

Tandem Hitch Lets Two Tractors Pull As One

Roy Ferguson, St. Joseph, Missouri, farms about 1,000 acres with a couple of Deere tractors as his main power units - a 4555 two-wheel drive and a 4250 front wheel assist.

Neither of those tractors alone had the power to pull the 15-ft., 3-bar chisel plow he wanted to use. So he decided to build a hitch that would allow him to couple the tractors together and drive both at once.

He started with a 15-ft. long, 5 by 7-in. toolbar off an old cultivator. At each end of the bar, he fastened 2-ft. lengths of 1/2-in. thick, 8-in. channel iron. "I could have welded it, but I was concerned welding might weaken the steel, so I bolted the channel iron to the tube with three 5/16-in. U-bolts," he says.

This bar fastens to the drawbar on the 4555 and then runs forward under the tractor to the front axle. Then he mounted a 2 5/16-in. gooseneck ball socket on the front end of the toolbar hitch, with the socket facing down toward the ground.

The idea was to carry the front end of the 4555 on the 3-point hitch of the 4250. So he made a bar to fit between the lift arms on the 4250 from 3/4-in. thick angle iron and put Category II pins on it. In the center, he added a pedestal made of a length of 4-in. square steel tubing. He welded a couple of ears at the top of this and drilled through them to make a bracket to pin the 3-point top link arm to it.

"At the bottom of the pedestal, I added a tongue made from a 14-in. long, 6-in. wide strip of 1-in. plate steel. I drilled a hole in the back end of that and mounted the 2 5/16-in. ball on that," he says.

Being able to pick up the front end of the 4555 with the 4250 allowed him to steer both tractors at once, but that was only half the job, Ferguson says. He also needed to be able to control the throttle, clutch, and 3-point hitch on the 4555 from the cab on the 4250.

Since the 4555 has electric-over-hydraulic controls, he mounted a potentiometer like the one on the 4555 lift arms in the 4250 and

hooked the two together with an extension cord.

He put a solenoid fuel-shut off control on the 4555 and, using a different colored extension cord, connected that to a switch in the 4250.

To engage or disengage the clutch on the 4555, he mounted a linear actuator on the foot pedal. "You can buy actuators with different inclines on the threads. This one is a fast-acting one. I connected it with an extension cord to a momentary switch in the 4250. The combination allows me to fully disengage the clutch in just two seconds," he says.

A slower 6-in. linear actuator was attached to the throttle lever in the 4555, with a corresponding switch in the 4250 cab. Another extension cord connects the actuator and the switch.

"I also put a linear actuator on the powershift lever in the 4555 cab, with a switch in the 4250. Both tractors have 15-speed powershifts and I hoped to be able to shift the back tractor as I shifted the front one. What I found was I couldn't easily tell which gear I was shifting into, so I don't do that. Instead, I just put the 4555 in the gear I need to use and leave it. I can turn at the end of the field using the 4250, so I just disengage the clutch on the 4555 before I begin to turn," he says.

Ferguson used the two tractors for all his chiseling this past spring. "I chiseled 500 acres, averaging 10 acres an hour," he says. Turning around was the biggest challenge. "You definitely don't want to try that with a cell-phone in one hand," he admits.

He says he did have one minor incident, after he'd chiseled between 300 and 400 acres. "I was trying to chisel as close to the field edge as possible, in order to have only a narrow headland to work. I guess I wasn't paying enough attention and I didn't get the clutch on the 4555 disengaged when I should have. As I turned, the back tractor pushed the



Home-built hitch allows Roy Ferguson to couple two Deere tractors together and drive both at once. He uses the tractors to pull a 15-ft., 3-bar chisel plow.

front tractor sideways a little and it actually bent the toolbar I used to hitch the two together," he says.

"It wasn't a major bend, but was enough to cause the rear tractor to run slightly off of the tracks from the front one. In the end, this was a good thing. I'd been having trouble with corn stalks plugging the chisel. With the tractors slightly offset like that, I ran over more stalks and the plugging problem was mostly solved," he says.

