

LESSON 2:

SIMPLE 3 BY 2 MATRIX OF A 2-LINE NAMEPLATE

In this lesson we'll learn how to setup a job of six identical nameplates to be engraved at the same time in a group, or matrix, of two across and three down.



Finished Nameplate

Figure 2-1

The concepts we'll learn are how to:

- ... Use "Manual Text" mode
- ... Use GravoStyle's Matrix tool to Create a Matrix to create multiple nameplates
- ... Correct the choice of an unsuitable cutting tool

Our job's design specifications are:

- ... Filename: Simple Matrix.vnd
- ... Each Plate: 3" by 1.5" Gravoply 2 material
- ... First Line of Text: US Block 1Line, 0.2 inches high
- ... Second Line of Text: US Block 1Line, 0.3 inches high

Our job plan is to:

- ... Open a new file in GravoStyle 5, then
- ... Define the size of *one* nameplate, then
- ... Enter our text in the default mode of automatic text entry with its default center justification, then
- ... Change the font to US Block 1Line, then
- ... Change the text height to .2 inches for the top line and .3 inches for the bottom line, then
- ... Position the text where we want it, then
- ... Use GravoStyle's matrix tool to replicate the nameplate into a group of 3 across and 2 down, then
- ... Select our engraving tool, then
- ... Preview the Job to make sure the engraving tool is suitable, then
- ... Correct the choice of tool if required



Our finished matrix layout will be as shown in Figure 2-2.

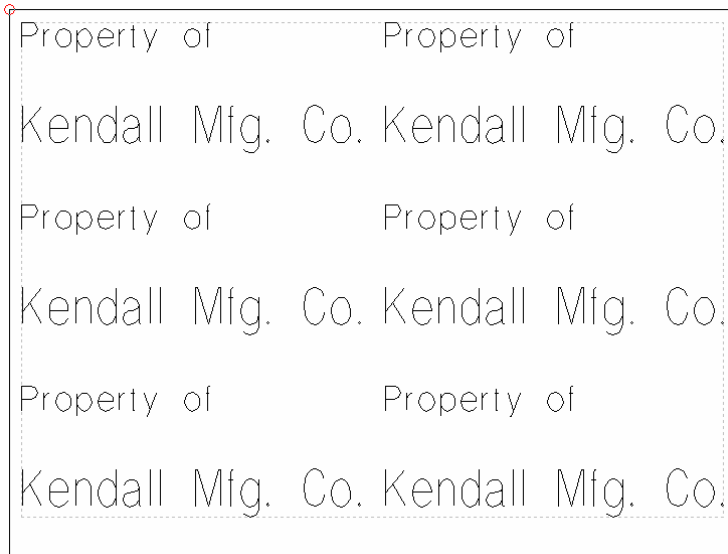


Figure 2-2
Finished Matrix Layout

STEP 1: OPEN A NEW JOB AND SET THE MATERIAL DIMENSIONS

We'll start a new job and define the plate size as 3 inches wide by 1 1/2 inches high with a 0.1 inch border. (Note that this is the size of *each* individual nameplate, and *not* the size of the entire matrix.) When we finish defining our material size, we see that the opening screen shows our plate and that we're in the program's default mode - Automatic Text.

STEP 2: ENTERING TEXT

We'll now type the first line - "Property of" - press the keyboard's "Enter" key, and type the second line - "Kendal Mfg. Co.". Our plate will now appear as shown in Figure 2-3.



Figure 2-3
Nameplate Text Entered

STEP 3: EDITING TEXT

We'll now select all of the text so that we can change its font and its letter height. Perhaps the easiest way to select all the text is to click on the selection arrow tool and then on the text tool. We'll now change the font to Block 1L by selecting it in the font list at the bottom of the screen and pressing the keyboard's "Enter" key. At this point, our job will look as it appears in Figure 2-4.

