Delta Unisaw Miter-slot Tune Up

August 21, 2004

Tom McDermott

My new Delta Unisaw™ arrived last fall. After building a workbench for the garage, it was time to build some cabinets. The experience gained in building the workbench taught me that it is sometimes difficult to achieve precisely 90-degree cuts on larger panels. So I constructed a panel-cutting jig as described by Norm Abrams on "The New Yankee Workshop". At first ¾" oak was used for the sled runner, but it was a pretty sloppy fit in the Delta t-style miter slot and didn't really help the accuracy of the cuts. Then the oak runner was replaced with an Incra™ adjustable-width aluminum miter slider (figure 1).

Figure 1 – Panel cutting jig with Aluminum Incra miter slider.

The miter slider (runner) has three width-adjustment points. At each point a screw can be tightened in order to increase the width by some thousandths of an inch at that adjustment point (figure 2). This helped tighten up the runner in the slot a bit, but the panel cutting jig still would twist about 1/32". It was possible to tighten the Incra runner more, but then the runner would not slide along the length of the miter slot, because the Unisaw miter slot had about 0.011" of variation in its width. The widest part of the runner would bind in the narrowest part of the miter slot. The solution would be to even out the miter slot so that the width was more or less constant along the length of the slot.

It was pretty easy to find the narrow part of the miter slot. Two of the three adjustment points on another Incra runner were loosened completely. Then one of the adjustment points was tightened. The runner was slid back and forth in the slot to find the loose part of the slot, then the runner was tightened a bit more. After this, the runner could be slid, and it was obvious where the narrow parts of the miter slot were – it was where the runner would bind up. The right miter slot had a narrow point right at the entry point to

the table, while the left miter slot had three narrow points. All four points were marked with a pointer on the table top (figure 3).

