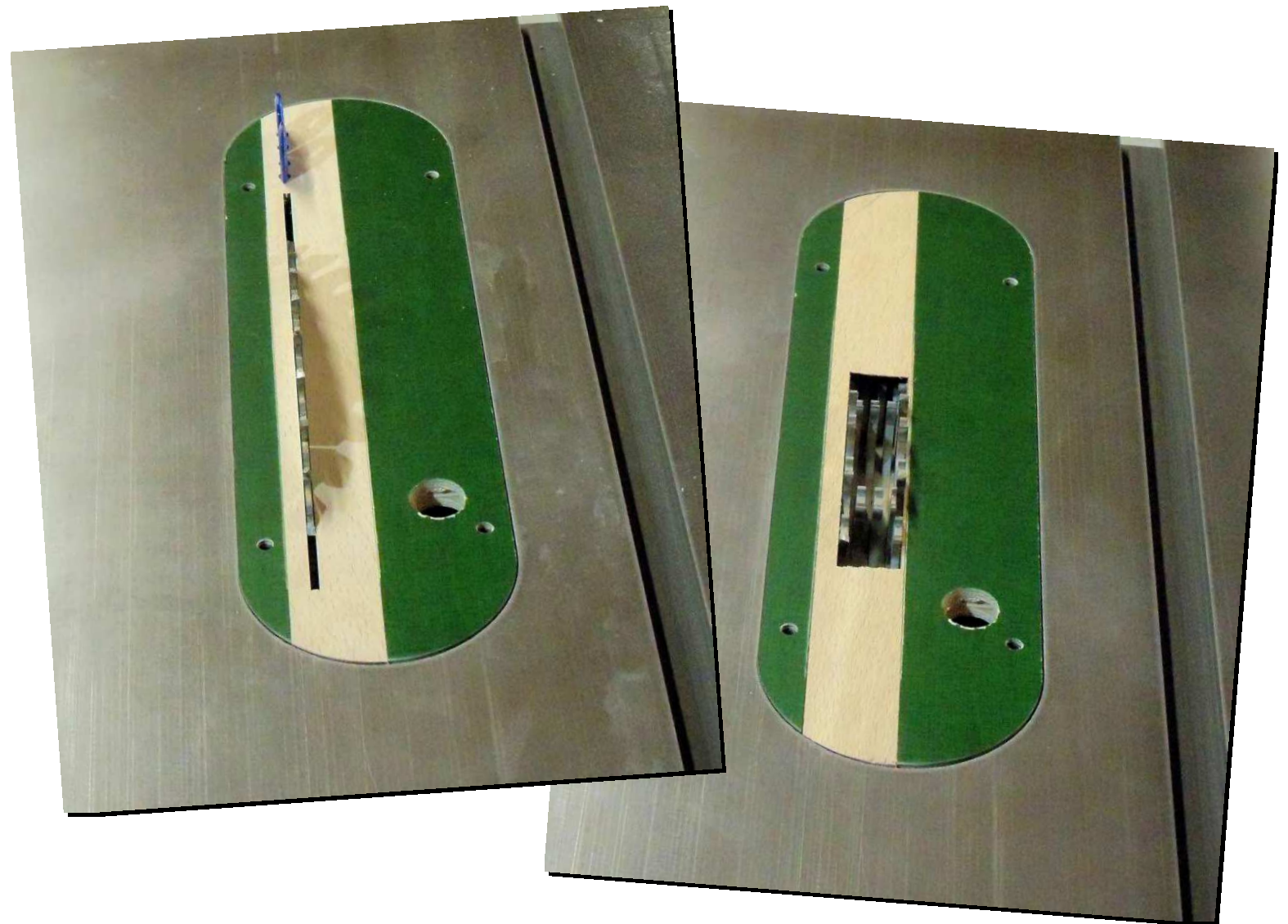


# ***INSERT THROAT PLATE***

***ONE PLATE FOR ALL YOUR CUTTING NEEDS!***



***COMPLETE PLANS FROM [CONSULTINGWOODWORKER.COM](http://CONSULTINGWOODWORKER.COM)***

## Insert Throat Plate

Like most woodworkers, I have several different insert plates for my cabinet saw; one for thin kerf blades, one for normal blades, and a couple more with different dado openings. I even have one for my molding head cutter. That's a lot of inserts hanging around my saw. And when one gets damaged or worn (and they do) making a replacement is kind of a pain and takes up scarce



shop time. Time to make one more....and throw all the others out.

