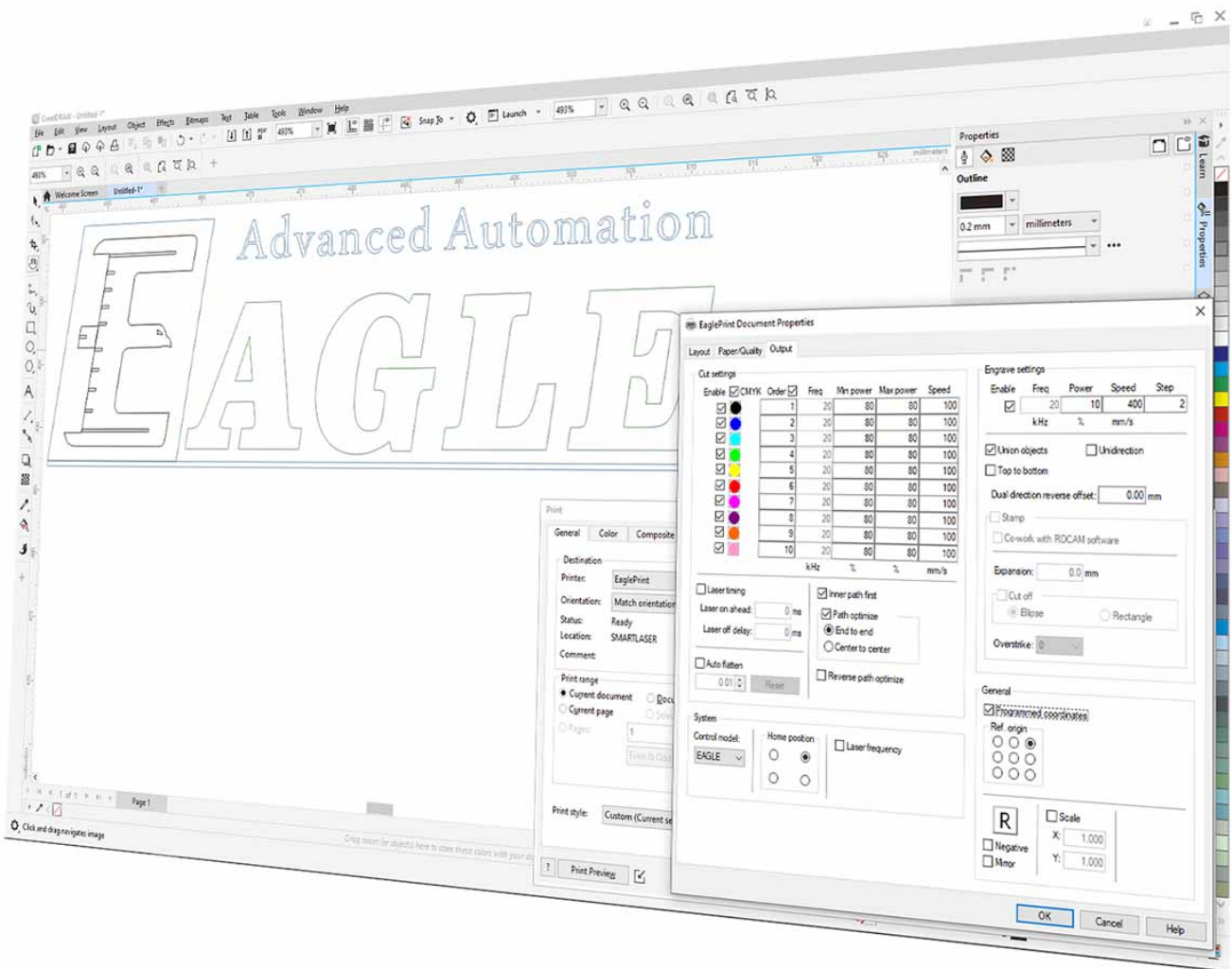


# EaglePrint CAM

## User's Manual



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If any details in this manual is unclear or if you need additional assistance setting up your laser, please feel free to call us at +1 (626) 671-4014 or email at [service@gueagle.com](mailto:service@gueagle.com).

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# Introduction

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## How to Use This User's Manual

Thank you for purchasing a GU Eagle laser system coming with the EaglePrint CAM software. EaglePrint has been designed to be easy to use, but you will utilize it to its fullest potential by taking some time to read this user's manual prior to use. You will be ready to use the software as soon as you read the first few sections. Then you can refer to topics in the remaining sections, as you work.

## Notes Used in This Manual

Look for these kinds of notes to help you find valuable information throughout the text:

### NOTE

Helpful notes to keep in mind while running the laser!

### IMPORTANT

Important instructions you should always follow.

### WARNING

Warnings and cautions to keep in mind while running the laser.

## EaglePrint vs. EagleWorks

EaglePrint is a print driver first, just like normal print drivers come with printers, and is designed to be used with a 3rd-party drawing software such as CorelDRAW, Adobe Illustrator, AutoCAD, Adobe Photoshop, etc. With EaglePrint, you can use your laser just like using a normal printer, make a design in your favorite drawing software, print and get the job done! No more export and import, no mess, and what you see is what you get.

On the other hand, EagleWorks is a standalone CAD/CAM software with a more comprehensive support of our laser technology. With EagleWorks, you have to make or import a design, lay out, set technology and send the job to the laser.

In a short, EaglePrint is a tool to simplify the more complicated workflow of EagleWorks with less functions and flexibilities, but is much easier to use, more intuitive, and more suitable for some projects, e.g. designs depend on vector line width which can not be recognized by EagleWorks.

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# Safety

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## Laser Safety

Lasers use intense beams of light to create heat and fire as a normal part of their operation, and depending on the laser, the light might not be visible to you. If the proper safety measures are ignored, you could burn or blind yourself or someone else, or start a fire that could damage or destroy the building in which the laser system is housed.

### IMPORTANT

**ALWAYS** wear protecting glasses while doing laser processing.

### WARNING

**DO NOT** aim and fire laser on anything but the workpieces you want to process.

### WARNING

**DO NOT** leave a running laser unattended.

### IMPORTANT

**ALWAYS** follow the laser safety regulations while operating a laser directly in EaglePrint.

The visible output beam of the Laser Diode Pointer (Red Dot Pointer) is accessible to the operator. While this device employs the same technology as the familiar laser pen-pointers, like them it is potentially hazardous if its beam is directed into the eye.

### WARNING

**DO NOT** view directly into the beam of the Laser Diode Pointer (Red Dot Pointer).

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# Install EaglePrint

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In this chapter, we will guide you to get, install and upgrade EaglePrint.

- [Get EaglePrint](#)
- [Install EaglePrint](#)
- [Upgrade EaglePrint](#)

## Get EaglePrint

Before diving into the installation, you need to get the EaglePrint installation package by the following ways.

1. The EaglePrint installation package comes with your CO<sub>2</sub> lasers.

Visit [our official website](#) to get more information about our CO<sub>2</sub> lasers.



2. Get the latest EaglePrint installation package from [our official website](#).

3. Buy an EaglePrint license separately

If you have an EaglePrint compatible laser and do not have EaglePrint yet, you can buy it separately.

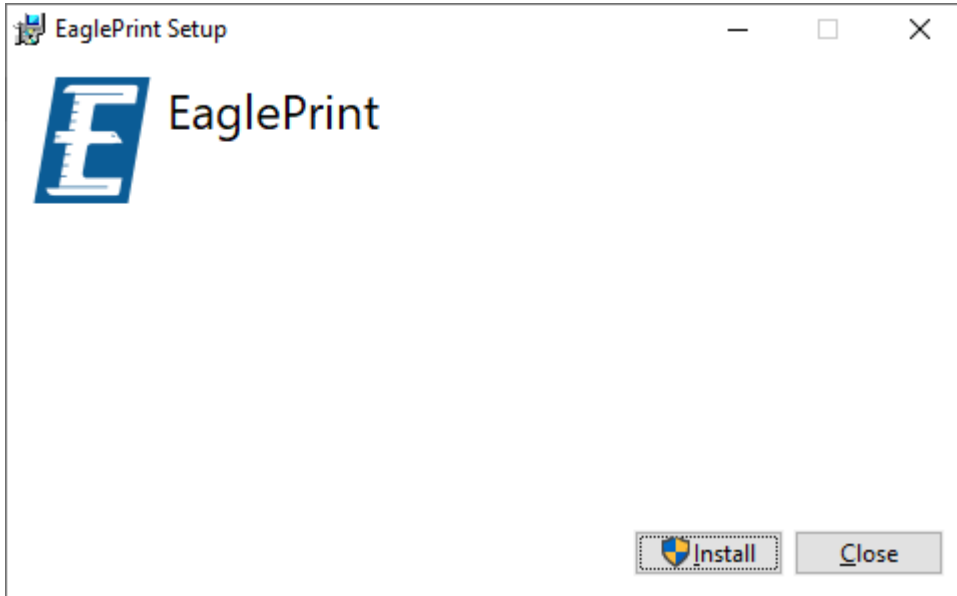
### NOTE

You can have a taste on EaglePrint without a license, only the job output function is disabled.

# Install EaglePrint

Before getting started, plug in the software USB flash or download the EaglePrint installation package from [our official website](#), refer to [Get EaglePrint](#) for more details.

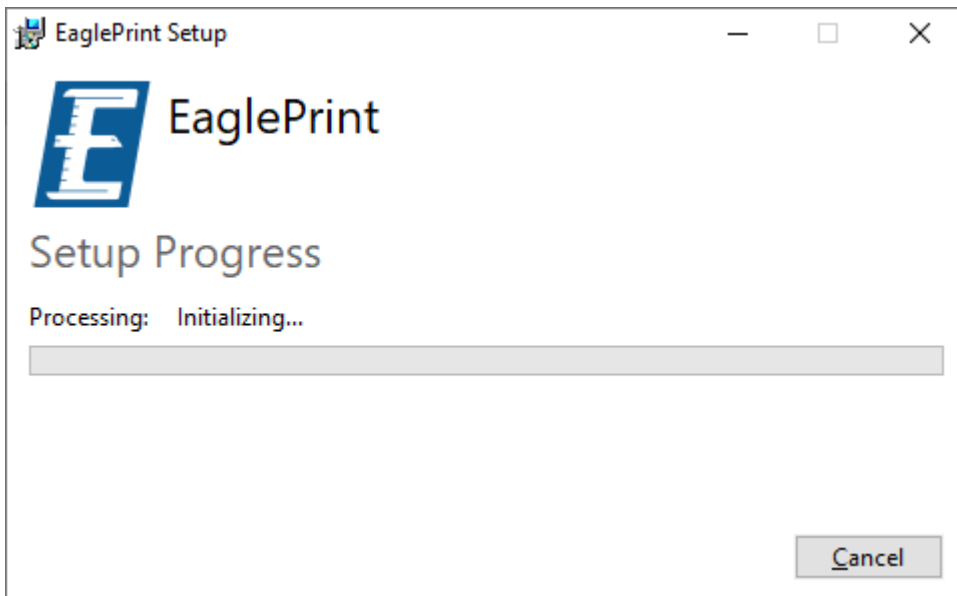
1. Browse to and double click the file *EaglePrint\_setup\_[version].exe* to launch the installer, a welcome screen appears.



## IMPORTANT

EaglePrint can be installed on Windows 7 and up only! You will get an error message if you try to install it on an unsupported operating system.

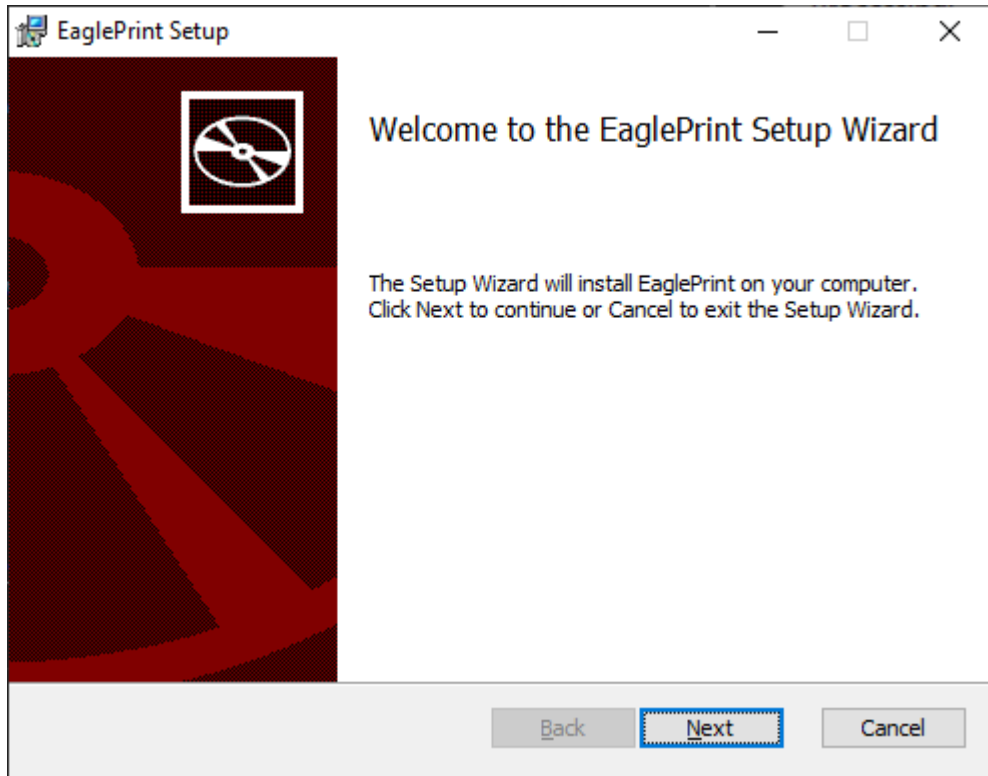
2. Click **Install** to start the installation.



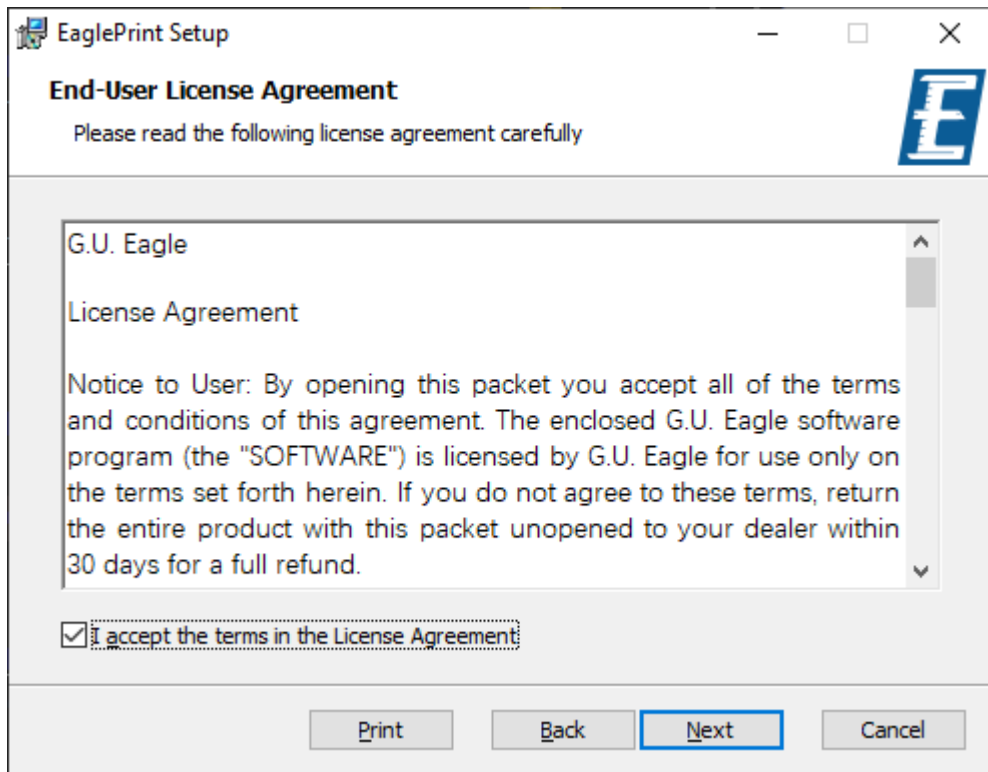
## NOTE

The installer may take some time to finish initializing depends on the operating system environment, please wait with patience.

3. A setup dialog pops up. Click **Next** to move on.

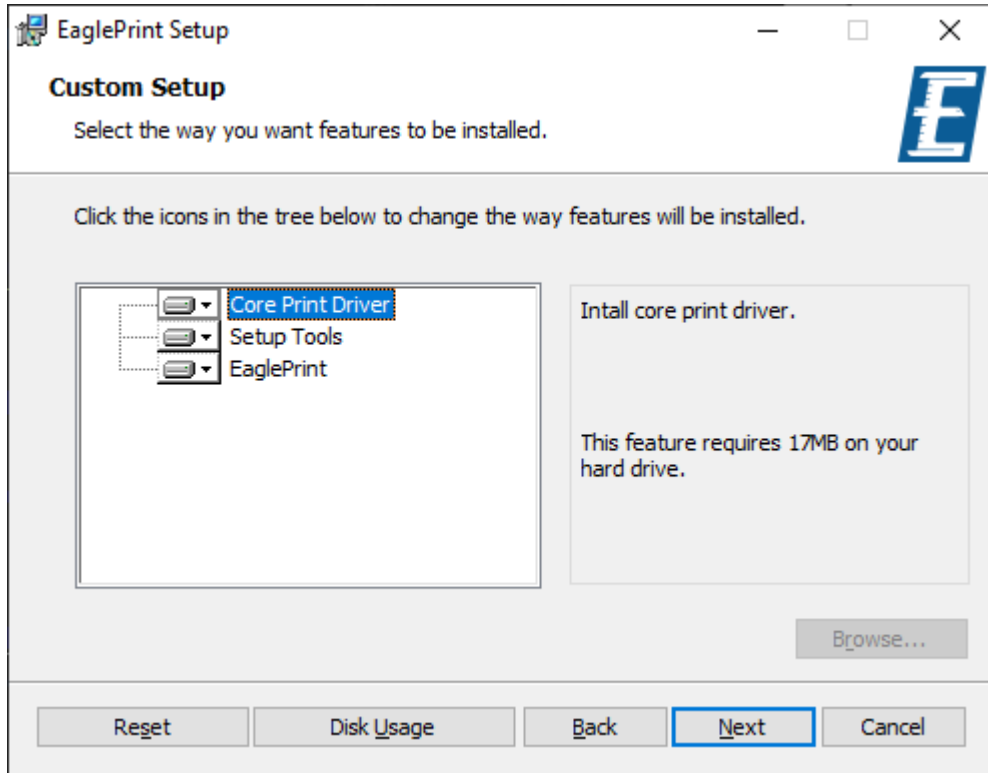


4. Accept the **End-User License Agreement**. Click **Next** to continue.

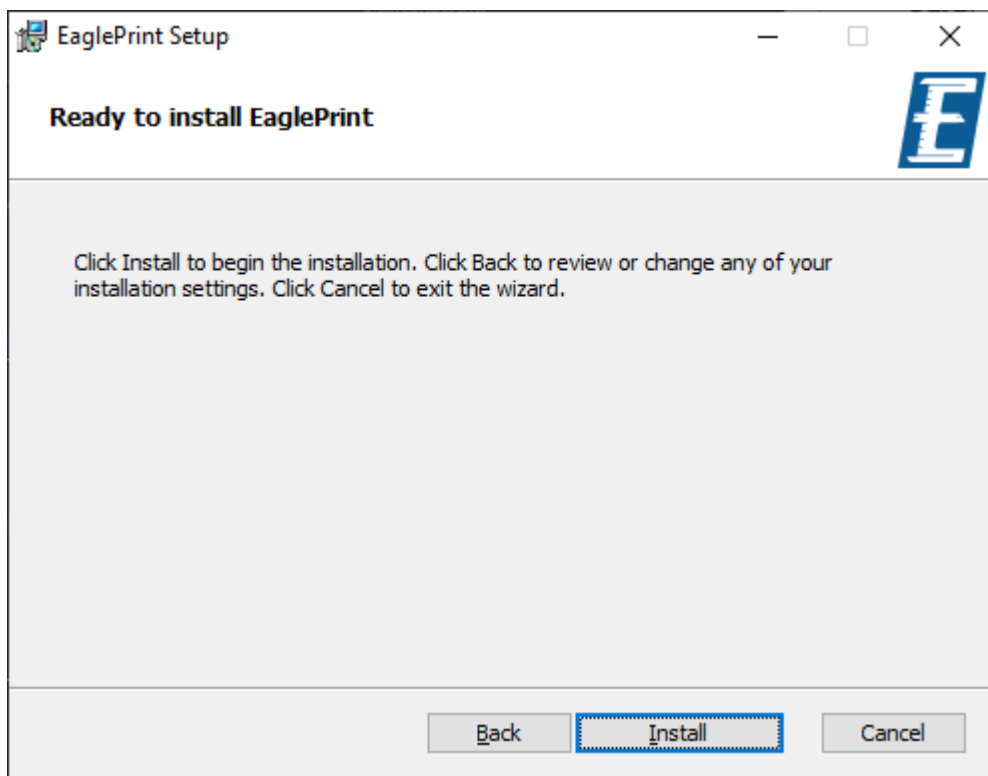




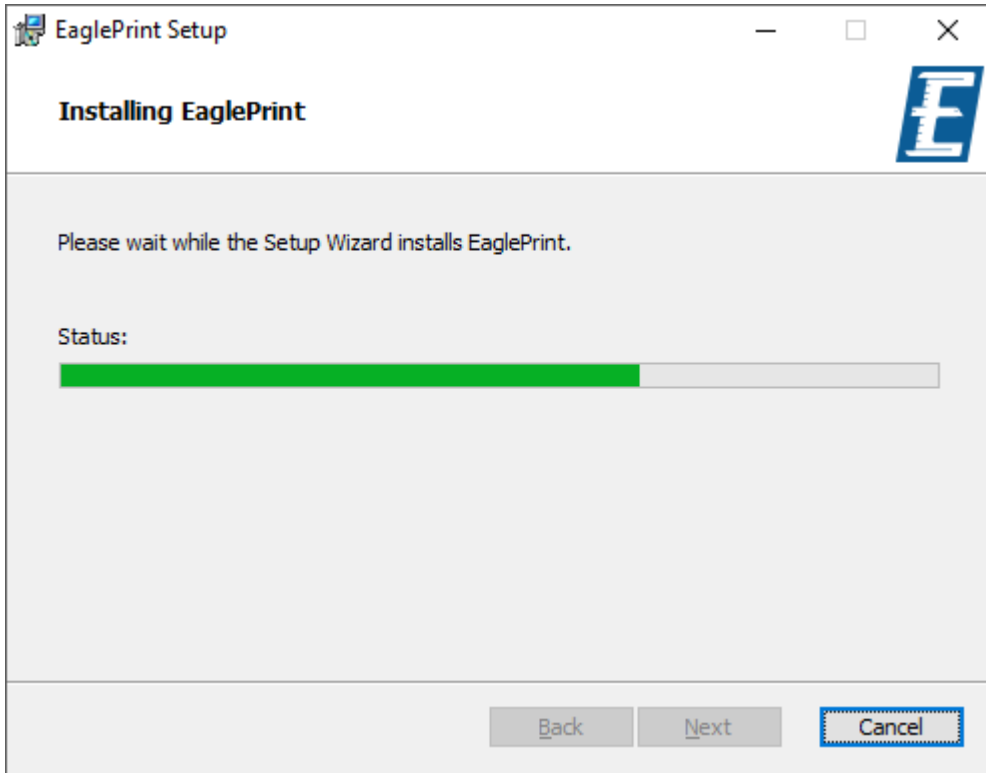
5. Have a look at the features going to be installed. Click **Next** to move on.



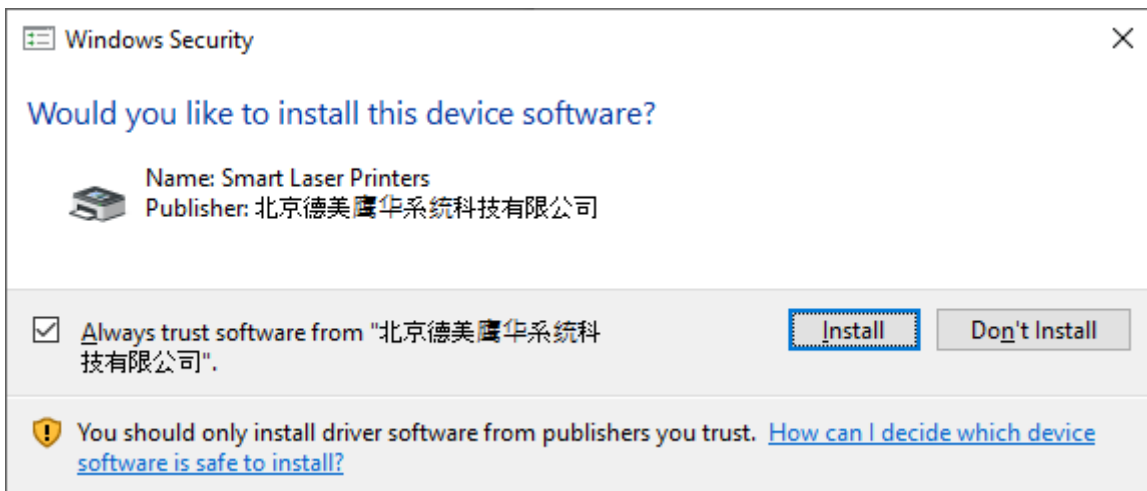
6. Click **Install** to start installing the features.



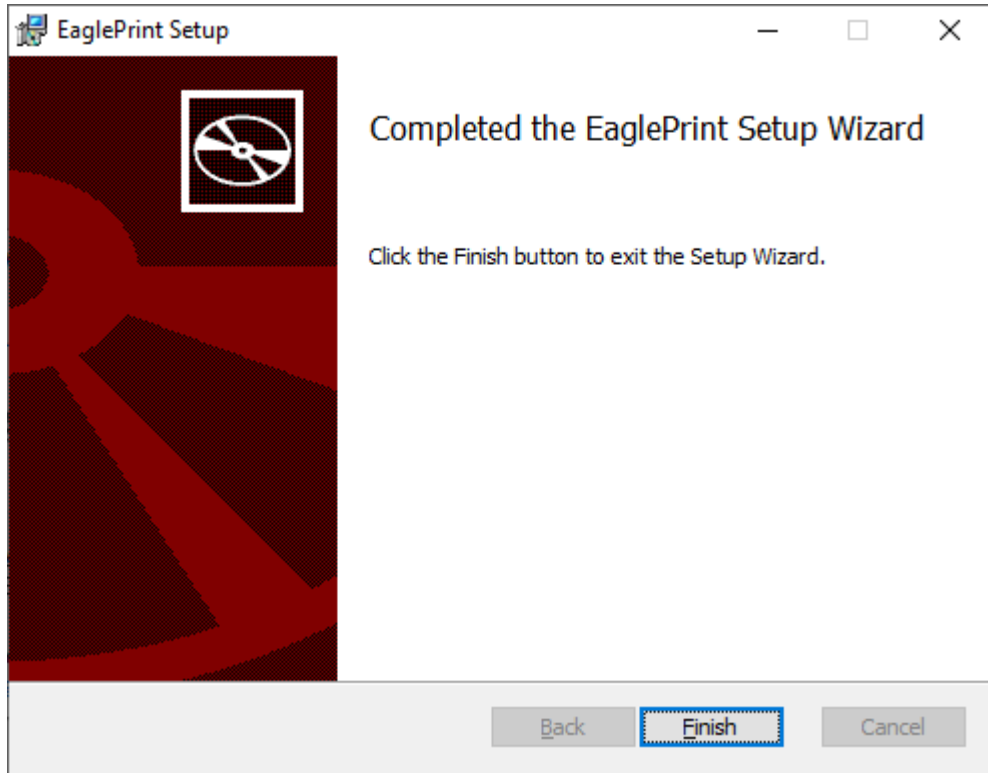
7. Wait for installing the features.



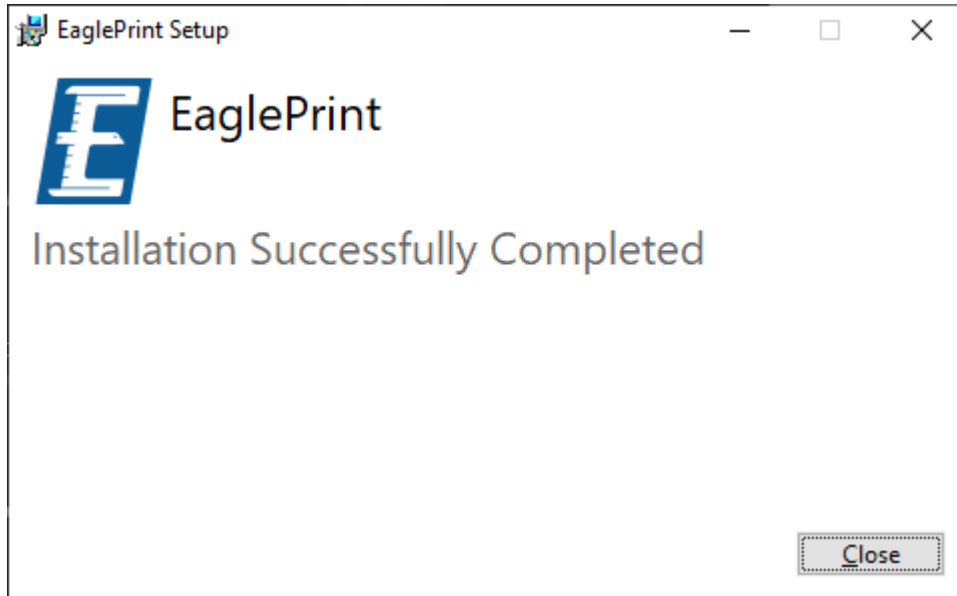
A Windows security dialog will pop up and ask you to confirm the installation, click **Install** to continue.



