

# Cleaning Out the Hydraulic Sump

By Carl Schmottlach, '51 8N (Nellie)

If your tractor will run, then the first thing to do is to start it up and run it long enough to warm up the engine and the fluids. You also need to lower the 3-point arms to their lowest point. This changes something inside the pump that lets the fluid drain more fully.

You will also need a large capacity bucket or other CLEAN container to catch the oil. Make sure it will fit under the tractor! I discovered one of those 5 gal plastic buckets is too tall to fit underneath. My plan was to only drain the oil from the differential drain plug, and then from the larger plug at the bottom of the hydraulic pump. I wasn't changing the oil out for new oil, so I didn't need to also drain through the transmission plug. If you are changing the oil completely and the sump cleanout is part of that job, then you will need two large buckets capable of holding 5 gallons of fluid.



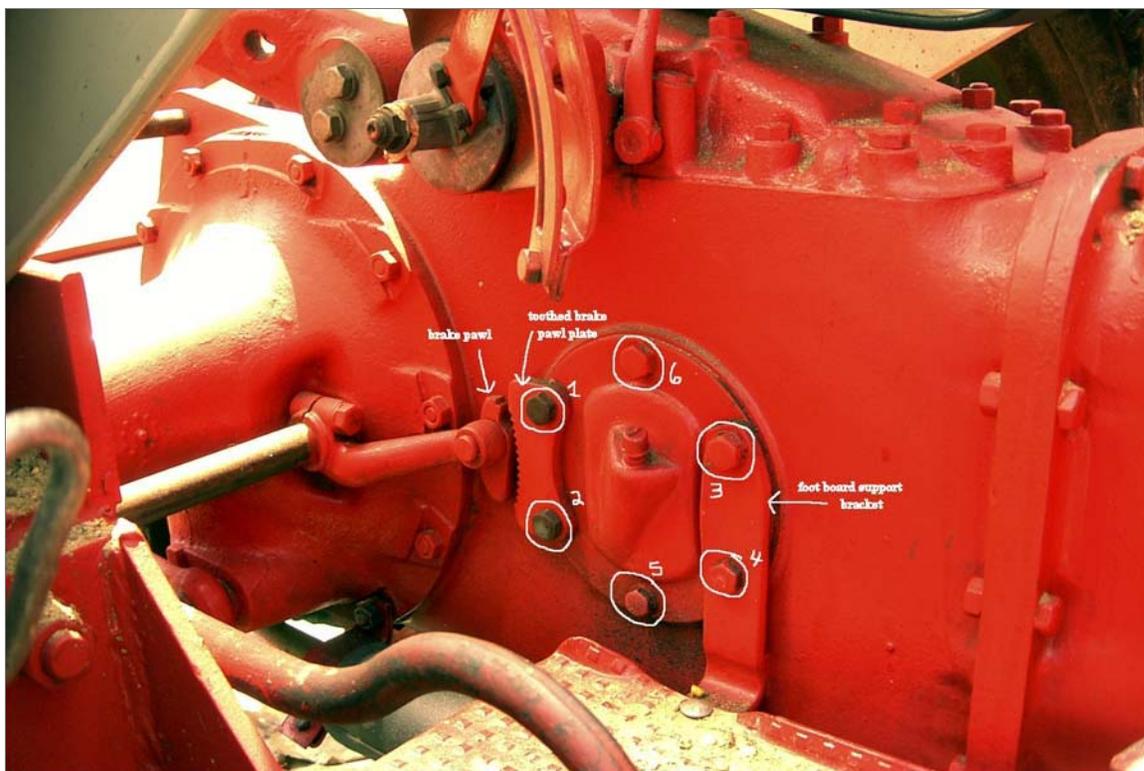
Since you need to get the drain plugs removed, Job One is to get under the tractor with a high leverage wrench to loosen all 3 plugs (or two plugs in my case). I used a long adjustable wrench. I have a 15" one and an 18" one, either of which gave me plenty of leverage. The small differential plug is fairly easy to remove. The plug is about 1/2" or 5/8" across. There is no gasket for this plug. It is essentially a pipe plug. Try very hard not to drop the plug into the rapidly filling bucket or you will have to go up to the elbow in oil to get it back out.

The hydraulic plug SHOULD have a gasket, though often you will not find one. Mine was missing its gasket so I made one from a cereal box cardboard. If the gasket is missing, then it may be harder to remove the plug since to get a metal to metal seal requires a more forceful seal.

I began by loosening the smallest plug, the one at the bottom of the differential sump. It is best to open this one first since it is the smallest and the small stream is easier to control to go in the bucket. It nearly filled my 4-gallon pail to the top. I had a 2nd container ready, just in case!

Once the emptying was down to drip-drip, I used the 2nd bucket under the hydraulic pump drain plug. Be prepared to get oil down your arm when it releases. The quart or two of fluid comes out in one big whoomp and there will be some sludge that comes with it too, since the plug is the lowest point of the pump housing.

