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Vectric Project Tutorial
www.vectric.com

Compatible with Current Version of:

Aspire

Sample Carved with:
ShopBot Buddy
PRSalpha BT48

ShopBot®
www.shopbottools.com

Japanese Garden Box
Designed for Vectric™ by Michael Tyler

The Japanese Garden Box was inspired by the traditional rock garden (called karesansui in Japanese) using sand or gravel as a base with carefully placed islands of rock. Groups of three dark colored rocks is common. The sand is raked in patterns up to and around these rock "islands" to represent water ripples. The lid of the box imitates this cultural garden style.

Photo of a real Japanese Garden

The sample box was made from a single wood type. The end panels, lid and bamboo front and back panel finish was applied before assembly.

The files are purposely organized so you may easily machine contrasting wood types instead of applying a finish before assembly, if you wish.

The dimensions are:
12.75" W x 9.5 " D x 5.5 " H

Main items you will need:
1) The Project Files (included):
• Side-A_Front-Back.crv3d
• Side-B_Front-Back.crv3d
• End_Panels.crv3d
• Garden_Lid.crv3d
• Rocks.crv3d
• Box_Bottom.crv3d

2) Material with these dimensions:
*Side-A_Front-Back: 0.75 "x 11 "x 14 "
*Side-B_Front-Back: same board as Side-A
End_Panels.crv3d: 0.75 "x 9 "x 21 "
Garden_Lid.crv3d: 0.75 "x 9.5 "x 14 "
Rocks.crv3d: 0.5 "x 2.75 "x 9 "
**Box Bottom: 0.25 "x 9 "x 14 "

 * (2-sided files use one board for machining)
**(use 0.25 " -thick MDF or Plywood panel)

3) Two 0.75 "x 0.625 " hinges, brass chain, finish washers, screws, two self-stick bumper pads, glue, epoxy, sandpaper, clamps, stain or paint and clearcoat

4) A Dremel-type rotary tool with assorted sanding wheels and bits to sand small details
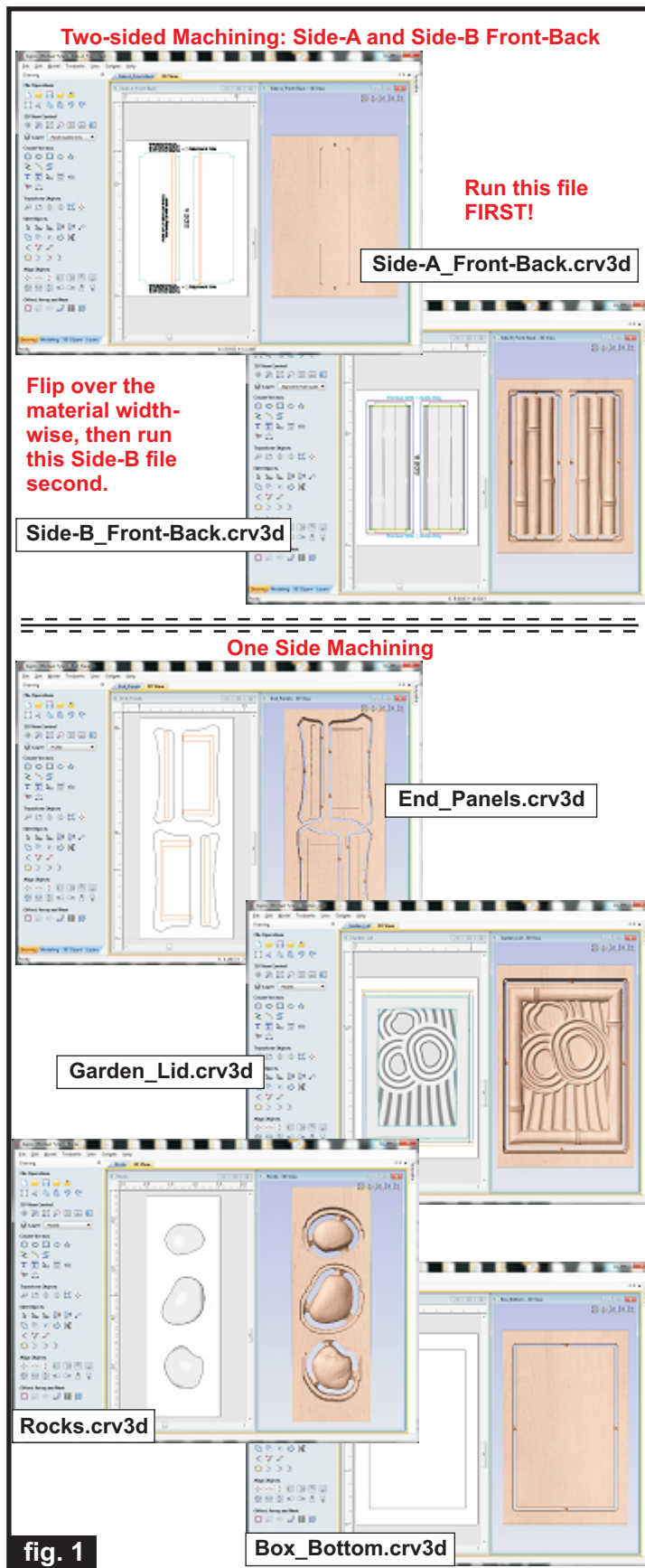

