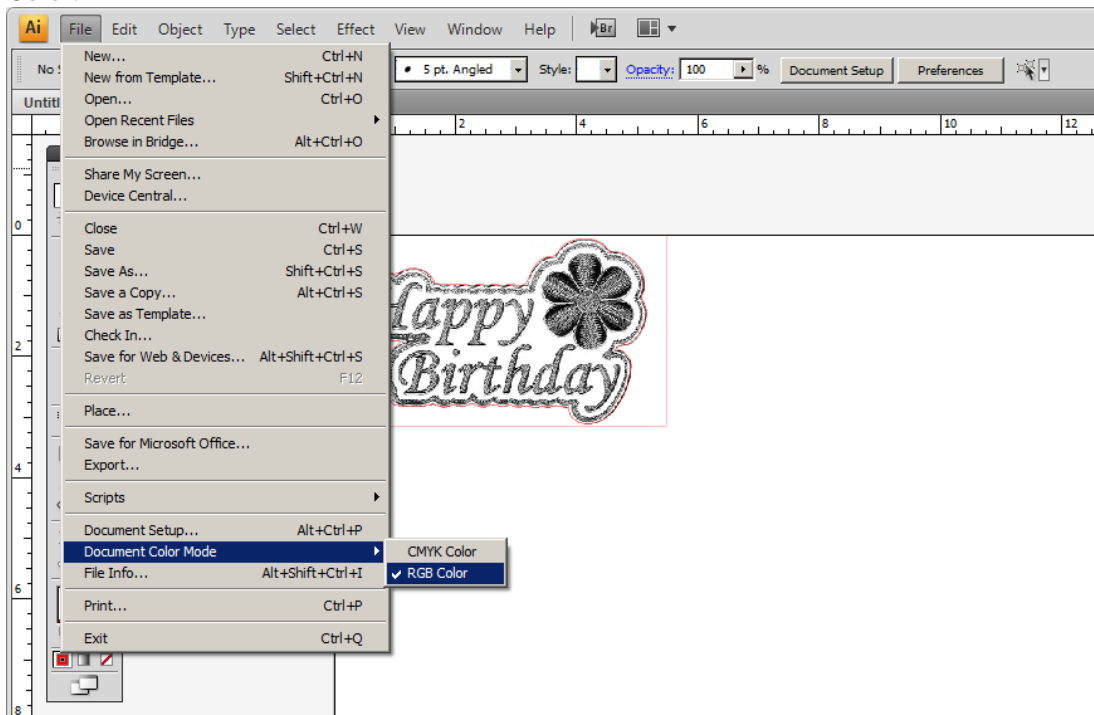# Laser cutter setup instructions:

1. Cut your material to 18" x 24" or smaller.

2. Turn on the laser cutter by flipping the wall switch on the right behind Station B. You will hear the cooling fan and air assist turn on.

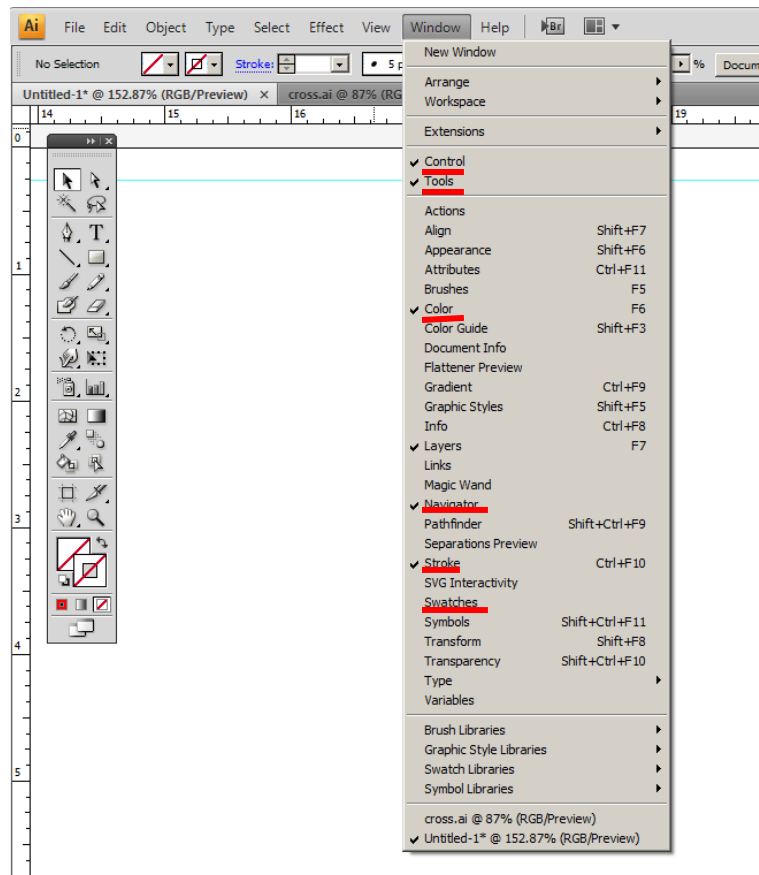3. Open Illustrator. Pull down "File" and make sure "Document Color Mode" is set to "RGB Color."

