CIRCUITRON TORTOISE: AN EASIER WAY

By Bob Sobol

If you have ever had the "joy" of attaching a Circuitron Tortoise switch machine under the layout, you may have expressed a few choice words after wondering what in the world the manufacturer could have been thinking. The directions are not very easy to execute when crawling under the layout and working upside-down.

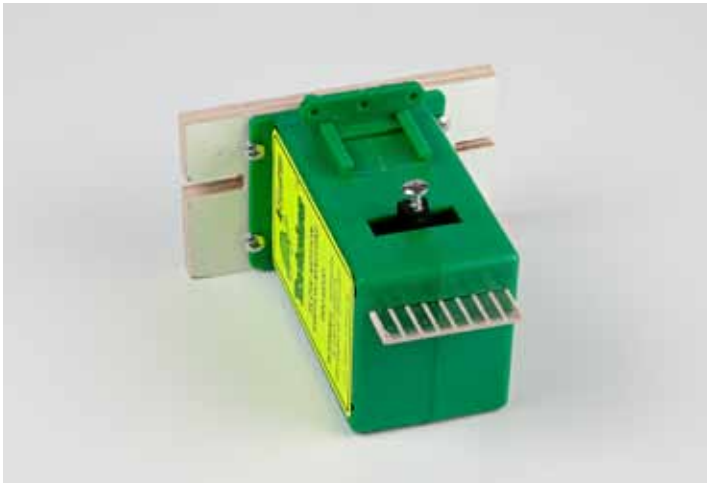
First we must accurately mark and drill four tiny mounting holes under the layout (paper template provided) and locate them in precise relationship to an actuating wire hole drilled all the way through the roadbed.

To mount the motor in place, we raise the motor to the layout and thread a short piece of piano wire though a tiny hole in the turnout throw bar. It is difficult to thread what we can't see. Once that is completed, we hold the motor in place with one hand and attach four #4 mounting screws (not provided) without dropping any of them. Next we learn that the motor location needs to be adjusted.

There is a much easier way to attach a Tortoise, one that starts prior to installing the turnout. After locating and drilling the hole for the throwbar actuating wire, put a Roto Zip bit in the Dremel and route the hole into a slot that runs along the direction of the ties. The extra clearance will allow you see what you are doing when threading the actuator wire through the throw bar.

Make a small slotted mounting plate out of 1/4 inch wood floor underlayment plywood. It is easy to accurately drill

Tortoise, Starrett cutnippers, piano wire, and automatic center punch.



Attach the Tortoise to the board at the work bench.

4 mounting holes and cut a pair of adjustment slots at the bench.

Get a longer piece of piano wire, of beefier gauge if needed, and attach it to the Tortoise. On David Stewart's A&O we use one foot long straightened wire from Enco. Gently move the motor to the middle of the throw range.

Place a desk light directly over the turnout throw bar so it shines light through the actuator hole. Crawl under the layout with the Tortoise and a scratch awl or automatic center punch. Thread the longer actuator wire up through the brightly-lit hole in the throw bar and hold it against the layout. Adjust the position until the turnout points are centered (a helper makes this easier.) Use the awl or punch to mark two screw locations, placed in the middle of the adjustment slots.

Remove the motor, drill the mounting holes, then repeat and screw it in place. If the points are not centered in throw range, loosen the two mounting screws and adjust the plate.

Piano wire is pretty nasty stuff to cut as it will quickly ruin a pair of Xuron rail nippers or diagonal cutters. With over 200 turnouts on the A&O 2.0, we picked up a used pair of Starrett piano wire cutters off eBay. Trim the piano wire once everything is adjusted and working to satisfaction.

The Tortoise is a great turnout motor, and one that *can* be fairly painless to attach to the underside of your layout. I