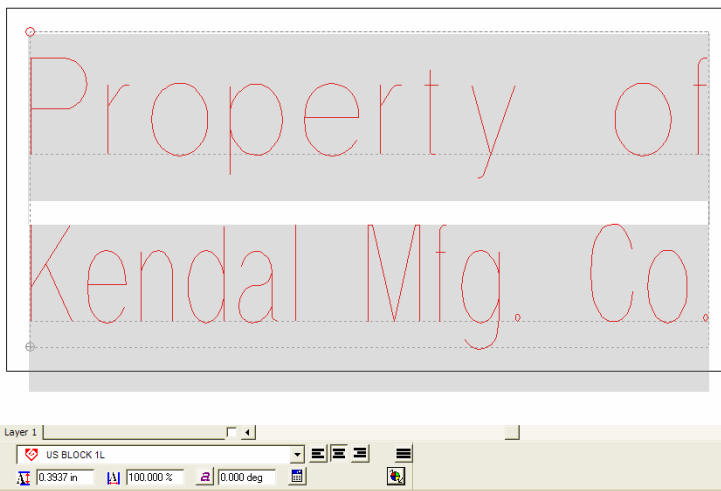


Figure 2-4
Font Changed to Block 1L

We can see that the second line is compressed. Changing its text height to the specified .3 inches should relieve most of this. We'll make this change by dragging the cursor over the bottom line only and changing its height in the text editing dialog area at the bottom of the screen. We'll then similarly select the top line only and change its height to the specified .2 inches. When we've done this, our job will appear as shown in figure 2-5.



Figure 2-5
Text Heights Changed



If we compare the letter “e” on the top line with the letter “e” on the bottom line, we can see that there is still some compression on the bottom line. We could eliminate this by making the second line even smaller in text height, but we judge the compression acceptable, and we’ll proceed with the job without doing this.

STEP 4: MANUAL TEXT MODE

Let’s now compare the job as it now is to the required finished nameplate as shown in Figure 1-1. We see that we have to leave the second line of text where it is and move the first line to the upper-left corner. To do this, we’ll make use of GravoStyle’s “Manual Text” mode.

Whereas the Automatic Text mode (which is what we’ve used until now) treats our typed text as one inseparable object fixed in position on the plate, the program’s Manual Text mode allows us to separate lines of text and position them independently (or, if we wish, enter new text at any location on the job).

How do we enter manual text mode? Let’s examine the text toolbar at the bottom of the screen. We’ll observe that there is a small color pinwheel icon at the lower right that looks like a smaller version of the large text-editing page selection pinwheel at the left (Figure 2-6).



Figure 2-6 Text Editing Dialog Area

We’ll click on the smaller pinwheel, and we see that the text editing dialog area has disappeared from the bottom of the screen and is replaced by a smaller version at the top of the screen (Figure 2-7).



Figure 2-7
Text Editing Toolbar at
the top of GravoStyle’s
Screen

We note three things about this new text-editing toolbar:

- ... It does not have the full capability of the bottom toolbar. It’s tools are a subset of the full text editing toolbar and are the most commonly used text tools.



- ... The small color pinwheel appears at the left of the top text-editing toolbar. If we click on it, the full function bottom toolbar reappears. We can use this small pinwheel icon to toggle back and forth between the two.
- ... There is a new icon on the top toolbar. It's shaped like a hand ("hand" representing "manual") and we'll click on it (Figure 2-7) to enter Manual Text mode.

We'll enter Manual Text mode by clicking on the hand icon. GravoStyle will ask us to confirm that we want to switch to this mode by popping up a small dialog box which asks "Activate manual mode?" (Figure 2-8.) We'll click on "Yes".

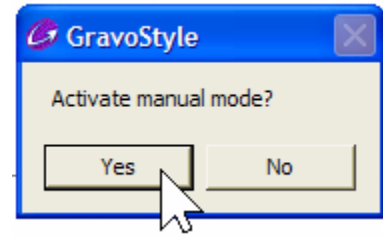


Figure 2-8
Confirming Change to

Our job will now appear as seen in Figure 2-9.



Figure 2-9 Job Changed to Manual Text Mode

*Does anything now look different about our job? Yes! The job's margins have disappeared. GravoStyle does this when you enter Manual Text mode to give us the opportunity to reposition our text *anywhere* on the*

plate. But what if we want to keep our margins? We'll do this by clicking on the "Material definition" icon at the top-right of the left toolbar. The screen that pops up is the same dialog box that we interacted with at the very start of our job to define our plate size. It's still set at our 3 by 1 ½ inch plate. We have only to re-enter our margin of .1 inch and click "OK" to have our margin re-established.

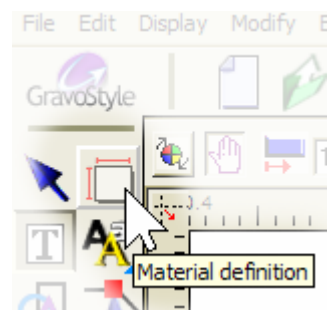


Figure 2-10

Look Further


We can also enter Manual Text mode by clicking on GravoStyle's "Modify" menu option and then clicking on the "Text" submenu that opens. When we do this, another submenu opens and its first choice is "Auto/Manual". If we click "Auto/Manual", we'll enter GravoStyle's Manual Text mode.

