

PARTS LIST - COMPLETE DOVETAIL JIG

1 Clamp Handle (2)	11 "L" Shaped Adjustable Stops (2)
2 Cam (4)	12 Cam Lock Knob (4)
3 Clamp Axle (2)	13 Cam Lock Housing (4)
4 Stop Bar (1)	14 Template Adjustment Bar (2)
5 Clamp Bar (2)	15 1/2"-14° Dovetail Bit
6 Pin Template	16 1/2"-8° Dovetail Bit
7 Clamp Springs (not shown)	17 5/16" Straight Bit
8 Fence Lock Knobs (2)	18 1/2"-8mm Collet Reducer
9 1/2" Half-Blind/Tails Template (1)	19 Template Guide Bushing Set
10 Jig Body (1)	

Introduction

Your new dovetail jig will cut Full Through Dovetails and three varieties of Half Blind Dovetails (flush half blind, offset half blind and rabbeted half blind). (Figure 1) It will accommodate stock from 1/2" to 1 1/8" thick and up to 11" wide.

The following instructions begin by detailing how to set up the jig for basic 1/2" and 3/4" material to mill flush half-blind dovetails and full through dovetails (Fig. 1). Once you have mastered this technique, you can add other joints to your repertoire such as offset dovetails and rabbeted dovetails. (See page 8 for details.)

Square and flat material is key to the success of perfectly aligned joints. For any of the joints being cut, always cut additional pieces the exact size of those being used in your project to experiment with the settings for joint accuracy

Figure 1



Through Dovetails



Half Blind Dovetails

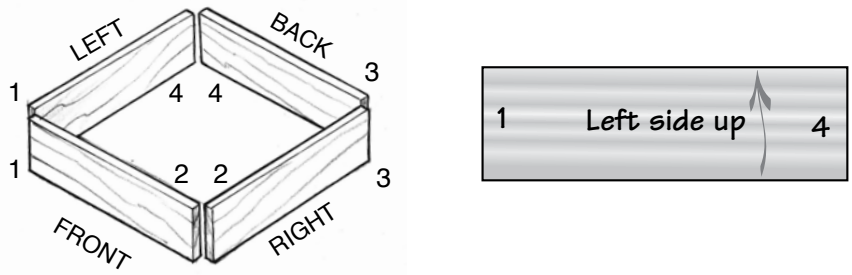
Secure the Jig

Two holes in the bottom of the jig allow permanent attachment to a workbench or similar stable base. Where work space is limited, the same holes allow mounting to a shop-built movable base (Fig. 2) that can be secured in the jaws of a vise. The jig can then be stored elsewhere when not in use. The base is just two pieces of sheet stock (plywood, MDF, melamine, etc.) screwed together at 90°. An optional glued dado strengthens the joint and provides extra stability.

Set Up the Router

Included with your jig are a 1/2"-14° dovetail bit for half blind dovetails, 1/2"- 8° dovetail bit and 5/16" straight bit for full through dovetail joints. Also included is a 1/2"-8mm reducer for your 1/2" router collet. The 8mm shank size will significantly reduce the amount of chatter and offer a cleaner cut. Also included is a 7/16" guide bushing assembly. The bushing is universal: it fits most popular brands of routers and after-market bases. (In the remote chance that you have difficulty attaining a perfect fit, consult your router's manufacturer; they usually offer a guide bushing as an option.)

HALF-BLIND INSTRUCTIONS



Drawer Layout

It is recommended that you keep track of the parts of each drawer by numbering and labeling them, then milling them in the same order every time you build a drawer or box. This repetition will virtually eliminate mistakes, with practice.

Refer to the drawing above to see how this is done. The parts of the drawer are laid out in their proper orientation, then each piece is labeled on the inside face (FRONT, BACK, LEFT SIDE, RIGHT SIDE). You can write directly on the part with a soft pencil, or use masking tape.

Mark the faces next: each face should have a notation that says which way is up. Finally, mark the corners with designated number, 1 through 4. For example, the left side of the drawer in the illustration meets the front at corner #1, so each part is so labeled. If you can develop a habit of marking the drawers in exactly the same fashion every time, errors will be few and far between.

Install the bushing in the router base and secure it with the included threaded ring. Tighten the ring securely, then slide the base toward the motor housing and install the bit.

