

# Custom Hot Rod Table Saw

by Chuck Green



My table saw is a 10-inch Delta Contractor's Saw. It has a 120-volt, 1½-hp motor and a 30-inch rip fence. I've added extensions and roller supports for cutting both long and wide stock, and an under-table router mounting so I can use my router with the table saw's rip fence and miter gauge. When I saw an upgrade kit called the Contractor's Saw Performance Package (from Inline Industries; 800/533-6709) at a local tool dealer recently, I snapped it up.

The literature that came with the upgrade kit said that the belt connecting the motor to the arbor was one source of problems with the saw. When the saw isn't running, and the belt is sitting still, it develops a "memory" where it curves around the pulleys. These lumps never really work themselves out, so when the saw is running, they cause lots of vibration on the machine.

Another problem area is the pulleys themselves. The tiniest imperfection in the manufacture of these parts can cause them to wobble and contribute



**Figure 1.** The weird-looking Red Power Twist Belt from Inline Industries is a series of linking segments, each of which is just over 1 inch long.



**Figure 2.** To make the final connection, the longer tab goes through both layers of the slotted piece, while the shorter tab goes through just one. Once you've turned the tabs, the belt is locked.

to the vibration.

The upgrade kit supplied a very unusual type of replacement belt and two replacement pulleys.

## The Weird-Looking Belt

The belt is called the Red Power Twist Link V-Belt. It's made of a tough, flexible bright red material (a urethane polymer supported by multiple plies of a solid polyester woven fabric). The belt consists of several interlocking pieces, each just over 1 inch long (see Figure 1). The pieces come as a long strip that needs to be connected end to end to form a loop.

The Power Twist is ½ inch wide and tapered at the sides. But the connecting tabs and slots (Figure 2) make the upper and lower surfaces very lumpy, which is to be avoided with a standard V-belt. The top and especially the under surface, where the interlocking tabs protrude, don't look capable of running smoothly through anything. But the belt runs smooth as can be, and the saw had noticeably less vibration immediately. The belt transfers power from the motor more efficiently because the links act as shock absorbers, dampening and dissipating vibrations.

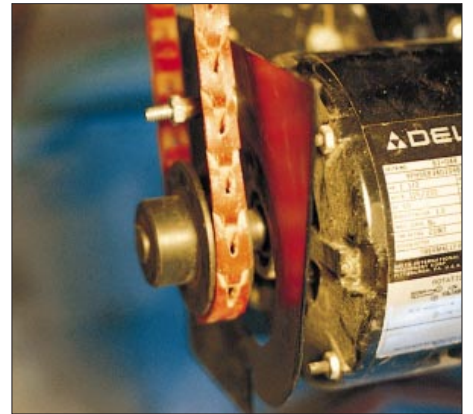
I once saw a rep from Inline Industries demonstrate the Red Power Twist Link V-Belt at a trade show using a Craftsman table saw with a 4-foot piece of strapping C-clamped to the bed. When he ran the saw with the original V-belt, the end of the strapping vibrated vigorously. After swapping the V-belt for a Power Twist belt, the saw ran so smoothly that a coin placed on the end of the strapping didn't fall off.

## The Pulleys

The second part of the upgrade involves replacing the 2½-inch pulleys on the motor shaft and blade arbor. The kit supplies a machined, balanced steel 2½-inch pulley for the motor shaft, and a 3-inch pulley for the blade arbor. On the new pulleys, the center

hole has been used as a reference for machining the steel blank. This ensures that the walls have precise and consistent spacing, which reduces much of the vibration.

The only difficulty I had was removing the old 2½-inch arbor pulley, which was hard to get to and required two soakings with Liquid Wrench. Even then it took two of us using long wrenches to break the pulley free. The larger drive pulley on the motor's shaft increases the blade speed from 3,100 rpm to 4,100 rpm. After running the belt between the pulleys



**Figure 3.** This is what the belt looks like in place on a Delta saw. Because the link belt can't develop a "memory" when it's sitting still, there is less vibration when it's running.

and replacing the pulley guard next to the motor, the upgrade was complete (Figure 3). My saw runs better than ever, at a total cost of about \$35.

Joe Morreale, a Delta Unisaw owner, replaced the original belt on his saw with a Power Twist. Joe says, "The Unisaw is heavier all around, so the difference is not as great as with the Contractor's Saw, but there is clearly less vibration, particularly on startup."

## Kits for Other Tools

In addition to distributing kits for table saws, Inline Industries sells the Red Power Twist V-Belt by the foot. The belts are available in ¾-, 1½-, and 5/8-inch widths, plus two metric sizes for imported saws. For imports, you can supply Inline with the serial number and date of manufacture, and they will find the matching belt size. ■

*Chuck Green is a NARI Certified Remodeler. He runs Four Corners Construction in Ashland, Mass. Photos are by the author.*