4. Make sure your Artboard size is set to 24 inches wide by 18 inches tall, and that your orientation is landscape, not portrait.

5. Pull down "View" and make sure "Show Rulers" is turned on(Ctrl + R). Many people also find it helpful to turn on "Show Grid" and "Snap to Point" but these are not required to set up a drawing to cut.
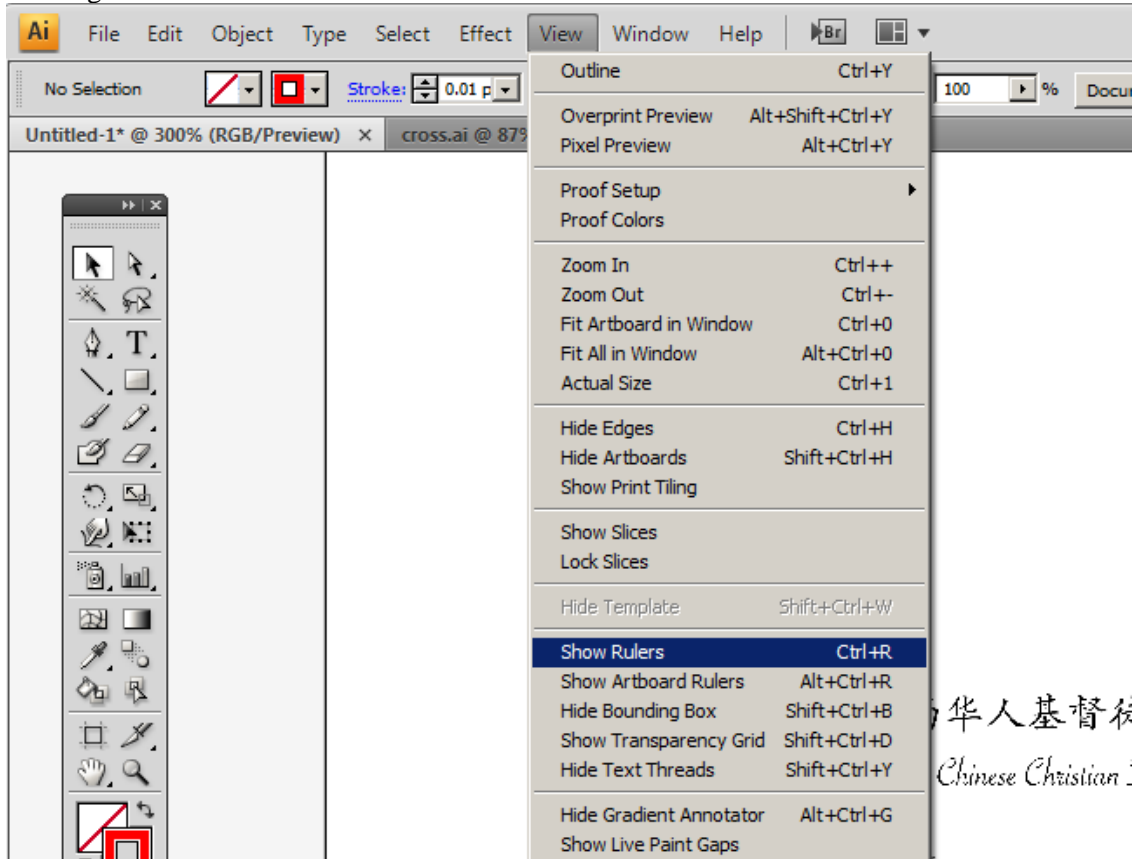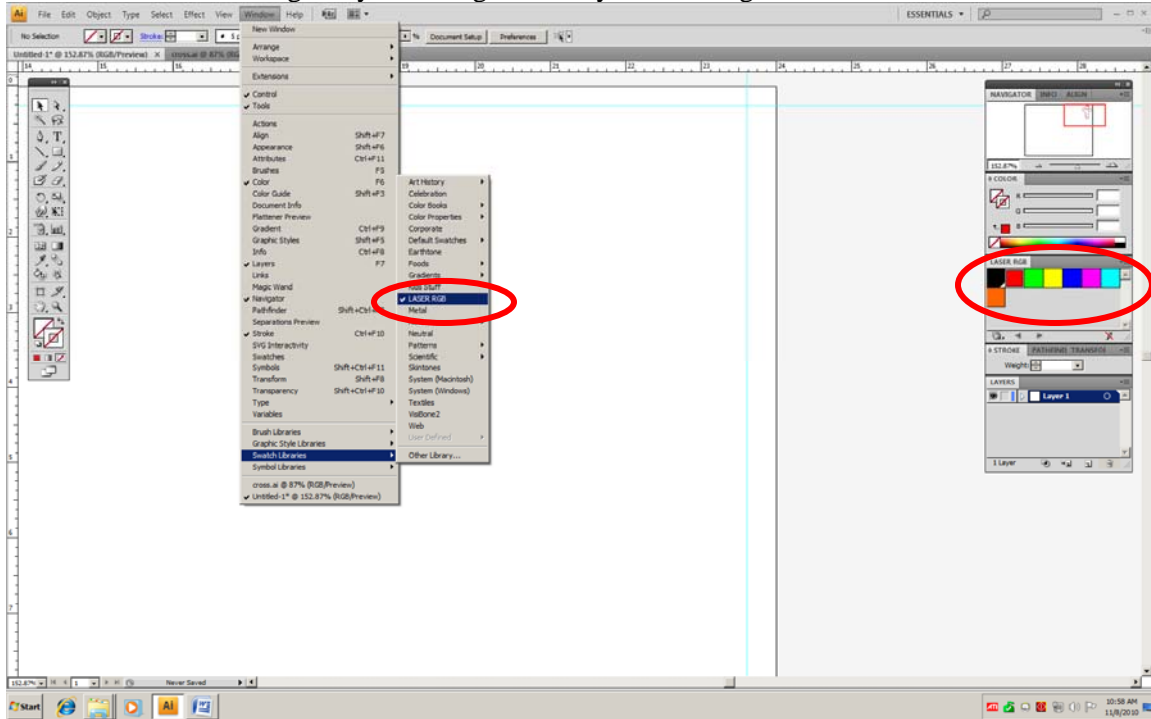
6. Pull down "Window" and make sure "Color," "Control," "Navigator," "Stroke," "Swatches," and "Tools" are turned on.

