

NOTES

JOB TYPES

**RASTER ENGRAVING**

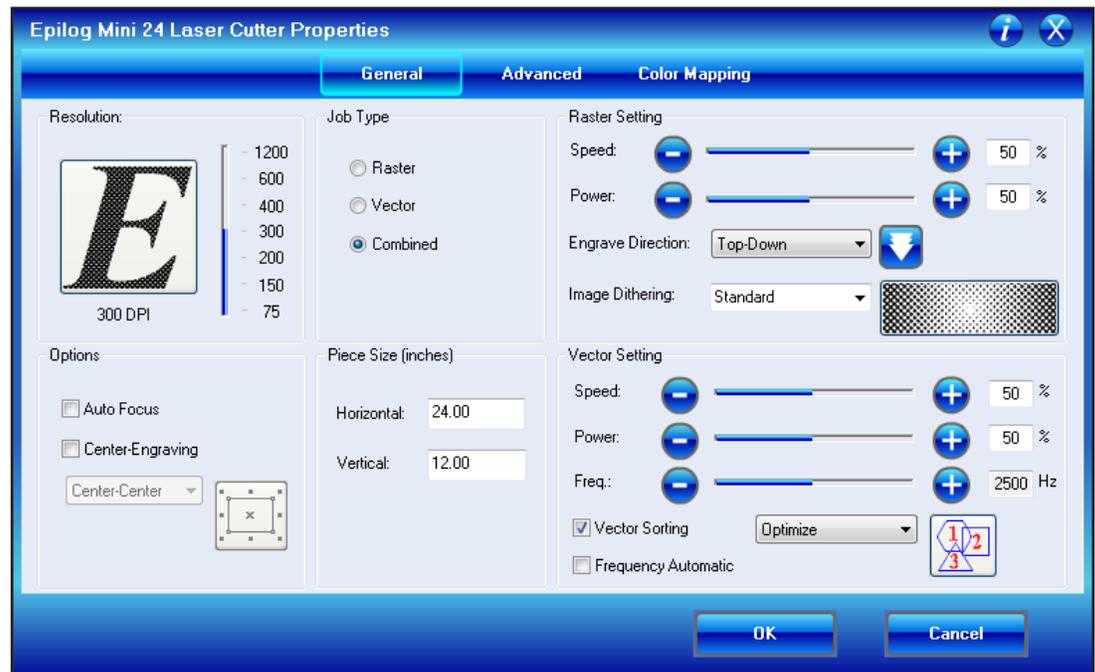
Raster engraving is dot matrix “printing” with a laser. The laser head scans back and forth, left to right, engraving a series of dots one line at a time. You can raster engrave scanned images, text, filled shapes, clipart, photographs, or line drawings.

**VECTOR CUTTING**

Vector cutting is a continuous path that follows the outline, or profile, of an image. It is normally used to cut completely through materials at lower power settings. It can also be used for quick marking and scoring.

To vector cut a line, the thickness of your stroke must be 0.001 inch thick.

**EPILOG DASHBOARD GENERAL TAB**



**RESOLUTION**

Increasing resolution while keeping the same Speed and Power settings will result in a greater cut depth because there is an overlap of each raster line at higher DPIs.

It's always best to start with high resolution images; if the artwork that is sent to the laser is poor quality, trying to engrave it at 600 DPI will not improve it.

**75 – 150 DPI**

These low resolution values are typically used for quickly producing a rough draft.

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**300 DPI**

This resolution can be good for production work where image quality needs to be good, but not great. Attempting to produce really fine detail with 300 DPI is not recommended.

**400 DPI**

This resolution value is ideal for many applications. It combines very good image quality with fast engraving times.

**600 DPI**

Used when really fine detail or overall excellent results are required.

**1200 DPI**

This resolution is used for projects that require the best engraving quality possible.

**OPTIONS**

**Auto Focus**

Allows you to turn on the auto focus feature.

**Center Engraving**

The Center Engraving Option allows you to define the center of your artwork as the home position.

**JOB TYPE**

**Raster**

Only raster images will be sent to the laser cutter.

**Vector**

Only vector images will be sent to the laser cutter.

**Combined**

Combined mode is used when you want to incorporate both Raster and Vector functions in the same job. All raster operations will be performed first, followed by the vector operation.

