

# Building a 1086 with MFWD



Front mounting bracket removed from the 1566.

**H**ello again! This month, I am going to be building a tractor for a customer of mine, Dr. Todd Hocraffer. He has been after me for a while to build him an 86 series IH with MFWD (manual front-wheel-drive). Well, I have not built one of them before, but I have added MFWD to a few 66 series in the past, so I figured it could not be much different.

To get the project started, he supplied me with a new-in-box white panel 1086. It's a nice tractor, but everyone has one. Next, I was able to pick up a new-in-box shelf model 1566 with MFWD to use as a parts donor tractor.

First, I needed to remove the MFWD from the 1566. To do this, I could have spent an hour removing all the screws, taking off the cab and the rear

wheels, and finally splitting the casting to properly remove it. But this tractor was going to head to the Chuckville Salvage Yard to most likely become a puller in the future, so saving the tractor 100 percent was not much of my concern. Instead, I wanted the front end removed in a timely fashion.

Using a Dremel with a cutoff wheel, I cut the front mounting bracket free from the tractor. With the front mounting bracket gone, I slide the MFWD forward and off. With the MFWD free, the driveshaft also comes free.

The only thing left to do with the 1566 is remove the transfer case from the side. I did this by getting between the transfer case and the chassis with a flat screwdriver and gently prying it free. I have never had a problem

removing the transfer case in the past, but if I was concerned with saving the 1566 100 percent, complete disassembly of the tractor would have been the better option. The MFWD parts removed from the 1566 got added to the vast collection of parts saved for later in life and then we head onto the 1086.

## Starting the build

First, we need to remove the wide front from the tractor. Here, the wide front (WF) comes off without any cutting or Dremel action. First, is removing the rear mounting bracket from the WF axle. Here, it is as simple as removing the screw on each side of the bracket and letting the axle fall. With the bracket pulled out of the way, tilt the WF to one side or the other and steer the wheels so

that the steering arm clears the tie-rod. With the steering arm clearing the tie-rod, slowly pull the front axle back out of the front mounting bracket and it will be clear from the tractor.

Now that the WF is removed from the tractor, it's test fit time. I grab the MFWD and start to lift it into place on the 1086, but that is when we run into our first obstacle. The tie-rod on the MFWD axle used a different steering design and the pin used to steer the axle is now in the way. For a simple solution, I use my side cutter to cut off the pin, then use my grinder to remove the rest of the material until it is smooth to the tie-rod.

With the pin removed, it is time to test fit again. This time, it fits close but the MFWD will not fit into the 1086's front axle mount. Out comes the calipers to measure the diameter of the hole in the axle mount, then the diameter of the pivot pin on the MFWD. The pivot pin is larger—not much larger, but enough to cause a problem. To fix this problem, I measure the pivot pin again, which measured 0.125. With this info, I use an 1/8 drill bit and drill out the axle mount to 0.125 and we are back to test fitting. This time it fit!

Now that the MFWD axle is fitting



The horseshoe built and mounted, making the front end steerable with the 1086's steering rod.



The battery box removed and the side plate ground off from the 1086 chassis.

under the 1086, it is time to see how to mount it on the rear. First, I searched the Web for the proper mounting technique. All I learned is that there are no two tractors out there that have their MFWD's mounted the same. There were a large variety of axles and mounting techniques, so this led me to believe that I want to mount this MFWD the cleanest way possible.

Seeing there was going to be some work to do to the front axle, I choose to remove the front wheels just to get them out of the way. To remove the front wheels, it is best to locate the three pins on the back side of the hub. With a spring-loaded center punch, give them a few hits and the caps will be off, exposing the screw that holds the wheels to the axle.

With the wheels off, I wanted to build a bracket that would use the existing 1086 rear WF mount and the existing MFWD axle pivot mount. To accomplish this, I used a piece of 0.062 thick by 0.500 wide flat brass shock, bending two 90-degree bends. To make those bends in the correct spot, I first measured the distance between the base of the pivot pin on the MFWD axle and the face of the rear mounting bracket, which measured 0.625 of an inch. I then bent the first side, making sure things were plenty long, then I measured 0.625 minus 0.062 to mark the opposite side. I subtracted 0.062 because when you make bends in metal, the outside dimension will grow by the thickness of the metal being bent.

This basically created a channel iron out of brass that I then roughly trimmed to the height, not wanting to take too much at a time. Remember, it is a lot easier to trim it again then try to stretch it after it has been trimmed too far. Once the channel was completed on one side, I drilled a 1/8-inch hole to match with the pivot pin on the

MFWD. On the opposite side, I added a 1/8-inch hole and installed a pin that would fit into the rear axle mount, then soldered the pin into place.