8. Click **Finish** to close the setup dialog.

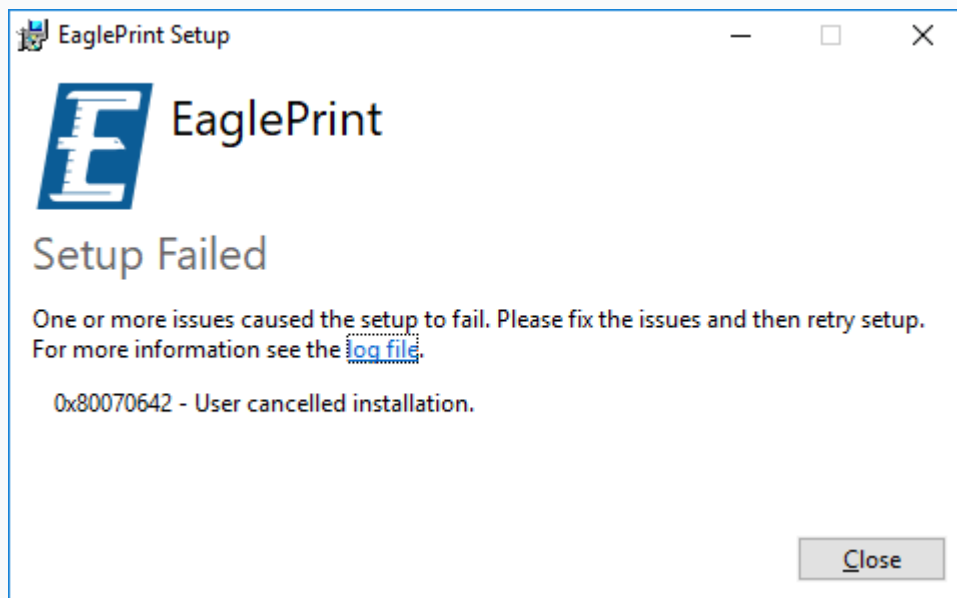


9. Click **Close** to finish the installation.

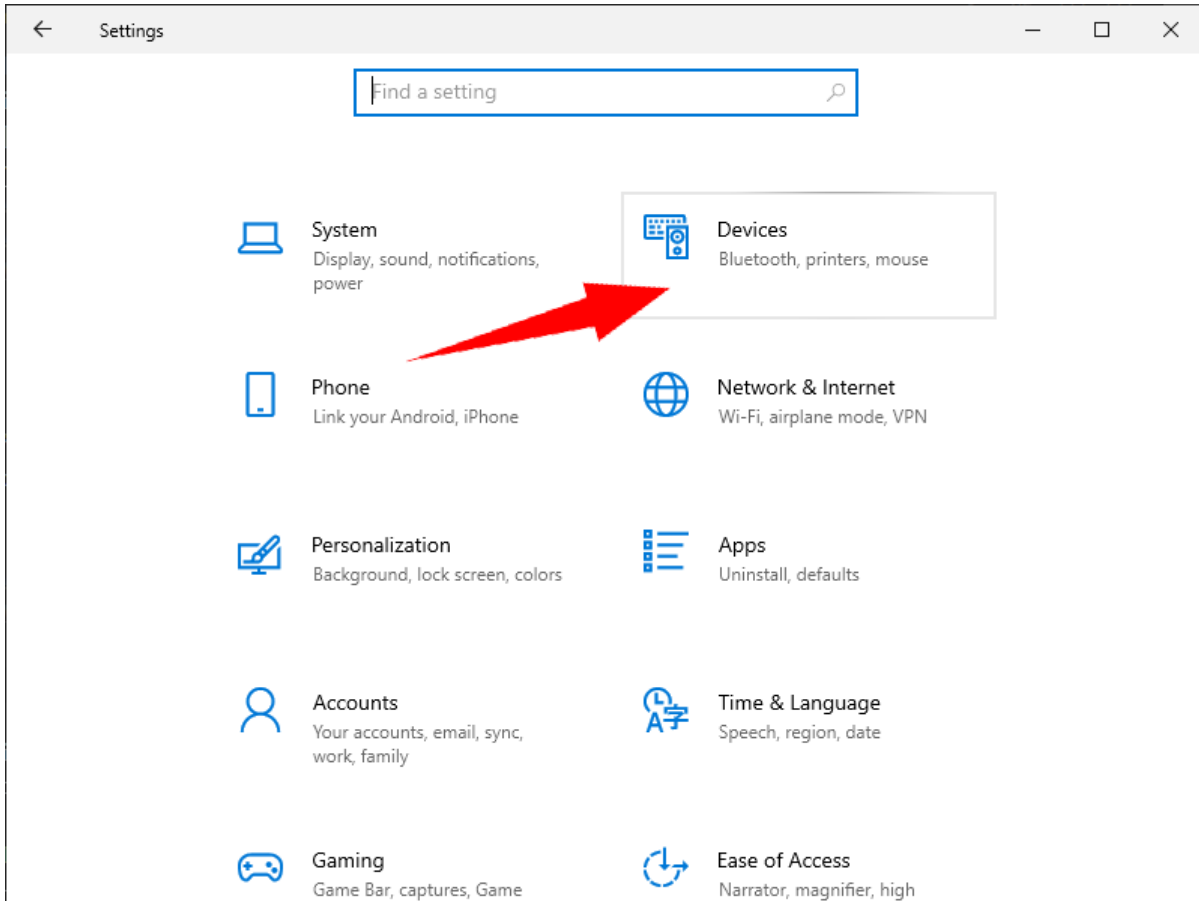


### IMPORTANT

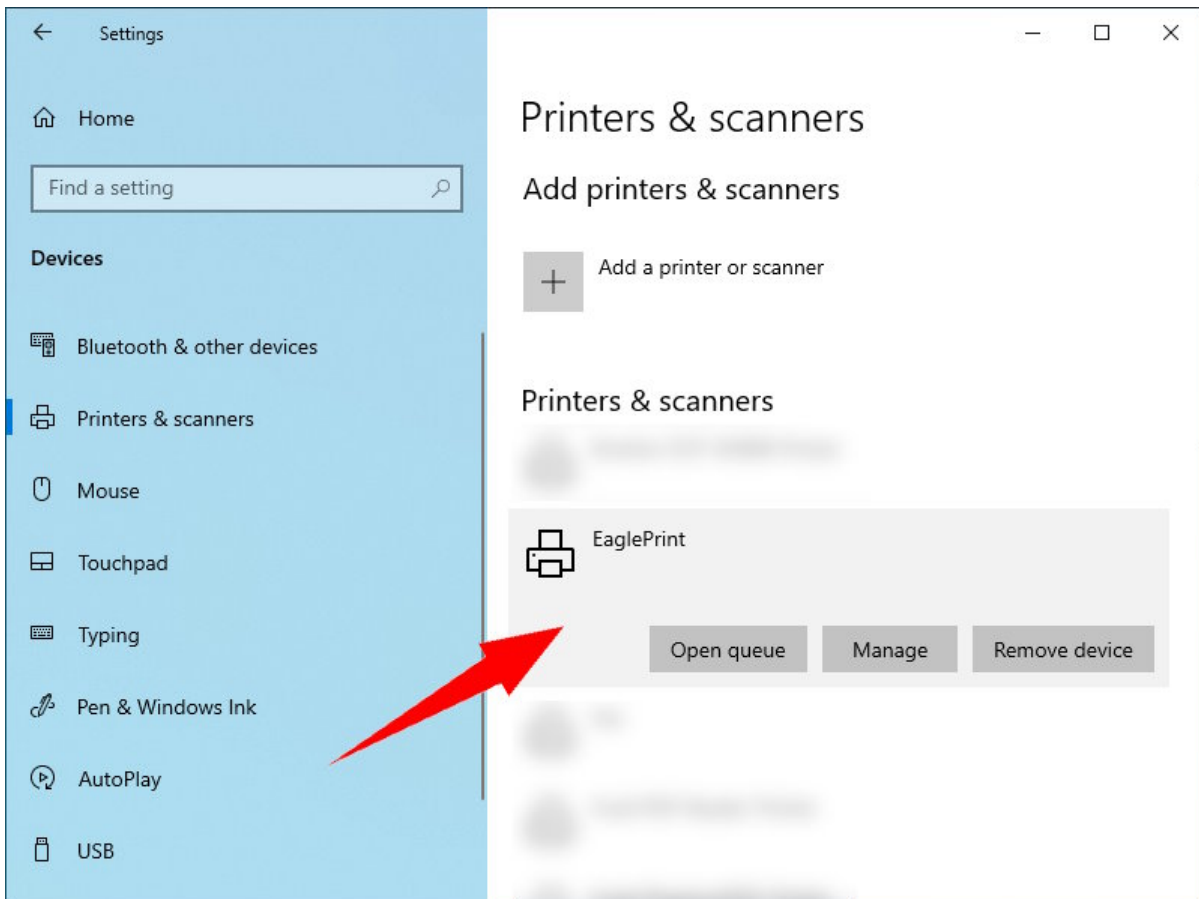
If the installation fails with errors, please check the log file and send it to us.



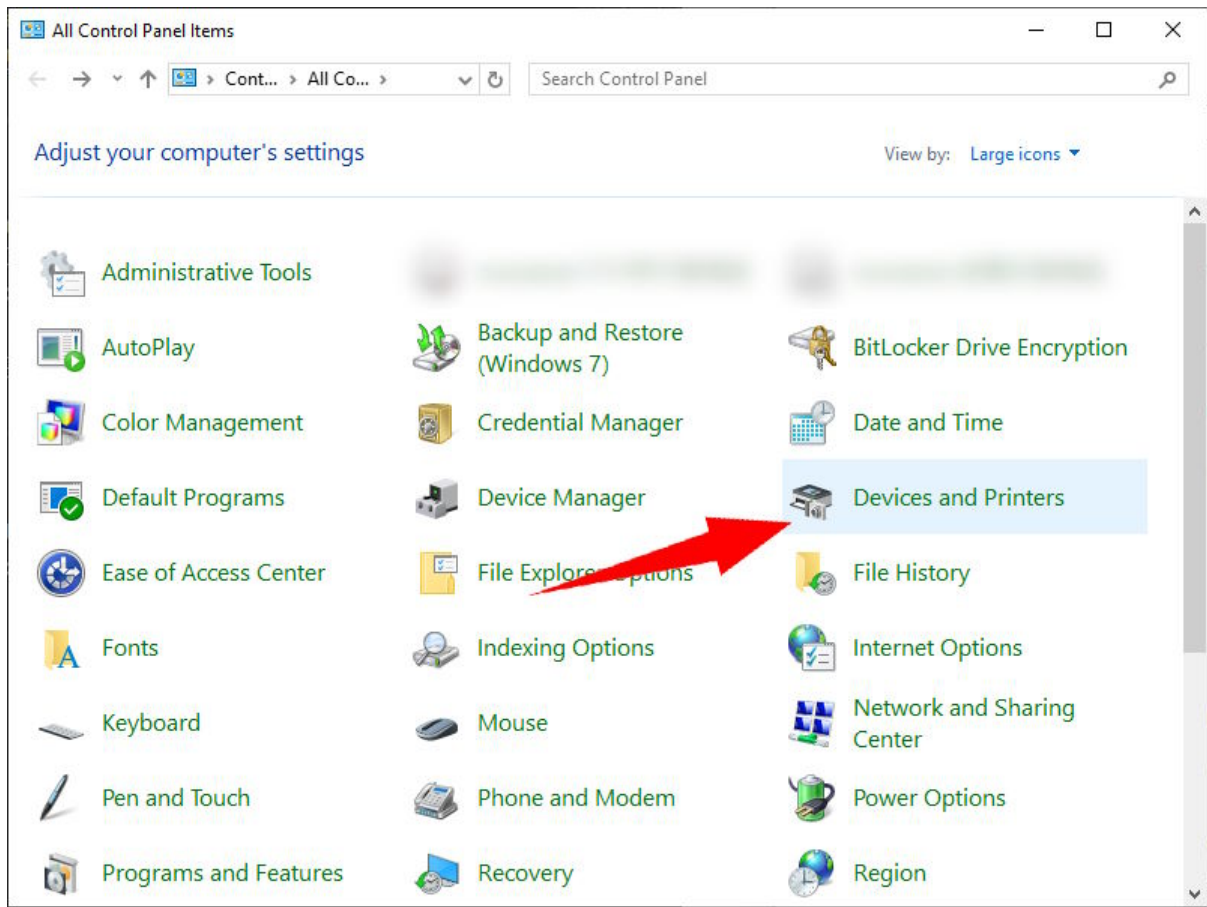
After the installation, on Windows 10, go to **Settings**, click **Devices**.



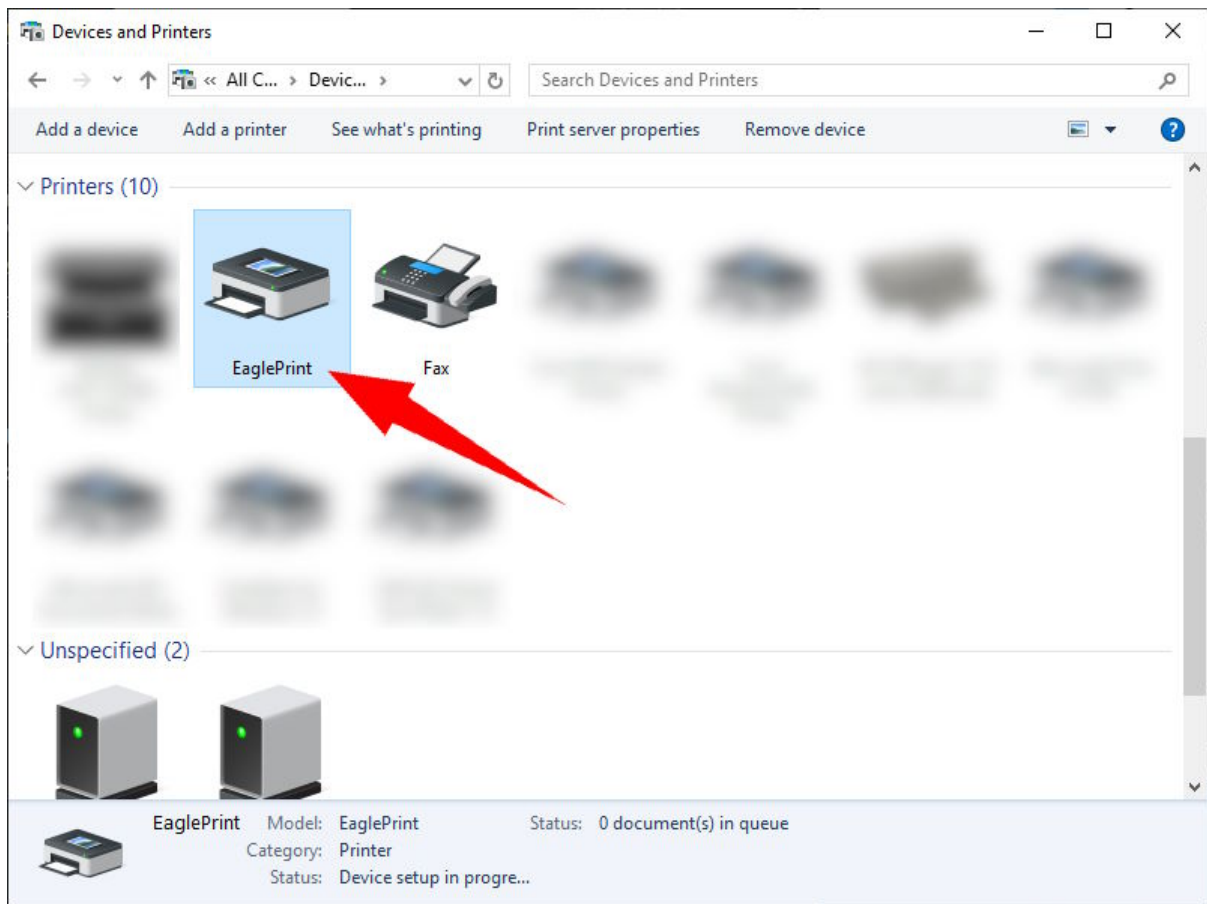
Choose **Printers & scanners**, you will see the printer **EaglePrint**.



On Windows 7, or if you are more familiar with the old Windows **Control Panel**, go to **Control Panel**, click **Devices and Printers**.



In the section **Printers**, you will see the printer **EaglePrint**.



Follow the steps in the chapter [Getting Started](#) to get EaglePrint ready for your laser.

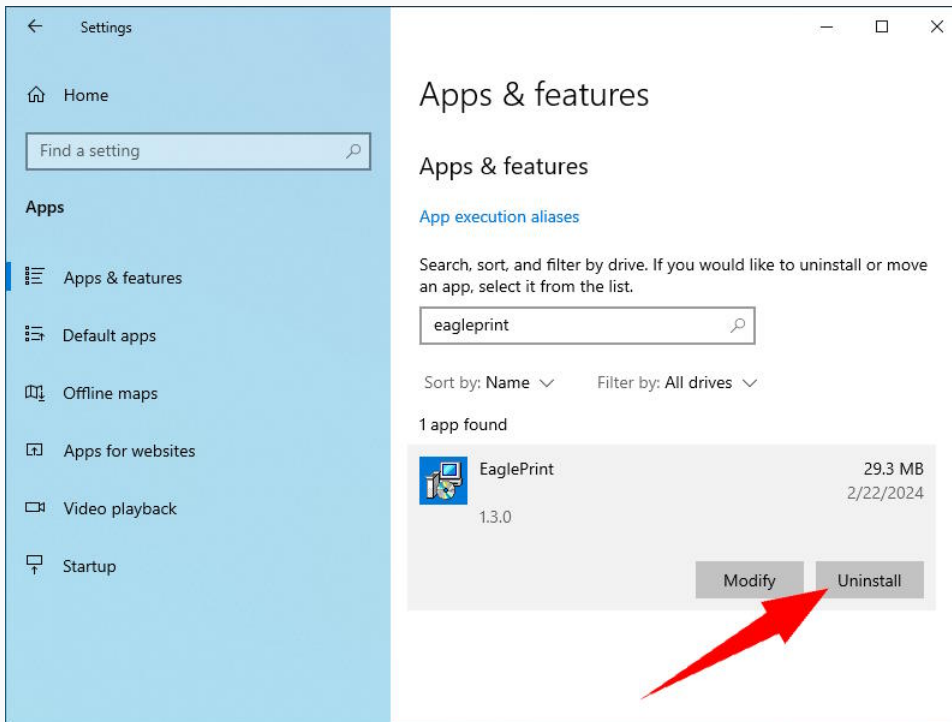
# Upgrade EaglePrint

You can always download the latest EaglePrint installation package from [our official website](#).

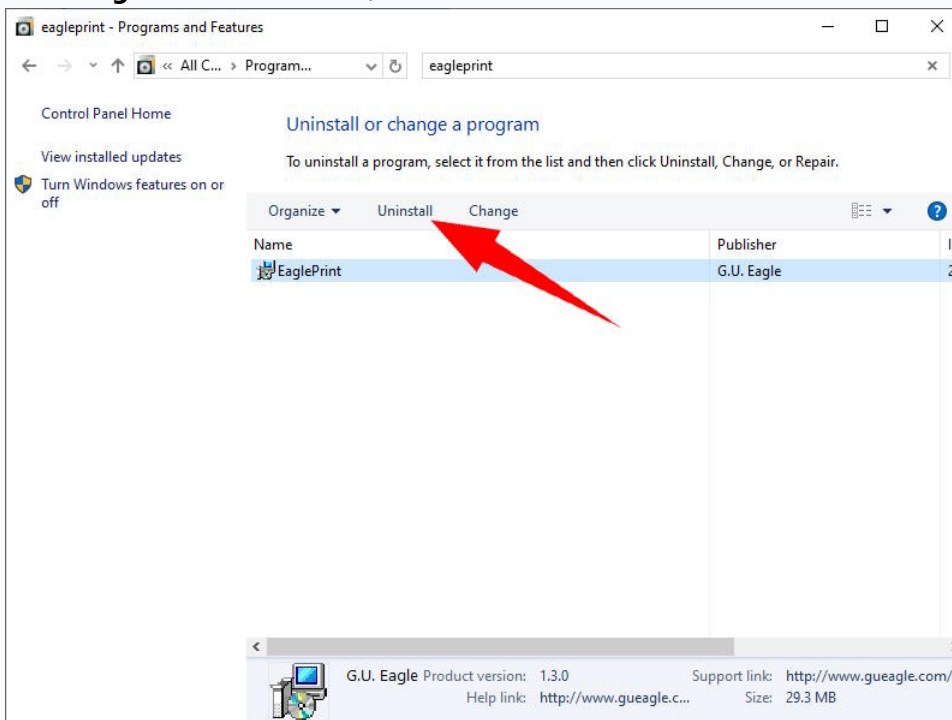
You can just install the new version directly, the installer will take care of uninstalling the old version, refer to [Install EaglePrint](#) for more details.

## NOTE

If you want to uninstall EaglePrint, on Windows 10, go to **Settings**, click **Apps**, uninstall the software there.



On Windows 7, or if you are more familiar with the old Windows **Control Panel**, go to **Control Panel**, click **Programs and Features**, uninstall the software there.





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# Getting Started

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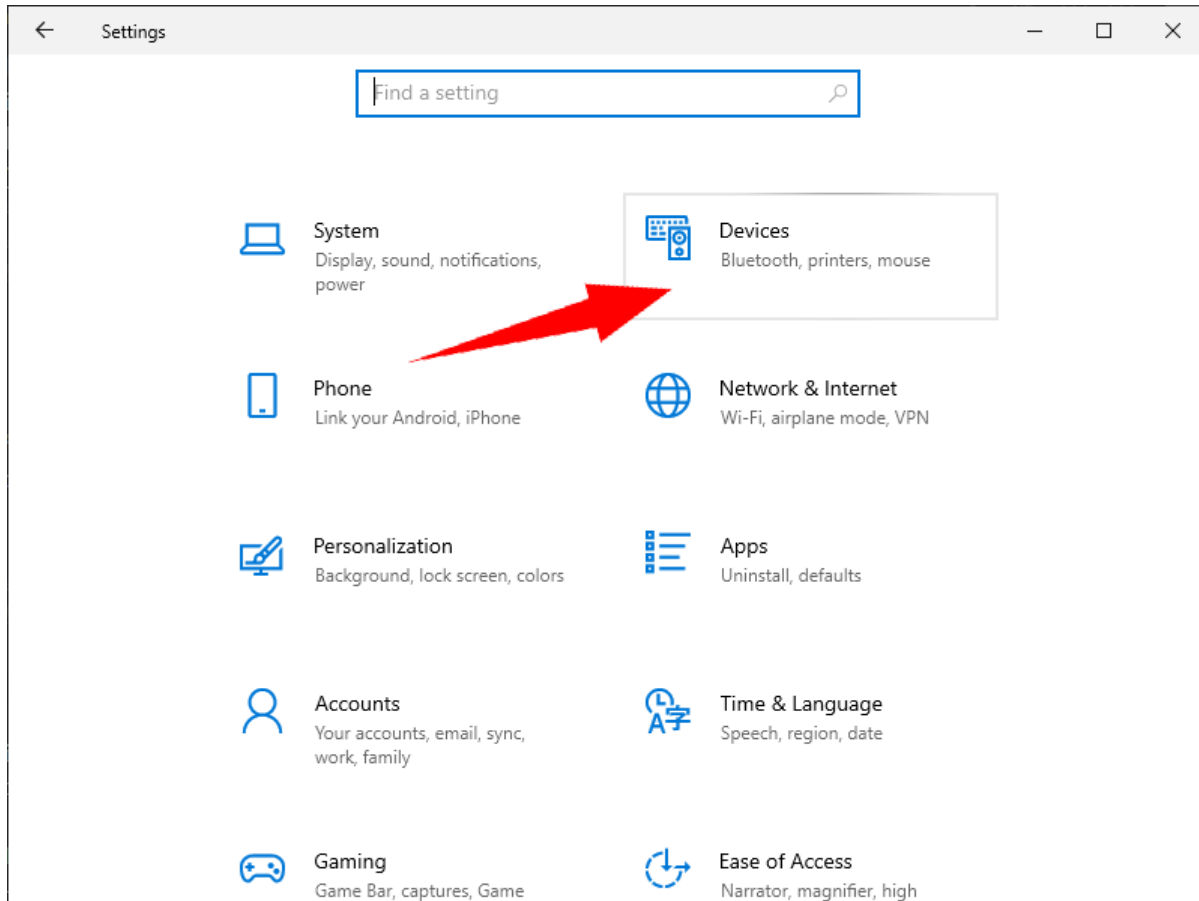
In this chapter, you will get familiar with the EaglePrint user interface, learn how to set up EaglePrint, the workflow, how to connect your laser and the license key.

- [Get Familiar with the EaglePrint UI](#)
- [Set up EaglePrint](#)
- [The Workflow](#)
- [Set up Laser Connections](#)
- [Connect the License Key](#)

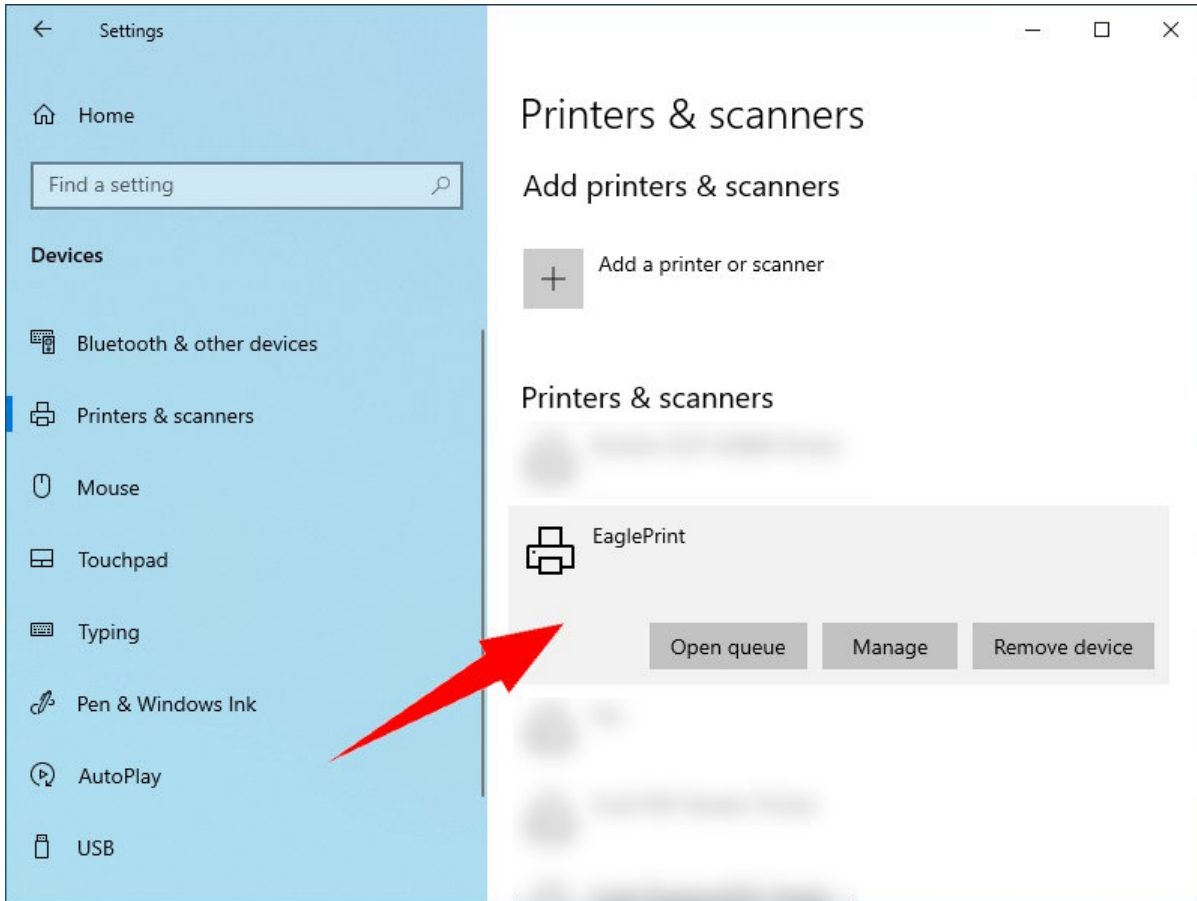
# Get Familiar with the EaglePrint UI

EaglePrint is a specialized print driver, cooperated with the EagleCAM laser controllers, for laser cutting and engraving. Like normal print drivers, EaglePrint exposes most of its information, features and functions through the printer properties and the printing preferences, which you can find in Windows settings.

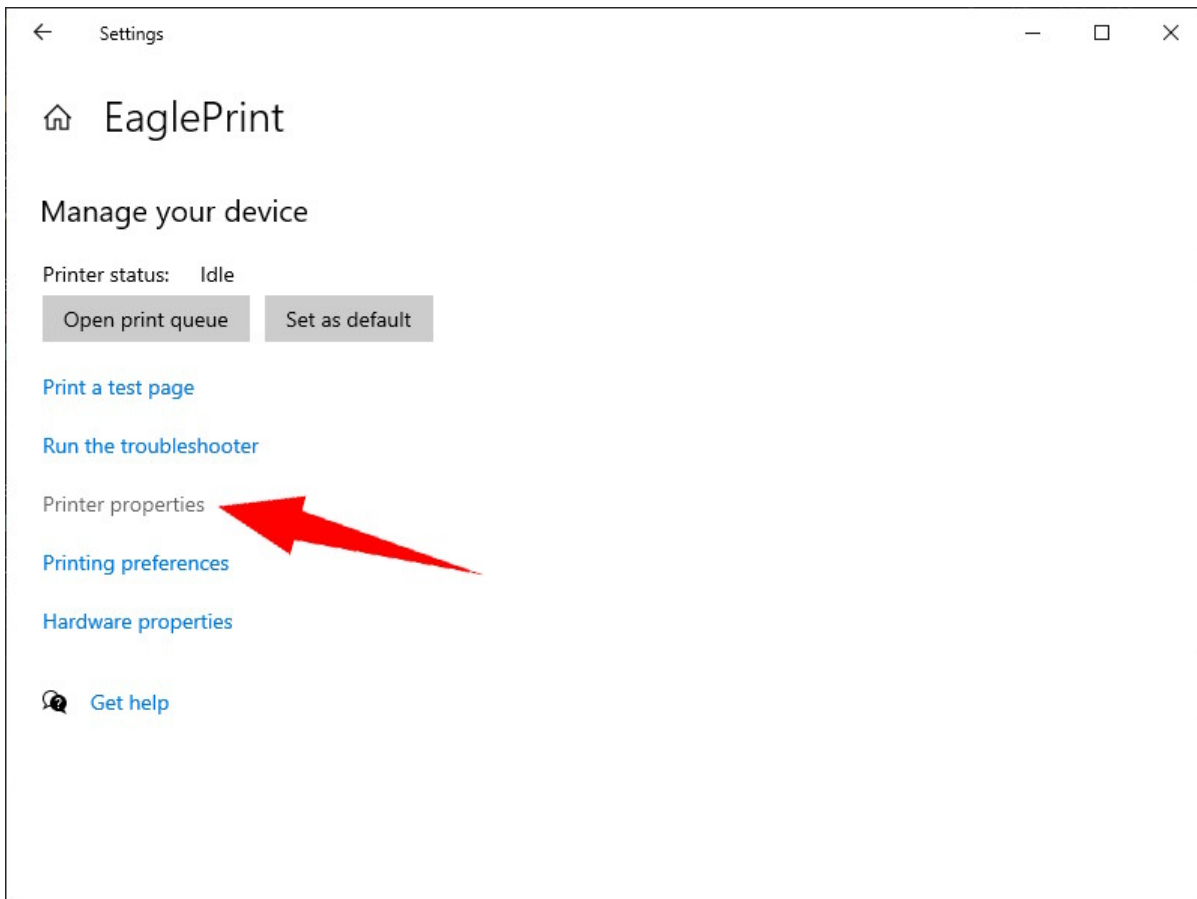
To open the printer properties, on Windows 10, go to **Settings**, click **Devices**.



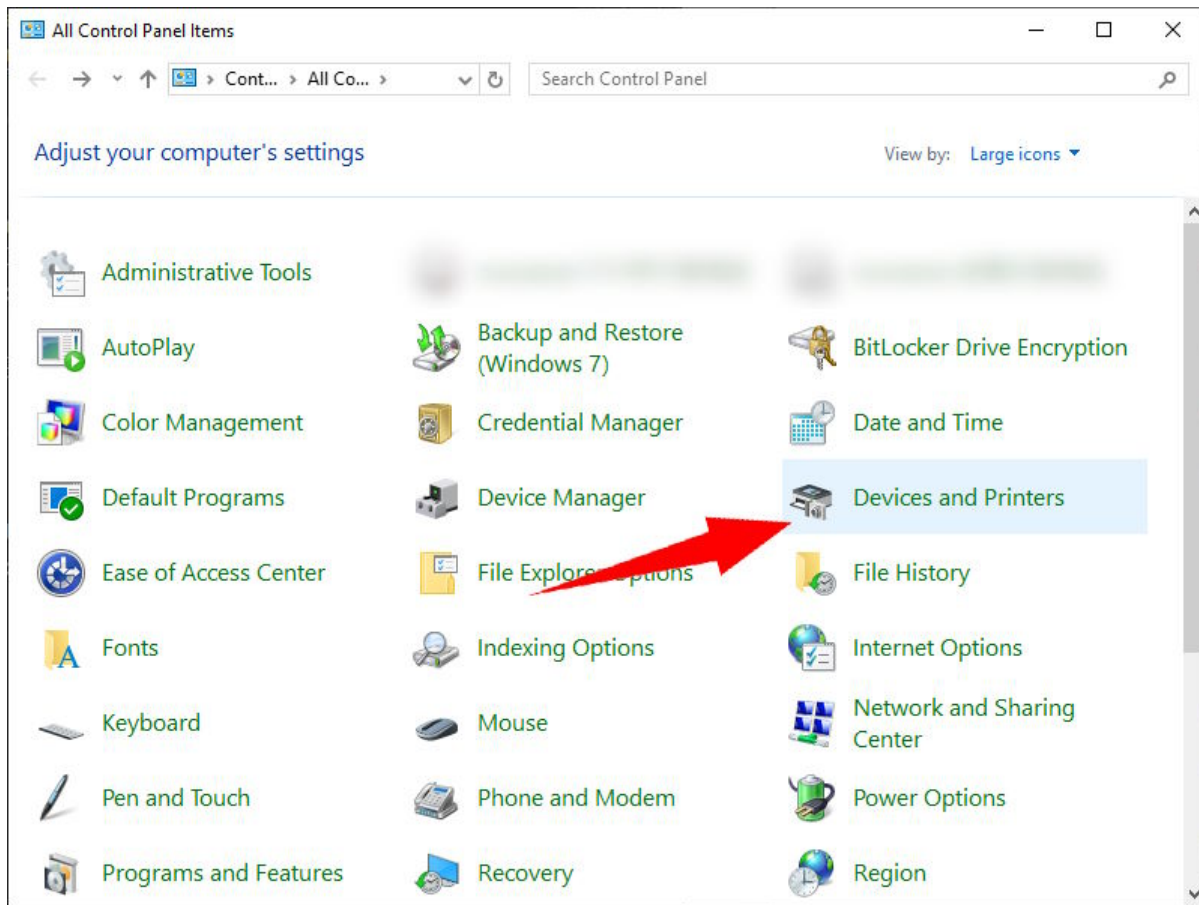
Choose **Printers & scanners**, click the printer **EaglePrint**.



