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**REALIZATION**  
LAB

## Laser Cutting in Room 36-Setting up your file

To use the Universal VLS 4.60, you need to create a file with vector lines that meet the following requirements:

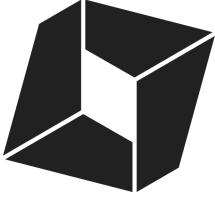
To **CUT** or **ENGRAVE**, all lines must have a stroke weight of **0.001"** (**0.072 pts**)

To **CUT**: Lines must be **RED** in RGB color mode (RGB 255, 0, 0)

To **ENGRAVE**: Lines must be **BLUE** in RGB color mode (RGB 0, 0, 255)

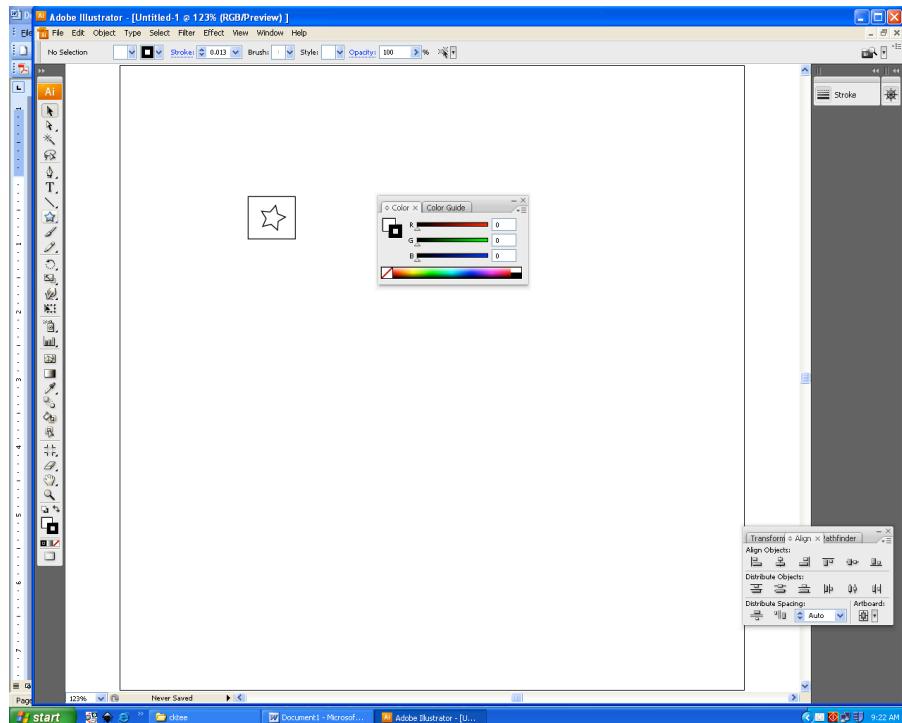
Any lines that do not meet these requirements will be RASTER engraved, which will result in a shallow engraving that will vary in density depending on the darkness of the gray-scaled equivalent of the lines/shapes.

\*Some programs (such as SolidWorks and Inkscape) cannot generate lines with a stroke weight of 0.001". These files should be saved in a format that can be opened in Adobe Illustrator and modified appropriately. A SolidWorks Drawing file can be saved as a .AI file type and then opened directly in Adobe Illustrator.

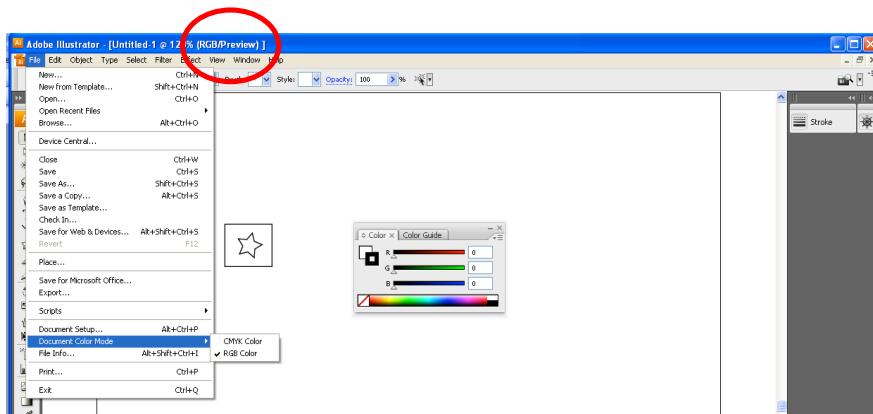


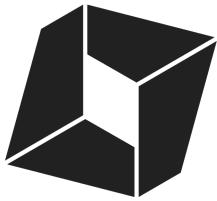
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- I. Generate a file that you want to cut.** This can be done in a vector program such as Adobe Illustrator, Inkscape, AutoCAD, or SolidWorks. (Note that files generated in SolidWorks will need to be processed through Illustrator to properly format the lines, as described below.)
  - a. Create geometry (shown here in Adobe Illustrator)