For half blind dovetail joints you will be using the 1/2" x 14° dovetail bit. Depth of cut will be 9/16" from the base of your router. Included on the half blind template is a gauge for setting this height (Fig. 3). Adjusting for joint tightness will be covered later in these instructions.

Figure 2

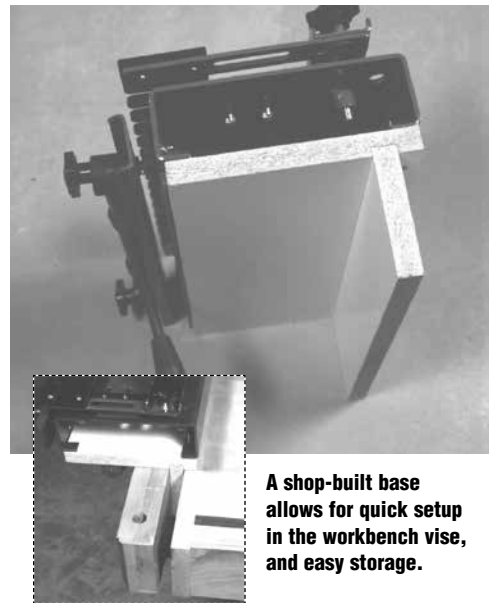
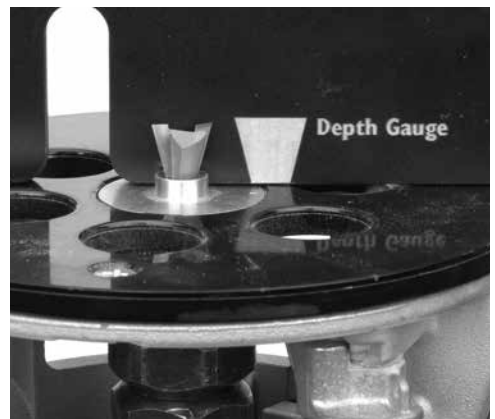


Figure 3



Locate the Stops

The jig is equipped with two stops (Fig. 4) that locate the drawer parts and allow repetitive milling; once they are set you can build as many drawers as you need.

The first step is to ensure that the dovetails are evenly spaced on your work piece (that is, there is the same amount of pin or tail top and bottom). With the half blind (straight fingers) template installed, slide a piece of scrap the same width as your drawer stock into the jig. Center the board (left and right) on the template fingers, as shown in Figure 5. The idea is to have the same amount of finger or gap showing at each side of the board. Make sure the board lies at 90° to the front of the jig, then loosen the three screws in the adjustable stop (the left one, Part 11, see (Fig. 6), and slide it snug against the board. Tighten the three screws. Repeat this process for the right side of the jig.

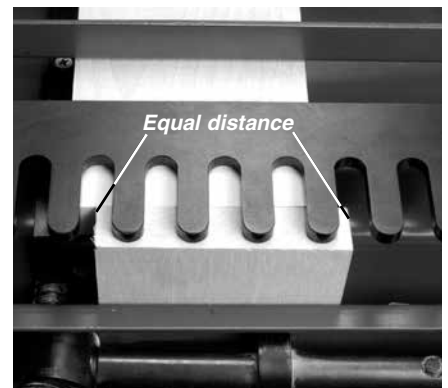
Insert the Drawer Parts

During initial set-up adjustment, always use test pieces the same thickness and width as your drawer sides that you will be milling. Only install the actual drawer sides after you've produced a satisfactory joint in the test pieces. Figures 6, 7 and 8 illustrate the process involved in installing the two boards for each joint. Note that the two left-hand joints (that is, the joints that attach the left drawer side to the drawer front and back) are cut at the left side of the jig. Subsequently, the two right-hand joints will be milled at the right-hand side of the jig.

Figure 4



Figure 5



Shop Tip: Always position drawer parts so inside is facing out.

Begin by installing the drawer's left side in the front of the jig (vertically), and securing it with the cam lock. You may have to adjust the cam lock for a good fit; don't over-tighten it. The top edge of the work piece should protrude above the jig body (Fig. 6), but perfect alignment isn't necessary at this time.

Shop Tip: For even clamping, always use scrap wood the same thickness as your stock as support on the opposite end of the jig.

Slide the drawer front into the top of the jig (horizontally). The inside face of this part should be facing up.