CNC Bits used for the Sample:

0.125 "Ball Nose (BN)
0.25 "Up-Cut End Mill (EM)
0.25 "Down-Cut End Mill (EM)

STEP 1 - Open and Review the Project Files
Open the files in your Aspire software. (fig. 1)

Two-sided Machining: Side-A and Side-B Front-Back

Run this file FIRST!

Side-A_Front-Back.crv3d

Flip over the material width-wise, then run this Side-B file second.

Side-B_Front-Back.crv3d

One Side Machining

End_Panels.crv3d

Garden_Lid.crv3d

Rocks.crv3d

Box_Bottom.crv3d

fig. 1

Carefully review all the toolpaths and make any necessary changes to suit your particular bits and machine. The toolpaths are currently set with feeds, speeds and pass depths that were used in creating the original sample. Please don't use them directly until you review them for your own setup. **It is VERY IMPORTANT to recalculate all toolpaths after making any edits/changes.** Preview all toolpaths again to visually verify the project outcome on-screen.

STEP 2 - Run the Project
When you are satisfied with your settings, save the toolpaths to the appropriate Post Processor for your machine, place your material on your machine bed and proceed to run the files. Here are some pointers on running the 2-sided files...
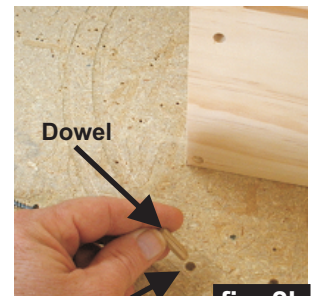(fig. 2a, 2b, 2c)

Side-A_Front-Back.crv3d

Run the Side-A file first, then flip over to run Side-B.

fig. 2a

After machining the first file parts, flip the board over across the (shortest) width.

Insert two alignment dowel pins into the holes in the spoilboard and replace the board onto the pins with the plain side up.

Re-apply a secure hold-down method.

Dowel

fig. 2b

Push board onto the dowel pins for perfect alignment between BACK and FRONT

After flipping the material width-wise, run the Side-B file

Side-B_Front-Back.crv3d

fig. 2c

(cont.)

STEP 2 - Run the Project (cont.)
Additional information for two-sided carving...

For the alignment holes of the prototype sample, I set the depth of the alignment drill holes to 1.1" when I ran the first file of the 2-sided board (i.e., the Side-A). This drilled all the way through the 0.75"-thick material and into the spoilboard, creating the two alignment holes in the spoilboard about 0.35" deep to insert the 0.25" dia. alignment dowels for placing the flipped board upon. (fig. 2d)
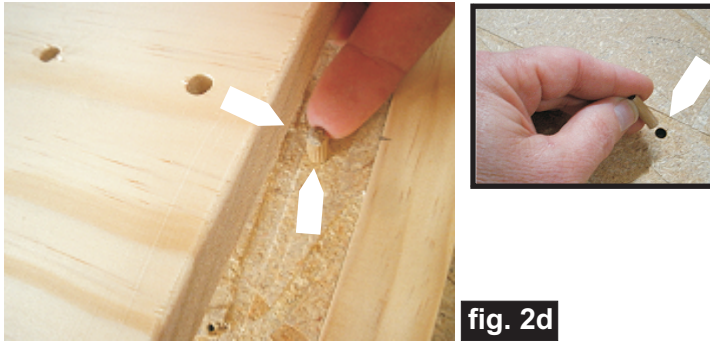

