

Reader Quick Fixes Save Time And Money

Dale Freeman has spent a lifetime making things work more smoothly and better, both professionally and personally. Recently, he shared a number of innovative projects he has made over the past 45 years. Some are more involved, such as his unibracket (Vol. 49, No. 6). Others, like these, are quick fixes.



PTO Pump Fix

When Dale Freeman bought an older 3-pt. Woods backhoe, it was in rough shape. One cylinder was bent and had to be replaced, and the hydraulic pump needed repair.

"The shaft had snapped off the PTO-powered pump," recalls Freeman. "The pump had broken free from the 1/8-in. steel retention plate that kept it from spinning around."

Freeman replaced the shaft and the thin retention plate. He fabricated a new plate from a piece of scrap 1/4-in. steel. The plate included a piece of 2 by 2-in. tubing on one edge. He milled off the top of the tubing, and once the pump was mounted to the plate, the tubing fit over the tractor drawbar and anchored the plate in place.

"Now, when I engage the PTO, the pump has 0.020 in. or less of play to rotate," says

Freeman. "It engages so smoothly, I hardly hear it."



Adjustable Lower Link Spreader Bar

"Hooking up 3-pt. implements can be a problem if lower link arms are floating free," says Freeman. "My spreader bar keeps the arms apart the preferred distance when backing in to hook up an implement."

Freeman used a length of concrete rebar that matched the width of his tractor. He welded two short lengths of rebar to it near one end, spacing them so they would slip over one link arm. He then welded a matching set of rebar pieces to a short length of pipe sized to slide easily over the longer rebar.

"I drilled a hole in the pipe and welded a nut over the hole," says Freeman. "A bolt works as a set screw. When I have the spread I want for the lower link arms, I just tighten down the bolt."

A large washer welded to one end of the rebar makes it easy to hang it out of the way when it's not needed.

Dipper Lock For Tractor-Mounted Backhoe

"When my tractor-mounted backhoe is disconnected, I wanted a way to secure the dipper arm," says Freeman. "I made a simple adjustable lock to hold the arm in place."

The dipper lock consists of two 1-in. steel

pins with holes drilled through their ends. Freeman slips threaded rod through the holes and secures the pins with nuts.



"I was able to use existing 1 1/4-in. holes where the end of the dipper arm meets the mainframe," says Freeman. "I can adjust the nuts on the threaded rod as needed without having the arm in a specific position like I would with a fixed lock."



Floating Landscape Rake End

"When I used my landscape rake, it always left a ridge of rocks at the trailing end," says Freeman. "I made a floating end panel to follow the contour while preventing the ridging."

Freeman welded a short length of 2 by 2-in. tubing to the trailing end of the rake frame,

parallel to the ground. He drilled holes in the tubing for two pieces of 1-in. steel round bar, each with four holes. Scrap pipe was bent into a runner shape and welded to the round bars.

"I welded a small piece of expanded metal to the inside of the runners to retain rocks and other material coming off the ends of the landscape rakes," says Freeman. "I use lynch pins in the top hole, which lets it float while keeping it from falling out when I raise the rake. I can also raise the panel up and clip it in place if I want."



Collar Locks Diverter Valve In Place

Freeman's Woods backhoe and his tractor have opposing hydraulic systems, one open and the other closed. A diverter valve resolves the issue. In the up position, it directs fluid to the tractor loader. In the down position, it directs fluid to the backhoe.

"To prevent accidentally diverting it from the loader, I install a collar on the valve," says Freeman. "I remove the knob from the shaft, slip the collar on, tighten a setscrew, and put the knob back on. When I want to use the backhoe, I just remove the collar."

Contact: FARM SHOW Followup, Dale Freeman, Monroe, Va.

A complete timeline of Fendt's innovation and product development is on display in the Fendt Lodge.



Tech On Display At Fendt's Minnesota Factory

Ask a U.S. auto owner to name a high-performance German automobile, and you'll likely hear names like BMW, Mercedes, AMG or Porsche. The equivalent in German farm equipment is Fendt, and its high-tech manufacturing is on display at the company's North American production facility in Jackson, Minn.

Looking more like a rustic mountain

hideaway than a manufacturing plant, the plant's Fendt Lodge entrance showcases advanced equipment technology through educational displays, interactive, hands-on simulators, and an up-close look at autonomous farming solutions. Visitors can slip into tractor and sprayer cabs to marvel at their fit and finish, then walk through interactive displays to learn about advanced

components of Fendt planters and Ideal combines.

Fendt tractors and sprayers are designed and engineered at the company's German headquarters and built in Jackson. A 1.5-hour plant tour, narrated by a former company engineer, gives visitors a bird's-eye view of assembly using high-tech tools and advanced manufacturing technology.

The build process begins with a truck-box-sized bare transmission rolling into the first assembly station and ends with a fully functional, high-horsepower Fendt tractor being carefully detailed several hours later. Along the way, each unit receives all its components, including the engine, hydraulic system, electronics, cooling system, and cab, and undergoes more than 1,000 quality checks.

Assemblers use specialized tools, torque equipment, and coded parts for each tractor. Every unit is built to a customer's order. Its electronic build sheet is continually updated on large-screen monitors at each assembly station. Each action is time-stamped and verified during the quality control process.

Fendt builds two tractors and sprayers per day at the plant. Engines and transmissions are built in Germany, while outsourced parts and components are delivered to Jackson for just-in-time assembly. The plant manufactures several parts from raw steel. Lasers cut sheet and tubular steel to precise

dimensions. The CMM measurement arm uses laser technology capable of measuring to 0.002 in. accuracy. Layout accuracy is measured to microns (millionths of an inch). Custom-made jigs hold pieces for spot welding by hand, then completion by robotic welders.

Electronic and hydraulic components are assembled on the vehicles, then subjected to shake and electrical testing at various frequencies to ensure compliance with engineering specifications. The Fendt ONE cabs are built at the plant and designed for comfort, sound control, clean air and operator convenience. A touring visitor who owns a Fendt says that driving and riding in his tractor is like sitting in his living room easy chair.

Completed tractors run through load stations that test electronics, gauges, hydraulic systems, heating, air conditioning, horsepower output under load, and cab decibel levels. Equipment also simulates field conditions and loads, and tests suspensions, transmissions and engine output.

Fendt factory tours are open to the public and can be scheduled online through the Fendt Lodge website.

Contact: FARM SHOW Followup, The Fendt Lodge, 202 Industrial Pkwy., Jackson, Minn. 56143 (ph 888-434-2426; jacksonstours@agccorp.com; www.fendt.com/us/fendt-lodge).

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