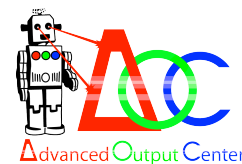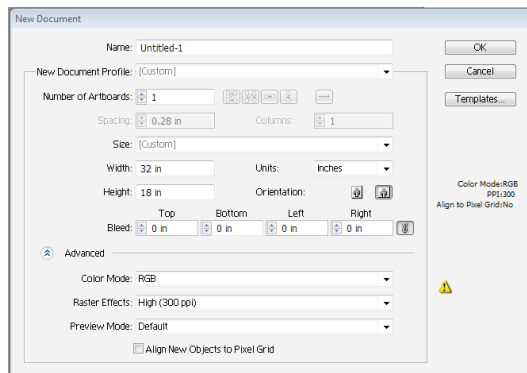# Quick Start Guide for:

Universal Laser Cutters

Document Preparation

Set up your document in Illustrator

- In Illustrator, select File->New..

- Set Width to 32 inches and Height to 18 inches

- Set orientation to Portrait and color mode to RGB

- Click OK

Turn on the Rulers

- Select View -> Rulers -> Show Rulers

Set the Guides:

- We also recommend you place a guide at a ¼" inch from each edge of the document that your material will touch. This will inset the design slightly so it is completely contained.

- At this point create your file making sure all your vector lines have a **0.1pt stroke weight**.

- Only use the colors to the right when setting up your vector lines. Keep the order in mind as well when setting your file up.
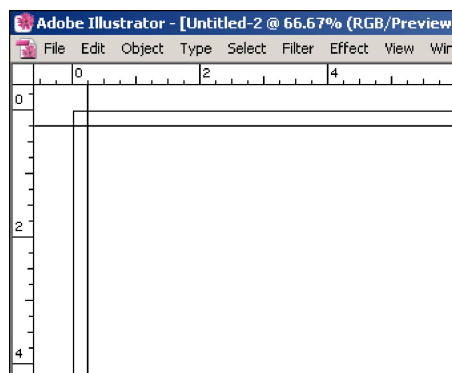
| COLOR	ORDER	RED VALUE	GREEN VALUE	BLUE VALUE
BLACK	1st	0	0	0
RED	2nd	255	0	0
GREEN	3rd	0	255	0
YELLOW	4th	255	255	0
BLUE	5th	0	0	255
MAGENTA	6th	255	0	255
CYAN	7th	0	255	255
ORANGE	8th	255	102	0

Power Settings

Use the laser cutter control panel to assign power settings and cut types to the colors in your file.

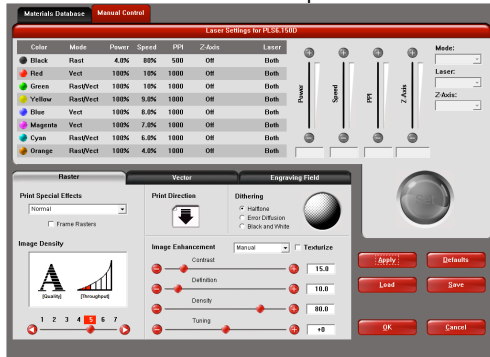**Assigning Power Settings**

1. In Illustrator, select **File -> Print -> Setup -> Preferences**
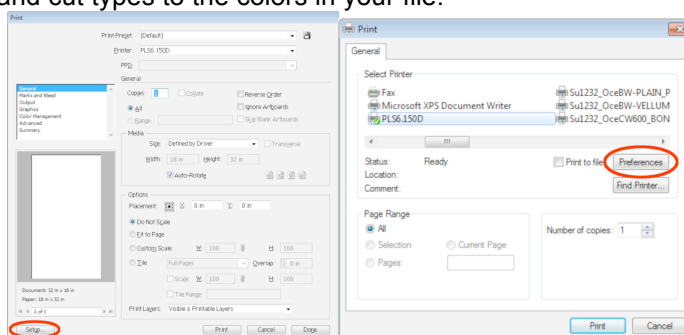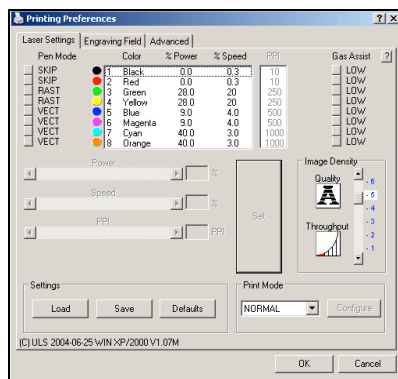
The 120w control panel.

The 150w control panel.

- **Pen Mode**
  - VECT = vector cuts AND vector engravings.
  - RAST = raster engravings.
  - SKIP = ignore this color.
  - RAST/VECT = don't use this.

- **Power:** The power setting for the laser beam, ranges from 0-100%. More = deeper cut; Less = shallower cut.