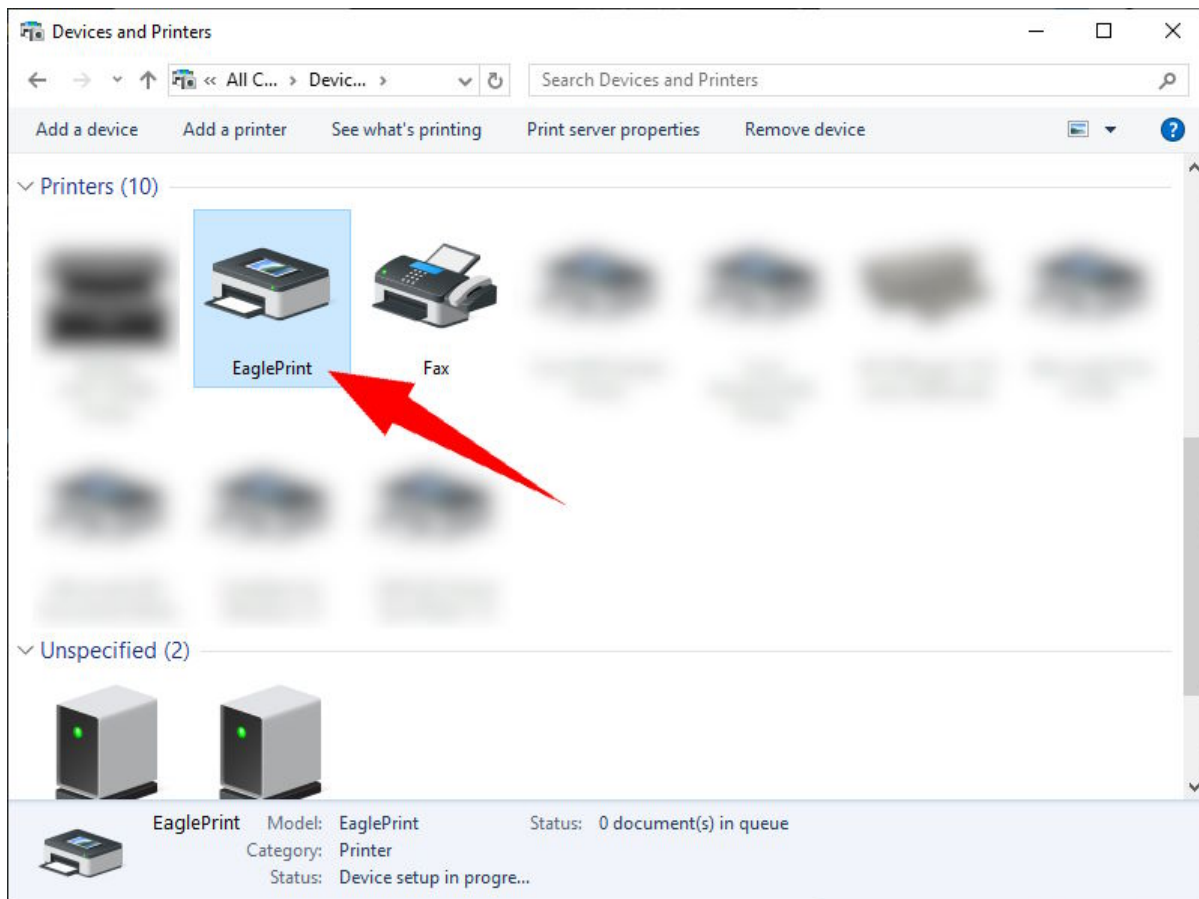
Click **Manage**, and then click **Printer properties**.



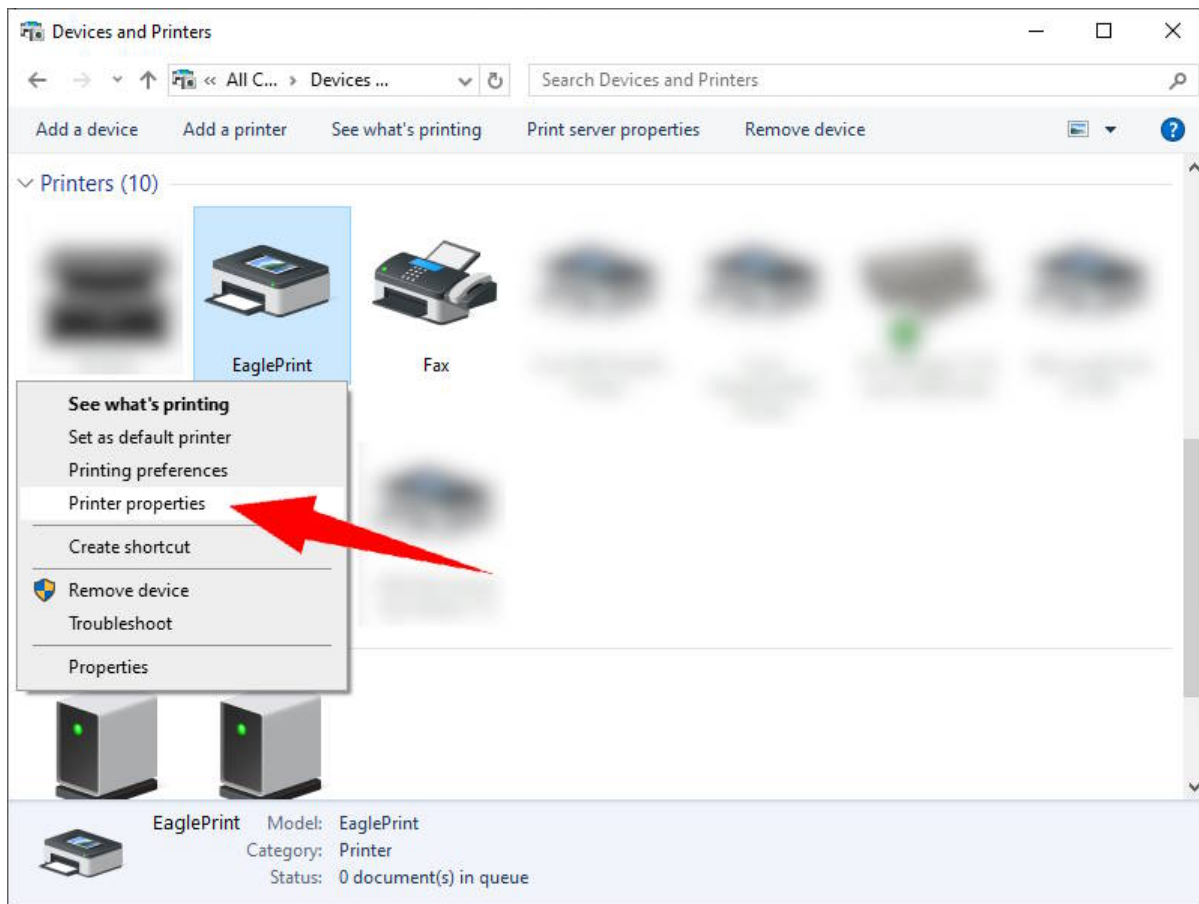
On Windows 7, or if you are more familiar with the old Windows **Control Panel**, go to **Control Panel**, click **Devices and Printers**.



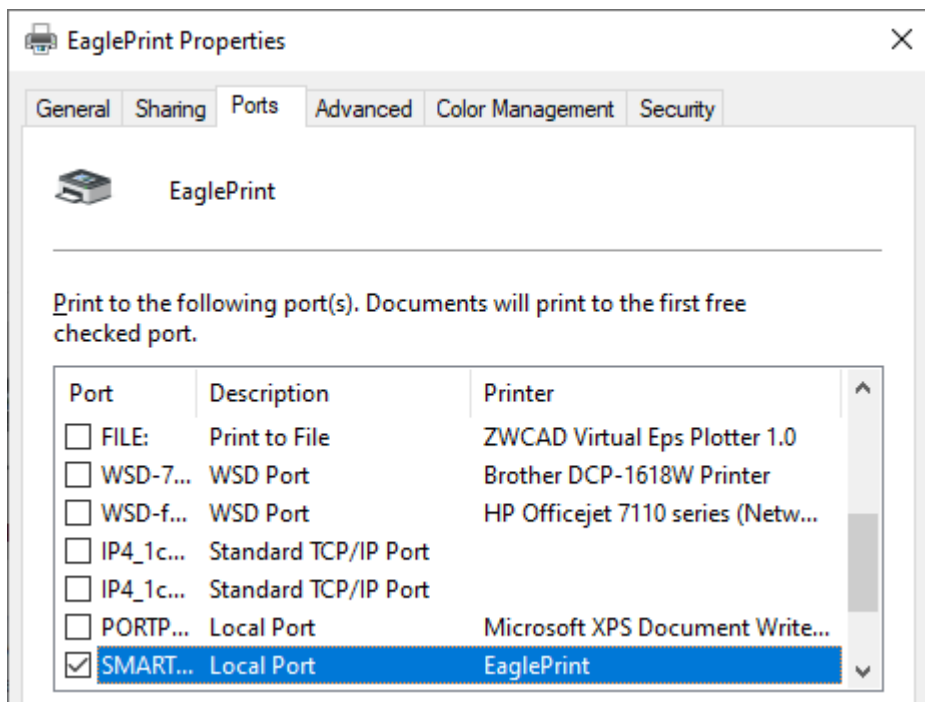
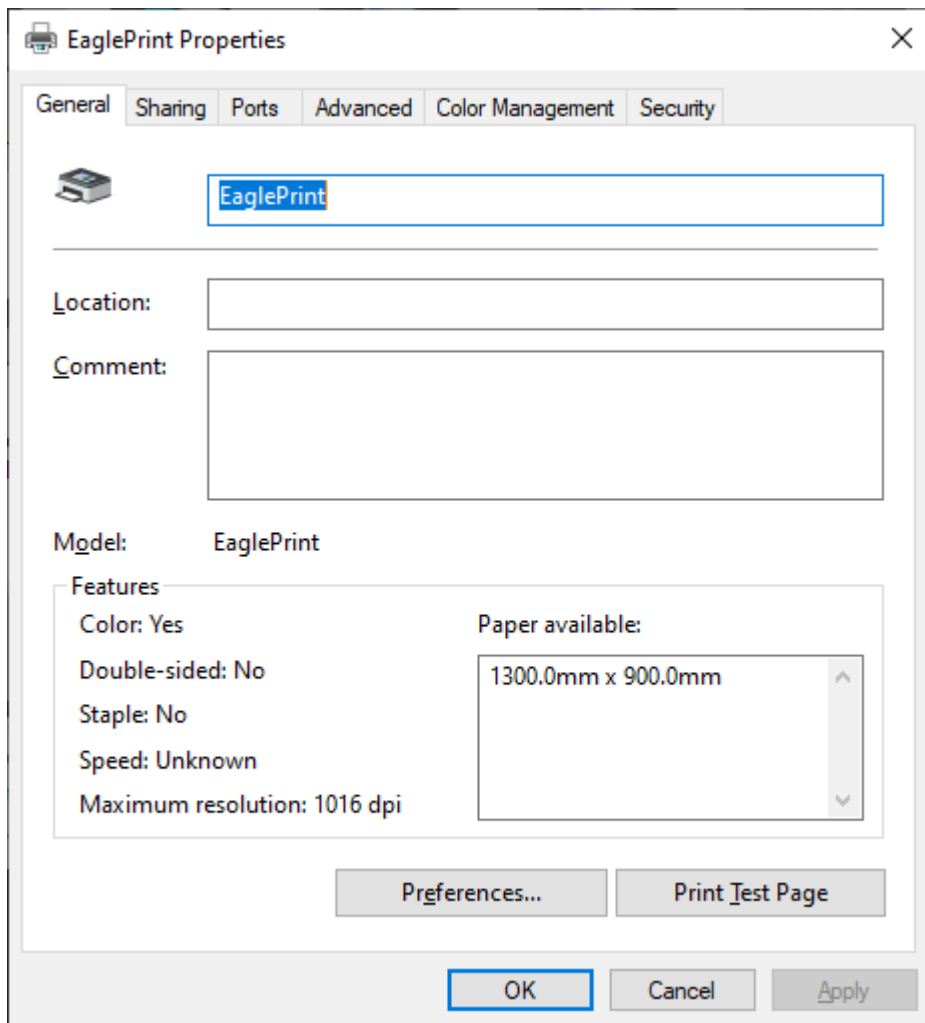
In the section **Printers**, you will see the printer **EaglePrint**.



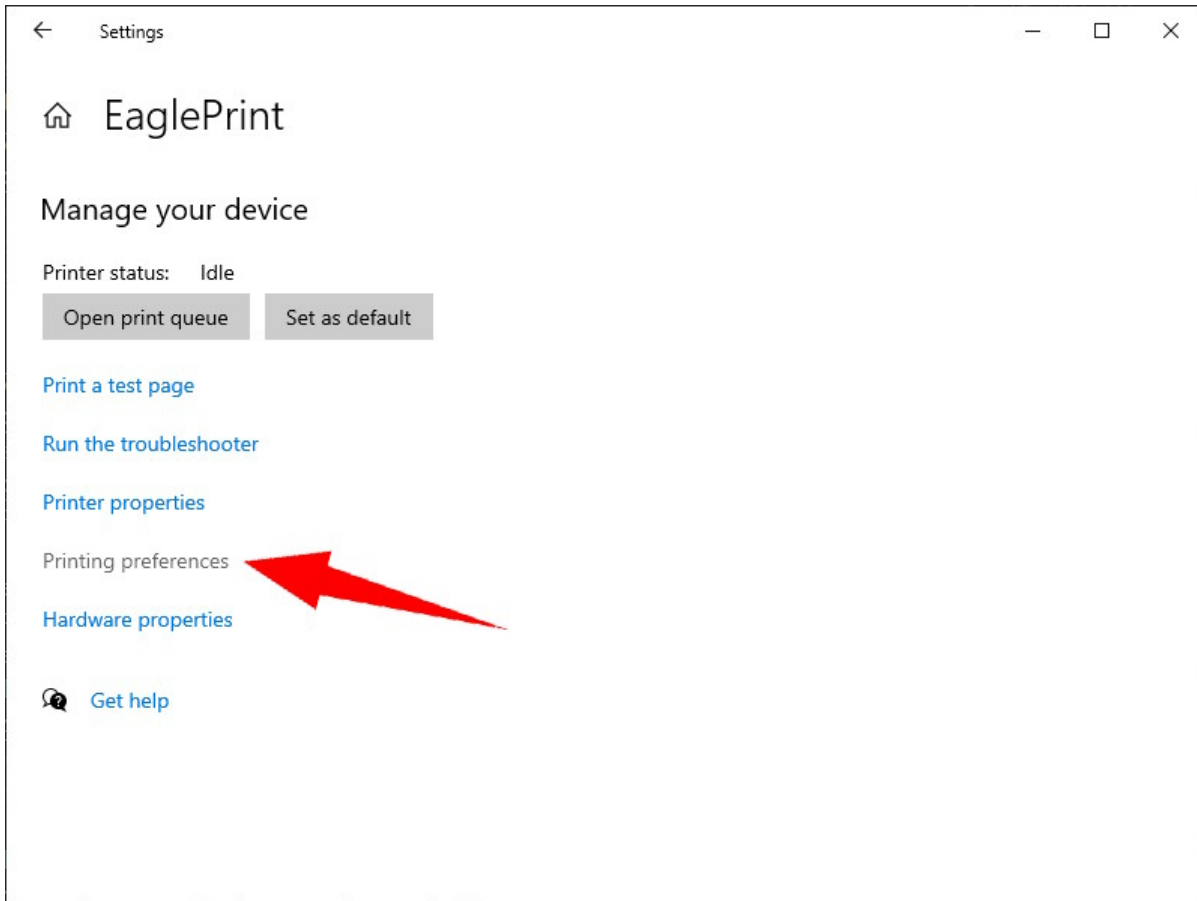
Right click **EaglePrint**, and then click **Printer properties**.



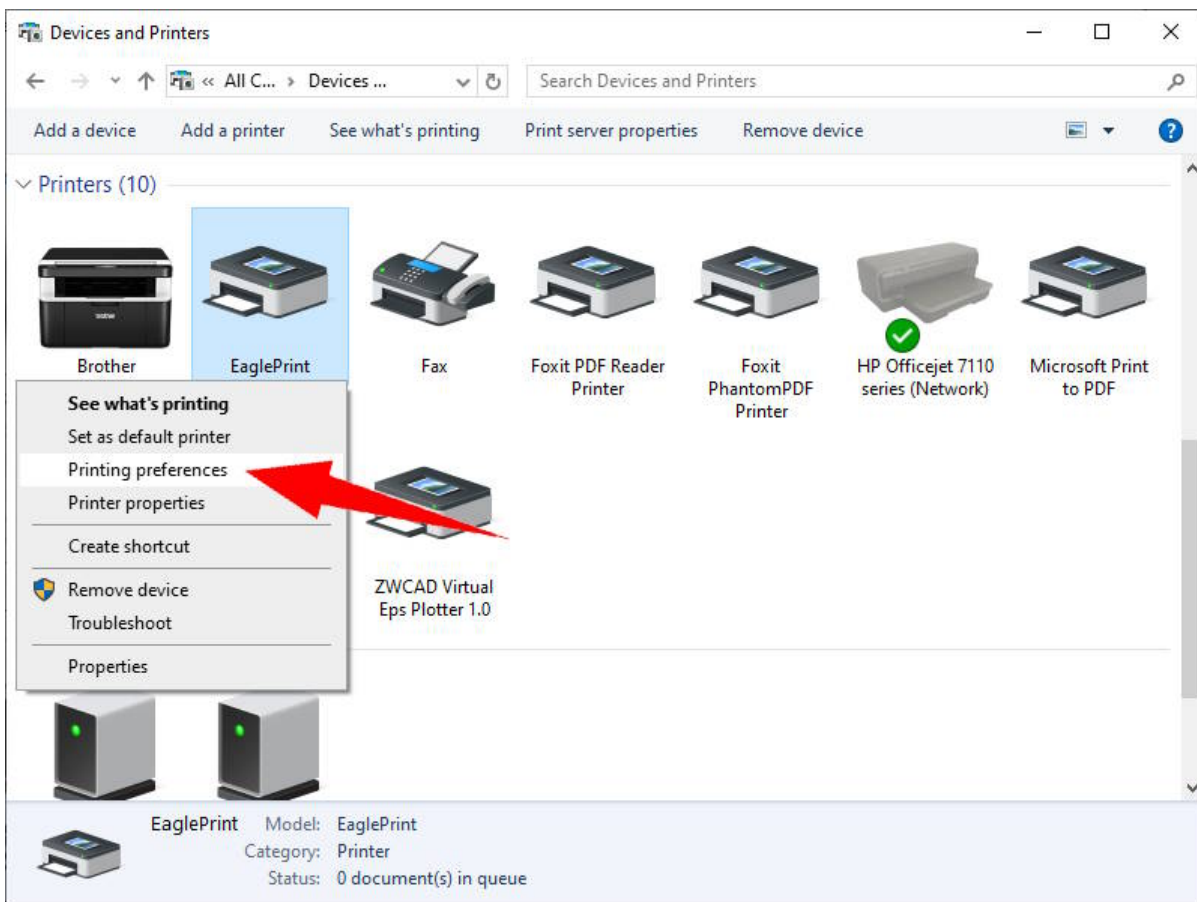
In the dialog **EaglePrint Properties**, you can have a look at the basic information and the features of EaglePrint in the page **General**, and the port used by EaglePrint in the page **Ports**.



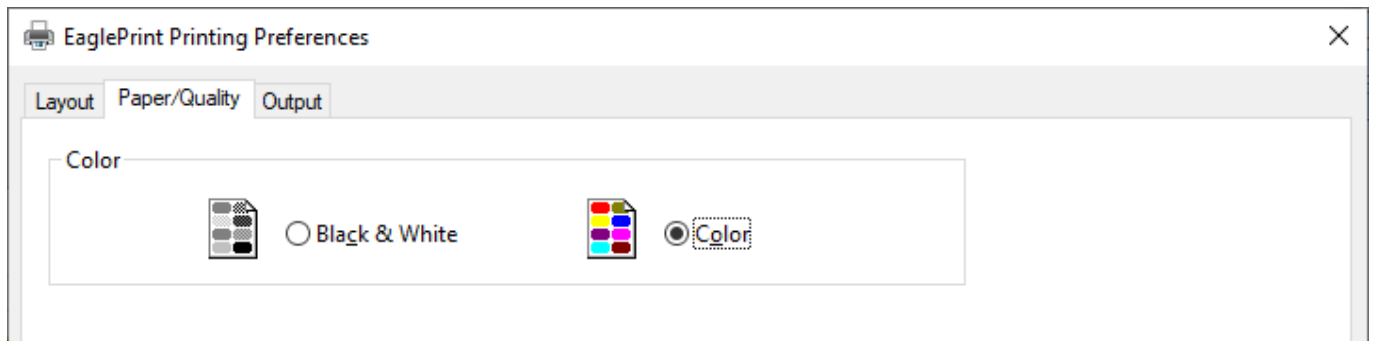
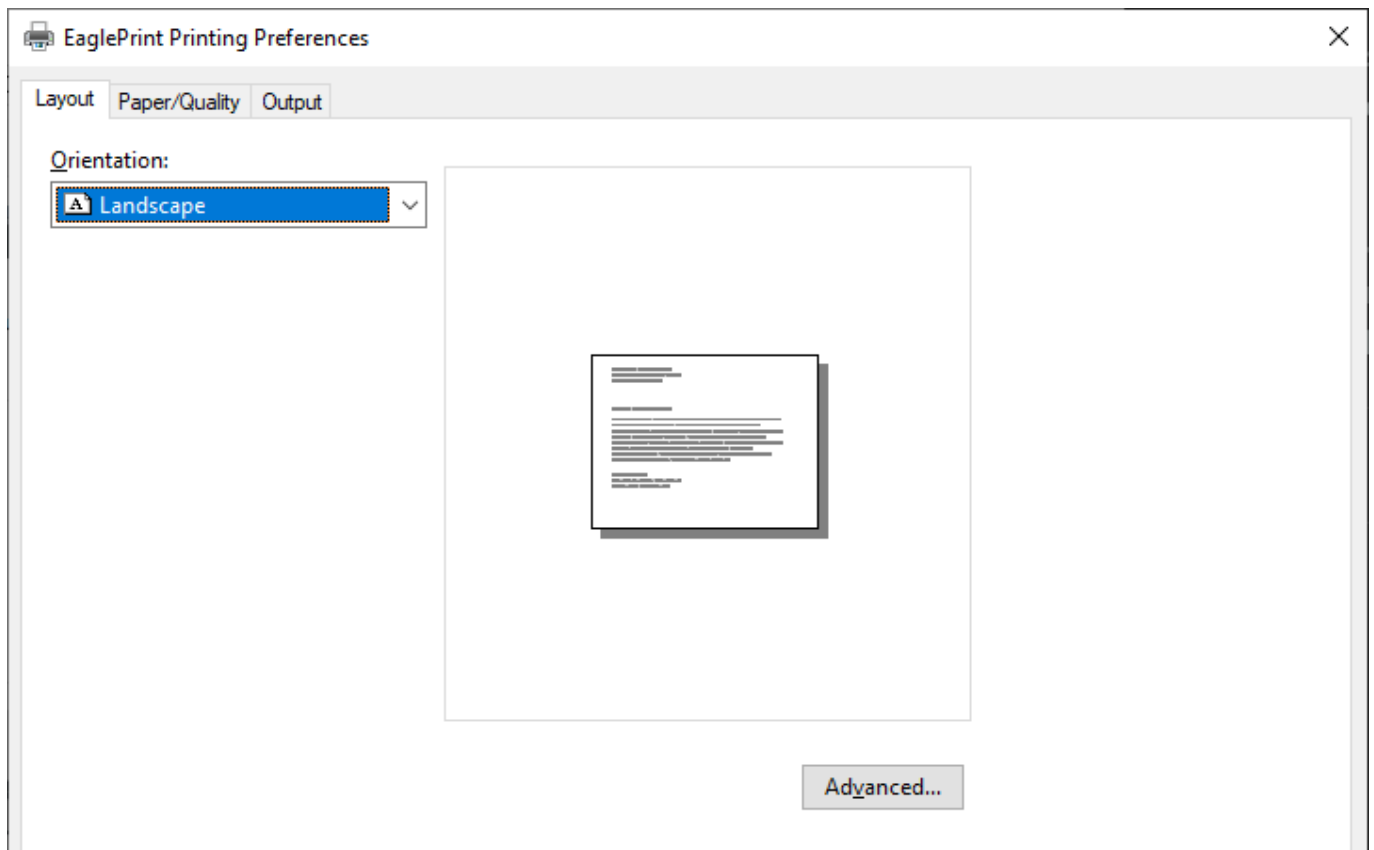
To open the printing preferences, on Windows 10, click **Printing preferences** in the EaglePrint manage page.



On Windows 7, click **Printing preferences** from the EaglePrint context menu.

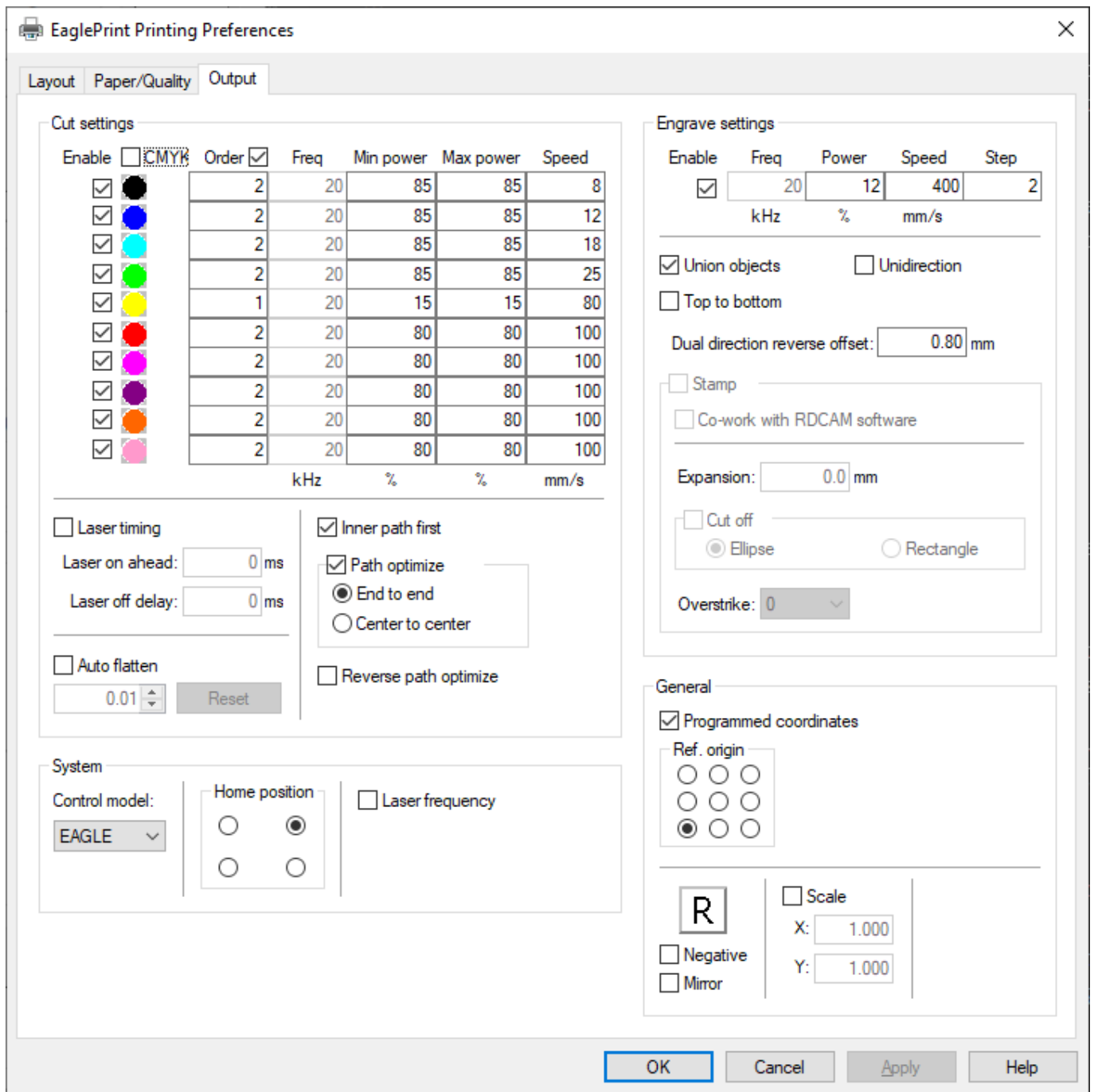


In the dialog **EaglePrint Printing Preferences**, in the page **Layout**, you can set the paper size and orientation according to your laser, and in the page **Paper/Quality**, you can set the color mode for printing. Refer to [Set up EaglePrint](#) for more details.

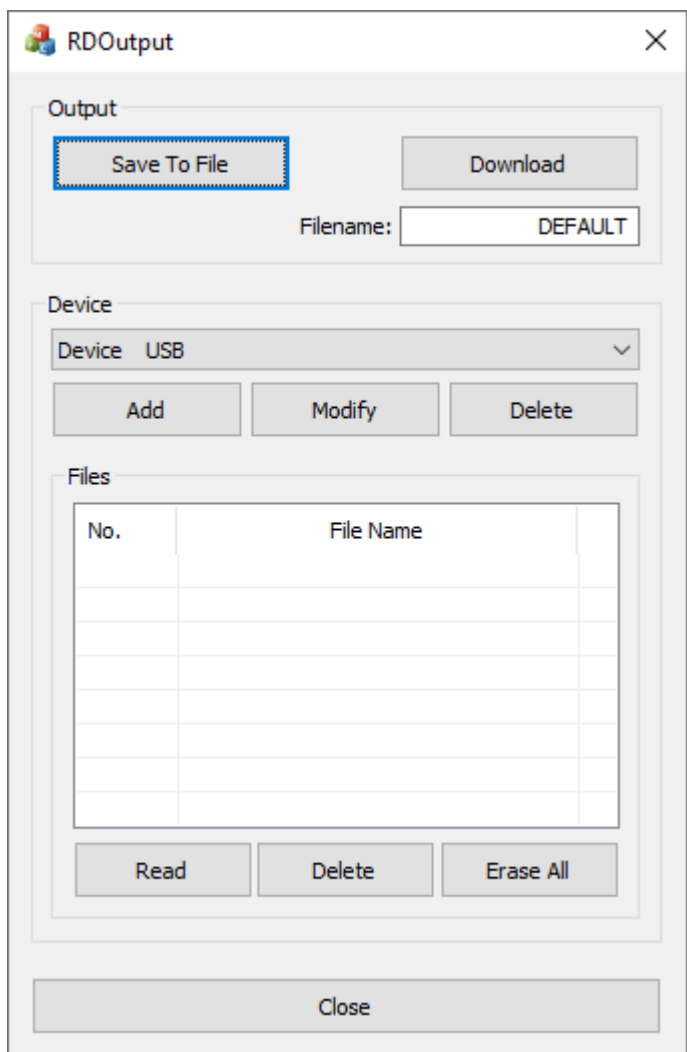




In the page **Output**, you can find the job and some system settings. Refer to [Set up EaglePrint](#) and [Job Settings](#) for more details.



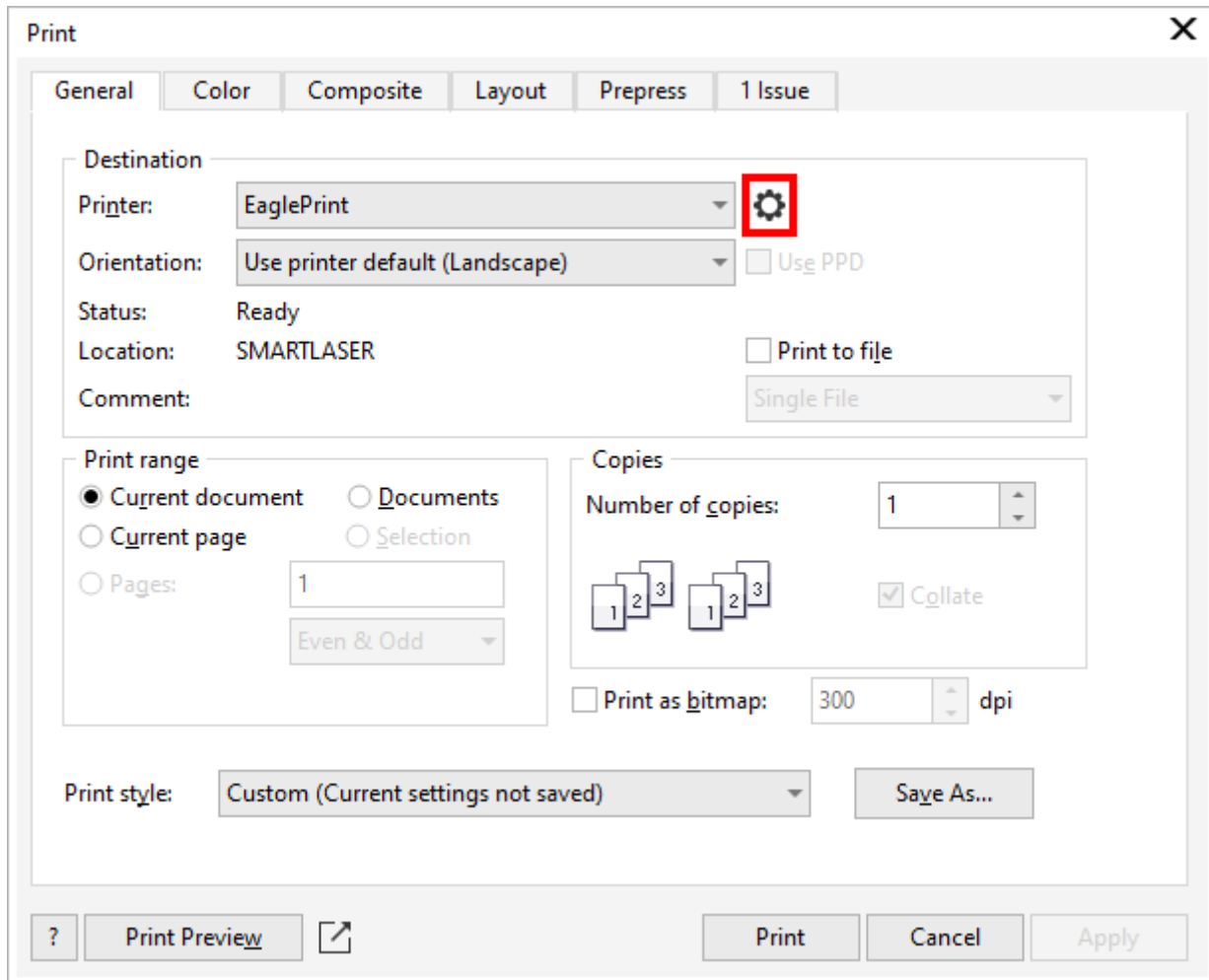
Finally, there comes the laser window when printing from drawing software. Refer to [Set up Laser Connections](#) and [Laser Processing](#) for more details.