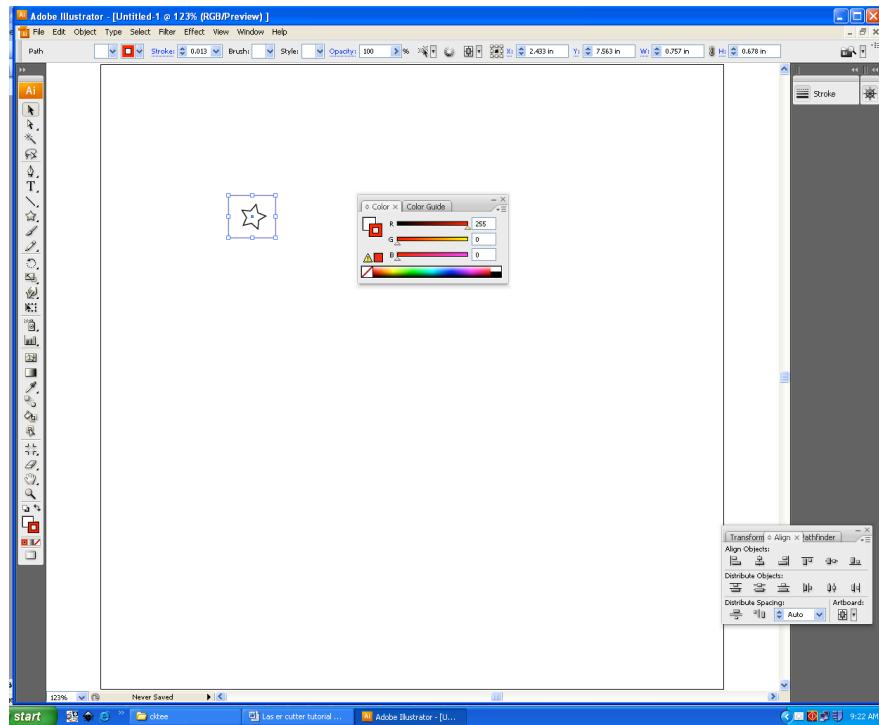
- b. Verify that your file is in RGB color mode. If not, click File→Document Color Mode→Select “RGB Color”.



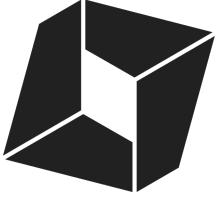


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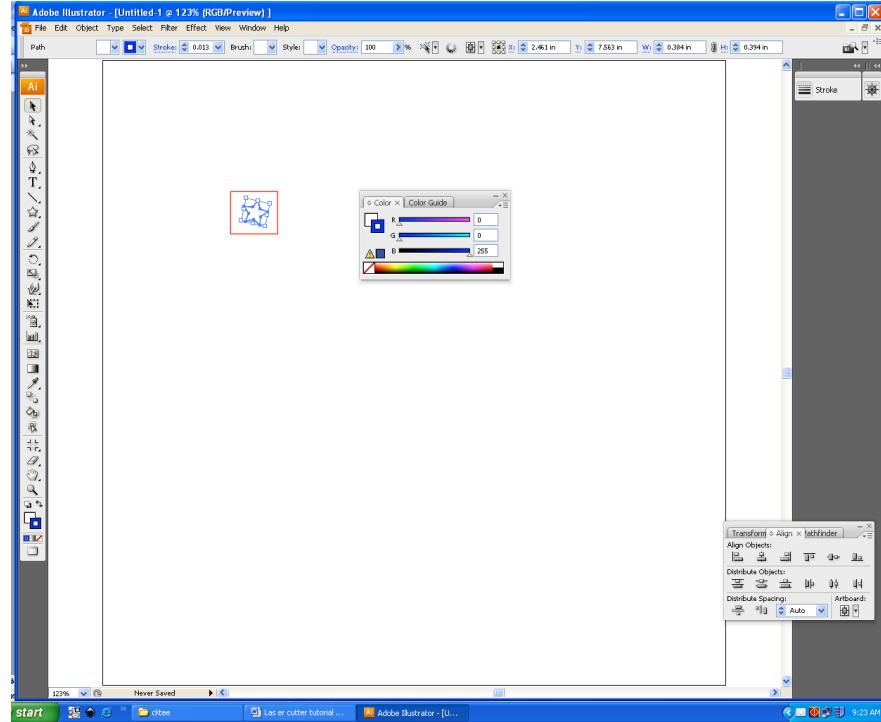
- c. Select lines that you want to CUT—they must be primary **RED** in RGB color mode (255, 0, 0)



