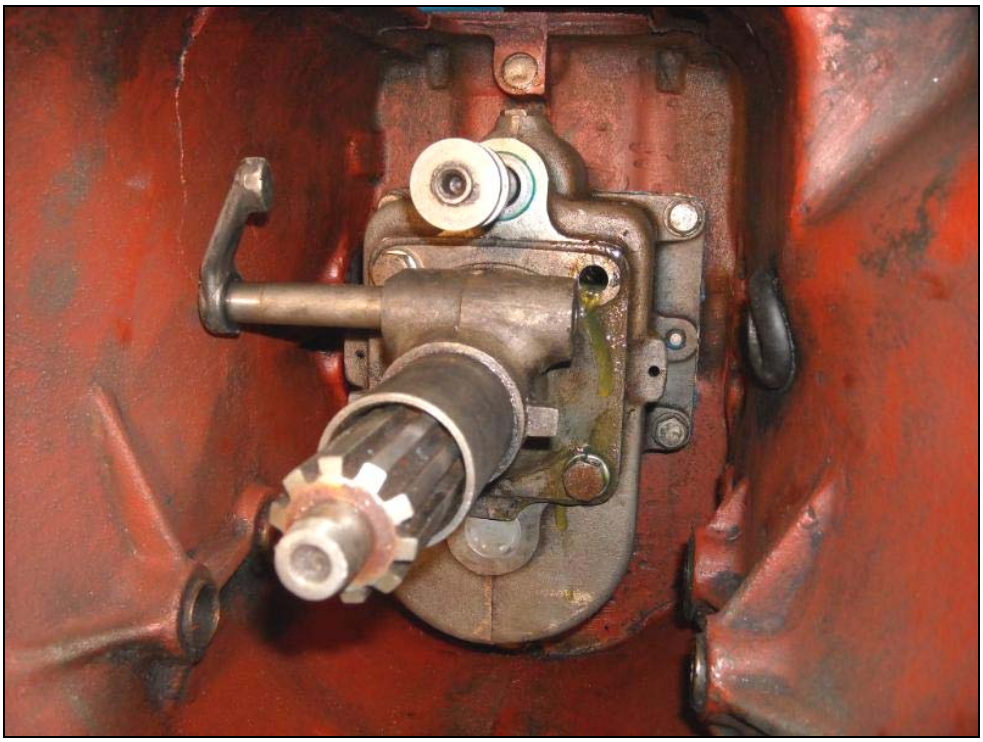
Don’t forget the wires to lock the mounting bolts and install the gears and snap ring on the shaft. Use assembly lube on the gears:



Put sealer on the rear main housing gasket and install the main housing. Make sure the selector gear is pointed the right way and is seated in the shifter fork.



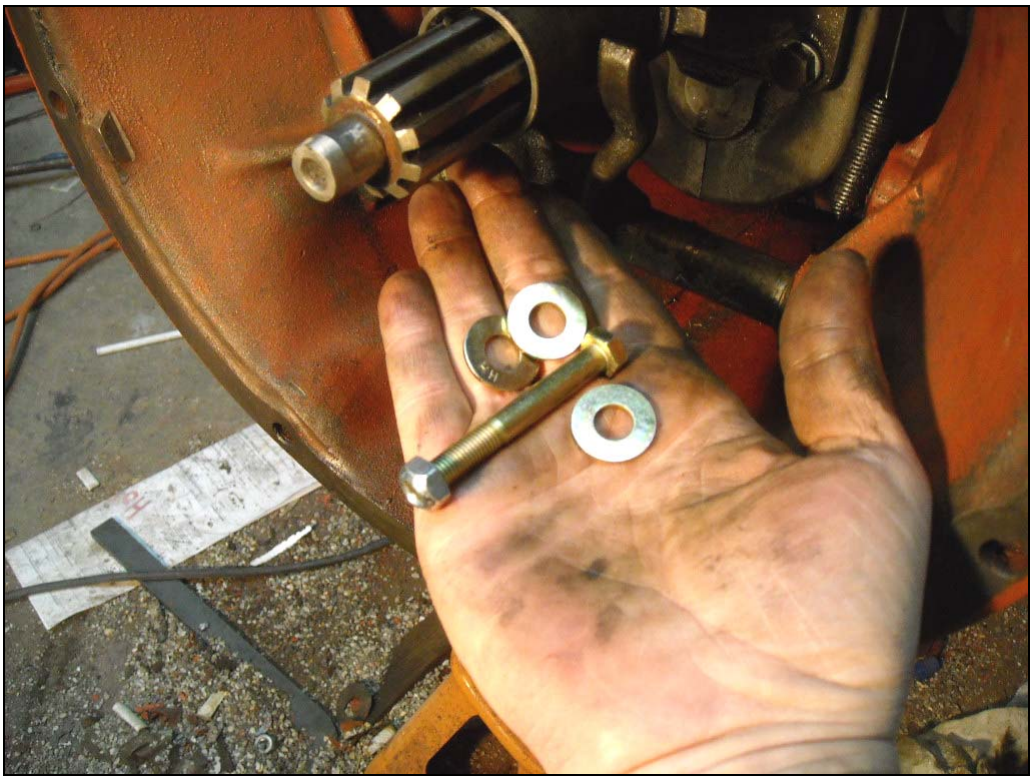
Install the shifter lever in the front housing and install the front housing on the main housing with sealer and put in three of the four bolts:



Add the 1 pint of lube (the same lube that you are using in the tractor transmission) to the Sherman OD by putting it in through the open bolt hole at the top right. Install the bolt and do the final torque of all the bolts.

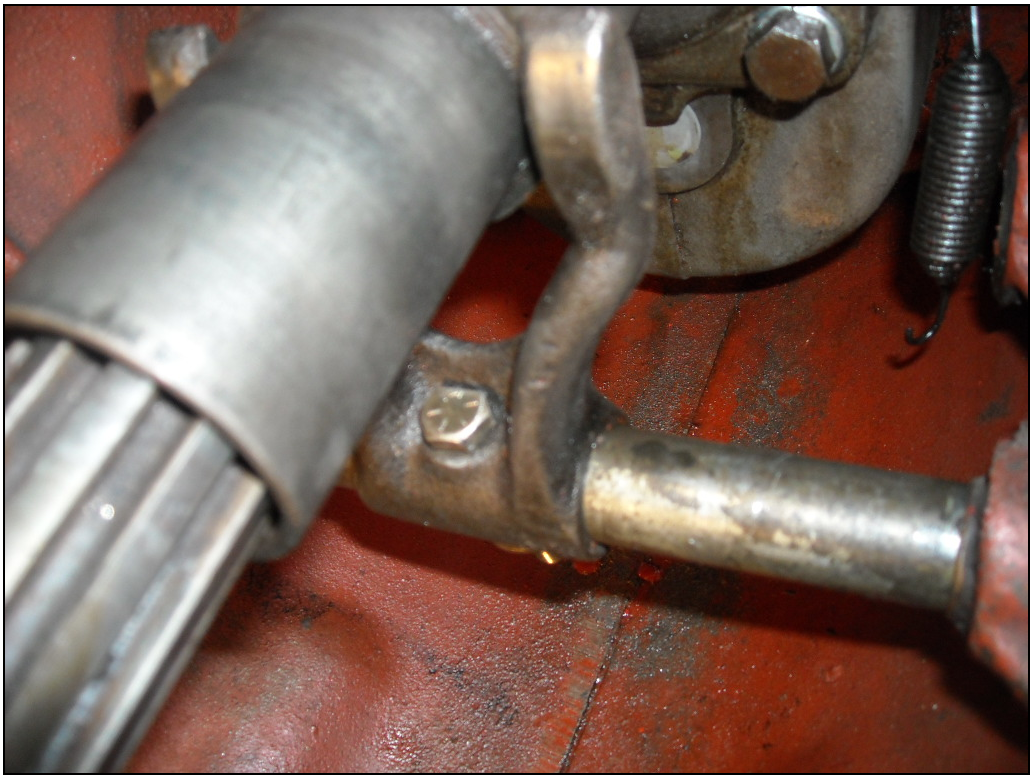
Locate the shifter arm between the two disks on the shifter rail.  Then install the cotter pin on the shaft and the cross pin and cotter through the shift lever and check for smooth operation. It's a great feeling to shift the Sherman and watch the rear hubs turn in both high and normal range.

Install the clutch fork and cross shaft.  I ground off the rivet when I took it out and I will replace the rivet with a 5/16 DIA x 2 ½  long  grade 8 bolt with 3 hardened washers and a type C (prevailing torque) lock nut.

