Down to Details

By Chuck Steffens

This month in "Down to Details," I am going to be showing you what makes up about 50 percent of my builds: a pulling tractor.

I had a local competitor contact me about building a model of their John Deere 4000 Hot Farm. I told them that I would need lots of photos of the real tractor to be able to match the toy to the real tractor as close as I could. So one Saturday they called me up to find out if I was going to be home. I said yes I was. They then proceeded to drive the two hours from their home to mine to bring me the photos they had taken of their tractor. After some long negotiating and solving of the world's problems, we came to a deal that I would use a Precision John Deere 4000 to build them the tractor they wanted. They also informed me that they wanted three of them, one for each generation involved with the tractor. So then what I like to call "Rule No. 1" came into effect—always build one for yourself!!!!

So now I have to build 4....

Now off to organizing the parts I would need. I already had two 4000s that I had converted to NF but would need two more. So eBay here I come. I was able to purchase two No. 3 JD 4020s, one NIB and one without box. A few days later they arrived and the project was underway.

With the parts tractors here I got started. First thing was disassembly working with one pair of tractors at a time. Back in July of 2011, I gave you a "DTD" article on how to convert a No. 3 4020 NF front end with a 4010 Heritage tractor. So I will just hit the highlights here on how to do the front end swap again then move on to all of the extra little details that set this 4000 apart from a standard NIB 4000.

First things first: get some type of container to put all of the screws and pieces in. Losing parts could lead you to end up like me and have shelves and shelves of incomplete tractors...hahaha. With a nice container next to you, use your heat gun to warm the area around the top half of the dash, then with a small fine-tipped straight screwdriver, gently get between the underside of the dash and pry out. Working in many areas in small amounts, the top half will come out. If you are lucky the dash decal will come with it, exposing two screws that hold the rear half of the hood onto the tractor. With these screws removed the lower half of the dash will come off. Be careful not to lose the pin that holds the dash levers.

No. 3 4020 and a No. 5 4000 Precision to start the project.

The real tractor I have to replicate.

Now with the rear of the hood able to come off, remove the single screw that is located under the very front of the tractor between the NF tires or the front and center of the WF. With this screw out the hood will come off and the front-end swap can be done.

For ease of access in the swap, I remove the screw that is located on the right front top of the chassis; this allows the frame to be slightly widened and the engine assembly to slide forward, making for more room to work. Take your time removing the steering gears as to not break them.

Then grinding the top off of the mushroomed heads of the NF, remove the two screws that hold the WF on the 4000. You can swap front ends of the tractors making a nice 4020 WF to sell, keep or just part out. One small difference between the swapping the front end on a 4000 versus the front end of the 4010 that was in the former "DTD" article, is that rather then using a screw on the front of the WF axle to hold it in place they used a pressed-in pin. If you are lucky that pin will come out easy, but as with this WF it did not. So what I had to do was use a good needle-nose pliers and remove the two screws that held the WF on the 4000 from the sides rather than just being able to use a screwdriver—but that is all just part of the challenge. Now just reverse the procedure and the front-end swap is complete.

With the front ends swapped over, what I did was reassemble the 4020 back into a nice custom 4020 WF. With the 4000 puller not having a ROPS structure or the 18.4-34 rears, I swapped them out to the 4020 as well making for a very nice 4020 custom.

The 4020 with the engine slid forward for easier access for front-end removal.

Back to the 4000 now.