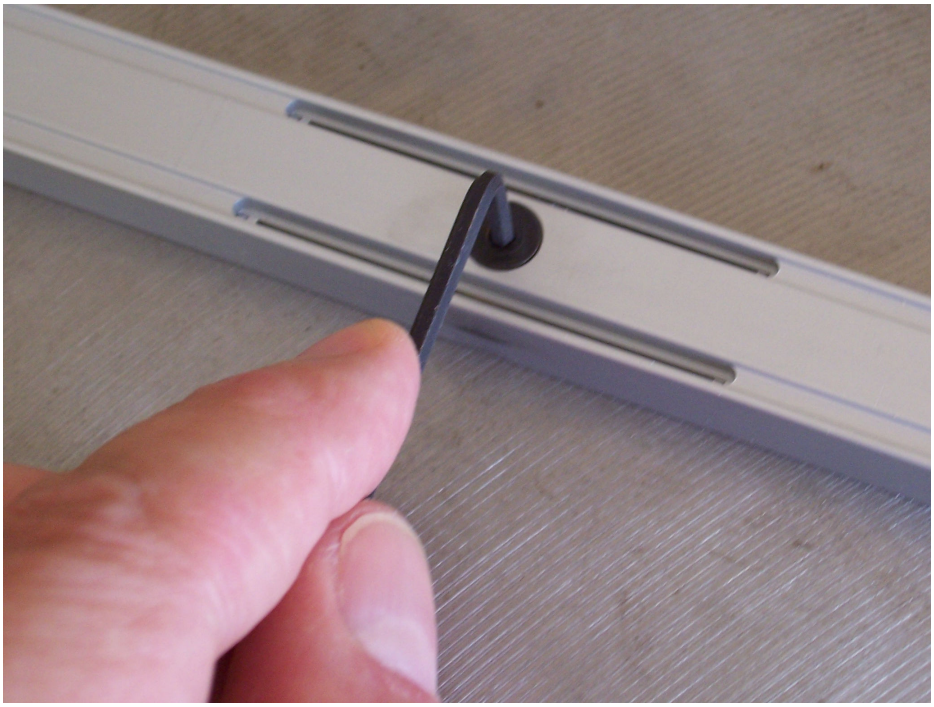

Figure 2 – Incra Miter Slider width adjustment screw

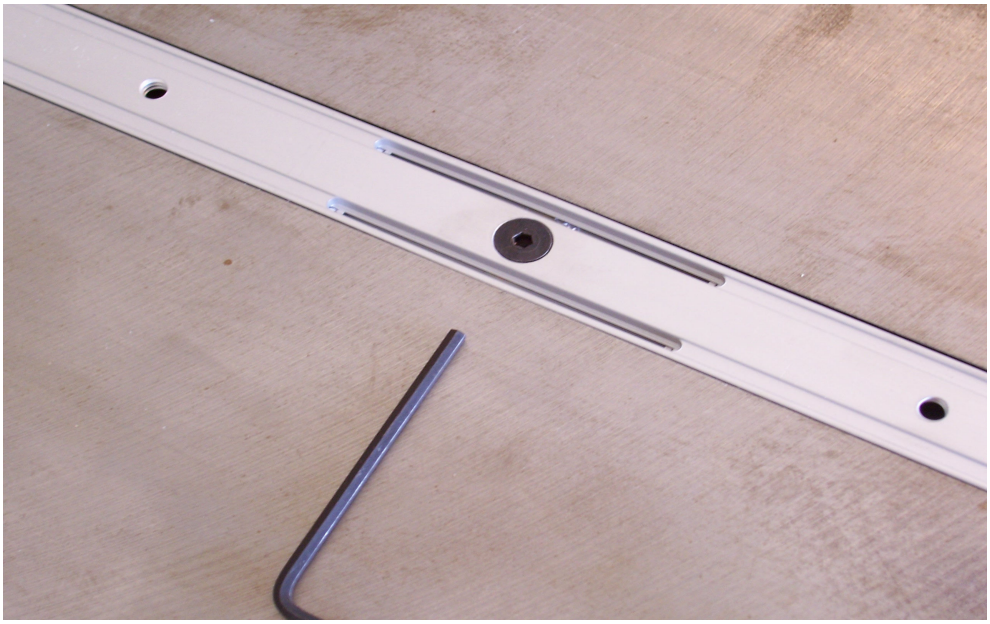

Figure 3 – marking the narrow part of the miter slot(where the runner binds as it is slid to the left and right).

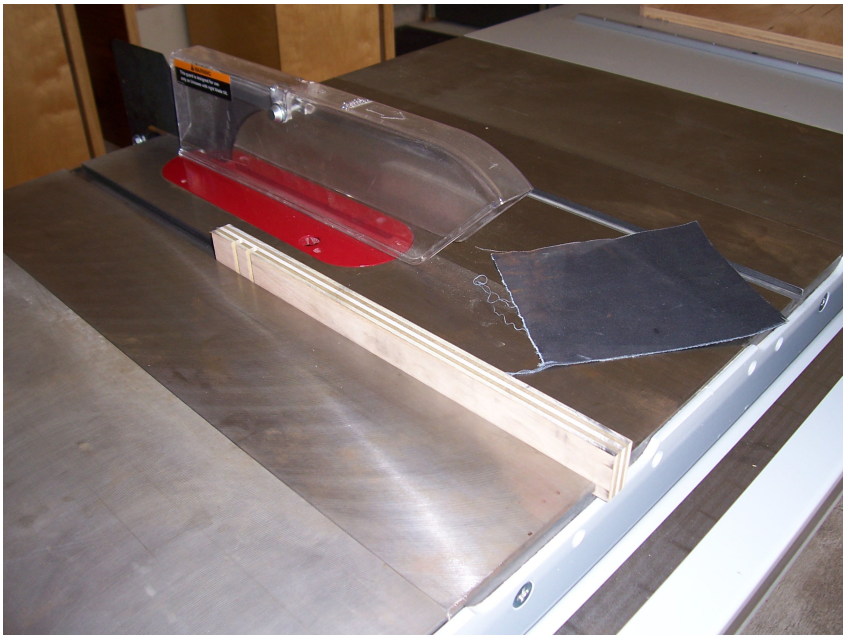

Figure 4 –. plywood scrap and 220-grip emery cloth.

To mill the slots, a ¾" thick piece of scrap plywood about 2 inches tall and 10 inches long was used as a sandpaper form; 220 grit black emery cloth was used as an abrasive (figure 4). A 2-inch by 10 inch piece of emery cloth was slipped in between the edge of the miter slot and the plywood scrap (figure 5). Then using fingers to hold the sandpaper firmly to the plywood, and sliding the plywood and paper together, the high spots in the miter slot were flattened by the abrasive (figure 6). About 10 passes on each side of the slot (either side of the plywood) were taken at each of the 4 narrow points.

