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bearings, 3 hp. motor, and switch. I used the vise and blade holder from the old chop saw. It's well-balanced and with plenty of power to cut through 1/2 by 3-in. steel bar faster lying flat than the old saw did with metal lying on edge. I use standard blades. No problems at all after 3 years. It runs at 3250 rpm's. The drive pulley is 6 5/8 in. dia. The driven pulley is 3 1/2 in. dia."

Tyler Plocinski, Williamsport, Penn.: "I repair garden tractors and the best idea I've come up with lately is using plastic quart oil bottles to change oil. I cut a square hole out of the wide side of it. The work great to catch oil from the engines. They fit into tight spaces. Once one is full of oil, you can use the original spout to pour it out."

Chris Lynch, Sabina, Ohio: "When we poured our shop floor we installed four 4-in. well casings in the ground and welded 18-in. long chains in the bottom. We placed them in the floor on 8-ft. centers so we can use them to hold equipment for repair."

O. Douglas Holland, Bedford, Va.: He came up with a method that makes it easy to install sleeves in a Massey Ferguson Perkins diesel. He freezes the sleeves to shrink them and heats the block with a space heater to the point where it's too hot to the touch. Then he just presses the sleeves in.

Thomas F. Jackson, Jr., Bowling Green, S.C.: Thomas tried an idea that has been in FARM SHOW before and says it really works. "To remove a bearing race that's in a recessed or hard-to-reach place, just weld a short bead onto the race. The heat and drawing effect of the weld will make removal easy."

Charles Huegel, Venus, Penn.: "My 1977 Belarus 400 tractor didn't turn very sharp so I cut a 1 1/4-in. section out of each spindle arm. Then I welded the arms back together. This really quickened the steering and sharpened the turning radius. I'm sure the idea would work on other tractors."

John Meyer, Walton, N.Y.: "We had a problem hauling manure in winter to the top of hills. So we attached a bumper to the back of our Deere flail-type spreader. Metal brackets were welded on and a hardwood 2 by 6 plank attached. Then we put a metal pusher with an old tire attached on front of another tractor that we used to push from behind. Worked well."

Tom Macy, Spencer, Ind.: "I stopped a 3-pt. leak on my Deere 3020 tractor by not letting it down when parking it. Just remember to push the lever down again before starting."

Colin Collins, Myrtle, Miss.: "The Powershift on older Deere tractors with cables can be hard to shift. I clamped a rubber hose onto the cable cover, and clamped a grease zerk into the other end of the hose. Then I pumped grease through the length of the cable. The tractor now shifts like new. One cable was full of dirt and dry grease. To clean it before greasing, I clamped a tire valve stem into the hose after first filling the hose with parts cleaning fluid. Then I blew in air to clean the cable by forcing the fluid through. This repair works best if you work from the lower end of the cables at the transmission where it's easiest to detach the cables."

Perry Hathaway, Claypool, Ind.: "To hook a battery charger up to a 600 Bobcat, I put an extension onto the positive cable so I don't have to take the seat off to charge it."

How To Make An Engine Last Longer

In a recent issue of FARM SHOW there was a brief mention about diesel engine cylinder liner corrosion. Engineer Kevin Johansen, Mound, Minn., contacted us with the following comments.

"I now work with big railroad maintenance equipment of 4,000 hp. and up, but I did a lot of farm mechanical work years ago. At that time, we knew almost every farm engine we tore down would have tapered wear in the cylinder. The widest, belled-out part of the cylinder is at the top. Wear decreases towards the bottom, resulting in the familiar taper to the cylinder. This taper was attributed to mechanical wearing due to the piston side forces. It was one of those folklore items that 'everybody knows is true'.

"However, I noticed that the hardest-working engines, which should have had the most wear, seemed to have the least taper. The bores might have more overall wear, but the wear was more uniform with little tapering. Those with the most severe tapering were the chore tractors – small loader tractors that got started and used every day, in all

kinds of weather. Often for only a short time.

"The second clue to solving the problem is that the side forces of the piston are not at a maximum at the top, where the wear was the greatest, but further down the stroke. I ignored both these signs because of what I – and most other mechanics – knew to be true.

"Several years later, while doing research on diesel engines, I found an SAE research paper on cylinder corrosion during the cold startup of an engine. The essence of the paper was that byproducts of combustion can condense, form acids, and attack lubrication and the cylinder liners underneath. The acids are worse at the top of the cylinder since they are exposed to the wall the longest. There is a critical temperature range of between 100 and 160° F. Above and below that range, less damaging acids are formed.