7. Pull down "Window" again and go to "Swatch Libraries" and make sure "Laser RGB" is turned on. This swatch gives you the eight colors you can assign cut values to for the laser cutter.


8. Open file. Illustrator files are *.AI- if your file is of another type, select it from the pull-down list, and it will be converted to *.AI. Check to make sure you have the desired scale by comparing the size of your drawing against the rulers and the Artboard and visually inspect your file to make sure it is still drawn and laid out as you intended.

9. Make sure that any lines you intend to make vector cuts on have their line weight set to .01 in the Stroke dialog box. Raster cuts can be any line weight.
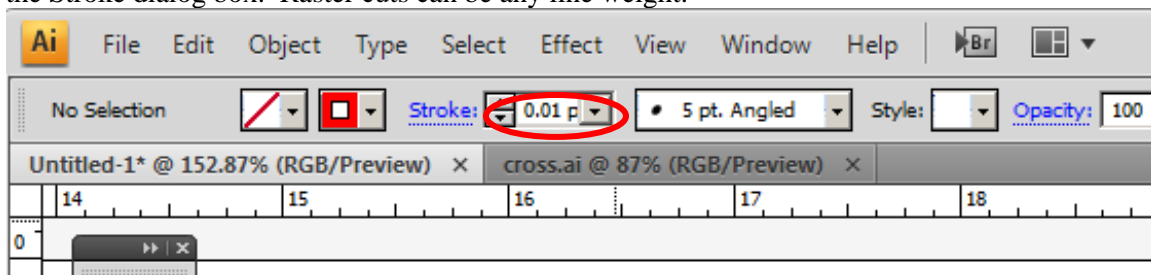
10. Assign colors to your drawing from the "Laser RGB" swatch. Remember that the laser will cut colors in order starting with black and ending with orange but that it will also cut rasters before vectors, regardless of color. As a general rule, therefore, it works best to assign your raster or "scoring" cuts first, and your vector or "through" cuts last, so that you are not trying to score or engrave into loose pieces which may move or be blown around.
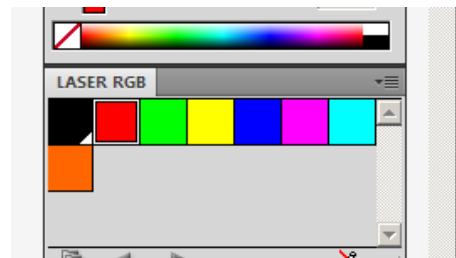
11. With your Rulers turned on, left click and drag the top left corner of your Rulers down to the top left corner of your Artboard.
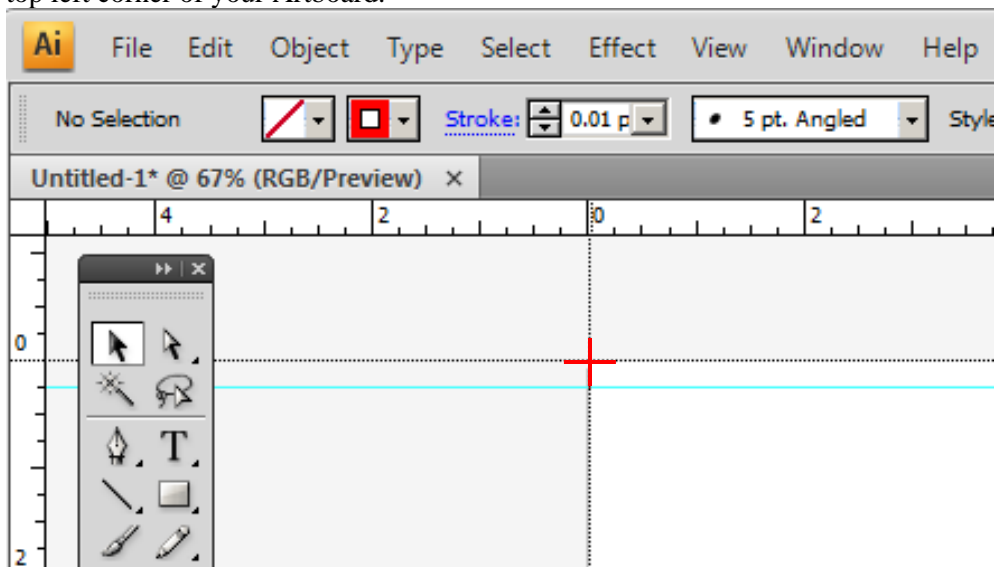