Note that entering the Manual Text mode is a one-way operation - we can't re-enter Automatic mode. (This is why GravoStyle asks for confirmation.) GravoStyle is designed this way to prevent disruption of various special types of text entries (text on an arc, text along a curve, vertical text, etc.) which may be typed while in Manual Text mode.

STEP 5: REPOSITIONING TEXT

We'll now click on the selection tool's arrow icon at the top-left of the left toolbar. We'll then select the top line of our text by clicking anywhere on any of its letters, and we'll notice that the entire line turns red, indicating that it is selected. We'll keep the left mouse button depressed and drag the line of text to the upper left corner of our margin.

Figure 2-11 shows our job as we begin dragging. The cursor has changed to a cross with arrow heads at the end of each arm to signify that we're in a "move" mode. In addition, the line of text is represented by a rectangle of the same size as the text so that we can see where we are positioning it.

We can't drag the text past the border because the padlock icon at the bottom of our screen is still closed, or locked.  We'll release the mouse's left button when we've reached the limits of the left and top margins and our text will be where we want it (Figure 2.12).

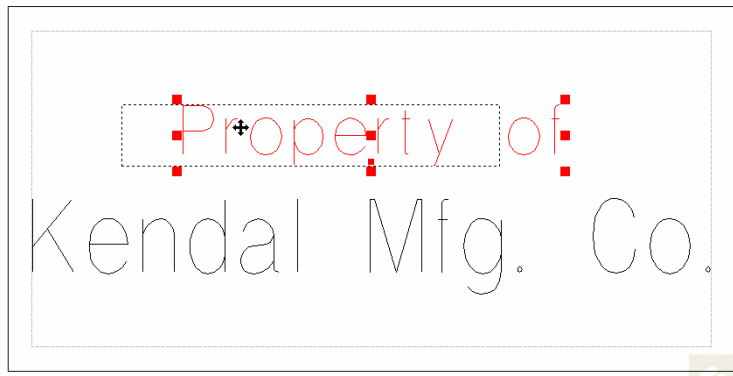


Figure 2-11 Dragging the Top Line of Text



Figure 2-12 Text Repositioned

Look Further

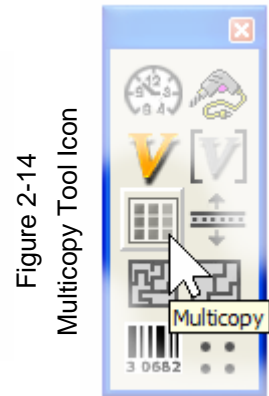
Once we have exited from Automatic Text mode, we can use Manual Text mode to type in text at *any* position on our job. We have only to click on the Text icon on GravoStyle's left toolbar to reenter text mode (Manual only) and click anywhere on our job to establish a new baseline and text entry position.

STEP 6: USING THE MATRIX TOOL

We've finished the layout of our nameplate and we're now ready to define the matrix of six identical plates. We'll locate the "Professional tools" icon on GravoStyle's left toolbar (Figure 2-13) and click on it.



A new toolbar will open. On it we'll locate and click on the icon labeled



"Multicopy" (Figure 2-14) This is our Matrix tool and the GravoStyle's Matrix dialog window will open (Figure 2-15).

The Matrix window opens with a pictorial representation of our table size (the darker rectangle in the upper right area of the window) and, on it, the maximum number of our plates (20) that will fit.

We want six plates. We have two ways of specifying this. We can either directly enter the numbers 3 and 2 in the "No. X" and "No. Y" dialog windows, respectively, or we can use our mouse and define the matrix size graphically. Let's use the mouse:

- ... First, we'll click on the small rectangle which represents the nameplate at the top left-hand corner of the matrix.
- ... Next, we'll click on the nameplate rectangle at the bottom-right corner of the matrix size we want. This will be the rectangle in the second row of the third column (Figure 2-16).

