

Vinyl Cutter Safety/Policies

Safety

- **NEVER** leave the Vinyl Cutter unattended while it is operating
- **NEVER** reach near the cutting carriage when it is in motion
- **BEWARE** of loose clothing and jewelry near the cutting carriage while it is in motion

Emergency Actions

1. Press Pause > Cancel
2. This should stop the Vinyl Cutter. If it does not...
3. Press ON/OFF button or Pull out the power cable on right side of the Vinyl Cutter behind the control panel
4. Notify Fab Lab staff

Policies

- You can only reserve 2-hours of Vinyl Cutter machine time per day
- Do not start a Vinyl Cutter job that will exceed your reservation period

Vinyl Cutter Design

Thoroughly check over your design before reserving machine time to reduce the need for troubleshooting

Recommended Design Software

- Cut Studio: Lab-supported; Installed on Fab Lab computers; Operates the Vinyl Cutter
- Any Graphics Software (Inkscape, Adobe Illustrator/Photoshop) can be used for design and imported into Cut Studio

File Format

The following formats are required to import into Cut Studio: BMP, JPG, AI, EPS

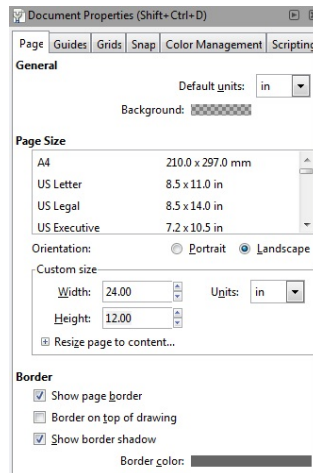
2D Design Rules:

Instructions below are for Inkscape although principles are the same across all 2D graphics softwares

Digital Document Size

Rule: Your document should be no wider than 22" if working with 24" vinyl or 13" if working with 15" vinyl. Be sure that your design is constrained within the limits of the material that is being used.

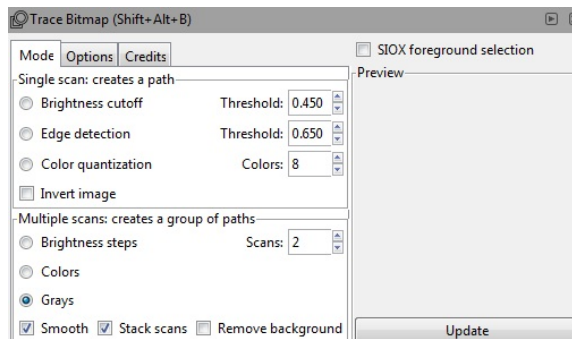
Solution: Go to File > Document Properties > Page tab > [Enter the Width under the Custom Size section]



Graphics

Rule: Convert graphics to darker colors (i.e. black, dark blue, etc.)

Solution: (1) Select your graphics and go to Path > Trace Bitmap > Mode tab > Multiple Scans > [Select *Gray*, *Smooth*, *Stack Scans*. Input 2 (or more) for *Scans*]. (2) The updated copy of your graphics will overlay the original. Delete the original and keep the updated graphics.



2D Design Tips:

Prototype Your Designs

It is unlikely that you will create a perfect product on your first try. It usually takes a couple of tries to perfect your design. We suggest starting with a scrap vinyl piece within the Recycle Bin. This is an easy way to perfect your design. After a couple of tries, you will become familiar with the design process.

Make Your Design Easy to Cut

Using graphics can be tricky. Any graphics incorporated in your design will eventually be traced (or outlined) within Cut Studio. The “trace” are the lines along which your design will be cut. The best way to visualize how this translates to your design is to imagine laying the graphics onto a sheet of paper and then drawing edges around each part of your graphics. Your design will look like the lines remaining on the paper. This effectively means you should avoid overly detailed graphics within a small area since you will later be removing unwanted vinyl (which can be a tedious process).

Also, your graphics should be a darker color (i.e. black, blue, etc.), like the image below, which makes it easier for the trace feature in Cut Studio to recognize where to trace.



Vinyl Cutter Operation

A step-by-step guide with illustrations is setup at the Vinyl Cutter Work Station

Step 1: Choose a vinyl color. Select either:

- A piece from the scrap bin
- A roll from the vinyl rack

Step 2:

- Make sure the Vinyl Cutter is off
- If the cutting carriage is not on the far right, manually push it over (if it does not easily move verify the machine is OFF!)

Step 3: Push the loading lever down on the back of the machine to release the pinch-rollers

Step 4: Insert the material from the back and squarely into the machine, parallel to the vertical guide marks on the front of the machine

Step 5:

- Align the right edge with one of the 3 white position-verification marks
- Make sure the left edge of the material is within the longer white verification mark on the left

Step 6: Move the pinch-rollers where they are positioned at the edges of the material and within the areas of the verification marks

Step 7: Lift the loading lever back into position to secure the material

Step 8:

- Turn on the machine
- Use the down arrow to select PIECE or ROLL or EDGE
 - EDGE: Cutting at the front edge of the roll
 - ROLL: Cutting where the roll is secured in the Vinyl Cutter
 - PIECE: A piece of material that has been cut from a roll
 - Press Enter
- The cutting carriage will move to the left edge and the material will move forward and backward
- The cuttable width (and length if a PIECE) will appear on the display

Step 9:

- If you require a new origin, use the Arrow Keys on the machine to reposition the origin
- Press and hold the origin button until the display blinks, which indicates that the origin has been set

Step 10: Open Cut Studio

Step 11:

- Go to File > Cutting Setup > Properties
- Select "Get From Machine"

Step 12:

- Create or Import your design
- Right-Click your design and select Image Outline
- Select the properties you want and select Extract Contour Line

Step 13:

- Create or Import your design
- If it's an image, Right-Click your design and select Image Outline. Then select the properties you want followed by Extract Contour Line and OK.

Step 14:

- Once your design is ready, place it on the layout so that material is conserved
- To perform the cutting, select Cutting > OK

Step 15:

- Use the Right Arrow Key to move the cutting carriage all the way to the right
- Once the Vinyl Cutter is finished cutting, release the material by pushing the loading lever back down
- If you cut a PIECE, remove it and turn off the machine
- If you cut a ROLL or an EDGE, continue on to Step #17

Step 16:

- Pull the roll through until your cut design is past the cutting slot
- Cut out your design with a blade along the cutting slot
- Turn off the machine and recycle the scraps

Step 17:

- Clean up
- Place everything back in their proper places
- Leave the workstation better than you found it!

Vinyl Cutter Materials

Fab Lab Tulsa will have limited quantities of the “Lab Materials” listed below. You are welcome to use these materials at no cost as long as you use them within reason. You are also welcome to bring in your own materials. If your material is not listed within the “Other Acceptable Materials” listed below, please provide Fab Lab staff with an MSDS (Material Data Safety Sheet) in advance. Staff will then determine if your material is acceptable.

Lab Materials:

All materials come in rolls and are either 15” or 24” wide. Maximum cutting width is 22”.

- Vinyl (adhesive backing)
- Paper
- Copper Foil (adhesive backing)

Other Acceptable Materials:

Maximum Width is 24”. Maximum thickness is 0.012”.

- Paint Mask
- Twill
- Heat Transfer Material
- Sand Blast Material
- Plastic Film
- Metal Foil
- Paper Sheets