Part 3 of John Deere Conversion

The ROPS uprights are given a test fit.

Here is the three-point top link mount in a vise grip and one reinstalled in the tractor after being modified.

Hello everyone! If you have been following my last two articles, I have started converting the Precision John Deere 5020 into a John Deere 700 Series A. In the first article, I showed you how to swap the wheels from the Precision 6030 and the 5020. In the second article, I showed you how to build the front half of the tractor, including the engine and hood modifications. This month, we will head to the back of the tractor and focus on the modifications there, particularly the construction of the rollover protection structure or ROPS.

To start the story on the ROPS, I will have to go back to Jan. 1, 2016, when my family and I visited a collection of full-size John Deere tractors and memorabilia owned by Randy Sterwald in Watertown, Wis. In his collection, he had a full-size JD 700 Series A with a factory ROPS. What shocked me about this ROPS is how it was made. After giving it a good look, it became obvious it was built like no other ROPS I have ever seen before.

The upright was built using 2-inch-thick solid steel that was flame cut with the base bent at 90 degrees. The base of the ROPS was then sandwiched between the axle housing of the tractor and the fender mount. For the top of the ROPS, a 4-by-6 tube with two 90-degree mounts was used to bolt it all together. The canopy top is than bolted directly to the crossbeam. So, I snapped a couple photos and gathered some information to use as a reference for when it would be time to build the ROPS.

When the day finally came to build that ROPS, I was doing some serious head scratching. I did not take any measurements of the ROPS on the real tractor because I have found in the past that not all of these tractors are built at exactly 1/16 scale. In most cases, it is better to go more on eye appeal then exact scale.

To start, I remembered that the base of the ROPS was the same width as the axle housing of the tractor. I also happened to have a ROPS side beam out of the 6030 Precision as a reference. Using that information, I started to rough sketch a design. I then took that rough sketch and laid it on some 1/8-inch-thick aluminum, thinking this would be the best route. Once the pattern was traced onto the aluminum, I used my band saw and proceeded to make some of the worst cuts I think I have ever managed to do. I then realized I needed to rethink this plan.

After a little more thinking, I remembered someone nearby who had a CNC plasma cutter. After sending him a quick message, he informed me that he would be interested in cutting my ROPS uprights. With a little road trip, he was drawing the program to cut the uprights out of 1/8-inch steel. He even added notches on the side of the uprights where I had to make the 90-degree bends. After picking up the uprights, I headed home to bend the 90-degree angle in them. For this, I installed the uprights in my vise and used my hammer to get the correct 90-degree bend that would have them mounting on the axle housing and parallel to the fenders.

The next step was to test fit the uprights. So, I carefully started assembling one fender and one upright to one of the axle housings, only to realize that the Ertl screws were going to be too short. My solution was to rummage through my bolt cabinets to find the bolts that would work. To my surprise, I had some.

Now back to attaching the fender to the axle housing with the ROPS upright held in place. Once both uprights were firmly sandwiched between the fenders and the axle housing, I test fit the rear wheels, only to realize I now had another problem. With the added height of the ROPS upright, the fender height now left too big of a gap between the tire and the fender itself. So now what? I came to the conclusion that the best way to fix the clearance problem would be to mill half of the top side of the base of the upright. This would lower the fender height by 1/16 of an inch. This would also give me the opportunity to tackle a problem I could see coming up—having a parallel and even height to the uprights.

I decided I needed a little help to mill the uprights, so it would be done right the first time. For this, I called my friend Mike Engling. Mike is a top-notch toolmaker, so a task like this would be a Sunday walk in the park for him. First, Mike built a clamping device to hold the uprights in place so he could mill the top of the base and the very top of the upright so the height of each upright would be exactly the same as well as parallel from top to bottom, which would make my life a lot easier when it was time to add the cross member to the top of the uprights. With the upright held in place, Mike milled the original 1/8-inch material down to 1/16 inch and then milled the top of the upright to be 4 inches from the base, making every upright exactly the same.

With the uprights milled, I took them home and started the assembly process again. This time, things looked good! The tire-to-fender clearance is nearly perfect and the uprights are parallel to the fenders, so the next step would be building the top cross bar. On the real ROPS, the top cross bar is a 4-by-6 tube with two 90-degree supports bolted to the upright. To build that cross member, I start with a piece of 0.250-by-0.250 brass tubing, then add a piece of 0.125 brass to both the top and bottom of the tube. Next, I solder a brass right-angle triangle that is cut at 0.250 to act as my mounting point. After the crossbeam had been soldered together, I then installed it to the top of the uprights. Trying to build the ROPS as correctly as possible, I drill the uprights and crossbeam and bolt the assembly together, making the ROPS assembly one completed unit minus the canopy top.

