Vectric

Passionate About CNC

Project Tutorial

Featuring compatibility with nearly all CNC Machines

It is our pleasure to provide our customers with fun and useful projects to enjoy!

Compatible with:

VCarve Pro 6.5
(or greater)

and

Aspire 3.5
(or greater)

Sample Carved with:
ShopBot Buddy
PRSalpha BT48

ShopBot®
www.shopbottools.com

Coeur d'Amour Box
Designed for Vectric™ by Michael Tyler

The "Coeur d'Amour" (French for 'Heart of Love') box project will make a beautiful and cherished gift for your loved one on Valentine's Day, or for any other special occasion!

The sample is made from Maple and Spanish Cedar, but you can get the same overall appearance using just about any contrasting-colored wood you prefer. Only a clear finish was applied to the sample.

The overall dimensions of the finished project are about 6"W x 7"H x 3"T.
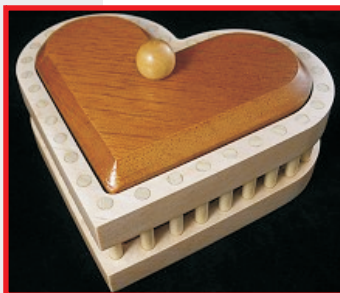
Main items you will need:

1) The Project Files (included):
• Light_Components.crv
• Dark_Components.crv
• Drill and Profile-Inside Test.crv

2) Boards with the following dimensions:
• Light_Components: 0.75"x 7½"x 15½"
• Dark_Components: 0.75"x 6½"x 14"
• Drill/Profile Test: 0.75"x 3"x 6"

3) Wooden dowels ¼" dia., ¾" wood knob for handle (doll head), self-stick felt sheet for box bottom, three stick-on felt or nylon disks for placing onto the underside of the box

4) Drill, wood glue, sandpaper, clamps, stain and/or paint and clear finish

5) A Dremel-type rotary tool with assorted sanding wheels and bits to sand small details and speed up preparation for finishing.

CNC Bits used for the Sample:

V-Carve: 90° V-Bit
Hole Profiles: 1/4"Up-Cut EM
Pockets, Cut Profiles: 1/4"Down-Cut EM

STEP 1 - Open and Review the Project Files

Start your VCarve Pro or Aspire software and open the project files. (fig. 1)

