CMT

ORANGE TOOLS®

CMT Junior Raised Panel Set

How to make a mission style mirror by using this great set

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You know me well enough by now to know that I do like new woodworking tools. You should also know that I only like those tools that can extend my woodworking skills.

That is why I was delighted to receive CMT/Sommerfeld's new Junior Raised Panel Set.

It is exactly like their regular raised panel set, but smaller.

I know I am showing you the last picture but sometimes it helps. Maureen is holding her first raised panel door using this set. The fit of all the components was exact—the very first time.

This door is 9" X 11" and will be a top to a new jewelry chest Maureen is making.

I said that the door was perfect the first time. That is true, but a lot of credit goes to the instructional video that comes with the set. Marc Sommerfeld is on camera going through the step-by-step just as he does at the many wood shows at which he exhibits.

We both watched this video and followed his instructions to the letter—including using some very clever, typical Marc Sommerfeld, jigs and hold downs that make the job easier and safer.

So let's show you the process.

Maureen starts at the table saw cutting the rails, stiles, and panel sections. She is doing one from quartersawn oak and the other from walnut. All the stock has been thickness planed to 1/2". The Junior Set handles stock from 7/16" to 11/16" thick.

At the router table, Maureen chucks the first bit that she will use to cut the end profiles on the two rails.

(Note, if you have been to the wood shows and have seen Marc demonstrate this, you will remember that he doesn't have to remove the router to change bits. We hope to be able to show his table setup on this site, real soon.)

With the bit installed, Maureen adjusts the router bit height using the stock to help estimate the position. We learned from the video that you want the back (top) rabbet to be about 1/8"—which is what Maureen is setting.

Of course, once she has the right height, she will cut a scrap piece that can be used to streamline future setups.

She uses the straight edge of a cabinet scraper to set the fence to be even with the bearing.

By the way, the fence we are using is the one we made for use with the locking miter bit. The cut out happens to be very close to all three bits of the Junior Set.

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This close-up shows Maureen actually making the cut. The two easy fixtures makes this cut safe and fast.

While the router is still unchanged, Maureen makes another cut on a scrap and marks it. This will serve as a setup piece anytime we want to make this cut on similar thickness stock.

With the rail end cuts made, she can install the bit for profiling the rails and stiles. She sets the height of the bit to match what she has just cut in the end of the stile.

Marc shows in his video that all the bits are matched for height. So, having set the first one, the other two will automatically match if you insert the router bit to the same depth. Marc uses two 1/2" O-rings that he places in his collet so that each of the bits bottoms on them. A great idea, that we will do as soon as we can get the O-rings. Note: you never want to insert a bit all the way into a collet.

With the profile bit setup, she can shape the rail and stiles. She uses this hold down block to grasp the rail without getting too close and the push block to feed the stock.

A quick check of the sample cut, and she knows that the bit is exactly right and that she can run all the rails and stiles.

With all the shaping done, she can assemble the first unit. It fits together perfectly. Next—it is time to shape the panel.

The panel edges are shaped very easily and in one pass...even with oak and walnut being cut. She is using a hold down block that we had created for the earlier story on the locking miter joinery. A standard padded hold down could be used; this one just fit the panel better.

She shapes the end grain sides first and then the other sides to minimize tearout. Actually, these router bits are so sharp and finely ground that they give very smooth, finished cuts.

Without a doubt, this is the fun part—all the parts fit perfectly together...the first time.

This is the picture we started out with. Maureen shows her very first raised panel—and it is a beauty.

As I said at the start, Maureen had cut pieces for two raised panels—one of quartersawn oak and the other from walnut. Both will make beautiful jewelry chests. Note that the walnut panel is made of resawn pieces.

Maureen had never done any re-sawing so she asked me to show her how. This is not a fancy re-saw station. It just works. The tall fence is nothing more than the base of the router table tall fence (turned on side). With a 3 tooth/inch resaw blade, she is able to make perfect thinner slices with the standard bandsaw.

