

V-Carve Inlay

A simple method for creating precision inlays from almost any design.

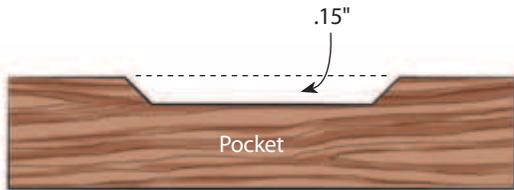
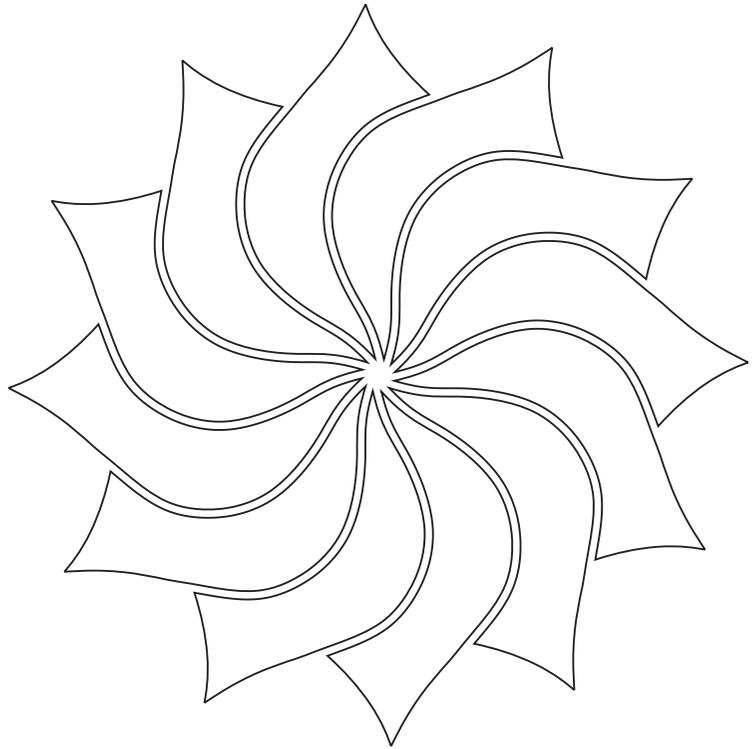


V-CARVE INLAY TAKES ADVANTAGE of a CNC's ability to precisely rout matching parts. In this case the parts are made as opposites and fit together to create a precise-fitting inlay. The sides of the parts are beveled and fit together like the lid on jack-o'-lantern pumpkin. The technique is surprisingly easy to learn and implement, in spite of the fact that it

would be nearly impossible to create these parts any other machine or by hand. It's truly a technique that's unique to the CNC. The fact that almost any design can be used, opens up many creative opportunities. As CNC's become more common in small shops, I fully expect to see v-carve inlays showing up on furniture in some interesting ways.

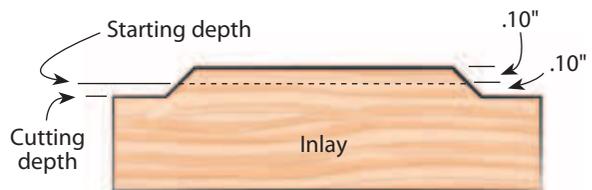
Step 1

Layout your design. Almost any design will work, but all individual parts of the design must be made with a single continuous line so the router has a complete path to follow. A shape that is open-ended or has a gap in the line will not be recognized by the v-carving program. I designed this pattern (right) in about 15 minutes, using V-Carve Pro from Vectric. I started with a single "petal" shape and then copied it using a function called "copy circular array" to create the 12 identical shapes. There's no need to shy away from sharp details such as corners or points. V-carving programs excel at capturing such detail. For more information on v-carving see "V-Carving in 10 Easy Steps," —AW #153, April/May 2011, page 17.



Step 2

Set the flat area cutting depth for the pocket portion of the inlay to .15". Setting the depth to this dimension provides clearance under the inlay to ensure that it doesn't bottom out in the pocket. The dotted line represents the location of the pattern, which in this case is the surface of the board.

