

How To Weld On Used Oil Field Drill Pipe

By Ron Galloway

In many areas of the U.S. and Canada used oil field drill pipe is cheap and easy to find. But welding it can sometimes be tricky.

The problem is that during normal use, drill pipe acquires the properties of a permanent magnet. The strong magnetic fields at the ends cause the electric welding arc to sputter, fluctuate, and leap wildly from side to side of the joint, making it difficult to get a good weld. Retired drill pipe is rarely used outside the oil fields in full lengths. When lengths are cut into two or more pieces, both ends of each segment will exhibit the same permanent magnet properties.

The challenge is to remove or completely neutralize the strong magnetic fields. To do that, we simply take advantage of the basic electro-magnetic principle used in creating an electro-magnet - that of wrapping an insulated wire around an iron core and then applying a direct current.

In this case the iron core is the drill pipe, the insulated wire is a few feet of your stinger

whip lead, and the direct current is supplied by the welding machine as soon as you strike an arc. It will continue as long as you are welding.

Both north and south polarities can be neutralized by this same method, the difference being the direction that you wrap the stinger lead around the pipe. Wrapping clockwise will produce one polarity and counter clockwise will produce the other. Polarity can be established by a simple compass test but it isn't necessary to use this principle. If you're wrong you'll intensify the magnetic field and your arc disturbance will be intensified also. Simply stop and rewrap the other direction.

There is no simple field test to establish the intensity of the existing permanent magnetic field. The intensity of your induced electro-magnetic field will be affected by the amperage setting of the machine and the number of wraps of cord you put around the pipe. The amperage is usually set by the rod size and the technicians preferred arc heat so the

easiest way to adjust the electro-magnetic field strength is with the number of wraps.

Experience shows, if your machine is set for 1/8-in. rod, you would start with six wraps and adjust more or less until you achieve the desired results. It's important that the lead be tightly wrapped both against the pipe and against each other, while keeping the wraps 4 to 5 in. back from the end being welded so as not to burn the insulation covering the lead. Start your wraps far enough back from you stinger that you don't restrict your freedom of movement of the stinger. Tests show that once the root pass has been completed the wraps can be removed and normal welding will resume.

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To neutralize strong magnetic fields, Galloway wraps lead wire around pipe before applying direct current.

Handy Folding Multi-Tool

You can do a lot with this new folding multi-tool called the RascalRule®.

It does the job of a level, square, bevel, and ruler.

"It does some things that you can't do with any other tool," says John Giza, president of Giza Industrial. "Best of all, it folds up to fit in your pocket."

The device can be used to do the following: measure odd or awkwardly shaped items, square 90° angles, find level, measure any mitre joint, linear measuring (as a stiff ruler to extend your reach 24-in.), determine the pitch of a roof from a distance above or below the rafter, gable end, etc., measure roof pitches over 12/12 or 45° (just fold over the horizontal section of your RascalRule to 90° from the level bubble), as a stair gauge, and as a bevel.

RascalRule is made from rugged fiberglass/mineral-filled nylon composite for strength, stability and durability. All of the

metal components of the RascalRule are stainless steel except for the rivet, which is composed of a rust resistant alloy.

According to Giza, RascalRule is suitable for use under adverse conditions such as those found in the mining industry (this is what Giza first designed it for).

The tool offers Imperial (inch), metric (centimeter), degree (for measuring angles) and percentage grade measurements (for measuring low angle slopes).

The RascalRule has the inch scale going from left to right on one side of the rule, while on the other side, the inch scale goes from right to left. This is to help when measuring off a center reference line.

For added convenience, the device is designed to "click" on the most commonly used mitre angles of 0, 45, 90, 135, 180 degrees. These pre-set angles make work go quicker and easier.

If need be, the RascalRule will also stand



Folding multi-tool does the job of a level, square, bevel and ruler. Device is designed to "click" on the most commonly used mitre angles.

on its own by simply opening one of the arms of the rule to create a stable base. To keep it handy, it can be clipped on to your clothing while working by opening and closing the arms onto the bib of your coveralls.

This device comes with a one year guarantee (under normal usage conditions) and sells for \$24.95 (Can.) plus \$5 S&H, regardless of size of order.



The Rascal Rule is also available in a metal version, and custom imprinting of either type is optional.

Giza says his popular, multi-purpose tool has been sold on every continent.

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Pneumatic Shift Added To Vintage Versatile

While rebuilding the engine on his 1974 850 Series Versatile tractor, Jim Hermanski, Enid, Okla., decided it was time to do something about the old tractor's inherent shifting problem.

"These are great tractors, and their 3-speed transmissions with four ranges allowed them to be used for a wide range of field work," Hermanski says. "The problem was that after you'd used the tractor a little, the remote shifter box wore down and it was hard to keep it from shifting into two gears at once. All the Versatiles with this transmission are notorious for this."

Having lived with the problem since he bought the tractor used in 1978, Hermanski had given plenty of thought to a solution.

"I worked for years as a truck mechanic," he says. "A lot of trucks with that same engine had pneumatic shifters, so I decided I could put one on the tractor and solve the problem."

His first step was to hunt down a used air compressor and an accessory drive assembly that had been used on the same model Cummins engine in an over-the-road truck.

"The Versatile engine was exactly the same as the truck engine, so all the mounting holes were already there. All I had to do was put it in place and add a coolant line to keep it cool," he says.

His idea was to replace the manual transmission shift lever with small pneumatic cylinders that would shift the gears. "I worked for an International Harvester truck dealership here in Oklahoma, and we worked on a lot of oil drilling equipment," he says. "So I was acquainted with a type of air spool valve used to control the pto on drilling rigs. They're small cylinders with a very short stroke."

Hermanski decided on some dual cylinder spools that had been used on a Speed Star transmission. They have buttons on them to control the rams. Since he was replacing the floor shifter (three forward speeds and reverse), two dual blocks were enough. He bolted the two blocks together, allowing him to shift using just four buttons.

"When all four are down, it's in neutral. Then there's one button for reverse and one for each of the forward gears," he explains.

"There's a clevis on each end of the pneumatic cylinder. One end hooks to the shift lever and the other to a stationary point, so I had to build stationary pivot points on the tractor frame for the rams to hook to. On the top shifter, I had to build a bracket that came off the side plate of the transmission. And I had to match the angle for the neutral position on the shifter. It took a little designing to get the stationary points made, but it wasn't



While rebuilding the engine on his 1974 Versatile 850 series tractor, Jim Hermanski decided to add a pneumatic shifter to solve the old tractor's inherent shifting problem. He bought a used air compressor (upper right) and an accessory drive assembly. Photo at right shows shift control valves.

that difficult," he says.

"I figured I'd have to make new levers on the transmission to get the stroke right, but the ones that were on it worked just right," he continues.

He found all the parts he needed (except for air lines, which he purchased new) at Southwest Truck Supply, Pratt, Kansas. "I had to rebuild the spool blocks and, because they were old, I went through several before I could get two that would seal up tight.

"What took the most time was running the air lines. I think there were 10 of them in all," he says.



"You still have to use the clutch to shift gears. And if you happen to pull up two buttons at once, it'll still shift into two gears," he says. "But it doesn't jam that way. All you have to do is push down one of the buttons and it corrects itself."

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