**PIECE SIZE (INCHES)**

This is the size of the laser cutter table.

**RASTER SETTING**

**Speed**

Determines the travel speed of the carriage. The slower the speed, the deeper the cut.

**Power**

Determines the amount of laser energy that is delivered to the piece being cut. The higher the power, the deeper the cut.

**Engrave Direction**

Top-Down engraving, debris moves towards the exhaust vent, causing some of it to collect in the area that has just been engraved.

Bottom-Up engraving prevents this debris from collecting in the freshly engraved spaces.

**Image Dithering**

Defines how the dot patterns will be engraved in raster images that contain grayscales, blends, or color. Dithering is used only for Raster engraving and has no effect on vector cut lines.

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**Clipart Modes**

**Standard**

This mode is the default mode and will be used for most engraving jobs that include text and clipart at 600 DPI.

**Brighten**

Many users find this mode good for engraving photographs onto wood or marble at 600 DPI.

**Low Res**

Adds an artistic half-tone type look to the engraving.

**Photograph Modes**

**Floyd-Steinberg**

Produces an almost wave-like pattern to an image. This works well for some photos containing a great deal of detail. Photos with more monotone swatches of color may not be as pleasing as Jarvis or Stucki modes.

**Jarvis**

This mode produces a very nice looking pattern on almost all photos.

**Stucki**

Produces results that are only marginally different than the Jarvis dithering pattern

**VECTOR SETTING**

**Speed**

Determines the travel speed of the carriage. The slower the speed, the deeper the cut.

**Power**

Determines the amount of laser energy that is delivered to the piece being cut. The higher the power, the deeper the cut.

**Frequency**

Frequency is the number of laser pulses that the laser fires per inch of travel and can be adjusted from 10 to 5000 pulses per inch; the lower the frequency, the less heat applied to the material being cut.

Lower frequency rates are helpful for products like wood to reduce edge charring.

High frequencies are useful on material like acrylic where it is desirable to melt, or flame polish, the edges.

Frequencies from 50 to 100 will produce a perforation, as opposed to a continuous cut.

**Vector sorting**

If sorting is enabled, you have two choices of how the vector lines will be sorted: Optimize and Inside-Out.

If sorting is disabled, the vectors will cut in the order in which they were drawn.

**Optimize mode**

Vectors will be cut in the most efficient manner, and will generally vector the next closest line to the one just finished. This is the most preferred method as it saves the most time, is the most predictable and will create a continuous line path.

**Inside-Out**

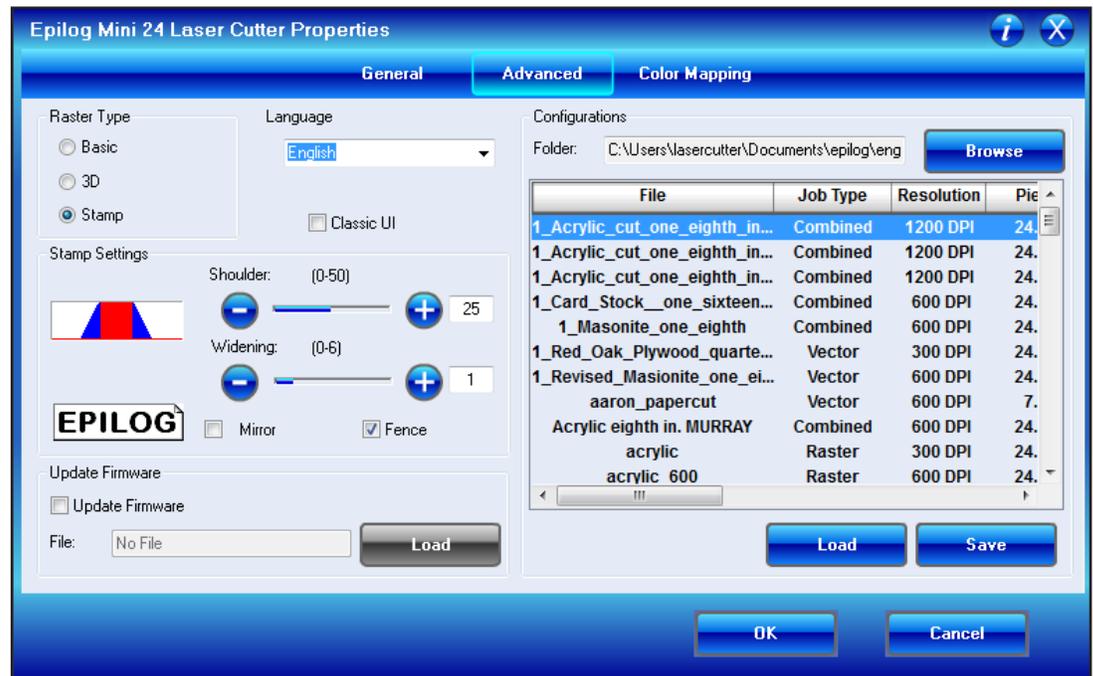
Will vector from the inside object first to the outside objects last. As an example, if you have a small circle surrounded by a large circle, the small circle will cut first.