- **Speed:** The speed of the laser head, ranges from 0-100%. Less = deeper cut; More = shallower cut. Speeds over 15% may cause wavy cuts in small or intricate lines. **DO NOT EXCEED 25% FOR VECTOR.**

- **PPI (Pulses Per Inch):** Spacing between laser pulses.
  - Low PPI (0 – 250) = perforation, not much burning.
  - Medium PPI (250 – 750) = smoother cut resolution, some burning.
  - High PPI (750 – 1000) = smooth resolution, more burning.
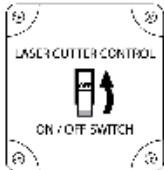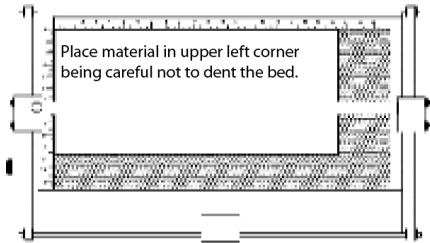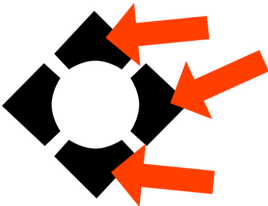
Assigning Power Settings

2. In the laser cutter control panel, select the desired color row by clicking on it.

3. Use the **Power**, **Speed**, and **PPI** sliders to adjust your settings, or enter the exact numbers in their boxes. You can **use the settings listed in the binder by the computer as a guide**, but **you may need to adjust them for your material** to get the desired cut/engraving.

4. When you are finished assigning settings for that color, click **'Set'**. Once you hit 'set', select the **'Pen Mode'** box for that row until the appropriate type of cut is selected.

5. Click **'OK'** in the laser cutter control panel, then '**Print**' in the second dialog window.

6. In the first print dialog, make sure that the **Auto-Orient** is selected, and that the preview looks rotated 90 degrees counter-clockwise (don't worry, it will cut correctly).
   Don't hit Print until the laser cutter is on.
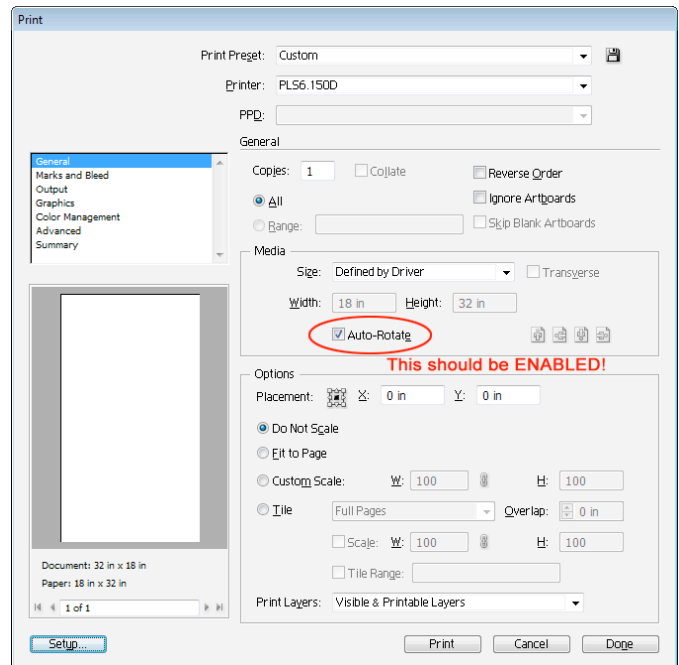
NOTE: It's a good idea to have a lab monitor double check your settings before sending. While this won't guarantee you'll get the exact cut results you want, it will help prevent files with dangerous settings from being sent!

This document is available electronically at http://crit.artic.edu/aoc/

Setting the Laser Focus

1	LASER CUTTER CONTROL — ON / OFF SWITCH	Turn on the wall switch next to the ventilation pipe.	**2** — Z — Always turn the machine on, open the lid, and hit "Z" before placing your material!
3	Place material in upper left corner being careful not to dent the bed.		**4** — Place the base of the focusing tool flat on your material, and line it up slightly in front of the laser head.
5	By default the bed will raise and lower by tenths of an inch. Use caution when moving the bed as it can crash into the laser carriage. When the focusing tool gets close to the laser carriage, hit the 'Select' button (120W) or the right arrow key (150W), then raise or lower the laser in hundredth increments using the up and down arrows.		**6** — Focus is set when the lip of the focusing tool is aligned with the bottom edge of the laser carriage. The flat part should be flush with the face of the lens carriage, with the focusing tool sitting flat.
7		Hit 'Escape' to exit focusing mode. (You may have to hit it twice) Place the gauge back in its slot, making sure it doesn't stick out.	Remember to set the focus anytime you start using the machine, as well as when you switch to a material with a different depth.

NOTE: Before using the machine, have an AOC employee check to make sure the cutting table is aligned properly.

Printing the File

- Once your settings are checked by an AOC employee, click the 'Print' button to send the file to the laser cutter
- The file name will appear on the display panel of the laser cutter, along with the power settings for the first cut. If these settings all read zero and/or if the machine beeps upon receiving the file, there is an error in your file. If this occurs, check your color and stroke weight settings.
- With the lid closed, hitting 'Start' will cause the laser to actually cut your file.
- **You must watch the cutter output your entire file. DO NOT EVER LEAVE THE CUTTER RUNNING UNATTENDED.**
- If you need to temporarily stop cutting, hit the 'Pause' button and WAIT FOR THE LASER TO STOP CUTTING. The cutter must finish the last line it started before pausing; if it is a long line or a slow cut, it can take up to several minutes for the cutter to pause.