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Custom-Built and Scratch-Built Projects Part 2



Jerry Kieffer ~ DeForest, Wis.

Jerry is a model engineer who insists on total perfection and building every part to scale. He is not a professional machinist, but recently retired as a field representative for a Wisconsin power company. Most of his skills were attained by trial and error.

A Fully Functional 1/8 Scale 1936 John Deere D Tractor

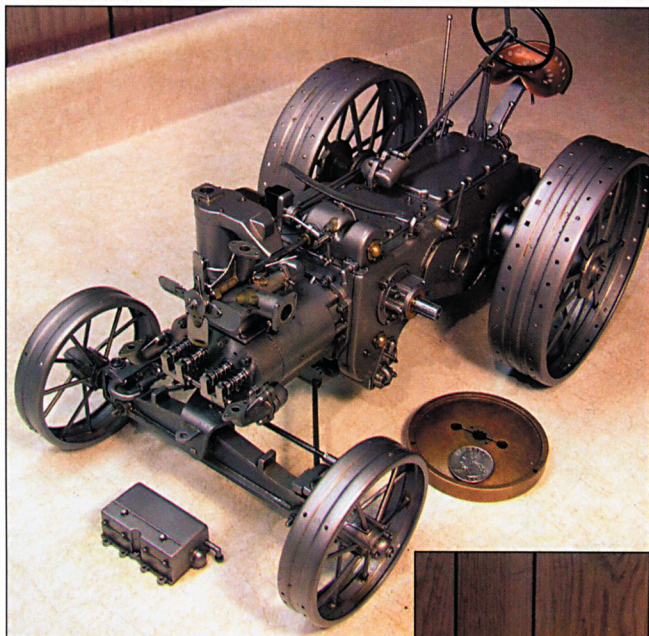
Jerry's original goal was to build a model to absolute scale in every respect and yet still have a running four-stroke, spark plug ignition engine that would

run on gasoline like the original. The idea was to have the tractor run at under 1,000 RPM and start by rotating the flywheel in the same manner as the full-size version. Starting by hand and running under 1,000 RPM is generally not a problem if you can enlarge the flywheel until you achieve your goal; however, in this case the size of the scale flywheel had to be maintained.

A flywheel of a size needed to get the desired performance would have been hopelessly oversized and looked ridiculous. The problem was solved by reduc-

ing the compression ratio to just under 4:1 (normal would be 6 or 7:1) so a scale flywheel could be used. Several other things were also done to reduce friction as well as making improvements in the air/fuel mixture. Fortunately, the tractor will still start by rotating the flywheel by hand as on the original.

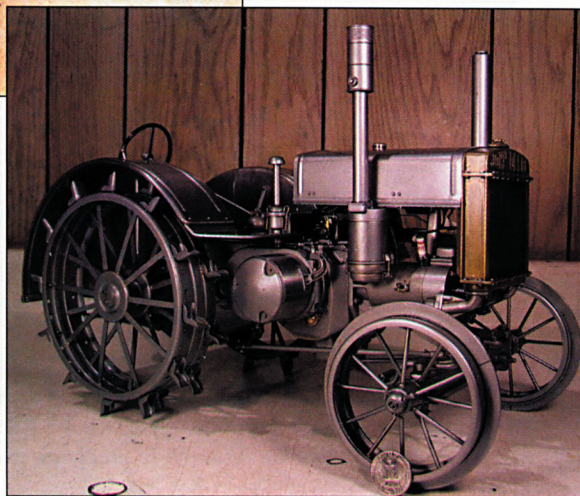
The next process was to completely disassemble the tractor and paint each individual part. Scale decals were made and applied, and then the tractor was reassembled. Now that it is painted, it probably won't be run very often,



Everything on the model is made to 1/8 scale down to the working grease fittings, each with a spring-loaded ball inside. A quarter lays beside for size comparison. (Photo courtesy of Forrest Atkinson.)