So now the front axle should be able to be mounted securely to the tractor. This leaves a few more details to complete before preassembly is finished on the MFWD axle. First is removing the rear pivot mount. I am referring to the long framework that leads back to the mid point of the tractor and provides another mounting location. You could leave it on and build a mount on the tractor, but I am shooting for a cleaner look and felt that removing this part of the axle would give me that look. Removing it is as simple as cutting it off with the cutoff wheel on the Dremel. But once it is removed, I wanted to clean the mounting locations as well. Using a combination of my 2-inch angle die grinder and my Dremel with a rotary cutter, I removed the extra material on the axle, giving it that clean look.

The last thing that needed to be done to the axle is making it steerable with the 1086's steering shaft. To tackle this job, I measured the diameter of the tie-rod, which came to 1/8 inch. So I took a piece of brass tubing with a 1/8-inch inside diameter, cut it about 1/2-inch long, then split it in the middle lengthwise. With the tubing cut in half, I then placed the half over the top of the tie-rod and drilled a 0.052 hole through the tubing and the tie-rod.

Once that was complete, I drilled the brass tubing hole to 0.060 and then tapped the tie-rod with 0.080 tap and bolted the brass tubing to the tie-rod. With the brass tubing installed, I was then able to use some 1/16-inch brass rod and build a horseshoe-shaped piece that I could now solder to the brass tubing, making for a strong solid mount for the steering arm to fit into.

Now that the front axle is mounted



MFWD parts removed from the 1566.



The pin is removed from the front axle mount.



The tie-rod steering rod being removed from the MFWD.



The transfer case and battery box installed on the tractor.



Both of the driveshaft halves trimmed down.



and steerable, it is time to give it some power! That means mounting the transfer case and the driveshaft. I am not sure exactly where the transfer case needs to go on an 86 series tractor, but there is only one spot on the precision model where there is room to put it and that is under/behind the battery.

First, the battery will have to come off. To accomplish this, you will need to pry down on the battery box assembly because there are two glued pins holding the assembly to the tractor. With a flat-tipped screwdriver and some patience, it will come free.

With the battery box out of the way, the first test fit of the transfer case is less than satisfactory. After placing the transfer case into the slot created with the battery box removed, it is clear that some modifications are going to be needed to fit the transfer case into place and still be able to mount the battery box back on. So out comes the Dremel with the rotary cutter. Ever so carefully, remove the "cover plate" that is casted into the side of the tractor under the battery box location. If you can control the Dremel, you can remove the plate without hitting any local paint. I did not let the Dremel get away from me and was able to give myself the room it took to mount the transfer case and battery box back on the tractor. The battery box did require some clearancing yet, but with a few test fits I used some five-minute epoxy and installed the transfer case and battery box onto the tractor.

The final step before the MFWD

parts can head to paint is shortening the driveshaft. I give it a test fit and it is nowhere near being the right length. To make it the right length, I cut the driveshaft in half. With the driveshaft cut in half, I mount one end into the drill. While spinning the shaft with the drill, I use my grinder to cut the diameter of the shaft down. I then use a piece of aluminum tubing, the same diameter as the original shaft, and epoxy it to the two ends of the driveshaft, making a new driveshaft the correct length. Now send these parts off to paint!

With the front axle off to paint, it is time to look at the back half of the tractor. Those 18.4x38 rears are just too small for the look we are going after, so off they come. To remove the tires from the 1086, I just grab them firmly and start twisting and pulling. With the wheels off, I then grab a set of wheels from a 1468 precision and do a little test fitting. You can guess it, they will not fit. To be honest, I knew they wouldn't being I have been down this road before on these 1086's, but the fix is relatively easy. The problem is that the tires hit the steps. The solution to this problem is to move the steps ahead.

So I flip the tractor on to its side and use a 1/4-inch drill bit to drill off the tops of the mushroomed-headed pins that are used to hold the step on. Once the heads have been removed, just wiggle and pull and the steps will come right off. I then remove the rest of the pin and bolt the steps back on

farther forward. This will be just that easy on the left side. To move the step ahead on the right side, you will have to trim the cab corner so it is like the one on the left. If you are careful with the Dremel, there will be no need for paint.

With the steps moved forward, I test fit the 1468 wheels again and sure enough they are a great fit! I then build an axle using 3/16-inch steel rod. I did widen the dual spacing 0.375 on each side using brass tubing around the axle and with a little epoxy on the shaft the wheels are mounted.

After I finished paint and body work to the MFWD axle, I proceeded to reassemble the tractor, being careful not to damage any parts and making sure everything was secure.

Then I need to convert this MFWD 1086 into a 1486. I called Bossen Implement and ordered a set of 1486 side panel decals which are not an exact fit. I was able to cut the 1486 numbers out from the decal and place them over the 1086 on the tractor, making the change quick and easy without any major work.

I already know the owner is pumped about getting his 1486 MFWD to set next to the 5488 and 4450 I have built for him already. The whole appearance of the tractor changed, making it look a lot "beefier."

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*The mushroomed pins holding the steps in place with the heads drilled off.*

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](mailto:csteffens@wildblue.net).



*The completed 1486.*