Dovetail Jig Review

Router jigs have their place, but don't expect them to duplicate hand-cut joints

BY GARY ROGOWSKI

To the uninitiated, dovetail joints are intimidating. That's why dovetail jigs are so popular. Seems like every few years someone comes out with a new one. And lots of woodworkers buy them, hoping to become master joiners with the flick of a router switch. I imagine many of these jigs get tossed into a corner after a brief tussle. Most will cut snug-fitting joints. But some are difficult to set up, either because of poor design or sheer complexity. And if you run out of patience with these jigs, your joints will fit poorly. True, making hand-cut dovetails takes skill, and unlike riding a bicycle, you do forget, or at least lose proficiency, if you don't do it regularly. Router jigs—a few of them, anyway—can simplify the task. But a router jig won't give you the flexibility and look of hand-cut dovetails. There's not a router bit out there capable of cutting the classic skinny pin hewn by a dovetail saw and chisel.

I'm no purist and realize that jigs have their place. Many jigs will allow you to cut dovetails faster than you could using hand tools. I tried eight commonly available jigs to see how they stacked up to one another. They can be classified into three groups: Jigs that cut only half-blind dovetails; jigs that cut only through-dovetails; and combination jigs that, depending on the model, may cut half-blind, through-, sliding and variably spaced through-dovetails.

Half-blind jigs cut both pins and tails at once

Half-blind dovetails are visible from one side (see the photo below). They're commonly used for drawer joinery when you don't want the end grain of the tails to show in the drawer front. Halfblind dovetail jigs all work in a similar fashion: A matching pair of pin and tail boards is cut simultaneously. Spacing is not variable.

Setup for each jig is the same: Mating pin and tail boards are both clamped in the jig at 90° to each other. The outside faces of the boards are placed down, or facing the jig. Locating pins, edge guides or stop bars offset the edges of each board so that the joint lines up when assembled. The jig's template is placed on the boards and secured. To cut the joint, use a router equipped with a template guide bushing and a dovetail bit. By changing the position of the edge guides, you can also cut dovetails onto drawer fronts with rabbets for overlay construction. Getting a good fit with halfblind jigs depends on setting the bit's depth precisely through trial

One bit cuts both pins and tails. Half-blindjigs leave symmetrical rows of dovetails with rounded edges of pins, which won't show once the joint has been assembled. Some combination jigs also cut these joints.

and error, which can be timeconsuming. If you set the bit for too shallow a cut, the tails and pins will be too large. If the bit is set too deeply, the joint will be so tight that it won't fit together. To speed the setup, mark your depth settings on a scrap of wood.

Porter-Cable 4112—Assembling this Porter-Cable jig takes some time, but it's a fairly easy job because of the decent instructions. Each edge guide is attached with only a small screw and a lock knob (see the left photo at right). When the knob is loose, the edge guide can pivot, especially if you're prone to banging your boards into place on a jig.

The clamp bars are sheet metal, and while they hold fine when new, I imagine they'll get distorted over time. I own an old Stanley dovetail jig of similar design, and it now requires an extra clamp to hold stock securely. Because the lock knobs screw on, it takes time to lock and unlock boards, but the joints come out fine.

Woodstock—The Woodstock jig is easy to assemble out of the box, but after that, things go downhill. You need to do a ludicrous amount of math to set the finger, or slot, template properly, and adjusting the template is difficult. The placement of a vertical board is also difficult because the finger template isn't easily removed and stays in the way. This template can also deflect, causing the router base to bind on it when cutting, possibly the reason for the poor results I achieved using it. The jig also has too many lock knobs located too close together (see the far right photo), making

HALF-BLIND DOVETAIL JIGS

Half-blind dovetail jigs all work the same way. A pair of adjoining boards, outside faces against the jig, are clamped at right angles to each other under the template. Both boards are cut in one pass.



MODEL	WOODSTOCK (360-734-3482)	PORTER-CABLE (800-487-8665)	
MAXIMUM WIDTH	12 in.	12 in.	
EASE OF SETUP	Poor	Fair	
MANUAL	Fair; fence-adjustment instructions read like a math lesson	Good; brief but clear	
COST	\$70 (bit and template guide bushing included)	\$100 (bit and template guide bushing not included)	
COMMENTS	Overly complicated to set up; awkward to use	Fine for occasional use	



Design makes it difficult to use the Woodstock jig. Lock knobs spaced too close together make the Woodstock jig awkward to use.