12. The laser cutter will only print parts of the drawing which have been placed inside the Artboard area, which is represented by the rectangle with the heavy black border. Place the part of your design you wish to cut inside that rectangle, making sure that none of it is touching or overlapping the edges of that box.
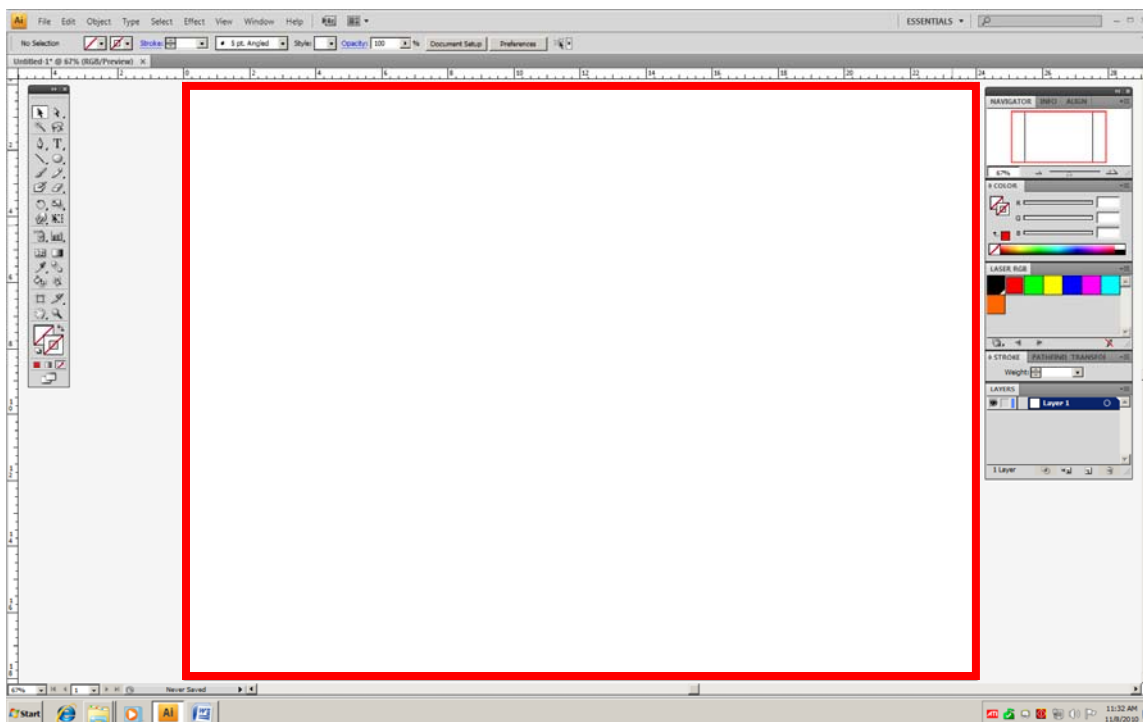
13. Once you have positioned the drawing you wish to cut, look through the box of sample cut cards next to