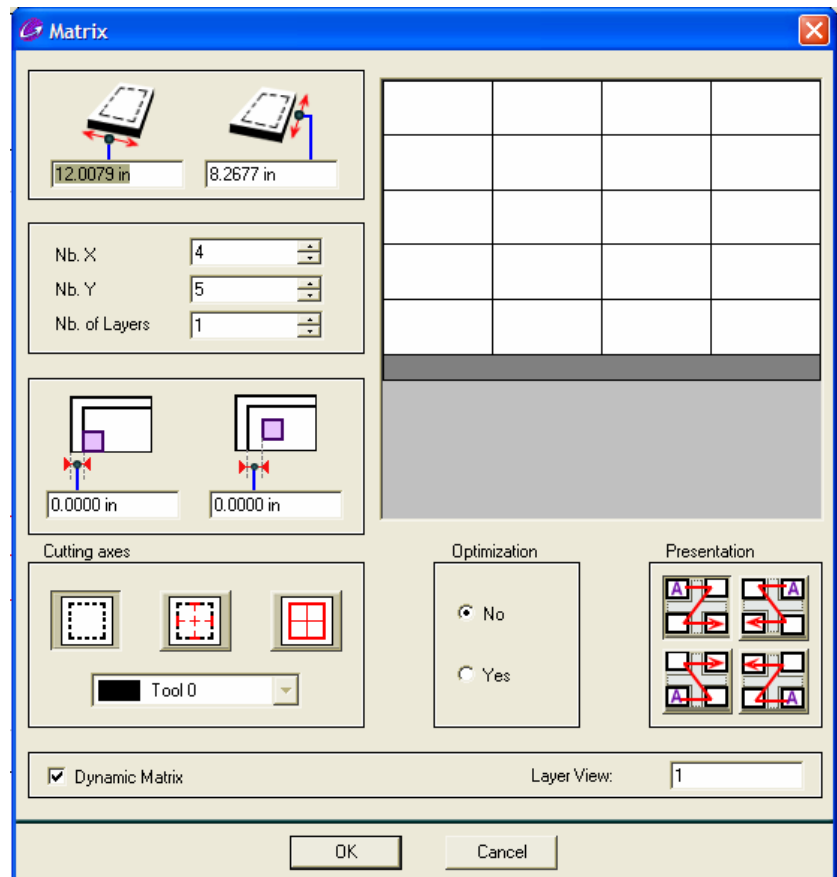


Figure 2-15 Matrix Dialog Window

Our matrix size is now defined.

Look Further

There are four other parts of the Matrix window that will be of value as we progress. They're the numbered areas of Figure 2-16. We won't use them for this job; we'll just mention them now:

- ... **Area 1** lets us define a border around our entire matrix and create spacing between each plate in the matrix.
- ... **Area 2** lets us engrave cutting aids to help in the separation of the individual nameplates after engraving. We have a choice of no aids (the leftmost icon), guide lines at the corner of each plate (the middle icon) or guide lines fully outlining each plate (the rightmost icon).
- ... **Area 3** lets us optimize the layout and cutting sequence of each nameplate in our matrix for the fastest machining time.
- ... **Area 4** is an aid for working with more complex matrixes which entail removing our work piece and replacing it with a next one. This is called "layering" and can be thought of as a 3D matrix, say, 3 by 2 on a plate, say, 5 plates down for a total of 30 (3x2x5) nameplates.

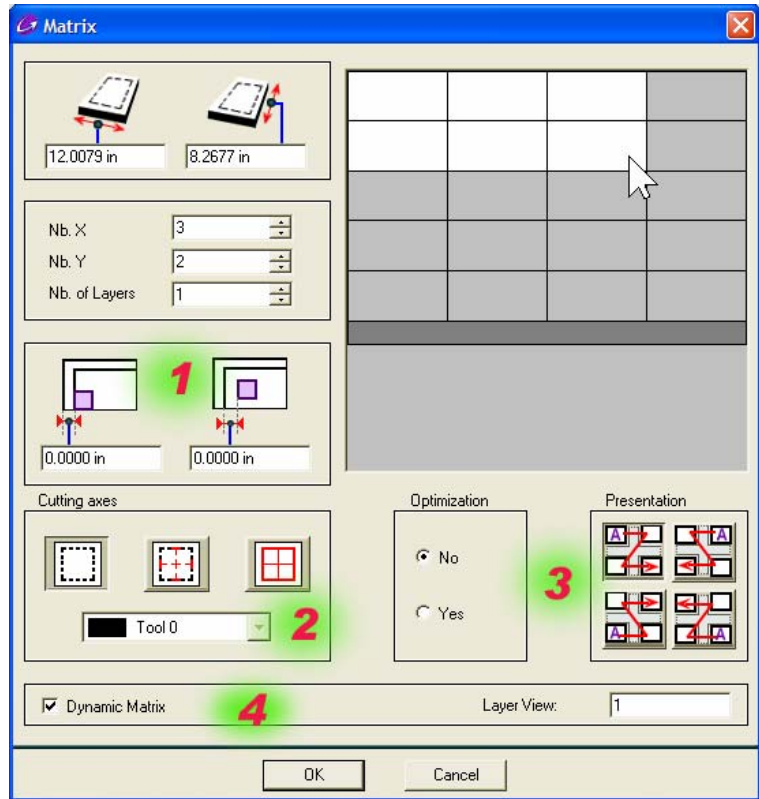


Figure 2-16 Matrix Size Defined

We'll elect to have no cutting aid lines or border and spacing between nameplates and we'll click "OK" to accept the matrix as it is. When we do this, GravoStyle's design screen shows the full matrix (Figure 2-17).