Butt the drawer front tightly against the drawer side (Fig. 7), check that it is tight against the stop (Part 11), and secure it in place with the cam lock.

Now you can slide the drawer side up so that its top edge is flush with the top face of the drawer front as shown (Fig. 8). Secure the drawer side in place, tight against the stop (Part 11), by engaging the front cam lock.

Figure 6

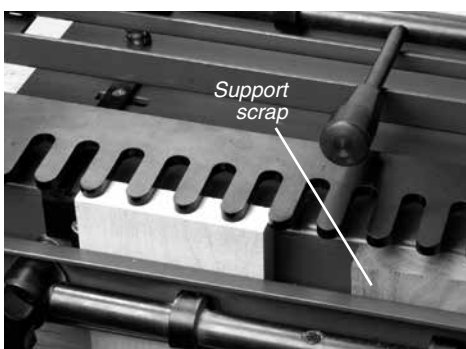


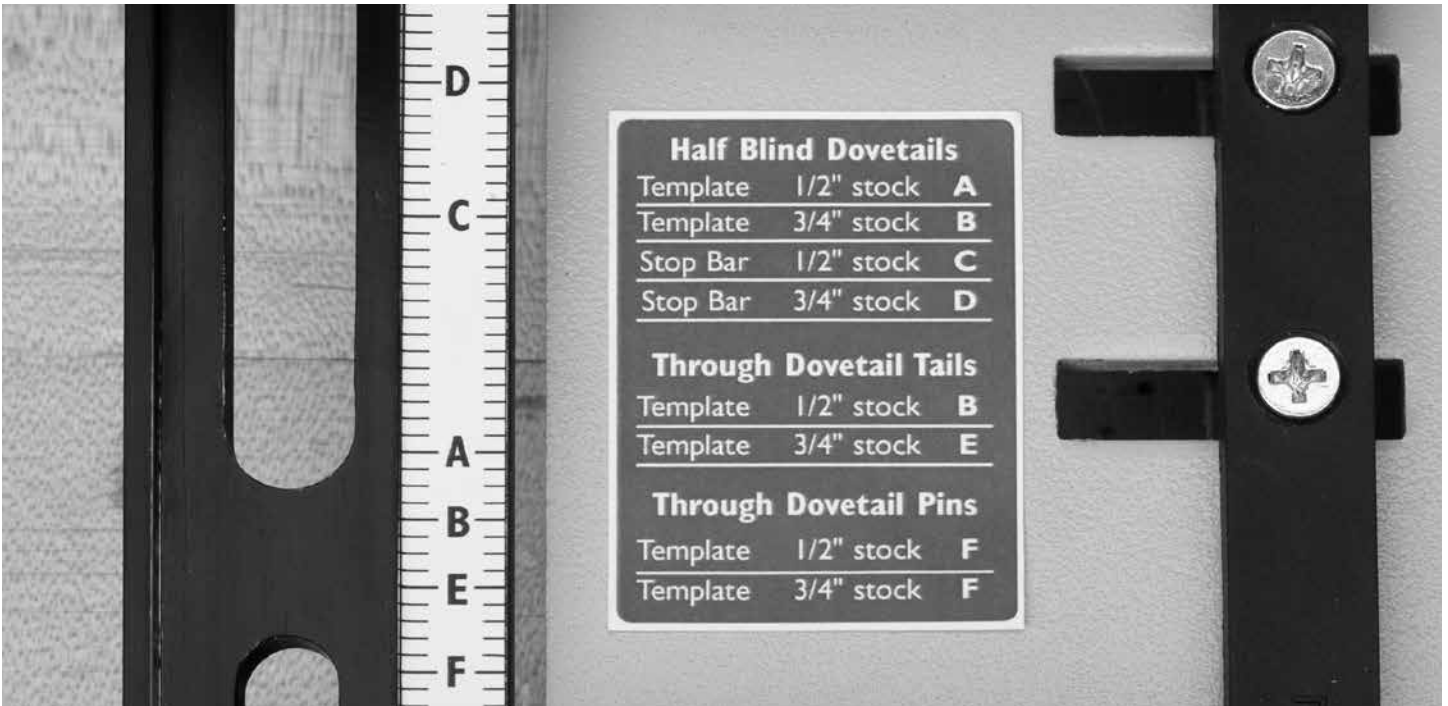
Figure 7



Figure 8



Figure 9



Set the Template

For 1/2" material, set the back edge of the half blind template to the "A" setting (Fig. 9) on the adjustment arm. For 3/4" thick material use the "B" setting (Fig. 9).