Light_Components.crv

Dark_Components.crv
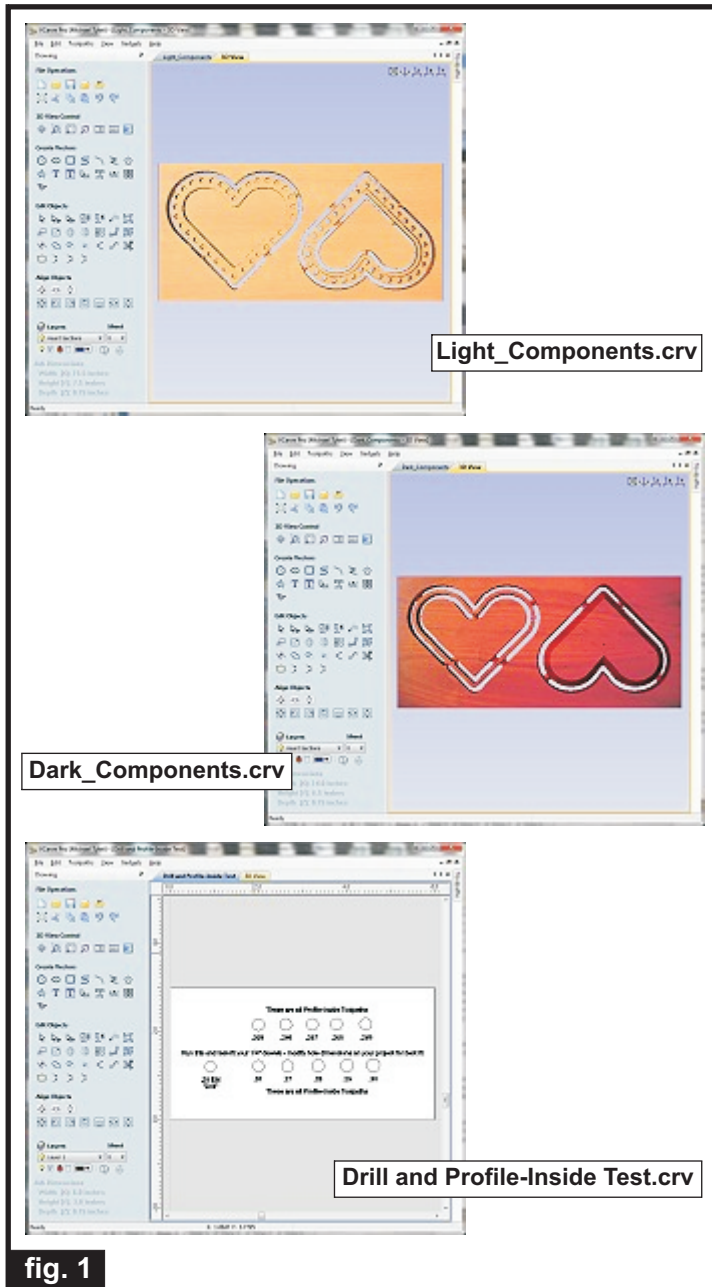

Drill and Profile-Inside Test.crv

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.

Special Note: You may want to adjust the dowel hole diameters for best fit for the dowels you have on hand. Please refer to pages 5 and 6 for tips to make this adjustment before running the project.

You can edit the tools and change the settings to your own preferences and requirements. **It is very important to recalculate all toolpaths after making any edits/changes.** Once you have recalculated for your own machine and bits, reset the preview, then preview all toolpaths again to visually verify the project outcome on-screen.

The project is designed with tabs to hold parts in place during the final part cut outs. You may delete the tabs if you use some other reliable hold-down method.

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 project. (fig. 2a, 2b)
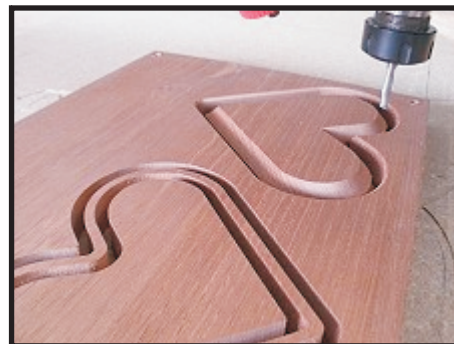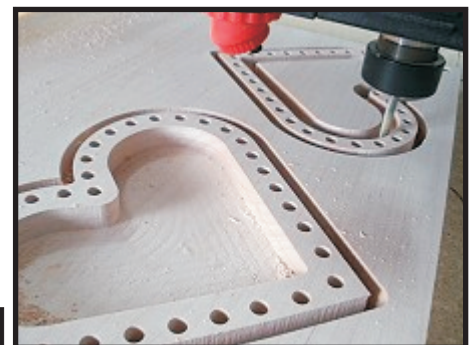

fig. 2a

fig. 2b

(cont.)

STEP 3 - Release and Sand Parts

Separate all the parts from the material. Sand off the tab remnants and any undesirable tool marks. Use reasonable care when sanding the thinner-walled middle section. (fig. 3a, 3b)
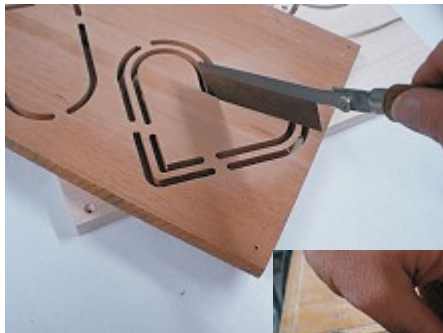

fig. 3a

fig. 3b

STEP 4 - Part Assembly

Cut four ¼" dia. dowels to a length of 2½". Glue the bottom and middle sections together first, then glue on the top section, inserting the four 2½" dowels (no glue on the dowels) to keep the parts aligned. Clamp until the glue dries.(fig.4a, 4b)
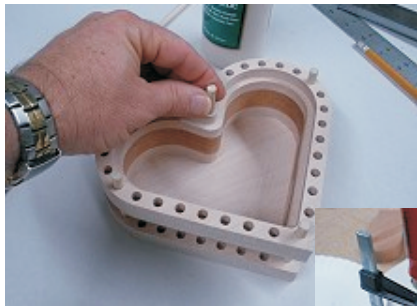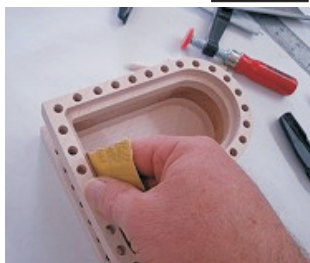

fig. 4a

fig. 4b

When dry, remove the clamps and temporary alignment dowels and sand the inside of the box. (fig. 4c)

fig. 4c

STEP 5 - Apply Finish to the Heart Lid and Box

At this point you may want to apply a finish to the heart lid, knob and body of the box before installing the series of decorative dowels that go around the perimeter of the box. (Don't allow finish to accumulate in the dowel holes.) Apply your choice of finish. Here's what I used on the sample Coeur d'Amour box project made from Maple and Spanish Cedar:

