

Mega-S User Manual(supplementary instruction)

Before you start using Mega-S, please read this document carefully and follow the steps provided in it. This will enable you to complete the setup process quickly.

The entire operation setup process will take approximately 120 minutes.

To facilitate your quicker use of MEGA-S, you can view the opening guide video of WIKI via the link and QR code below. Or browse through this illustrated description.

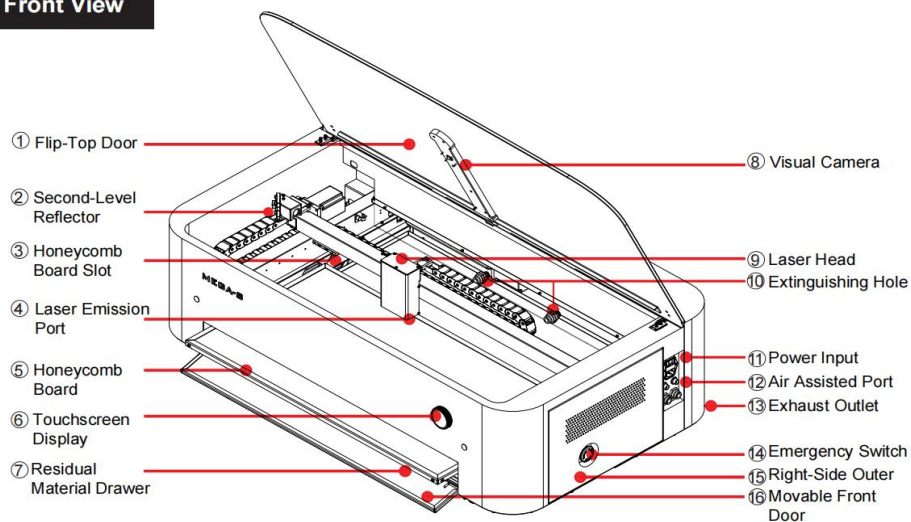


<https://wiki.monportlaser.com/en/home/Mega-S/MEGA-S-Open-Box-Usage-Video>

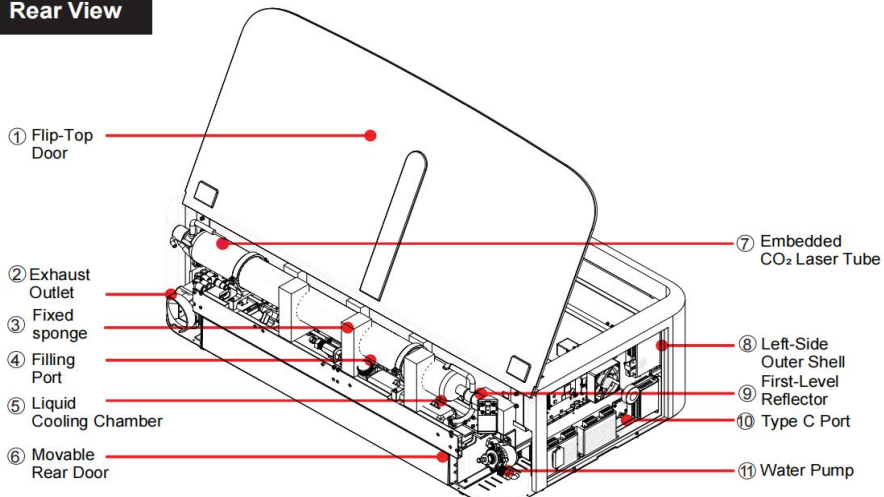
1 preparatory work

Before starting the operation on Mega-S, please have a clear understanding of its basic structure. Here are the front view and rear view of Mega-S:

Front View



Rear View

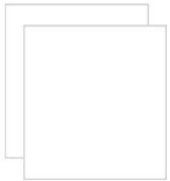


1.1 Check for any obvious damage both inside and outside.

- Damaged packaging appearance
- Has the inner casing undergone any deformation?