# Set up EaglePrint

Before starting, you need to know that you can set up EaglePrint system wide or just for a specific project. In general, we recommend to do a system wide setup for the system settings and a group of job settings for your every day jobs, i.e. the model of the laser controller, the home position, the paper size and orientation, the coordinates and the job origin, the color mode, a group of cutting and engraving parameters etc, and do a customization for a specific project when necessary, e.g. change some cutting parameters.

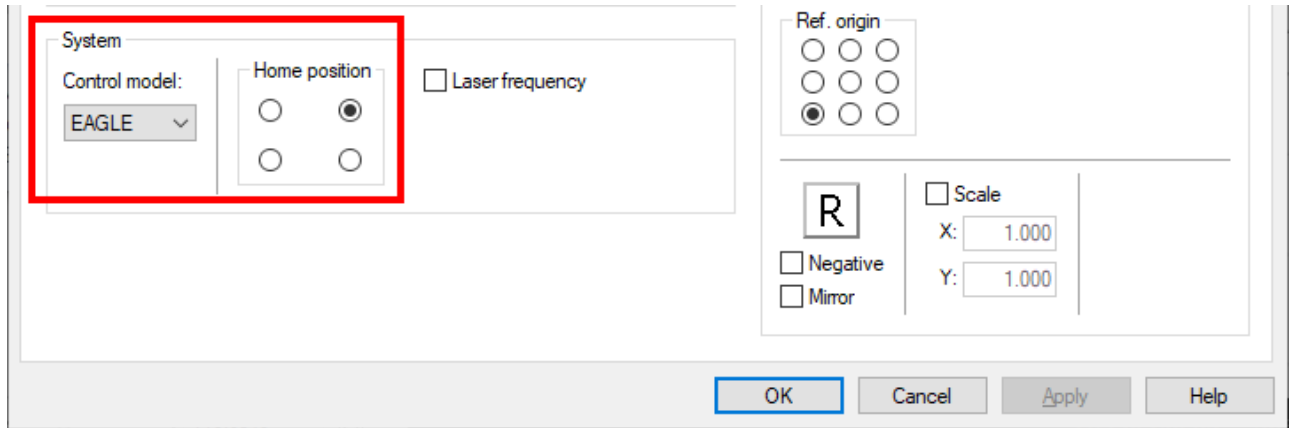
Open the printing preferences from Windows settings to do a system wide setup, refer [here](#) for more details. Open the printing preferences from the print dialog of the drawing software, e.g. CorelDRAW, to do a customization for your current project.



Here we will guide you to set up EaglePrint step by step.

1. Set the model of the laser controller and the home position of the laser

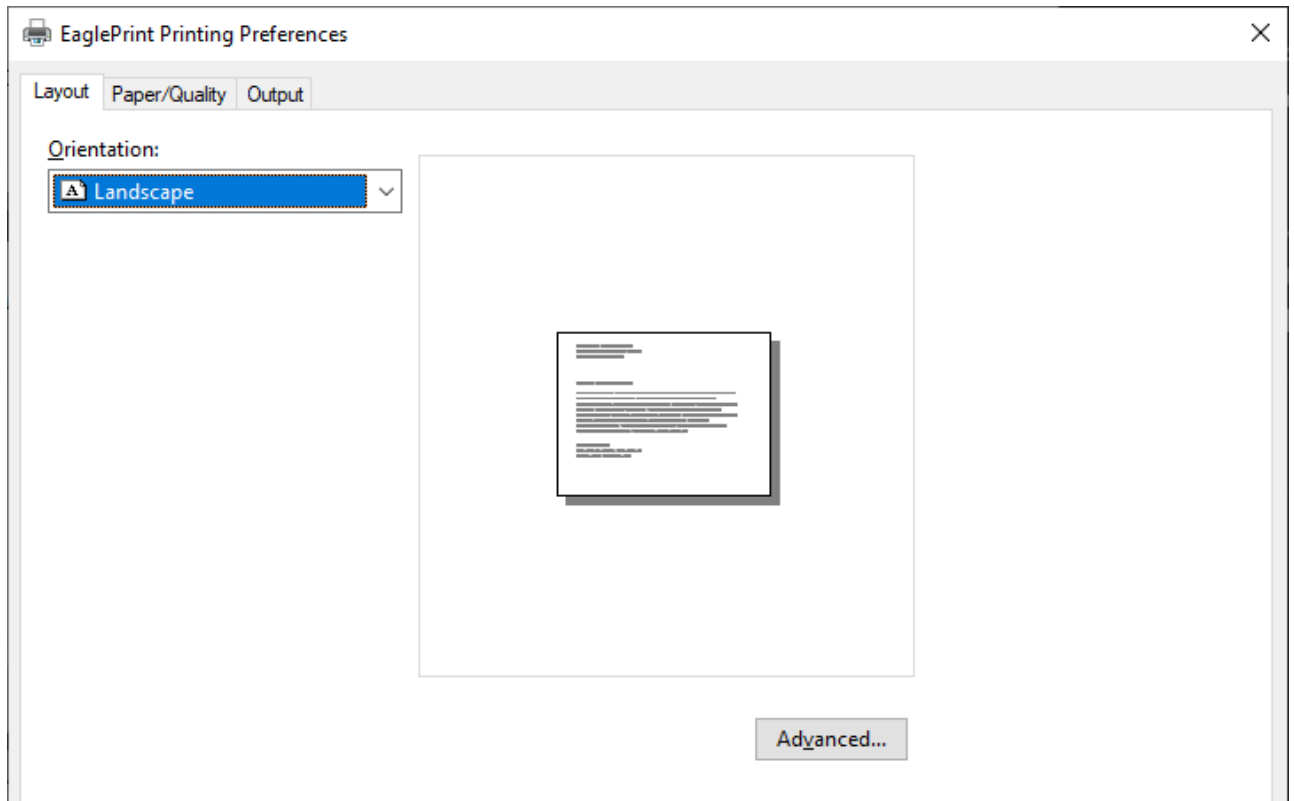
In the page **Output**, in the section **System**, choose the model of the laser controller of your machine to let EaglePrint generate proper data for your laser. And the option **Home position** must match the home position of your laser, otherwise, jobs will be in a wrong coordinate system, results in mirrored or flipped cutting or engraving.



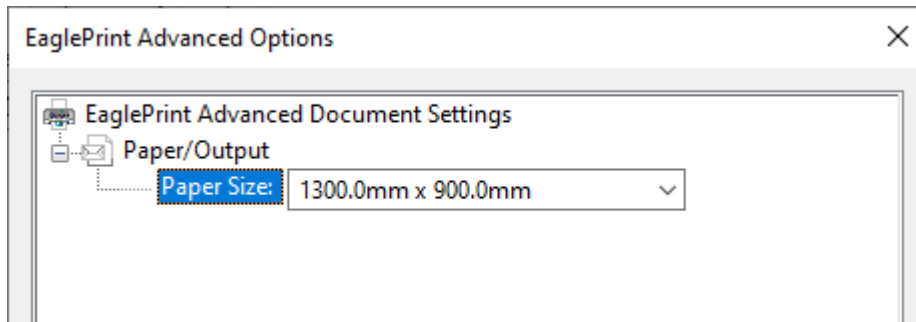
2. Set the paper according to the work area of the laser

The paper in EaglePrint represents the work area of the laser, and should be in the exact same size and orientation with the laser.

In the page **Layout**, set the paper orientation.



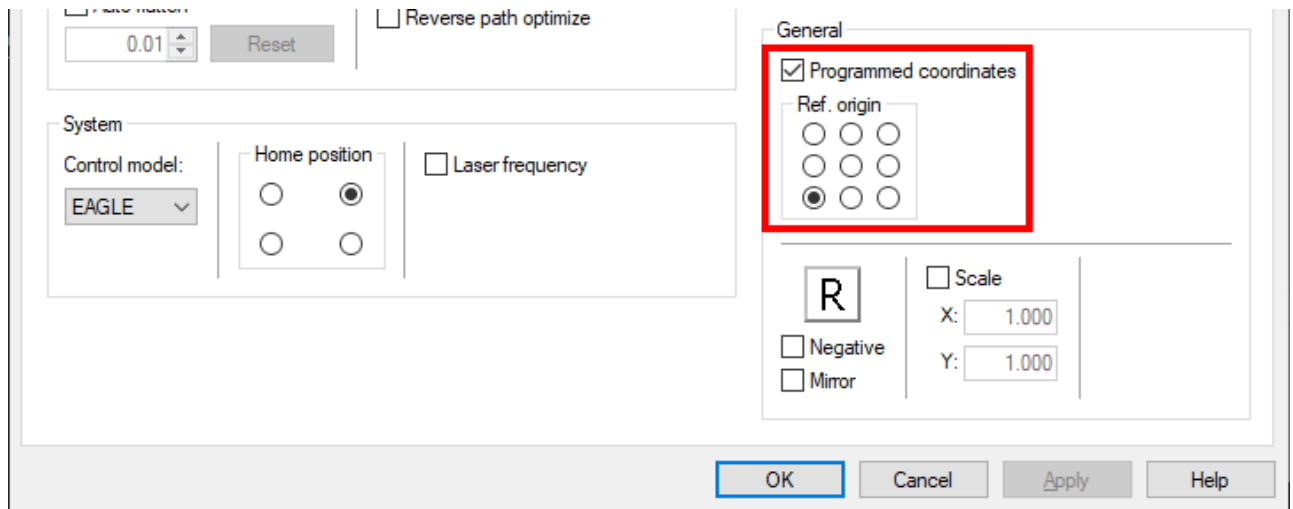
Click the button **Advanced...** to bring up the dialog where you can set the paper size.



The pages start with *CAD* in their names are being there for being compatible with some old versions of AutoCAD. And the yellow exclamation mark means that the paper's built-in orientation is different with the paper orientation setting and should be corrected.

### 3. Coordinates and job origin

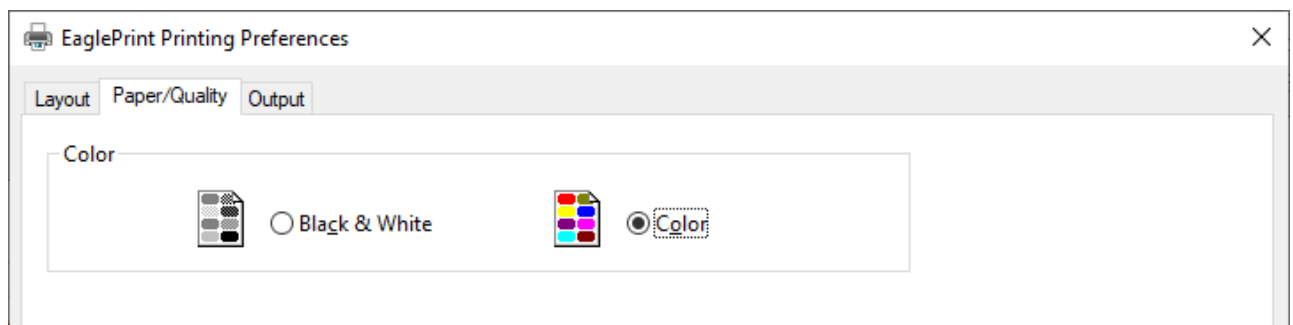
In the page **Output**, in the section **General**, check the option **Programmed coordinates** to let EaglePrint position jobs according to the programmed coordinates. And the job origin tells the laser how to position the job relative to the programmed origin. Refer to [Coordinates and job origin](#) for more details.



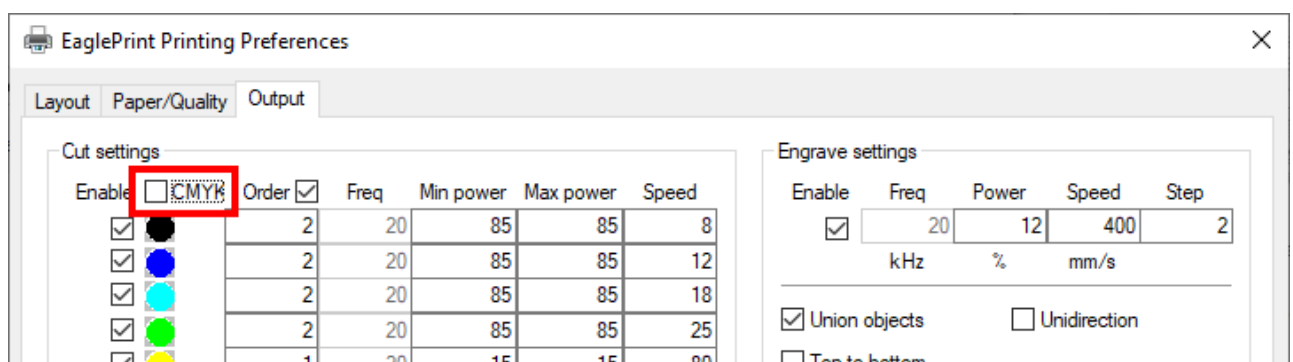
### 4. Colors in printing

When printing, Windows will spool graphics in your design in black and white or in color, depends on whether the print driver supports color printing. In general, we recommend to set EaglePrint in color mode to support features like multi-colors cutting and get better vector graphics engraving results. Refer to [Colors in Cutting](#), [Colors in Engraving](#) and [Vector graphics](#) for more details.

In the page **Paper/Quality**, check the option **Color** to set EaglePrint in color mode.



In the page **Output**, in the section **Cut settings**, uncheck the option **CMYK** to use RGB colors which are more consistent across different drawing software, avoiding troubles on assigning or setting colors when designing and recognizing colors in EaglePrint.



## 5. Job settings

In the page **Output**, set cutting and engraving parameters for your every day jobs, refer to [Job Settings](#) for more details.

**EaglePrint Printing Preferences**

Layout Paper/Quality **Output**

**Cut settings**

Enable  CMYK

Enable	Order	Freq	Min power	Max power	Speed
<input checked="" type="checkbox"/>	2	20	85	85	8
<input checked="" type="checkbox"/>	2	20	85	85	12
<input checked="" type="checkbox"/>	2	20	85	85	18
<input checked="" type="checkbox"/>	2	20	85	85	25
<input checked="" type="checkbox"/>	1	20	15	15	80
<input checked="" type="checkbox"/>	2	20	80	80	100
<input checked="" type="checkbox"/>	2	20	80	80	100
<input checked="" type="checkbox"/>	2	20	80	80	100
<input checked="" type="checkbox"/>	2	20	80	80	100
<input checked="" type="checkbox"/>	2	20	80	80	100

kHz % % mm/s

Laser timing  
Laser on ahead: 0 ms  
Laser off delay: 0 ms

Auto flatten  
0.01 Reset

Inner path first  
 Path optimize  
● End to end  
○ Center to center

Reverse path optimize

**Engrave settings**

Enable	Freq	Power	Speed	Step
<input checked="" type="checkbox"/>	20	12	400	2

kHz % mm/s

Union objects  Unidirection  
 Top to bottom  
Dual direction reverse offset: 0.80 mm

Stamp  
 Co-work with RDCAM software

Expansion: 0.0 mm

Cut off  
● Ellipse ○ Rectangle

Overstrike: 0

**General**  
 Programmed coordinates

# The Workflow

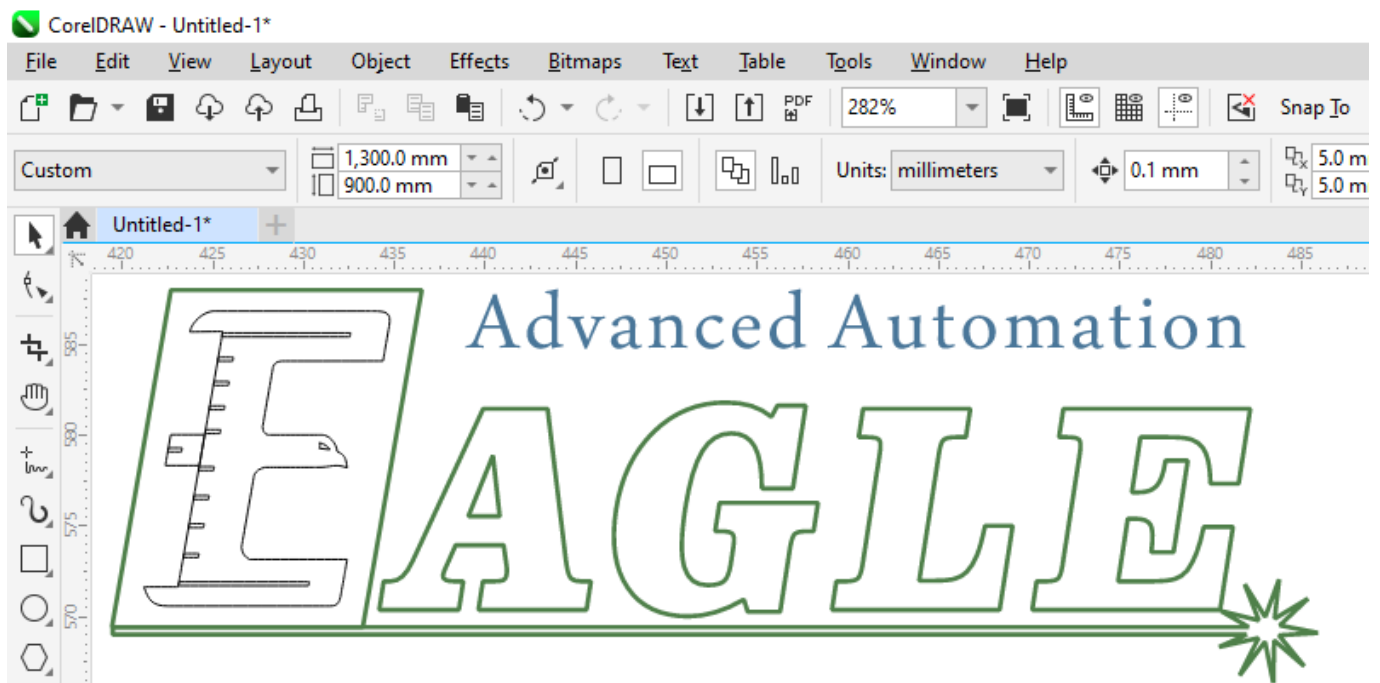
We will go through the workflow of printing with EaglePrint in a drawing software in this section.

1. Prepare the design in the drawing software.
2. Customize the job settings and print.
3. Laser processing.

## Prepare the Design in the Drawing Software

Prepare your design in the drawing software, set width of outlines, fill shapes, to match the way how Windows spool vector graphics, and process images, to get better engraving results. Refer to [Important Concepts](#) and [Drawing Software Use Cases](#) for more details.

Here is an example of preparing a vector design in CoreDRAW.





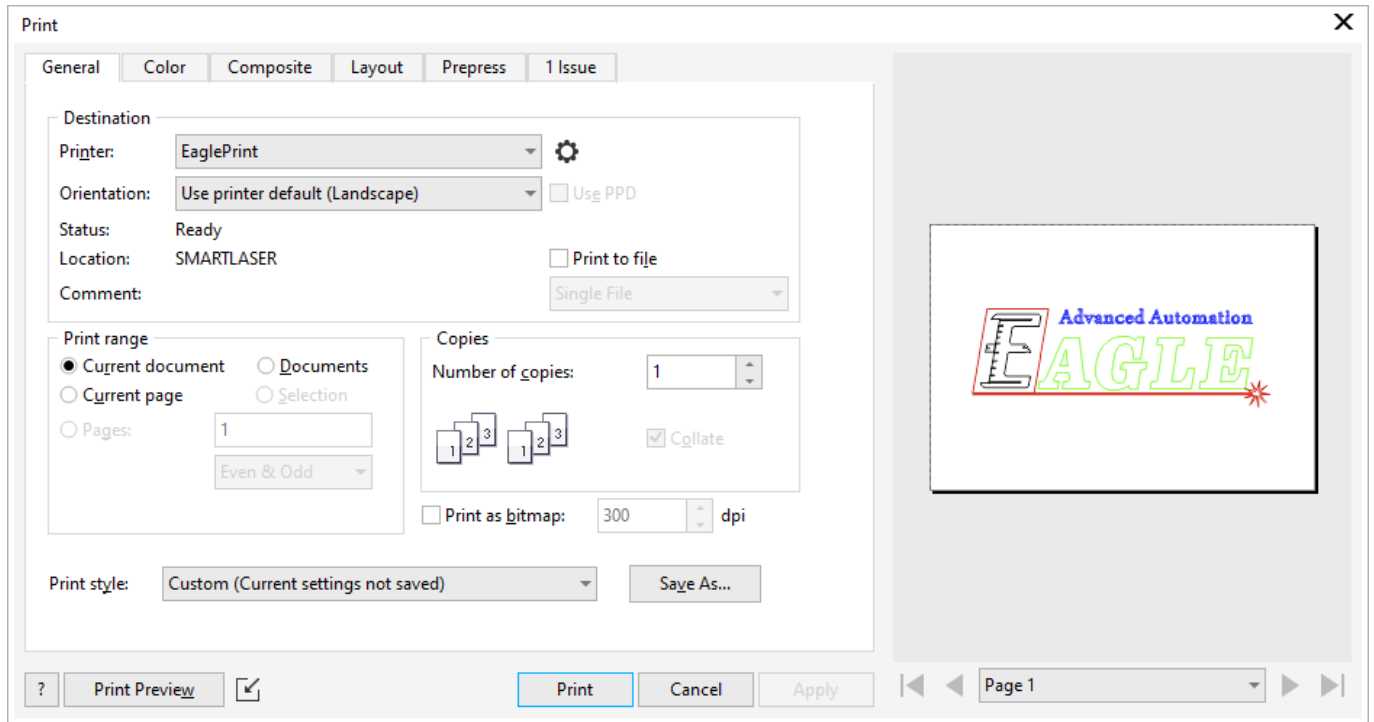
And here is an example of preparing an image in Photoshop.



## Customize the Job Settings and Print

Bring up the print dialog, open the printing preferences there if you want to customize some job settings, e.g. the job origin, cutting or engraving parameters, etc, preview and confirm printing and then print out. Refer to [Set up EaglePrint](#) and [Job Settings](#) for more details.

Here is an example of printing in CorelDRAW.

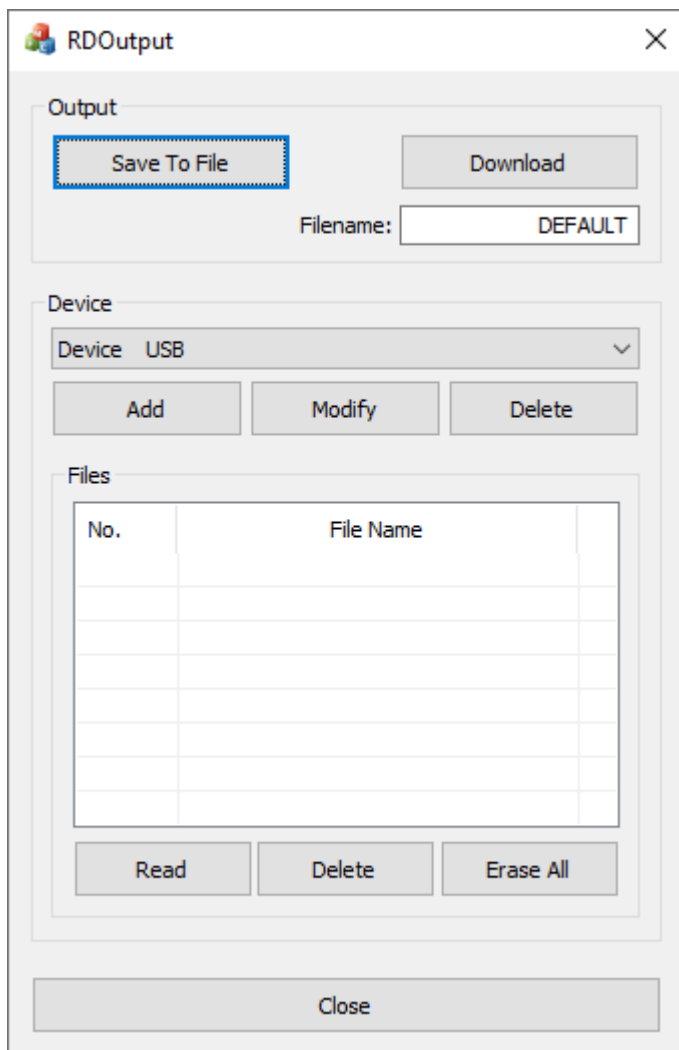


### IMPORTANT

What you see in print preview is what the Windows spooler will get when printing, so we recommend to **ALWAYS** preview and confirm before printing. If there is anything wrong in print preview, e.g. wrong color, missing parts, paper overflow, etc, please go back and review your design and all relative settings in EaglePrint and in the drawing software.

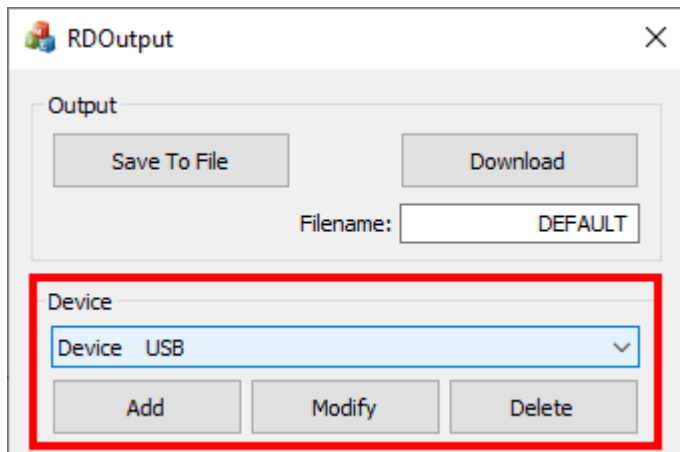
## Laser Processing

There comes the laser window, and you can download the job to your laser for processing. Refer to [Laser Window](#) for more details.



# Set up Laser Connections

Before downloading jobs, you have to set up laser connections in the laser window of EaglePrint.



Laser could be connected to EaglePrint by USB or by network. There could be only one machine connected by USB at a time, and more than one machines connected by network at the same time.

## 1. Connecting by USB

First, you need to install the USB driver which included in the EagleWorks installation package, refer to [Get EagleWorks](#) and [Install EagleWorks](#) for more details.

And we highly recommend to install EagleWorks at the same time, because EaglePrint is an alternative to EagleWorks which provides comprehensive support for laser controllers, and lacks some features that you sometimes need to use, as we mentioned in [EaglePrint vs. EagleWorks](#).

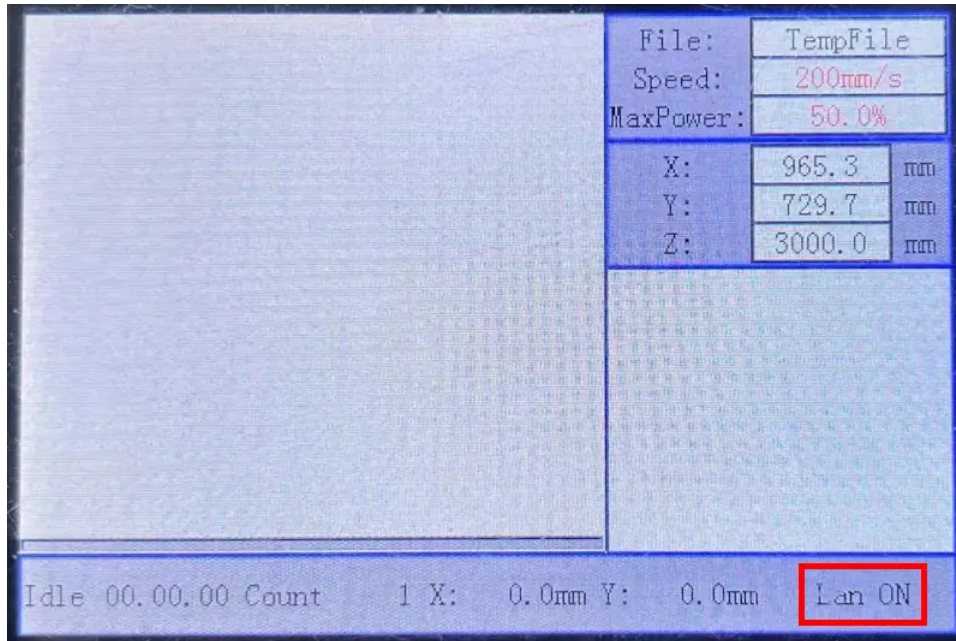
Then connect the laser to the computer using the USB cable that comes with the machine. The connection should be up and running immediately because the software already has a USB device set up by default.

## 2. Connecting by network

There are two ways to connect lasers to the computer by network, depends on the infrastructure and the way you work on your site.

The laser could be connected to the computer directly using the ethernet cable that comes with the machine, just like the connection with the USB cable.

And, the laser could be connected into the sub-network you already have. In this way, you can connect your computer wirelessly or have your workstation in another room, e.g. dedicated for job management or designing.



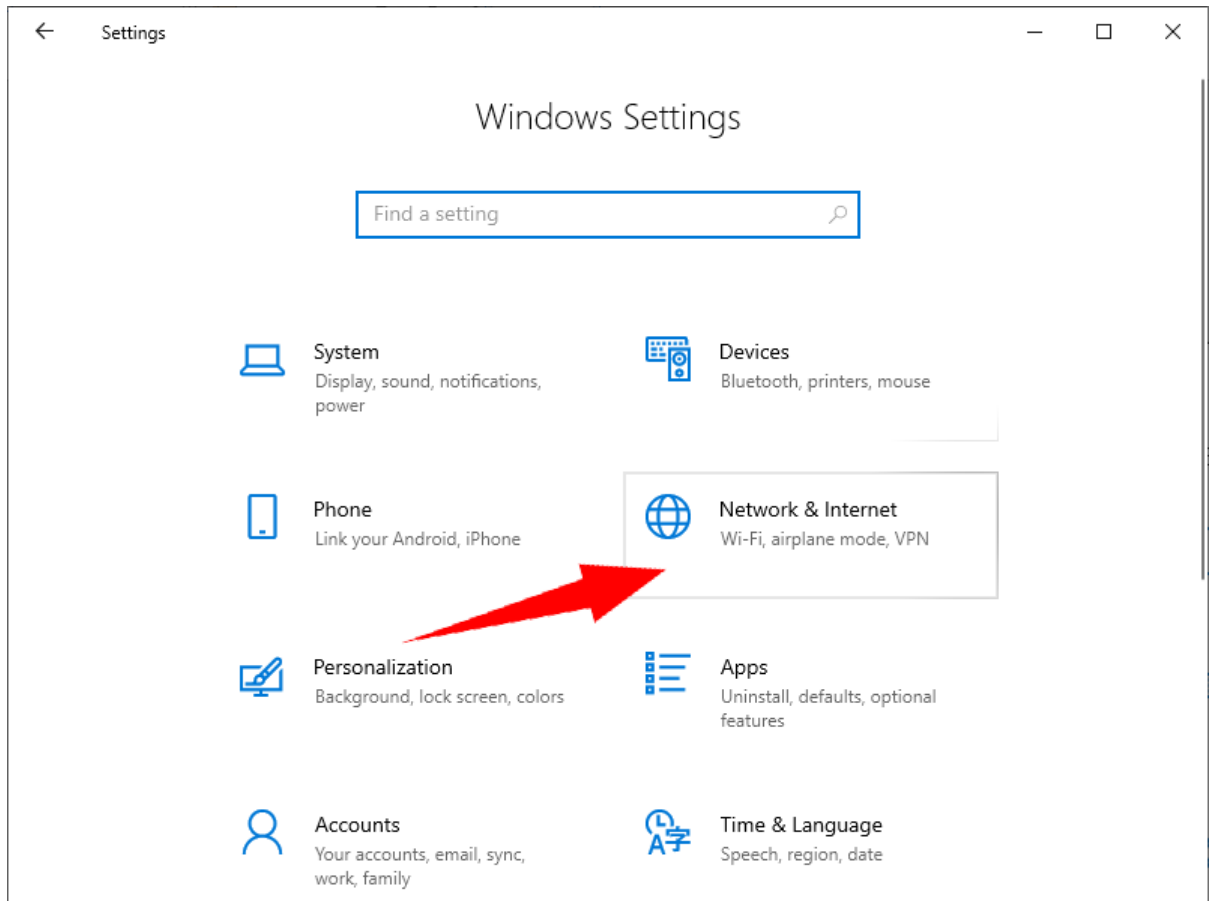
In either way, a network status prompt will appear on the control panel showing **Lan ON**, and you have to set up the network, put both the laser and the computer in the same subnet to let them communicate with each other.