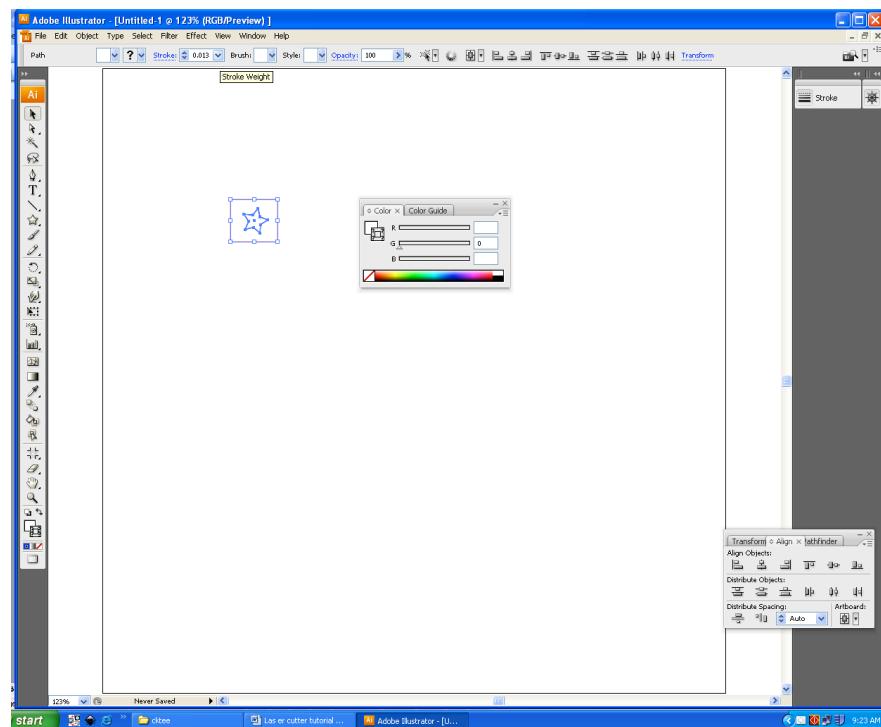
- d. Select lines that you want to ENGRAVE—they must be primary **BLUE** in RGB color mode (0, 255)

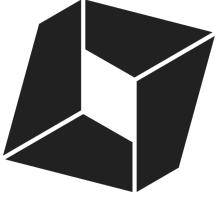


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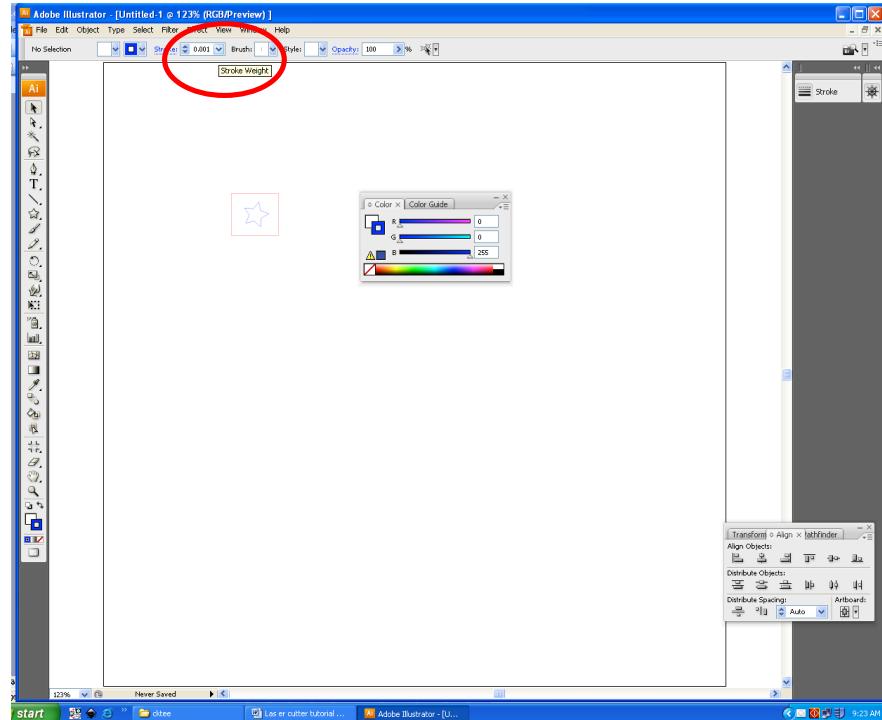


- e. Select all lines that you want to CUT or ENGRAVE—they must have a line (stroke) weight of 0.001" (equivalent to 0.072 pts)