1.2 Check of the accessory list

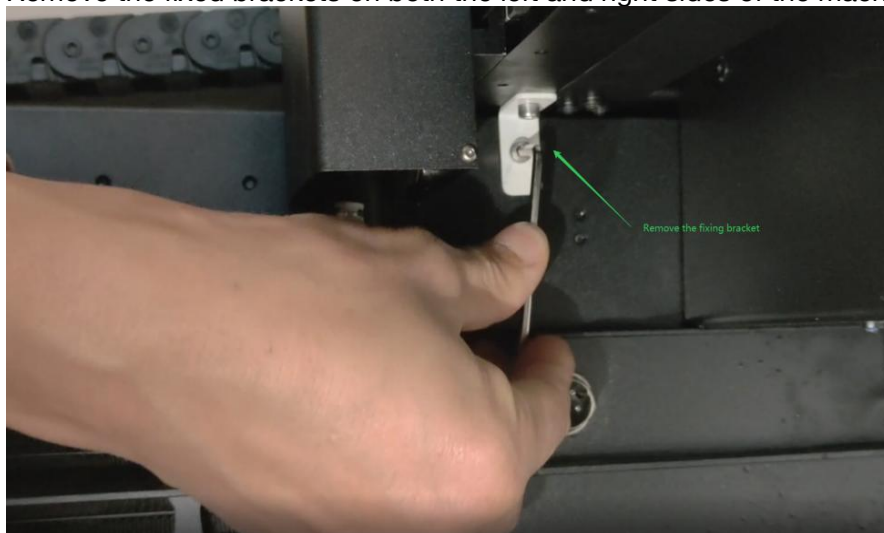
After you open the packaging of Mega-S, you will see the accessories as shown in the following picture:

 3mm Transparent Acrylic x2	 3mm Linden Wood Panels x5	 Kraft Paper x10	 Screwdriver Kit x1
 Air Duct Hose and Clamp x1	 1L Antifreeze x1	 Air Duct Adapter x1	 Rubber ball (Assist in add water) x1
 Fixing Clips x1	 Power Cord x1	 USB Type C Cable x1	 Optical Target Assembly x1
 Funnel x1			

Please carefully review this list. If there are any omissions, please contact us at support@monportlaser.com promptly.

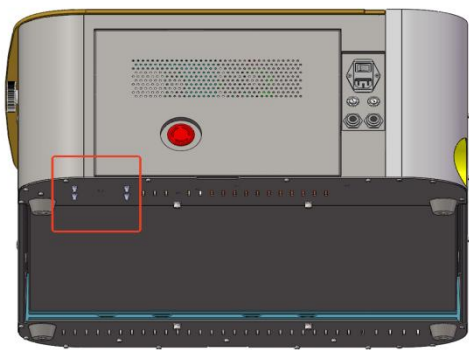
1.3 Remove the X-axis fixed bracket

Remove the fixed brackets on both the left and right sides of the machine.



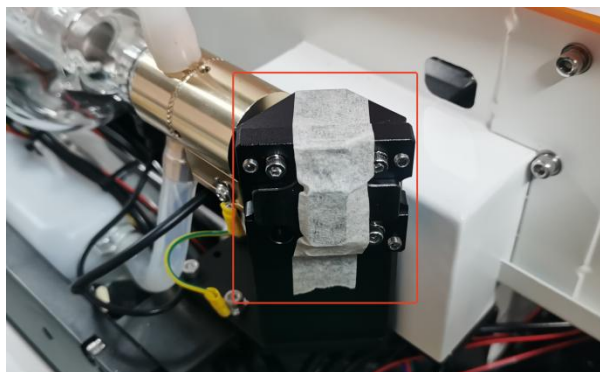
1.4 Remove the fixed air pump cable ties

On the bottom right side of the machine, the fixed air pump belt used for transportation needs to be removed.



Cut off one end of the rolled strip and pull out both sides.

1.5 Remove the protective tape from both the mirror one and the mirror two.



1.6 Complete the addition of coolant.

Before using Mega-S, it is essential to add coolant (water or antifreeze) and ensure that the liquid circulates continuously when the water pump is turned on to prevent air from entering the pump.