• 4 coats of thinned Bullseye SealCoat, sanding between coats (2 parts sealer/3 parts Denatured alcohol)
• Several coats Krylon Crystal Clear Acrylic (spray)

(fig. 5a, 5b, 5c, 5d)

fig. 5a

fig. 5b

fig. 5c

fig. 5d

STEP 6 - Install Decorative Dowels

Cut your ¼" dia. dowel into 34 lengths that when inserted, they will extend just slightly above the top surface of the box (each length will be approx. 2"). The dowel tops will be sanded flush to the box surface after the glue dries. Alternatively, you could cut the dowels SHORT by about ¼", then use dowel plugs to cap off the dowel holes (even stain them a contrasting color, if desired). You can cut the dowels by hand using a fine-toothed hobby saw, or use a band saw or other suitable tool to make the job go faster. (fig.6a, 6b)

fig. 6a

fig. 6b

NOTE: Test fit your dowels to make sure they slide snugly, but easily (without too much "slop") through the holes around the box. Sand the diameter of your dowels, if necessary *before* cutting to length.

Apply glue inside the holes in the box base with a toothpick or small brush. (fig.6c) Slide a dowel partially through the top hole, apply a small amount of glue to the top portion of the dowel, then push the dowel through all the way until fully seated. Repeat for all the dowels. (fig. 6d) Wipe off any glue squeeze out.

fig. 6c

fig. 6d

When the glue is dry, sand the tops of the dowels flush with the top surface of the box. (fig. 6e)

fig. 6e

Apply your final finish/clearcoats to the entire box. (fig. 6d)

fig. 6f

STEP 7 - Final Touches

Install the "doll head" knob onto the lid with a dowel and appropriate size hole drilled in the lid (my knob had a 3/16" hole, so I used a 3/16" dowel and drilled about ½" deep in the lid to glue the knob on. (fig. 7a)

fig. 7a

Using the included pattern on page 7, trace and cut out a felt liner for the bottom of the box. (fig. 7b)

fig. 7b

Press on three self-stick round felt or nylon "feet" on the underside of the box. (fig. 7c)


fig. 7c

(cont.)

IN CONCLUSION

I hope you have enjoyed making your Coeur d'Amour - Heart of Love project. There's quite a bit of room for your own "customization"...V-carve the top with your own design, use rounded dowel plugs for capping off the top holes, eliminating the dowel holes altogether and making the middle section larger (perhaps inset by a small amount between the top and bottom sections), choosing different colored woods, or even make it out of brass or aluminum - let your imagination reign free! Happy Carving!

Michael

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Tip for Adjusting Dowel Hole Diameters

The dowel diameters in the project are not drilled - rather, they are setup as "Profile-Inside" cuts with a Spiral Ramp applied to route out the holes in a spiral/plunging fashion. The holes are currently set at 0.265 " to fit the particular 0.25 " dowels I had on hand. Your own dowel holes may need a *different* diameter setting for machining, in order for your dowels to slide easily through the holes during final assembly.

I included the **Drill and Profile-Inside Test.crv** file that you can run on a scrap piece of wood to "test fit" your own dowels and determine the best diameter dimension for the 0.25 " dowels you will be using. I have found there can be a variance in dowel diameters, so it may be wise to run this test board and see if any adjustments need to be made to the hole size settings before running the actual project files.
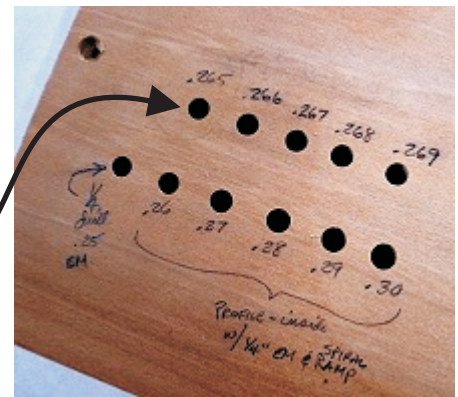
First, go ahead and run the **Drill and Profile-Inside Test.crv** file and test-fit your dowels. If they slide easily through the 0.265 " hole, you're done and can go ahead and run the project as-is. If you discover the dowels are too tight (or too loose), you can adjust the dowel hole size in the project to the diameter dimension that fits well. There is a handy method for adjusting the circle diameters quickly. (I confess - I forgot about this method myself when doing the project and selected every single circle, one at a time, and changed each diameter one at a time. A good friend reminded me of the following method, AFTER I had already done it the "hard way"!)

