



Modeling a repowered **JOHN DEERE**, Part IV



Welcome back to “Down to Details.” The last three times we met, I was doing my best to walk you through my “ultimate muscle tractor” build, my John Deere 5020, repowered with a 3-D printed Detroit 8-71 engine. Last time, we had the tractor back on all four wheels, with the hood modified, the FARR air cleaners installed and the fenders mounted. This month, I’m going to walk you through the painting process I use on the 3-D printed parts and modified parts used on the tractor. I’ll also share the big error in the preassembly and finally those last details to finish the tractor.

Last time, I showed you how I installed some brass boxes into the original hood of the Precision 5020. This month, we have to clean up the fit of those boxes and fill the holes where the original muffler and precleaner were installed. Getting this hood finished starts with getting it cleaned up, which means I will have to get it to a point where I know I won’t have any future issue with new paint reacting with the powder-coat finish used on the hood. Plus, when Ertl produced the Precision 5020, it cast the side emblems into the hood and had them painted on. I have tried my best through the years to save those side emblems and I have failed almost every time, so I grind the emblems off smooth to the hood and replace them with a decal I made after the paint is completed.

I use my angle die grinder to grind the hood emblems smooth with the rest of the hood. I then take the hood to my glass bead cabinet and strip the rest of the paint from the hood, giving me a clean hood and a good base for body filler and paint to bond onto. With the hood stripped, I use my Dremel to roughen the muffler and precleaner holes so the body filler has a good bonding surface. With the holes cleaned up, I apply a coat of body filler. After it is set, I sand the filler smooth, feathering the edges until it is all smooth, flush and free of voids and pinholes.

My next task is replacing the hex-head bolts I used to mount the frame rail to the front half of the tractor with countersunk bolts. I use 0-80 Phillips-head countersunk bolts from Micro Fasteners. I remove the hex bolts one at a time and use a 1/4-inch drill bit to create the hole and install the replacement bolts, leaving the heads of

the bolts flush with the frame. Again, I apply a thin skim coat of body filler and sand it smooth, using 240-grit sanding paper.

With the body work completed on the frame and hood, I wash the parts with water and dish soap and then dry using paper towels and forced air. Once the parts are dry, I wipe them with a PPG brand wax and grease remover as an extra precaution. Any oily residue, even from your hands, will cause "fisheyes," which are small dots in the painted surface where the paint pushes out in a circular form away from any oil that remained on the surface.

Once the parts are completely clean and dried, I apply a coat of epoxy primer. Allowing time for the paint to cure, I apply two coats of fill primer to fill any of those small imperfections left from the sanding of the body filler and grinding. After these two coats have been applied, I let the fill primer cure for 24 hours before I sand the surface with 240-grit sanding paper, taking out any of those final small imperfections. I follow the 240-grit with a wet sanding, using 600-grit and taking the smoothness of the surface even further.

I prep the rest of the parts in the same manner. Making sure everything is perfectly cleaned and dried, it is time to add some color to the parts. On this project, the engine, fenders and dust shields are 3-D printed out of a plastic resin and I get lots of question on how to paint them.

I treat the 3-D parts like any other plastic I have ever painted, except I spray a coat of Plastic Prep sold in aerosol through my Keystone/PPG store as a little extra security. I know lots of people who use these printed parts who don't do this step or even sand the surface, but I get a little paranoid. After the five-minute cure on the plastic prep, I apply epoxy primer to all of the plastic and metal parts and again give it time to cure. What works best for me is to apply the epoxy at the end of the day and let it cure to the following day. The PPG epoxy has a 72-hour window before it needs to be sanded again.

With the epoxy cured, I add one little extra step to the 3-D printed parts that have flat surfaces. When the parts are printed, they have a 0.004 layering, which will probably never be seen. But on flat surfaces with shiny paint, they

can be seen. To solve this problem, I sand the epoxy primer with some 600-grit to remove those layer lines, giving a smooth surface.

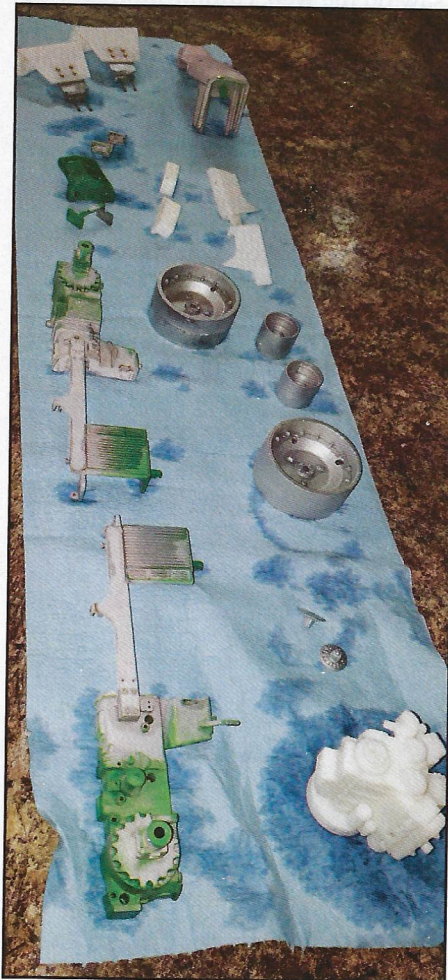
Once I'm happy with all the surfaces, I apply the color to the parts. For paint, I use a PPG brand paint that is known as a Base Coat/Clear Coat, which means the color is applied and followed with a clear coat to bring the shine out.