You need to set different coolant ratios according to different temperatures. For detailed ratios, please refer to the following table:

Annual lowest temperature in your region(°C)	Concentration (%)	Antifreeze(ml)	Purified water(ml)
$T > 0$	0	0	1220
$-10 \leq T \leq 0$	20	244	976
$-20 \leq T \leq -10$	35	427	793
$-30 \leq T \leq -20$	45	549	671
$-40 \leq T \leq -30$	50	610	610
$-50 \leq T \leq -40$	60	732	488

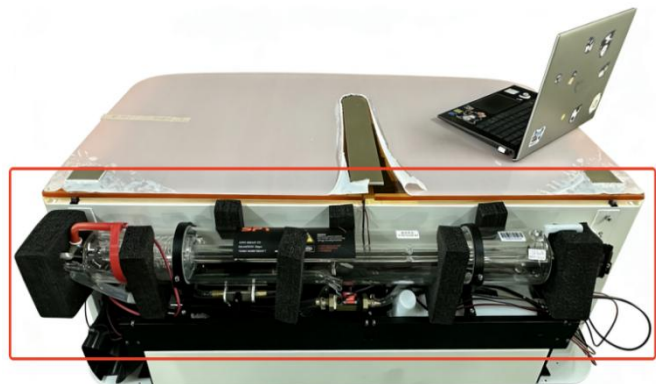
After you receive the machine, you need to unscrew the back cover screws, remove the back cover, and remove the laser tube protective cotton and perform the water injection operation.



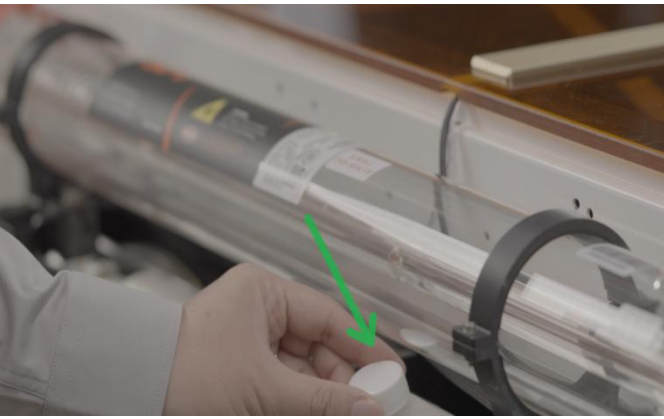
Please remove the back cover in the following manner.



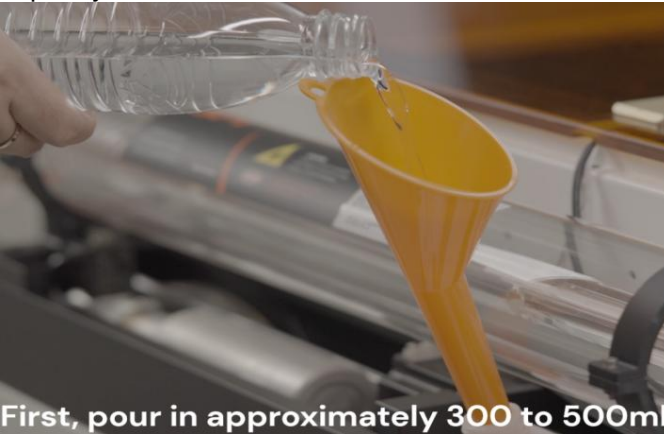
Remove the protective cotton covering the laser tube



After removing the rear cover, unscrew the water tank lid:

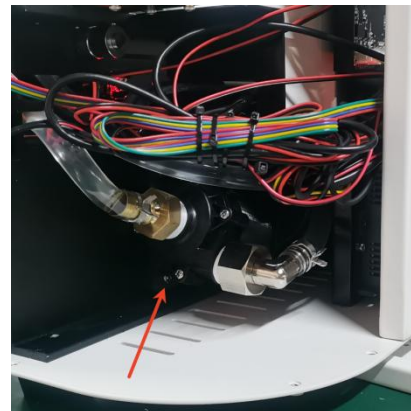
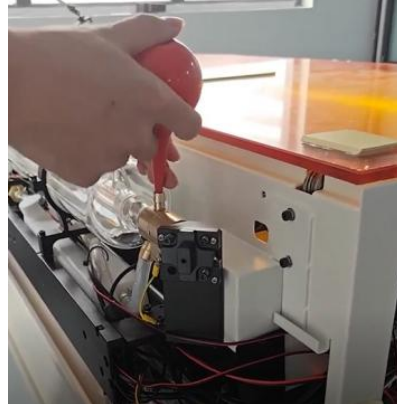
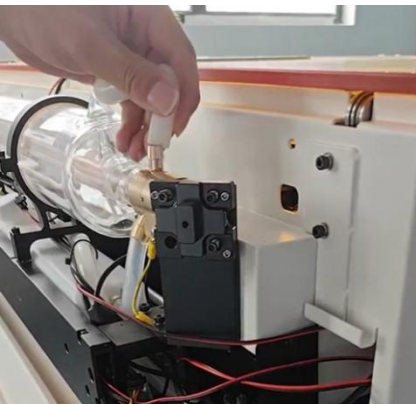


Next, we will add water to the water tank in two stages. The first time, we will fill the tank with more than two-thirds of its capacity of water.



First, pour in approximately 300 to 500ml

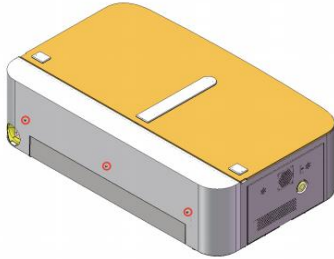
After the power is turned on, one can observe the water circulation through the laser tube. If no water circulation is observed, please ensure that the pump is operating under vibration conditions and close the water tank cover. Use a blowpipe to apply pressure.



If the pump starts in a state of idle rotation protection, it will intermittently operate or fail to work. In this case, you need to switch the power supply of the equipment on and off to restore the pump's operation and then perform the pressure increase process again.

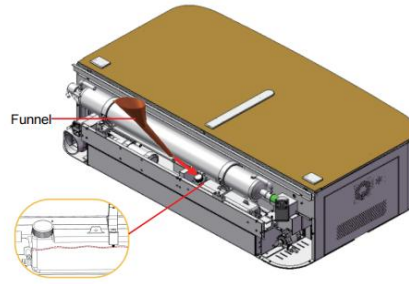
- Before using the device, add cooling liquid to the system by removing the back panel and filling the internal water tank with water or coolant.
- Check all parts for damage before use. Do not operate the device if any parts are damaged.

① Steps to Remove the Rear Panel



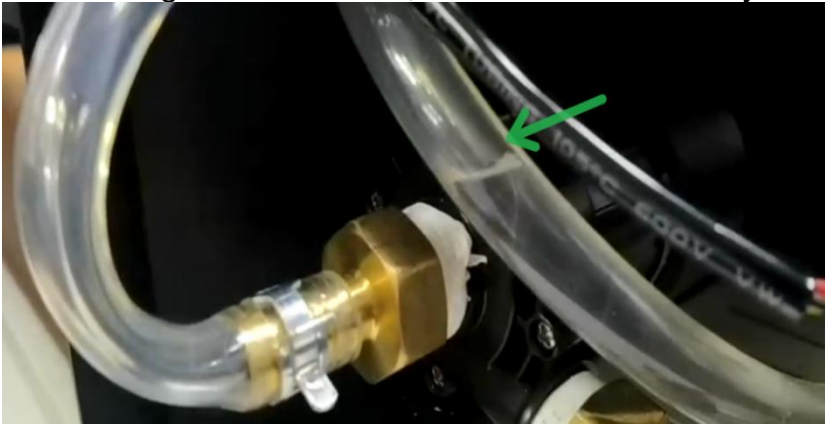
Use the included hex wrench to remove the socket screws (M4*6) from the back panel.

② Add Coolant



Fill the water tank to the indicated mark. Power on the machine; the water level may decrease as it circulates. Replenish the water to the mark.

After turning on the machine, water will automatically fill the pipes and the laser tube.



Once the water in the pipes is fully filled, the water in the water tank will decrease significantly. At this point, we need to continue adding water to the water tank to make the water level reach more than two-thirds. And thus the water addition process is completed.