All the template settings for 1/2" and 3/4" material are designed as starting points to rout your joints. Depending on material thickness, tolerances in the guide bushings and router bits, the template may need minor adjusting to give you the desired final fit.

Set the Stop Bar

The last adjustment to make before milling begins is to set the Stop Bar (Part 4). Two knobs (Parts 8) lock the Stop Bar in place.

The reason you set the Stop Bar is that the router base butts up against it at the end of every cut. This limits the length of the grooves between the pins into which the tails fit. Note the different lengths of the grooves (Figures 10 and 11). Both of these settings are for Porter-Cable (5 3/4") base dimensions.

If you are using a router with a base that's not 5 3/4" diameter, you need to use the following formula for setting the fence. Setting the fence location sounds complicated, but it's really quite simple. You'll need a piece of paper and a pencil to work out the location, since you'll need to add a couple of numbers together.

Start by writing down a measurement that is twice the thickness of the drawer side stock (for example, with 3/4" thick sides, this would be 1 1/2"). Now find the radius of your router base: that is, the distance from the center of the bit to the edge of the base. Add this to the first number. For example, if your router has a 6" base, you would now have 3" plus 1 1/2" for a total of 4 1/2". The last calculation is to deduct half the thickness of the bit. The supplied bit is 1/2", so just subtract 1/4". Locate the fence this distance from the front of the template. In our example, the fence would be 4 1/4" back from the front edge of the template. Be sure that the fence is set parallel to the front of the template. Secure the fence by locking down the two knobs, and you're ready to mill the test boards.

Figure 10



Figure 11



Example: 1/2" material using 5 3/4" Porter-Cable router base with a 1/2" dovetail cutter
 $1" + 2 \frac{7}{8}" = 3 \frac{7}{8}" - 1 \frac{1}{4}" = 3 \frac{5}{8}"$

Making Minor Adjustments

Install your test boards in the jig, set the fence and template to their correct locations, and then lock the boards in place with the two cam locks. With the router bit set at the correct height, visually check that the bit won't engage the template or any part of the jig. Begin cutting from left to right, making sure that the bushing rides the template all the way to the back of each groove. **DO NOT LIFT THE ROUTER OFF THE TEMPLATE WHILE THE MOTOR IS RUNNING.** If you do, the bit will destroy your template.

If the resulting joint is too sloppy, raise the bit 1/64" and try again. Conversely, if the fit is too tight, lower the bit. Make adjustments in approximately 1/64" increments, as a small adjustment can make a lot of difference (Fig. 12).

If the two parts fit together well, but the tails are proud, move the stop bar back the amount the tails are proud. If the tails slide too far into the grooves (also called "sockets") between the pins, move the stop bar forward the amount they are shy (Fig. 13).

If you don't have an even amount of pin or tail at the top and bottom of the drawer, revisit the section entitled "Locate the Stops." Sometimes you may want to have a full pin at the top and a half pin at the bottom. This is easily accomplished by visually adjusting the stops in the manner described in that section.

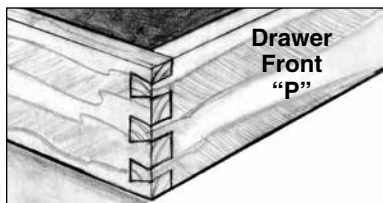
Continue milling test pieces (both left and right) until you achieve results that are satisfactory. Only then should you mill actual work pieces. The scales on the jig are designed so that when you achieve the joint you desire you can make pencil marks on them for use later on for quicker set up (Fig. 14).

FULL THROUGH INSTRUCTIONS

Drawer or Box Layout and Identification of Pins and Tails

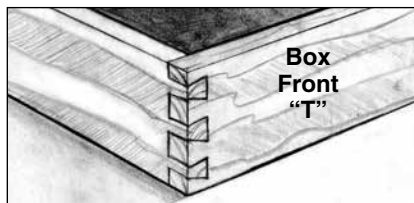
Layout all four pieces of your box or drawers and identify which will be the drawer sides (tail boards) and drawer fronts and backs (pin boards).