Time to build a throat plate body that takes secure but easy to change inserts. By simply swapping inserts, you can quickly change the opening to match your cut. The best part is that when the insert wears, it can be replaced with minimal hassle. If you make enough insert stock when you build your throat plate, you just need to grab a blank and put it in place to keep right on working.

### ***MATERIALS AND HARDWARE***

Since this throat plate is going to be around a long time, I made the body from 1/2" phenolic faced plywood (See Sources). Any suitable material will do, but you want something very stable, with no voids.



The insert material can be any clear straight-grained hardwood, or even nylon. I used steamed European Beech I had left over. It looks quite well with the green plate.

The slot is cut with a drawer lock bit. The 1" diameter version works best with the size we want to make the insert slot. (See Sources)

Lastly, you will need seven set screws for leveling the plate, and a matching tap. I used 1/4-20 x 1/2" Allen head set screws from my local home center.

## ***STARTING THE BODY***

The measurements and drawings here are for my left tilt Delta Unisaw throat plate. With minor changes, you can easily adapt these plans to virtually any cabinet saw plate. The only critical details are to make sure that the insert is nearly centered over where the blade is mounted, (Right tilt saws will be a mirror image) and that the holes for the levelers are positioned to sit on the "ears" inside your saw's opening.

Begin by verifying all the measurements on your existing throat plate. Cut the blank for the body to width and length. I set the rip fence using my factory throat

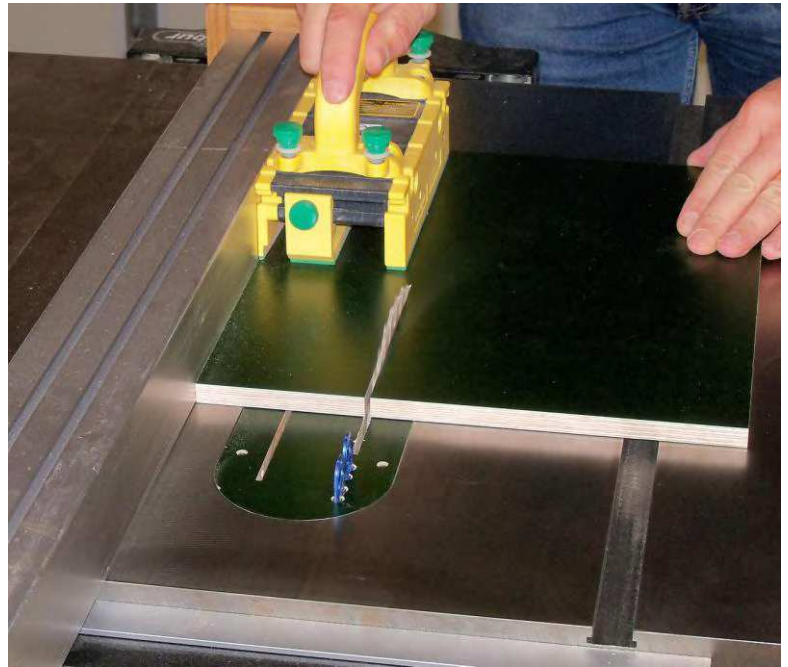
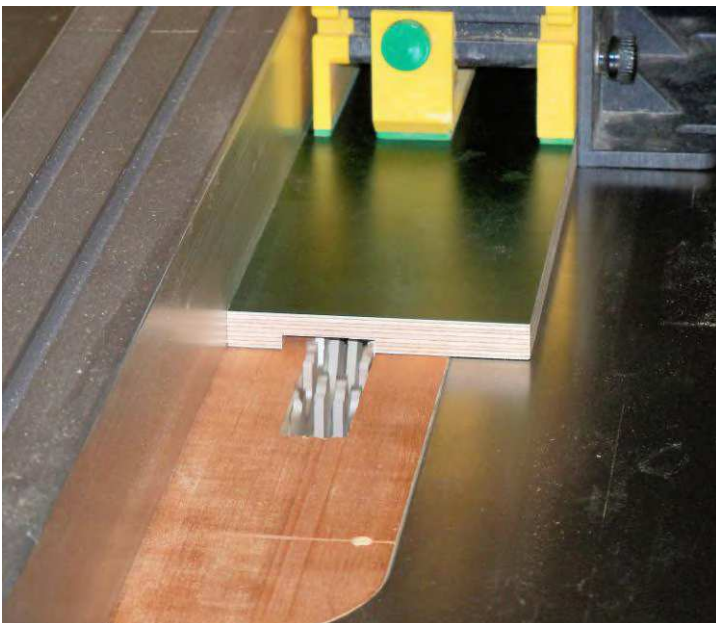