fig. 2d

When I flipped the board over after machining Side-A, I pressed the board onto the dowels and resecured the hold down (screws driven through the material and into the spoilboard). I maintained the same X,Y zero location on the machine bed throughout the complete project run. Inserting a couple dowels into the holes in the spoilboard and into the material holes, yields perfect alignment between the back and front of the material.

Alternatively, you can set up a drilling toolpath on the first side of the material that is ~0.55" deep. Then after completing the first side, rezero the bit to the machine bed and drill the same holes giving you a total depth of 1"+. Using 1"-long glue dowels, this works great.

This alternate technique means you don't have to maintain the same X,Y zero location. You can move the spindle to a different location, rezero X and Y and then continue with drilling the holes in the spoilboard, placing the material and machining the second side. If you have a 'pristine' table, you can secure a sacrifice sheet of mdf (or whatever) on top of your spoilbard and drill the holes into that for aligning the second side.

STEP 3 - Release Parts from Material
Separate the parts from the material, then sand off any tab remnants and undesirable toolmarks. (fig. 3a, 3b)

fig. 3a

fig. 3b

STEP 4 - Parts Prep and Assembly
Square-up the rounded corners of the slots in the lid end panels using a sharp chisel. Square and clean the slots of the bamboo panels using a single-edge razor blade. (fig. 4a, 4b)
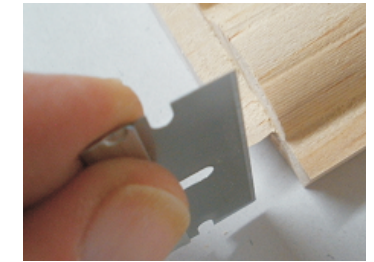

fig. 4a

fig. 4b

Dry-fit the parts. Touch-up sand, if necessary. (fig. 4c, 4d)

fig. 4c

fig. 4d

STEP 5 - Finish Application

Apply your choice of finish before assembly (unless you are using contrasting woods instead of stains). Here's what I used on the sample made from Select Pine. (fig. 5a, 5b, 5c):

• **Rocks:** Two coats thinned Zinsser Bulls Eye SealCoat (50/50 SealCoat and Denatured alcohol), then applied Rust-Oleum Ebony stain and several coats of Krylon Clear acrylic spray

• **End Panels:** Rust-Oleum Cabernet stain (wiped on with a rag)

• **Lid and Bamboo Panels:** Applied several coats of Krylon Clear acrylic spray to seal, then lightly and selectively dry-brushed brown acrylic craft paint as a glaze on the "bamboo" leaving the lid "garden area" natural

• Several light coats of Krylon Clear acrylic spray was applied overall, but I masked off all the tenons to keep the wood unsealed for easier glue up during assembly

Apply Krylon Clear Acrylic to seal lid and bamboo panels

fig. 5a

Stained Rocks and End Panels

fig. 5b

Apply brown paint as a glaze.

fig. 5c

STEP 6 - Assembly

Organize the parts, then glue the box and lid parts together. (fig. 6a, 6b, 6c)

fig. 6a

fig. 6b

fig. 6c

Position the hinges on the back "V" of the box lid and base. Pierce the center of each screw hole with an awl and pre-drill the holes before installing the screws in the box and lid. NOTE: There will be a gap between the base and lid...about a two popsicle stick thickness. (fig. 6d)
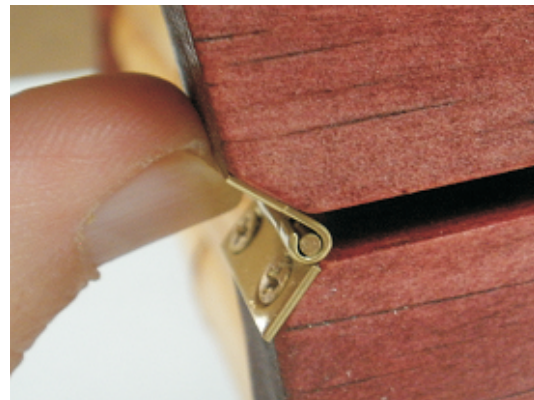
fig. 6d