Here are simple setups for example, please refer to your network administrator if there is a complex setup on your site.

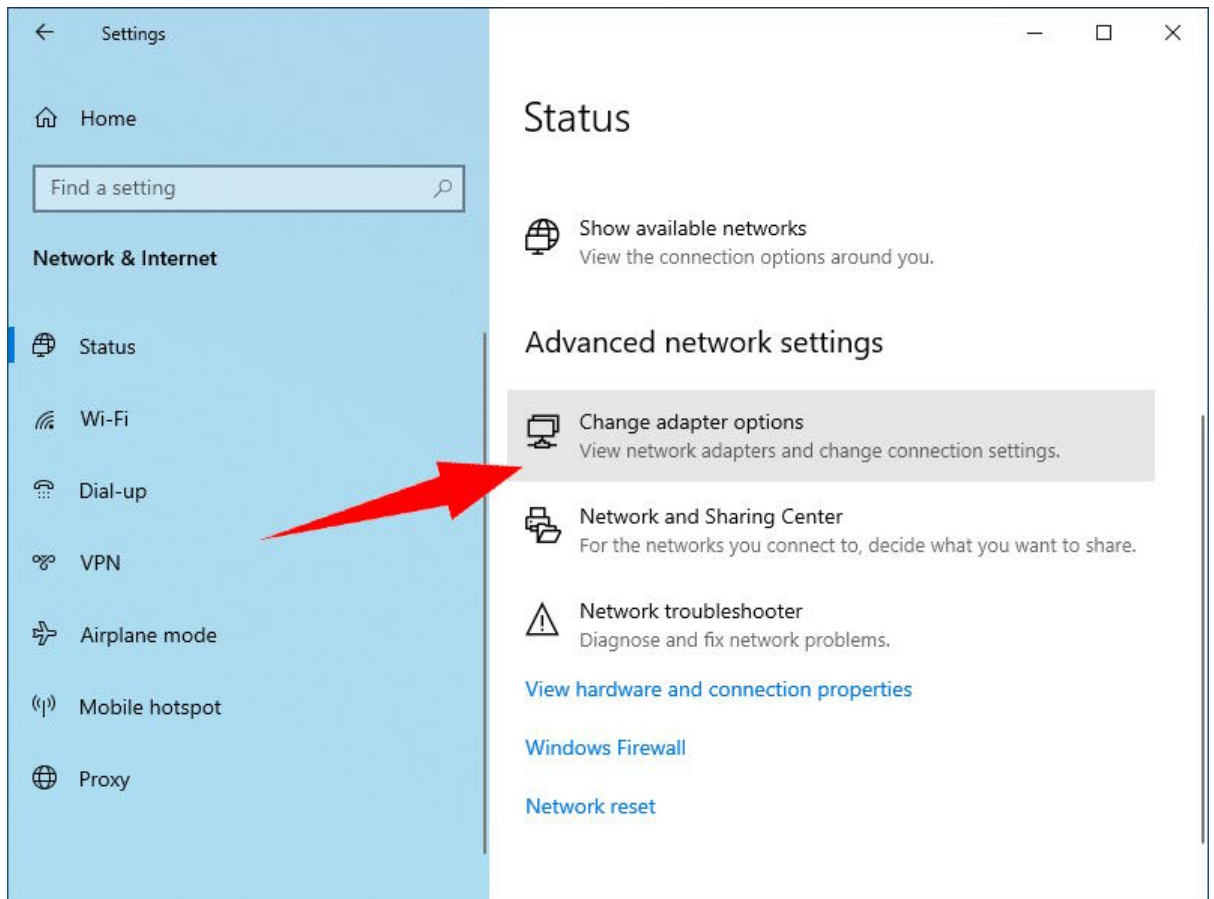
- Set up network for a direct connection

The machine is set up to the IP address *192.168.1.100* by default. You can just set up a static IP address for your computer to put them in the same subnet.

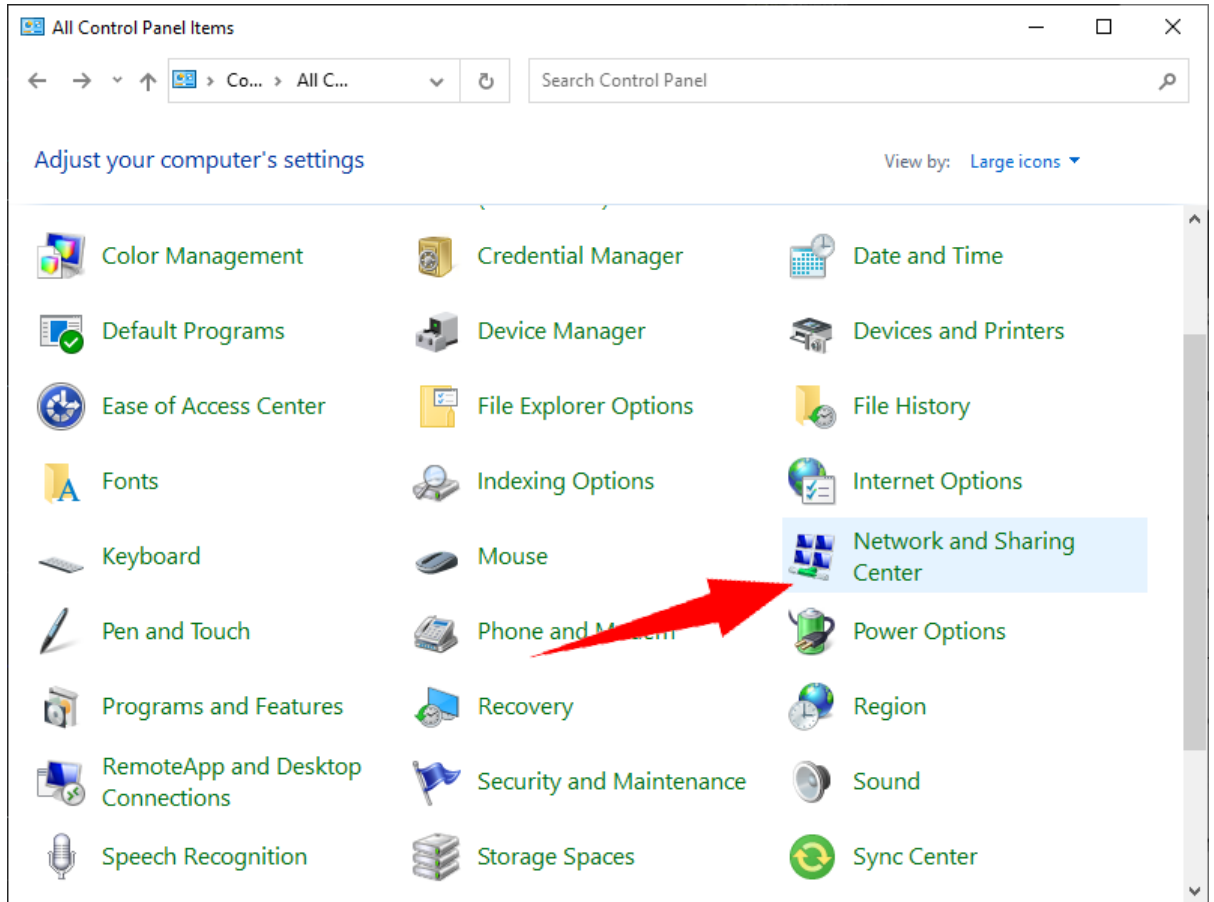
On Windows 10, go to **Settings**, click **Network & Internet**.



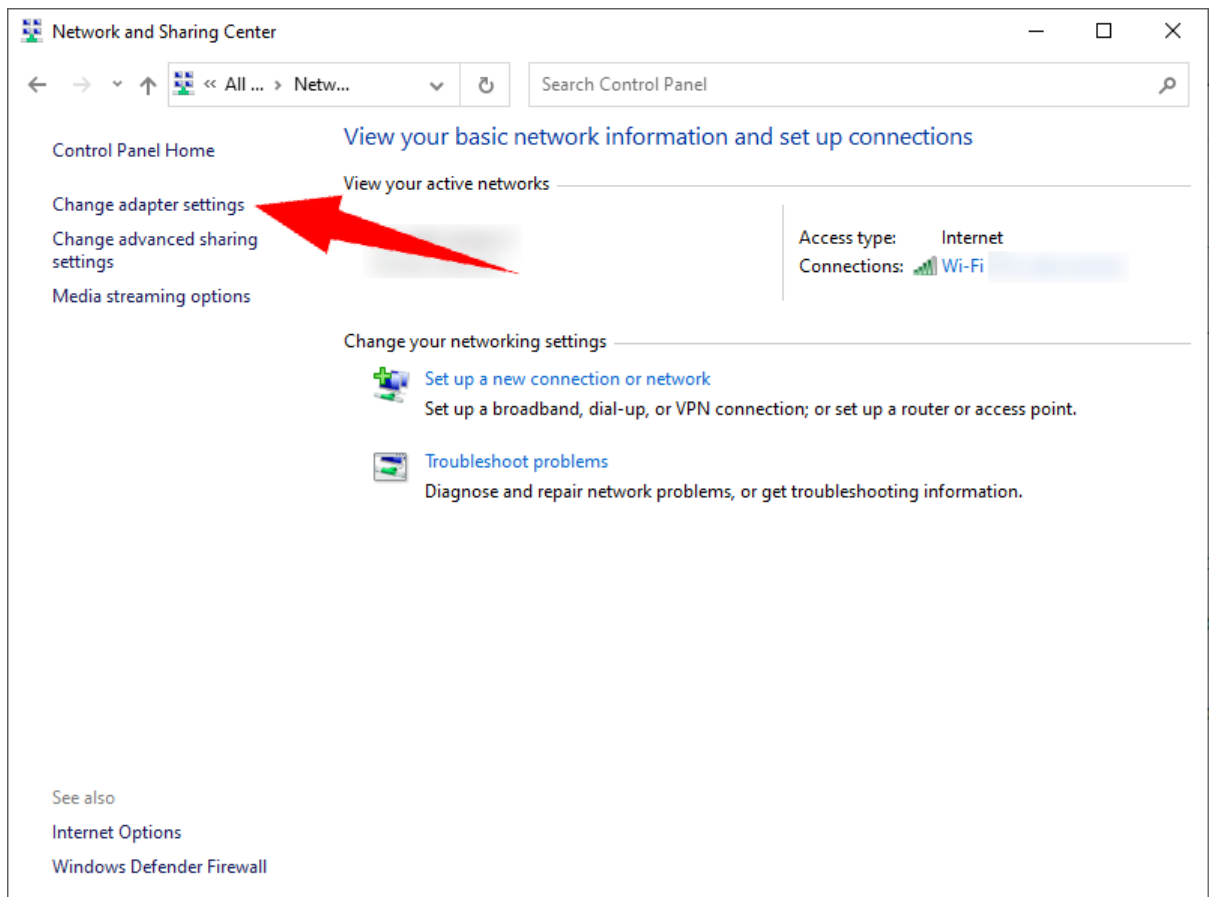
Choose **Status**, click **Change adapter options** to open **Network Connections**.



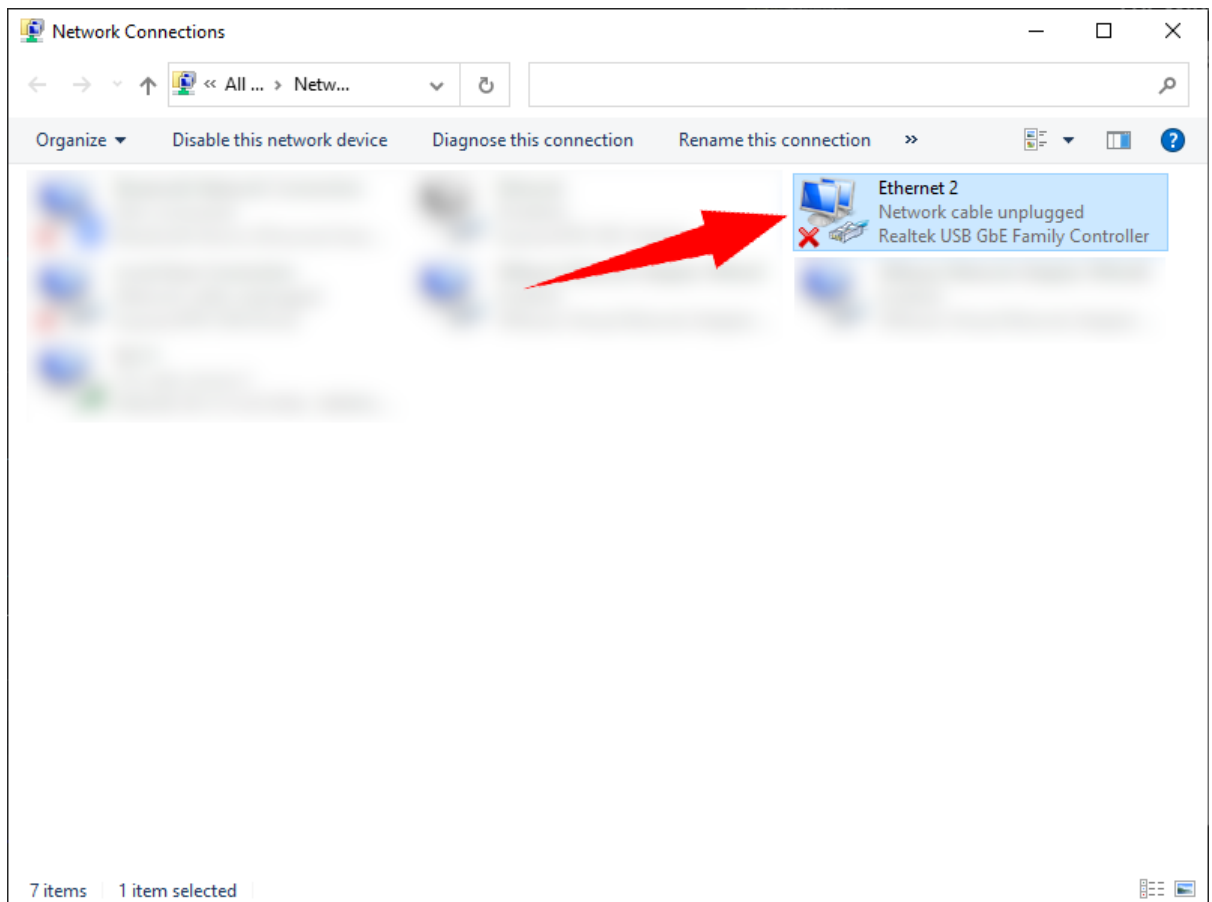
On Windows 7, or if you are more familiar with the old Windows **Control Panel**, go to **Control Panel**, click **Network and Sharing Center**.



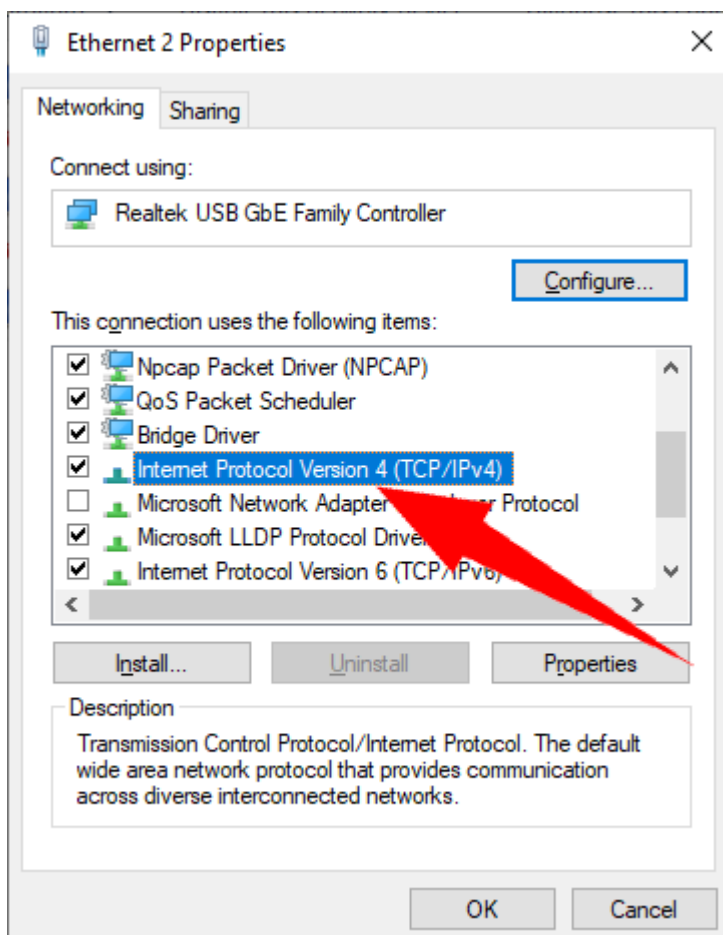
Click **Change adapter settings** to open **Network Connections**.



In **Network Connections**, double click the adapter connecting to the laser.



Scroll to and double click **Internet Protocol Version 4 (TCP/IPv4)** in the pop-up dialog.





Check **Use the following IP address** in the pop-up dialog, set **IP address** to, for example, 192.168.1.99, set **Subnet mask** to 255.255.255.0. Click **OK** to finish.

Internet Protocol Version 4 (TCP/IPv4) Properties

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

Obtain an IP address automatically

Use the following IP address:

IP address: 192 . 168 . 1 . 99

Subnet mask: 255 . 255 . 255 . 0

Default gateway: . . .

Obtain DNS server address automatically

Use the following DNS server addresses:

Preferred DNS server: . . .

Alternate DNS server: . . .

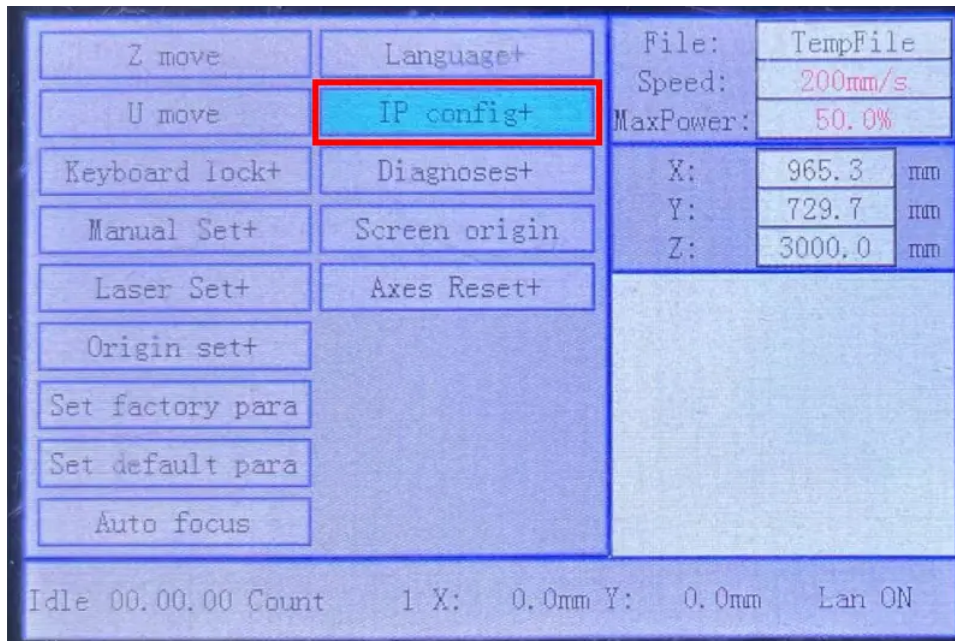
Validate settings upon exit

Advanced...

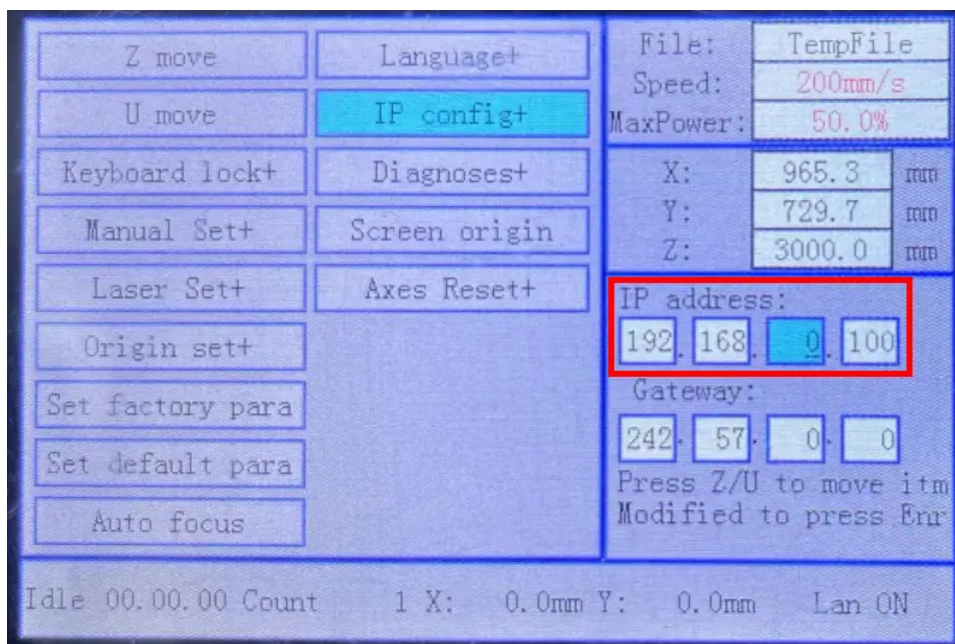
OK Cancel

- Set up network for connecting to an existing sub-network  
First, set up a static IP address for the laser according to the existing subnet.

Press the button **Z/U** on the panel, highlight **IP config+**, and press the button **Enter**.



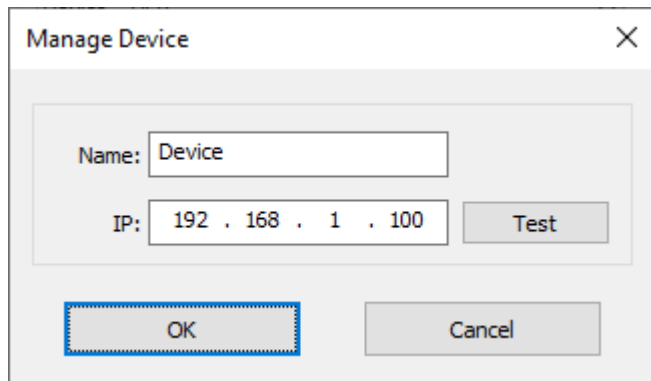
Set up the IP address, and press the button **Enter**.



Then, set up a static IP address for your computer, as described above, or get a dynamic IP address by DHCP, according to your network preference.

After setting up the network, set up a corresponding device in the laser window.

Click **Add** to bring up the dialog for setting up a new network device.



The image shows a 'Manage Device' dialog box. It has a title bar with the text 'Manage Device' and a close button (X). The main area contains two input fields: 'Name' with the text 'Device' and 'IP' with the text '192 . 168 . 1 . 100'. To the right of the IP field is a 'Test' button. At the bottom are 'OK' and 'Cancel' buttons. The 'OK' button is highlighted with a blue dashed border.

Set a name for the laser, fill in the IP address of the machine. We recommend to click **Test** to do a connection test. Click **OK** if you get a successful message, then the laser will be selected as the current one automatically and you will be good to go with it.

You can connect more than one lasers to EaglePrint by network at the same time, just remember to assign different IP addresses for them.

If there are more than one lasers connected, make sure to select the right one in the device list before starting jobs, because the software needs to identify the model of the laser and then generate the proper data.

Sometimes, you just cannot connect the laser, e.g. you have a workstation in a room which is far from the laser and without a network setup. In this case, you can send jobs to the laser with a USB flash: make your design, save the job to a USB flash, and read it from the laser. Refer to [Laser Window](#) and the laser's manual for more details.

## Connect the License Key

You need to connect the license key, comes with your laser or the software, to get allowed to download a job to the laser or save a job to a USB flash, refer to [Get EaglePrint](#) for more details.

Plug the license key into a USB port of your computer, and Windows will set it up and install the device driver automatically.



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# Technology in EaglePrint

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In this chapter, you will get to know some most important concepts and get familiar with the detailed job settings in EaglePrint.

- [Important Concepts](#)
- [Job Settings](#)
- [Machine Settings](#)

# Important Concepts

So far, you are familiar with the basics of EaglePrint, but you may still have questions about how the software maps your designs to cutting and engraving. We will show you some most important concepts in this section, to answer your questions and help you use EaglePrint properly.

## 1. Laser processing modes

First of all, you need to get familiar with the laser processing modes, which mean what a laser can do on laserable materials. EaglePrint supports laser cutting and engraving, here is a definition of laser cutting on Wikipedia.

Laser cutting is a technology that uses a laser to cut materials. Laser cutting works by directing the output of a high-power laser most commonly through optics. A typical commercial laser for cutting materials would involve a motion control system to follow a CNC or Gcode of the pattern to be cut onto the material. The focused laser beam is directed at the material, which then either melts, burns, vaporizes away, or is blown away by a jet of gas, leaving an edge with a high-quality surface finish.



And here is a definition of laser engraving on Wikipedia.

Laser engraving, which is a subset of laser marking, is the practice of using lasers to engrave an object. The technique does not involve the use of inks, nor does it involve tool bits which contact the engraving surface and wear out, giving it an advantage over alternative engraving or marking technologies where inks or bit heads have to be replaced regularly.

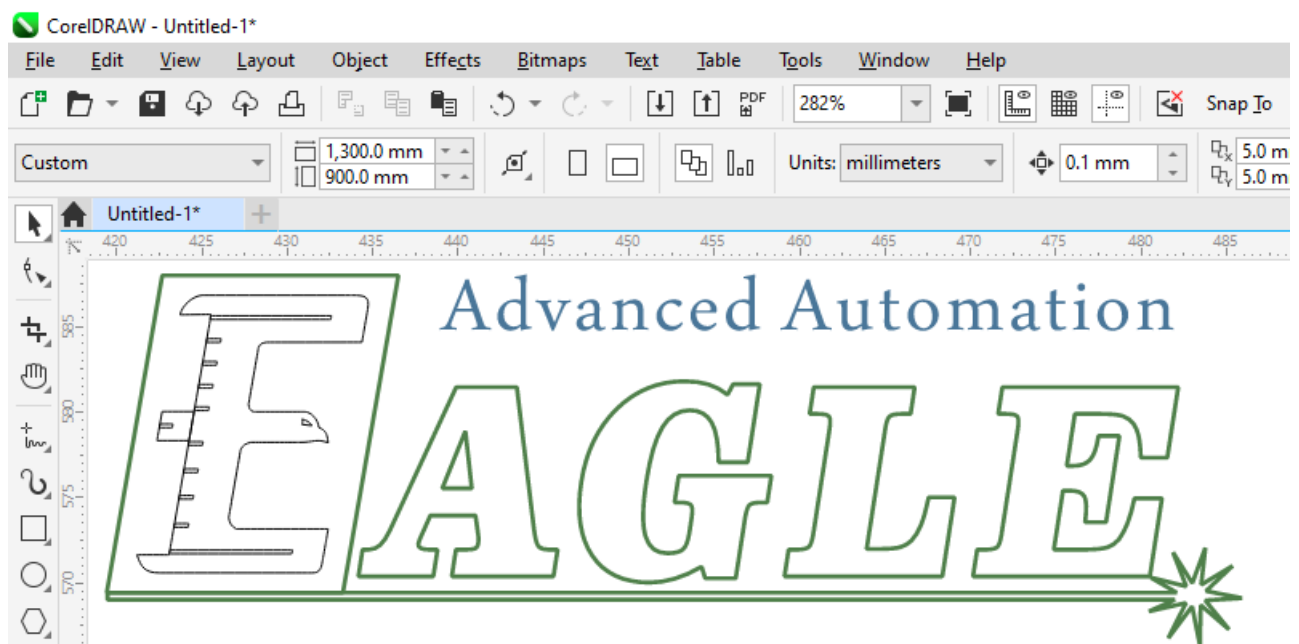


## 2. Vector graphics

EaglePrint supports cutting on thin outlines and engraving on thick outlines and fills of vector graphics. Here is a definition of vector graphics on Wikipedia.

Vector graphics is the use of polygons to represent images in computer graphics. Vector graphics are based on vectors, which lead through locations called control points or nodes. Each of these points has a definite position on the x- and y-axes of the work plane and determines the direction of the path; further, each path may be assigned various attributes, including such values as stroke color, shape, curve, thickness, and fill.

The example below is an artwork of our logo in CorelDRAW, there are three parts, the shape eagle is drawn in black thin lines for cutting, the outbound of the shape eagle, the letters *A, G, L* and *E*, and the bottom shape are drawn in green thick lines for engraving, and the texts *Advanced Automation* are filled in blue for engraving.



### IMPORTANT

Windows will spool an outline as vector path if it is thin enough which depends and is variant in different drawing software, e.g. hairline in CorelDRAW, less than around 0.01mm in Adobe Illustrator, 0.00mm in AutoCAD, etc. You have to figure out the line width threshold in a specific software, drawing a rectangle, set the line width thinner and thinner until you get cutting instead of engraving.

### NOTE

There are some drawing software, such as Adobe Photoshop, which do NOT support vector graphics at all. It is NOT possible to use this kind of software for cutting.



### 3. Images

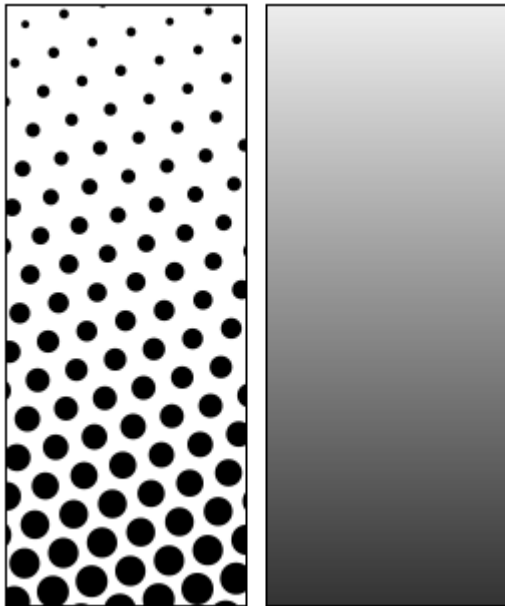
EaglePrint supports only engraving on images. Here is a definition of images on Wikipedia.

In computer graphics, a raster graphics or bitmap image is a dot matrix data structure, representing a generally rectangular grid of pixels, or points of color, viewable via a monitor, paper, or other display medium. Raster images are stored in image files with varying formats.

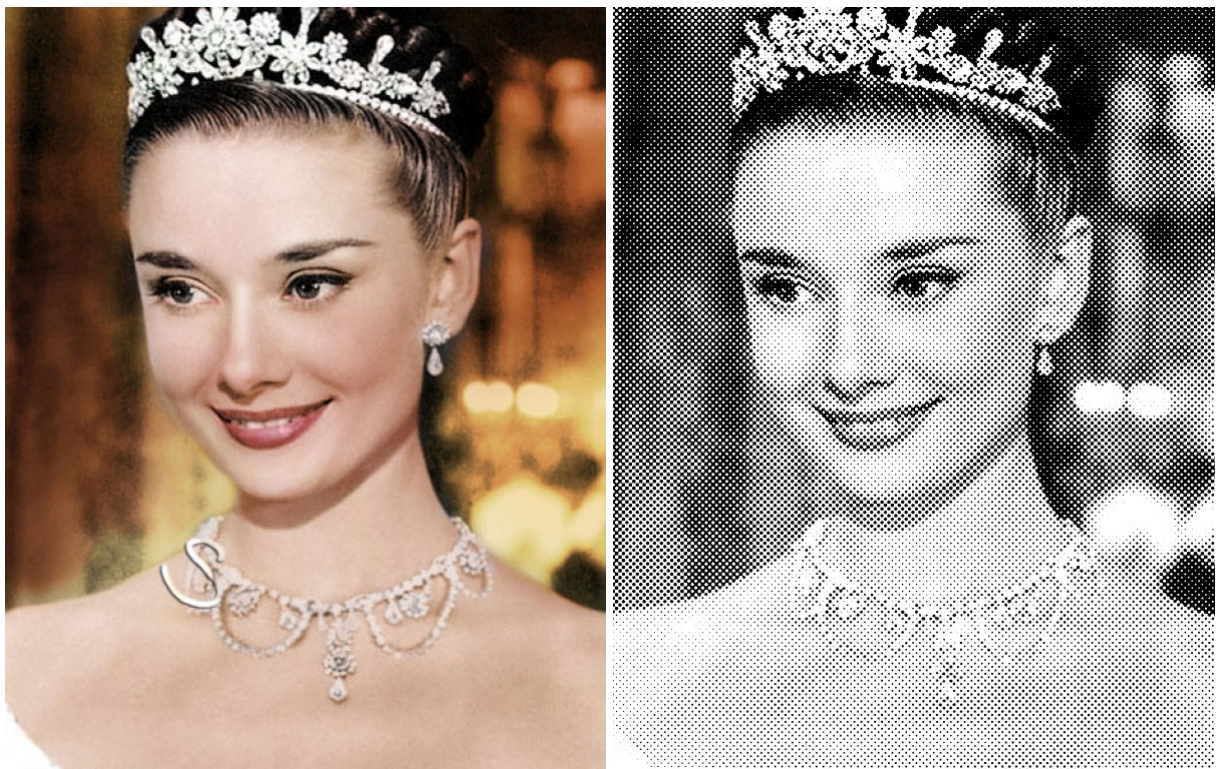
The example below is a photo of Audrey Hepburn in Adobe Photoshop.