plate for an exact fit. I crosscut the blank about 1/4" oversized for trimming later.



For accuracy and safety, the insert slot is milled before rounding the ends of the blank. Milling the insert slot will work better if most of the waste material is removed first. Raise your dado blades to 1/4" deep, set the rip fence to 3/4" to start, and mill the slot 1 1/8" wide. This removes

most of the waste, but leaves enough for for the router bit to define the slot.

Moving to the router table, the drawer lock bit is raised to  $5/16$ " above the table, and the fence is set so that the **furthest** edge of the bit is 2" away from the fence.

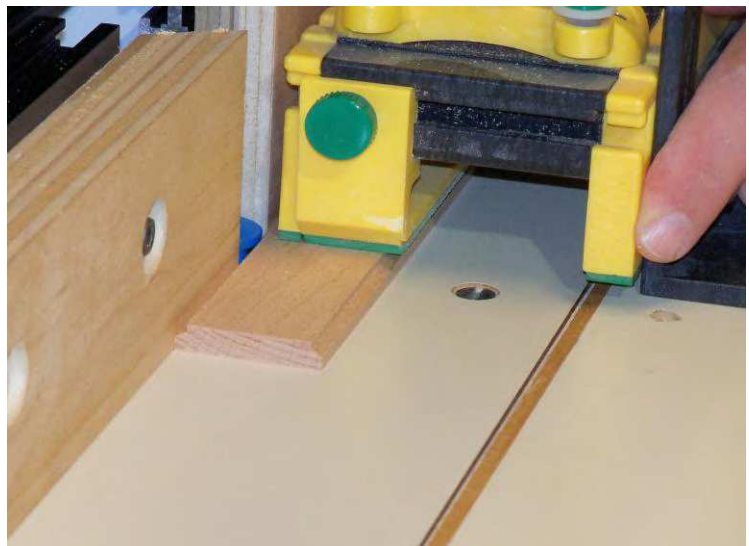
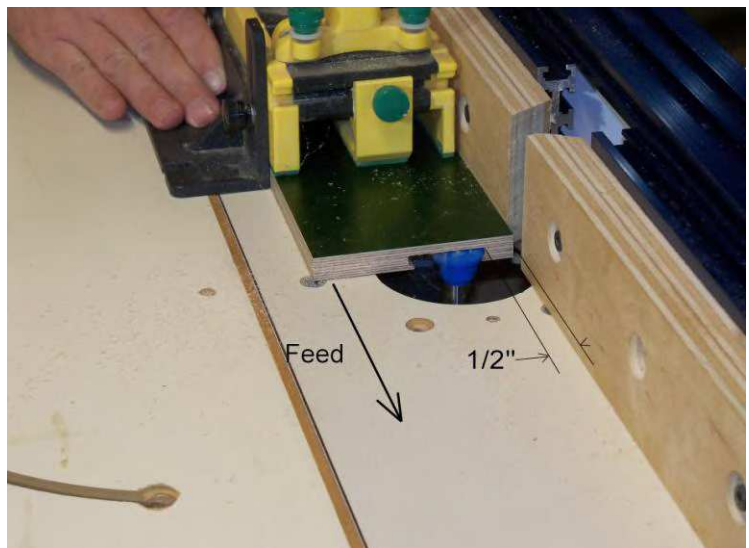
The profiled slot is finished with the fence set  $1/2$ " from the **closest** point of the bit. In this pass, the bit will be cutting on the fence side of the slot. For better control and safety, make this cut sliding the blank from **LEFT TO RIGHT** maintaining a conventional cut. Otherwise, the bit will want to self-feed the part along the fence which can be dangerous.