**Frequency Automatic**

For this setting the laser will automatically adjust the pulsing of the laser to a value of 5000.

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EPILOG DASHBOARD ADVANCED TAB



**RASTER TYPES**

**Basic**

This setting is used to raster engrave clipart, photographs and text. In this mode the laser fires whenever there is a dot and the output power is always the same. Dots are interpreted depending on the type of artwork that is being used:

1. If the image being engraved is black and white, the laser fires wherever there is black.
2. If the image is a grayscale or color image, the laser fires wherever there is a black dot.

Grayscales are defined in percentages of dot density. A 10% gray has one black dot for every ten available dot spaces and produces an engraving pattern with widely spaced dots. A 50% gray has 5 black dots for every ten available spaces and produces a pattern with a higher dot density. Colors are interpreted as shades of gray.

**3D**

Instead of looking at the dots and determining where to fire the laser based on the dot spacing, the laser looks at the dots and determine how much laser power to apply to each dot.

An additional aspect of 3D mode is that, unlike Basic mode, the laser fires continuously between most dots – even if it is engraving from a 10% fill pattern to a 30% fill pattern. This is by design so there is a gradual change in the depth of engraving when the artwork transitions from one shade of gray to another. The only time that this is not true is when the artwork changes from 100% black to 100% white (or visa versa).

**Stamp**

The stamp option automatically converts your artwork into to a format that will produce

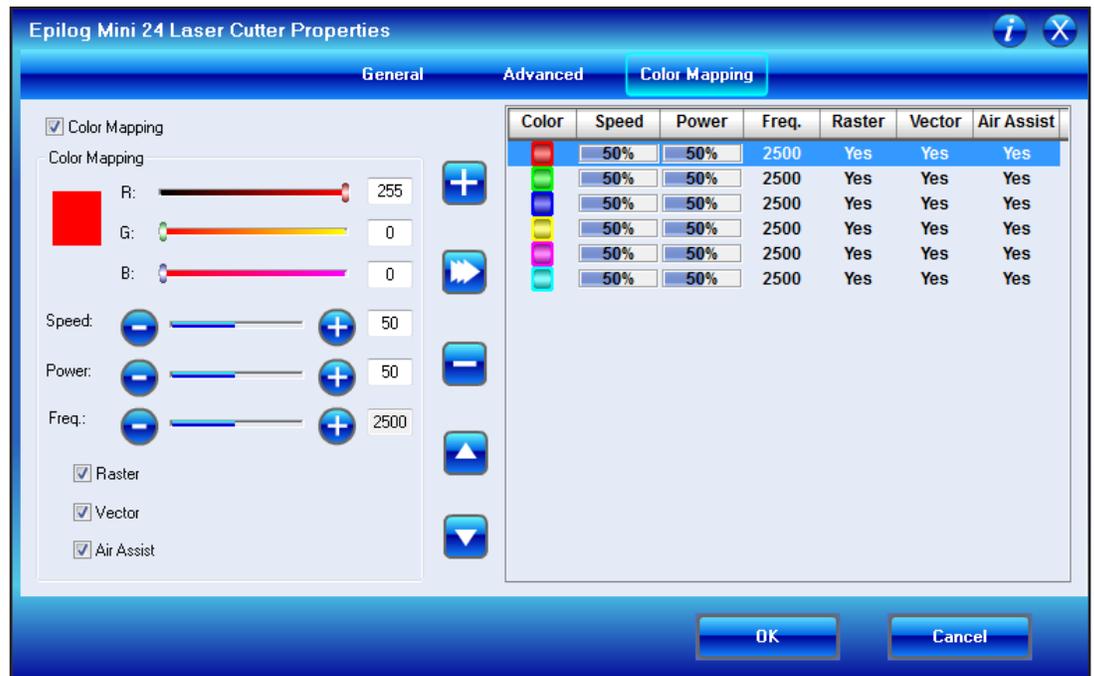
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a laser engraved stamp. This function automatically inverts your artwork so that the background is engraved away while your text and graphic images are left standing. It also puts a supporting shoulder around every component of the artwork.