To clean out the sump, you'll need to remove the inspection cover where the dipstick is. It's on the RIGHT side of the tractor as you are sitting on the tractor, just below the quadrant. It will be easier to work on the sump if you remove the foot board (mission creep!). There should be just 4 short carriage bolts holding it on. The foot board has square holes that the carriage bolts sit in. The nuts are underneath. If the tractor was running, watch out when you go after the one behind the muffler because it may be hot. Once the foot board is removed, you can work on the 6 bolts holding the inspection cover on. There SHOULD be a gasket between the cover and the side of the tractor, so don't be jamming a screwdriver between the cover and the housing or you'll wreck the gasket.



The top bolt on my tractor was shorter than the bottom bolt, so make notes about which bolt came from which hole! I removed the two on the toothed brake sector plate first (#1 and 2), and kept the bolts in the plate so I knew where they came from. Then I removed the two bolts from the foot board support (#3 and 4) and kept those bolts with it. Then remove the bottom bolt (#5), the one they tell you to remove to get the hydraulic fluid level right. This leaves the top bolt (#6), with the cover hanging on it. Remove the last bolt and hopefully the cover will be loose enough to remove by hand. If it is painted on to the tractor body, or rusted on, then use something like a bolt against the side of the cover, and hit the bolt with a hammer GENTLY to loosen it. This way, you won't ruin the gasket. If you have a new gasket on hand, or are willing to make a new one from cardboard, then you can use a screwdriver to pry the cover away from the body.

Now you are ready to get really dirty. Have a gazillion paper towels close at hand, or a good supply of old rags to wipe your hands on. But first, remove the buckets you drained the oil into and put a wide low container like a kitty litter pan or old plastic dish pan under the large hydraulic plug hole. MOST of the sludge is at the bottom of the hydraulic pump casing. I just used my fingers to loosen it and push it out the hole. There may be a sharp ridge in the center from when the pump bottom was cast, so be careful not to scrape up your fingers on it. Once you have as much of the bottom area cleaned as you can reach, there is another place to go. As you are looking into the opening, on the LEFT side there is like a mini metal terraced area above where you were cleaning. It has a lip on the side of it, so there will be a significant amount of sludge here, too. Again, I found fingers to be the tool of choice. There ARE places on the far side of the housing where you can't reach, so this is where the sprayer comes in. I used a bottle type sprayer that was meant for spraying garden pesticides. A pressurized type tank sprayer would be better but I didn't want to get mine dirty. Now, what do you use to spray inside with? I've read you can use ATF fluid (automatic transmission fluid) or diesel fuel. Others recommend mineral spirits (gum turpentine or paint thinner), but this will be hard on your hands. My choice would be to use plain gasoline because it is excellent at dissolving grease deposits but I haven't read about anyone using this. If I did use that, I would want to rinse the inside thoroughly with diesel fuel or ATF afterwards. I used the ATF, and it did work somewhat, but if I did it again, I would use something else.

An old toothbrush or other small cleaning brush could be useful to reach some tight places where your fingers won't go. A strong flashlight is useful to see inside. I suppose you could stick a Maglite type flashlight up the hole and then you could see pretty well.



Once you have the gunk cleaned out and you've mopped out the ATF or whatever you used, put the drain plugs back in and remove the fill plug on the top of the transmission case (right by the starter button) and use a funnel in the hole when you pour the new fluid in. I left the inspection cover off, so I could see the fluid coming up. Stumpy (NH) said there's kind of a tunnel at the bottom of each compartment to let the fluid flow from transmission to hydraulic sump. After you've put in about 4 gallons it's good to have a helper watching the bottom bolt hole. When fluid starts coming out there, stop pouring. You can't pour and watch the hole, really.

### Gasket making:

I used a Shredded Wheat Cereal box cardboard. Any suitable cardboard box of that thickness would do. To make the inspection cover gasket, I first cleaned up the cover.

- I cut a square of cardboard slightly larger than the inspection port, and then laid it on a smooth surface, plain side up.
- Put the cover down onto the cardboard and using a pencil or pen, trace around the outside of the cover, trying to keep the pencil point as close to the cover edge as possible.
- Without moving the cover, trace around the inside of each hole again trying to keep the pencil point against the edge of the hole.
- Use scissors to cut the outside circle you just traced.
- Now you will need an Exacto or hobby knife with a sharp tip. Cut around just outside the line for each hole's circle. Don't forget to put a piece of scrap plywood or corrugated cardboard under your cereal cardboard before you start cutting with the Exacto. Cut one hole and then test it to see if it is the right size for the bolt. You want the bolt to fit snugly through the hole but without catching any edges. Cut the remaining 5 holes in the same way. Your new gasket is ready!!

### **Pump plug gasket making:**

- Place the plug onto the cardboard and trace around threaded portion that is making contact with the cardboard. Use the Exacto to cut around the line you created.
- Fit the threaded plug into the hole and then trace around the outside edge of the plug, which should be sitting tightly against the cardboard now. You may have to hold the plug up in the air to do that, or place between two pieces of wood. Cut outside circle with scissors. Pump plug gasket is done!

To install each gasket first put a light film of oil over the cardboard surface to get a tight seal to the metal, the same as you do to the rubber ring on an oil filter.



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