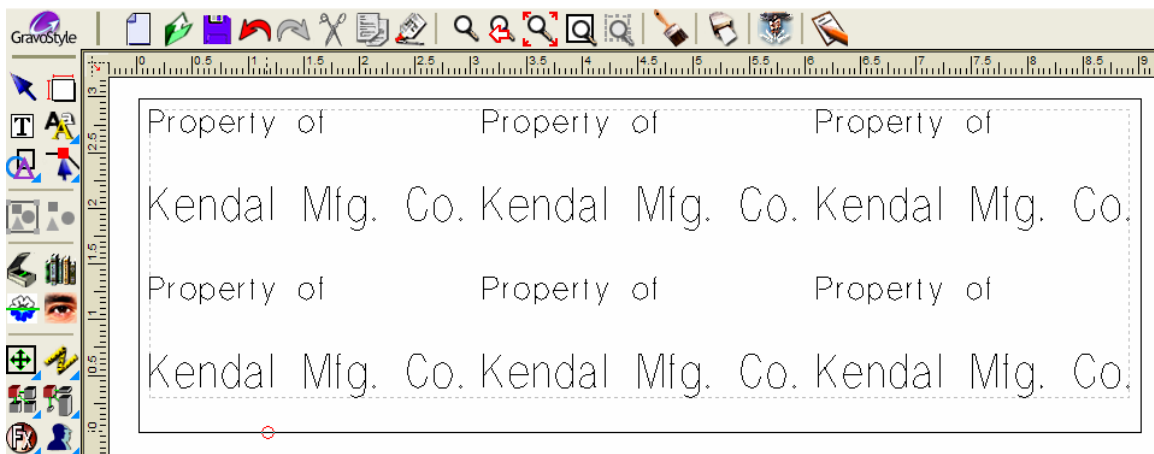


Figure 2-17 Completed Matrix

Figure 2-17 is shown with the job moved to the upper-left of the screen so that we can see the rulers. Notice that our job is now 9 inches wide by 3 inches high, as we would expect.

Look Further

There are other ways to verify that our job is now 9 by 3 inches. Locate the icon on the left tool-bar that looks like a folding measuring rule.  It's labeled "Measuring tools". Click on it and, from the new tool pallet that pops up, click  on top-most right icon - it's labeled "Size measurement". Use this tool to drag a rectangle exactly around our matrix and read the dimensions of the dragged box at the left-most part of GravoStyle's information bar at the bottom of the screen. Other useful tools in this tool pallet include linear, angular and area measuring aids.

Let's look at the word "of" of the top-most left nameplate. Is the top of the letter "f" fully formed? It's hard to tell with the dashed line of the border in the way (Figure 2-18). Let's position the tip of the cursor near the top of the "f" and click the *right* mouse button. The screen redraws, centered on the part of our job where the cursor tip was and with the job enlarged. Figure 2-19 shows our job zoomed in this way a second time (with a second right-click) and we can see that the top of the "f" is indeed there.

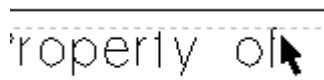


Figure 2-18 Examining

We can similarly zoom out by holding down the "control" key while we right click. We'll do this (two times) to return to our original view.

STEP 7: SELECTING OUR TOOL

Our job is colored black on-screen. We'll open the "Machining tools" dialog box by clicking on the "Color" icon at the bottom-left of the left toolbar. We'll select "Tool 0" (for black) and click on "Properties" to open our tool dialog window (Figure 2-20).



Figure 2-19 The Letter "f" Enlarged

Our material is Gravoply 2 and the GravoGraph New Hermes materials catalog suggests a range of 0.002 to 0.003 inches for cutting depth. We'll set our cutting depth at 0.003 inches in the Tool Properties window.