your computer, and find the card which most closely matches the material you are going to cut. Take note of specific settings on that card, and of which colors you want to assign each setting to.
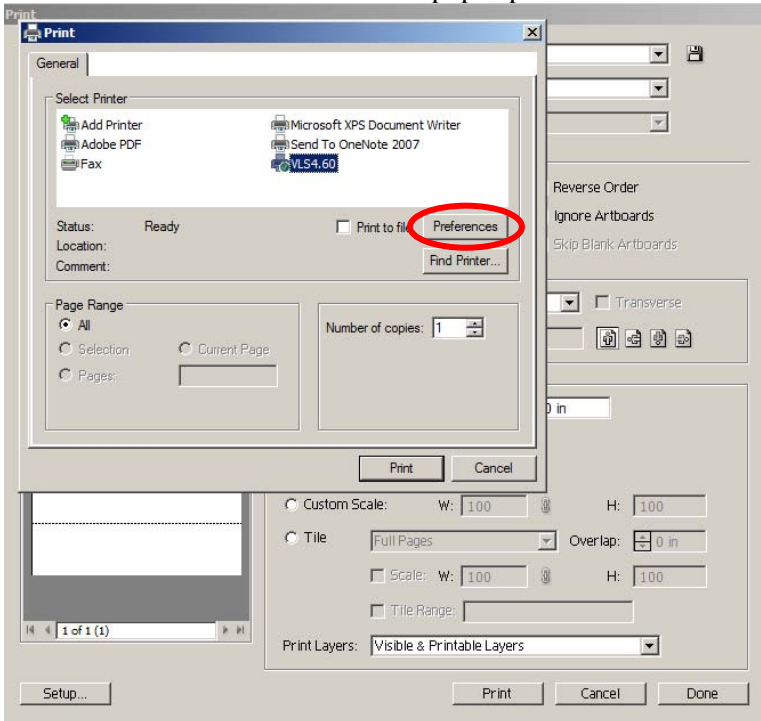
14. Pull down "File" and click on "Print."
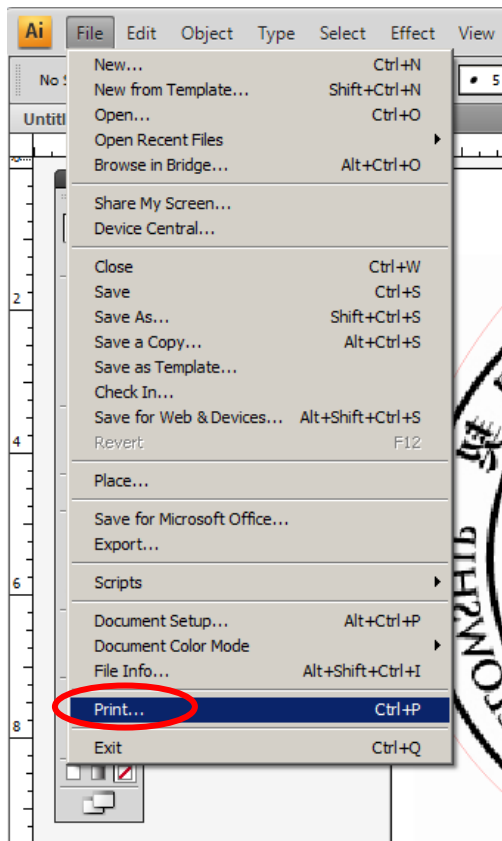
Click the "Setup" button at the bottom of the Print dialog box.
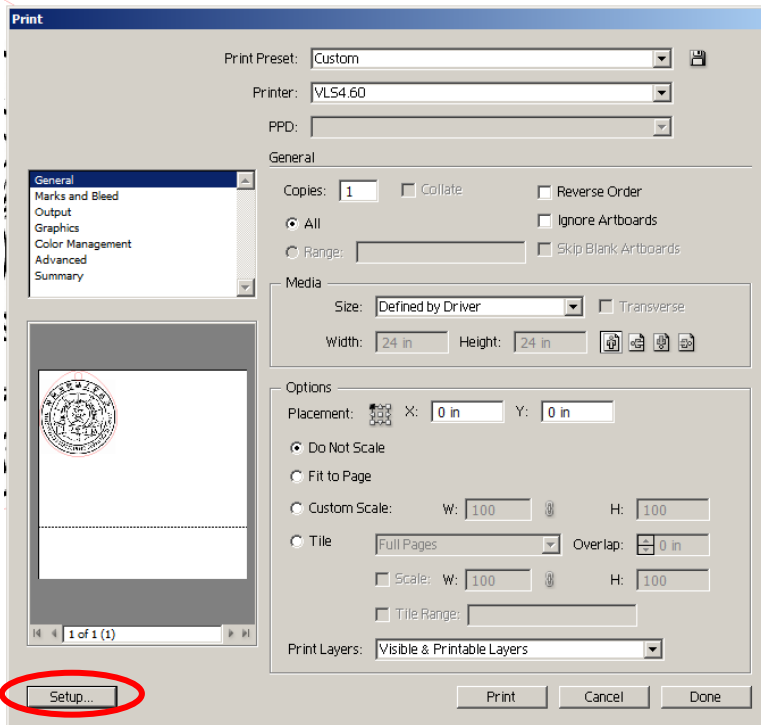
Click "Preferences" when Print box pops up.