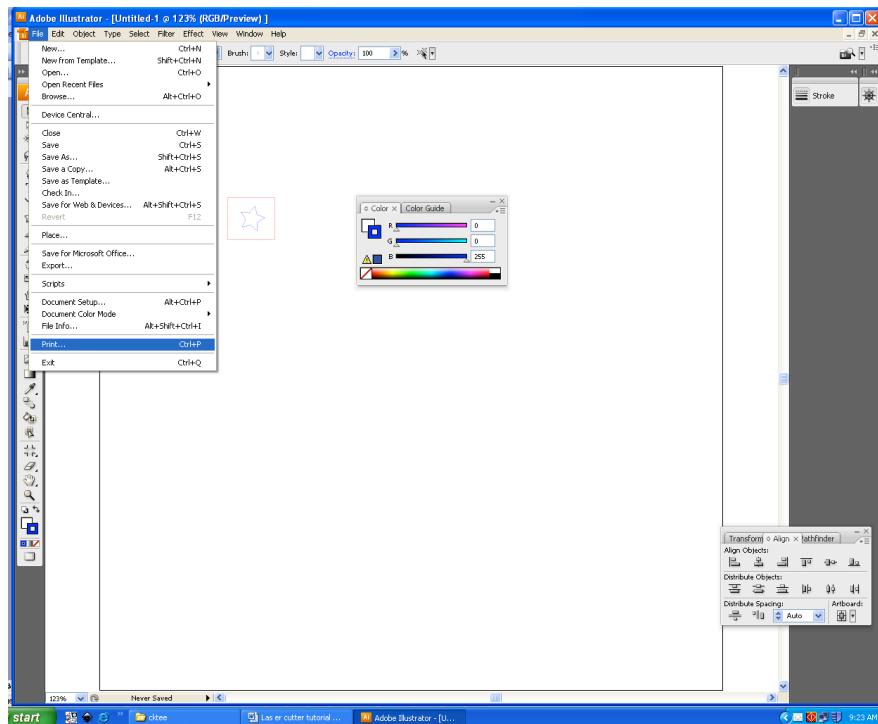




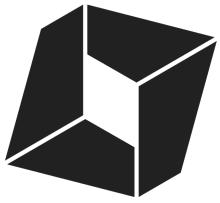
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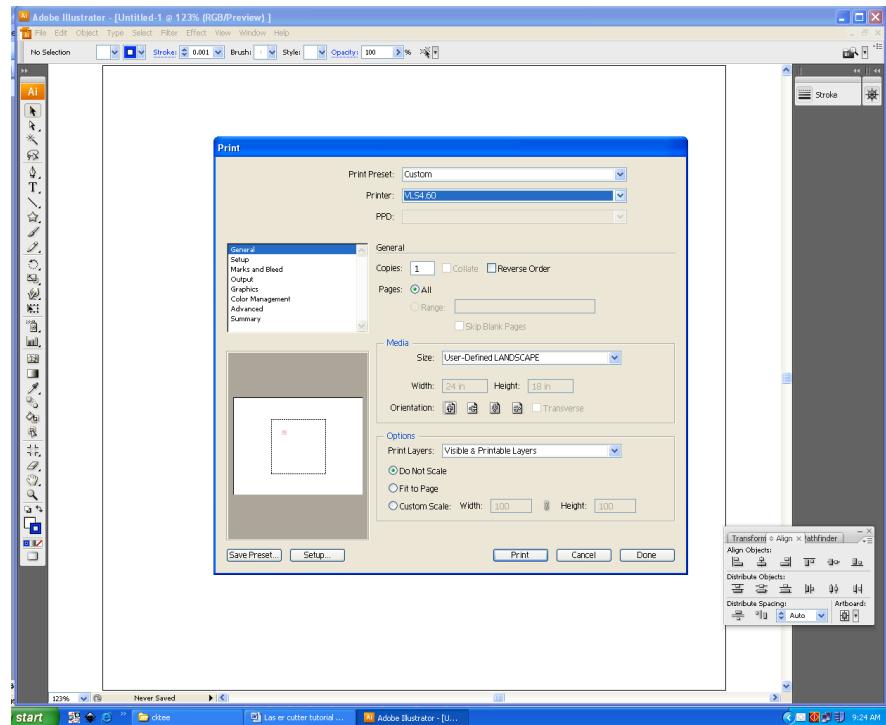
## 2. “Print” your file to the laser cutter software. File→Print

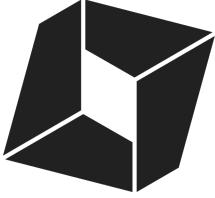


- Select “VLS4.60” from the Printer pull-down menu, and “User-Defined LANDSCAPE” from the Media pull-down menu.



