

## Moveable Tractor Shelter

"I wanted to keep my tractor out of the weather, and this was the cheapest way I could think of to do it," says Gary Pierman, Perth, Ontario, who used 3-in. dia. steel pipe to build a portable storage shed that he can pick up and move with his Case IH 1285 4-WD loader tractor and 3-pt. mounted snowblower.

The 11 by 24-ft. shed has an 18-ga. corrugated steel roof screwed onto 1 by 4 roof boards. Pierman uses a chain on his loader bucket to lift the front end of the shed, and two 16-in. long chains welded to both ends of an 11-ft. long, 3-pt. mounted crossbar to lift the back end.

"I just lift it straight up about 12 in. off the ground and drive forward," says Pierman. "I park the shed and tractor in front of our garage during winter so I can quickly back the tractor and out and use the snowblower. Whenever I'm not using the snowblower I

enclose all 4 sides with woven poly fabric to keep snow out. During the summer I park the shed out of the way in back of the garage."

To raise the front end of the shed he tilts the loader bucket down and attaches a chain to the top of it, and also to a pair of hooks welded onto a length of 2 by 6 tubing, which is slid in across the front of the shed. To raise the back end of the shed, he pins the cross pipe with chains onto the tractor's 3-pt. lower lift arms.

"I put a lot of thought into it before I built it," says Pierman. "As I lift the shed it goes straight up. I didn't want to lift the shed at an angle because that would risk pulling the sides in."

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Gary Pierman used 3-in. dia. steel pipe to build this portable storage shed, which he can pick up and move with his Case IH loader tractor.

## Diesel-Powered Mini Van Gets 42 MPG

Matt Eby repowered a Ford Windstar with a VW diesel, boosting mileage up to as high as 42 mpg. He and his wife operate Eby Farms, an organic, pasture-based, local market farm. They needed a better way to deliver their homemade soap, produce and meat to customers.

"I talked to a friend of mine who had a 2000 Ford Windstar with a blown motor," says Eby. "It was in great shape with no rust, and I had a diesel Jetta with a 5-speed."

His friend, Andrew Leach at A+A Recycling in Hartford, Mich., provided the use of machine shop tools, welding and general assistance. Eby was able to swap a side of beef and the scrapped out Jetta for the minivan.

Eby took 2 weeks off work and parked the 2 front-wheel drive vehicles alongside each other. He and Leach pulled out the minivan's motor, transmission, clutch and driveshaft and replaced them with the Jetta's. The clutch was upgraded.

"I did the upgrade, as the minivan was about 600 to 700 lbs. heavier than the Jetta," explains Eby. "We mocked it up for height and reused the Jetta motor mounts. They fit the frame, but had to be modified for the wider space."

The right side required metal wedges to create a level mounting area. The left side had to be extended out to accommodate the narrower motor and transmission.

"We also added a wishbone mount underneath the engine and transmission to keep them from twisting under torque," says Eby. "We found existing holes in the minivan frame to attach the wishbone in place so it could be bolted to the transmission."

Eby and Leach also had to modify the front axles to match the Jetta transmission and

driveshaft and the Ford wheel hubs. They removed the original axles from both vehicles and cut them in half.

"We welded up bushings to connect the section of the Ford axles with hubs to the Jetta axle halves that connected to the transmission," says Eby. "The only problem we've had since was a bushing on one axle that broke after about 8,000 miles. We hadn't made the weld deep enough."

Parts that were transferred from the Jetta to the Windstar included the clutch pedal, gas pedal, wiring harness, half the air intake system, the instrument cluster and computer. The computer was required for the electronic fuel pump, and the instrument cluster was needed to talk to the computer and engine. The Jetta clutch pedal was needed for the Jetta's manual transmission.

"We made a bracket for the clutch pedal," he says. "It is a hydraulic clutch, so we could put it where we wanted. Since we kept the Windstar hubs, we kept the brakes too."

Keeping the computer and instrument cluster from the Jetta meant the wiring harness had to be matched and merged with excess removed. After stripping out the Jetta wiring harness, anything not needed for the hybrid Windstar was removed. It was then laid over the Ford harness and reattached with unneeded Ford wires removed.

"The wiring was the hardest part of the swap; however, only once did we have to backtrack to replace a stripped out wire," says Eby. "We did have to do some splicing to retain the Ford ignition switch."

If he was doing it again, Eby says he would have mounted a mechanical fuel pump. That would have eliminated the need to transfer the computer and wiring harness from the Jetta to the minivan.



Matt Eby repowered a Ford Windstar van with a VW diesel engine, boosting mileage to as high as 42 mpg.



He extended the motor mount to accommodate the narrower engine and transmission, and added a wishbone brace that bolts onto the transmission.

Most parts, such as hoses, were off the shelf. The air-to-air cooler from the Jetta didn't fit in the Ford, so Eby had to buy an air-to-water intercooler. It was the only after-market component purchased. He estimates the entire process cost about \$700 in incidentals, hoses and electronics.

"If you don't have a phenomenal amount of money, you have to be creative and build stuff," says Eby. "The swapping made it work. If I had to purchase everything, it would have been expensive."

As it is, the swap, including an estimated

120 hours of labor, has already been recovered. Eby estimates he has driven about 25,000 miles in the past year and saved around \$2,000 in fuel.

"It is our primary transportation," says Eby. "We have one other vehicle, and it gets only half the mileage of the repowered minivan. The minivan gets 32 to 35 mpg in the winter and 39 to 42 mpg in the summer."

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## Tracks May Reduce Wasted Hay

Deep tire track ruts on pasture are typically not a good thing, but they can be used to reduce hay loss, says David Dugan, an Ohio State University extension educator and beef producer. Ideally he stores his net-wrapped round bales in a barn, but in 2013 he lined up excess bales outside in a long row.

"Over the winter months I cut tracks (when removing the bales) and never worked it down. When I went to stack bales again this year I saw that I was putting them on an elevated area," Dugan explains.

Water runs off the bale sides and into the tire tracks instead of under the bale.

"It won't completely eliminate waste on

the bottoms of the bales, but hopefully it will greatly reduce it," he says.

Dugan will know more after this winter. If it makes a big difference, he is considering lining the tracks with a permeable landscape fabric topped with gravel. That will prevent erosion, yet allow water to filter through away from the bales.

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