15. You should be in the "Laser Settings" tab and should see a list of the same eight colors in your "Laser RGB" swatch. Under the "Pen Mode" column, click the small white box next to each color to change it to either "RAST," "VECT," or "SKIP" for any colors you are not using for this job. Now click inside the "% Power" and "% Speed" box on the first color you want to assign settings for. The three sliders beneath this box will light up. Enter your three setting values from the sample material card in the three fields next to the sliders and when finished, click the large "Set" button to the right of them. Repeat this for each color you are using, and then click "OK" at the bottom of the screen.
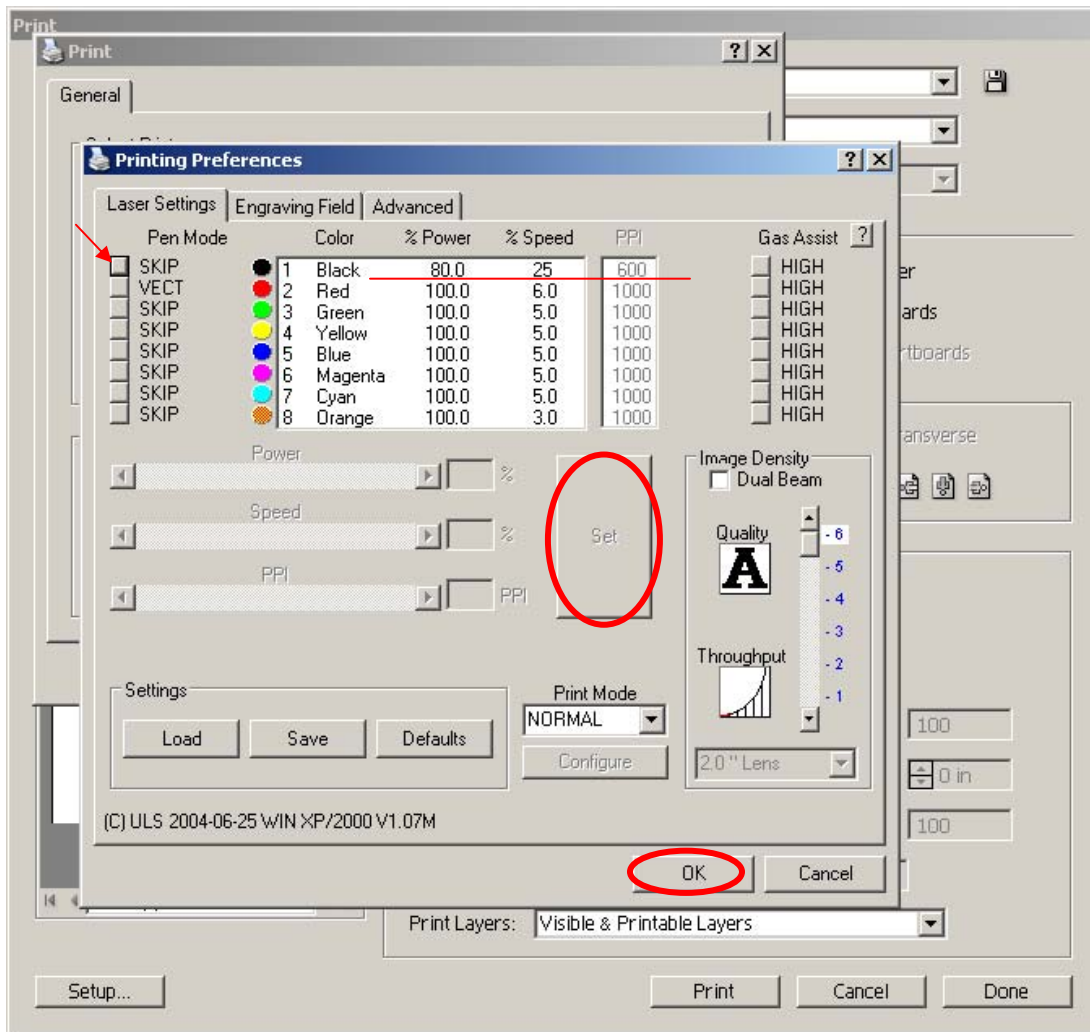
16. Click the "Print" button at the bottom of the Print box.
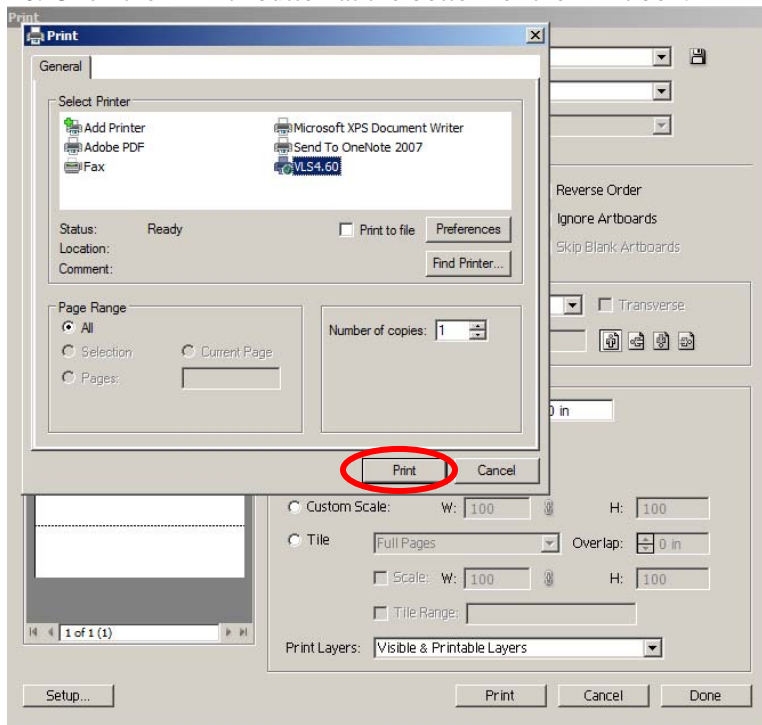
17. Now click Setup in the scroll menu in the top left corner of the Print box, and then click the top left corner of the square in the Placement box.