The next task is to build the canopy top. Again, I asked for a little help from another builder, Ryan Mees. Ryan has built numerous canopy tops and could detail one with his eyes closed. After I got the top from Ryan, I mounted the canopy top to the ROPS. Wanting to mount it as correctly as possible, I drilled and taped the canopy to the ROPS crossbeam, only to learn that the top had way too much play in it and had a 100 percent chance of a future failure.

There just was not enough material to make a strong bond between the crossbeam and the canopy top and I noticed that the crossbeam now had a lot of play between it and the uprights. I had to face a reality that I was going to have to solder the entire unit together. It may not be 100 percent correct to solder the crossbeam to the uprights or the canopy to the crossbeam, but I felt it was the only way things would be strong enough to be handled.

With the ROPS assembly completely soldered and then soldered to the canopy, it is time to look for any flaws I may have missed. It looks good so far!

It is time to move forward, or should I say downward. Moving downward, we have to consider the options this tractor would have on it. The 700 Series A could be equipped much like the 5020, but few, if any, ever came this way. It was common for the tractor to be a "bareback," meaning no PTO or three-point assembly. To get this "bareback" look, the grinder is going to be busy!

First, I removed the rockshaft/three-point housing from the base of the seat assembly. To modify this area of the seat assembly, two screws will

The ROPS top cross bar installed.

The sway blocks and PTO removed.

The rear half of the tractor with the ROPS installed and now as a bareback model.

The hammer strap installed on the drawbar.

have to come out and the assembly will be in your hands. After it has been removed, an additional screw located under the bottom of the assembly will have to come out. With this screw removed, the assembly will then come apart into three pieces.

I then use my 2-inch angle die grinder to grind off the rockshaft assembly. You will grind through the casting and have a void to fill with a little auto body filler. With the seat assembly removed, the area of the top link of the three-point will lift out. With this removed, I grab the grinder again and remove the three-point top link mount, grinding it flush with the rear housing, but not taking too much, because you will need to fill the area back in with the remaining casting.

We now have the three-point/rockshaft/top link area modified. The next item on the list is to remove the sway blocks on the side of the drawbar saddle. Again, the 2-inch angle die grinder makes quick work of that. But be careful not to take too much, because the drawbar still mounts onto the bottom of the assembly with two small pins.

With the sway blocks gone, it is time to remove the PTO. I hit it with the grinder and it is gone. So, we are getting close to having the back of the tractor the way I want it. The final item for this column will be adding a hammer strap to the drawbar. Most of the larger industrial tractors use the hammer strap drawbar for pulling sheepsfoot packers, so I wanted to add that feature to this tractor.

Adding the hammer strap involved another tour through the "Chuckville Salvage Yard." I found a few damaged John Deere 820 industrials that had this particular drawbar option. So, to add this to the 5020/700A drawbar, I had to remove it from the 820 with a little help from the band saw.

The hammer strap looks close, but will require a few modifications as well. First, it is too long. So it's shortened with the angle die grinder. Next, the top of the strap has a drawbar pin hold down on it, which looks nice but takes away any chance of hooking an implement to the tractor. Guess what tool I used! Finally, it needs to be mounted to the drawbar. With a little trimming, I finally get the drawbar pin hole of the strap to line up with the drawbar hole in the 5020 drawbar. Once these were lined up, I drilled the strap and drawbar, then added a 0.080 bolt to hold everything in place.

A 2-inch angle die grinder.

Tool of the month

This is where we will end the transformation for this month, but we need to feature the "tool of the month." This month, my tool is my 2-inch angle die grinder. I have had a few different angle die grinders, but my Blue-Point Snap-On model is my favorite. It is lightweight and semi-quiet. I also have a less-expensive model sold through Advance Auto Parts. It is a little bigger and bulkier, but a good machine.

These angle die grinders have many different bit options, but the one I use most is the 2-inch Roloc with a 36-grit grinding pad. The pads change out quickly and are not overly expensive (anywhere between 50 cents to $2 each, depending on brand and quality) for the amount of grinding a person can get out of one. I most often use the 36 grit, but I have used the 24-, 80- and 120-grit as well. Any will get the job done, but one will obviously get it done quicker or, if you are not prepared, it will create scrap quicker as well!

Until next time, feel free to send me questions, comments or anything else you would like to see to csteffens@wildblue.net. *TF*

Living just northwest of Dyersville, Iowa, in the heart of farm country and farm toy replica country, Chuck Steffens has found a niche in the toy world, building high-detailed replicas in his spare time. He shares his experiences with Toy Farmer *readers, hoping to lead other collectors to personalize one of their own tractors. Comments or suggestions can be directed to csteffens@wildblue.net.*