

Laser Cutting Guidelines

Basic AutoCAD:

1. In order to set up the AutoCAD files, you must be working on AutoCAD 2006 or higher to make the needed corrections prior to laser cutting.
2. The laser cutter offers two options for making models, CUT and SCORE.
3. All lines you may wish to cut and score should not be in any 3D format. In order to check, hold the SHIFT button and with the mouse, click and hold the scrolling wheel as you rotate your drawing in an orbital manner. Any 3D lines or object must be removed. To return to the initial floor plan view of your drawing, click on the taskbar VIEW, followed by 3D VIEW and finally TOP VIEW.
4. Never rescale your original drawings. Always maintain them at their original scale.

Plot Rectangle:

1. In AutoCAD, type MVSETUP and press ENTER. Next type the letter N to select no under the paper space plot. Press ENTER to continue.
2. Once asked for your scale type, type A or E for your scale type. Press ENTER to continue
A is for Architectural Scale such as $\frac{1}{2}'' = 1' 0''$ or $\frac{1}{4}'' = 1' 0''$
E is for Engineering Scale such as 1:40 or 1:100
3. After you have selected a scale type, a dialog box will appear on your screen with the scale type you specified and several highly used scales within.
4. Select a scale factor, as is specified on the side of the scale you would want based on your personal scale.
i.e. $\frac{1}{4}'' = 1' 0''$ would be $4 \times 12 = 48$
5. Based on the scale factor, in this case 48, type the corresponding unit and press ENTER.
6. Next you will be asked for the laser cutter bed sheet dimensions. The bed width is 32 inches so when asked for the paper width type in 32, then press ENTER. The height of the bed sheet measures at 18 inches; therefore type in 18 for its paper width.
7. The plot rectangle will show up at the x y origin of your file and it will be scale to full and real measurements. DO NOT scale down your drawings; the plot rectangle is scaled up.

Offsetting the Plot Rectangle:

1. The next step is to offset the plot rectangle by a $\frac{1}{4}''$ relative to your scale factor. In real scale, you have to offset it by your scale factor, which if it was $\frac{1}{32}'' = 1' 0''$ scale, then you would divide $32 / 4 = 8$. The number 8 will be offset from the plot scale in FEET units.
i.e. $\frac{1}{4}'' = 1' 0''$ $4 / 4 = 1'$
1:100 $100 / 4 = 25'$
2. Type O for offset, followed by the relative offset distance, 25' for instance or your actual offset you designated. Press ENTER to continue. You will be asked to select your plot rectangle and move your mouse within the rectangular frame and click inside the box to create the offset.
3. Place all your drawings you wish to laser cut into the offset line within the large plot rectangle. When something does not fit, simply duplicate the print rectangle and the offset line. To do so, type COPY and select the plot rectangle with its offset. Click any base

point you may desire to be the origin of copy followed by its next origin point that should be placed outside the original plotting rectangle.

Overkill Double/Hidden Lines

1. Type OVERKILL to delete any duplicate or hidden lines in AutoCAD. Press ENTER, and select all the lines within the plot rectangle. Press ENTER once again and a dialogue box should appear in your screen. Leave all settings under its default standards and simply click OK.

Layer Properties

1. Both the Plot Rectangle and its offset must be under a layer called DEFPOINTS. To create a new layer in AutoCAD, type in the command LAYER. Click on the icon NEW LAYER and name it Defpoints. The Defpoints layer is set automatically to never plot any of its contents. Once having created the new layer, select both the Plot Rectangle and its offset, type PROPERTIES and under the new window that will pop-up, click LAYER and change its option to the layer named Defpoints.
2. Finally, change the lines you wish to CUT to the color BLUE by first selecting the desired cut lines and typing the command PROPERTIES. A new window should appear where you will be able to change the line color by clicking on its COLOR tap and selecting the DEFAULT blue color. Follow these steps to change the lines you wish to score to the color RED.