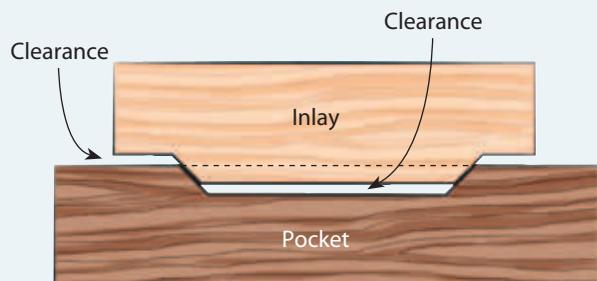


Step 3

Set the cutting depth for the inlay in two stages. First set the "start" cutting depth at .10" and then the cutting depth at .10". Setting the cutting depths in this fashion will ensure a small amount of clearance between the inlay and pocket boards. The dotted line also represents the elevation or the location of the pattern in the board.

How it works

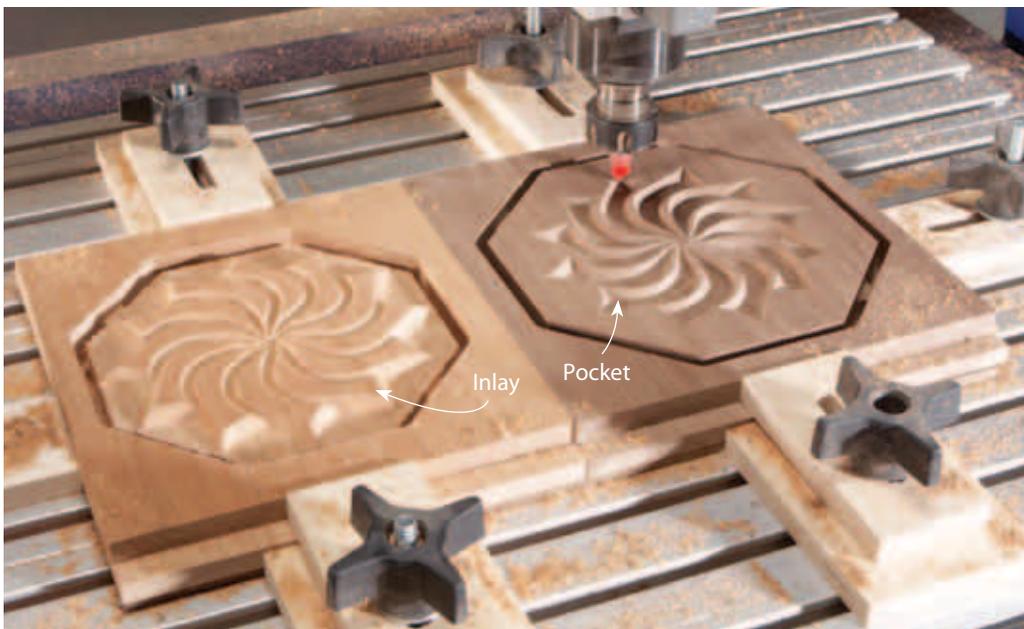
The angled shoulders of the inlay and pocket intersect to create a tight, wedged fit. The cutting depths for these parts are set to provide clearance between the parts (Steps 2 and 3). The excess top portion of the inlay is removed down to the dotted line to reveal the final pattern (Step 7).





Step 4

Rough rout the background and wide areas with a straight bit. Rough routing removes the majority of the wood in the large areas. This reduces the amount of material the v-bit needs to remove in Step 5 and shortens the overall machining time for the project by about 15 minutes. I also routed the cutout profile around each part at this time, although the parts are still attached to the outer boards with tabs. It took about 20 minutes to rough rout and profile this design.



Step 5

V-carve the design details with a 90° v-bit. Notice that the inlay on the left is a mirror image of the design on the right. They must be opposites in both relief and orientation in order to fit together. This is important to remember when laying out and programming your design. This step took about 25 minutes.



Step 6

Apply glue to both parts. A small brush makes it easy to get the glue into the v-carved areas. The inlay portion has been trimmed to rough size on the bandsaw.



Step 7

Tighten the clamps lightly at first and then add a little pressure to each clamp until they are all fully tightened. Applying uneven pressure can cause misalignment of the parts. Leave clamped until glue is completely dried.



Step 8

Route off the excess material to reveal the final inlay. The ability to control the cutting depth in increments as small as .001" makes it easy to precisely remove the extra material. For this project I used a 3/4" straight bit and programmed it to remove the majority of the material in 1/8" deep passes until it got to within .02" of the surface. I then continued with .005" passes until the bit removed just enough material to expose the inlay and get rid of the dried glue. This step took about 10 minutes.



To watch a video of v-carving inlay in action and to download this pattern, visit AmericanWoodworker.com/CNC