From the Original Woodworker's Notebook

By

Ronald Woodhull

SHAKER STEP STOOL

A NOTE ON SAFETY

Safety is the responsibility of all woodworkers. Do not attempt any project or procedure without all safety devices intact. Any deviations in stock dimensions and/or any change in project will affect the end result of any project. When circumstances require the use of different materials, alter project dimensions as required.
Read all instructions for any project before starting the project.

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SHAKER STEP STOOL

By Dave Morgan

The Past and Present

The beauty of Shaker furniture lies in the simplicity and practicality of the design and the fine craftsmanship that went into the construction. The Shaker craftsmen took great pride in their joinery and handwork.

Our little step stool is based on the Shaker design. However, I have added a through double-dovetail joint to create a more decorative piece.

The through double-dovetail joint is not difficult to make, but I would recommend making a project with a single through-dovetail first to get the feel of the setup.

Construction

The first step for this project is to install the ¾" Through Double-Dovetail EZ-VIEW template in the **IPM-1 or CLINCHER**. With scrap pieces of wood, make test cuts to determine the depth of cut for a ¾", 8 degree dovetail bit. The approximate depth of cut is shown on the joint plan in the Handbook as ¾". The exact depth of the cut must be made by trial and error. If your test yields a depth of cut of ¾" or less you can use 4/4 stock size (some companies mill 4/4 stock to 25/32"). If your test yields a depth of cut greater than ¾" you will have to use 5/4 stock size (actually milled to approximately 1⅛"). Some hardwood suppliers will stock ⅞" thick material.

The next step is to select the material. Maple or cherry would be an excellent choice with walnut for the joint contrast. You will need at least two pieces 8" wide by 60" long of the maple, one piece 8" wide by approximately 16" long of the walnut and one piece of 1" x 2" x 48" long of maple. Plane the 8" material to the **exact** same thickness as the depth of cut. After planing, prepare the boards for jointing. If your table saw is adequate for jointing, rip the boards to 7" wide by taking material from both sides of the boards to insure squareness. If the boards are to be squared on a jointer or using **SmartFence** rip the material to approximately 7 1/16" to prepare the stock for jointing to 7". I joint both edges of each board

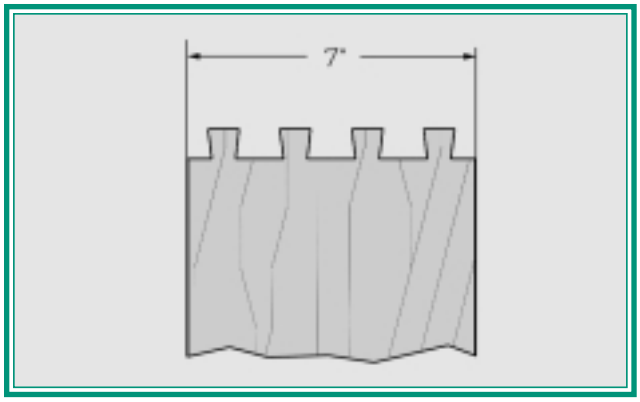
to be sure everything is square. Square one end and crosscut each of the long boards into two 20” and one 10” lengths using your crosscut sliding saw table. Cut the walnut board into four equal lengths.

Select two of the 20” boards to be the steps, be sure both pieces are exactly the same length. These two pieces will have dovetails cut on both ends. They will have the pin cuts.

Zero the fence, set the template zero to + 3/8” mark on the fixed scale. Center the work piece

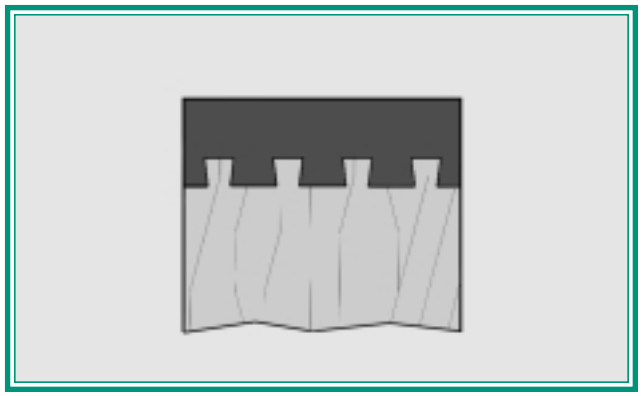
Both of the step boards (pin pieces) may be cut at the same time. Clamp the pin work pieces vertically along with a backup board to the **Vertical Push fixture**. Be sure the pieces are fully down on the table top and square against the fence. Make the first pin cuts using the full length RED template lines. Make the cuts on both ends of the boards. Set up the stops and make the finish horizontal pin cuts on the pin joints.

The remaining four maple pieces will be the sides and will be cut one end only with tail cuts. Clamp all four pieces along with a backup board to the **VPF-1**. Be sure the pieces are down on



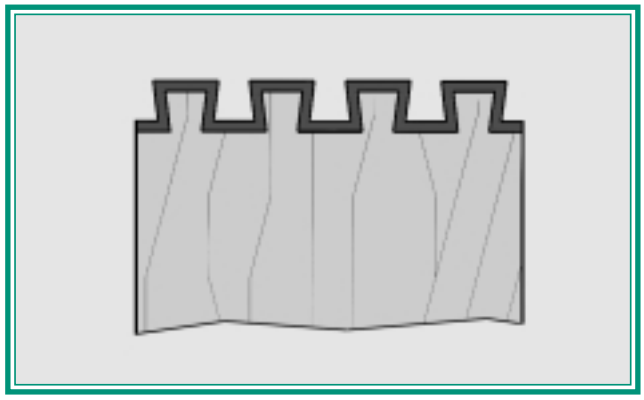
the table top and square against the fence. Make the tail cuts using the full length BLACK dashed template lines.