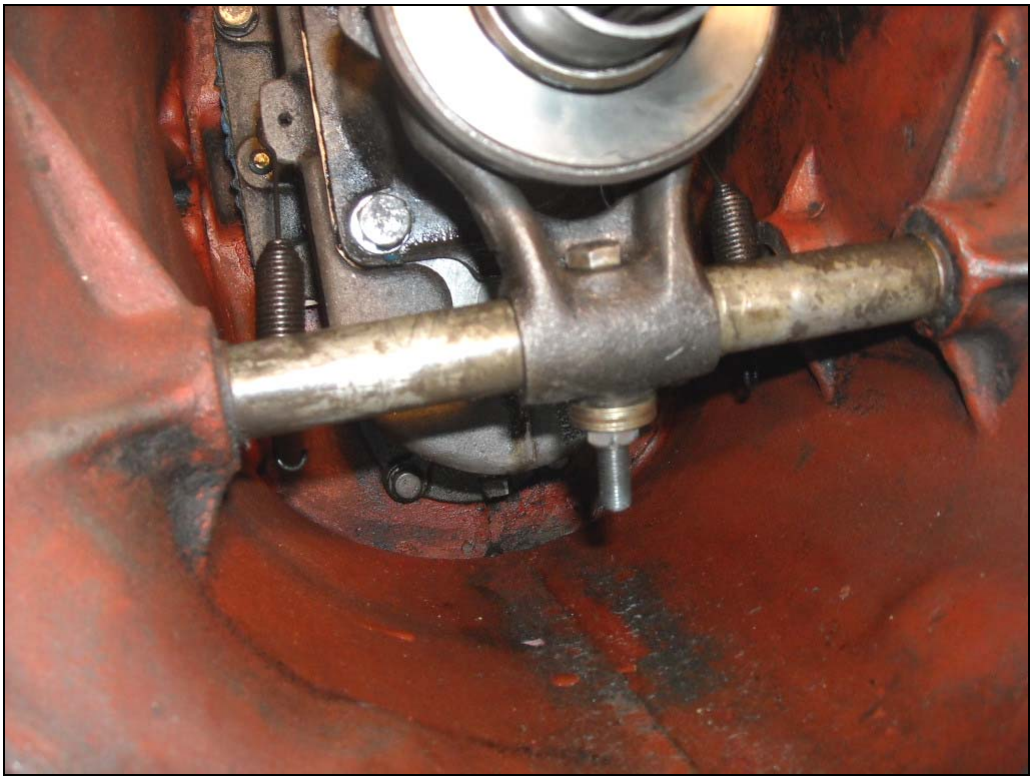


To get the head of the bolt to seat I had to grind the head on one side flush with the shank.

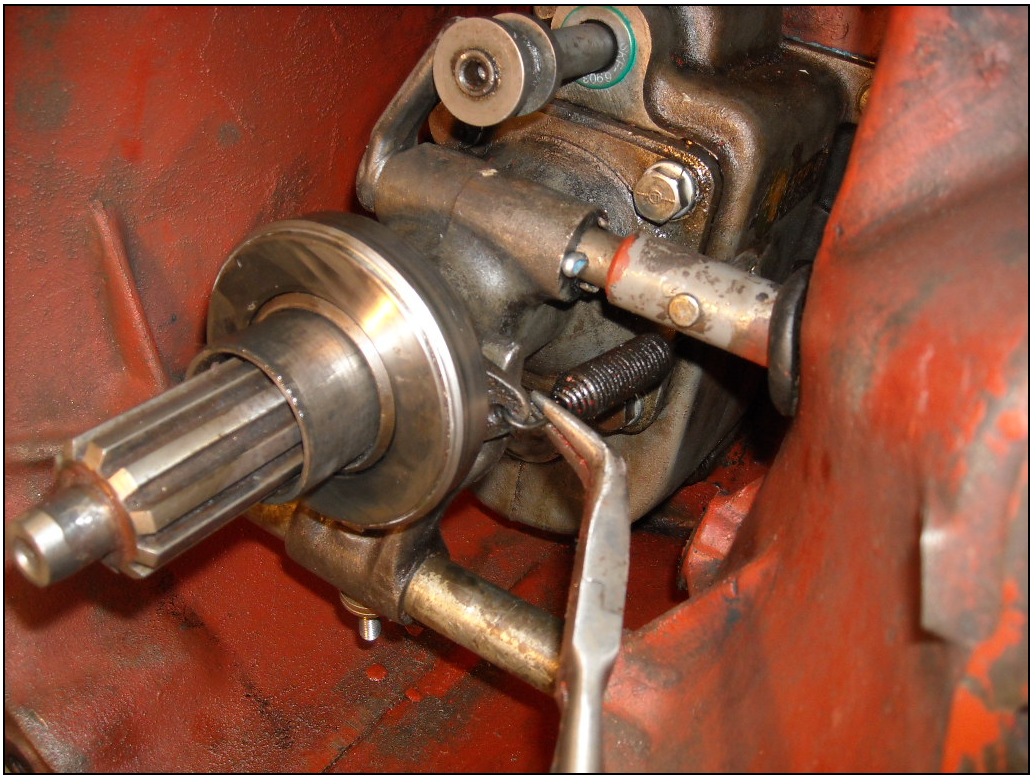
Put the throw-out bearing springs on the OD housing while you still have lots of room. With the bolt head ground, the bolt seats against the clutch fork.



Install the washers and the lock nut. I use a long bolt with washers to keep the full diameter of the bolt in the full depth of the connection between the fork and the shaft.



Install the springs to the throw-out bearing carrier and make sure that the clutch shaft and the carrier mates between the forks and operates properly.  I always replace the throw out bearing while the tractor is split.



Hope it lasts for another 60 years!!!