

Do It Yourself

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Wooden Tool Chest -- Cutting Dovetail Joinery on a Band Saw

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Creating Dovetail Joinery With a Band Saw

With the, work can begin cutting the dovetail joinery using the band saw. As mentioned in the previous section, a dovetail jig will not be used for creating the joinery for this piece. For aesthetic reasons, the neck of the pins on the dovetails for this chest are cut very thin -- to about 1/8 inch. The shanks on router bits are generally 1/4-inch or larger. For this reason, the band saw is better suited for cutting these finer pins and tails.

Materials:

Milled walnut stock

Band saw

Bevel gauge

Jig saw

Sharp chisel; Japanese dovetail chisel

Clamps

Straight-edge

Carpenter's pencil; chalk

Carpenter's tape

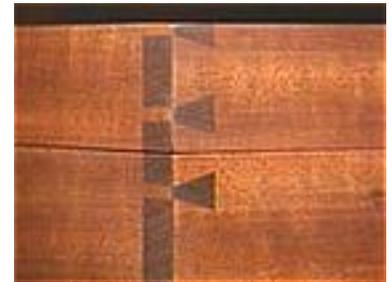
Safety glasses or goggles

Note: Cut sizes may vary. For exact measurements, please contact David Marks through his Web site -- information below under Resources.

Safety Alert: *Always* wear safety goggles or safety glasses when working with wood, power-tools, saws, drills, routers, etc.

Steps:

- Before making any cuts, the band saw must be properly set up. First, tilt the table on the band saw to 14 degrees, setting the angle with a bevel gauge (**figure A**). Once you have the correct angle



Dovetail joinery dates back to ancient Egypt and is the strongest form of joinery used in woodworking.



Figure A



Figure B

established, lock down the table.

Note: If your band-saw cannot be set to a 14 degree angle, a 10- or 12-degree angle should be sufficient for making the joinery. Ascertain the angle that your saw is capable of making *before* laying out marks on your stock.

- Use the previously drawn layout marks to set up the band saw. Position the first cut-mark against the blade (**figure B**).
- Secure a stop-block of MDF to the fence on the table saw to serve as a reference (**figure C**).
- Cutting the joinery on the band saw requires a lot of repetition. Rather than re-setting the fence for each cut, four separate spacers are made (**figure D**) to simplify the cutting of the pins. The spacers are made from MDF, and are based on the measurements between the pins. To help prevent mistakes, each spacer is numbered. Following are the widths of the four spacers:
 - #1: 1-1/8 inches
 - #2: 2-1/4 inches
 - #3: 5-5/8 inches
 - #4: 9-1/8 inches
-
- To cut the half-pin, set the stock against the fence, and use a stop-block to prevent the cut from extending beyond the scribe line.
- For the second cut, place the spacer cut to 1-1/8 inches wide against the fence, and make the cut (**figure E**). (Note: This spacer will be used again for the sixth cut.)
- For the third cut, use the spacer that's cut to 2-1/4 inches wide (**figure F**).
- The fourth cut is at the center of the board. Slide in the corresponding spacer cut to 5-5/8 inches and make the cut.
- For the fifth cut, slide in the spacer that's 9-1/8 inches wide and make the cut.



Figure C



Figure D



Figure E



Figure F



Figure G

- For the sixth cut, use the 9-1/8 inch spacer *and* the 1-1/8 inch spacer (**figure G**) and make the cut.
- This completes half of the cuts for the pins on one end of the stock. Rotate the stock and repeat the process, making the same cuts on the other end (**figure H**). Use blue carpenter's tape as a reference to ensure that the outside of the case-piece is facing up.
- Follow the same cutting pattern as before until all cuts are complete on the second end.
- Once the first round of cuts are all made on both pieces of stock, tilt the band-saw table in the opposite direction, again at a 14-degree angle. Set up another fence of MDF to support the stock when it's tilted in the opposite direction as before (**figure I**).
- Replicate the process used in the first round of cuts, adding the same spacers and following in the same procedure (**figure J**).
- Rotate the stock and repeat the process as before. Perform the process on both pieces of stock.
- Once all of the cuts have been made (**figure K**), mark the stock that will be cut away with X's (**figure L**). Mark the edges as well as the end-grain to help avoid accidentally cutting through the pins.
- To prepare for cutting away the remaining stock, make certain that the wide parts of the pins are facing upward, and clamp the first piece to the work table for stability (**figure M**).
- Now use a jig-saw to begin carefully cutting away the stock to expose the pins (**figure N**). The jig-saw is the ideal tool for this since the blade is small and easy to maneuver with precision.
- To complete the process of hand-cutting away excess stock, well-sharpened chisels are used. Clamp a board that's been jointed to exactly 90 degrees along the scribe line (**figure O**) to act as a reference and ensure a nice, straight cut.
- Carefully chip away the remaining stock (**figure P**), making sure to only cut half-way down the thickness of the stock.



Figure H



Figure I



Figure J



Figure K



Figure L

- Then flip the stock, re-clamp the guide board on top, and chisel the other half. Cutting from both sides in this way helps ensure that the chisel cuts perfectly on the scribe line, eliminating the potential for gaps. Allow plenty of time for carefully chiseling out all the pins on both pieces of stock.
- The chisel produces sharp cuts and clean pins (**figure Q**) that will help ensure a precise fit when the pieces are joined together.
- With all of the pins cut, the tails can be laid out on the long front and back pieces.
- Use a cabinetmaker's scribe to score a fine line along the ends of the long stock.
- Clamp one end of a finished side-stock piece onto the board at 90 degrees, with the neck of the pins facing outward. Use a razor knife to scribe the layout of the tails onto the front and back pieces. Finally, add chalk marks to identify the matching pieces (**figure R**).
- With the tail pattern laid out, reset the band-saw table back to horizontal. The cuts for the tails are made freehand. Lay the stock flat on the table and carefully cut the outside edges for the tails.
- Once the outside edges, use the band-saw blade to carefully "nibble" away the bulk of the stock from inside the cuts (**figure S**).
- Cut away the half-pins on each end using the band saw.
- Use a sharp chisel to finish the job of cutting the tails to precision (**figure T**), cleaning up the area where the pins will fit.
- The chisel used for this piece is a **Japanese dovetail chisel**, specifically designed to reach into the sharp recesses.



Figure M



Figure N



Figure O



Figure P



Figure Q

In the segment that follows, the assembly begins on the tool chest.

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Figure R



Figure S



Figure T