

current liquid level inside the drum, from 5 to 90 percent. An alarm goes off when the fluid level drops below 5 percent of capacity, while 3 LED's and an additional light at the top of the console illuminate to remind you that action is required.

Jason Lyon (jdgren4640@gmail.com): "In your last issue a reader complained about loose steering on his Chevy Tahoe. I used to be a GM tech and I've fixed lots of steering problems on earlier GM trucks. The problem often is in the EVO (electronic variable orifice) system that uses a solenoid valve (located on the power steering pump) to provide maximum assist at low speeds, such as parking, and gradually lessens the assist as speed rises to give the driver road feel. The culprit is the sensor at the base of the steering column that gets corrupted and sends a bogus signal to the solenoid. You'll notice it most on a long curve where there is moderate pressure on the steering wheel and suddenly it 'lets go'. It can be very disconcerting for the driver who suddenly finds himself swerving across the yellow line. It almost always happens in one direction or the other. Replacing the sensor (which is nothing more than a position sensor) fixes the problem and makes for worry-free steering. The steering column does not need to be removed from the vehicle to replace it."

Vernon Knack, Correctionville, Iowa: "To remove Deere axle wedges, it works really well to tighten the two pusher bolts as tight as possible with a 3/4-in. drive breaker bar and a 4-ft. piece of pipe. Then have one person put continuous pressure on one of the 2 bolts while the other one smacks the end of the axle with a 5 or 10-lb. sledgehammer. Amazingly, they usually break loose. Our dealer's shop foreman told me about this trick."

Tony Ryba, Johnstown, Penn.: "My 2001 F-250 Ford pickup with a 5.4 engine, has 144,000 miles and still has the original U-joints, starter and battery. Once a month I lube the U-joints with a motorcycle chain lube, working it into the joint with a small paint brush. Every other summer I unbolt the starter, and use motorcycle chain lube to lubricate the bushing and starter gear."

Michael Gacek, Minneapolis, Minn.: "I'm a real estate agent so I've seen a lot of clever and not-so-clever ideas in the homes I



sell. I liked this one. The top rail of a chain link fence is a piece of galvanized pipe that's plumbed into a water line at the house and 3 water spigots spaced every 20 ft. around the yard for watering plants and grass. That way you don't have to drag a hose all over the yard."

Dave Nicholas, Peebles, Ohio: "I save money by mixing Rustoleum thinning oil with non-Rustoleum oil-base paint to make rust-covering paint on the cheap."

Neil Richter, Barnes, Kan.: "The plastic fingers on combine reels bend back and break when you hit something hard. There's a plastic knob on the back end of each finger that fits into a hole for mounting. When a finger gets sheared off, I drill a small hole near where the knob was and insert a metal screw to hold the finger in place. Works just

as good as a new finger and saves \$3 apiece."

James Rhodes, Dayton, Va.: "I've seen lots of methods for getting 4020 Deere wheel centers loose from axles. If you can plan ahead, I've found that 'time' is the best way to do it. Just squirt used oil in the cracks between the wedges, take the cork out opposite the pinion gear pin, and put lots of oil in there. Let it go weeks or even months if you can. Then it'll all come loose."

"If you're in a hurry, loosen all big bolts and turn the 'jam bolts' up. Strike the end of the axle as hard as you can with a 12-lb. sledge. I've never seen it take more than 6 licks to break the center loose."

Roger Gutschmidt, Gackle, N. Dak.: "The clutch froze recently on my Deere 4010 tractor. When I stepped on the clutch the transmission would grind. The clutch plate was stuck to the splined shaft and I could not free it."

"I tried pulling the tractor while it was in gear to break the plate free but it didn't work. I then sprayed Penetrol 90 (a Schaeffers oil product) all around the splined shaft and surrounding areas. Over the next 24 hrs. I sprayed almost 3/4 of a can through the bottom cover that you take off to grease the throw-out bearing. It's important when doing this to have the clutch pedal pushed in. I wedged a block of wood against the pedal to hold it down."

"Anyway, the next day I put the tractor in 3rd gear and drove it out of the shop, jerking on the brakes while the clutch pedal was pushed in. It came free."

"My Deere service man said it happens sometimes to tractors that are stored for a while. He said most times the tractor has to be split to fix the problem, which can be a \$5,000 repair. My total cost was a \$7 can of penetrating fluid."

"A mechanic friend told me that when you store a tractor for a long time you should have the pedal pushed in. So I'm going to make up some wood blocks and use them on my 4010, 4020 and 4440 for winter storage."