**CONFIGURATION**

This is where you can save and load settings for different materials.

**EPILOG DASHBOARD COLOR MAPPING TAB**



**COLOR MAPPING**

Color mapping is used for two main reasons:

1. Using color so that multiple Speed and Power setting can be used in a single print job where one color is used for marking and another color is used for cutting.
2. Using different colors allows users the ability to sequence the order that objects will be cut or engraved.

**Color Values**

The values in Color Mapping MUST match the colors used in your document, so it's best to use one of the six basic colors:

**Red**

RED: 255, GREEN:0, BLUE:0

**Green**

RED: 0, GREEN:255 , BLUE:0

**Blue**

RED: 0, GREEN:0, BLUE:255

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**Cyan**

RED: 0, GREEN:255, BLUE:255

**Yellow**

RED: 255, GREEN:255, BLUE:0

**Magenta**

RED: 255, GREEN:0, BLUE:255

**Color Mapping Sequence**

When color mapping is used, it always cuts in sequence starting from the top color in the Map List and working down.

Color Mapping allows you to control the following laser functions.

**Speed**

Sets Raster speed and Vector speed for all objects of the color.

**Power**

Sets Raster power and Vector power for all objects of the color.

**Freq**

Color Mapping allows you to set different frequencies for different vector colors within a single job setup.

**Raster**

Colors that are set to "Yes" will raster engrave at the speed and power settings for that color. Colors that are set "No" will be prevented from raster engraving.

**Vector**

Colors that are set to "Yes" will vector cut at the speed and power settings for that color. Colors that are set "No" will be prevented from vector cutting.

**Air Assist**

This is a vector only function. Colors that are set to "Yes" will turn the air assist on when vector cutting. Colors that are set "No" will turn the air assist off when vector cutting.

**Scroll buttons**

These buttons move the selected color up or down in the table. The values do not move with the colors. You must move the colors first, and then change the values.

**Color Mapping & Combined Mode**

There are a couple sequencing considerations you will need to account for when using combined mode with color mapping

1. Any object that is color mapped will be raster engraved first in the color order from the right side of the tab. Any other raster objects that are not color mapped will then be raster engraved using the Raster settings found in the General Tab of the Dashboard.
2. After all of the raster objects have all been engraved, the vector objects will be vectored in the color order from the right side of the tab. Any other vector objects that are not color mapped will then be vectored using the Vector Settings found in the General Tab.

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## MACHINE SET-UP

### X/Y OFF

Pressing the X/Y OFF button and then pressing the GO button disables the X and Y motors and allows you to move the carriage by hand to any location on the table which allows you to perform several different functions:

1. Manually focus anywhere on the table.
2. Create a new, temporary, home position.
3. Accurately determine X and Y axis location. When you disable the axes and move the carriage by hand, the X and Y axis coordinates will be displayed on the LCD panel.

### SET HOME

The process of setting a temporary home position involves the following steps:

1. Turn on the Red Diode Pointer as a visual locator aid
2. Press X/Y OFF
3. Press GO to disable X and Y axis
4. Move the lens assembly by hand to your desired location
5. Press SET HOME to establish your new home position
6. press RESET button to move the carriage to it's park position a short distance to the front of where you set home.

### RESTORING HOME POSTITION

Press Set Home and Reset simultaneously then press GO and the carriage will return to the default home postition.

### FOCUS

Pressing the Focus key allows you to raise or lower the table by pressing the Up or Down Arrow keys. When the Focus key is pressed, the carriage will move out several inches from its standard park position in the upper left corner.

To prevent the carriage from colliding with your material, you can do one of two things:

1. Press the Stop key first before pressing the Focus key. This holds the carriage in its park position, allowing you to lower the table with your material in place.
2. Remove your material, press the Focus key and use the Down Arrow key to lower the table.

