TEXT ON TEXT PROCEDURE FOR V-CARVE AND ASPIRE

There has been several discussions of the Vectric forums about the procedure for producing Text-on-text signs. I have also been asked by CNC acquaintances to teach them how to do that. **The following is a compilation of the process but clarifies the procedure if you decide to use the V-Carve toolpath to get greater detail using V bits or bullnose bits.** Fonts with curved features such as Time New Roman do well with small endmills such as 1/8" and thus the offset process is not needed. Other fonts that have sharp corners or small details do better using the V-CARVE tools and the shape of the bit must be accounted for. This is how I do it – others use slightly different steps.

This technique is for carving a multi-layer name or symbol where typically the first name/symbol is over-layed on top of a larger last name/symbol. It is best to use several different layers for the different steps needed so that if the preview does not look right you can go back to the original objects to change or tweak. In the example below we will assume the top layer (first name) is going to be carved .12" deep and the second layer (last name) .15" deep.

SET UP 5 LAYERS

1. Layer 1 is the Material Frame and simply consists of a rectangle which defines the size of the sign
2. Layer 2 is the Top Level - text that you want on top
3. Layer 3 is the Bottom Level – text that you want on bottom
4. Layer 4 is the Offset Level – used to offset the Top Level Text so carving the bottom level does not destroy the top level text. This is needed if using V-Carving instead of Pocketing,
5. Level 5 is the Weld Level – where the top level text (or Offset version of it) is Welded to the Bottom Level text

PUT THE APPROPRIATE VECTORS/TEXT IN EACH LAYER

1. Layer 1: Draw a rectangle the size of the sign you want to carve – say 5 X 10
2. Layer 2: Type in the text you want to appear on the top level such as a first name: Cinda. Place it appropriately. You might want to test carve this to make sure your vectors are clean.
3. Layer 3: Type in the text you want to appear on the bottom level such as a last name: HALL. Here you typically use a larger and fatter font. Place it appropriately.
4. Layer 4: Copy the text from Layer 2, change it to curves, if the text overlaps use the Weld tool to get rid of them. Group this set. It pays to do a test carve of this set by selecting it, the rectangle from Layer 1 and doing a pocket.

    IF YOU ARE ONLY USING ENDMILLS TO POCKET OUT THE TEXT THEN YOU CAN GO AHEAD AND COPY THIS SET TO LAYER 5 TO BE WELDED AND GO AHEAD TO THE NEXT STEP.

    HOWEVER, IF YOU ARE GOING TO USE THE V-CARVE TOOLS THEN WE MUST OFFSET THIS LAYER AN AMOUNT TO KEEP THE V-BITS OR BALLNOSE BITS FROM CUTTING INTO THE TOP LAYER WHEN CARVING THE BOTTOM LAYER. HERE IS HOW THIS IS DONE:
    a. Determine the offset needed by selecting the grouped text (first name) you just created, Under Toolpaths select the 2D Profile Toolpath, select Show advanced toolpath options, choose the tool you are going to use (for instance a 60 Deg V bit), set your cut depth to the depth of the first layer (.12), choose Outside/Right for Machine Vectors, select the Corners option and within that box check Sharp external corners and Sharp internal corners. You should see a calculated value in the next box of .0693 which is the <u>Allowance for cut out tool</u> for a 60 Deg bit cutting at 12" deep. Copy or write this value down as we will need it for the next step. Close this toolpath as we don't need to use it – we just needed the calculated allowance to use for our offset.
    b. Now choose the Layer 4 name group (first name), the Offset Vectors tool in the Drawing tools, select Outwards/Right. In the Distance box paste or type in the value written down previously. Make sure Create sharp offset corners is <u>un-checked</u>. Check Delete original and Select new. Offset. Close. Make sure the new vectors are grouped. Copy them to layer 5.
5. Level 5 layer: Change the text copied from Layer 3 (last name) to curves and group them. Layer 5 should now have 2 groups of vectors. The text from Layer 3 (last name) and the offset vectors from Layer 4 (first name). Choose the two groups. Use the Weld Selected Vectors tool to weld the two groups together.

SETTING UP YOUR TOOLPATHS

First Toolpath

The top layer is carved in a normal manner using the typical techniques for V-carving or pocketing but is only carved to the depth where the second layer starts. Typically the first or top layer is carved to a Flat Depth of .1 to .15 inches deep. In our example we are going to carve the top text to a depth of .12"

Choose the Layer 1 rectangle and the Layer 2 First name vectors/text.

IF YOU ARE ONLY GOING TO USE ENDMILLS THEN USE A POCKET TOOLPATH WITH A CUTDEPTH OF .12

IF YOU ARE GOING TO USE V-BITS OR BALLNOSE BITS THEN USE A V-CARVE TOOLPATH WITH A FLAT DEPTH OF .12". You will probably want to Use Flat Area Clearance Tool such as a .25" endmill to hog out most of the area between the rectangle and the text vectors.

Second Toolpath

Select the welded vectors in Layer 5 and the rectangle from Layer 1.

IF YOU ARE USING ENDMILLS THEN USE A POCKETING TOOLPATH WITH A START DEPTH OF .12 AND A CUT DEPTH OF .15

IF YOU ARE USING V-BITS OR BULLNOSE THEN USE THE V-CARVE TOOLPATH.

First Name cut with ¼" endmill for flat area clearance to depth of .12

Followed by 60 Deg V Bit – note the crisper image you get using the V-CARVE technique

The second level starting at 12" and cut .15" deep clearing out with ¼" Endmill

Second level V bit used for final

*To keep from changing bits constantly I do all the endmill clearance cuts for both levels and then do the V-Bit cuts for both levels by combining the toolpaths that use the same bit.