## ***MAKING THE INSERT STOCK***

With the insert slot cut in the body, it is time to mill the insert stock. Joint and plane it to be just a little wider than  $1\ 1/2$ " and just a little thicker than  $5/16$ ". Since a proper fit is so important, the idea is to carefully "sneak up" on the final dimension. Be sure to prepare plenty of material and it will be years before you need to make more. You'll need  $13\ 1/2$ " for each insert. Mill up your stock in long lengths and cut them down later.

With your stock milled straight and true, the edge profile is milled. With the drawer lock bit still set up, reset the fence so that the small diameter of the bit is exactly even with the fence face. Set the bit height a little higher than your slot would indicate, and make a test cut on one edge of the insert stock. Check it for

Copyright 2011 R. Bagnall





fit in the slot. Leaving the bit high, allows for recutting at a lower setting if needed. Remember that your stock is a little thicker than it needs to be so you should have a little of the insert showing above the base. With the set up correct, mill the other side of the insert stock, and check for fit side to side. It should be too tight since you milled the stock a little over 1 1/2". Carefully joint or re-rip the stock, and mill the drawer lock profile again until the insert stock slides easily into the slot in the base. Once you have the fit you want, joint or re-rip all the stock and mill the edge profile in both edges. Now your insert stock fits well side to side but may stick up above the top of the Base Plate. Carefully set your planer or drum sander to remove the top (narrower) section of the insert stock until it lies flush with the Base Plate.



behind.

## ***SHAPING THE ENDS***

With the slot milled in the base and the insert stock made, the final shape of the base is milled. Remove the leveling screws from your factory throat plate, and screw it to your base through the leveler holes. This not only secures the two, but also marks the leveler holes in your new throat plate.

Be sure that the edges and ends are even with those of the factory plate, and that the blade openings are together. Cut around the edges with a bandsaw or jigsaw leaving just a little material

If you plan to use the factory splitter and guard, you will need to cut that slot into the back of the base. Carefully cut the waste out following the edges of the factory slot. I prefer to use MicroJig's MJ Splitter Steel Pro, so the splitter slot is left off.

Return to the router table. Adjust the flush trim bit height so that the bearing will ride



along the factory throat plate, then trim your base plate and end caps flush. The retaining pin on your factory plate will leave a tab behind, be sure to remove it when you separate the factory plate from your base.

Test fit your throat plate to insure that it fits in your saw properly. Once it does, you can cut your insert stock to length and round those edges as well. Tape the insert in place, cut the ends close to the base plate and flush trim them to match the curve of your new throat plate.



## ***THROAT OPENING***

A through hole needs to be milled under the insert. The sides of the hole will be defined by the slot, but the ends must be set. Mark a line 2 1/2" in from the back, and another 1 1/4" from the front. Tape a couple of insert scraps in the base plate aligned with those marks.

Drill through the center of the insert slot for the

flush trim bit. Set the bit height so the bearing will ride along the top face of your insert slot at the narrowest part. Remove the entire area between the taped in scraps.