For Drawers



Drawer front:
Pin piece is in front

For Boxes



Box front:
Tail piece is in front

For jewelry or other decorative boxes, you'll want to display the more decorative dovetail tails on the front of the box. To do this, label the front and back pieces as tail pieces as shown at right.

Mark the tail boards and pin boards with a "T" or "P" on the inside faces.

NOTE: This is a very important step, since the face will either face towards the operator or towards the jig and will automatically align all four parts when assembling.

Figure 12

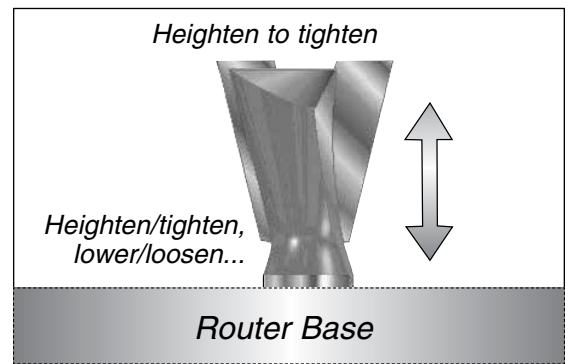


Figure 13

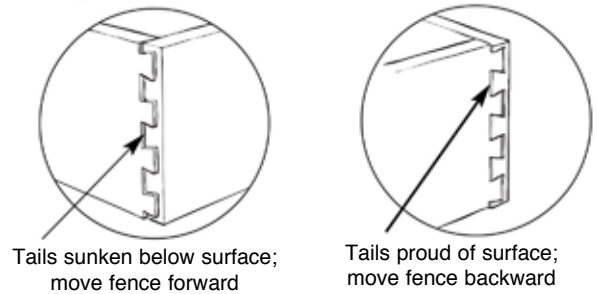
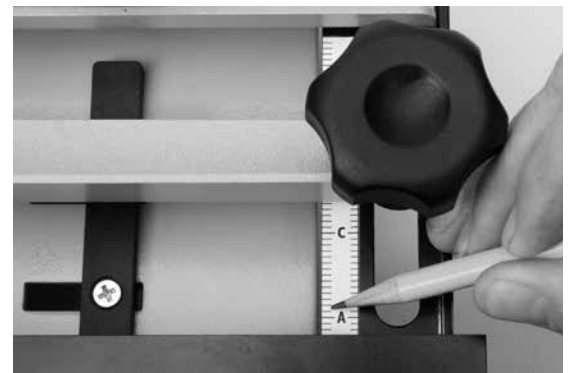
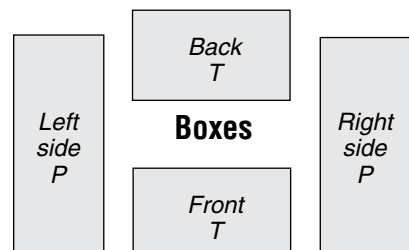
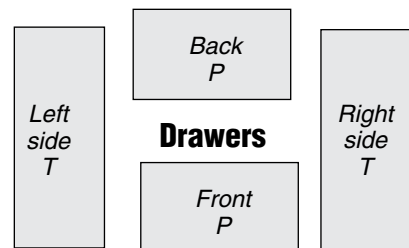


Figure 14



Mark all pieces on the inside face



Set up the Jig

When cutting full through dovetails you will be cutting to a depth of slightly more than the thickness of the material you are working with, so you will need to cut a clamping shim approximately 10" wide x 7" deep that's 1/4" thicker than your stock. An easy way to get this extra thickness is to first cut the shim from your stock material, and then cut a second shim piece from 1/4" thick masonite or other 1/4" material (Fig. 15).

Now simply stack the two shims to get the thickness you need. The shim should be flush with the back edge of the jig body (Fig. 15).

To correctly space the dovetails on the width of your stock, hold your work piece vertically in the jig as shown in (Fig. 16). Adjust left side stop (#11) side to side until the fingers on the template are equally spaced on both edges of your stock.

Then remove the stock and template and use a small square to make sure the vertical leg of the stop (#11) is square with the top of the jig body as shown in Figure 18. Tighten all three screws on the L-shaped stop (#11) and reinstall template.

Cutting the Tail Pieces

You will be using the half blind or tail piece template first. The first step is to cut a scrap piece the same size as your stock to verify the outer tails on both ends are the same width. If needed, readjust the L-shaped stops (#11) to equalize the outer tails (Fig. 16).