1.7 Connect the duct and the air pipe properly

We suggest that you install the exhaust duct before using Mega-S. This is a very important step.

Step 1: You need to prepare three items (duct adapter, duct hose and clamp)



Step 2: First, insert the duct adapter into the machine. Then, insert the duct hose into the duct adapter and secure the hose with a clamp.



1.8 Prepare a PC computer (Windows)

!!! Due to the fact that there are still some compatibility issues with the current Mac version of MDH, we strongly recommend that you operate the Mega-S engraving machine using the Windows system. This will greatly enhance your usage experience!



Please prepare in advance a laptop with Windows operating system. Laptops are more convenient for setting up network for Mega-S compared to desktop computers.

Before connecting the machine, you need to install the serial port driver on your Windows computer.

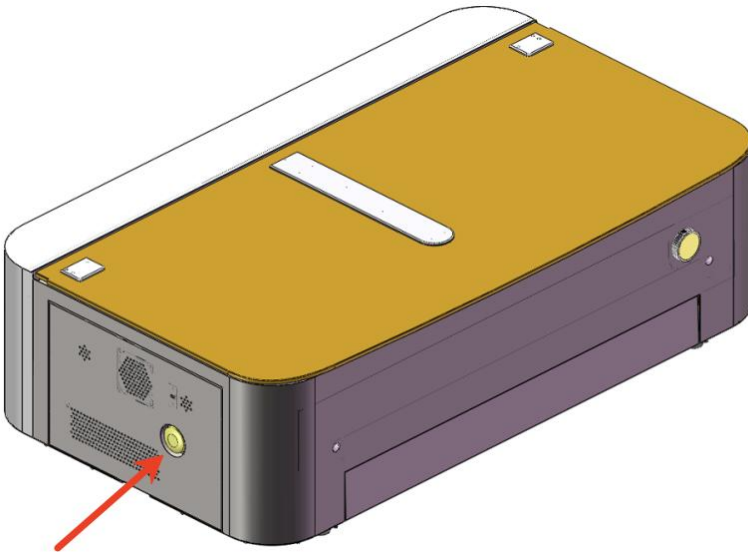


https://drive.google.com/file/d/1TztHogUbP7Ks8Pa28WZlxKNUYjVnKwga/view?usp=drive_link

1.9 Ensure the network usage environment

Please ensure that the working area for Mega-S is properly set up. Please adjust the computer's automatic sleep function to the "off" state or ensure that the computer screen remains on, as well as maintaining a good Wi-Fi signal environment. Many operations of Mega-S rely on Wi-Fi. A good Wi-Fi signal can significantly enhance the efficiency of using Mega-S.

The antenna of Mega-S is located on the left side of the entire device.



Please make sure to point this side of the Wi-Fi antenna towards the direction where your router is located. On this side of the antenna, there should be no metal objects blocking it. If there are any, it will block the Wi-Fi signal and affect the normal operation of Mega-S.

2 Configure the network and upgrade the firmware

Before use, we recommend that you upgrade the firmware of your printer to the latest version to achieve the best user experience.

2.1 Software download and installation

Please download the latest MDH client from this link:

<https://github.com/Monport-Laser-Office/Monport-Design-Hub/releases>

After downloading, please install this software directly.