1) Open the **Light_Components.crv** file, then open the Layers menu. **Uncheck** the Bottom Dowel Holes and the Top Dowel Holes layers. **Place a checkmark** in both the "YOUR Bottom/Top Dowel Holes" layers.
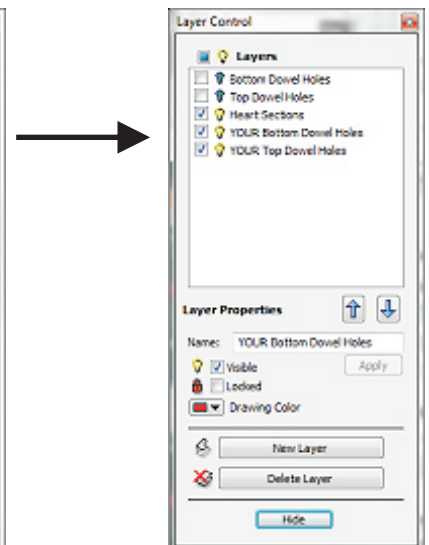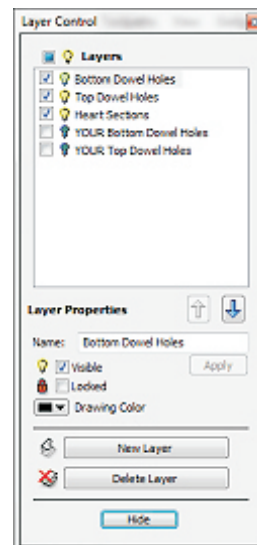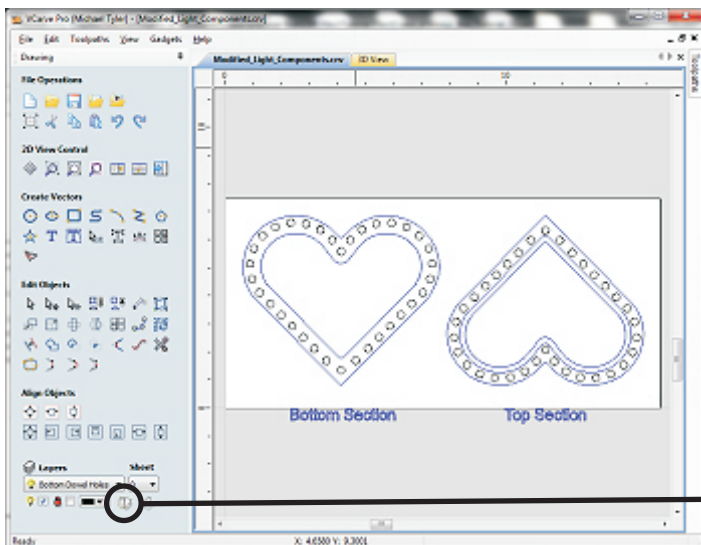
2) Calculate the difference between the existing setting of 0.265 " diameter and your desired diameter.
Example: Let's say your desired diameter will be 0.267 ". You'll need to apply an offset that is one-half the difference between the two diameters.

$$0.267\text{ "} \text{ (desired setting)}$$
$$- \, 0.265\text{ "} \text{ (subtract the existing setting)}$$
$$0.002\text{ "} \text{ equals the difference}$$

Divide the 0.002 " difference in half = .001 " (the offset amount to be entered)

3) Make sure that the "YOUR Bottom Dowel Holes" layer is active, by clicking on the name to highlight it..

