

(Continued from previous page)

rolling it up was a problem," he says. "I went to the store to buy a reel for it but when I saw the price, I came home and built my own."

He used lengths of scrap strap iron 1/8 in. thick by 1 in. wide, bent to form a reel. He fastened the bent straps to a length of galvanized pipe, fitted on one end with a \$2 swivel valve from the hardware store. This is where the line comes in from the air compressor. He plumbed his 100-ft. air hose into the pipe with a 1/4-in. pipe fitting.



To bend the straps used on the reel, Bennett used a press he built a few years ago. The press is made from 6-in. channel iron. He powers it with a 12-ton hydraulic jack, mounted on the top beam of the frame. The jack base is a 1/2-in. steel plate with a 2-in. solid steel shaft welded on the bottom where he attaches his tools. When he releases the jack, it and the base are pulled up away from the work by cables attached to a spring he salvaged from an old Hesston hay stacker. The adjustable height work table sits on a steel rod inserted in holes punched in 1/2 in. steel flat iron he welded on the sides of the channel iron frame. "I use it to bend flat iron, press off bearings and that type of thing," he says. He's building a bigger press using a truck hoist hydraulic cylinder.

Cutting steel is easier now that he mounted his chop saw on a table. To make the table, Bennett built an angle iron frame to fit around the base of the saw. The frame is welded to a pipe which slides into a larger pipe welded to an old wheel. This makes the table height



adjustable. He also has a couple of adjustable support rollers to hold up heavy materials while he cuts it.

Bennett also put together a portable torch cart. It's built from the wheels and stub axles from an old trailer sprayer. He even used the 16-in. tires from the sprayer. He built a frame on which he mounted the stub axles. The frame, with handles for moving around by hand, can accommodate acetylene and oxygen tanks for welding and the propane



tank he uses for cutting. A length of pipe makes a tongue, which he uses to pull the cart behind his 4-wheeler or pickup.

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Home-Built 100-Ton Hydraulic Press

Fred Gibbs, Greeley, Colo., made his own 100-ton hydraulic press using a 1/2 hp electric motor and hydraulic pump off a "Perfect Circle" center pivot irrigator.

He used 10-in. I-beam to make a 6-ft. high press frame and mounted the pump, electric motor, and oil reservoir on top of it. A junked 10-in. dia. hydraulic cylinder does the work.

"It's a nice looking unit that cost me very little to build because I got the irrigation components cheap," says Gibbs. "I use it to press bearings and gears on and off shafts and to repair gearboxes for center pivot sprinklers."

"The Perfect Circle irrigation system had an electric motor, hydraulic pump, and reservoir on each tower. Each motor ran continuously. If one of the towers got behind, a valve would open to move that tower forward until the valve closed. There are a lot of these old power units on the market that can be bought cheap."

Gibbs also made his own easy-to-use bulk oil system that mounts on a steel frame above the press. There are four barrels, with two containing hydraulic oil and the other two containing motor oil. The barrels are mounted two high, with a gas pump nozzle and hose connected to each of the bottom barrels.

"It's a gravity flow delivery system that delivers oil directly to our tractors or to filler cans on a drain rack that's mounted on the shop wall below the barrels," says Gibbs. "The drain rack consists of a 12-in. dia. length of pipe cut in half, with expanded metal grating on top of it. It bolts to the wall. A length of clear tubing connects each pair of barrels to serve as a site gauge for filling."

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Inexpensive Repair for Leaking Water Lines

Desperate situations call for innovative solutions.

That's how Carroll Kallevig managed to repair a leaking buried water line without having to spend hours trenching to dig it up. At the same time, the owner of Kallevig Pump Service, Irwin, Iowa, also saved his customer hundreds of dollars.

"To get the water back on in a hurry, we simply slid smaller diameter plastic tubing into the leaking pipe," he says.

He's made this repair dozens of times since then with great success. One satisfied customer, Marlin Petersen, Kirkman, Iowa, alerted FARM SHOW, saying it was a great way to avoid expensive trenching.

Says Kallevig: "If the leaking pipe isn't full of hard deposits and is otherwise still intact, we can push rolled plastic pipe through it for several hundred feet."

If the original water line was 1 in. steel, he uses 1/2-in. rolled black plastic pipe. For 1 1/4-in. steel pipe, he uses 3/4-in. plastic.

For a longer line, Kallevig says some excavation may be necessary. "You can push

the plastic line only so far and then you need some help," he says. So if the repair will be more than 200 ft. or so, he digs up the old line in one or two spots and cuts out enough pipe so a worker can help feed the plastic line through.

The longest distance he's run one of his repair lines is about 500 ft. That was a line that ran under a highway and buried power lines to a house. "Replacing the line would have taken hours, and we'd first have had to have the utility company come out and mark their lines for us. And going under the highway would have been very costly."

Kallevig says there's no real trick to making this kind of repair. "I always taper the end of the line so it will slide past any obstructions in the line. If there are elbows in the line, you can't push the plastic line through them." But, Kallevig says, "you can dig them up and make a curve in the line or push a new line in at the corner and then connect the two."

If water lines run under pasture or alfalfa fields, Kallevig recommends using heavy

"Smart" Monitor Detects Failed Seals

North Dakota farmer named Bob Heinzman is an inventor who runs a manufacturing plant, along with his brother. Years ago FARM SHOW featured his mini-tree spade for transplanting large trees without the need for a big truck (that business is currently for sale).

Now Heinzman and his brother have come up with a new product which they are offering to manufacturers. It's a "failure detector" for seals. An electric circuit attaches to the seal at the point of maximum wear and tells the operator when it should be replaced.

The circuit simply runs a continuous resistance test on the seal. When the electrical resistance changes due to wear, a signal is given to the operator.

The circuit can actually be sprayed into seals as a polymer film that's as thin as .002 in. thick. Different formulations are available for a variety of seal materials.

"We've had a lot of interest from major manufacturers. We think 'smart machines' - which can diagnose their own maintenance needs - are the wave of the future. This system not only monitors seals, it also monitors itself so that if a circuit is damaged in any way and not functioning, it will tell you," says Heinzman.

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sheet metal or 1 1/2 or 2 in. angle iron to make a covering over any bare plastic tubing where you've dug up the line to make a place to push or connect to another line. "Gophers have a tendency to dig into the trench and may chew up the plastic line if it's not

protected," Kallevig says.

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