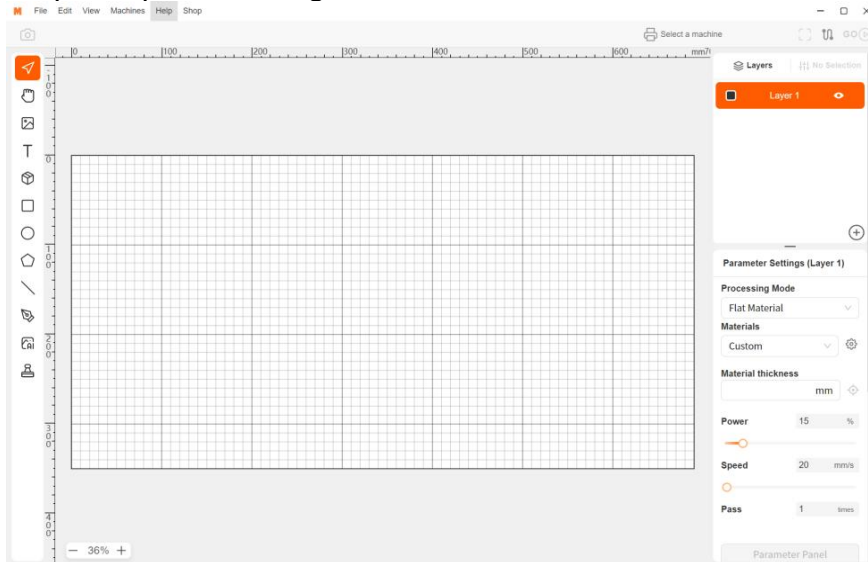


Scan the code to redirect to the website.

2.2 Utilizing MDH for power distribution for Mega-S

Before connecting to the network, you need to prepare a Type C data cable first. The picture shows how to connect the data cable to the machine.

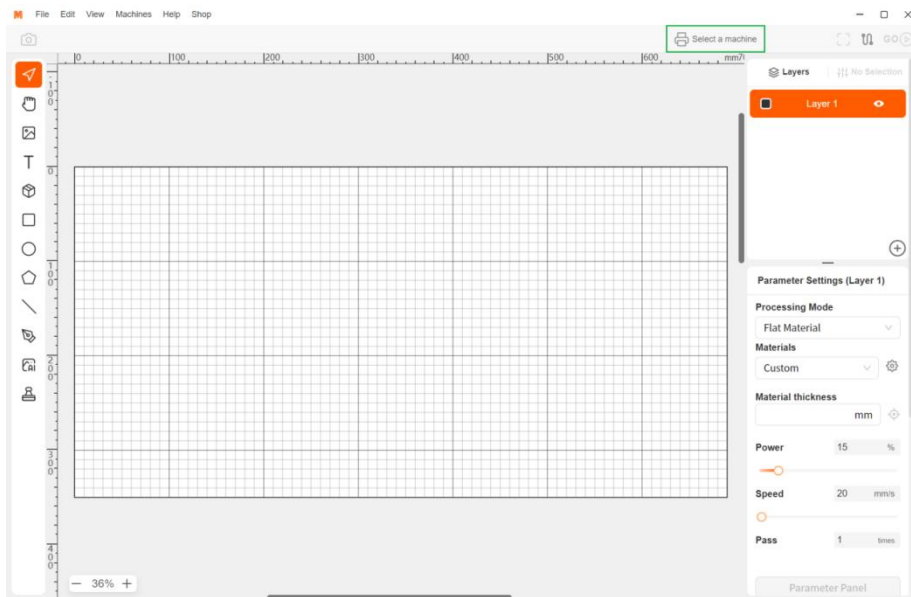
Step 1: Open M-Design Hub



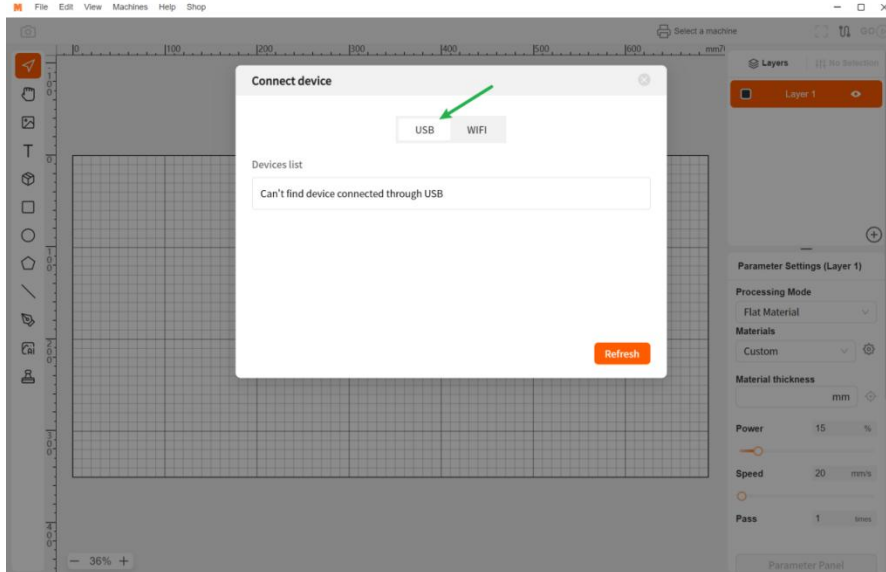
Step 2: Connect the device to the computer using a USB data cable, and then open the Mega-S device.



