

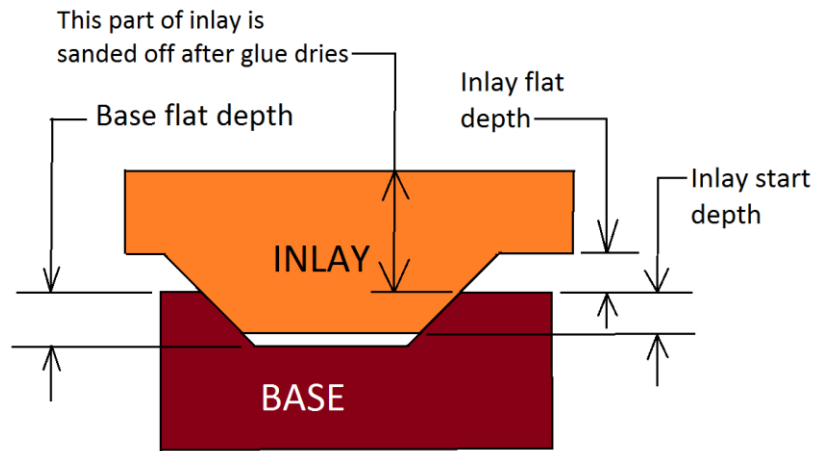
# Notes on the Zank VCarve Inlay.

Michael R. Turner (FixitMike) 12-10-2019

Zank VCarve Inlay. A method of cutting the male and female parts of an inlay that utilizes the capabilities of Vectric VCarve and Aspire programs to produce inlays with extreme detail. It can be considered a “hack”, since it takes advantage of features of the programs in ways that were not considered when the programs were written. As such, there are undocumented things to consider when using the method. These notes are an attempt to clarify some of those items.

1. Terms used in the notes.
  - a. VCarve. This can mean either the program or the toolpath inside the toolpath. For clarity, when I mean the program, the name will be underlined like this: VCarve.
  - b. Base: The female base material for the assembled inlay. It has a VCarve toolpath design cut into it using the usual settings for the toolpath. For an explanation of how the VCarve toolpath works, see the Help-Help Contents of either VCarve or Aspire.
  - c. Inlay: The inlay material that is carved and glued into the base.
  - d. Toolpath settings. I have included suggested toolpath settings in brackets { .06”}. They are ones I have used successfully, but are no means the only ones.
2. Settings. What toolpath settings to use and how they affect the inlay are probably the most confusing (and sometimes incorrectly described) part of the Zank method. Even the original document has errors in this area. Although they are not serious enough to prevent producing a good inlay, they can be confusing to someone who is trying to understand the method. The following picture indicates what each setting does:
  - a. The base VCarve toolpath is carved with the same settings one would use if you were going to have just a VCarved picture. The one exception is that if the finished inlay is going to be drum sanded. In that case, a start depth should be added to be account for material that will be removed from the base. See also 2.d. {Flat depth setting 0.18”}
  - b. Inlay flat depth. This is the most often misstated setting. Within limits, **it doesn’t matter!** As you can see, it determines the empty space between the top of the base and the flat areas of the inlay. There should be enough room for glue squeeze out, more if you are going to saw between the pieces to remove the excess inlay material. {Flat depth setting 0.2”}
  - c. Inlay start depth. This setting controls how far the male sticks into the female in the flat areas. It should, of course, be less than the female flat depth. See also 2.d. {Start depth setting 0.14”}
  - d. The base flat depth minus the inlay start depth sets how much space there will be between the two pieces in the flat areas. It is space for glue, and for the

ridges left by the V bit when it is cutting flat areas. I usually use numbers such that the difference is around .04". Others have suggested as much as 0.1", but I feel this is too much, except for quite large projects.



3. Material preparation: A coat or two of sealer or varnish on the female before carving will make it easier to remove glue squeeze out.
4. Inlay pass depth. Although the tool pass depth is usually limited by what is entered in the tool description, VCave assumes that there is no material existing above the start depth. As a result, the VCave toolpath will cut initial passes of the inlay at the start depth plus the normal tool pass depth. If this is too much, it is advisable to use two sets\* of toolpaths, the first set with a start depth of zero and the start depth of the second set of toolpaths no more than the maximum pass depth for the tool.
  - a. \* I use "sets of toolpaths" because I am assuming the use of an end mill in the VCave toolpath to clear the flat areas.
5. V bit ridges. The VCave toolpath cuts flat areas that can't be reached by the clearance tool with passes spaced by the tool stepover specified in the tool description. For example, a 45° bit with a .02" stepover will leave ridges that are .024" high above the base flat depth. These should be accounted for when setting the inlay start depth vs the base flat depth.
6. After cutting, both pieces need to be cleaned up. Remove all chips and fuzzies. I use a dental pick for this job.
7. Inlay high "peaks". The peaks in the inlay have to fit into valleys in the base. If the valleys are not perfectly cut, the pieces may not go all the way together. To reduce this possibility, sand off the sharp points of the inlay peaks **except in the areas where there will be fine lines or sharp points in the finished inlay.**
8. When the pieces are ready to glue, they should fit together, almost with a "click".

9. Marking both pieces with locating marks with a pencil can help when it comes time to glue.
10. Complicated inlays may be easier to glue up if the inlay is cut into separate pieces.