The four walnut middle pieces can be cut simultaneously. Clamp the four pieces to the **VPF-1** along with a backup board. Be sure the pieces are down on the table top and square against the fence. Make the cuts following the SHORT dashed BLACK lines on the template.



Glue the dovetailed ends of the middle pieces and the tail pieces together and set them aside for the glue to dry.

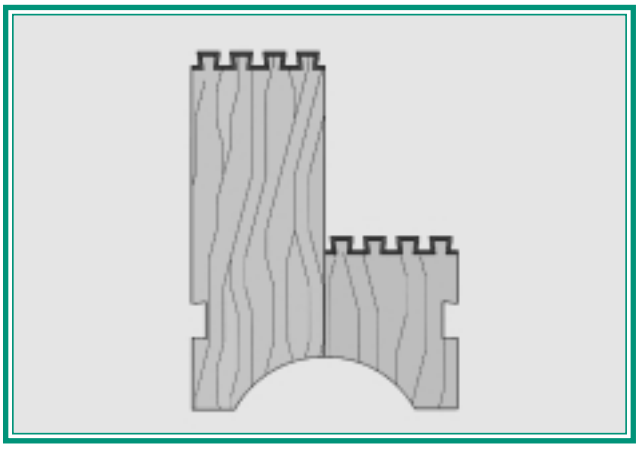
Mark the middle sections to extend the tail pieces 3/16” beyond their original length (to approximately 20 3/16” and 10 3/16”). Use the sliding saw table and cut the middle pieces at the marks.



Clamp the new longer tail pieces together along with a backup board to the **VPF-1** and perform the series of cuts following the SHORT RED lines on the template.

We now have the boards prepared from which we will make the step stool.

It will be necessary to join a 10” board and a 20” board to make a side. The boards may be supported with dowels or biscuits at the joint or it is perfectly acceptable to butt glue the edges without additional support. From the top (dove-



tailed) edge of a long piece measure down 10” and mark the board. Place a mark on the other long board at the same location. The short board will be joined to the long board with the top of the short board at this location.

After the sides are joined and the glue is dry remove any excess glue from the joint and sand lightly.

Using the sliding table with a stop set up at 19¼” trim the bottom edge of each side.

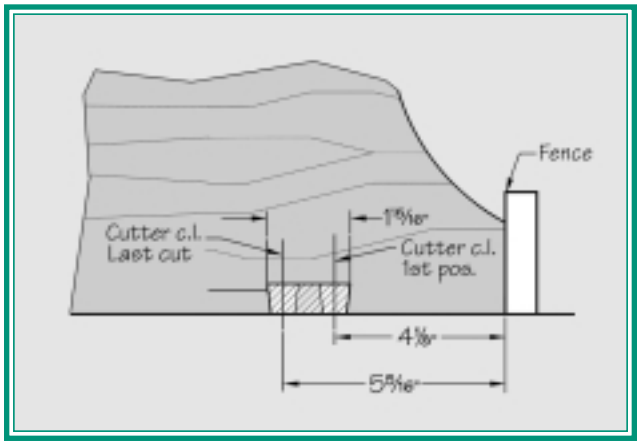
Layout the arc cut at the bottom using the dimensions shown on the drawing. Double back tape the two sides together and cut out the arc on both sides simultaneously.

Use a band saw, scroll saw or hand held jig saw to make the cut.

Adjust the height of the router bit to the thickness of the 1” x 2” strip (approximately ¾”).

Move the fence until the cursor lines up with the 4⅛” mark on the fixed scale. Still taped together, clamp the two sides along with a backup board to the **VPF-1** with the bottom edge of the side against the fence. Make a cut through both pieces. Move the fence in small increments (approximately ¼”) making a cut at each fence setting until the cursor is on the 5⁵⁄₁₆”mark.

Remove the clamp and flip the pair of sides 180 degrees and repeat the cuts on the opposite side.



With the router bit set to the same height as in the previous steps, install a horizontal featherboard to the table and the vertical featherboard to the **SmartFence.** Cut a full 7degree dovetail taper on both sides of the 1” x 2” x 48” strip. Using the jointer feature of the **SmartFence**, set to cut 1⁄32”. Trim the width of the strip until it is a snug fit into the dovetail slot in the sides. If you do not have a **SmartFence**, tape a piece of card stock to the outfeed side of your fence and use it like a jointer.

Cut the strip into two 20” lengths.

Assembly

Sand the inside and outside of the two side pieces before assembly. Install the two 1” x 2” x 20" pieces into the dovetail slots with glue. Make sure the two pieces are flush with the outside surface on both sides and clamp in place.

Assemble the top and bottom steps in the dovetails with glue and clamp in place. After the glue is dry remove the clamps and remove any excess glue that may have squeezed out. Finish sand and apply a finish of your choice.