

## Gunderson's Amazing Do-All Machine

If you were the kind of kid who liked to tear things apart just to see how they worked, you'll love Mark Gunderson's Amazing Do-All Machine. It's hard not to be awed by the movement, the bright colors and the whimsical humor of this complicated machine.

Mark Gunderson, Charleston, W. Va., is an electrician by day and a tinkerer by night. He created the Do-All Machine a decade ago, after being inspired by machines he saw at antique engine shows. His goal in building it was to entertain while showing off the internal workings of many machines.

A 10 hp Witte gas engine is the main power source. Gunderson took the engine apart, painted the pieces and reassembled it - minus the exterior. He did the same with other engines in the piece: a V-8 motor, a boat motor, a weed eater motor, a Wankel rotary engine and Gunderson's personal favorite, the engine from a B25 bomber.

He got the plane engine after hearing a B25 had crashed. With just the name of a town and knowing that the property owner raised pigs, he made calls until he located it. The owner said he could have it.

"It looked like a 2,000-lb. piece of aluminum foil that had been thrown against the wall," Gunderson recalls. The engine had two rows of 7 cylinders, so he picked out the best ones to make just one row.

It's not the only time he's gone out of his way to salvage trash to turn into Do-All Machine treasure.

When he heard about a 220-lb. tapered roller bearing that had been thrown out, he

got permission to do a little dumpster diving. "I wrestled it out of there and put it on the Do-All. It rolls perfect," Gunderson says.

He's particularly proud of the square gears he made out of a rack gear. He had to get the teeth and pitch to line up perfectly.

In addition to intertwining gears, pulleys, and sprockets recycled from implements and vehicles, there are personal touches - whirling hand shapes traced from his children's hands, a horseshoe one of his children found, and his sister's old satellite dish that spins with the sun on one side and the moon on the other.

In addition, a blacksmith blower blows bubbles from soapy water in an ammo can. A squirrel cage off a furnace blows air to wiggle the bright red tongue of the "nagging wife". A straight gear alligator slides back and forth chasing a chicken.

Gunderson bolts everything securely to a 13-ft. trailer and has taken it to schools and antique engine and air shows in West Virginia and nearby states.

Gunderson continues to tinker and is currently tearing apart a straight 8 Packard engine.

As he creates, Gunderson notes that he's learned many skills including foundry work, blacksmithing, how to gear up and gear down, and understanding hydraulics. He's always looking for an odd gear or mechanical piece to add to his Do-All Machine.

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Mark Gunderson says his goal in building the Amazing Do-All Machine was to entertain, while showing off the internal workings of many different pieces of machinery.



Rig is equipped with several engines and motors as well as recycled gears, pulleys and sprockets.

## How To Motorize A Pedal Tractor

"I thought your readers would like to see the motorized pedal tractors I put together. They really work great," says Tom Demers, Bethlehem, Conn., who in recent years has motorized Deere, Oliver and other brand pedal tractors.

The first one he modified was a 1965 Deere Pedal Trac. Demers cut the center part out of the hood and installed a 1981 Echo 21 cc weed trimmer engine, which is hooked up to the transmission off a Troy-Bilt mini rototiller.

The transmission chain-drives the tractor's rear axle. The tractor still has its original front and rear wheels, seat, and steering wheel. An add-on, spring-loaded throttle lever is used to control tractor speed.

"The weed trimmer engine has a built-in clutch so when you let off the gas, the tractor stops dead. It's like putting on the brakes," says Demers. "When it's running, the tractor moves at walking speed."

To build, Demers put the engine and transmission together first. Then to make room for them, he split the tractor apart lengthwise and used a sabre saw to cut out an opening for the engine.

The rototiller transmission has a worm gear drive with a 36:1 ratio. The 2-cycle engine doesn't have much torque unless it's revved up, and would have run too fast for the pedal tractor so Demers had to gear it down. To do that he cut 1 tine shaft off the tiller and shortened the other, then mounted a sprocket on it to drive the tractor's rear wheel.

"I'm happy with the way it turned out. It looks cool because the engine and muffler are black and orange and just the right size so everything looks proportionate," says Demers.

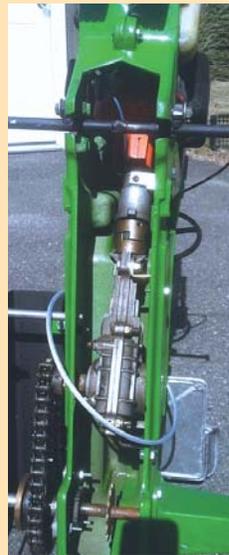
"I used the chrome pipe from a motorcycle handlebar to make an exhaust pipe, and the knockout from an electrical box to make a flapper. The flapper bobs up and down with the exhaust just like on a real tractor, which

people really get a kick out of at parades.

"My son and his teenage friends like to drive all my motorized pedal tractors. It looks funny to see grown boys and men driving such small tractors, but the tractors have no trouble handling them because they have so much torque and a high gear ratio."

The tractor's throttle cable runs from the engine up to the steering column. "I only have to turn the steering wheel 1/2 way each way to steer, so the throttle can't get tangled up. However, on my most recent pedal tractor I mounted the throttle on one of the tractor's foot pedals, so that as soon as you take your foot off the pedal the tractor stops," notes Demers.

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Tom Demers motorized this 1965 Deere Pedal Trac by installing an Echo 21 cc weed trimmer engine. It hooks up to a transmission off a Troy-Bilt mini rototiller, which chain-drives tractor's rear axle. Photo at left shows underside of tractor.

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