Engraving with laser is much different with printing with ink, there is no color applied on materials, laser expresses colors by etching material in different depths or densities. To map colors of an image to different depths, we convert colors to gray scales, and then map gray scales to laser power levels. But in practice, it is usually very difficult to control laser power precisely at a high rate of change, especially for some kinds of laser, such as the CO<sub>2</sub> glass laser which is widely used in laser machines. The better choice is to map colors to different densities. A technique called halftone is often used to simulate gray scales by the use of black dots, varying either in size or in spacing, in a result of a gradient like effect. In the pictures below, the left one shows halftone dots, the right one shows what human eyes would see from a distance far enough.

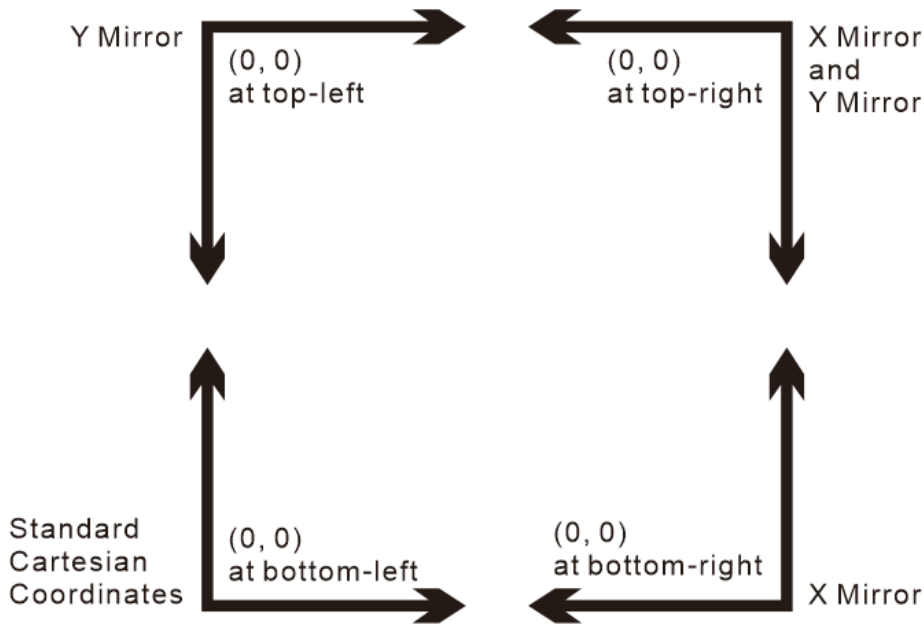


The example below shows the original and the halftoned photos of Audrey Hepburn.



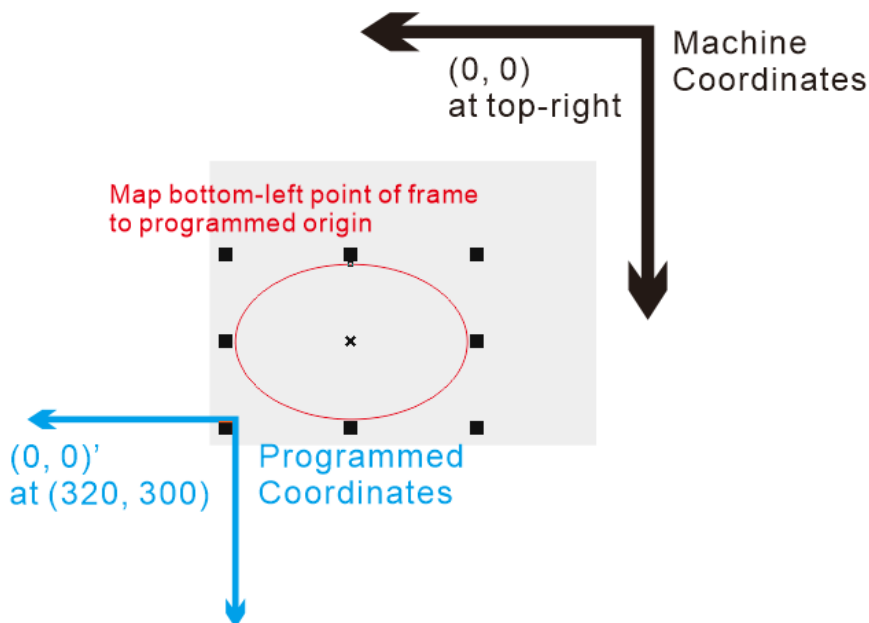
#### 4. Coordinates and job origin

Every laser has a coordinate system set up on its work area, you must set up an exact same coordinate system, called machine coordinates or absolute coordinates, in EaglePrint to map the laser. Refer [here](#) for how to set up the home position.



Laser controllers support standard Cartesian coordinates and its variants, laser manufactures use one of them according to their machine.

In practice, people are often used to set a position in the work area from the laser, called programmed origin, where you want your job to be aligned. And there comes the job origin in EaglePrint, which tells the machine how to position the job relative to the programmed origin. Refer [here](#) for how to enable programmed coordinates and set up the job origin.

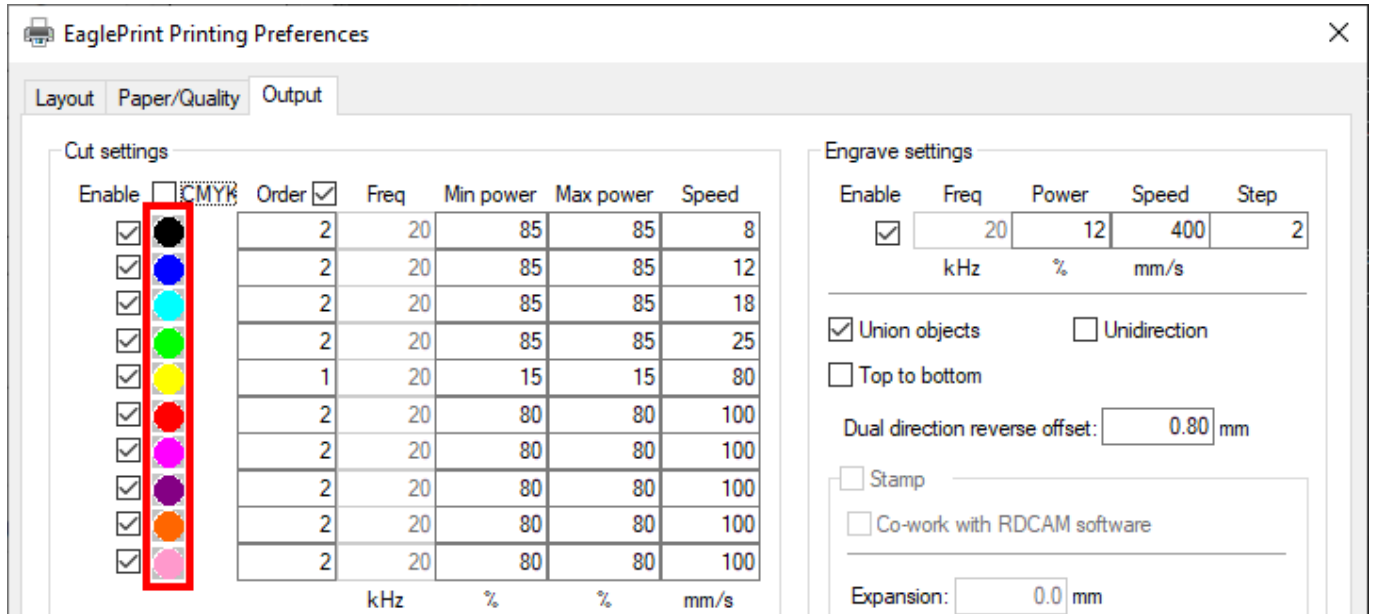






# Job Settings

A set of appropriate job settings is one of the most important technology for getting good laser results.

## Colors in Cutting

In **Color** mode, refer [here](#) for more details, there are ten pre-defined colors available for cutting in EaglePrint. A set of cutting parameters, associated with a color, will be applied automatically to the thin outlines which are assigned the color.



In general, cutting and etching on different materials with different thicknesses and surfaces require different sets of parameters. In practice, we recommend to create a one-to-one mapping between the most commonly used operations and the first few colors, e.g. 3mm acrylic cutting to the color , 5mm plywood cutting to the color , surface etching to the color , and temporarily assign other operations to the last few colors when necessary, e.g. 2mm cardboard cutting to the color . When setting parameters, all you need to do is just assigning the outlines the colors.

The colors are available in both RGB and CMYK, in order to support a wider range of drawing software and use cases. Uncheck the option **CMYK** to use the RGB colors.

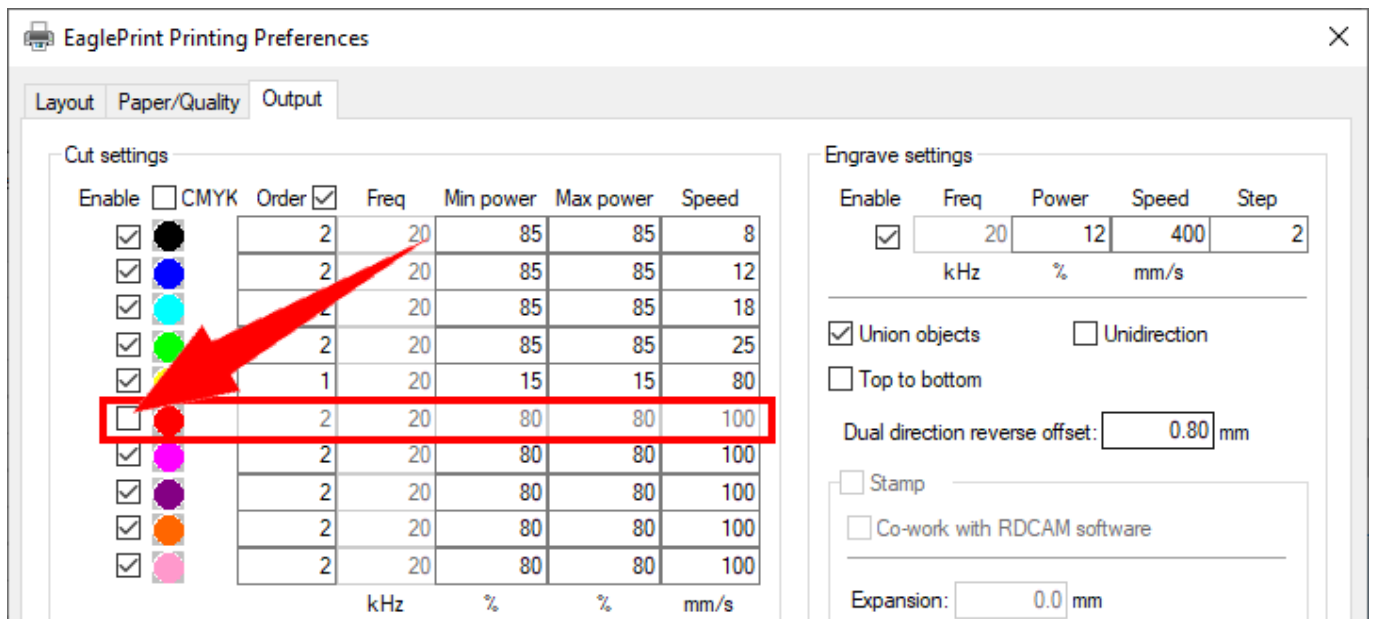
#	Color	Hex	R	G	B
1	 <b>Black</b>	#000000	0	0	0
2	 <b>Blue</b>	#0000FF	0	0	255
3	 <b>Cyan</b>	#00FFFF	0	255	255
4	 <b>Green</b>	#00FF00	0	255	0
5	 <b>Yellow</b>	#FFFF00	255	255	0
6	 <b>Red</b>	#FF0000	255	0	0
7	 <b>Magenta</b>	#FF00FF	255	0	255
8	 <b>Purple</b>	#9900CC	153	0	204
9	 <b>Orange</b>	#FF6600	255	102	0
10	 <b>Pink</b>	#FF99CC	255	153	204

Check the option **CMYK** to use the CMYK colors.

#	Color	C	M	Y	K
1	 <b>Black</b>	0	0	0	100
2	 <b>Blue</b>	100	100	0	0
3	 <b>Cyan</b>	100	0	0	0
4	 <b>Green</b>	100	0	100	0
5	 <b>Yellow</b>	0	0	100	0
6	 <b>Red</b>	0	100	100	0
7	 <b>Magenta</b>	0	100	0	0
8	 <b>Purple</b>	20	80	0	20
9	 <b>Orange</b>	0	60	100	0
10	 <b>Pink</b>	0	40	20	0

To assign an outline a color in CorelDRAW, for example, select the RGB or the CMYK color mode when creating a new document, make your design, select the outline and then click the color on the palette or set the color value by yourself. Refer to [Use EaglePrint with CorelDRAW](#) for more details.

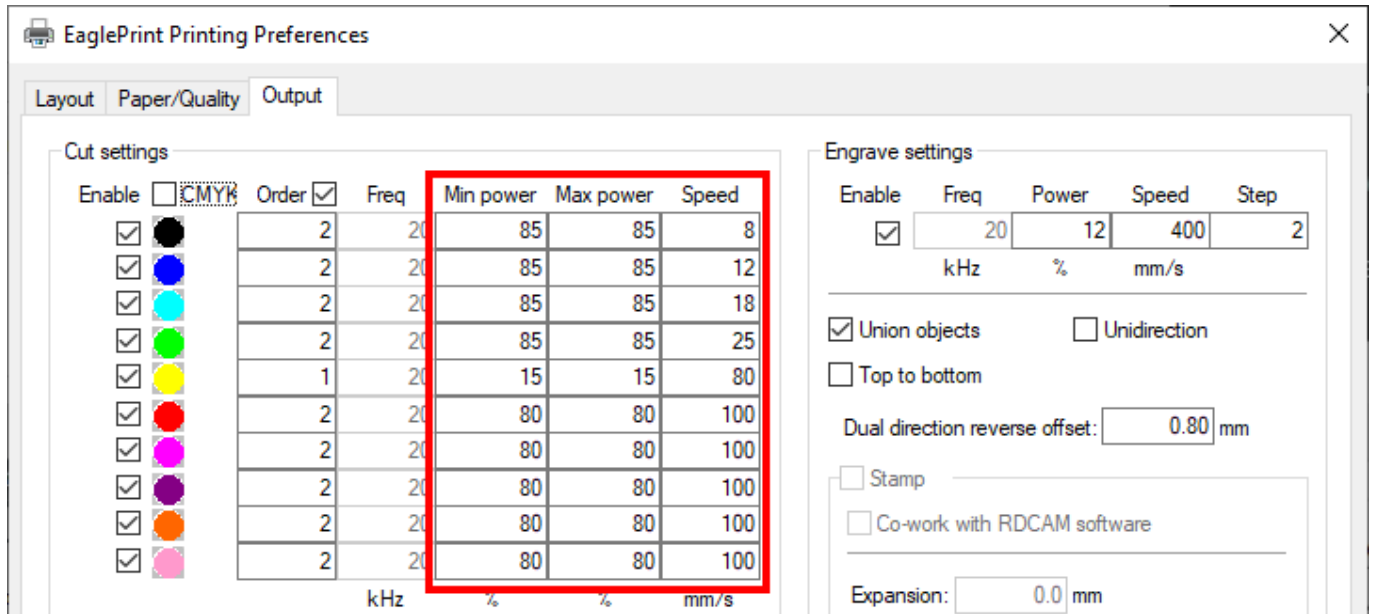
Sometimes, if you want to process just a part of your design, uncheck the option **Enable** of the colors of the shapes which you want to ignore.



You can also print only the selection to do the same thing if the drawing software support that, refer to [Drawing Software Use Cases](#) for more details.

And, by enabling the option **Order** and assigning each color a sequence number, you can sort the shapes of different colors during cutting, refer to [Processing Sequence](#) for more details.

## Cutting Parameters



Here is a list of parameters for cutting.

Parameter	Description
<b>Min Power</b>	The minimum power for cutting.
<b>Max Power</b>	The maximum power for cutting.
<b>Speed</b>	The speed for cutting.

Sometimes, especially when cutting thin sheets in a high speed, the material will catch a lot more heat at the start, end and sharp corners because of the low feeding speed at these positions and results in over burnt edges. In these cases, you should set a low minimum power, e.g. just above the firing threshold, and the software will generate a linear power curve, then the machine will adjust the power level based on the real-time feeding speed.

## Colors in Engraving

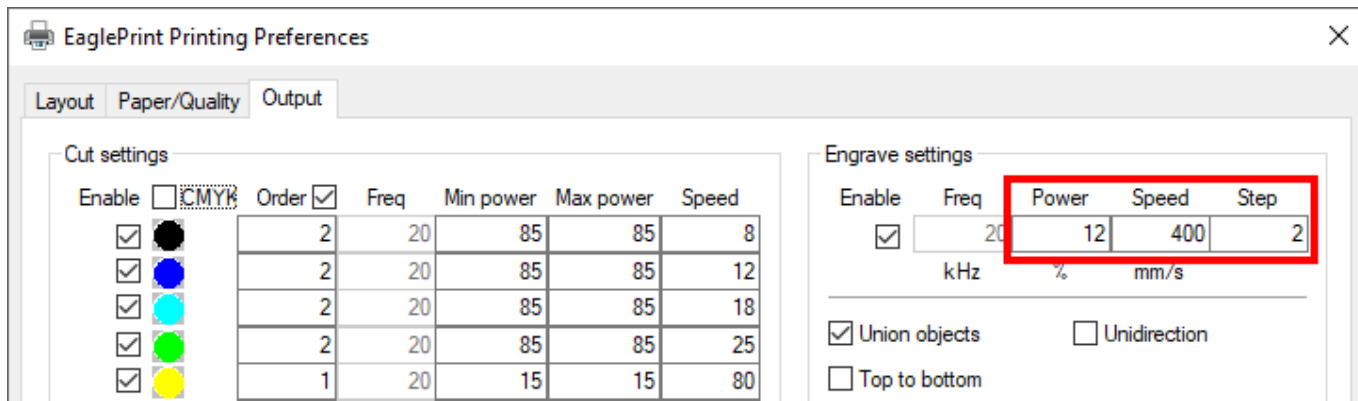
In **Color** mode, Windows will spool thick outlines and fills all in black, and convert images into black and white in a simple but ugly way.



For getting better engraving results on images, we recommend to use Adobe Photoshop or some other professional image processing software to do halftone by yourself, refer to [Use EaglePrint with Photoshop](#) for more details.



## Engraving Parameters



Here is a list of parameters for engraving.

Parameter	Description
<b>Power</b>	The power for engraving.
<b>Speed</b>	The speed for engraving.
<b>Step</b>	The space between scanlines.

And here is a map between the step values and the corresponding engraving DPI.

Step	DPI
1	1000
2	500
3	333
4	250
5	200
8	125
10	100

Sometimes, if you want to ignore the engraving part of your design, just uncheck the option **Enable**.

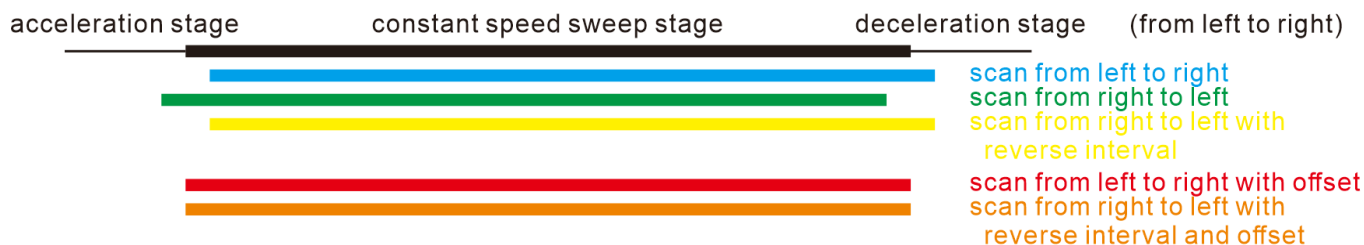
If the option **Union objects** is checked, all the separated parts will be treated as a whole when engraving, reduce the overall processing time, especially when there are lots of small parts close to each other. You should uncheck this option if there are just few parts far from each other, avoiding very short laser firing time on long scanlines.

The option **Unidirection** is for single-direction engraving, refer to [Engraving Correction](#) for more details.

By default, EaglePrint will engrave a part from the bottom up to prevent the engraving surface from being contaminated by the exhaust airflow carrying smoke and dust. Check the option **Top to Bottom** if you want to engrave from the top down.

## Engraving Correction

Laser engraving involves high speed moving of the laser head. In this progress, laser should be triggered simultaneously with the position control. But unfortunately, there must be some timing difference between these two execution subsystems. In a result, each scanline will shift a little with its ideal position, which will be even worse in a dual-direction engraving, and you will see jagged edges, shown as below.



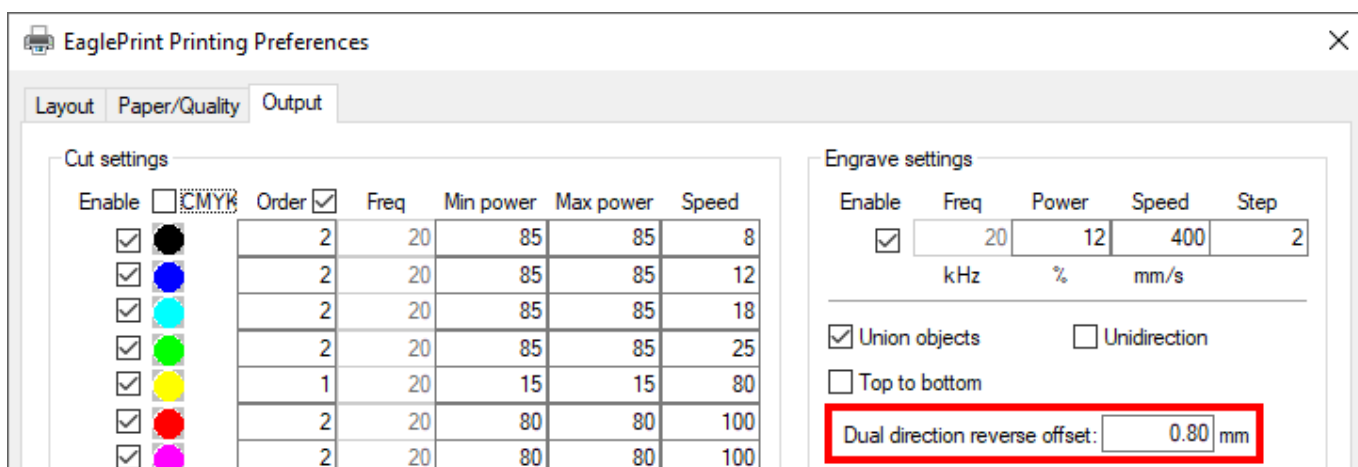
In this figure, the black line represents the ideal position of a scanline, the blue line is the real position of a scanline from left to right, and the green line is the real position of a scanline from right to left. In this example, laser is triggered a little late than the position control of the laser head.

The simple way to solve this issue is to use single-direction engraving by checking **Unidirection** in the engraving parameters, refer [Engraving Parameters](#) for more details. Every scanline will shift the exact same and align with each other. But in this way, it will take much longer to finish the job compare to dual-direction engraving, because the laser head travels back instead of engraving back.

EaglePrint has a setting to correct offsets in dual-direction engraving to balance quality and efficiency. To use this function, you need to measure the response of your machine at a specific speed.

1. Draw a rectangle in 80mm x 10mm, set it to engraving at the speed of, for example, 400mm/s, and set **Step** to 20.
2. Laser the rectangle on a cardboard.
3. Measure the distance between the ends of the scanlines.

In the engraving parameters, set the reverse compensation value to the option **Dual direction reverse offset**. You may need to do this multiple times, making minor adjustments to get a clean result.



### NOTE

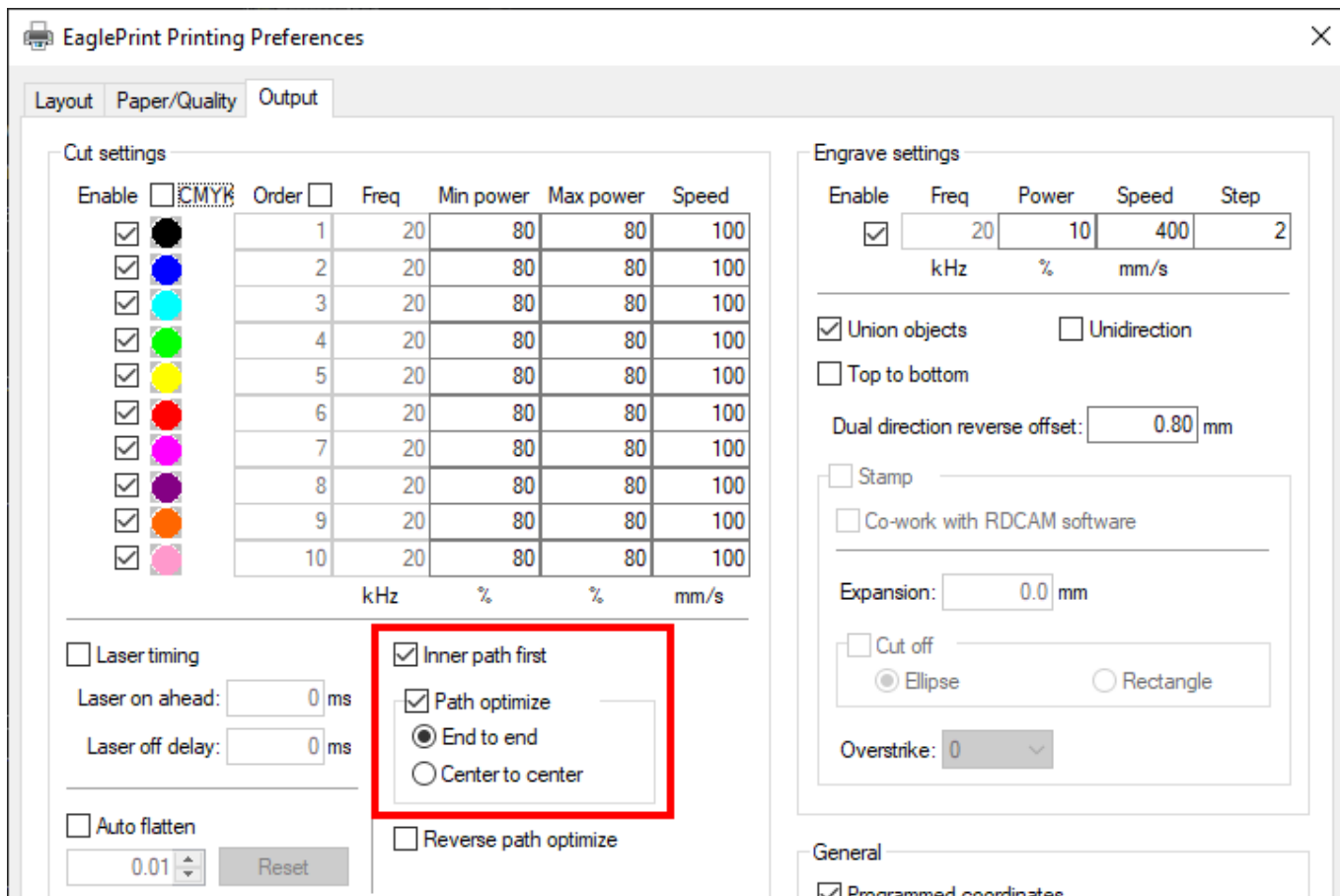
The reverse compensation value could be minus, depend on your laser.

## Processing Sequence

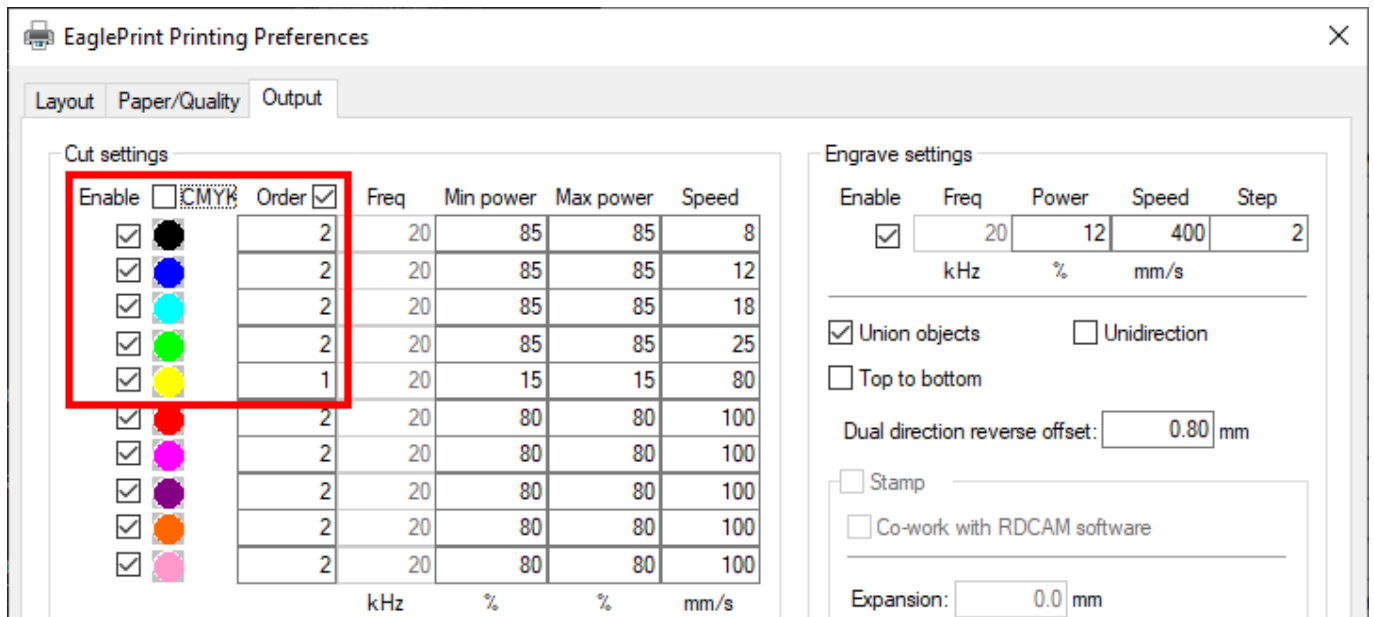
When printing, Windows will split the paper horizontally into narrow strips, and spool all the shapes and images in each strip from top down. You can let EaglePrint process the job in that order, or in an optimized one which fits your needs better, e.g. engraving before cutting, inner before outer, less traveling, outlines of a color before outlines of another, etc.

First, engraving is always before cutting if it is enabled.

And, for cutting, check **Inner path first** to process inner outlines before outer ones, check **Path optimize** to shorten traveling path.



Set the sequence number of a color smaller than the number of another to process the outlines of the color before the ones of the other. The sequence numbers of more than one color can be same, means that the processing order of the outlines of those colors will not change.



In the example above, the color black, blue, cyan and green are for cutting, the color yellow is for etching, and the user just cares about doing etching before cutting.

# Machine Settings

There is a set of machine settings for cutting and engraving, which affects all jobs, saved in the laser controller. You can set them up through EagleWorks, refer to [Machine Settings for Cutting](#) and [Machine Settings for Engraving](#) in the EagleWorks user's manual for more details.

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# Laser Processing

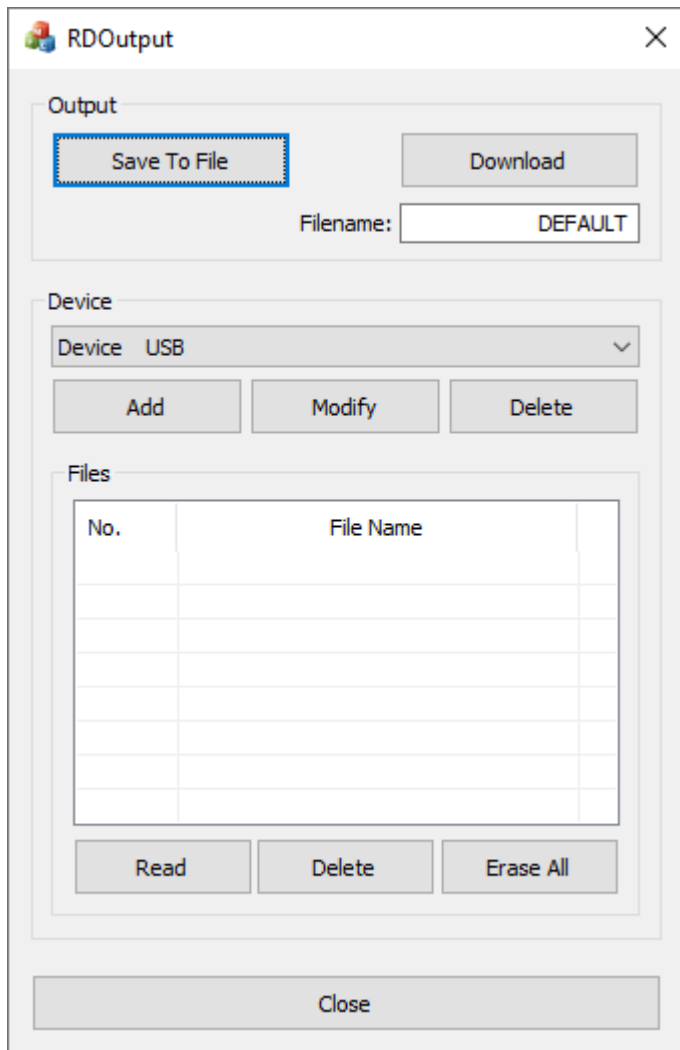
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In this chapter, you will get familiar with the laser window, and learn how to manage offline jobs in EaglePrint.