To apply the paint, I use a small airbrush with suction cups, which makes changing colors as simple as taking one cup off, rinsing it using lacquer thinner and going onto the next color. One big advantage using this painting technique is that the base coat (the color) thinned down 50/50 with thinner has a quick flash time. If done right, a second coat can be applied in 10 minutes. But more importantly, it allows for detail painting. For instance, the hood on

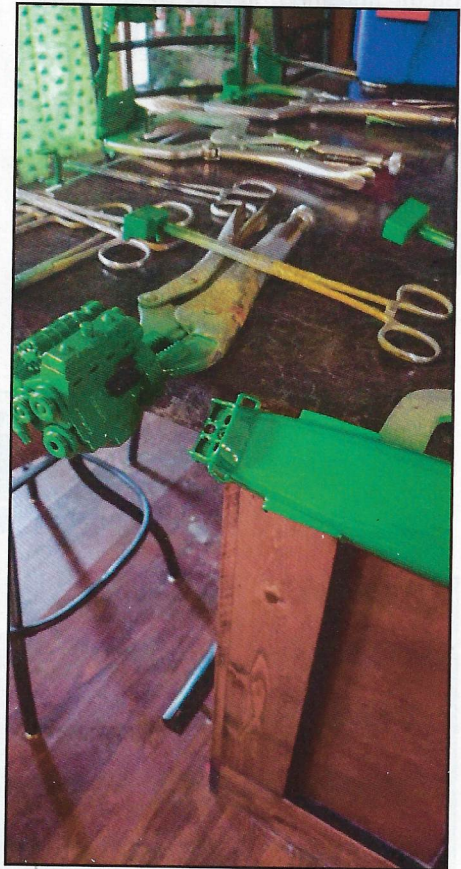
this 5020 is green, but the center hood emblem is silver and the grommet around the fuel cap is black, so these can both be painted shortly after the original color is applied and then followed with a coat of clear, making everything look correct and not like it was an afterthought.

I let the paint cure for 24 hours before I assemble the tractor. One piece at a time, the tractor starts to go together. It looks like this will be a well-planned project, when it all hits a brick wall.

A few years ago, I got docked a couple points at the St. Louis, Mo., custom-built contest, because the tractor I built did not steer with a steering wheel. So, I knew this tractor was going to steer with the steering wheel. There should not have been any problem with that. All I had to do was reinstall the original steering shaft Ertl used and all would be well. The



The parts are cleaned and prepped for paint.



I use a variety of methods to hold the parts for paint, including vise-grips and forceps.



The engine is painted green, with a detail-painted oil filter and fill cap.

plan went exactly like I thought, until I started to install the hood and realized the box I built for the FARR air cleaner hit this steering shaft!

What do I do? I could have taken the easy route and removed the steering rod, but there is a \$5 trophy on the line and bragging rights, so that was not an option. I use my grinder with a cutoff wheel and carefully make a small cut, then let the hood rest. I then make another small cut, careful not to get anything hot and cause the paint to lift and peel. After about a half-hour of this, I had a 0.250 section cut out of the center of the box, with no permanent damage to the hood. With the box modified, I was now able to install the hood and continue with the assembly of the tractor. The only permanent damage was a few more

gray hairs on my head.

With most of the assembly complete, it is time to install the decals. I had my local sign shop make some decals to replace those that had been removed as well as the "5020 diesel" and "Kinze" decals. One little trick I learned years ago is to spray a light coat of soapy water to the backside of the decal. It will allow you to apply the decal and be able to adjust its location on the tractor without it sticking right away. Once the decal is in the correct location, simply press the decal tight to the tractor, squeezing out the soapy water, then give it a little extra time for the rest of the water to dry and you can save yourself from having crooked decals or decals in the wrong location.

The last major item is the exhaust. In my engine kit, I provide the exhaust manifolds and the 90-degree turn-ups, but no mufflers. As anybody who has been around one of those screaming Detroit engines knows, having mufflers is a plus. From the tractors I saw on the web, chrome mufflers would be better. Doing some research, I come up with some dimensions and draw a round muffler to fit into the turn-ups and send it off to print.

Once I get the muffler, I install our extension pipe with a rain cap to the muffler and send them off to be chromed. Once they are returned, I apply a thin coat of clear silicone (I use silicone rather than glue because the silicone has good bonding strength, but still has some flex, hopefully reducing the chance of breaking) to the



My BIG mistake! Luckily, I was able to cut the center of the FARR air cleaner box out without any collateral damage.

90-degree turn-ups and the mufflers. I assemble them to the tractor and I think this tractor is now complete!

As always, thanks for taking time to follow me through one of my builds. Hopefully, you will be able to utilize a trick or two on a project of your own. As always, visit www.chuckysprecisionpullersandparts.com for past "Down to Details" columns and parts used on this project and many more.

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My Gateway Mid-America Farm Toy Show first-place trophy in the adult customized contest!

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.