18. In the Media box, under Orientation, click the first of the four buttons. In the print preview window on the left side of the Print box, you should see your drawing aligned to the top left corner.
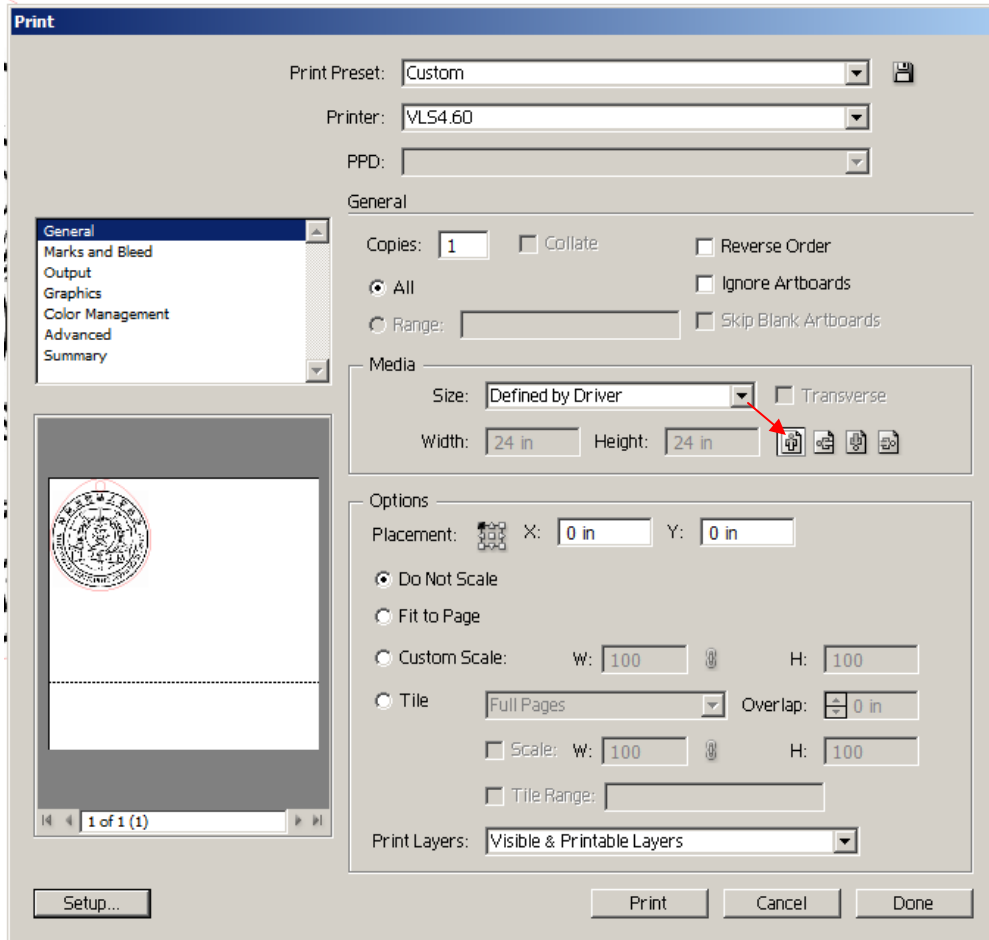
19. Click the "Print" button at the bottom of the Print box. After a few seconds, you should see your filename on the screen on the control panel of the laser cutter in a format like "001) MY CLASS PROJECT." If you don't see your file, use the "PREV FILE" and "NEXT FILE" buttons on the laser cutter control panel to find it. You should see the cut settings you entered displayed below your filename. If those settings are incorrect, or all read 0.0, work through the instructions again or ask a staff member for help.
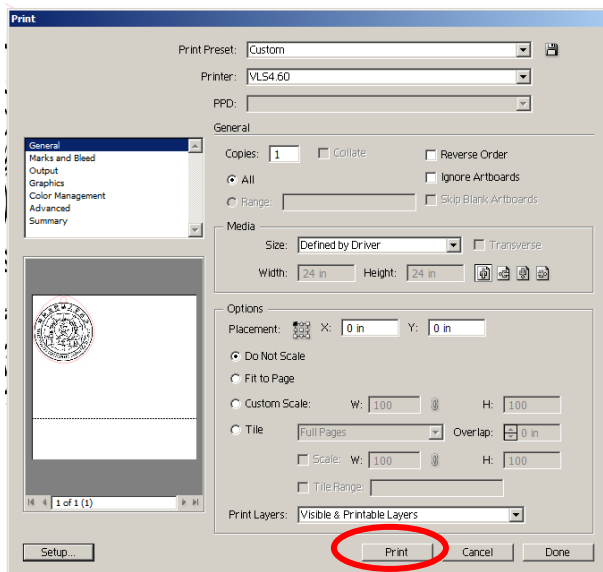
20. Open the lid of the laser fully, making sure it does not drop when you let go of it, and place your material in the bed of the laser, making sure it lines up with the steel rulers on the top and left sides of the bed, that the height of your material will not interfere with the nose cone of the laser, and that it does not hump up in the middle of the sheet or curl up sharply on the edges. All of these situations will cause the nose cone to catch on your material and ruin your work.