Click on the Bottom Section group of circles to select them.
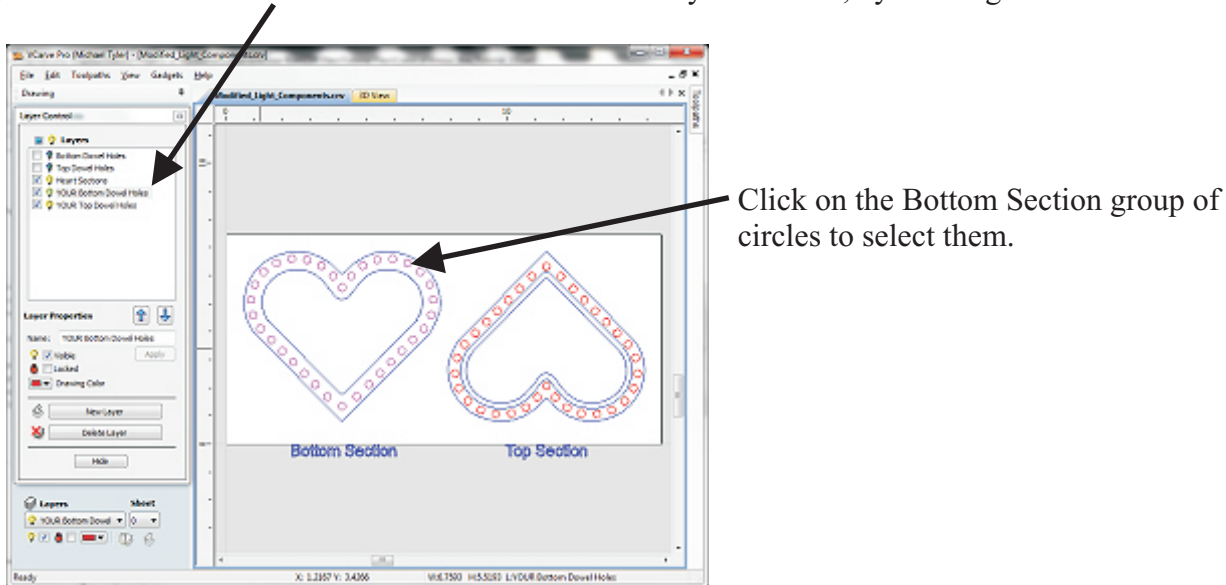
4) Open the Offset Tool, type in the desired offset amount (select Outwards or Inwards, as applicable) and click Offset.
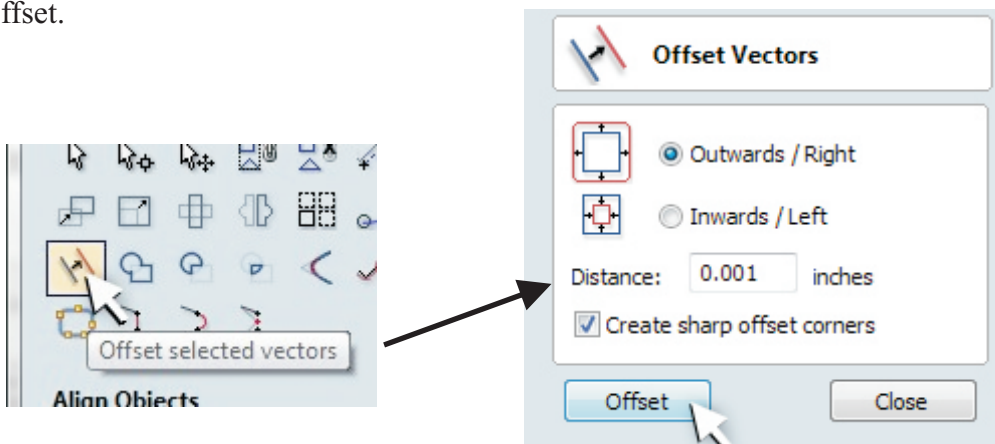

Once you apply the offset, <u>the original-size circle group is still highlighted</u> and you can hit the Delete key on your computer keyboard to dispose of that group. Your circles with the new desired size will remain on the layout. Repeat this overall procedure for the "YOUR Top Dowel Holes" layer, then close out of the Offset Tool.

👉 **Don't Forget! You will need to recalculate the toolpaths after making these edits/changes.**