- [Laser Window](#)
- [Managing Offline Jobs in EaglePrint](#)
- [Auxiliary Machine Settings](#)

# Laser Window

Now you can print for laser processing. The job sending functions are grouped in the laser window.



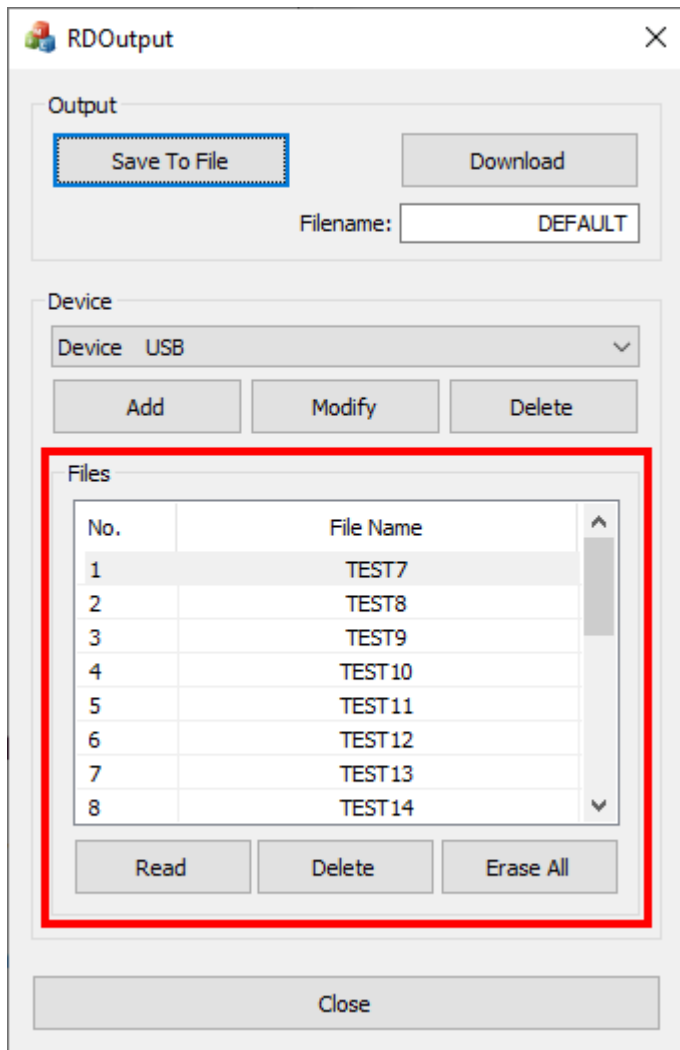
Before sending jobs, select a laser in the device list, refer to [Set up Laser Connections](#) for more details.

If the laser is connected, set a filename, and click **Download** to send the job to the laser, then control the processing from the machine panel.

Otherwise, click **Save to File** to save the job into a file, and you can send it to the laser by a USB flash, then read it and control the processing from the machine panel.

# Managing Offline Jobs in EaglePrint

If the laser is connected, you can manage offline jobs in EaglePrint.



EaglePrint will read jobs from the laser automatically by default, or you can click **Read** to update the file list by yourself. Click **Delete** to delete the current selected job, click **Erase All** to delete all jobs.



## Auxiliary Machine Settings

There are some auxiliary machine settings you can set up through EagleWorks for the laser, refer to [Auxiliary Machine Settings](#) for more details.

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# Drawing Software Use Cases

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In this chapter, we will guide you in details to use EaglePrint with CorelDRAW, Adobe Illustrator, AutoCAD and Adobe Photoshop.

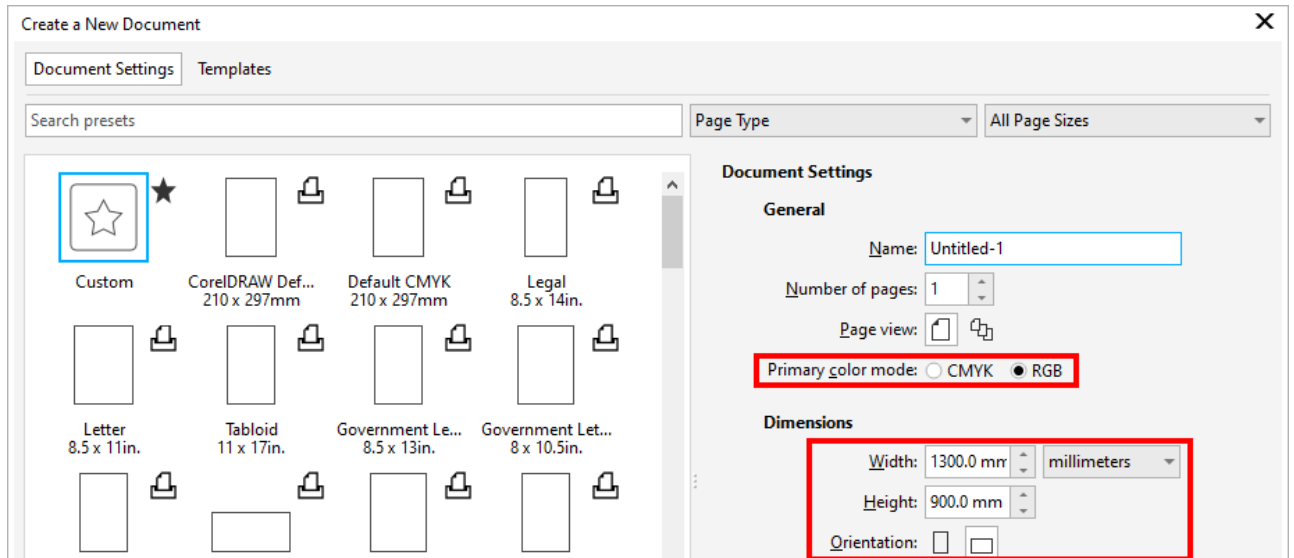
- [Use EaglePrint with CorelDRAW](#)
- [Use EaglePrint with Illustrator](#)
- [Use EaglePrint with AutoCAD](#)
- [Use EaglePrint with Photoshop](#)

# Use EaglePrint with CoreIDRAW

We will guide you in details to use EaglePrint with CoreIDRAW in this section.

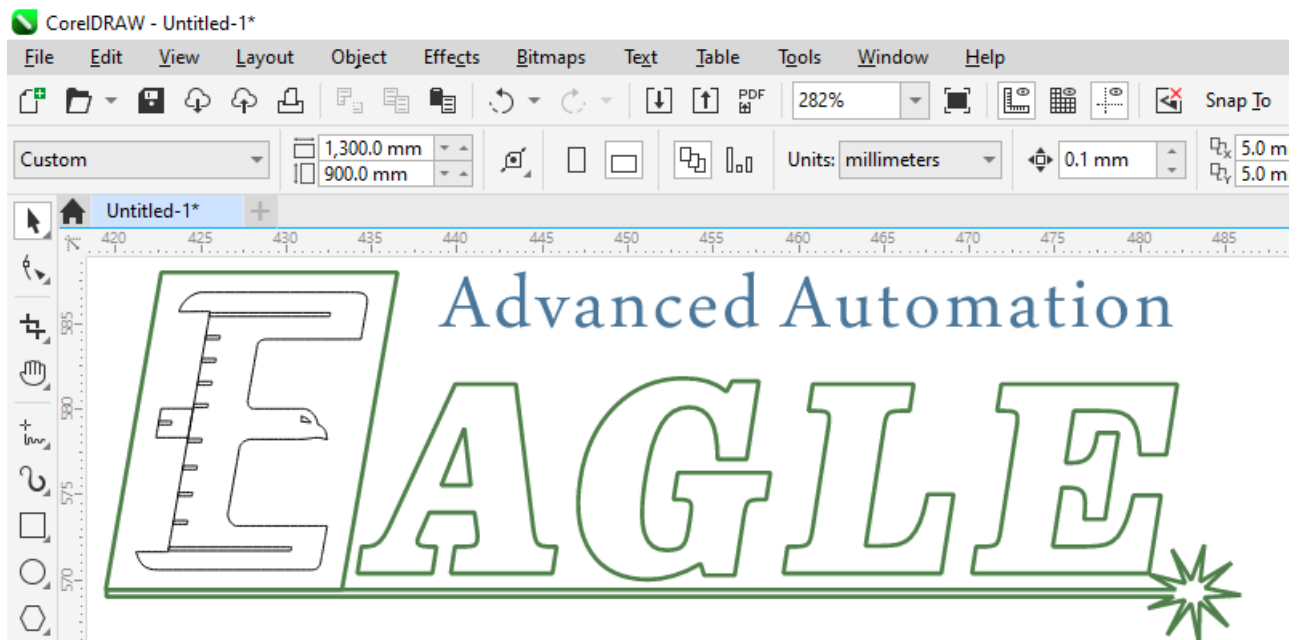
## 1. Create a new document

Choose the color mode to match the colors for cutting in EaglePrint, refer [here](#) for more details. And set the paper size and orientation according to your laser, refer [here](#) for more details.



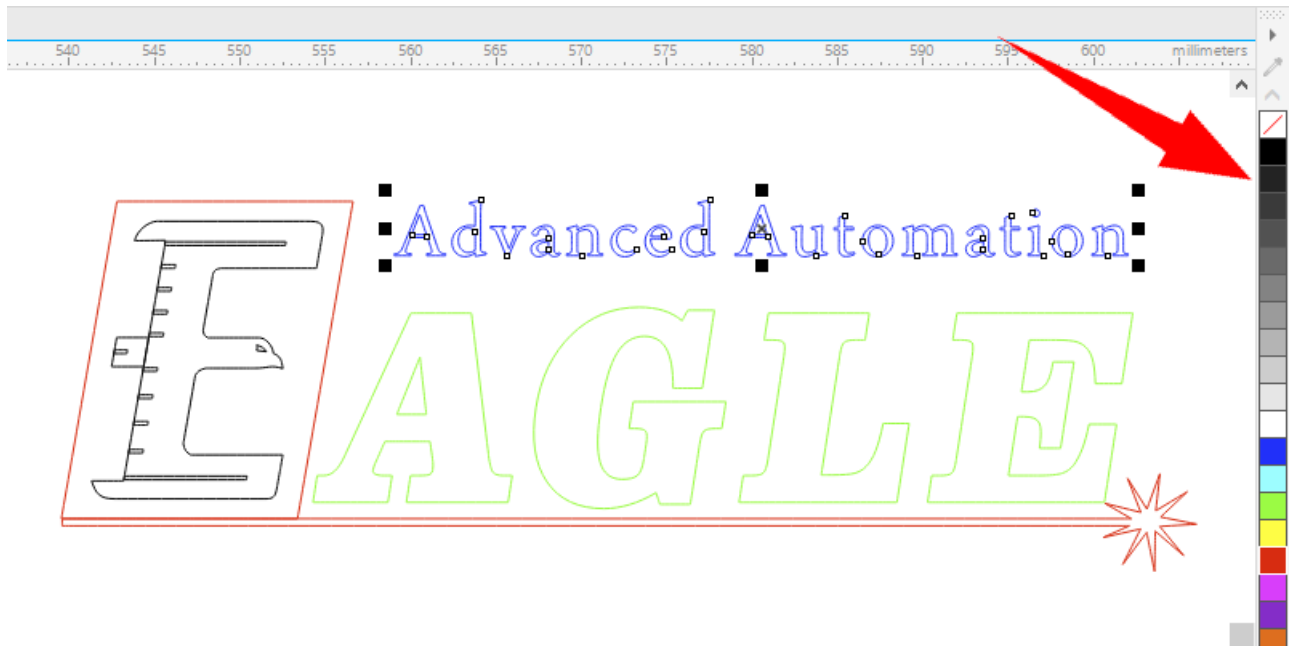
## 2. Create your design

Create your design. EaglePrint will cut thin outlines, which are set as hairline, and engrave thick outlines and fills, help you get an exact same result as the design. Refer to [Vector graphics](#) for more details.

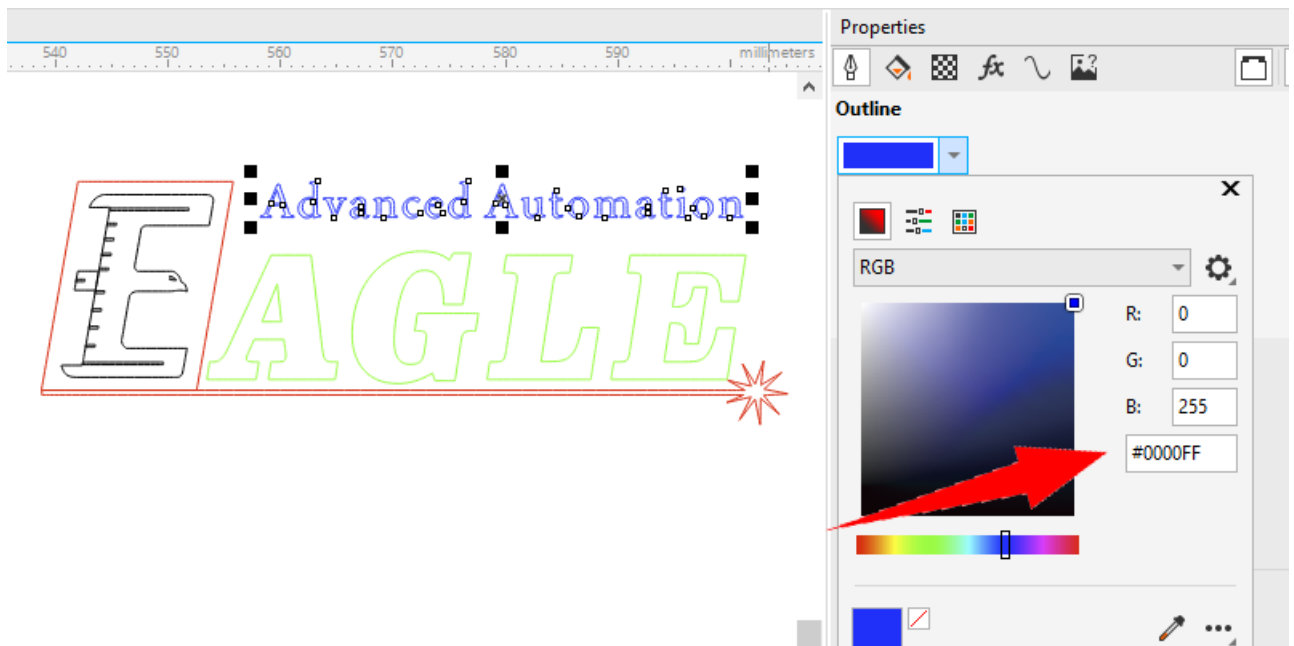


If you want to set different cutting parameters on outlines, assign them with different colors, matching the corresponding ones in EaglePrint, refer to [Colors in Cutting](#) for more details.

Here is an example of assigning color with the palette.




And here is an example of setting the color value directly.

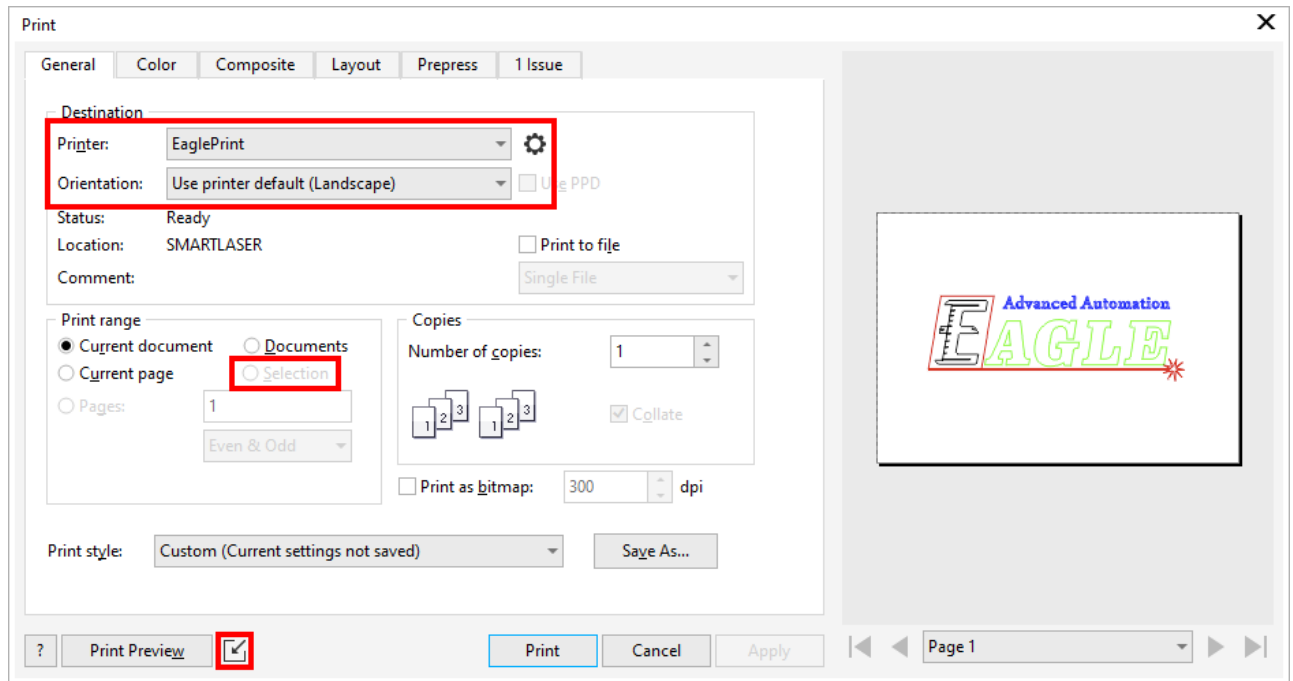



In color mode, all thick outlines and fills will be spooled in black and results in same engraving effects, refer to [Colors in Engraving](#) for more details.

CorelDRAW does not support image engraving well, we suggest to do that in Adobe Photoshop, refer to [Use EaglePrint with Photoshop](#) for more details.

### 3. Print

Bring up the print dialog. Choose EaglePrint, confirm **Orientation**. Check the option **Selection** in the section **Print range** if there is a selection in your design which is the only part you want to process. Click  to show the instant preview window which helps you have a look at what is going to be printed out.

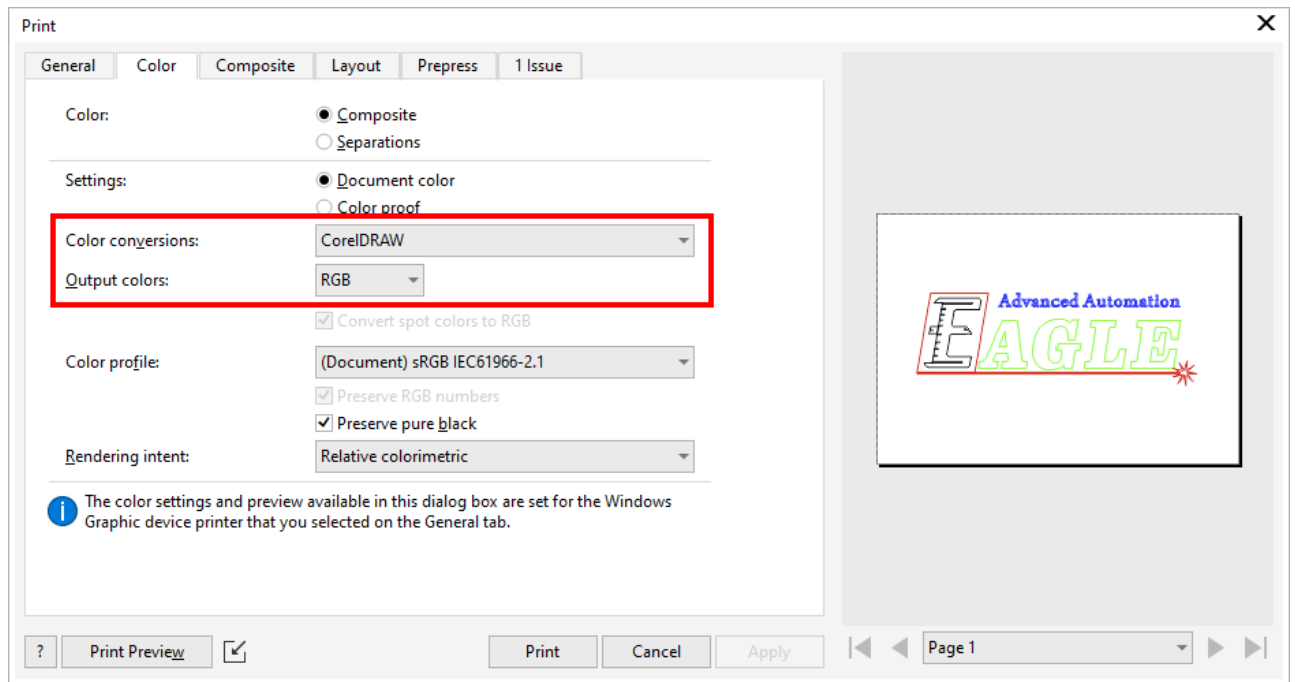


If you want to change the job settings, click  to bring up the printing preferences dialog. Refer to [Job Settings](#) for more details.

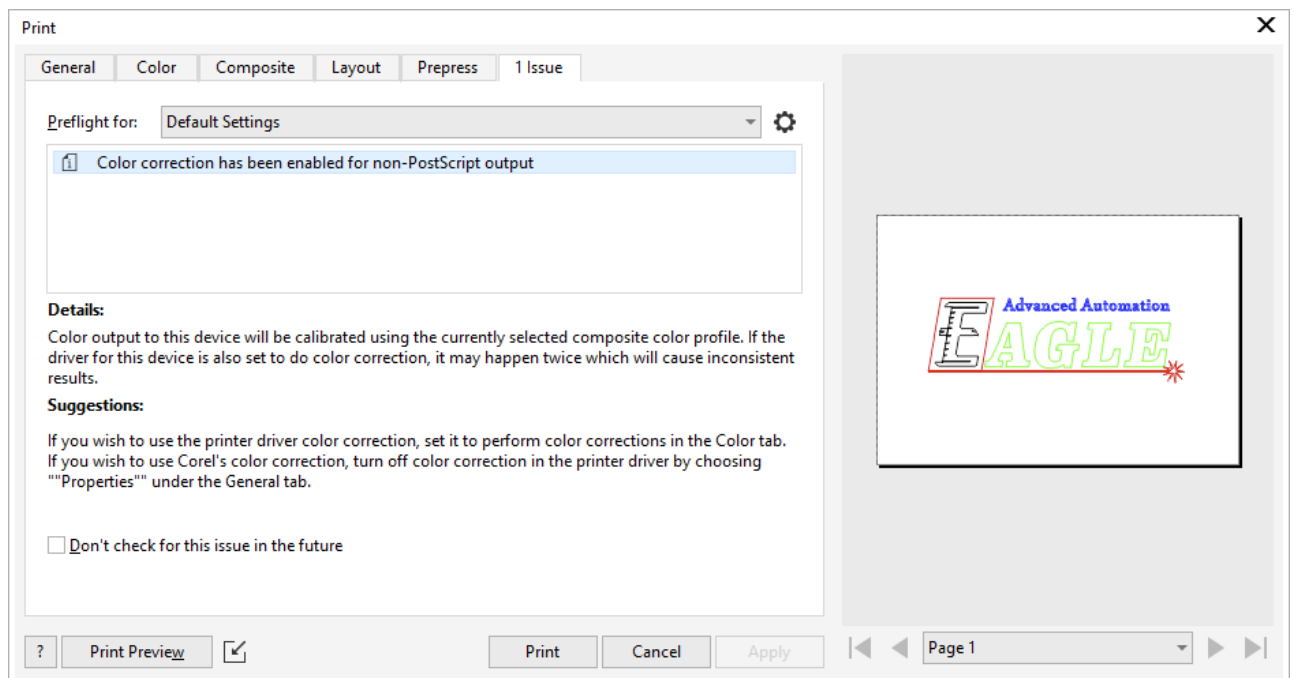
#### IMPORTANT

What you see in print preview is what the Windows spooler will get when printing, so we recommend to **ALWAYS** preview and confirm before printing. If there is anything wrong in print preview, e.g. wrong color, missing parts, paper overflow, etc, please go back and review your design and all relative settings in EaglePrint and in the drawing software.

If you cannot see the colors in the design, click the tab **Color** and check if the option **Color conversions** is set to **CorelDRAW** and the option **Output colors** is set to **RGB**, or if the option **Color conversions** is set to **EaglePrint**.



Click the tab **Issue** if there is a badge number on the tab to check if there is a series issue you have to resolve before printing.



#### 4. Output

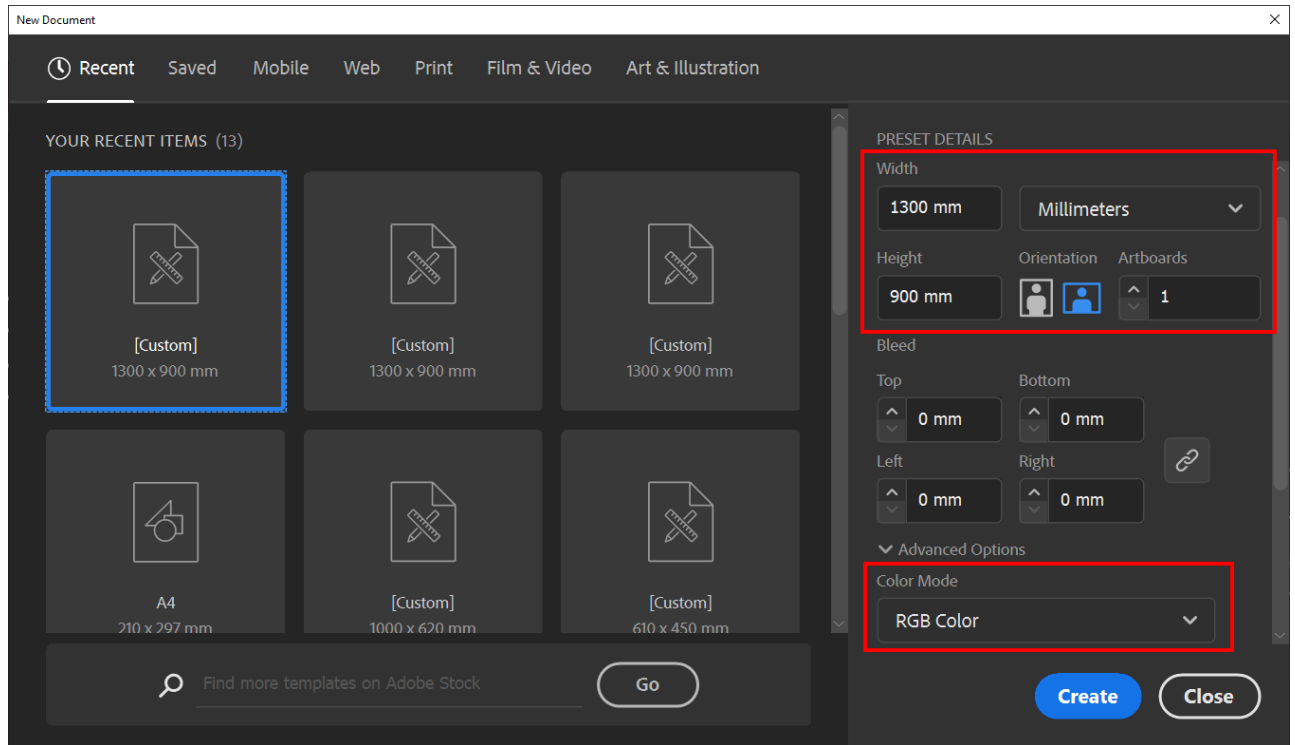
If everything is good, click **Print** to bring up the EaglePrint laser window, select the laser, set a name and download the job, or save the job to a USB flash and read it from the laser. Refer to [Laser Window](#) for more details.

# Use EaglePrint with Illustrator

We will guide you in details to use EaglePrint with Adobe Illustrator in this section.

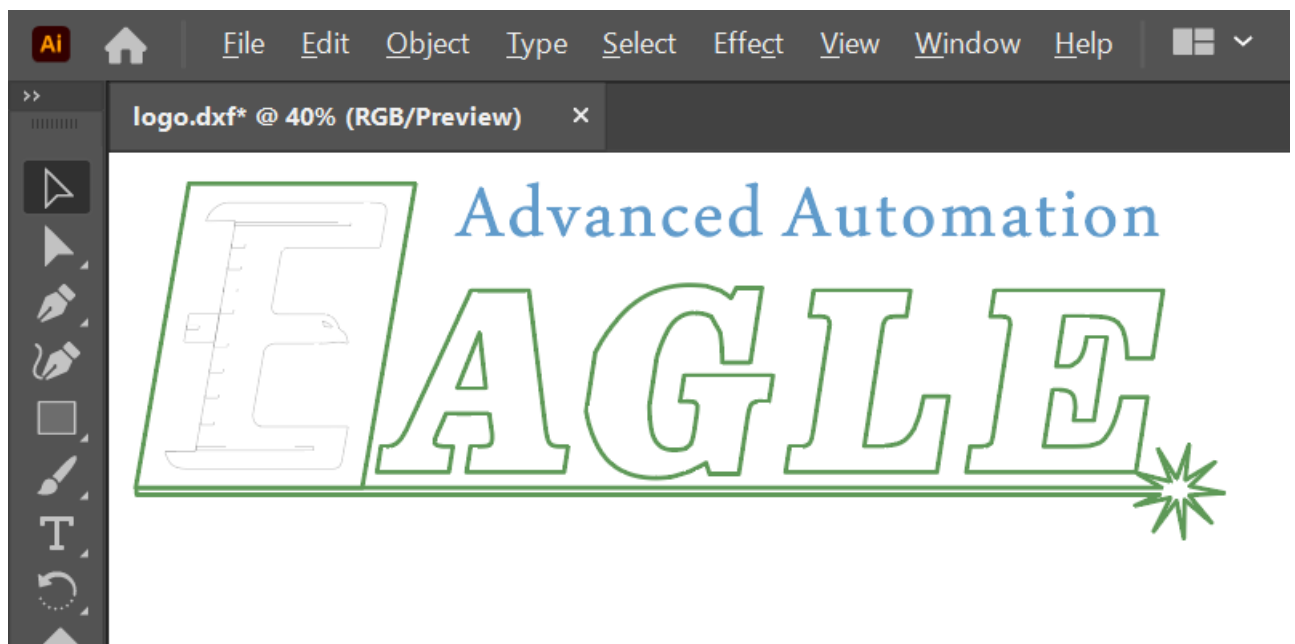
## 1. Create a new document

Set the paper size and orientation according to your laser, refer [here](#) for more details. And choose the color mode to match the colors for cutting in EaglePrint, refer [here](#) for more details.



