

## Cub Cadet Fitted With Home-Built Loader, Backhoe

"Both projects were fun to do. Once I got started on them I was out working in the garage until 10 or 11 every night," says Bernie Traxler, who built a front-end loader and a backhoe for his 1972 Cub Cadet tractor.

The loader is made from 1 by 2-in. heavy wall rectangular tubing and has a lift height of 8 ft. Its bucket measures 38 in. wide and is made from 3/16-in. thick steel plate. Traxler welded a piece of grader blade across the bottom of the bucket to reinforce it. The bucket is just 1 in. wider than the tractor's rear wheels.

A belt-driven hydraulic pump, located under the middle of the tractor, supplies oil to four 2-in. dia. cylinders that operate the loader.

"I found that when lifting a load the back end of the tractor was too light, so I added fluid to the rear tires to keep the tractor from tipping forward," says Traxler.

He built the backhoe when he bought a new place in Arkansas and had to dig water lines.

The loader mounting bracket underneath the tractor is also used to mount the backhoe. "By pulling two pins from the bracket and unhooking three hydraulic quick couplers, I can drive right out from under the backhoe," says Traxler.

The backhoe bucket measures 8 1/2 in. wide and is tilted up or down by a 3 1/2-in. dia. cylinder. The bucket teeth are made from heavy truck leaf springs. He used 2-in. sq. tubing to build the stabilizers.

He modified the tractor seat to swivel 360 degrees so he can operate the backhoe controls facing backward.

The boom can be swiveled from side to side by a low speed, high torque hydraulic motor. "Conventional backhoes can swing less than 90 degrees in either direction, whereas I can swing the boom 120 degrees to either side. It really helps when digging close to a building," says Traxler. "The bucket can reach down a little more than 10 ft. I made the outriggers bigger than I really needed to



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level it up in steep areas.

"I built it for less than \$1,000. I paid \$500 for a new control valve and hoses and \$3 apiece for the hydraulic cylinders, which I bought at an auction.

"I made a small extendable boom that attaches to the back side of the bucket. It lets me lift beams 15 ft. up in the air and really came in handy when I recently put up a new shed. I used the boom to put up steel beams.

I have a quick disconnect for the backhoe bucket which makes it easy to pull the bucket off. I'm in the process of building a hydraulically-driven post hole digger to attach in place of the bucket. It will be reversible to aid in freeing the auger in case it ever gets stuck on a rock."

Contact: FARM SHOW Followup, Bernie Traxler, HC 33, Box 31, Harrison, Ark. 72601 (ph 870 420-3266).

## Do-It-Yourself Loader, Backhoe

If you're looking to add a front-end loader or backhoe to a garden-size tractor, here's the place to go.

P.F. Engineering specializes in backhoe and front-end loader plans that allow you to build your own compact tractors. They also offer a spindle upgrade kit to boost capacity of front axles.

The loaders and backhoes are said to work great for hard-to-get-at locations where a larger machine won't fit. They're able to travel over lawn and landscaped areas with minimum compaction.

Each set of plans includes a full set of measured drawings showing each part of the loader/backhoe with material dimensions and location of all holes; a bill of materials listing every piece of steel including sq. tubing, angle iron, bushing material, pins, etc. so you know the exact size and quantity of what to purchase; a full set of 3D assembly drawings to show you the loader/backhoe as a whole and exactly where each part goes with exploded views included of the more detailed

sections; complete hardware bill of materials including all bolts, nuts, washers, pins, pipe fittings, etc.; complete hydraulics bill of materials, including the supplier's name and their part number for each item with the price listed for each item; complete hydraulic schematics showing hydraulic cylinder placement and hose connections from the pump to the control valves to the cylinders.

The loader weighs 325 lbs. and has a lift capacity of well over 500 lbs. It has a lift height to level bucket of 73 in. and a bucket width of 42 to 54 in. Bucket roll down is 50 degrees at maximum lift.

The company's backhoe can be used to dig trenches for electrical and water lines, irrigation and drainage systems, planting bushes and trees and for digging small ponds and water features. It weighs 350 lbs. and has a digging depth of 5 1/2 ft. and a reach of 8 ft. Boom swing is 170 degrees, and bucket width is 10 in. Estimated cost to build is \$1,500.