(cont.)

STEP 6 - Assembly (cont.)

Install the chain, with finish washers and screws to the box lid and interior of one side panel. The chain acts as a strain relief to protect the small hinges from failure over time. Adjust the chain length to become taught before straining the hinges when the box is opened. (fig. 6e)

Mark chain screw hole slightly away from side panel so the chain "flows" down when lid is closed

Use short screws so they don't poke through the lid top

fig. 6e

Apply two self-stick silicon pads to each box side panel top to even out the gap and provide a bumper when the lid closes. (fig. 6f)
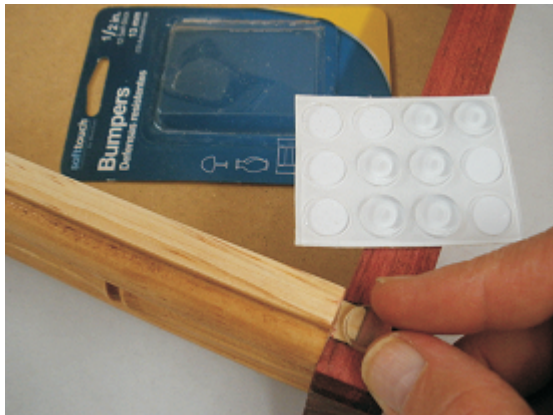
fig. 6f

Epoxy the "rocks" onto the top of the garden lid to complete the project. (fig. 6g)

fig. 6g

IN CONCLUSION

I hope you enjoyed making your own Japanese Garden Box. Please consider posting a photo or two on the Vectric Forum. We would love to see your handiwork!

Happy Carving!

Michael

Rear View

(cont.)

Materials Source Page

• **3M Radial Bristle Discs from www.mcmaster.com**
(stack 3 discs at a time on your rotary tool mandrel)
      80-grit: part # 4494A19
      220-grit: part # 4494A18

Krylon Clear Gloss Acrylic
from WalMart™

Items Purchased at Home Depot™or Lowes™

• **Zinsser Bulls Eye SealCoat (100% wax-free clear shellac)**
• **0.75 "x 0.625 " (19mm x 16mm) brass hinges**
• **#6 finish washers, #4 brass screws, brass chain**
• **Silicon self-stick "bumpers"**
• **0.25 "-thick MDF**
• **Rust-Oleum Ultimate Stain (Ebony and Cabernet)**
• **Sandpaper**
• **Disposable Brushes and Paint Rags**

0.75 "x 0.625 "brass hinges

Finish washers, screws and chain

Items Purchased at Michael's Arts & Crafts™

• **Apple Barrel #21058 Real Brown acrylic craft paint**

Additional Resources

RESOURCES...
There are numerous resources for Vectric software owners to make their experience with their products more enjoyable. The Vectric website includes video tutorials and more, to provide a good overview of the software products and how to use them. Please visit the Support page for a complete listing of available resources for you.

Vectric Support: http://support.vectric.com/

Vectric User Forum
Every owner should join the Vectric User Forum (http://www.vectric.com/forum/) where fellow users share their experience and knowledge on a daily basis. It is a FREE service that you will surely appreciate. A handy Search Feature helps you find answers to any questions you may have. There are Gallery sections as well, where you can post and view photos of projects created with Vectric software.

IMPORTANT: Before outputting any toolpaths you should carefully check all part sizes and the material setup to make sure they are appropriate for your actual setup.You should also check and re-calculate all toolpaths with safe and appropriate settings for your material, CNC machine and tooling.

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