With the re-saw setup and the CMT Junior Raised Panel Set working so well, I couldn't help but cut a block of spalted Sycamore I had picked up last fall. I don't know exactly where I will use this, but it sure is a pretty piece.

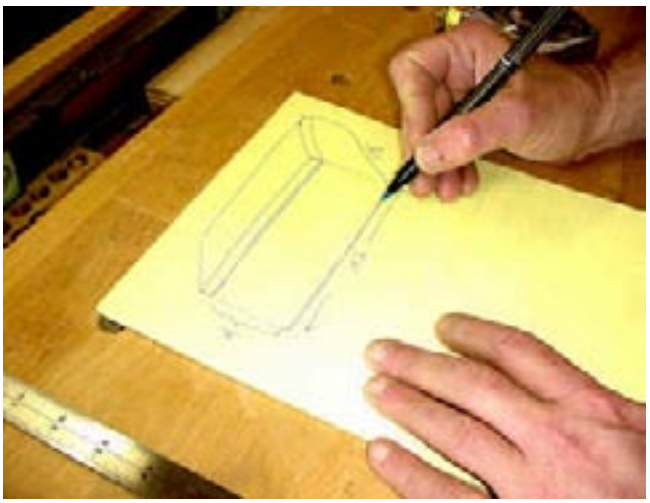
I apologize for not having Maureen on camera this week. Her schedule was real busy, and I wanted to move the jewelry chest project along…she will be back soon.

After making the larger panel with the spalted sycamore, the next task is to make the jewelry chest on which it will be fastened.

I have no plans, per se, but it should be rather simple. I started by approximating the height that I think would be in proportion to the top—4 inches seems to look right.

And measured the two dimensions of the panel.

And made a very simple sketch. If you remember, when Bethany and I were using the Incra Project Book, it was nice to have the exact plans and detailed measurements. It is also nice to be able to make the plans as you go—and come out with a good finished product.



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I cut the four sides of the chest from 1/2” walnut.

For small boxes, mitered corners are great. But a locking miter corner is much better. It has the precision look of the miter and has great structural strength.

For me, the first step is to set the height approximately so that the center of the bit is centered on the stock.

To have perfect locking miter joints, this centering must be absolutely correct. We will use the method we devised a month or so ago, when we first covered this great bit. I will describe the procedure here.

With the fence in place, I use a hold down to pass the sample pieces over the router.

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I then fit the two pieces together. You can't see the small degree of misfit here, but it is there. Remember, if the "B" side is low, raise the bit one half the amount.

Rather than to bore you with pictures of more adjustments, I will simply report that it took two minor, minor changes of the bit height to get a perfect fit—and I mean PERFECT. This method is so fast and simple, it makes using this locking miter joint fun.

I now start routing each of the sides. As I explained in the locking miter procedures story, it is important to make an "A" cut on one end and the "B" cut on the other. That way, the box will come out square and without any minor size variations.

I am using a standard push block to hold the board flat to the table and the shop made push block to push it through the bit. This block will also serve as a backing board and minimize tearout.

To make the "B" cuts, I use the vertical push block I made for the locking miter bit. It holds the piece flat against the fence and keeps my fingers a safe distance from the router.

The four sides fit together nicely. The inset close-up shows how nice the fit is. The locking miter joint is attractive and strong.

With the dado set installed, I run a 1/4” groove on each of the sides to hold the bottom panel.

The locking miter joint provides a lot of glue surface so it makes sense to brush the glue in to all the profile.

A couple of clamps hold the box together while the glue sets. I check the corners for square. They are very square.

I have cut two pieces of walnut to fit inside the box. These will serve as a shelf to hold a small tray.

I fit the pieces that will make up this tray.

I move to the table saw to cut a rabbet in the small tray pieces. At the left is my usual dado/rabbeting setup. I didn't like the thought of running the small sides over the large dado insert, so I added a 1/4" piece of ply to the saw table. It is held in place by the fence. I raised the dado blades just the amount necessary to make the rabbet. This setup allows me to make the rabbets safely.