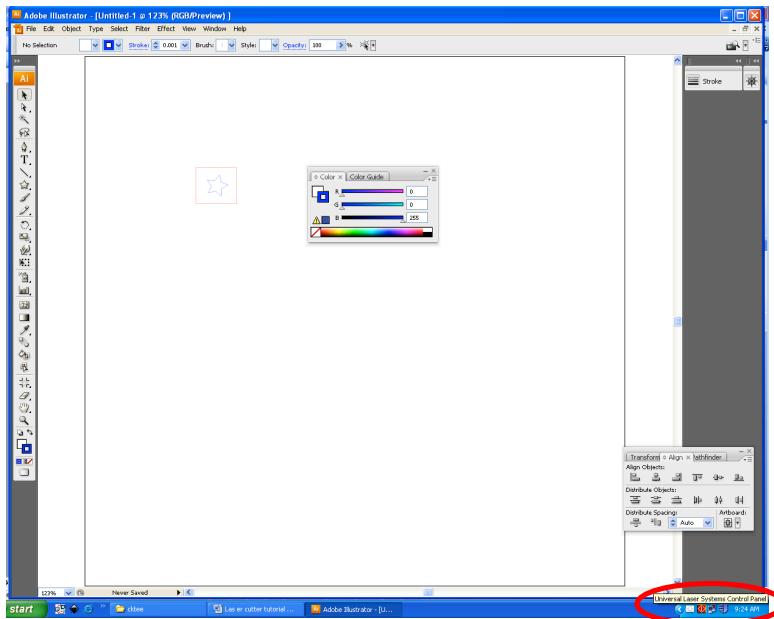
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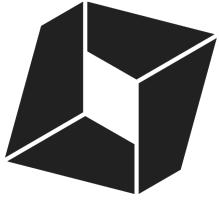
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- b. When you click “Print” nothing will appear to happen—your file will NOT begin cutting immediately. Click on the square red button in the lower right corner of the screen. This will open the laser cutter software.

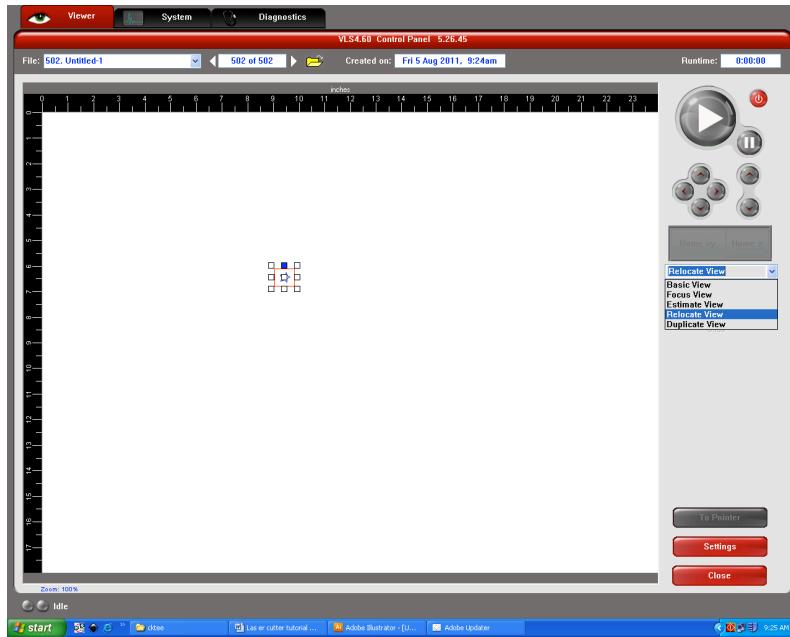


### 3. Locate your geometry for cutting.

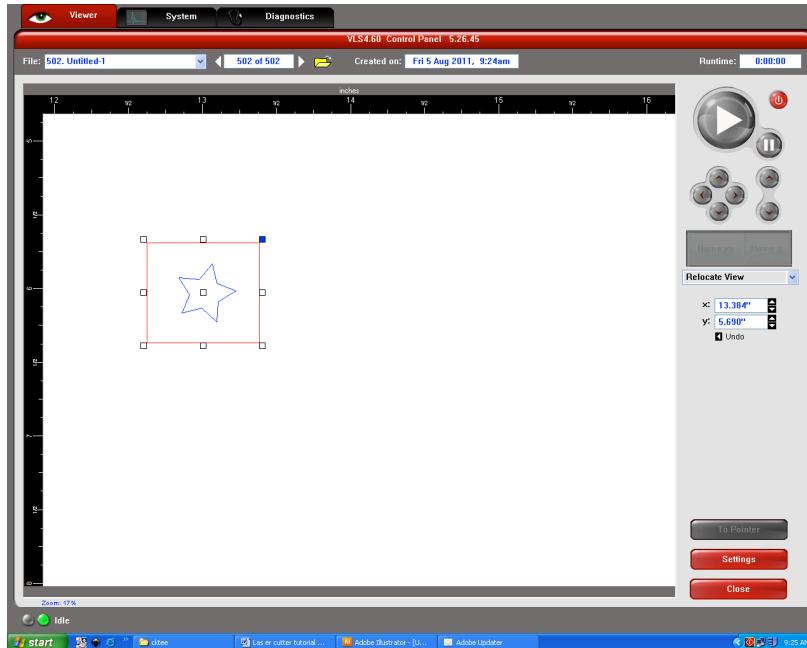
- a. Verify that any lines that you want to cut or engrave are **RED** or **BLUE**. If they show up **BLACK** in this screen, then the lines are not formatted properly. Review step 1 above. Note that there are several different viewing functions that are available. The 24” x-axis and the 18” y-axis align with the rulers inside the machine.

