

Farmer-Designed Full Feature Plasma Table

By Jim Ruen, Contributing Editor

Paul Devloo couldn't justify the cost of a commercial grade CNC plasma cutting table so he built one himself. He first used the 48-in. sq. table to build access steps to attach to Lexion combines' grain tanks. The idea was to make it easier for operators to clean the windows or unplug the impeller. Once he had sold the \$450 steps to Lexion owners all across Canada, he decided to start building his plasma tables for sale.

"At that point my table had worked flawlessly for close to 3 years, and I knew it would be a great addition to anyone's farm shop," recalls Devloo, a mechanical engineer and farmer. "I knew the technology had improved and I could source better parts to build an even lower cost table. I figured out ways to get it simple enough for anyone to run."

One of the downsides to plasma welders is their toxic outgassing, which also dirties up the shop. So Devloo has included a water tray in his newest tables.

"I didn't have that on my original table, and after building so many steps, my shop was a mess," says Devloo. "The water tray underneath the cutting table absorbs all the toxins and contaminants. It leaves the job

and the shop clean, even reducing the slag on cuts."

Software is key to any CNC table. "I was able to find open-source CAD and low-cost CAN software," says Devloo. "Using open-source software instead of proprietary means you have an entire community of users and developers to ask if a problem comes up. You don't have to wait until business hours to get support. It's available 24/7."

He is proud of how user-friendly the software is. "All the parameters are in the software," says Devloo. "You just pick out the type of plasma welder and type and thickness of the metal. You just tell it where you want to start the cut and where to end it."

Devloo uses his table with his Hypertherm XP45 plasma welder. However, he says it can be used with virtually any plasma torch. Not wanting to lose the versatility of a handheld plasma jet, he designed the table with a quick disconnect.

"So many tables require a \$1,000 dedicated torch," says Devloo. "Mine uses a handheld torch that can be quickly released for use freehand."

The table comes with everything needed except for a torch and a laptop. The total price



Plasma table comes with user-friendly software, making it simple to operate. Quick torch disconnect (below) allows table to be used with a handheld torch.



is \$4,000 Canadian. The table has the needed software, computer stand, water tray, V-slot rails, 3 Nema 23 stepper motors, controller and power supply, wiring, steel table legs and frame.

"I sold my first new plasma table to a farmer in the area, and he was cutting with it right away," says Devloo. "He's having great luck with no training."

Devloo suggests that other farmers may find an opportunity to do what he did with

his grain hopper steps. "You can conjure up what you need," he says. "If others need it too, you have repeatability to make more and sell them. I don't encourage people to buy it for that reason, but simply to make the parts you need when you need them."

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Jack-Operated Roller Stand

"I salvaged the hydraulic jack off an old dump trailer to build this infinitely adjustable roller stand. I use it with my lathe and mill, and sometimes my welding table when handling long material. It works great to move objects along as I work on them," says Dennis Hartmann, Double D Machine Shop, Yankton, S. Dak.

The hydraulic jack came equipped with a 22-in. long, 1 1/8-in. dia. cylinder and an internal pump. It came off a wrecked trailer. The top end of the cylinder was damaged so Hartmann cut it off. He made a metal sleeve to slip over the top of the jack's 22-in. long, 1 1/8-in. dia. cylinder, and welded a V-shaped bracket onto the sleeve that slips over the cylinder. He then bolted a pair of multi directional, load-bearing transfer balls onto both sides of the bracket. The bottom of the cylinder clamps onto a 4-wheeled base made from a 10-in. dia., 1/4-in. thick steel plate.

A pair of levers attached to the top of the cylinder housing are used to operate the pump.

"It works great to keep long material steady, and the transfer balls make it easy to rotate the material," says Hartmann. "I use one lever to operate the pump and the other handle to open a valve that lets me retract the cylinder," says Hartmann. "At first I attached a foot-operated lever to the pump and ran a long rod from it up to the top of the cylinder. However, I found the foot-operated lever was difficult to operate so I switched to the hand-operated design," he says, noting that hydraulic jacks similar to the one he used are available at a reasonable price from Harbor Freight.

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Hydraulic jack is equipped with a 22-in. long cylinder, an internal pump, and a pair of load-bearing transfer balls at the top.

UV-Activated Repair Patch

This reinforced self-adhesive repair patch is activated by ultraviolet light so it works fast.

The DurapatchUV patch is made from reinforced polyester and comes with a white backing tape over the adhesive. You just clean the damaged area with glass cleaner and select a patch large enough to cover the damage. Then firmly apply the patch over the damaged area and press out any air bubbles.

According to the company, the patch cures in just 5 min. of direct sunlight or 50 min. in cloudy weather. The material can be applied to any surface except polypropylene and quickly cures hard as a rock. There's no shrinkage or expansion during application or after curing.

Durapatch is available in 4 sizes – 2 by 3-in., 3 by 6-in., 6 by 9-in., and 9 by 12 in. – although you can cut any size patch you need from a larger one. The patch can be drilled, tapped, sanded or painted in less than 1 hr. after it's applied. It's resistant to chemicals,



Self-adhesive repair patch cures in just 5 min. of direct sunlight.

solvents and oils.

Prices range from \$8.99 to \$34.99 depending on patch size.

Contact: FARM SHOW Followup, Hastings Equity Mfg., 1900 Summit Ave., Hastings, Neb. 68901 (ph 402 462-2189; e.pjohnston@hastingsstank.com; www.durapatchUV.com).

Grinder Converted To Right Angle Drill

Mike Toppen, Allegan, Mich., tapped the back side of an old Jacobs drill press chuck with 5/8-11 thread, allowing him to also use his DeWalt cordless angle grinder as a right angle drill.

"By using the angle grinder with the threaded chuck and a drill bit, I can use one piece of equipment to do 2 different jobs," says Toppen, who works for a mobile repair business. "I carry my tools with me in my pickup and the fewer tools I have to carry around, the better," he says.

Toppen found the 1/2-in. drill press chuck in a box of junk that he bought cheap at a sale. He used a lathe to bore a tapered hole into the back of the chuck, and then tapped it with a 5/8-11 thread - the same thread found on the cordless angle grinder.

Toppen says he's surprised that DeWalt doesn't make an adaptor chuck designed to convert an angle grinder drill to a right angle drill. "Maybe it's because angle grinders don't operate with as much torque and the rpm's are higher, limiting you to bits with higher cutting speeds.



By tapping the back side of an old drill press chuck, Toppen can use his DeWalt cordless angle grinder as a right angle drill.

"For example, a DeWalt 4 1/2-in. angle grinder like mine is designed to operate at 5,700 rpm's, whereas large drill bits are designed to operate at a lower cutting speed with more torque. But my right angle drill conversion is still a handy tool for just drilling a hole through something in close quarters where a drill won't fit."

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