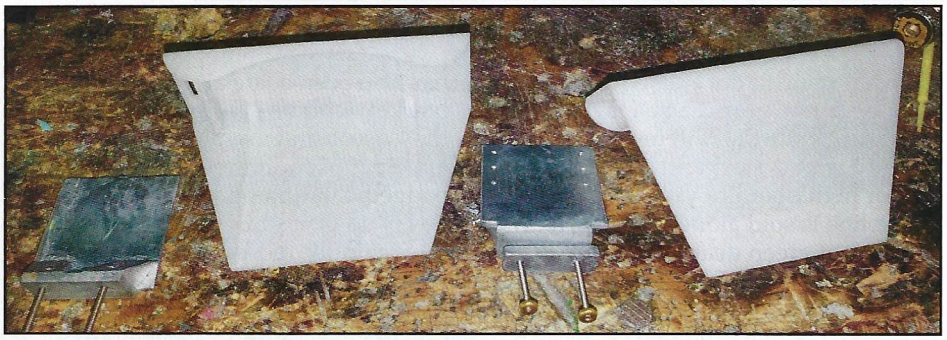

These 3-D fenders and spin-cast zinc mounts are used on the 5020.

Modeling a repowered JOHN DEERE 5020, Part III

Welcome back to the latest installment of "Down to Details." This month, I am going to walk you through the build of my "ultimate muscle tractor," my John Deere 5020, repowered with a 3-D printed Detroit 8-71 engine.

So far, I have shown you how I replaced the frame rails, and assembled, modified and installed the 3-D printed engine in the chassis. This month, I continue the build, starting my focus with the rear of the tractor by first replacing the standard Ertl rims and tires with my rim and tire combo, and changing the tractor from the standard Wheatland version to a row crop version, which was more common in the Midwest.

The rear tire/rim combo I want for this tractor is a set of 20.8x38 tires, with the heavy offset power hub rims, both of which I make and offer through our website. The rims I offer have a 3/16-inch axle hole, which is the same as the hole on the 5020. Using a piece of 3/16-inch steel rod, I have a new set of rear wheels temporarily mounted on the tractor.

The fenders are marked, and the pins are lined up so they are parallel and square to the tractor.

The next step is changing the standard fenders to the double-teardrop row crop fenders offered on the 5020. This is a fender we started offering through our website about a year ago. The fenders are a combination of 3-D printing and spin-cast zinc. The base/mount I cast in zinc to be a close replacement to the fenders already attached to the 5020. But they are also universal, which means some modifications are needed.

I first fit the mounts up to the axle housings and see that I am going to have to modify the axle housing to mount the fenders far enough from the platform. On the axle housing, a few casting locators line up with the original fenders, but I will have to remove them using my grinder. I grind them smooth until the top of the axle housing is smooth from one edge to the other.

I install the mount again and it fits the top and sides perfectly, but when I put the lower clamping plate on, the bolts are too long and a pile of ugliness is cast into the bottom of the housing. I decide to smooth it off, just like the top.

I retest the fit of the mount, and it fits good. But I still want to move the fenders out. That is when I notice line-up locators, which were used for the original screws, cast into the side of the axle housing. Rather than grinding them off, I decide to use them. I slide the mount out to the point where the bolts for the new mounts are lined up with these locators and clamp everything together. I think this is the perfect location.

With the mounts bolted in place, I fit a fender up to the mount. I have designed locating pins into the mount and fender. A series of small pins on the mounts match with holes on the fenders. The plan is to use these locators, making sure the fenders are at the same height and parallel, so both fenders on the tractor match. Anyone who has tried to do this freehand has discovered it is a lot easier said than done.

With the fenders matched with the pins on the mounts and with correct fender clearance, I take them back off and apply a small amount of glue to the surface that mates the mount. I reassemble the fenders to the mount, applying clamps to hold them in place.

I wait until the glue sets, then remove the fenders with brackets from the tractor. Not trusting glue for any major connection like these fenders, I mark out a four-bolt pattern, then drill, tap and install 0-80 bolts with washers and then nuts added to the backside. Now, I know the fenders will be securely mounted for years.

Next, I want to install the row crop dust shields, which are much like the high Wheatland-style dust shields, except they taper down from the fender to the platform height. When I had the fenders designed, I had these dust shields completed, too. I have never used them, so this is going to be a learning curve for me.