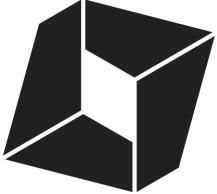


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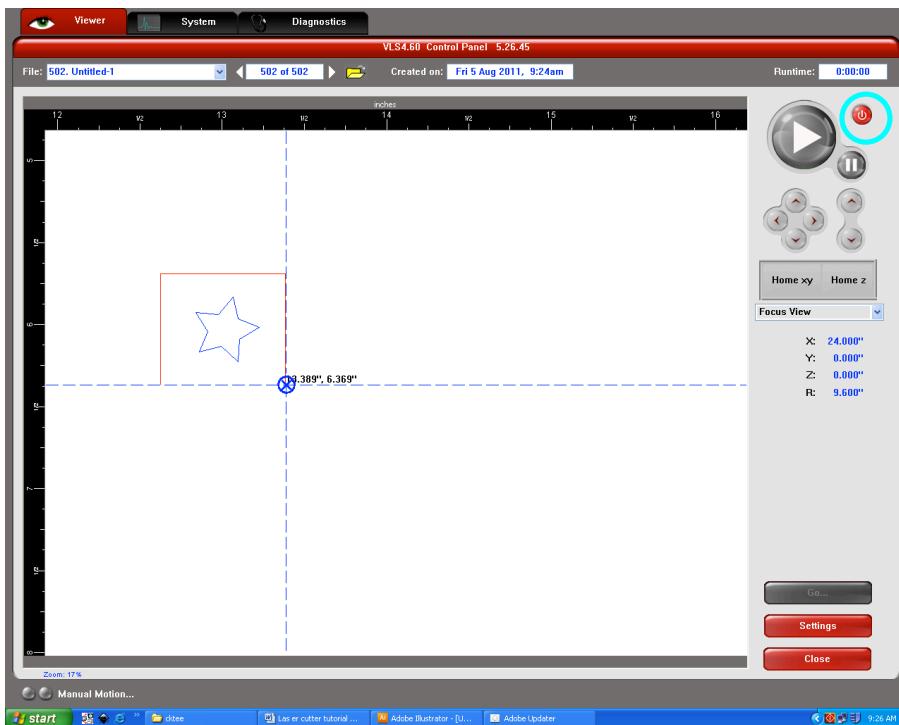
- b. When the cursor shows up as a magnifying glass shows up in the cutting field, a left mouse click will zoom in, and a right click will zoom out.