We'll choose a 42007060 cutting tool (it has a 0.060 inch tip diameter) and we'll make sure that we've selected

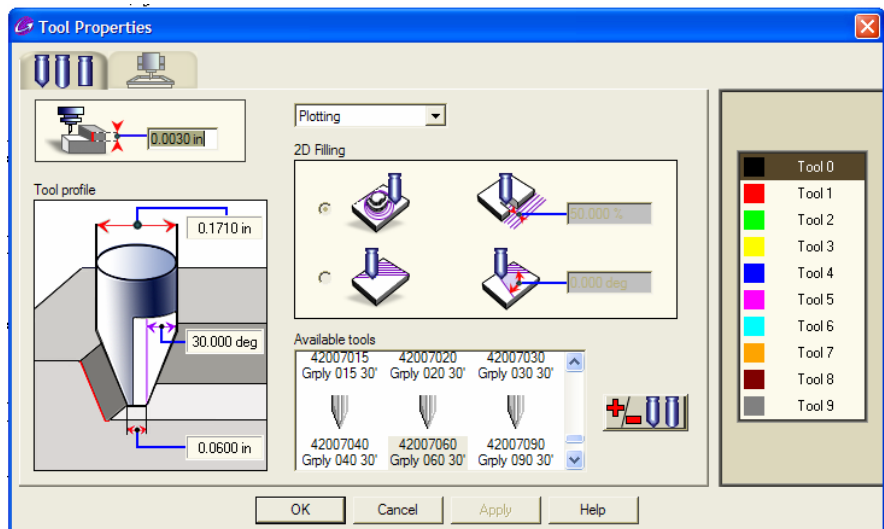


Figure 2-20 Selecting the Cutting Tool



“plotting” for the type of engraving. We’ll then close the dialog windows.

STEP 8: USING WYSIWYRE TO CHECK OUR TOOL

We’ll now click on the WYSIWYRE tool and examine our job (Figure 2-21).

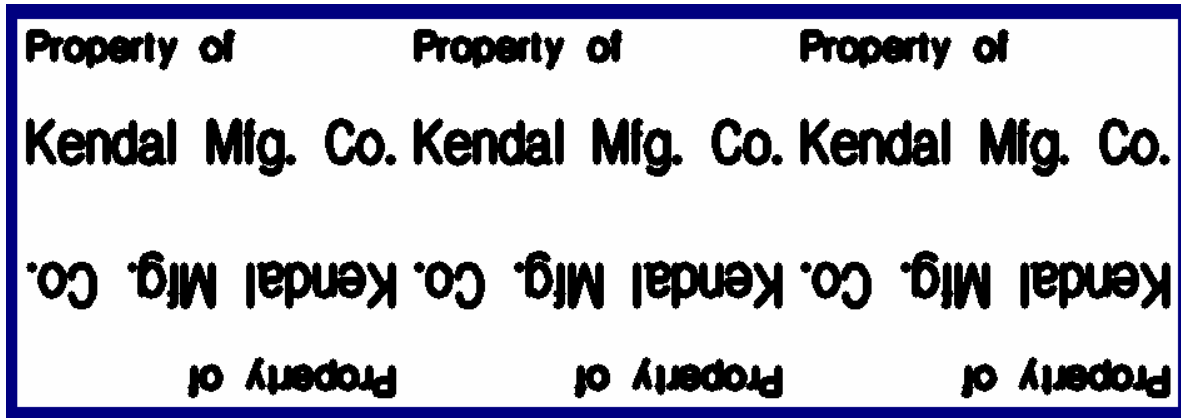


Figure 2-21 WYSIWYRE SCREEN

We can see at once that our letters are much too crowded. The WYSIWYRE screen, however, provides us with a tool that lets us check the width of the engraved line and to see the effect of changing this width. It’s called the “Engraving width value” tool and it’s the fifth icon from the right on the WYSIWYRE toolbar (Figure 2-22).

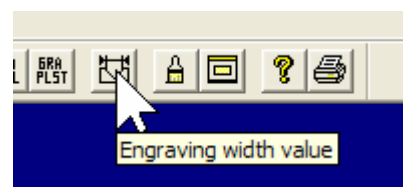


Figure 2-22 WYSIWYRE's

The window that opens when we click on this icon is titled “Tool Size”, and is shown in Figure 2-23.

Figure 2-23 shows an engraving width of 0.063 inches. How can this be if we’ve selected a 0.060 tool? The answer is that our engraving width is *not* the same as our tool size; the tool diameter is specified near its tip and the tool is angled, so the deeper we cut the wider our engraved line will be.

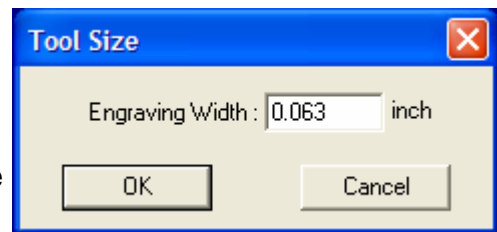


Figure 2-23 Tool Size Window

WYSIWYRE’s tool size box does more than tell us what the width of the engraving line will be. It saves us a lot of time by letting us change the engraving width value and see the results immediately on the WYSIWYRE screen. Let’s try it.