Of course, I could also have rabbeted the stock before cutting it into the small sides.

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I now use a small brad nailer to tack the two shelf supports in place.

Its time to add the plush red velvet to the bottom of both the chest and the tray. I have cut 1/8" ply to the dimensions less 1/8"—to allow for the fabric. This is not a usual thickness ply found in most shops. You can use heavy cardboard just as well.

I cut the velvet allowing about an inch over on all sides. The velvet is a great dust collector so be sure to clean your bench before handling.

Wrapping the thin ply with the velvet takes no special skills. I use masking tape to hold the edges taut to the bottom.

The velvet covered ply can now be inserted in the tray. A suggestion: if you insert it in the tray to test the fit, add a piece of masking tape that can serve as a handle so that you can remove the tray for the finishing. I didn't do that, and it was tricky trying to get the tight fitting layer out.

This gives an idea of the tray and the bottom of the chest. The red velvet adds quite a nice touch to this walnut chest.

I started to scribe for the hinge mortises and then stopped what I was doing. I purchased two small brass hinges at the local hardware, but after looking at them, I decided to order some nicer brass hinges. There are some hinges made from heavier brass that will really look elegant—I think this chest deserves those brasses.

Well here is the jewelry chest ready for finishing. I have removed the velvet covered pieces to a clean place and will start finish sanding the piece.

I probably will use a shellac/ French polish on this jewelry chest. That takes time, but I think it will be worth it. I did spray the spalted sycamore with polyurethane before inserting it in the frame. I am hoping that the poly will seal this porous piece and make it less subject to warping.

A number of times, I have mentioned some of the great ideas that I have gotten from watching Marc Sommerfeld demonstrate router practices.

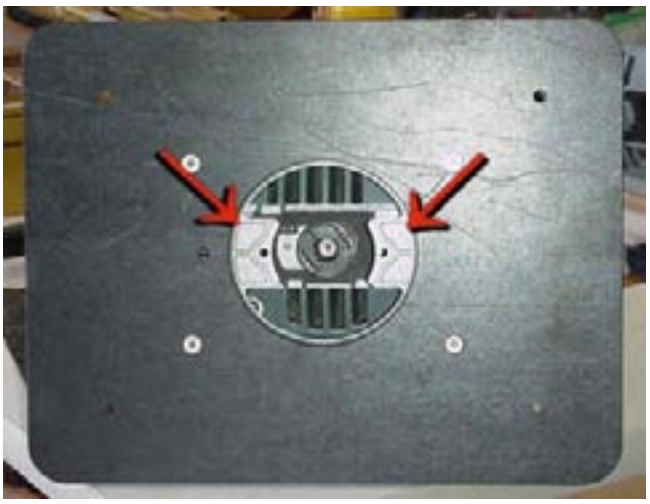
This may be the wrong place, but I will summarize some of the "tricks" he does when using the CMT/Sommerfeld Junior Panel Raising bit.

He uses the Hitachi 12V, so it is that router that I will use. Most of his "tricks" can be applied to any larger, variable speed router.

I started by removing the head of the router from the base. There are two guide posts and springs. I remove the springs since they help support the weight of the router head when plunging manually but work against you when it is mounted in the table.

Be aware that there is a small brass round that will come loose. This brass must be put in place at the lock lever position. Don't lose it.

This shows the base plate before I started to make changes. The arrows point to the two "ears" that are designed to hold guide bushings. I don't use these bushings, particularly in the router table setup, so I will remove the "ears" first.