Adjusting the Porter-Cable's edge

guides are light duty; a board banged against a guide may knock it out of

adjustment, requiring you to repeat

the initial setup.

guide. To align joints, boards are offset

to one another using edge guides. These

it difficult to turn one without banging your fingers on another. Plus I have a little trouble trusting a jig whose instructions warn against overtightening plastic parts, lest they crack. The woodshop is not a place for the meek.

Through-dovetail jigs cut pins and tails separately

On through-dovetail jigs, stock is mounted vertically under the template, which has separate fingers and bits for cutting tails and pins. The template mounts onto a backer board whose placement determines the fit of the joint, unlike a half-blind jig whose bit depth determines the fit. On through-dovetail jigs, joints are cut using a bearing-guided bit. Because the pins are cut at an angle (using a straight bit), moving the backer board in or out will produce pins of different sizes. The bit depth determines only whether or not the joint comes out with flush ends.

Keller Journeyman—The Journeyman jig requires you to make a backer board, to which the phenolic-resin template is attached. Milling the backer board to the proper size and adjust-

> ing it are simple, taking about an hour. The 15-in.wide Journeyman template has both the tail and pin fingers, so you mount only one backer board. (The large, heavy-duty jigs, made of anodized aluminum, come in three sizes: 16 in., 24 in. and 36 in. These jigs all use separate tail and pin templates, each requiring its own shop-made backer board. The aluminum jigs operate the same way as the Journeyman jig.)

The pin template has angled fingers, which are cut with a flush-trimming bit. If the backer board is set too far forward, the pins will be too small and the joint will be loose. If the board's set too far back, the pins will be too large to fit with the tails. Setting the backer board right is the key to this jig. But once set properly—and as long as you don't drop it on the shop floor the jig is always ready to go and cuts perfect-fitting dovetails.

The Journeyman jig is easy to use (see the right photo above). First, mark the center on the tail board and center this line on one of the fingers of the tail template. Figuring out the bit depth is easy: Simply add the thickness of the template ($\frac{1}{2}$ in.) to the thickness of the stock. It's a good idea to clamp a piece of wood to act as a stop so that the jig automatically indexes subsequent cuts. After routing the tails, place the pin board in a vise, lay the tail board on top and use the tails as a template to mark (use a knife or sharp pencil) the location for the pins. Then mate the pin board with the template, using the layout marks for registration. By using registration marks, you can also move the jig from side to side and handle stock wider than the jig. And you can also cut variably spaced through-dovetails simply by moving the jig over.

Katie Jig—The Katie Jig comes with two backer boards fitted to an aluminum extrusion, which serves as the track for the template's fingers (see the photo at right). The finger spacing can be adjusted.



Cutting through-dovetails on the Keller Journeyman. A stop block (left) is clamped to the backer board of the jig. Stock is clamped vertically under the template and is cut using a bearing-guided router bit.

Each finger has two sides—one for cutting pins and the other for tails. Stop blocks slide into the bottom of the jig and can be locked in place. It doesn't matter whether you cut the tails or pins first because the stop blocks put you in the right spot for both cuts.

The Katie Jig is remarkably simple to set up and use, and the results are good. There is no fudge time because the jig has been adjusted at the factory. Like the Journeyman, you can slide the jig over when cutting stock wider than the template's 12 in.

One thing about the fingers concerns me. When loosened (via set screws), the fingers have a bit of fore and aft play in the sliding



The Katie Jig has an adjustable template. The template's fingers are attached to a sliding aluminum extrusion, which allows you to adjust the spacing of dovetails.

THROUGH-DOVETAILJIGS

Pins and tails are cut separately with through jigs. Stots Dovetail Template Master (left), is just that: a template used to make a working jig (the MDF template shown); the Katie Jig comes with a backer board and stop blocks; the Keller Journeyman and Keller 1601, both of which operate on the same principle, require you to make your own backer board and stop blocks.



