

Ram Pump Moves Water For Free

Jack Thompson lets his water pump itself uphill thanks to two ram pumps that he built himself. The first one lifts water 36 ft. and pushes it 900 ft., while the second one lifts water 90 ft. and pushes it 700 ft.

"A local rancher told me he had used one for more than 40 years, so I asked my extension agent about them," says Thompson, of Deer Lodge, Mont. "He found a couple designs on the Clemson University website."

After using a ram pump for three years, Thompson is sold on them. "The plastic one was really simple," he says. "It didn't need any machine work, just glue plastic fittings together."

Clemson University extension specialists recommend gluing plastic components to get a tight fit. Metal components can also be used.

Although different designs are available, Thompson used one with a swing check valve. On the inlet end, velocity builds up to an amount needed to close a valve. As it closes, water is forced into an air chamber. When the pressure equalizes, another valve opens and the water is pushed out and into the outlet pipe. As this action is repeated, the water is moved up the outlet pipe.

Thompson's first ram pump was made

from 1 1/4-in. diameter schedule 40 PVC pipe and connections. It delivers 3/4 gpm. His second pump is smaller, using 3/4-in. galvanized steel pipe and delivers about 1/4 gpm. He notes that pumps raising water more than 50 ft. need to be made from metal to withstand the pressure.

While Thompson's pumps move water slowly, they run 24 hours a day, 7 days a week, providing enough to keep stock tanks full. The volume of water moved per minute depends on the drop in elevation between the water source and the pump. The greater the drop, the greater the capacity of the pump. One well-known hydraulic ram pump built back in the 1800's could pump 50,000 gal. per day to an elevation of 200 ft.

"The only thing you have to remember is that you have to pump water to a higher elevation than its source," says Thompson. "You have to have the back pressure to make it work."

Both pumps use water flow from springs to transport the water to dry parts of his 240-acre pasture.

"There are quite a few commercial ones available, but I would guess this one didn't cost more than \$90 to build," says Thomp-



Thompson's homemade ram pumps move water hundreds of feet uphill to water cattle.

son. "I probably spent another \$150 to \$200 for pipe to run the water up to the tank. Without water, my cows wouldn't go up on my hillsides."

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Zero Turn Mower Steers From The Front

"Our new zero turn mower is equipped with front wheel steering that steers tightly around trees and other obstacles, even at full speed. It's much easier to drive than conventional zero turn mowers, and is much less likely to tear up the grass," says Jeff Huncilman, president of Gizmow Inc., New Albany, Ind.

The patent pending mower has two steerable caster wheels on front that are linked to the hydraulic motors on back. As the wheels are cranked in either direction, power is adjusted to make a smooth turn.

"It lets you go from arrow-straight to spin-on-a-dime by simply flicking the steering wheel. And, because it steers just like a car, there's no learning curve," says Huncilman.

The front steering wheels turn perpendicular to the frame for a true zero turn. A pair of cams attach to the steering shaft. When you turn the steering wheel, the cams act against a roller which mechanically pushes the pump arm backward to slow down the hydraulic motor for that wheel. When you turn the steering wheel far enough, the pump arm will push all the way to reverse, resulting in a true zero turn.

"It does away with many of the problems associated with conventional zero turn mowers," says Huncilman. "Conventional models are hard to control on rough ground and can slip on hillsides, requiring constant correction. When a conventional zero turn mower goes straight down a hill, weight is transferred to the front caster wheels, which reduces the steering capability. But on the Gizmow mower, the front wheels have enough traction to push the machine in the direction you want to go. As a result, weight is transferred to the rear wheels giving the mower great hillside performance.

"Another advantage is that you don't have to slow down when working close to walls and curbs. And, you won't tear up the grass when making tight turns."

Huncilman says the new mower is built heavy. "We wanted to build a Cadillac, not a Hyundai. The mower has an extra-heavy welded mower deck and reinforced frame. The entire unit is undercoated with an automotive E-coat primer. It has a comfortable padded steering wheel and a thick-back sus-



Two steerable caster wheels on front are linked to hydraulic motors on back. As wheels are cranked in either direction, power is adjusted to make a smooth turn. Front wheels have enough traction to handle hills.

pension seat. An electric actuator lets you raise or lower the deck on-the-go."

Two models are available - one with a 52-in. deck and either a 25 or 27 hp engine, and the other with a 61-in. deck and a 27 hp engine.

Both models sell for less than \$8,500.

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Tree Skidder Makes Log Hauling Easy

Van Arnette can cut a tree of any size in almost any location, and pull it home with a small tractor without tearing up the road or yard, thanks to his home-built tree skidder.

When he finds a tree on his farm that's dead or dying, he hires a portable sawmill to come in and cut it up into lumber.

"I use the lumber to make buildings on my farm or do other projects," Arnette says. "I wanted a simple, low cost method of transporting single trees home for this purpose."

The Hamer, South Carolina man built his log skidder using the frame and wheels from a large truck's front end. He added 8-in. I-beams from a scrap yard, and finished it off with a 2 1/2-ton hoist and chain.

He simply hooks a chain around the butt end of the tree and hoists it up. "When the tree butt is higher than the bottom of the frame, you back the tractor up about three

feet. That causes the hoist to move forward on the rollers (toward the tractor)," he says. "Then you use the hoist to let the butt down so it rests on the base of the frame. Next, you take another chain and tie the butt down securely to the frame. Then, you can take off and go anywhere. The small end of the tree is dragging, but it doesn't cause much friction or ground disturbance."

Arnette points out that during transport, there's no tension on the hoist because the tree is lying on the I-beam frame.

He originally made it to haul bulldozer blades, and thinks it could also be used for engine blocks or transmissions. He estimates that the unit can haul up to 6 tons.

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Frame and wheels are from a large truck's front end. Van Arnette added 8-in. I-beams from a scrap yard, and a 2 1/2-ton hoist and chain.