"Bingo. Chore tractors are started up 365 times a year to get 300 hours on them. Big field tractors are started up 25 times a year to get the same 300 hrs. on them. So engine wear in the big tractors is more truly wear due to hard use. Wear in the smaller engines

is more from corrosion and loss of lubrication.

"What this taught me is that getting longer engine life involves four simple, easy steps:

"1. Maintain the cooling system, including fluid and pressure cap.

"2. Get the engine hot as soon as possible to get through those damaging temperatures. Keep the thermostats working. Cover the radiator with cardboard. Use block heaters or oil pan heaters. I have a stick-on oil pan heater wired together with a block heater on all vehicles. I plug them in at night and have a simple 24 hour timer that comes on an hour before I need the equipment the next day.

"3. Change oil frequently to get the acids and particulate out of the engine.

"4. Always question the 'conventional wisdom'. Like someone said, 'It's not all the things I know that cause me problems, it's the things I know that ain't so.'"

Contact: FARM SHOW Followup, Kevin Johansen, 2148 Basswood Lane, Mound, Minn. 55364.

Portable Lift Makes Small Equipment Work Easy

Here's a handy new lift for anyone who does a lot of work on mowers or has thought about opening a sideline repair shop.

The Heftee 250 is a free-standing service lift that you can roll anywhere inside your shop. It's designed to hold push mowers, chain saws, small engines, and other equipment. It'll handle up to 250 lbs. The base of the unit rests on a U-shaped steel frame.

A pair of channeled lift arms mount on a rotating head that's attached to a vertical steel mast. The arms can be adjusted from 16 to 42 in. wide. A pair of straps secure the equipment to the arms. You crank a handle to raise the arms up to 48 in. high. The arms can be rotated up to 360 degrees to provide optimum visibility and access to any part of the repair item. (There are 12 locking positions, one every 30 degrees).

"It works much like a free-standing fork-lift and requires no in-ground installation at all," says Kelly Johnson, McCause Engineering, Oregon, Ill. "It eliminates the need to stoop down to the floor to make an adjustment or reposition the equipment on the floor or on the bench top. Separate brackets are



Locking Jaw Adjustable Wrench

It looks like a cross between a vice grips and a crescent wrench.

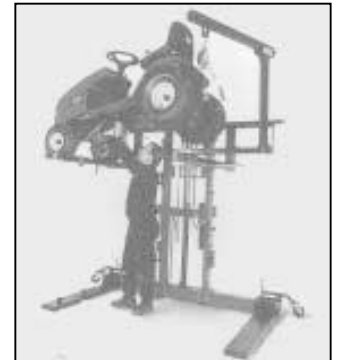
Stanley's new MaxGrip wrench has an adjustable jaw like a crescent wrench. You adjust to fit whatever nut or bolt you're trying to loosen. Then squeeze the locking handle down to tighten the jaws, which have just enough "wobble room" to clamp down tightly.

Sell for about \$25 in stores.

Contact: FARM SHOW Followup, Stanley Works, 1000 Stanley Dr., New Britain, CT 06053.



Free-standing Heftee 250 (above left) can handle push mowers, chain saws, and small engines, and can be fitted with a flat platform for standup work on small equipment. The Heftee 2000 (above right) lifts 2000 lbs. up to 6 ft. high.



required for chain saws, string trimmers, and small engines."

Sells for \$500 plus S&H.

The company also offers two larger electro-hydraulic, push button-operated models that run on 110-volt electricity. The Heftee 2000 can safely lift 2,000 lbs. to any height up to 6 ft., and the Heftee 4000 can accommodate equipment up to 87 in. wide and safely lifts

4,000 lbs. They can be used to lift riding mowers, garden tractors, etc.

Contact: FARM SHOW Followup, McCause Engineering, LLC, 107 South Daysville Road, Oregon, Ill. 61061 (ph 800 755-7540 or 815 732-7540; fax 2052; E-mail: mccauses@essex1.com; Website: <http://www.heftee.com>)

Hanging Tools In Shop

Here's a simple way to store garden tools which we spotted in Countryside magazine. A dowel or broomstick is mounted horizontally along the wall. Loops of twine hang from the bar. To hang up shovels, hoes, pitchforks, etc., you make a "slip loop" over the end of the handle. The weight of the tool keeps the twine tight. When you need to use it, just lifting up on the tool releases loosens the twine.

Takes up much less room than hanging tools on nails.

This simple idea for hanging hand tools saves room in shop.