## RECOMMENDATIONS

### SPEED AND POWER

The Power settings are linear(50% power is half as much as 100% power).

The Speed setting scale of 1% to 100% is not linear (100% speed will not be twice as fast as 50% speed). This non-linear scale is very useful in compensating for the different factors that affect engraving time, but using speed to predict a jobs engraving time is not practical.

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## NOTES

The two basic rules for determining Speed and Power are:

1. Hard materials generally engrave and cut at low speeds and high power.
2. Soft materials generally engrave and cut at high speeds and low power.

### **Cutting Depth**

Depth will increase if the power is increased, or if the speed is decreased.

Changing only one variable at a time will help to determine the correct setting for your material. It is easiest to change the speed or power variable in 10% increments when you are experimenting. This will save time and allow you to refine your settings later in 1 or 2% increments.

### **Cutting Acrylic**

Cutting acrylic is usually best achieved with relatively slow speed and relatively high power. This combination allows the laser beam to melt the edges of the acrylic and produce an almost flame polished edge.

## **RASTER COLOR MAPPING**

If there is a large amount of white space between engraving objects, Raster Color Mapping can save time by setting the different colors to all engrave at the same speed and power.

## **MULTIPLE PASSES**

If you find that you cannot cut completely through a material or if you are melting a material in a single pass, try making two or even three passes instead of just one. Some materials are not laser compatible, but can be cut if a gentle touch is used. Multiple passes may also allow you to cut through thicker materials than the laser is rated for.

## **CLEANING THE OPTICS**

If smoke, resin, or other contaminants are allowed to accumulate on the laser's optics, they will reduce the available laser power and may cause damage.

To clean the mirrors and lenses. moisten a high-quality cotton swab with liquid optics cleaner; daub the optic gently, rotating the swab after each daub to expose clean cotton to the surface, until the optic is free of visible contamination. Then prepare a fresh swab and clean the surface with a gentle zigzag motion. Avoid any hard "scrubbing" of the surface, especially while there are visible particles on it, and try not to use repetitive circular motions. When you are done, be careful to remove any cotton threads that may have snagged on the mountings. Allow the optics to dry before you operate the laser cutter.

## **WARNINGS**

### **NEVER LET THE LASER SYSTEM OPERATE UNATTENDED**

Many materials have the potential to burst suddenly into flames.

### **KEEP THE AREA AROUND THE MACHINE CLEAN**

Remove any clutter combustible materials, explosives, or volatile solvents such as acetone, alcohol, or gasoline.

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**ALWAYS KEEP A PROPERLY MAINTAINED FIRE EXTINGUISHER ON HAND.**

**ALWAYS USE AIR ASSIST WHEN VECTOR CUTTING.**

**KEEP THE LASER SYSTEM CLEAN**

A build up of cutting and engraving residue and debris is dangerous and can create a fire hazard. Keep the laser system clean and free of debris. Regularly remove the vector grid to clean any small pieces that have fallen through.

NOTES

**DOCUMENT SETUP**

**DOCUMENT DIMENSIONS**

24 in wide X 12 in high

**DOCUMENT COLOR MODE**

RGB

**STROKE WIDTHS**

0.001 in

0.025 mm

0.072 points

Hairline (Corel Draw)

**COLOR MAPPING VALUES**

	R	G	B
<b>BLACK</b>	0	0	0
<b>RED</b>	255	0	0
<b>BLUE</b>	0	0	255
<b>GREEN</b>	0	255	0
<b>CYAN</b>	0	255	255
<b>MAGENTA</b>	255	0	255
<b>YELLOW</b>	255	255	0

**SUGGESTED CUT ORDER AND OPERATION**

**Black**

Raster engrave

**Blue**

Vector mark / score

**Red**

Vector cut

**SETTING HOME**

1. Turn on the Red Diode Pointer
2. Press X/Y OFF
3. Press GO
4. Move the lens assembly to new location
5. Press SET HOME
6. press RESET

**FOCUS**

1. Press FOCUS
2. Attach MANUAL FOCUS GUAGE
3. Use UP or DOWN keys until FOCUS GUAGE touches material
4. Return MANUAL FOCUS GUAGE
6. press RESET