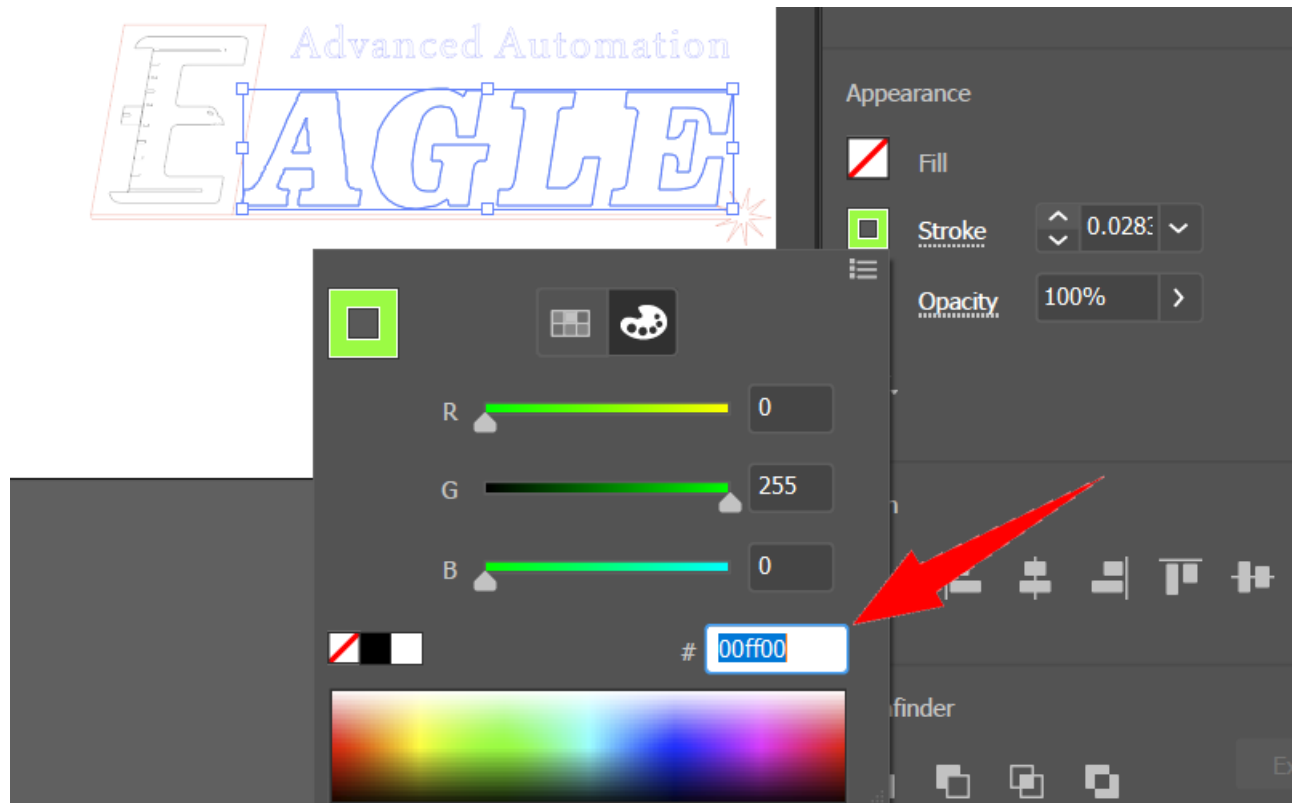
## 2. Create your design

Create your design. EaglePrint will cut thin outlines, which are less than around 0.01mm, and engrave thick outlines and fills, help you get an exact same result as the design. Refer to [Vector graphics](#) for more details.



If you want to set different cutting parameters on outlines, assign them with different colors, matching the corresponding ones in EaglePrint, refer to [Colors in Cutting](#) for more details.

Here is an example of setting the color value directly.



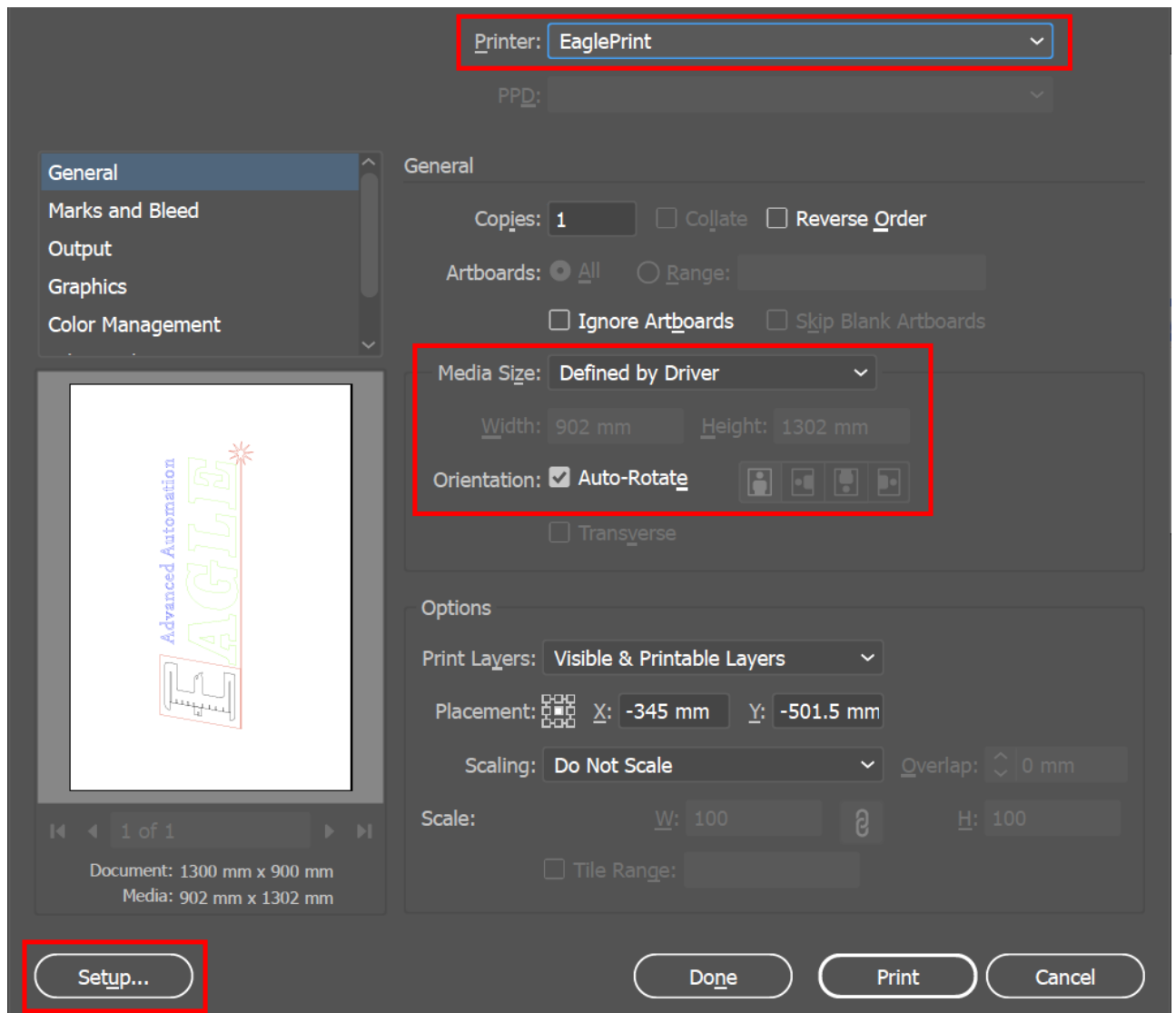
In color mode, all thick outlines and fills will be spooled in black and results in same engraving effects, refer to [Color in Engraving](#) for more details.

Illustrator does not support image engraving well, we suggest to do that in Adobe Photoshop, refer to [Use EaglePrint with Photoshop](#) for more details.

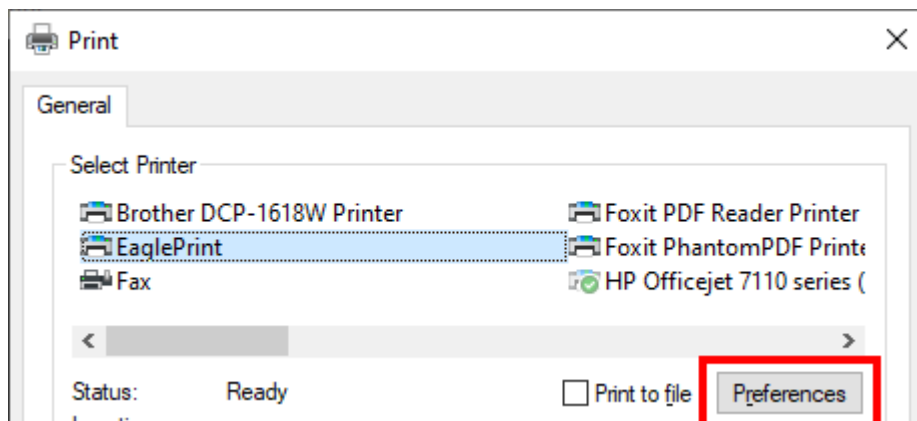


### 3. Print

Bring up the print dialog. Choose EaglePrint. Illustrator will set **Media Size** to **Defined by Driver** and check the option **Auto-Rotate** by default. The paper in print preview might be in portrait and will be rotated automatically to match the laser.



If you want to change the job settings, click **Setup...**, and then click **Preferences** to bring up the printing preferences dialog. Refer to [Job Settings](#) for more details.



## IMPORTANT

What you see in print preview is what the Windows spooler will get when printing, so we recommend to **ALWAYS** preview and confirm before printing. If there is anything wrong in print preview, e.g. wrong color, missing parts, paper overflow, etc, please go back and review your design and all relative settings in EaglePrint and in the drawing software.

### 4. Output

If everything is good, click **Print** to bring up the EaglePrint laser window, select the laser, set a name and download the job, or save the job to a USB flash and read it from the laser. Refer to [Laser Window](#) for more details.

# Use EaglePrint with AutoCAD

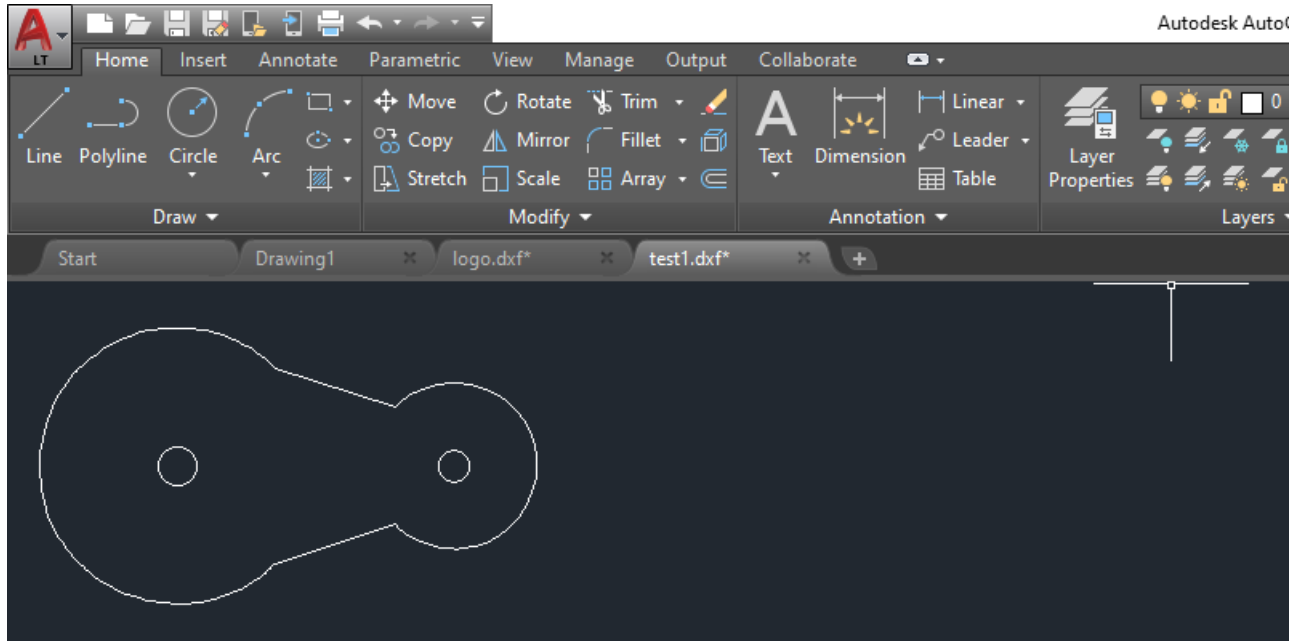
We will guide you in details to use EaglePrint with AutoCAD in this section.

1. Create a new document

There is no document setup dialog in AutoCAD, different with CorelDRAW and Adobe Illustrator.

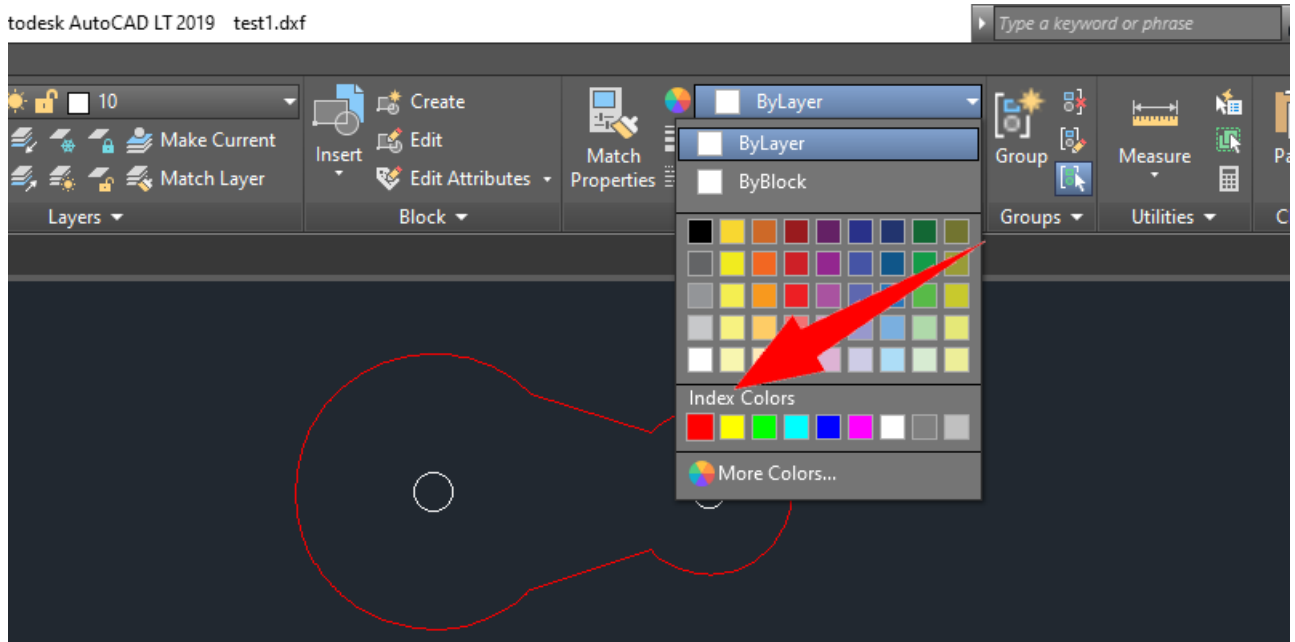
2. Create your design

Create your design. EaglePrint will cut thin outlines, which should be set to 0.00mm in AutoCAD, and engrave thick outlines. Refer to [Vector graphics](#) for more details.

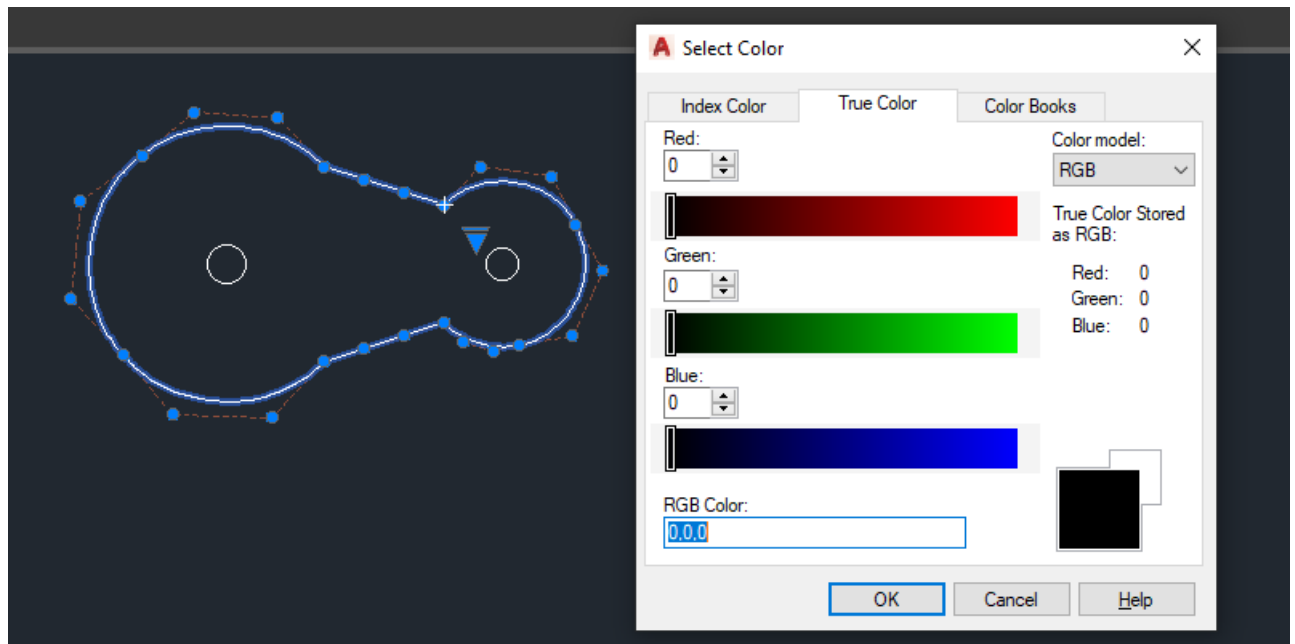


If you want to set different cutting parameters on outlines, assign them with different colors, matching the corresponding ones in EaglePrint, refer to [Colors in Cutting](#) for more details.

Here is an example of assigning color with the palette.



Click **More Colors...** in the dropdown-window shown above, you can set the color value directly in the tab **True Color**.

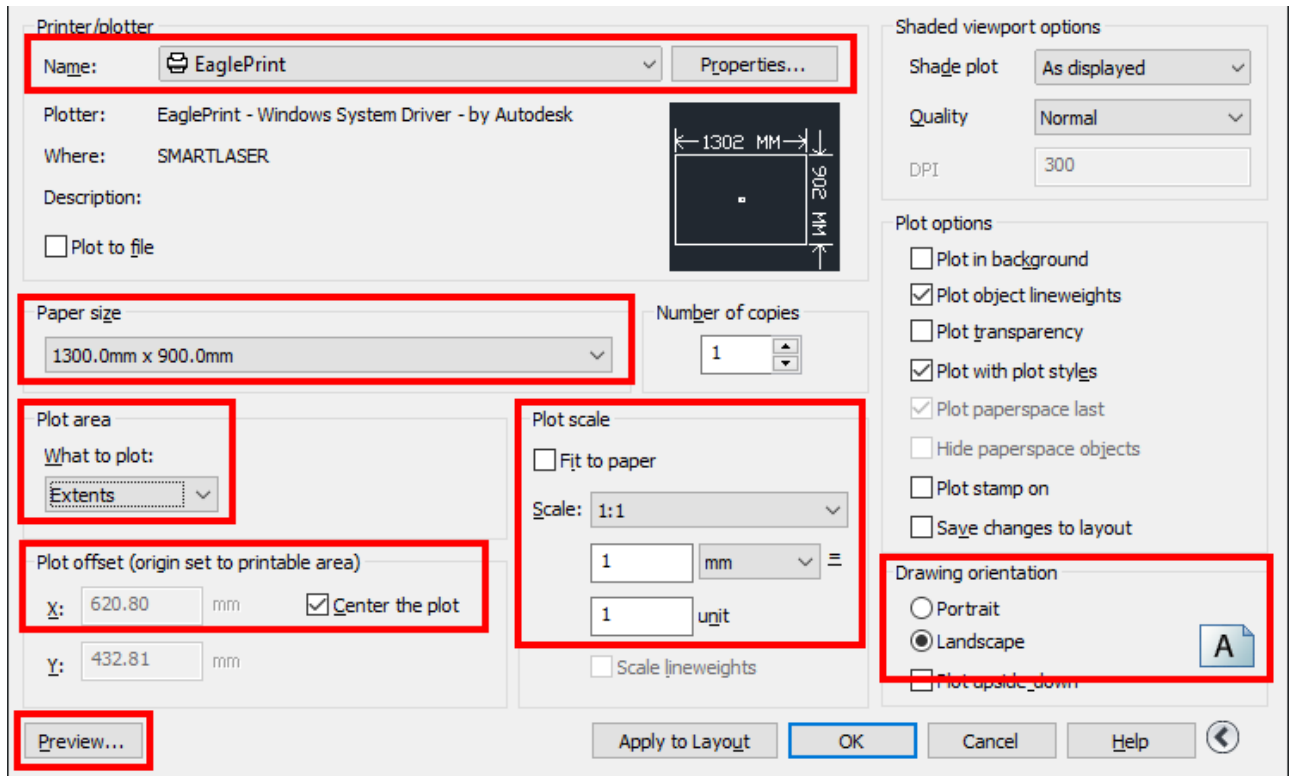


In color mode, all thick outlines will be spooled in black and results in same engraving effects, refer to [Colors in Engraving](#) for more details.

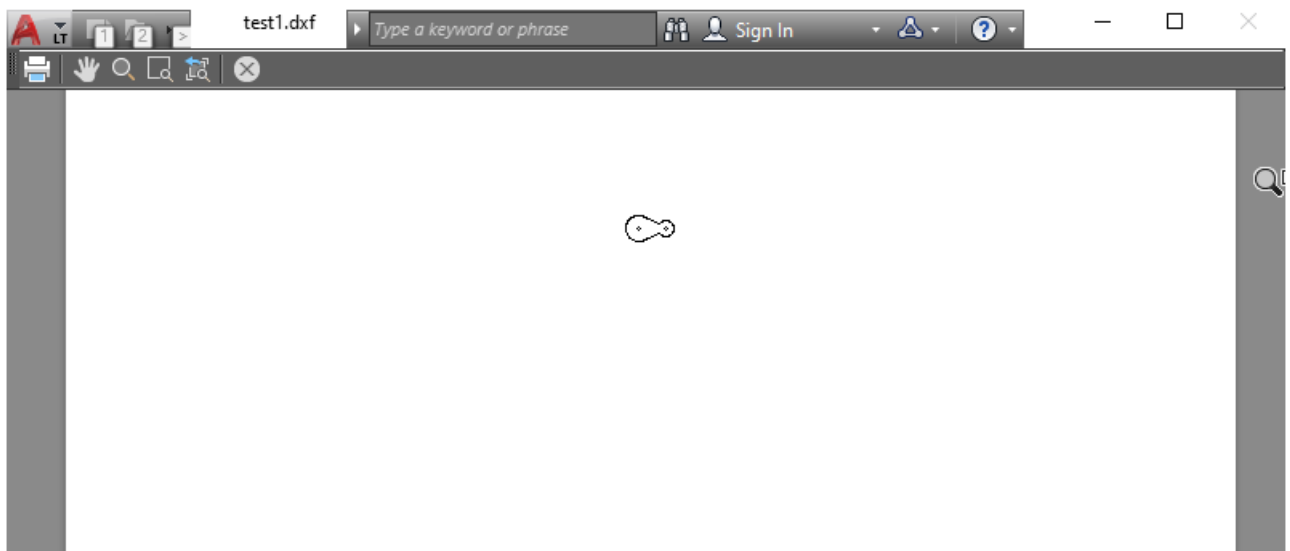
AutoCAD does not support image engraving at all, we suggest to do that in Adobe Photoshop, refer to [Use EaglePrint with Photoshop](#) for more details.

### 3. Print

Bring up the print dialog. Choose EaglePrint, confirm the paper size, set **Drawing orientation** to **Landscape**, set **Plot scale** according to your design, set **Plot area** to **Extents**, and check **Center the plot** in **Plot offset**.



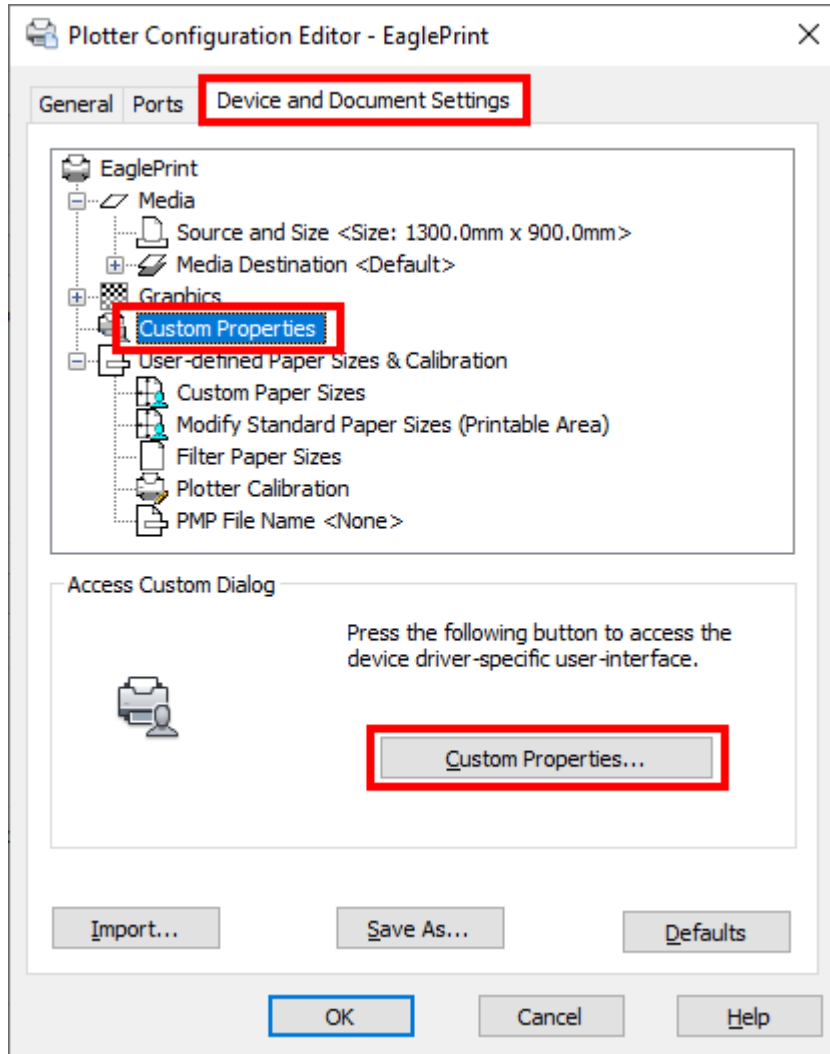
Click **Preview...** to show the preview window which helps you have a look at what is going to be printed out.



#### IMPORTANT

What you see in print preview is what the Windows spooler will get when printing, so we recommend to **ALWAYS** preview and confirm before printing. If there is anything wrong in print preview, e.g. wrong color, missing parts, paper overflow, etc, please go back and review your design and all relative settings in EaglePrint and in the drawing software.

If you want to change the job settings, click **Properties...**, and then click **Custom Properties...** to bring up the printing preferences dialog. Refer to [Job Settings](#) for more details.



#### 4. Output

If everything is good, click **OK** to bring up the EaglePrint laser window, select the laser, set a name and download the job, or save the job to a USB flash and read it from the laser. Refer to [Laser Window](#) for more details.

## Use EaglePrint with Photoshop

We will guide you in details to use EaglePrint with Adobe Photoshop in this section.

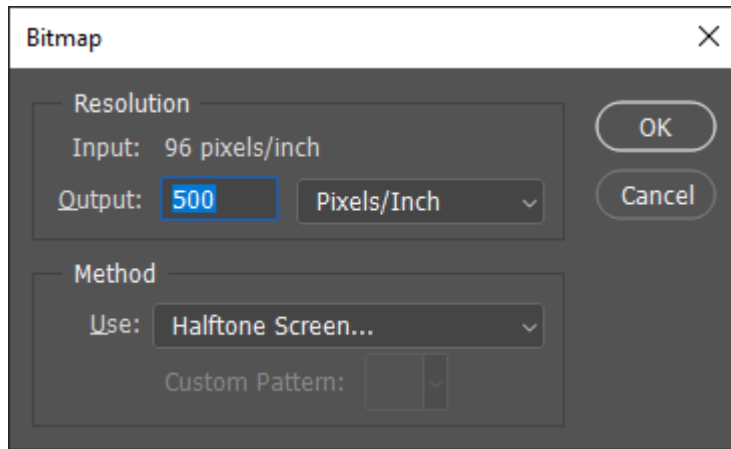
1. Open an image

Open an image or make your own in Photoshop.

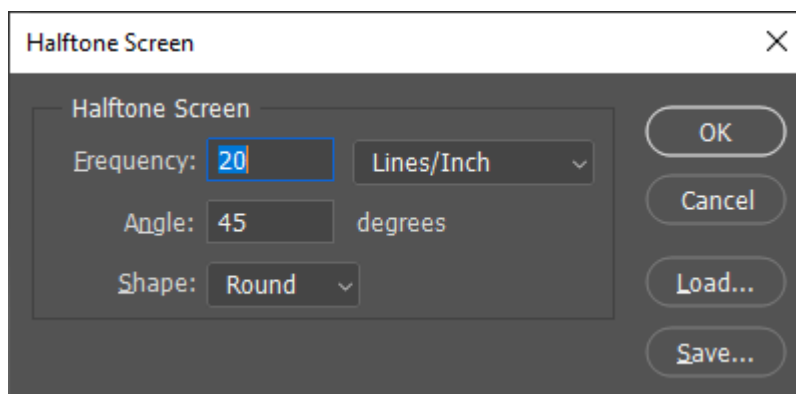


2. Apply halftone on the image

First, click **Mode > Grayscale** in the pulldown-menu **Image** to convert color image to grayscale. And click **Mode > Bitmap...** to bring up the bitmap dialog, set output resolution to at least 500 pixels per inch, and set **Method** to **Halftone Screen...**



Then click **OK** to bring up the halftone screen dialog, set **Frequency** to 20 lines per inch, set **Angle** to 45 degrees, and set **Shape** to **Round**, click **OK** to apply.



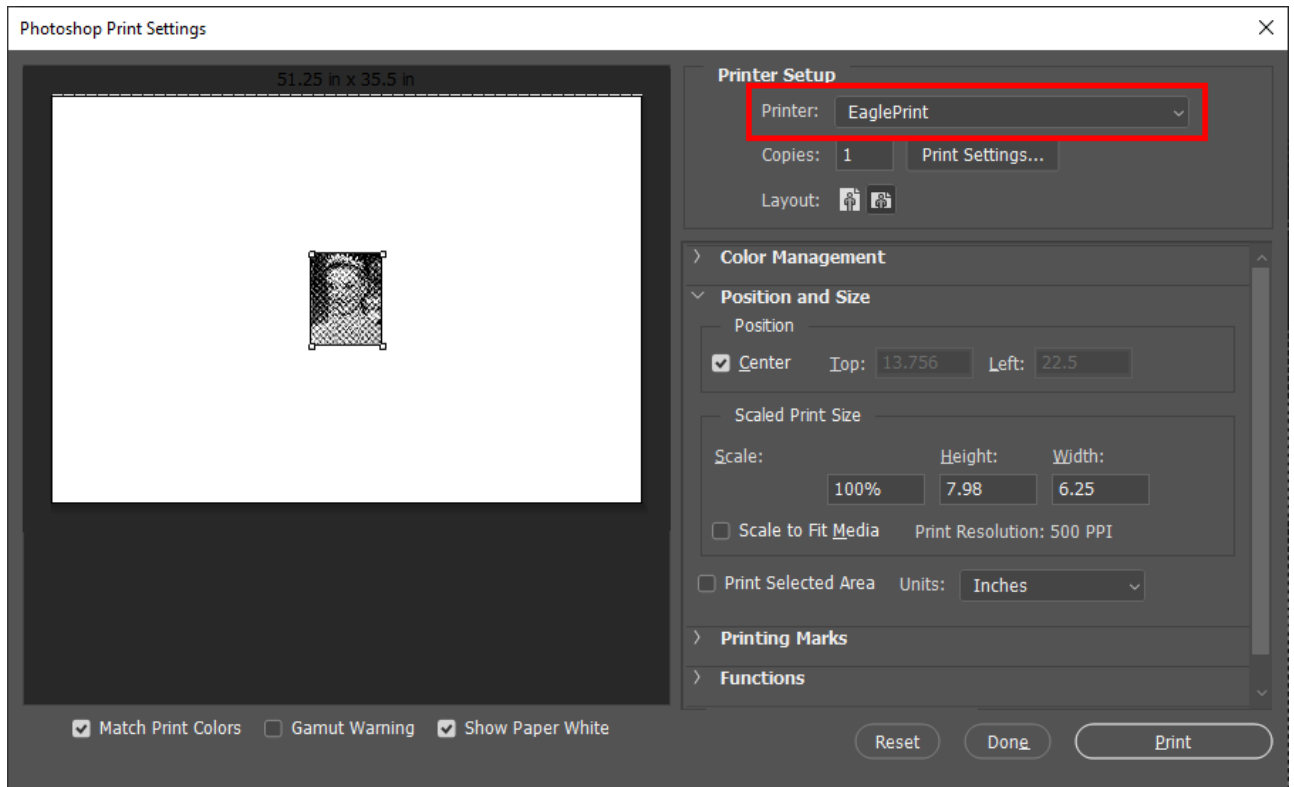


Here is the halftoned image.



### 3. Print

Bring up the print dialog. Choose EaglePrint.



If you want to change the job settings, click **Print Settings...** to bring up the printing preferences dialog. Refer to [Job Settings](#) for more details.

#### IMPORTANT

What you see in print preview is what the Windows spooler will get when printing, so we recommend to **ALWAYS** preview and confirm before printing. If there is anything wrong in print preview, e.g. wrong color, missing parts, paper overflow, etc, please go back and review your design and all relative settings in EaglePrint and in the drawing software.

### 4. Output

If everything is good, click **Print** to bring up the EaglePrint laser window, select the laser, set a name and download the job, or save the job to a USB flash and read it from the laser. Refer to [Laser Window](#) for more details.