## ***DRILLING AND HARDWARE***

Several holes need to be added now to finish out the base plate. First is a 1" through hole for a finger pull. Locate it approximately where your factory plate has one.

Drill and tap the four holes for the leveling screws using the screw holes left behind in the last step. Three holes are drilled and tapped into the edge of the base plate: one next to the slot in the front, and two along the right side. These will hold set screws that will snug the plate inside the throat opening in your saw.

On your factory plate, there is a steel pin down low in the rear of the plate. This retainer keeps the plate from flying up out of the throat opening. Drill a 1/8" dia. hole into the rear end of your plate that will accept an 8d nail. Epoxy it in place and cut it off about 1/4" from the plate edge.

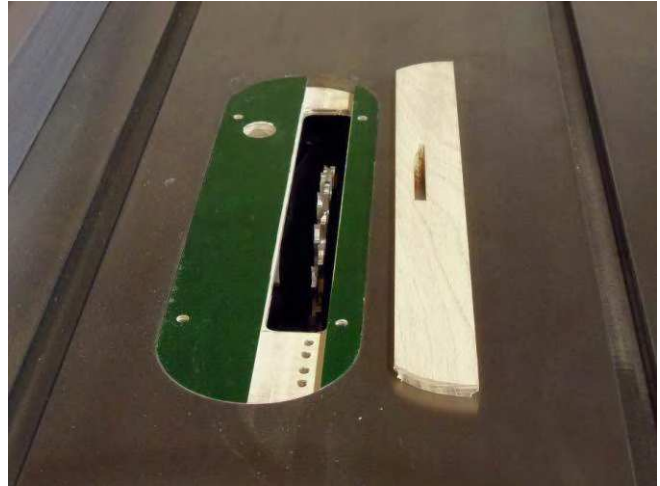
## ***FINAL STEPS***

Now you can remove the blade from your saw and set your new throat plate in place. Use an allen wrench to level the four corners so the entire assembly is flush with the table top. At this point, you might notice that there is a bit of play in your throat plate. Lift the plate and adjust the set screws in the edge of the plate to remove any play.

## ***FIRST CUT IN AN INSERT***

A 10" blade cannot be lowered enough to clear the bottom of an unused insert. The initial cut through the insert must be done carefully. The blades from your dado set are either 6 or 8 inches diameter and will go below the fresh insert. So use them to add the clearance for your 10" blade.

Install the two outer blades in your saw as if you were making a 1/4" dado. With no insert in the plate, raise the dado to just below the top of the plate. Mark that position on your elevation handle and drop the blade one full turn.



Slide in a fresh insert, set the rip fence over the throat plate (but not over the insert) turn the saw on and elevate the blade one full turn. This should cut a clearance groove in the underside of the insert, but not come out the top. Now the full 10" blade should spin freely below the insert. Make the first cut through the fresh insert with the rip fence covering the throat plate just like described above.

This throat plate will save you a lot of time and aggravation over the years. When you buy that new blade or need a clean dado cut in an odd size, you can simply slip in a fresh insert, and instantly create a zero clearance opening for your saw.

I hope that you enjoy making this throat plate and get many years of good service out of it. If you have questions or comments, please feel free to contact me at [rbagnall@consultingwoodworker.com](mailto:rbagnall@consultingwoodworker.com)

## **SOURCES**

### ***Phenolic Faced Plywood, 1/2" Thick:***

This plywood can be a bit hard to find, it is typically used for concrete forms, but I favor it for all sorts of jigs and fixtures. Fortunately, both Rockler and Woodcraft carry it.

Rockler Product # 38764

Rockler QR Code:



Woodcraft Product # 131171

### ***Drawer Lock Bit 1" Dia.***

Virtually all manufacturers make a form of the drawer lock bit used in this project, but some are too large in diameter to cut the slot needed. Again, Both Rockler and Woodcraft sell the appropriate bit.

Rockler Product # 22637

Rockler QR Code:



Woodcraft Product # 814944