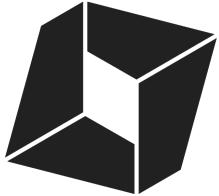




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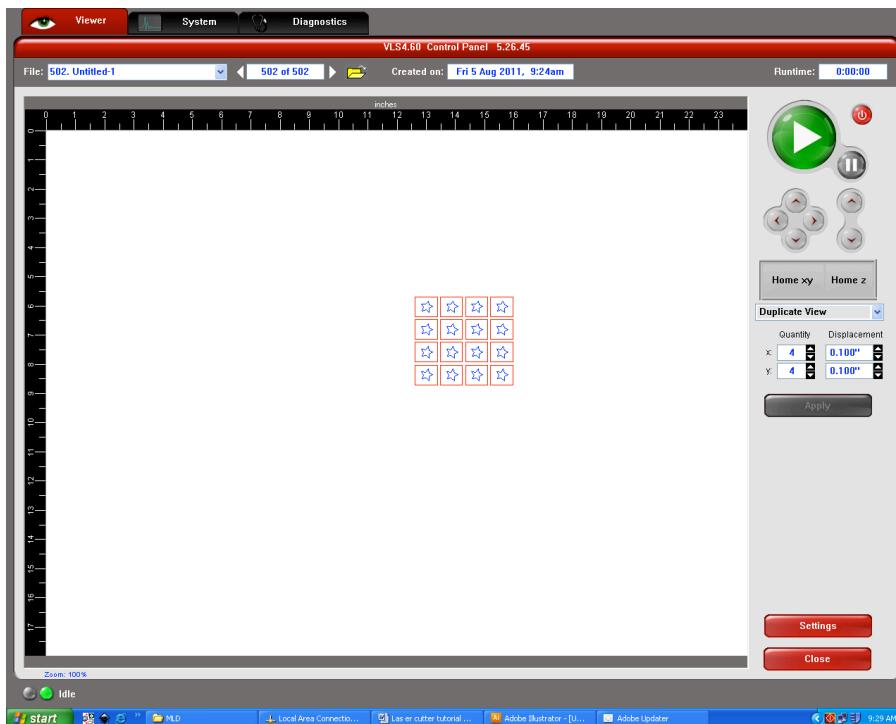
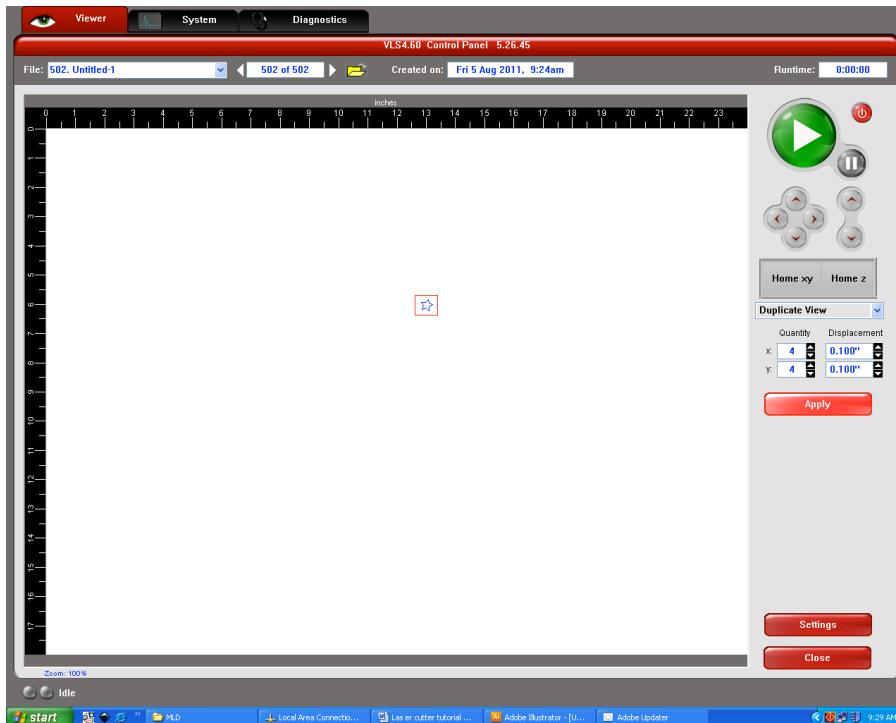
- c. Focus and Relocate views are used together to ensure that your geometry will align with your material to cut as desired. Relocate view allows you to move your geometry around in the cutting field, and with Focus view, you can verify the software position of your geometry relative to your physical material in the machine. Turn the machine on and click on your geometry—the machine will move the laser head to that position and will indicate with a red indicator.

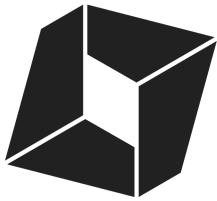




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d. Duplicate View allows you to create a matrix of your geometry with a defined displacement.

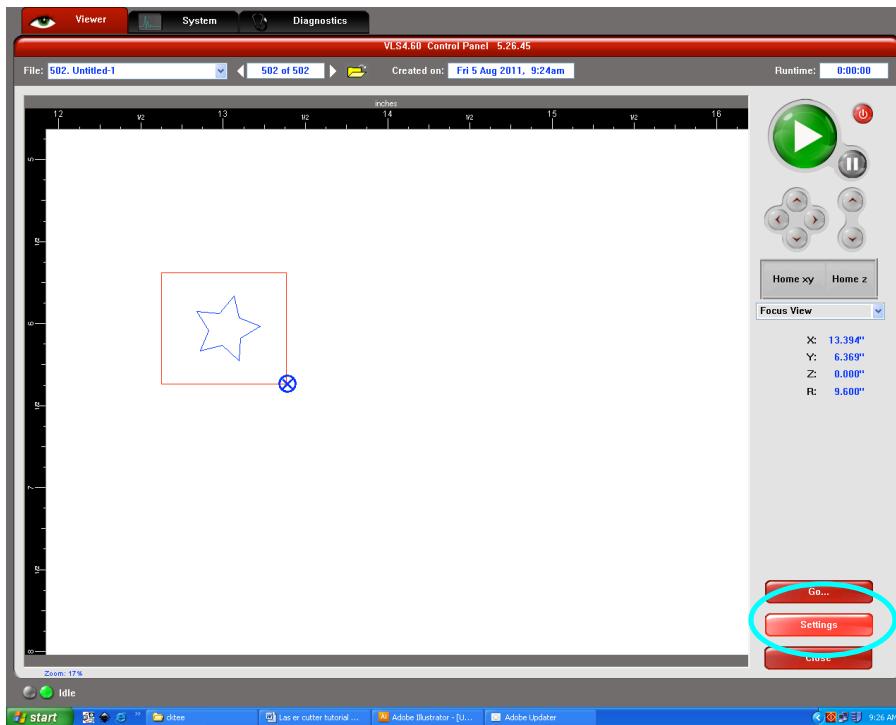




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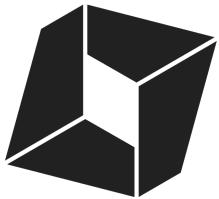
## 4. Define your material type and thickness.