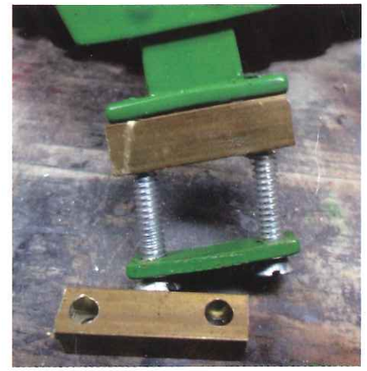
The next little difference between the standard 4000 Precision and the puller is the intake manifold. The puller used a center-feed intake, whereas the standard model was a front feed. So what I did was to use an intake off of a damaged Precision 4430 to get where I wanted to go. First off was removing the intakes. On both engines the intakes are separate pieces installed on the engine with casted pins mushroomed over inside of the engine block. To remove them I simply got behind them with a small flat-tipped screwdriver and pried out working in the whole manifold trying not to scratch any paint. With both removed I test-fit the 4430 manifold on the 4000 engine. Lo and behold it was not even close to fitting...so what I ended up doing was drilling two new holes in the engine block to match the manifold, then trimming the manifold even more to get a proper fit. This was a time-consuming task of trim and fit—trim and fit, being careful not to go too far and end up adding a new piece to my scrap collection. After I got the manifold fitting the engine block like I wanted, it was time to see if the hood fit. Sure enough it didn't. It was not too far off, but it didn't fit nonetheless. So what I was able to do was trim the backside of the hood side panel to give me this clearance and being as I needed to paint the hood anyway it wasn't much of a problem. So now with the manifold fitting nicely I used a small amount of clear five-minute epoxy and attached the manifold to the engine block.

The 4000 with the intake manifold removed and 4430 intake manifold modified to fit the 4000 engine as well as the 4000 hood clearanced for installation.

With the NF installed intake manifold fitting with hood clearance, one thing left to do on the front half of the tractor—drilling the hood for a chrome pipe. The customer wanted a 3/8 chrome pipe installed on the replica. This task isn't a bad task. One trick I have learned in the past with drilling these hoods out is use a step bit drill bit. I have had much better control using a step bit over a common drill bit because it is far less likely for the drill bit to get away from you whipping the hood around and scratching it. A step bit also makes a much cleaner hole for the pipe and if you drill it right you can add a small taper to the top of the hole with the bit giving it a cleaner look. Problem is don't drill too far, that leads to extra parts in the scrap pile again!!

The front half is done for now—on to the back half. With the ROPS/fenders removed already and installed on the 4020 the next thing is to strip the rear end. To do this the three-point, side console, hydraulic remote, PTO guard, side batteries and sway blocks all need to come off. First on the list will be the three-point. Take your time removing this. There are many good parts here that could come in handy for a future project. The best way I have found is using a fine-tipped flat screwdriver and a side cutters with the backside ground down smooth. Using the side cutters I was able to remove the lower press-fit pins that hold the three-point arms to the saddle under the tractor. Then using the fine-tipped screwdriver, I gently got between the top three-point arms and the rockshaft housing and pried out. These are a little more of a challenge to remove but will come straight out. With the three-point side arms removed the side console will easily come off with

The 4000 with the three-point, side console, sway blocks and hydraulic outlet removed.



The fender extension.

The rear rim with the shim getting installed.

Down to Details Continued

just a little pressure on the backside with the small screwdriver. Now the third link: it is attached with two casted pins glued to the tractor. Using a needle-nose pliers I grabbed ahold of the third link mount and gave it a little wiggle and pulled until it came off. Next the hydraulic remote outlet: the only way it is coming off is to cut it off.

So that is what I did.

When you cut it off you want to leave a little of it on the tractor to be ground down and finished with a smooth finish for painting. Same goes for the sway block. Only way they are coming off is with a grinder, leaving enough so that it can be finished with a finer sanding paper prepping for paint. On to the batteries: here is one of the cases where I would like to tell you the proper way to remove the batteries, but that would take a whole article up itself.

Instead what I did was use the flat screwdriver again and get between the rear of the battery and the tractor's chassis, then pry out on the battery. There are two screws that hold each battery in place so it will require a little effort but will come off easy enough that the battery can be saved for another project. With the batteries removed I then used a battery box off of a 2510 Precision and attached it to the tractor using clear silicone on the backside of the battery box. Last item, PTO shield, here again I used a small pliers and lifted the shield off, breaking it from the tractor…may not be the right way but it works quick and still leaves you with a good shield for another project.