21. Press the "Z" button on the laser control panel. The red focus carriage will move toward the top left corner of the bed. You can move the bed up and down quickly by using the UP and DOWN arrows immediately to the right of the display screen. To move the bed up and down slowly, press the SELECT button before using the UP and DOWN arrows keys.

22. Find the back and white plastic focus tool on the right-hand shelf inside the laser cutter.

23. Place the focus tool on top of the material, near the red focus carriage. Raise or lower the bed so that the notch at the top of the white part of the tool rests against the side of the focus carriage. Slowly raise the bed until the beveled edge on the focus tool touches the bottom edge of the focus carriage and you see the top of the focus tool start to tilt away from the focus carriage. Move the bed back down slightly until the tool sits perfectly flush with the carriage.

24. Press the "Z" button to return the focus carriage to its home position.

25. Close the lid of the laser cutter and press the green "START" button when ready.

If you need to examine your work or clear loose debris or dust from your sheet while the file is cutting, press the "PAUSE" button firmly. It will sometimes take a second or two, but the laser will stop cutting and park in the top right corner. You may now raise the lid of the laser and inspect your work. Take care not to shift the sheet of material you are cutting, or the rest of the file will be misaligned. When ready to finish cutting, close the lid and press the "RESUME" button, and the laser will pick up precisely where it left off.

TIPS:

If you send a file and nothing happens, or the settings all read "0.0" on the screen, check your color mode, check your stroke weight, and check your line colors. This fixes 90% of such problems.

Don't forget that you can score with vectors as well as through-cut. This is usually much faster than scoring with rasters.

Recall that the lasers will always cut all your rasters first, and then all your vectors. Recall also that if you have, say, several vector cuts, the laser will cut them in order of color from black to yellow, just like in your Laser RGB color swatch. Use this to organize your drawing so that you cut your scores first and your through-cuts last. This will help keep you from losing small pieces and snagging your sheet on the nose cone.

Remember to leave yourself enough time to cut your file. Bear in mind that the more complex your design, the lower your speed settings are, or the more rastered artwork you have, the longer you will need to cut your file.

If you have a huge file that you know will take a long time to run, such as a sheet with hundreds or thousands of parts, you can divide it into several areas with a margin in between each, and output them as separate files. Doing this will allow you to pull your sheet off the laser while only partially complete and come back to finish your work later without having to throw your material away and start over.

If you have very tiny pieces you worry might blow away or fall through the honeycomb, you can put "tabs" or "bridges" on them: tiny gaps in the outlines of your pieces that leave them connected to your skeleton. The easiest way to do this in Illustrator is to simply make very small rectangles or circles with white fills and no stroke and position them over the perimeters of each shape in one or two spots. The laser will "see" a gap in your vector. As an added benefit, this allows you to quickly pick up your whole sheet and trim pieces off as you need them at your desk. This works very well for paper and cardstock, which is the biggest offender, but is slightly trickier when cutting acrylic.

If unsure about your settings, or still becoming comfortable with the laser cutter, make a small test cut either on a part of your sheet you will not need, or on a separate piece of scrap of the same material you're using for your finished file.