After messing up one set, I take a moment to think things through and remember that these are battery boxes also, so I proceed to mount them to the bottom of the platform, just like the Ertl dust shields. In fact, I ended up mounting them the exact same way. I clamp the Ertl dust shields to my dust shields bottom-to-bottom and drill the screw holes into my shields, matching the Ertl holes. Unbelievably, they fit nearly perfectly!

I had to trim them where they meet the bell housing and at the back where they interfered with the side of the transmission housing and the mounting of the platform. Once these were addressed, I installed the platform and then the new dust shields, using the same screws used on the original shields. We are looking at a perfect fit.

After the shields are installed, I reinstall the fenders and everything fit

The bolt patterns are marked, so the bracket and fenders can be drilled and bolted together.

The box is roughly installed in the hood for the FARR air cleaner.

The center cap is removed from the front rims, then the mushroomed pin is drilled so the rim can come off the axle. Then the new front rims and tires are installed on the 5020 front axle.

together perfectly. How rare is this!

The next task is installing the FARR brand air cleaners. A few variations of air cleaners are used on these repowered tractors, but the tractors with which I am most familiar used the FARR brand. The cleaners are mounted on top of the engine, but require the hood to be modified to fit the filter.

First, I install the hood on the tractor, with the engine in place, and mark the center of the engine on the hood. I want to keep the filters located directly above and center over the engine. I then measure the 3-D printed FARR air cleaners we offer, which are slightly under 1.250 inches wide. With this measurement, I use a piece of 1.250x0.032 flat stock brass and solder some 0.500x0.032 to the sides at 90 degrees, leaving a little extra space for paint tolerances.

Leaving their length extra long, I solder my brass flat stock pieces together and use a file to clean the angles, so I can test fit the air cleaners. With the air cleaners fitting the box, I line up the box with the hood and outline a rough location for the hole that will need to be cut to install the box.

Only wanting to cut into the hood to a depth of 0.250 to 0.300, I cut things a little shallow and proceed to do test fits again, trimming and test fitting until I have the box fitting the hood. Once I am satisfied with the fit, I clean up the outside of the box and grind the underside of the hood. I apply some auto body filler, using it as the glue to mount the box into place.

With the filler dried, I trim the box to size, using my bandsaw and grinder. I then install my FARR air cleaner boxes into the mounted box on the hood and hold them in place with a piece of tape.

Remaining plans are adding steps and finding a way to permanently mount the engine. This can be a case of hitting two birds with one stone. My plan is to use some 0-80 bolts to mount the steps onto the frame of the 5020 and run bolts long enough that they bolt the engine to the frame as well, giving the engine a secure mount to the tractor. With a couple drilled holes and bolts, it is done.

One last item to address is changing out the front wheels. The fronts used on the Ertl 5020 are not a bad match for this build, but I just want more. Removing the wheel from the front of the 5010/20s can be a challenge. The center hub is glued into place quite well and can be difficult to remove, especially if you want to save the parts for future builds, which we always try to do. The best way is to heat the centers, being careful not to burn the paint. Then use a vise-grip clamp on the center hub to wiggle and pull. Sooner or later, it will come out.

Once the center cap is removed, you will see that Ertl uses a 1/8-inch pin with a mushroomed head that will have to be ground down. Using my Dremel, I grind the head of the pin down and use my spring-loaded center punch to push the pin out from the wheel.

Now, both front wheels are removed and 1/8-inch stems are sticking out from the front axle, which are good for mounting the new wheels. The rims I make have a 3/16-inch hole in them, but I also offer a bushing to go from 3/16 to 1/8 for people who want to use a rivet to mount their wheels.

The only large modifications remaining are the front wheels and tires.

Using the bushing installed in the rim, I fit the wheel onto the stem. It is a perfect fit, but the wheels set out too far, so I take my rim back off and cut the stem on the backside of the rim down ¼ inch and test fit again. I am much happier with the fit.

Next, I drill and tap the center of the axle stem for a 0-80 bolt and reinstall the wheel, using the bushing trimmed to the correct length, and install the bolt, using a washer, and the front wheels have been swapped. I have to admit the tractor looks a lot better with my four-rib 16.5x16.1 tires over the Ertl wheels.

At this point, preassembly is complete, with the tractor back on four wheels, fenders mounted and the hood fitting correctly. It's time for some body work and paint before we go to final assembly. Next time we meet, I'm going to walk you through the painting process.

As always, thanks for reading. Visit www.chuckysprecisionspullersandparts.com for parts used on this project and many more, plus past "Down to Details" columns.

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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.*