

Underground Antifreeze Helps Start Van

On cold winter days George Friesen of La Crete, Alberta, pumps anti-freeze out of the ground to start his van.

Friesen has a solar-powered home so he didn't have enough electricity to power a plug-in engine heater. He solved the problem by coming up with a way to warm up the engine using anti-freeze pumped up from underground pipes.

He buried 200 ft. of 1/2-in. dia. water hose 10 ft. deep underground. The hose is filled with a total of about 4 gal. of anti-freeze. The two ends of the hose come up out of the ground through a 3-in. dia. pipe that provides frost protection. Quick couplers are used to connect the hose ends to the van's heater hoses.

A 12-volt pump plugs into the van's bat-

tery and is used to pump anti-freeze through hoses from the ground into the engine and then back into the ground again.

"I've used this system for two winters and it works fine. It's safe to use and warms up the engine nicely," says Friesen. "I let the pump run for about 20 minutes before I start the van.

"One time the outdoor temperature was almost 40 degrees Fahrenheit below zero. But after the pump had operated for only about 20 minutes, the water running through the engine had already warmed up to 22 degrees Fahrenheit above zero."

Friesen says it's not an expensive system and it works fine, as long as you have enough water hose and enough anti-freeze



A 12-volt pump plugs into van's battery and is used to pump anti-freeze through hoses from the ground into the engine.

underground. "The more hose you have underground the better, because the cold water in the hoses will have more time to warm up as it circulates," he notes.

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Easy Way To Get Fuel Flowing

"Before retiring, I ran a small engine repair service and one of the most common problems I saw was fuel system problems in riding mowers," says Eldon England, Jameson, Mo.

"Many small tractors have the gas tank under the seat with a small diaphragm-type fuel pump built onto the carburetor. These work very well once the engine is running but after a mower sits for a while, the diaphragms tend to dry up. This can result in hard starting even after just a few days. Sometimes you have to prime the carburetor manually to start one of these engines.

"I solved the problem on many tractors - including my own Sears Craftsman 16 hp twin cylinder - by installing an outboard motor primer bulb in the gas line. Before

starting the engine on my tractor, I lift the hood to squeeze the bulb a few times to get gas to the fuel pump. It starts every time, even after sitting through the winter months.

"A more elaborate cure is to install a small electric fuel pump available at any auto parts store. It can be installed anywhere under the hood with a small push button installed on the dash, wired directly to the battery with a 30-amp inline fuse for safety. Then you just hold the button down until the engine starts.

"Both methods work well on any mower or smaller machine with the gas tank installed at a level lower than the carburetor."

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Homemade jig allows cutting and welding the broken guards together.



How To Repair Broken Sickle Guards

Jim Taylor teaches advanced welding at Morrisville State College in Morrisville, New York. When one of his students came in with a 5-gal. pail full of broken combine sickle guards, the class decided to make a jig that would allow them to cut and weld the broken guards together.

"The student's dad had saved the broken guards and put them in a pail in his shop. After we rebuilt the guards he bolted them back onto his Deere soybean header. We made both two and three-section guards. He saved a lot of money because new triple guards sell for \$45 apiece or more, and new double guards for at least \$20," says Taylor.

The jig is made from an 8-in. length of 3/8-in. thick angle iron and has a length of 7/8-in. dia. round bar welded onto one edge of it. The rod is there to line everything up. They

set the grooved side of an unbroken guard down over the bar, then drill a pair of holes in the jig and insert studs through them. They put a nut on each stud to keep the guard in place, then weld in new material on both sides of the broken guard. When they're done they unbolt the guards from the jig.

"It works good. In fact, the student said his dad has had better luck using the sickle guards we welded together than he did with new ones, because they weren't as likely to break," says Taylor. "The round bar has to be in precisely the right place in order to hold everything together correctly."

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Screws With An Extra "Bite"

These new-style screws come with patented thread serrations, which allows them to more easily penetrate wood.

"Spax" screws feature a special 4-cut point thread serration near the tip.

"They're more expensive than ordinary screws but worth the extra cost," says Larry Harsila, Altenloh, Brinck & Co., Inc., Bryan, Ohio. "The 4-cut thread serrations help move fibers of wood around for better holding power. They also reduce the amount of torque needed to drive the screws in. Most times you won't even need to drill a pilot hole to avoid splitting the wood."

Another advantage is the screw head design, which can accommodate both a Phillips screwdriver and a square drive bit. "The screw head is quite deep so your screw driver fits into it better and is far less likely to spin out," says Harsila.

The company also offers a variety of other screw designs for specific jobs and material types. For example, its MDF screw is specially designed for medium density fiberboard and won't split the fiberboard even when used close to the edge. Screws designed for outdoors use have an additional barrier coating on them that resists corrosion. Multi-



A special 4-cut point thread serration near tip of screw allows it to more easily penetrate wood.

material screws for use in wood or light gauge metal can be used in masonry block or concrete, provided you pre-drill a hole. Lag screws with built-in washers are also available.

Spax screws are available at Home Depot and Menards.

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Tank is mounted on a 2 by 4 wood frame, and filled with ground corn cobs. As tank slowly spins the cobs polish any item inside.

Water Tank Makes Great Metal Polishers

Old water pressure tanks make great metal polishers, says Robert Ferreira of Crystal River, Fla. The retired electronics engineer melts down lawn mower engines and casts the metal into art work. To polish off the rough edges, he throws the small sculptures into his homemade polisher.

Ferreira cuts a hole in the side and adds edges to the piece he cut out to make a secure door that he can bolt tight.

Mounted on a 2-by-4 wood frame, the tank spins slowly, powered by an old 1/4 hp motor and a couple of pulleys from a clothes dryer. Ferreira fills the tank with ground corn

cobs and runs the polisher several hours to polish an item. Or, he places the item in a plastic gallon jug filled with metal grit and ball bearings, and then puts the jug in the polisher.

Most people have the materials right in their shop to build a polisher, Ferreira says.

"Make stuff out of what you can get for nothing. That's the joy of it," he says.

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