Lock the first tail piece vertically (inside face out, marked "T") in the jig, flush against the left side stop and tight against the template. Check the position of the template to verify the fingers extend beyond the face of the work piece. For 1/2" material, set the back edge of the tail template to the "B" setting and for 3/4" stock use the "E" setting (Fig. 17). Install the 7/16" guide bushing provided with your original half blind dovetail jig on your router.

Now install the 1/2" x 8° dovetail bit provided with the jig.

Next, set the depth of cut to equal the thickness of the stock for the pin piece. The easiest way to do this is to scribe a line on the tail piece using the pin piece as a guide (Fig. 19). Set the depth of cut on the dovetail bit so it will just cut through the scribe line (Fig. 20). This setting will allow your tails and pins to protrude slightly so they can be easily planed or sanded flush after assembly. If a dust collector is installed you will need to do this setting by turning your router upside down and using the stock you are working with and one of the templates as a guide to set the depth of cut.

Figure 15

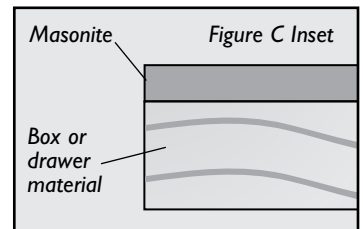
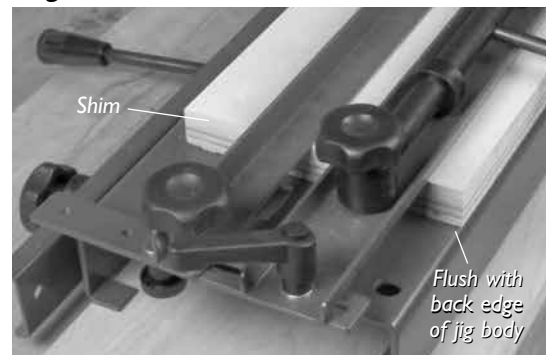


Figure 16



Figure 17

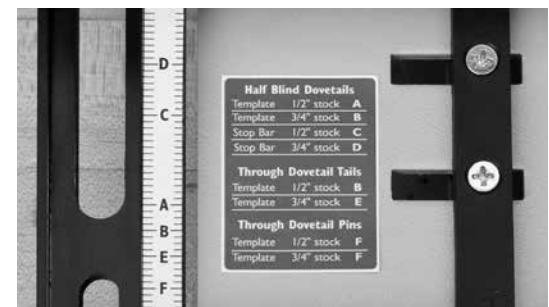


Figure 18

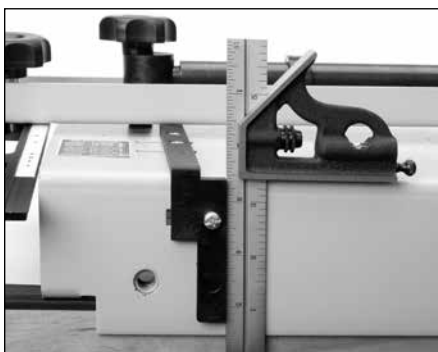


Figure 19



Figure 20



Set the router on the template, making sure the cutter is not in contact with the template or the stock. Turn the router on and start cutting on the left edge of the work piece. Keeping the guide bushing tight against the template, cut the tail by plunging in on the left edge, across the back side and coming back out on the right side of the tail. Always keep the guide bushing tight against the template fingers, and guide the router in a clockwise rotation around the tail (Fig. 21).

Flip the piece end for end, keeping the inside face toward the operator and continue cutting the remaining tails using the same procedure. Cut all remaining tailboards in the same way.

WARNING: Do not lift the router off the template while the motor is running. If you do, the bit may ruin your template.

Cutting the Pin Pieces

Cutting the pins determines how tight your joint will be. To get the jig set up correctly, use a test board exactly the same dimension as the pin boards used in the project. All pin boards are cut with the inside face (marked "P") towards the jig.

Remove the 1/2", 8° dovetail bit and install the 5/16" straight bit. Remove the tail template and install the pin template. Set the back edge of the template to the "F" setting (Fig. 22) for both 1/2" and 3/4" material.