From Figure 2-23 we can see that our engraved line width will be .003 wider than our cutting tool’s tip diameter. (That’s .063 engraved width minus .060 tool diameter.) Let’s try a smaller



tool, say one with a diameter of 0.030. We'll add 0.003 to this diameter to allow for the line width at our cutting depth and enter the result, .033, into the engraving width dialog window of WYSIWYRE's "Tool size" window and Click "OK". WYSIWYRE redraws, showing the result as it appears in Figure 2-24.

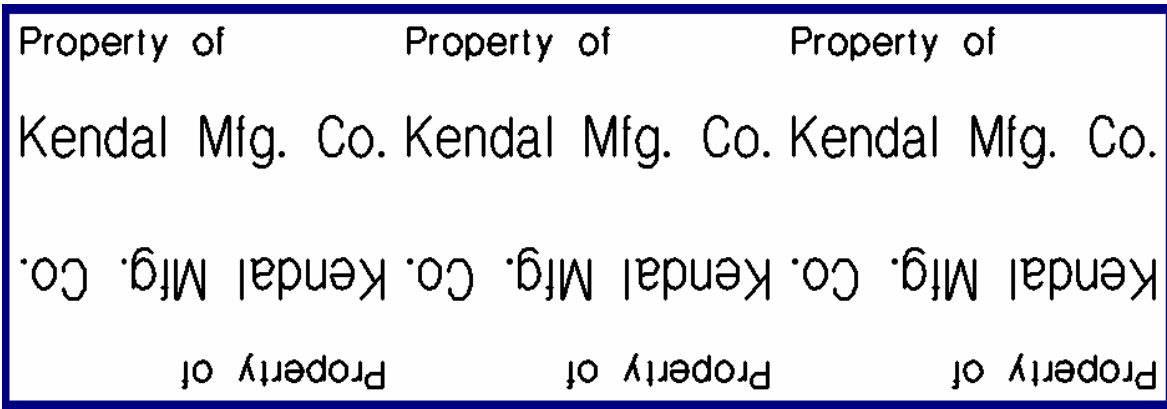


Figure 2-24 WYSIWYRE Screen Redrawn

STEP 9: USE WYSIWYRE FOR CUSTOMER PRESENTATION

WYSIWYRE has another valuable feature. We can use it to print a page showing the engraving job as it will appear in the actual colors of the specified material. For this job, we're using Gravoply 2, and let's say that our customer wants white lettering on a dark red background.

We'll look at the toolbar at the top of the WYSIWYRE window and see that most of the icons are labeled with

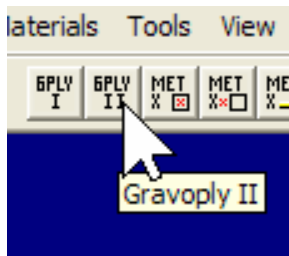


Figure 2-25 WYSIWYRE's Materials Selection Tools

New Hermes' popular engraving materials. We'll click on the Gravoply 2 icon (Figure 2-25), and a new window titled "Material Choice" opens. We'll scroll down this window until we find Gravoply2, 383 (Figure 2-26). We can see that this is a dark red cap over a white core.

We'll click "OK" and the WYSIWYRE screen redraws in these colors (Figure 2-27).