Carrying the front end of the 4555 on the rear of the 4250 gave him plenty of traction without having to add weight. "If I need to use just one tractor, I can stop them, lower the 3-point on the front tractor, uncouple the hitch, unplug my plugs and back the 4555 off in less than 10 minutes," he says.

Ferguson used different colored extension cords for each of the different connections from the front to the rear tractors. "This way, I can tell at a glance what cords to fasten together when I hook up," he notes.

The total cost of the hitch was under \$700.

"The toolbar was salvaged, as were the hitch and ball. I spent less than \$80 on additional steel. I used 25-ft. good quality extension cords and had more in the four of them than in all the steel. The solenoid for the fuel shut-off was about \$80. The three linear actuators were \$120 apiece," he says. "I also had to buy some switches and make a switch bar that I mounted in the 4250 cab, behind the hydraulic control levers, but the cost of that was minimal."

He says he thought about adding a camera in the cab of the rear tractor and a monitor in the front cab so he could see what gear he was shifting into. "With some remote presets on the camera, I could also monitor the gauges on the dash of the 4555," he says. After using the two tractors together, though, he decided the camera probably wasn't needed.

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"Continuous Drive" Bale Wrapper Works Faster

The high cost and slow operation of commercial bale wrappers prompted dairyman Glenn Zimmerman, Arbela, Mo., to build a "continuous drive" self-propelled rig with the help of a neighbor. It's designed to wrap either round or big square bales on-the-go without stopping.

Bales are placed against each other and wrapped in a long continuous tube. The machine can wrap big square bales up to 7 ft. long and placed crosswise, or round bales that measure up to 6 by 6 ft.

"We do custom wrapping for farmers within a 50-mile radius. It works fast and can wrap up to 120 big square bales per hour," says Zimmerman.

The hydraulic-operated machine rides on a pair of big flotation tires on front and a pair of truck tires on back. It has a 10-ft. long apron chain deck on back and a bale wrapper on front that's attached to a steel arch. Power is supplied by a 13 hp Honda gas engine that operates a hydraulic pump, which drives both the apron chain and the bale wrapper. Both sides of the deck are equipped with side rails that keep the bale centered as it moves forward with the apron chain. By pulling a pair of pins, the rails can be angled inward or outward and also raised or lowered depending on the size

and shape of the bale. A front-end loader is used to place each bale on the deck.

To wrap bales, the operator stands alongside the machine and uses one hydraulic lever to activate the apron chain and another lever to operate the wrapper. As the bale goes under the arch it gets wrapped. Once it reaches the end of the deck it stops until the following bale pushes it down a 10-ft. long ramp that leads to the ground.

"It's a very efficient machine - the bales are wrapped as fast as one man can load them onto the deck," says Zimmerman. "The machine is built strong. It has to be because when we're wrapping square bales there can be up to 12 bales on the machine at one time. We came up with the idea five years ago and went through 10 different designs while perfecting it. We have machines working in Pennsylvania, Indiana, Iowa, and Missouri. It sells for \$17,000. Commercial machines somewhat comparable to ours sell for at least \$23,000. Those machines work slower and require more maintenance because the wrapper has to start and stop all the time. Also, because of the starting and stopping motion, the plastic is far more likely to break. Our rig can't wrap bales individually."

The wrapper is equipped with a gooseneck



"Continuous drive" self-propelled rig is designed to wrap either round or big square bales without stopping. It can wrap up to 120 big square bales per hour.

hitch on front that allows it to be pulled by a pickup at high speeds on the road. To transport the rig, a 6-ft. long hinged section of the ramp locks up into a vertical position.

The rig steers via a hydraulic lever. A variable flow valve is used to adjust the speed at which the bales flow through.

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Power is supplied by a 13 hp Honda gas engine that operates a hydraulic pump.