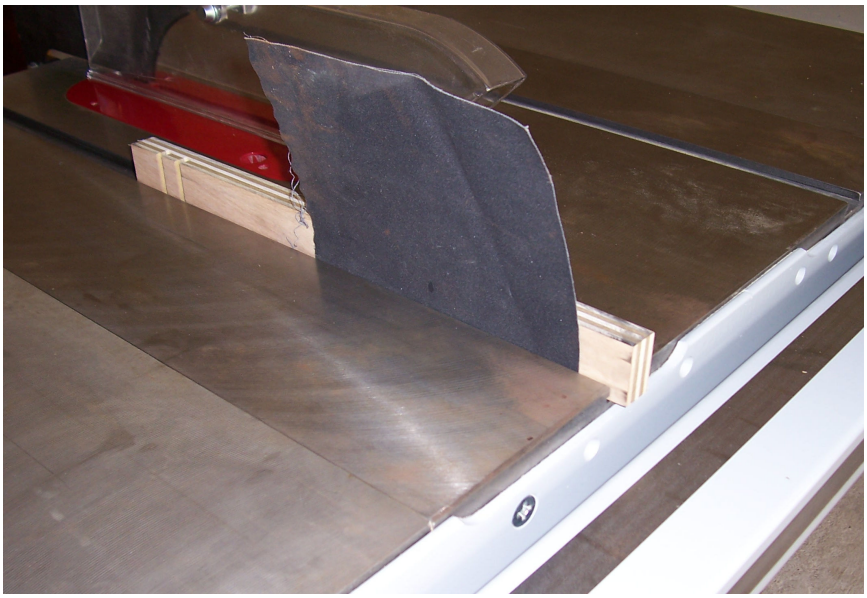

Figure 5 –¾" plywood with 220-grit emery cloth inserted between the plywood and the side of the slot.

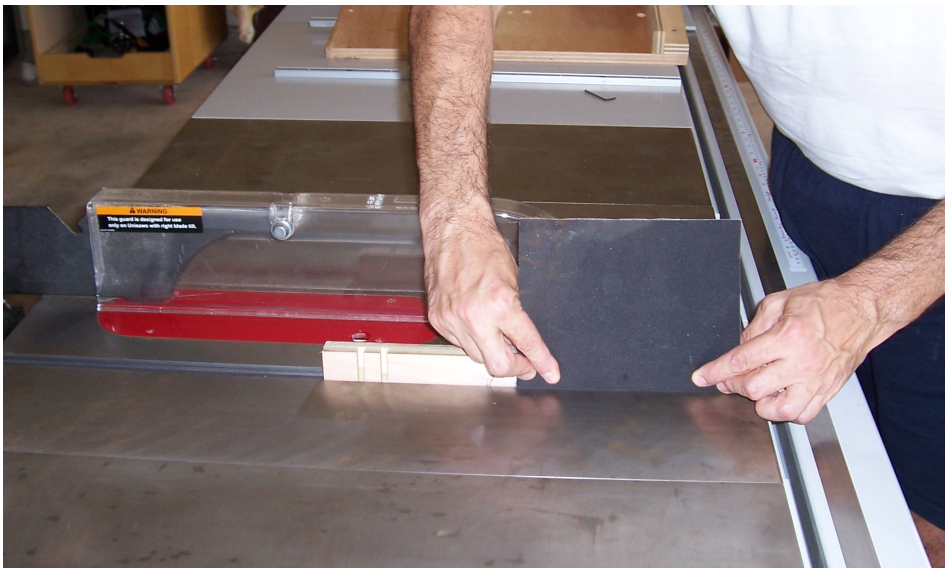

Figure 6 – abrading the slot at one of the narrow points.

After this round of abrading, the slots were cleaned out (blowing into the slots to clear out the metal and sandpaper residue). Then the Incra runner was tightened slightly to test the fit. A few of the narrow points were improved, to the point that they were ‘done’ but others were not quite wide enough. The problem points were abraded more, and the runner used to determine when those narrow points had been sufficiently opened. The worst case point in one of the slots took about 5 attempts (10 passes per attempt) to widen out adequately.

After getting all 4 narrow points sanded, the runner on the panel cutting jig was re-adjusted. It took a surprising amount of widening (about 0.008 inches) before the runner started binding again, indicating that the narrow points of the slots had been eliminated. The Incra runner was ever-so-slightly backed off from this point.

Now the runner on the panel cutting jig had more or less uniform tightness along the length of the miter slot, and was a better fit, but did not bind up. The play (slop) in the panel cutting jig is now a lot less, probably 0.005” or about a three-fold improvement. The entire effort took less than an hour and has dramatically improved the results using the jig.

Figure 7 – Panel cutter after slot tune-up. The twist between the panel and the table top is reduced by about a factor of three.

™Unisaw is a trademark of Delta.Machinery.
™Incra is a trademark of Taylor Design Group, Inc.