Bob Sell equipped his tractor with a pto-powered hydraulic pump and mounted a 20-gal. reservoir and cooler directly on the hitch of his R-23 Vermeer Twin Rake.

Add-On Hydraulics Allow Small Tractor To Handle Big Twin Rake

By Mick Lane

It doesn't take a lot of horsepower to power a big hay rake but Bob Sell, Woodville, Wisconsin, says it can take quite a bit of hydraulic capacity.

For example, Sell points out that the manual for an R-23 Vermeer Twin Rake calls for an 18-gal. reservoir minimum. "Not many tractors have that capacity until you get well over 100 hp," he notes.

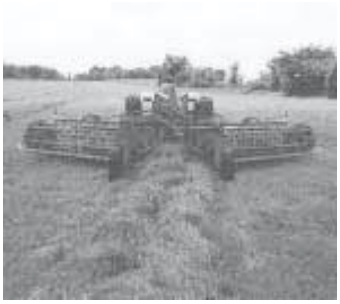
"Newer hydraulically-powered rakes, particularly twin rakes, need a hydraulic flow of 20 gal. per minute or more," Sell says. "Some of the older tractors we've normally thought of as 'rake tractors' just don't have this kind of hydraulic capacity."

Sell's neighbor, Don Rodel, Woodville, Wis., wanted to use a Deere 4010 on his Vermeer Twin rake. When he did, though, the hydraulic system got red hot. There wasn't enough oil in the reservoir and therefore, not enough cooling capacity for the rake. They double-checked the tractor's hydraulic system to make sure it was operating properly. Then they put Rodel's 4430 on the rake and its hydraulic system overheated, too.

Sell solved the problem by equipping the tractor with a pto-powered hydraulic pump and mounting a 20-gal. reservoir and cooler directly on the rake hitch. The existing rake hydraulics plug into this system, just like they plugged into the tractor's hydraulic outlets.

"The 4010 has plenty of horsepower to pull the rake and run the PTO. This protects the 4010's hydraulic system while providing plenty of hydraulic power to the rake," Sells says.

Sell says the conversion was fairly inexpensive, especially when compared with the cost of having to split a tractor open to rebuild a hydraulic pump worn out because of the intense heat build-up.



At first Sell mounted the pump on his Deere 4010 tractor. He now uses a David Brown 995 tractor and hasn't had any overheating problems with it, either.

In addition to farming, Sell operates B-W Machine, a metalworking and machinery repair shop on his farm. "This is the first conversion of this type I've made," he says. "If there's interest, I could put together a kit, along with instructions for mounting it on the rake. There's enough hydraulic capacity from this pump that we could also plumb it to handle the lift cylinder on the rake so there'd be no hoses to hook up to the tractor at all."

Rodel now uses a David Brown 995 on the rake. He says there was never a time during the first two cuttings this year that the pump or reservoir got warm enough that you couldn't touch them.

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Note pto-powered hydraulic pump on tractor and hoses running back to oil reservoir.

Build Your Own Iron-Melting Furnace

"I use it to make parts for restoring antique equipment," says Steve Chastain about his home-built iron melting furnace that he built mostly from scrap materials.

Chastain says his 10-in. dia. furnace can melt as much as 330 lbs. of iron per hour, fired by gas and air from a shop vac. His basic design can be expanded to almost any size to increase capacity.

"Old engines fascinate me. I love to restore old machines. Many engines and machines are scrapped because of broken castings. Parts are expensive or nonexistent. I had several machines that could be fixed if I could find a way to cast the parts.

"My first project was a set of pistons for an antique 4-cyl. generator set. After that I made manifolds, water pumps, magnetos, and cylinder sleeves. When my friends found out I could pour iron, they started bringing me their projects. Along the way I learned that pouring iron is not as difficult as most people think."

Chastain's home-built furnace worked so well he has put together a detailed do-it-yourself book designed to help anyone do what he did. Chastain used to run an electrical component manufacturing firm until he decided to go back to school. He's now back in college studying engineering.

His 125-page book explains in detail how he built the furnace, the theory behind it, what parts you should use, and how to operate it. He also explains in detail how to increase capacity of the furnace by building a higher capacity blower.

Chastain built his home-bulit iron melting furnace mostly from scrap materials.

The book sells for $19.95 plus $3.20 S&H. You can buy direct from Chastain or from Lindsay Publications, which is a great publisher of a wide range of do-it-yourself books (ph 815 935-5353 or www.lindsaybks.com).

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Old Pressure Tank Makes Adding Gearbox Oil A Breeze

One of the chores that comes with center pivot irrigation is maintaining the gearboxes on each individual tower. That means routinely checking the heavy oil in each drive unit and refilling as needed.

Tired of carrying a bucket of oil and a funnel to each of his center pivots, Greg Frey, Stapleton, Neb., decided there had to be a better way.

He devised a way to use air pressure to pump the oil.

He started with a 15-gal. water pressure tank, which has a 1 1/2-in. dia. hole on each end. "I added a length of hydraulic hose, a brass ball valve and handle, with a short gooseneck of 1/4-in. copper tubing on one end," he says. The other hole is used as both the filler hole and to pressurize the tank. He screwed in a cap with an air pressure valve. To fill the tank with oil, he simply screws out this assembly and pours in up to two full 5-gal. containers of oil.

To make it mobile, he welded a length of sq. tubing to the legs and then welded hard steel bolts in the ends of the tube to make an axle for two 8-in. used lawn mower wheels. On the other end of the tank, he welded a handle. "It looks sort of like a big upright vacuum," he says.

In addition to filling irrigation pivot gearboxes, Frey also uses it in his shop to service machinery. "This same type of system would work for engine oil or transmission fluid, too," he says.

The oil rack is constructed of used pipe and set on wheels. On the rac, he mounted four 70-gal. heavy duty square plastic tanks. The tanks he used are stackable so he can add more without adding to the size of the rack. And because of their size, he can dump in an entire 55-gal. drum of oil.

Air pressure pumps oil out of tank.

On the rack, he stores transmission fluid and engine oil for the various diesel and gasoline engines used around the farm. The rack is high enough that oil flows by gravity into any machine he can get into the shop.

"Since it's on wheels, it's easy to move it around the shop where we need it or out of the way when we don't," he says.

He also modified an old bulk gasoline tank - the kind that fits in the back of a pickup - for catching used engine oil. "I just cut a hole in the top of the tank and added a tray on the side to hold filters and tools," he says.

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