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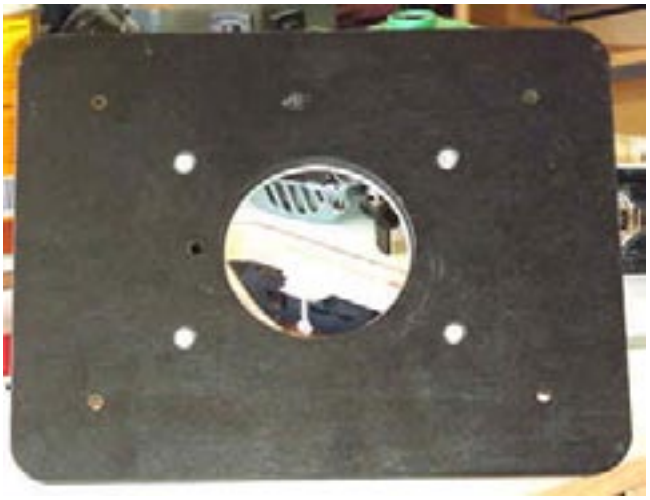

One of Marc's great ideas is to add two 1/2" "O-rings" to the base of the collet. These soft rubber rings will keep the bit from bottoming out.

With these in place, I can seat router bits that are part of a matched set. Each bit will be in alignment with the other bits. For the raised panel sets, this is truly a big plus.

If you have watched Marc's demos and see him go from one bit to another without checking bit height, this is why he can do this without effecting accuracy.

[Note: these O-rings are available at plumbing supply stores. They are used for faucets. I managed to get them at Home Depot where they have an extensive O-ring and washer display. O-rings are marked with O.D. - I.D. and then thickness. The O-rings I got are 1/2 X 5/16 X 3/32. The first measurement should match your collet width.]

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Marc has added a wire control on the shaft lock for his super router table. I did much the same. The hole I drilled allows me to fasten a push rod to the shaft lock.

I can insert a 1/4" threaded rod which I lock with a couple of nuts. Note, the outside nut is a double nut for locking. I do not want that nut to vibrate free and drop into the router motor.

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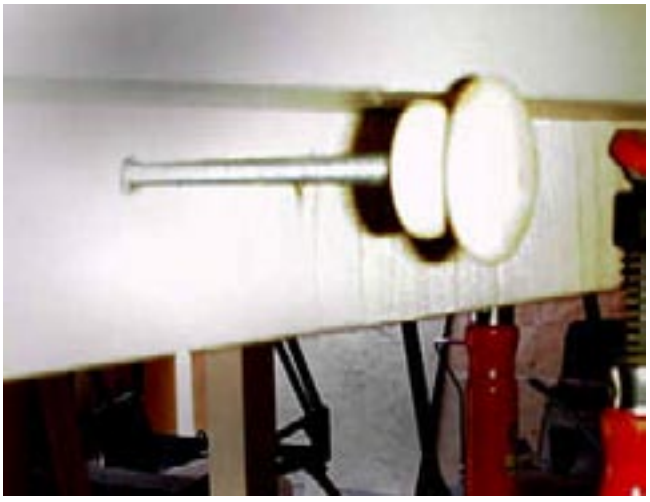

To prevent starting the router with the shaft lock engaged, I will hang the router plug on this knob when changing bits. This also means that I don't need to bend over and pick the plug off the floor—I am liking this more and more.

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You just rotate and remove the wrench. It is amazingly simple. My right hand is on the shaft lock knob, and my left hand tightens the collet.

By the way, if you get into the practice of inserting the bit so that the collet flats are crosswise to the bit, you will greatly minimize fumbling and searching for the flats to tighten. It is a minor point but one of those tricks that make bit changing very easy.

My thanks to Marc Sommerfeld for sharing these ideas with me—and now, you.

Now what I am itching to do is to try out this whole new way to change bits—and try them on one of the "matched bit sets." Is it really possible to set-up once and then just go back and forth between bits—and have all the joints come out right? That is my question. The answer is on the next page.

I had used this set of panel raising bits several months ago. At that time, I set the height of each bit by trial and error. I am excited to think that Marc's trick of O-rings in the collet would really allow me to set the height once and thereafter just change bits.

I decided to make a raised panel door using the exact dimensions found in the CMT catalog. The instructions there are extremely well illustrated and make this relatively complex task very doable.