The front-end loader plan package sells for \$50 plus \$5 S&H. The Micro Hoe plan pack-



**You can build a backhoe and front-end loader for a garden tractor with detailed do-it-yourself plans from P.F. Engineering.**

age sells for \$75 plus \$5 plus S&H. The front-end loader and Micro Hoe combination plan package sells for \$125 plus \$10 S&H.

The front spindle upgrade results in a 1,000-lb. capacity front end. The upgrade uses 1-in. spindles with tapered roller bearings and four-bolt hubs. The complete mate-

rials cost about \$85.

Contact: FARM SHOW Followup, P.F. Engineering, 47 Pomeroy Lane, Amherst, Mass. 01002 (ph 413 256-4960; email: p.f.engineering@verizon.net; website: www.p.f.engineering.50megs.com).

## Bi-Fuel Converter Lets Vehicles Use Gas Or Alcohol

If you own a fuel-injected vehicle, you can operate it on 100 percent alcohol or 100 percent gas, or any mixture of the two, by installing a flexible fuel kit imported from Brazil.

"It has the potential to save you a lot of money on fuel, because you can burn either ethanol or gas, whichever is cheaper," says distributor Brad Miller, Ridgeville Corners, Ohio.

The Flexfuel converter consists of a small 4 by 3 by 1-in. box with wiring harnesses that hook up to each of the vehicle's fuel injectors. A network of processors is used to reprocess the signals, making the vehicle engine and the fuel found in the pump compatible with each other.

The kit installs with no need to cut wires or make any other mechanical alterations. A toggle switch on the box is used to control the ratio of alcohol or ethanol to gas. To set the fuel mixture you simply press "G" for gas or "A" for alcohol.

Kits designed for 4, 6, and 8-cyl. vehicles are available.

"It doesn't improve the vehicle's mileage per gallon, but it does allow it to use whatever fuel is less expensive," says Miller, who recently installed the kit on his 1997 Chrysler Town & Country van. "The big advantage is that right now ethanol is cheaper than gas in

most areas and doesn't fluctuate in price as much as gas does. Until now, if you wanted to use alcohol in a fuel-injected vehicle your only option was to replace the fuel injectors with different ones, which means messing with the timing.

"Go to [www.thefuelman.com](http://www.thefuelman.com) to see if the Flexfuel system will work on your vehicle. If you want to use 100 percent alcohol in your vehicle, you may have problems starting it in temperatures below 59° F. In that case you'll need to install a cold start-up gasoline reservoir, which is available from the company."

The Flexfuel kit is priced at \$246 for a 4-cyl. engine; \$317 for a 6-cyl. engine; and \$388 for an 8-cyl. engine. But prices will soon be going up, according to the manufacturer. They are also coming out with new models that have the cold start feature incorporated into the unit. The current cold start-up gas reservoir sells for \$89. Polarity inverter kits to terminals of injection plug connectors with fabric-reversed polarity sell for \$30 to \$60 depending on how many cylinders your vehicle has.

Miller is also a distributor for alcohol fuel stills for do-it-yourselfers. He offers Revenoor copper stills ranging from 5 gal. to 1,000 gal.

The Revenoor Co. has been building alco-

**Flexfuel converter (right) has a wiring harness that hooks up to each of the vehicle's fuel injectors. Kits designed for 4, 6, and 8-cyl. vehicles are available. Miller also sells 5 to 1,000-gal. alcohol fuel stills for do-it-yourselfers (below).**



hol stills for more than 25 years at its plant in Yamhill, Oregon. The company also offers larger custom built units. Models can be heated by wood, electricity, or propane. The company also provides detailed information

to customers on how to make and use home-brewed alcohol.

Contact: FARM SHOW Followup, Brad Miller, P.O. Box 222, Ridgeville Corners, Ohio 43555 (ph 419 267-5679; 1611av@cleaninter.net or [www.thefuelman.com](http://www.thefuelman.com)).