5.71 inches

4.428 inches

cut inside the lines
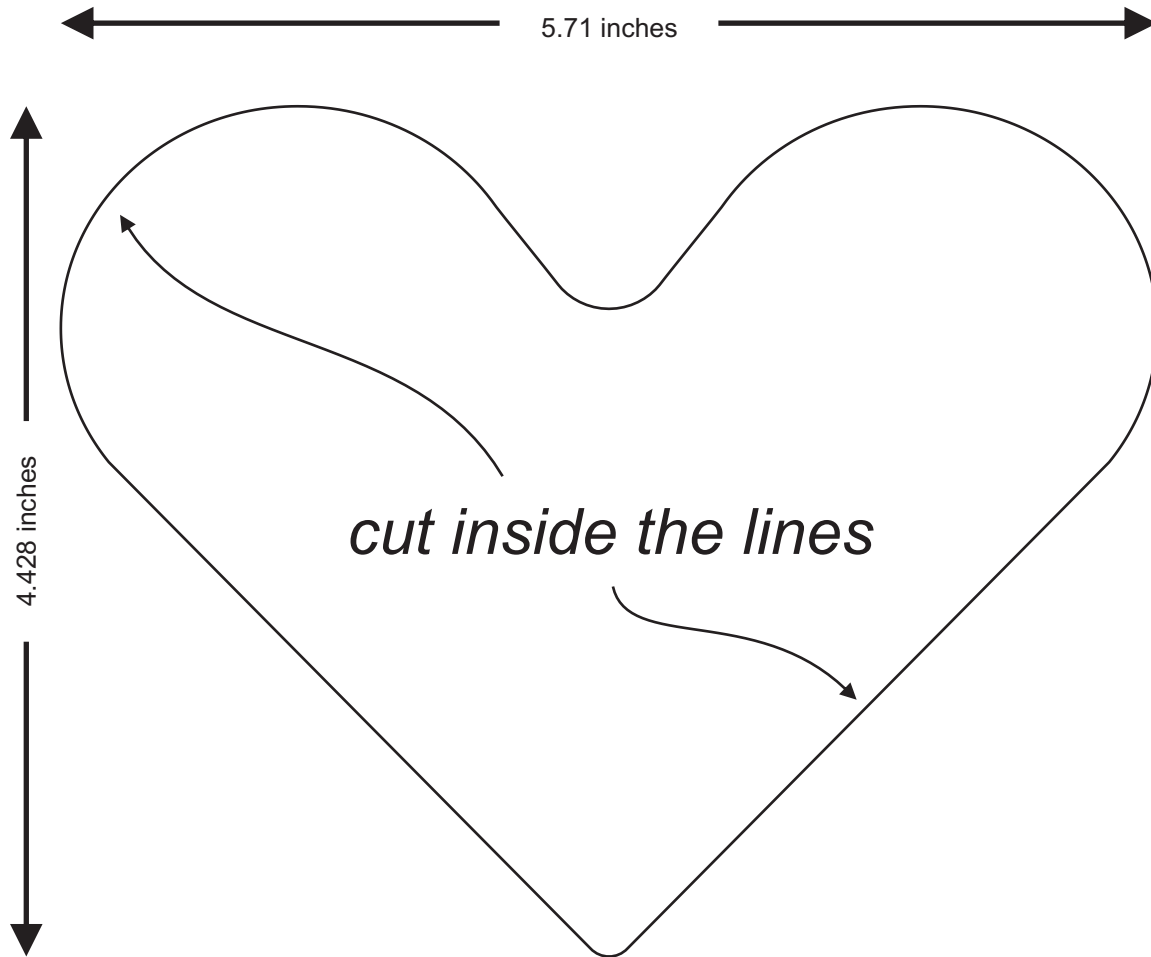
Bottom Box Liner Pattern
(cut from self-stick felt)

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

Miscellaneous Items Purchased at Michael's Arts & Crafts™

• **Wooden ¾-inch "Doll Head" for lid knob**
• **Self-stick felt sheeting**

Miscellaneous Items Purchased at Home Depot™

• **Bullseye SealCoat and Denatured Alcohol**

Miscellaneous Items Purchased at Lowes™

• **1/4-inch Diameter Dowels and 3/16-inch Dowel**
• **Self-stick nylon "round bumpers" for feet under the box**
• **Disposable Brushes and Paint Rags**

Krylon Clear Gloss Acrylic
from WalMart™

Additional Resources

RESOURCES...

There are numerous resources for Vectric software owners to make their experience with their products more enjoyable. The Vectric website includes videos and tutorials to provide a good overview of the software products and how to use them. (http://www.vectric.com/WebSite/Vectric/support/support_vcw_tutorials.htm)

As well as the resources available from the Tutorial page, please also visit the 'FAQ' and 'How To' pages for more support information...

'How To' webpage
http://www.vectric.com/WebSite/Vectric/support/support_how_to.htm

'FAQ' webpage
http://www.vectric.com/WebSite/Vectric/support/support_faq.htm

Vectric User Forum
Every Vectric software 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.