- Click on “Settings” in the lower right corner of the window.



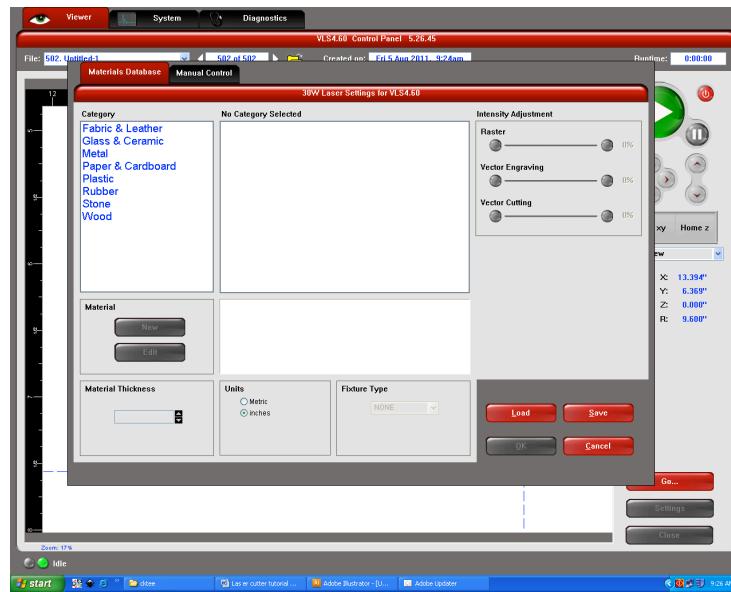
- Click on “Materials Database” in the upper left tab.



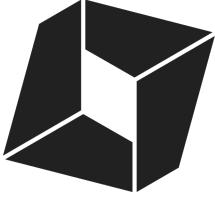


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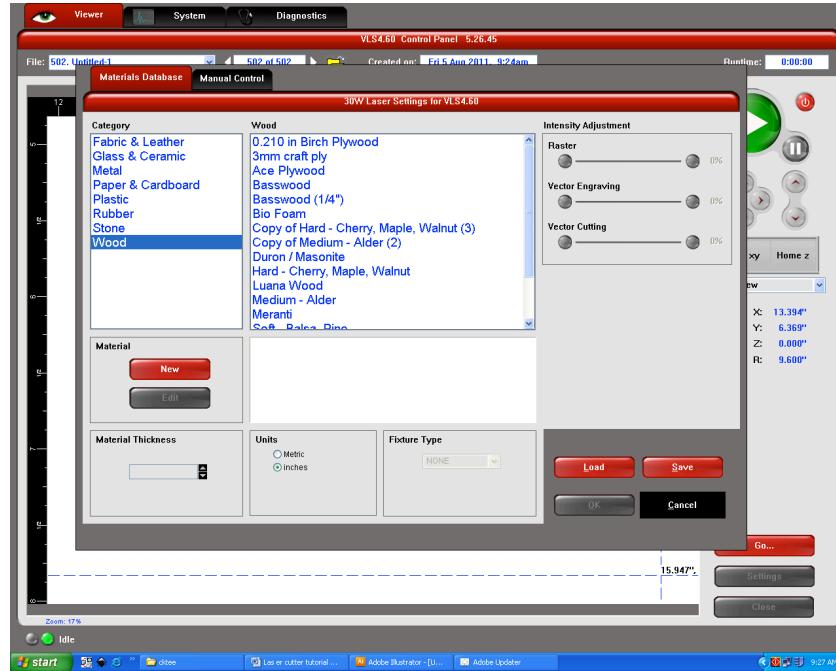
- c. Select a material Category in the left column. (Note: These laser cutters will NOT cut Glass & Ceramic, Metal, or Stone—these materials can only be engraved.)



- d. In this example we have chosen Wood. Once a category is chosen, a list of different materials is populated. **If you are unsure about what your material is, please ask a TA.** Certain materials, such as PVC (vinyl), release harmful chemicals when they are laser cut. It is highly recommended that you cut a small sample cut (such as a small square) in your material before proceeding with your cut to ensure that the settings meet your expectations.



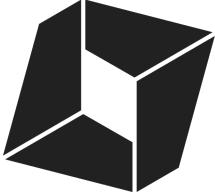
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- e. In this example we have chosen Basswood. Select the material, and then enter the thickness in the box in the lower left corner.



- f. Press "OK". Sometimes this screen gets 'stuck' and you may need to wiggle the mouse to return to the cutting field view.



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- g. Verify that the white filter suction unit is turned on, and press the large green play button. This will begin your cutting operation. It is important that you stay nearby the laser cutter while it is cutter to ensure that the cut is proceeding properly.