Replica in 1/8 scale of the John Deere D. Note the tiny Butternut coffee can—a low-tech but effective way to keep rain out of the exhaust pipe in the old days. (Photo courtesy of Forrest Atkinson.)



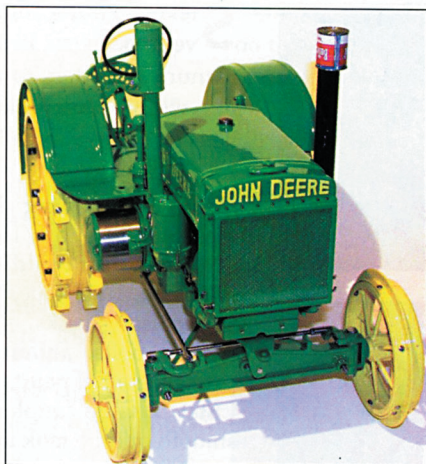
Right: Construction is finished. Now the model must be disassembled for painting. (Photo courtesy of Forrest Atkinson.)



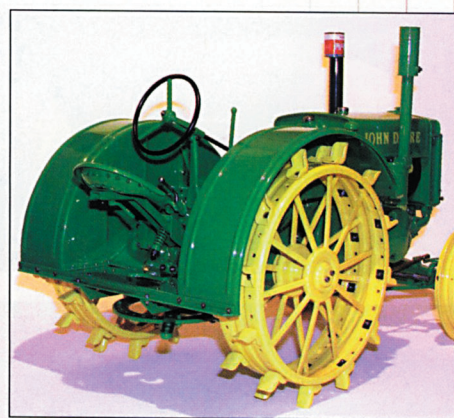
The scale grease gun that functions, as you can see by the stream of grease coming out. (Photo courtesy of Forrest Atkinson.)

because, like on the real tractor, this is an oily, messy process that can be hard to clean up after. Jerry also intends to make a scale tool kit if it can be determined what originally came with the tractor. A scale owners manual and possibly a scale shop manual will also be made if possible.

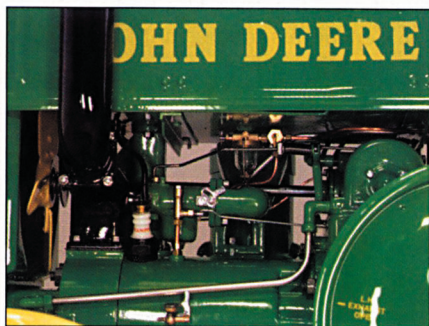
The original tractor was purchased by his grandfather, and it remained in the family. Jerry fully restored it a few years ago while taking dimensions from each part to build this replica.



The raised John Deere lettering was machined freehand on the mill and painted. Behind the grille is a radiator that re-creates every brass fin and tube of the original. (Photo courtesy of Forrest Atkinson.)



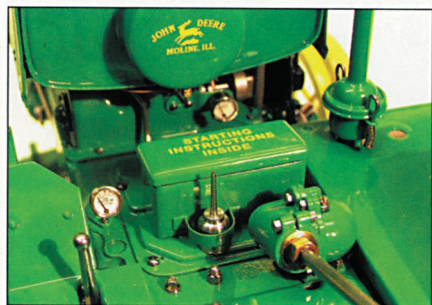
A rear view of the tractor shows the steering wheel, seat, controls and hitch bar. Details of the fender beading can also be seen. (Photo courtesy of Forrest Atkinson.)



The incredible detailed parts and assembly are precision perfect. The .200-inch diameter glass fuel bowl is actually machined, drilled and ground from solid glass and polished. It took seven attempts and three weeks to make this one part. (Photo courtesy of Mike Rehms.)



Jerry restored the full-size John Deere D as he was measuring and doing research to build the 1/8 exact replica D. (Photo courtesy of Mike Rehms.)



A rear view of the model and a closer look at some of the controls. The tiny oil pressure gauge and oil can actually work. (Photo courtesy of Mike Rehms.)