Set the depth of cut the same way as you did cutting the tailpieces, but this time use the tail stock to scribe your line. Proceed to cut the joint in the same fashion as you did the tail boards.

Test Fit

Test fit the pin board to the tail board. If the joint is too tight, you will need to loosen the two T-bolt knobs and move the template away from you approximately 1/16". **NOTE:** Moving the template towards you will give you a tighter joint; moving the template away from you will loosen the joint (as indicated on the template). Be sure the front edge of the template remains parallel with the front of the jig body.

Cut off the previously routed pins, and reinstall the same test piece again, keeping it tight against the left side stop. Then re-cut the pin test piece.

Follow this process until you produce an acceptable fit. Proceed to cut all pin boards. Remember to always have the inside face toward the jig when cutting the pins.

Figure 21

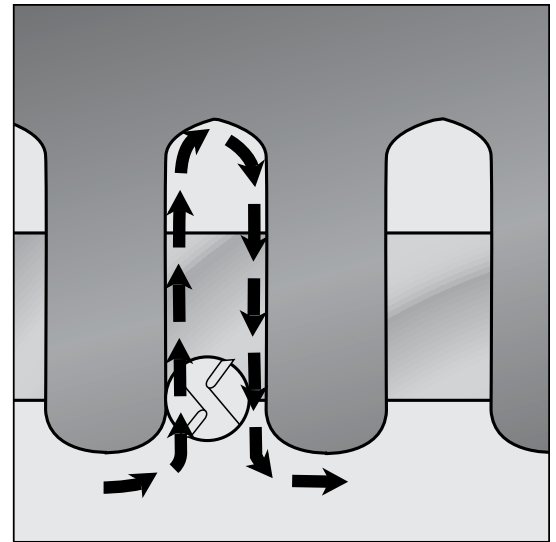


Figure 22



Quick Guide for Half Blind Joints on 1/2" material

1. Set router bit (1/2"-14°) depth to 9/16" using guide on half blind template.
2. Adjust side stops for equal spacing of dovetails.
3. Install both vertical and horizontal pieces tight up against side stops.
4. Set back of template to "A" setting on scale.
5. Set stop bar to "C" setting.
6. Rout joint.
7. Adjust settings as needed.
8. Document final settings on scale for future use.

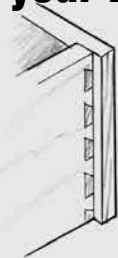
Quick Guide for Through Joints on 1/2" material

1. Set router bit (1/2"-8°) depth to material thickness plus template thickness.
2. Adjust side stops for equal spacing of dovetails.
3. Install tail piece vertically into jig and clamp securely.
4. Set back of tail template to "B" setting on scale.
5. Route both tail boards.
6. Install 5/16" straight bit.
7. Set depth to the same as dovetail bit.
8. Install pin piece vertically into jig and clamp securely.
9. Set back of pin template to "F" setting.
10. Rout pins, remove from jig and test fit with tail pieces.
11. Adjust if needed and document settings on scales.

Tool Safety Rules

1. Keep your work area clean and well lighted.
2. Do not use a router with this jig when tired or under the influence of drugs, alcohol or medication.
3. Avoid loose clothing or jewelry.
4. Unplug the router to make any adjustments.
5. Remove the wrench(es) before starting the router.
6. Always wear eye, dust, and hearing protection.
7. NEVER lift the router off the jig while the bit is still spinning.
8. Secure the jig to a solid base (such as a heavy workbench) before using.
9. Keep children and other distractions away.
10. Always replace damaged parts before using the jig.

Some other joints you can make with your Rockler 12" Dovetail Jig



Offset Dovetails (top drawing) can be used when there is no separate drawer face to attach to the drawer front. They give you an integrated overlay; that is, part of the drawer front overlays the face frame of the chest or cabinet. To mill the joint, just add 3/4" to the length of the front. The part thickness should be a minimum 7/8" thick, and the rabbet on each end should be milled before inserting the piece in the dovetail jig. Move the backstop 3/8" back, and test your setup on scrap.



Rabbeted Dovetails (middle drawing) add a lip to the top, bottom and sides of the drawer front. They are milled in the same fashion as the offset dovetail (above), except that you must reset the right and left stops for the drawer front. Note: You'll need to shim the horizontal/top arm of the "L-shaped" stop 3/8" so that the offset is 1/8" instead of the standard 1/2", then proceed.