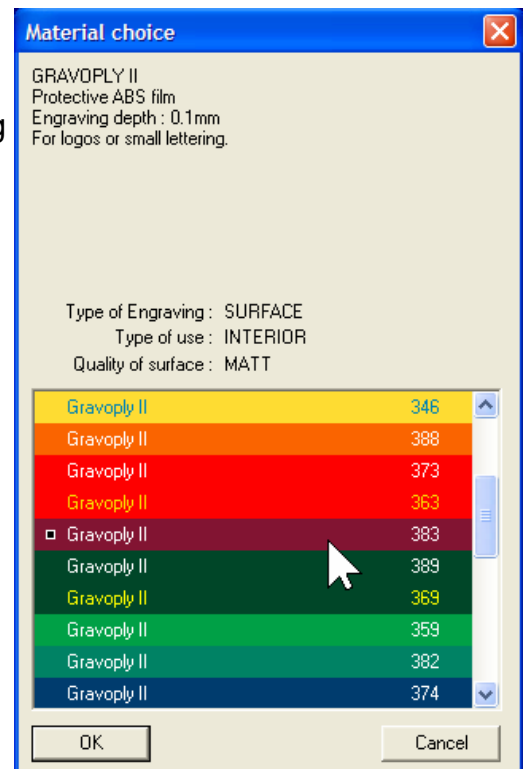


Figure 2-26 WYSIWYRE's "Material choice" dialog box

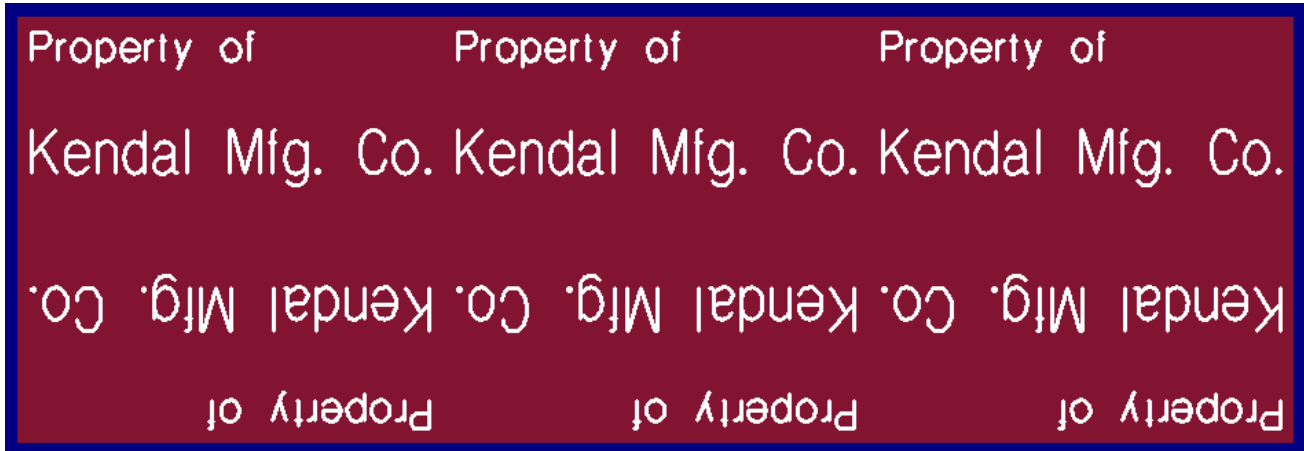


Figure 2-27 WYSIWYRE Screen Redrawn With Customer's Colors

We can now click on the WYSIWYRE window's printer icon to print a copy suitable for showing the customer before actually cutting the job.

STEP 10: SENDING THE JOB TO THE TABLE

Our job is finished and we've verified that its appearance is what we want. Our last steps are to click on GravoStyle's "Machining" icon to enter the machining window. There, we'll set our X-Y and Z axes speeds, make sure that the spindle motor is set to be on, our lift-over height is OK and check that our machine origin and job orientation are the way we want them. (Note that the engraving depth is already set to 0.003 inches - the value we earlier specified.)

One final check - we'll click on the preview button to make sure that there won't be any surprises. We're done! We can now click on "Run" to send the job to the table, **and we'll make sure that we save our job!**

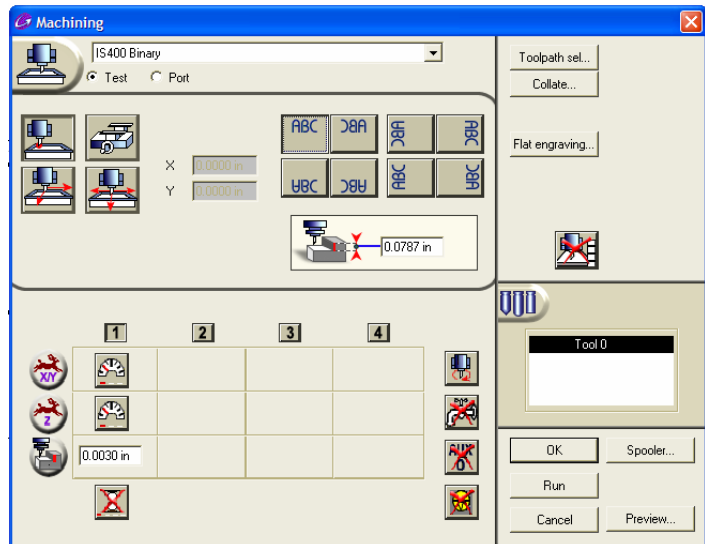


Figure 2-28 Machining Window



WHAT WE'VE LEARNED

In this lesson, we've learned how to:

- ... Work with the manual text mode
- ... How to reposition text
- ... How to design a simple matrix
- ... How to use measuring tools
- ... How to zoom in and out using the mouse
- ... How to use the WYSIWYRE screen to correct a poor choice of cutting tool
- ... How to use the WYSIWYRE window to show the job in the actual colors that it will be engraved