Using the Stots jig is slow work. The router must come to a complete stop before moving on to the next pin or tail cut.

rack. How the fingers are positioned can affect the tightness of the joint. I did, however, get good results with the jig.

In use, the router bit cuts into the backer board, which helps prevent tearout of the joint (same as on the Journeyman jig). Over time, repositioning the fingers will result in a worn-out backer board that

doesn't offer support against tearout. You can either buy a new backer board from the manufacturer or mill your own.

The dovetail bits that come with the Katie Jig are so tall and wide that when using stock thinner than 1 in. your tails look a bit oversized. Make drawers out of ¹/₂-in. stock, and the joints look very pversized. The other problem with using thin stock is that the tails and pins will be proud (up to about ¹/₄ in.) of the joint, and they have to be planed or sanded flush.

Slots Dovetail Template Master—The Stots jig isn't really a jig at all: It's a master template. You use the Stots jig to pattern-rout a working template. Why? The foreword in the manual explains that the problem with through-dovetail jigs is "not if you cut your jig, but rather when." Of course, this applies equally to the Stots jig, which you make out of plywood, medium-density fiberboard

MODEL	STOTS DOVETAIL MASTER TEMPLATE (502-329-0737)	KATIE JIG (317-881-8601)	KELLER JOURNEYMAN (800-995-2456)
MAXIMUM WIDTH	6 in.*	12 in.*	15 in.*
EASE OF SETUP	Fair	Good	Fair
MANUAL	Good but diminutive graphics	Good, clear instructions; helpful graphics	Fair; graphics are crude but adequate
COST	\$40 (template only)	\$250 (two bits and adjustable stops included)	\$140 (two bits included)
COMMENTS	Tedious to copy template; slow to use	Simplest to set up and use	Easy to use; stays in adjustment

*Jig can cut wider stock.

(MDF), or another material that's easily cut and also easily marred. Working templates can be ganged together, and you can make them as long as you want. But pattern-routing each template and making a backer board take a couple of hours. Using the jig is time-consuming, too, because for each pin or tail, you have to insert the router bit into a slot, cut it, then turn it off before lifting the router up and out of the slot. Yes, it works, but I would recommend buying any other jig and spending your time more wisely.

Combination jigs give you versatility

Combination jigs are remarkable in that they all try to do so much in such a small package. Their designers should be given awards for cleverness, and the writers of some manuals should be given a caning behind the woodshed. The KISS (keep it simple, stupid) principle should always be the guide when designing dovetail jigs. Essentially, if you want to cut adjustable through-dovetails, you should learn to cut them by hand You'll save lots of money and get a sense of satisfaction that none of these jigs can give you. On the other hand, if you have to produce a lot of joints, with practice

you can learn to use these jigs efficiently and perhaps save some time.

Combination jigs can cut half-blind and throughdovetails, and some do even more, including variably spaced through-dovetails, box joints and sliding dovetails. For half-blind joints, the setup usually requires only one template, a template guide and a dovetail bit. The exception is the adjustable half-blind Leigh jig, which uses both sides of its two-sided template, two setups and one bit. Through- or variably spaced dovetail joints require two templates (or a twosided template) and two bits.

Porter-Cable Omnijig—The manual for the Omnijig was not written by a former Microsoft engineer. It's short and readable, and it makes sense. The Omnijig, made of thick cast aluminum and steel, is by far the heaviest of the jigs and is fit for industrial use. It's the best combination machine for cutting half-blind dovetails. The sturdy, eccentrically mounted clamping bar is a huge improvement over the flimsy clamps found on most half-blind jigs. The finger template is made of cast aluminum. Sturdy fasteners keep jig settings from being

knocked out of whack (see the left photo on the facing page). The Omnijig can also cut adjustable through-dovetails. As with the other through-dovetail jigs, the tails and pins are cut with the stock clamped vertically. A backer board of scrap wood is clamped into the jig to prevent tearout and damage to the jig's base.

