

# Dolphin Digital Fabrication Lab

### Preparing Laser Cutting Files in Adobe Illustrator

### Set up your document

- In Illustrator, select File->New.. (Ctrl + N)
- Set "Width" to 32 inches and "Height" to 18 inches
- Set orientation to "Landscape" and "Color Mode" to RGB
- Click Create



#### Turn on the Rulers:

Select View -> Rulers -> Show Rulers

#### Set the Guides:

\*Recommended\*

- Set a guide line to the bottom edge of your material and the right edge of the material.
- We also recommend you place a guide at a 0.125-0.25 inches from each edge of the document that your material will touch. This will inset the design slightly so it is completely contained.



## Preparing your graphics in Illustrator

Cut Type	Graphics Requirements	Single/Multipass	Order	End Result	
Raster Engraving	<ul> <li>Filled Shapes or text</li> <li>Images (jpg, bitmap, etc)</li> <li>Lines with heavy stroke weights (+0.1pt)</li> <li>Gradations</li> </ul>	Multi-pass (like an inkjet printer)	Before Vector Lines following color table	Engraved area (Power is limited to pre- vent cutting through)	
Vector Engraving	Lines with these properties <ul> <li>0.1pt stroke weight</li> <li>Aligned to center</li> </ul>	Single pass		Engraved line (Power is limited to prevent cutting through)	
Vector Cut	<ul> <li>No brushstrokes</li> <li>No dashed lines</li> <li>No compound paths</li> <li>No clipping paths</li> </ul>	(following vector path)	Dependent on color	Through-cut line (Power is increased to cut through)	

The laser cutter can make three different types of cuts; see the table above for an overview of each. All cuts can be sent from the same Illustrator file. Graphics in the file are grouped into different colors, which allows the laser cutter to distinguish different cuts from one another. Colors are also used to determine the order in which vector cuts and engravings take place.

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	

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NOTE: Use the exact RGB color values listed in the table above, and make sure your Illustrator document is in the RGB color mode (NOT CMYK) when file prepping for the laser cutter; otherwise the laser cutter will not read your file!

When the laser cutter runs a file, it automatically processes raster engraving first, before vector engravings and vector cuts. It will then process all vector cuts and vector engravings as one group--this is where color should be used to control the order of cuts. In the example below, black has been designated for raster engravings, red for vector engraving, and green for vector cutting.

(The colors used here are only an example; the same cuts could be made with different colors.)

By setting up the vector and raster engravings to go first, we'll keep the material stationary until the outline cut is made. When the file is run, the cuts and engravings will happen in this order.

- 1. Raster engraving (black)
- 2. Vector engraving (red)
- 3. Vector cut (green)

When setting up a file for laser cutting, use a different color any time you want to assign different settings or affect the cutting order of a group of cuts.



Fig. 2: Finished Cut

NOTE: A good technique for keeping your cuts in order is to assign your last cut to the last color on the list, and work your way backwards towards the first cut.