1/8-Scale Model D Actually Runs!

Jerry Kieffer's mini Model D Deere is no kid's toy. It's a working model that runs in forward and reverse at engine speeds between 600 and 800 rpm's and will rev as high as 2,000 rpm's. Kieffer did have to reduce the compression ratio from the normal 6 or 7:1 to 4:1. However, that is one of only two variations from exact duplication of his grandfather's Model D that Kieffer restored earlier.

"My grandfather bought the Model D new in 1936," says Kieffer. "I bought it from a neighbor's estate after he died, and I restored it. Then I decided to make a nice model of it."

Originally Kieffer had thought to make a model of everything that was on the farm where he grew up. If he did it all to the accuracy of the Model D, it might take several lifetimes. The 1997 winner of the Craftsmanship Museum Metalworking Craftsman of the Year award is a perfectionist.

"The tractor is scaled to 1/8 and everything functions, down to the check valve and the grease fittings," says Kieffer, who built a grease gun about the size of a quarter to grease the tractor. "The only thing out of scale is the spark plug, and it's only a little bigger. Electricity doesn't run to scale."

He machined the Model D with a bench top lathe and mill from Sherline Products, and assembled it with miniature tools he built for the job. He makes his own taps and dies to make micro nuts and bolts. When he started building models in the 1970's, finding less than full-size and full-cost metalworking tools was a problem.

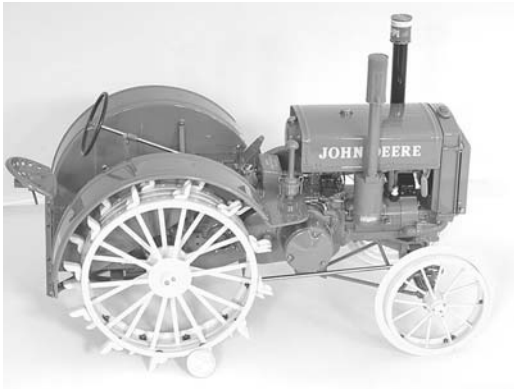
"Until Sherline tools came along in the mid 70's, there wasn't a lot to pick from," says Kieffer. "I still can't find anything to outperform them for the type of work I like to do."

That work includes a 1/30-scale Corliss steam engine model with bolts that are 0.009-in. in diameter. Currently he is working on a 1/8-scale running model of a 1947 Harley Davidson "knucklehead" motorcycle.

On the Model D, even the 0.200-in. dia. glass fuel bowl is authentic. Kieffer machined, drilled, ground and polished it from solid glass, though it took him 7 tries over three weeks. He even made a Butternut coffee can to scale to put over the exhaust pipe, as his grandfather used.

Kieffer is neither an engineer nor a machinist by training. However, he grew up fixing equipment on the family farm. He also worked on computers in the Navy. Hobbies have included watch repair, clock making, gun repair and model engine construction. All his skills are self-taught through trial and error. There were no schools for micro-machinists, other than watch and clockmaker training, when he started working on projects. That's no longer true.

"I teach a weekend course four or five times a year at the School of Horology, Colombia, Penn.," says Kieffer. "It's sponsored by the National Association of Watch and Clock Collectors, but the courses are open to everyone."



Jerry Kieffer's 1/8-scale Model D Deere tractor actually runs. It's an exact duplicate of his grandfather's Model D, which Kieffer had restored earlier.

Kieffer encourages anyone interested in micro metalwork or similar detailed crafts to experiment. He believes craftsmanship is a matter of natural skill, equipment and experience or technique.

"You need to find the equipment and technique that you can master with your skills," says Kieffer. "What you'll accomplish is based 75 to 80 percent on equipment and technique."

Kieffer is meticulous with his technique and tries to be as close to perfect as he can in the models he makes. That's one reason he makes the things he does.

"The only way I can afford to have the best of a thing is to make it," he says.

Contact: FARM SHOW Followup, Jerry Kieffer, 305 N. Cleveland Ave., De Forest, Wis. 53532 (ph 608 846-5243; jlkieffer@charter.net; www.craftsmanshipmuseum.com/kieffer3.htm).

He made a grease gun that's amazingly small - about the size of a quarter to service the tiny Deere D.

Museum Features Micro-Motors, And Other Mini Craftwork

If you ever get a chance to visit the Craftsmanship Museum in Carlsbad, Calif., you'll see a working steam engine that weighs only 3.5 grams (1/124 oz.). The twin flywheel engine, powered by air injected with a hypodermic needle, sits on top of a pencil eraser. There are more than 300 works on display. Not all are as small as the micro steam engine, but they're all unique and of amazing quality such as the 13 by 9 by 9-in. Corvette V-8 that exceeds 10,000 rpm's.