Having mounted the coping profile in the router, I set the height to approximately where I want the shape to be. The instructions say that you want at least 1/8" on the back rabbet.

By the way, I am going to show much more step-by-step detail in this section. I want you to witness first hand the ease of changing bits and making adjustments between each of the three cutters.

I adjust the split fences to allow room for the cutter. Note, that there are some fences where you can have zero clearance inserts for each profile. Marc has such a fence, and it works very well. This split fence is part of the Woodhaven router table that I use, and it also worked very well.

I adjust the fence so that it is aligned with the bit's bearing.

Having the right pushblock(s) is necessary for both good cuts and safety. Just as I did with the Jr. Raised Panel bits, I made a new pushblock and marked it for this use. The new pushblock also serves as a good backing board and will greatly reduce tearout.

I make trial cuts. This is actually the second try. The first one, at the right of the block, was about 1/8" too much thickness at the top of the curve. Note that I am using the hold down just as I did with the small pieces of the jewelry box project.

With the the profile where I want it, I now start routing the end profiles on each of the rails. The rail in front has been shaped. I use the push block to guide the rail through the cutter at right angle to the fence. My left hand holds the rail flat to the table.

Now, I have my two rails cut with their cope profiles at both ends. It looks good. Now comes the moment to see if changing bits can be done without having to reset height.

I start by moving the fence back. It doesn't need to go back far since I will not be removing the router to change bits. Actually, the very first step is to unplug the router. I did this and hung the plug on the router shaft lock extension knob.

I pop out the throat plate to gain better access to the bit and collet.

I slide the bent wrench under the bit and find the flat side of the shaft. Then, with my right hand, I press in on the knob and engage the shaft lock.

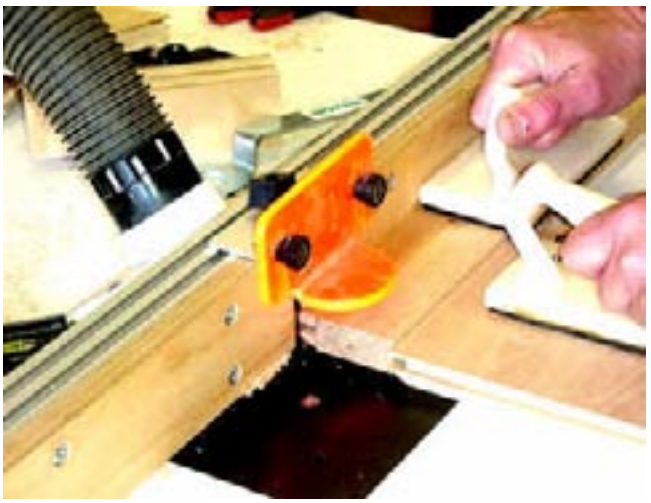
I switch bits. The new bit will give me the ogee shape and the groove for the panel along the length of the rails and stiles. I push it all the way to the bottom of the collet. I can feel the spring of the O-rings return it to the right height—I hope.

I slip the bent wrench back into position and press in on the shaft lock extension knob and tighten the 2nd bit in position.

I place the smaller throat plate back in position.

I bring the fence back until it is aligned with the pattern bearing.

I route the sides of all rails and stiles. I did NOT make a trial cut this time. I decided that I wanted to see how well this "matched set" system really worked, so I didn't fit the pieces together until all the components were cut.



As before, I unplug the router and move the fence back.

I pop out the throat plate, but this time I place it in storage since the panel raising bit is wide and needs no additional throat plate.

I slide the bent wrench under the bit and push the shaft lock knob in and loosen the bit.

Because of the size of the raised panel bit, I put the bent wrench in place first and then insert the bit. I align the bit so that the width is at right angles to the wrench. This allows for the maximum amount of room for slipping the wrench in and out. Just as with the other bits, I “bottom out” the bit against the O-rings which push the bit back to the right height—I hope.

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