Scott Wolf, Ramona, S. Dak.: "I pull my 2007 Agri-Fab 2-wheeled, hard top Mow-N-Vac lawn vacuum behind my riding mower. It does a beautiful job and really cleans up



my yard nice (ph 800 448-9282; www.agri-fab.com). My yard looks like a golf course when I'm done. The only problem was that if I turned too short around trees, one of the wheels would catch on the tree causing the box to tip over. I solved the problem by bolting 3-ft. long, aluminum 'handicap bars' diagonally onto both sides of the box. Now if the box hits a tree it just slides by it."

"The vacuum is powered by an 8 hp engine and it always starts right up, even when using old gas. I've never had an easier starting engine."

Walter Sprague, Orrtanna, Penn.: "The front axle broke down on my Massey Ferguson 205-4 MFWD tractor and I couldn't find the parts to repair it. Instead, I made a mounting system to attach a 1975 Ford 1/2-ton 4-WD axle to the tractor. I had to turn the axle upside down to use on front of the tractor. I fitted the axle with a 9-in. drive pulley that's belt-driven by a small pulley on the driveshaft. It worked out very well."

Shop Tree Holds Tools In Plain Sight

There's no digging through cabinet drawers or toolboxes when Brian Haubrich needs a 3/4-in. wrench or socket. Every tool he needs is out in plain sight.

"I got tired of looking for tools in cabinets, on hooks or on my workbench," says Haubrich. "I built a tool tree with long hooks and shelves to hold practically every tool I have. The best part is I can reach most of my tools without moving far from my vise."

The list of what the tree holds includes hundreds of sockets, and dozens each of wrenches, punches, chisels, cutters, calipers, pliers, screwdrivers and more. There is even room for a welding helmet as well as hacksaws, hammers and clamps. Amazingly, the entire tree takes up only a few square feet of shop space. Yet each item has its own spot with duplicate wrenches lined up on the same hook.

"I can hang a dozen 3/4-in. combination wrenches on a single rod," says Haubrich. "I keep lots of duplicates around. Even so, when you outfit a couple of air seeders or combines in season, the rack gets emptied out pretty quickly."

Haubrich used a baler flywheel for the base. He welded 1 5/8-in. pipe stubs in opposing holes of the flywheel. The actual rack, which is made from 2 by 2-in. square, 1/4-in. thick steel tubing, slips over the pipe.

Shelving is fabricated from 1/4-in. flat steel and hooks are 1/4-in. steel rod. Heavier wrenches are hung on 5/16-in. rod. Each socket sits on an upright peg on the shelf so they won't get knocked out of position.

"Each hook is marked for the size wrench that's on it," says Haubrich. "Shelves for sockets have the socket size marked as well. It makes it easy for my son or our hired men to grab the tools they need for the machine they are running."

Haubrich likes his shop tool rack so much that he made smaller versions for each piece of farm equipment. Racks with needed wrenches, sockets and other tools hang on the doors in the cabs or stand upright so they're easy to see and grab as needed.



"I built this tool tree with long hooks and shelves to hold practically every tool I own," says inventor Brian Haubrich.

"We all love these racks," says Haubrich. "When you get back in the cab, you see the tool rack and can immediately tell if any tools are missing. When you get back to the shop to put away the machine, it's easy to hang the tools back on the tree."

While it may be easy, Haubrich admits that it doesn't always happen, and the in-cab tool racks don't prevent tools from getting lost.

"I watch for sales at the stores and will pick up a couple sets," he says. "We always need more tools."

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He Made His Own Transmission Tool

The truck Steve Bellaw bought used had a bad automatic transmission that needed to be rebuilt. To rebuild it, he needed a clutch spring compressor.

"It's used to keep things from flying apart," says Bellaw. "The auto parts store wanted \$200 for the tool, but I couldn't justify the money."

After looking closely at the commercial version, Bellaw decided to try making it. He describes it as looking a bit like a backwards gear puller, pushing instead of pulling. It presses on the retaining washer in the clutch drum to compress the clutch piston return springs. This allows him to remove and later re-install the snap ring.

"I used 3/8-in. steel that was 3/4 in. wide for all the pieces," says Bellaw. "I drilled out a hole in a 4 1/2-in. long piece to make a T-handle for the carriage bolt that does the pushing. I welded the bolt in place."

He cut 2 slots in a 6-in. long piece of the steel and threaded a hole in the center for the carriage bolt. The spring retaining arms are 3 in. long with holes drilled and threaded in one end of each for bolts. Once properly spaced to match the size of the spring, wing nuts secure them in place.

For a "pusher" plate, Bellaw machined a circle of 3/8-in. steel and threaded it for the



Steve Bellaw built this clutch spring compressor for an automatic transmission that needed to be rebuilt.

carriage bolt. He installed a lock nut at the end of the bolt.

"It took a little lathe work and some machining, but it works great," says Bellaw. "I've used it for other applications and loaned it out to friends. Bottom line is don't let them tell you that you need a special tool or part. You can always come up with something."

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