Joe Martin, owner, Sherline Products, developed the museum to showcase modern craftsmen who create working models of real world machines.

"We started with our online Craftsmanship Museum, but people started sending in models they had made," says Craig Libuse, marketing director, Sherline Products. "We recently went from 6,000 sq. ft. of display space adjacent to our company headquarters to a separate 16,000 sq. ft. building with 13,000 sq. ft. of display."

The full name of the museum is the Joe Martin Foundation Miniature Engineering Craftsmanship Museum. His company is the maker of the bench top metalworking tools used to make many of the items on display.

"Items don't have to be made on a Sherline tool to be accepted into the museum," emphasizes Libuse.

The mission of the museum is to expose the public to not only fine craftsmanship on a miniature scale, but also the tools that make it possible. The museum includes a Miniature Machine Tool Collection and a 4,500 sq. ft. working machine shop.

The tool collection includes early hand-cranked watchmaker lathes; modern, electronically speed controlled, laser engraved machines; and everything in between. A Lufkin #137 Mini Square is only a few inches long with a standard measuring rule blade. An interchangeable, unmarked blade has a 45º angle on one end and a 30/60º angle on the other.

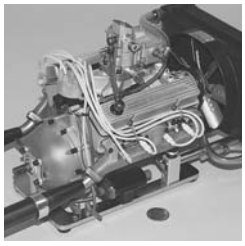
Volunteers operate bench top machine shop tools in the machine shop area, making small engines as visitors watch.

For the past 14 years, the Foundation has awarded a prize to a Metalworking Craftsman of the Year. Libuse encourages people to nominate friends or relatives and their work for consideration or inclusion in the museum. Send in a photo of their work or a portfolio. The museum also has sections for wooden mechanical devices, as well as miniature guns and working steam engines.

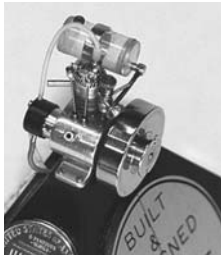
"While we are primarily metalworking, we do accept wood work if it's small and really good," says Libuse.

The company also accepts tax-deductible donations of metalworking tools and unique or antique miniature machinery.

The museum offers free admission and is open 9 a.m. to 4 p.m. Mon. through Sat.



Miniature Engineering Craftsmanship Museum includes this working Corvette V-8 engine that measures just 13 in. long.



This single cylinder spark plug engine is thought to be the smallest running spark plug-fired gas engine in the world.

More than 300 miniature works are on display at the museum.

Contact: FARM SHOW Followup, Craftsmanship Museum, 3190 Lionshead Ave., Carlsbad, Calif. 92010 (ph 760 727-9492; www.craftsmanshipmuseum.com).

Precision Tools Designed For Small Jobs

You can buy a complete metalworker's shop with lathe, mill and other tools from Sherline Products for $2,400. With those tools, you could build your own mini tractor, car or practically anything else. The only catch is no part turned on the 3.5-in. metal lathe can be bigger than 1.8 in. in diameter or 17 in. long. No piece can be machined on the mill that is larger than 6 by 9 in. While these tools and their output are small, they are far from toys.

"Our tools are used by watchmakers, gunsmiths and medical device manufacturers, as well as craftsmen who like making very precise, working models," says Craig Libuse, Sherline Tools.

How precise? With the addition of a thread cutting attachment to the lathe, it's capable of cutting up to 80 threads per inch. While precision is to a certain extent a matter of the operator's ability, the company suggests a good machinist can make parts accurate to within a thousandth of an inch or less. How much less can be startling.

"We received an envelope in the mail one day from Jerry Kieffer, one of our customers," recalls Libuse. "In it was a 1/4-in. diameter, 3/4-in. long vial with a cork. At first, we wondered why, then someone thought he saw a chip in the vial. We put it under a magnifying glass, and it was a 1/10,000-in. diameter hex nut on a hex bolt."

When Libuse called Kieffer and asked why he sent it, he said, "I just wanted you to see what I was able to do with your machines."

Kieffer now does demonstrations with Sherline equipment at trade shows.

"For his latest demonstration, he drills a hole through a human hair for a 1/1,000-in. diameter wire with a drill and bit he made with our equipment," says Libuse.

Sherline has been making this bench top metalworking equipment since the 1970's. Joe Martin, design engineer and current owner, first imported and then modified an existing Sherline lathe made in Australia. Later he developed the first Sherline vertical milling machine. Since then, the company has been a leader in developing bench top metalworking equipment for small-scale output for industry and hobbyists alike. Today, all Sherline tools are made in the company factory in Vista, Calif.

Contact: FARM SHOW Followup, Sherline Products, Inc., 3235 Executive Ridge, Vista, Calif. 92081 (ph 760 727-5857; 800 541-0735; sherline@sherline.com; www.sherline.com).