With the tractor stripped down for a puller, it was time to start adding pieces to make it a puller. First task was rear wheels. The customer and I discussed that he wanted to use the 20.8-38 tire I produce and the rim used on the larger Ertl tractors. With this plan under way, I was going to have to add some fender clearance. With the 20.8-38 tire being .500 taller then the biggest tire that would fit under the fenders, I needed to add .250 to the fenders' height. So what I did was use .250 brass square tubing and drilled it for the bolts that held the fenders on. With the spacers made up I would also have to grind smooth the two locator pins casted into the bottom of the fender mounts. With these ground smooth it was just a matter of assembling the parts and mounting the fenders with new longer bolts.

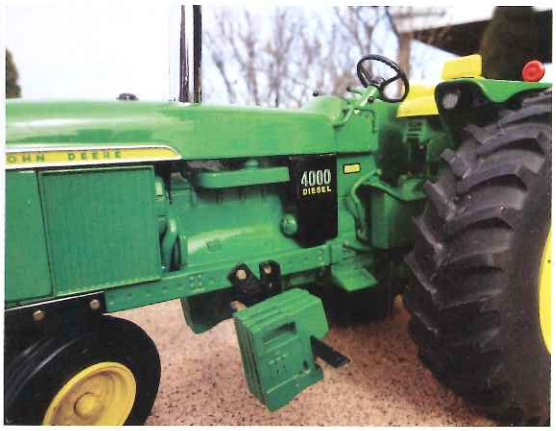
Now that there is fenders clearance, it is time to fit the wheels and our next problem. The rims that I am using have an axle hole of .315 and the 4000-axle hole is .155. I could just drill the 4000 out for a larger axle but an axle that big would not look right. So instead what I did was built a shim to fit inside of the rim using aluminum and brass round stock to downsize the hole to .160 and glued it into the rim using some five-minute epoxy. Now to test-fit everything…

...and voila looks good!!!

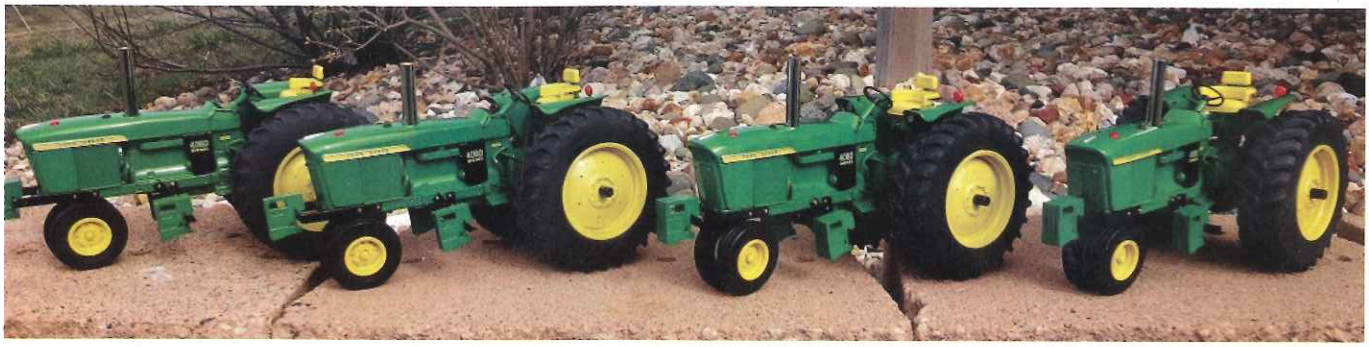
With the structure of the tractor complete it is on to weight brackets. Using a combination of 1/4 .032 brass flat stock and angle iron, cutting, soldering and bolting it isn't too bad of a task—just times four. Hahaha. With all of the weight brackets built and test-fit, preassembly is complete and time for paint.

Now with the paint complete and a little help from my buddy Cliff at The Sign Makers, the tractor is assembled, with three heading to the customer and one to my shelf. Taking a standard Precision 4000 and adding all of those "little" differences and changing it into a tractor that three generations of tractor pullers can say is a model of their tractor will be a prize possession that can be enjoyed for years to come.

Thanks, Chucky. *TF*



Completed pictures of the 4000.



All four tractors complete.