The Omnijig's adjustable through-dovetail template is unusual in that the fingers for both pins and tails are on the same side. All you have to do is move the template spacers in or out to reposition the template for



Some clever engineering went into the Craftsman jig. A dial on the side of the jig allows you to fine-tune the template position, which affects the fit of the joint. Many of the components are made of plastic.

cutting either tails or pins. The fingers can also be moved left or right to make variably spaced dovetails. Once set for a tail cut, the fingers will automatically make the pin cut to match. Make sure you don't space the fingers too far apart; otherwise, you may lose support for your router base.

I got good results with the Omnijig. The only thing troublesome about the through jig is the large $\frac{3}{4}$ -in. dovetail bit that comes with it. The bit narrows to about $\frac{3}{16}$ in. at its neck right before the shaft. It looks awfully thin, although I had no problems with it.

Sears Craftsman—The Craftsman 16-in. jig is designed for people who love to assemble jigs. Just getting all of the pieces together is an accomplishment in itself. And the design is clever. Unfortunately, it's designed within a budget that included only plastics and pot metal (see the photo above).

To prevent deflection of the templates, each needs to be fitted with a metal stiffener. This is hardly a symbol of strength. The





Porter-Cable's Omnijig has an optional variable-spacing template available. Adjustable fingers, which cut both pins and tails, slide along a pair of clamping bars.

clamping system, however, is surprisingly strong and well designed.

The half-blind template works the same way as the Porter-Cable and Woodstock templates. The one difference is that a dial moves the template in or out to adjust the fit of the joint.

Through-dovetails are made using a single template mounted with two sets of fingers on each side, one for the tails and one for the pins—like the Journeyman jig. My router base didn't slide smoothly over the template. But the results were okay.

Leigh D4—I know it's heresy to complain about the very popular Leigh jig, but it's just too darn busy for my taste (see the bottom photo on the facing page). The Leigh can do so many things, but it takes so many pages of instructions to get there: 168 pages, in fact. I think you could be fairly accomplished at handwork by the time you tried all of the Leigh's permutations. But, hey, that's just my opinion.

For half-blind work, I needed at least two hours of setup time to get the fit right. It cuts boards like any half-blind jig: one board placed horizontally and one vertically and both cut with one dovetail bit.

But unlike the other half-blind jigs, each board is cut in a separate operation by flipping the finger template over and realigning it. There are no clues as to the depth of cut you need, either. So it's a cut, fit, dial in, trial-and-error kind of operation. And if you set the adjustable fingers too far apart, you need to add a spacer block to prevent accidental cuts in the wrong places.

The Leigh D4 jig cut through-dovetails with great ease. And once you understand the sign language of the jig, it's pretty simple to use. You lay out the joints with the pin side of the finger template.

COMBINATION DOVETAIL JIGS

Some of the most clever design innovations can be found on combination machines. The Leigh D4 (left) gives the user the most options for types of joints; the Porter-Cable Omnijig (middle) is also a versatile machine; the Craftsman combination jig (right) will not allow for variably spaced dovetails.



MODEL	LEIGH D4 (800-663-8932)	PORTER-CABLE OMNIJIG (800-487-8665)	SEARS CRAFTSMAN (800-377-7414)
MAXIMUM WIDTH	24 in.	16 in. (24-in. model available)	16 in.
EASE OF SETUP	Poor	Good	Fair
MANUAL	Fair; good graphics but time-consuming to decipher	Good; brief but clear	Good; easy to follow with good graphics
COST	\$350 (two bits included)	\$275 (dovetail bit and template guide bushing included)	\$135 (template guide bushing included)
COMMENTS	For variable spacing, this jig can't be beat; accessories are available to make finger joints, mortise-and-tenon joints and Isoloc joints	Best jig for half-blind dovetails; extra templates are available for finger joints, variably spaced dovetails, fixed through- dovetails and sliding dovetails	Entry-level jig; works fine but spacing of joints is fixed

That's the side the lock screws are on. Then you flip the template over to make the tail cuts using a template guide and dovetail bit.

To cut the pins, you must flip the template over and dial it into position. So it's a trial-and-error fit again. In fact, the manual for the Leigh jig says to keep testing until you get it right, then note the settings for future reference. The results I got were good, eventually. I just felt that the setup time was too long.

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