

# Self-Propelled Sprayer With State-Of-The-Art Boom

"It has a lot of unique features on it that you won't find on any commercial sprayer," says Kenneth Waddell, McCook, Neb., about his home-built self-propelled sprayer that also doubles as a round bale hauler.

The sprayer rides on four 36-in. high wheels and is equipped with a 400-gal. tank and a 50-ft. boom with nozzles spaced 30 in. apart.

The rig's features include:

- A "chain-controlled" tri-fold boom that folds to a narrow 8-ft. wide transport width.
- One side of the boom can be hydraulically folded in and locked up, while the other side can be extended out to any distance and used to spray along fence rows, etc.
- The tank is skid-mounted and can be replaced with a round bale hauler/unroller. The tank is secured by a single spring-loaded bolt on front and two bolts on back.
- A headache rack, bolted to the pickup frame just behind the cab, contains the oil tank and all valves, filters and gauges. The same components are used to operate the round bale unroller.
- The pickup's air intake extends up through the hood in front of the windshield, avoiding engine problems caused by dirty air under the hood.

Waddell started with a 1978 1-ton Chevrolet pickup equipped with a 4-speed transmission. He added another 4-speed transmission to provide a total of 16 forward speeds. He raised the cab about 10 in. and also beefed up the overload springs.

The boom is built in seven sections with a 7 1/2-ft. stationary center. What makes it different is the chain-drive system Waddell uses to fold it. The boom is equipped with five hydraulic cylinders: two that extend or retract each side of the boom, one that raises or lowers the entire boom from 18 to 48 in. off the ground, and a pair of smaller ones that operate a pair of chains that cause the boom to fold up "pendulum" style. All cylinders are controlled from the cab via electric solenoids.

A pair of chains on each side of the boom



**A pair of chains on each side of boom are used to fold it up like an accordion. The chain-drive system holds boom solid at all times and keeps it from bouncing up and down.**

are used to fold it up like an accordion. A pair of sprockets are fastened to both ends of one section on each side of the boom. Each sprocket that's closest to the center section is fastened to a hydraulic cylinder, which in turn is attached by a steel arm to a slide that mounts over the boom. As the cylinder is retracted it pulls on the chain, which causes the outside boom section to lay down flat over the adjacent section about halfway through the folding process. Then two other hydraulic cylinders bring the rest of the boom upright.

The boom pivots on a rectangular pendulum-style steel frame. The boom's center section is attached to the lower end of the pendulum, with a small cylinder fastened to the upper end. The pendulum allows the entire boom section to tilt back and forth and acts as a shock absorber.

To reposition the air cleaner, Waddell cut a hole in the pickup's hood and ran a length of 3-in. stainless steel pipe through it, then mounted the air cleaner on top of it. The pipe is fastened to the engine firewall and is connected by a length of flexible hose to the intake on the air cleaner.

"It took a lot of time to build this sprayer and I cut up a lot of iron trying to figure it out. However, now that it's done it works slicker than a button," says Waddell. "The boom's narrow transport width makes it a lot more maneuverable. Most commercial sprayers fold only to a 9 or 10-ft. width so they're harder to get down roads.

"The chain-drive system holds the boom solid at all times and keeps it from bouncing up and down. A lot of people told me it couldn't be done but it works. The chain not only raises and lowers the boom but it also holds it in place while spraying.

"Being able to mount a round bale hauler lets me use the sprayer over a much longer period of time. I plan to modify the mounting brackets on my Besler 3-pt. round bale unroller so I can also mount that on the truck.

"Farmers who use pickup sprayers have had a lot of problems with the engines burning out because the engines suck so much dirt in. The problem is that in loose soil conditions, dirt and dust boils up under the hood. No conventional oil or air cleaner can remove that dirt. I discovered that the cleanest place to mount an air cleaner is in front of the wind-



**Boom folds to a narrow 8-ft. transport width.**

shield."

Waddell says he's looking for a manufacturer to put his sprayer on the market.

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## Self-Propelled 950-Bu. Grain Cart Made From Old Airport Fire Truck

Custom harvester Robert Lemieux, High River, Alberta, wanted a reliable self-propelled grain cart to haul grain from two combines while making the grain harvest trek north from Oklahoma to Canada. So he spent last winter building one.

He started with a 4 by 4 airport fire truck. "It was built with a 2,000-gal. water tank, a 150-gal. foam tank, and a 265 hp 6-cylinder Caterpillar engine to operate the pump," he says. The truck itself was a full-time 4-wheel drive vehicle, with 30-ply 18 by 25 tires on it. It's powered by a 600 hp V-8 Caterpillar diesel, with a six-speed Allison powershift transmission," he says.

Lemieux started the conversion by stripping off the water and foam tanks, along with the pump and the pump engine. He sold what he could of these.

Then, using 4-in. square steel tubing for a base and 2 by 2 tubing for the sides, he welded together the frame for what would be a 950-bu. grain tank. He completed the tank by welding 14-gauge steel sheeting to the inside of the frame.

To unload it, he borrowed the turret auger from the grain tank on an old Massey 860

combine.

Lemieux figured the 30-ply heavy-duty tires that came on the machine were sufficient for travel on hard roads, but knew they'd leave the machine stuck in soft soil or mud. To make sure it had plenty of traction in the field, he added duals all around.

He bought wheels and new tires, but had to make spacers to mount the new wheels to the existing wheels. "Making the spacers was one of the most difficult parts of the conversion," he says.

On the added outside wheels, he mounted 16.9 by 34 lugged tractor-style tires. He selected tires that are just a little smaller in diameter than the original tires, which he left in place on the inside wheels.

"That way, when we're on hard surfaces with it, there's less wear on the lugged tires. But in the field, as soon as it sinks in a little, the lugged tires dig in and keep it moving," he says.

It worked so well that we used it instead of a 4-wheel-drive tractor to pull combines out of the mud last year," he says.

Lemieux uses two semi-trucks to haul grain to the elevator and had two combines in the



**To build his 950-bu. grain cart, Lemieux started with a 4-WD airport fire truck. He stripped it down and built the big hopper from scratch.**

field. The 950-bu. grain-hauling rig was more than sufficient to keep grain moved away from the two combines to the semis.

On one farm, he teamed up his two combines with two of his cousins' combines and used just his motorized grain cart to haul away the wheat. "We had no trouble keeping grain hauled away from all four," he says.

His grain cart runs well on the road at 35 to 40 mph. "One of my employees had it up

to about 50 mph, but at that speed, it was a rough ride," he says.

Lemieux is thinking of selling his cart and if he does, he'll probably build another.

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