AutoCAD File Format

If you are using the EDUCATION VERSION of AutoCAD, please save the file as DXF 2004 or 2007 or higher format. This will prevent the laser from cutting out a time-consuming plot stamp around the edges

Adobe Acrobat Professional Guidelines

Exporting to a JPEG

1. Click on FILE.
2. Highlight the option EXPORT and a tab will pull out to the right.
3. Move mouse cursor over IMAGE and a selection of different formats will appear.
4. Click on JPEG. Rename the JPEG file and click SAVE.

Reduce File Size

1. Click DOCUMENTS.
2. Click REDUCE FILE SIZE.
3. Under the pull down menu select RETAIN EXISTING. Click OK.
4. Rename the PDF File Name.
5. Click SAVE.

Converting JPEGs to PDF

1. Click on FILE under the pull down Menu.
2. Click OPEN. Select under the tab Files of Type: ALL FILES.
3. Locate the folder in which the jpeg file is located. Click OPEN.
4. Click SAVE AS. Rename the file. Select the area where you want your new PDF to be located, and click SAVE.

3D Z Printer

File Format

1. The printer is compatible with the following file formats:
ZBD, STL, BLD PLY, ZCP, SFX, 3DS, ZEC, ZPR and VRML(WRL).
2. The two most common used file formats used are 3DS and VRML(WRL) and both are compatible with Rhino 3D and Autodesk Maya

Scale Procedure

1. Click File. Click Open. Search and double click the file you wish to 3d print. Click Open.
2. A window titled CHOOSE UNITS for File Name will appear.
3. In the left side of the window, under THIS PART'S DIMENSIONS ARE the current size will appear. On the right, PLEASE PICK UNITS will have a variety of units. Although a wide selection is given, the 3d works with INCHES. Select INCHES, click NEXT.
4. The SCALE window will pop up. The dimensions for the 3d printer are
x-axis: 8 inches y-axis: 10 inches z-axis: 8 inches
5. Adjust the current file units to fit within the above 3d printer units. Click on the tab with the highest numerical value on the X, Y, or Z axis. Lower the unit number to its corresponding max size. By alternating one unit, it will alternate the rest. Click NEXT.
6. A new window titled LOADING PART IN EZ PRINT MODE will appear. Click NEXT.
7. The next window that will pop up will ask you READY TO PRINT. Click EXIT.

Prize and Payment Methods

1. Once the file has been opened, click FILE. Click PRINT TIME ESTIMATOR.
2. A Time Estimation Report window will open. Under the report, a numerical unit will be shown next to TOTAL VOLUME OF PARTS.
3. Multiply the numerical unit, which will be in cubic inches, by the number five.
i.e. 25.66 cubic inches x \$5.00 = \$128.30
4. The student is only allowed to pay with Panther Bucks. To charge their Panther ID with money, visit the Graham Center.

Payment Transaction

1. Enter the amount in the following format:
i.e. 1 + ENTER = \$0.01
2510 + ENTER = \$25.10

2. Press 1. Followed by CODE and finally swipe the PANTHER ID Card.
3. The card reader will show the Transaction amount and the Balance left in the Panther ID Card. If the card has insufficient funds, the screen will read NOT AUTHORIZED.
4. Once amount is entered, code, and swiped, the transaction is complete and funds are immediately withdrawn.
5. To clear a transaction (before swipe), press 0 followed by VERIFY. Wait for the response followed by arrows. Re-enter amount and perform transaction.

Photoshop File Resolution

Follow the chart below to create printable DPI paper sizes:

<u>Whitebond & Translucent 36" Paper</u>	<u>DPI</u>
36 x 12	280
36 X 24	200
36 x 36	150
36 x 48	140
36 x 60	120
36 x 72	110
36 x 84	100
36 x 96	100

<u>Whitebond 24" Paper</u>	<u>DPI</u>
24 x 12	300
24 X 24	240
24 x 36	200
24 x 48	170
24 x 60	150
24 x 72	140
24 x 84	130
24 x 96	120

**Files bigger than 100 MBs will ONLY be printable after 5pm. Please be aware, files bigger than 100 MBs have a high chance of loosing data.