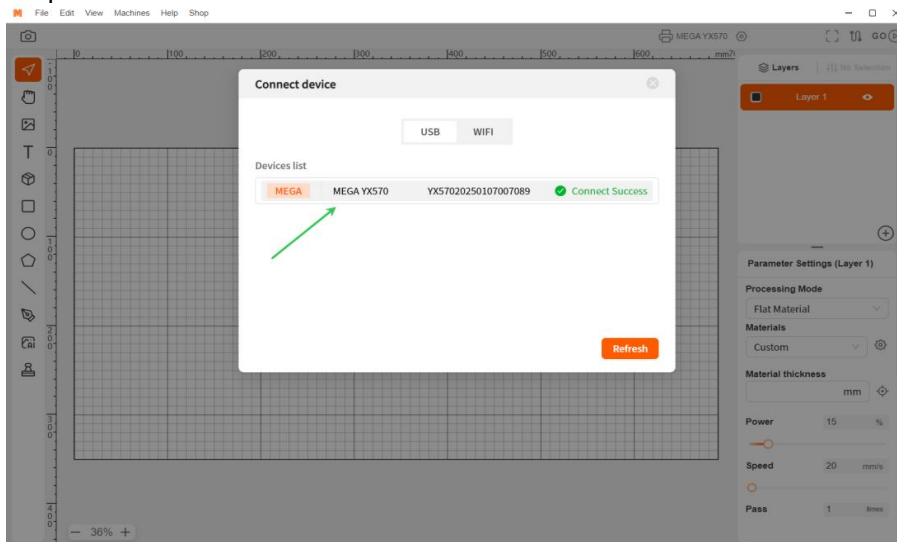
Step 3: Click on 'Select Machine'.



Step 4: If your device is listed in the device list, please select it.

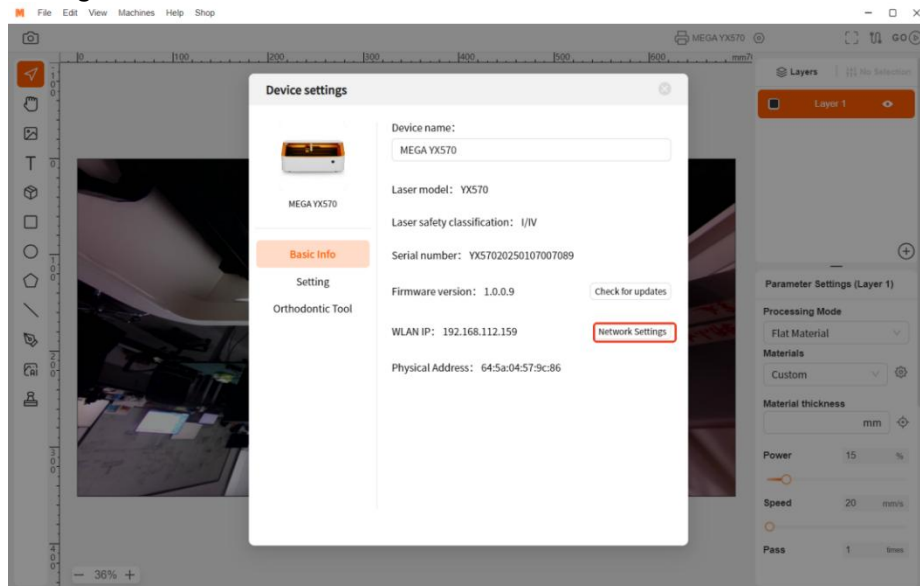


Step 5: USB connection successful

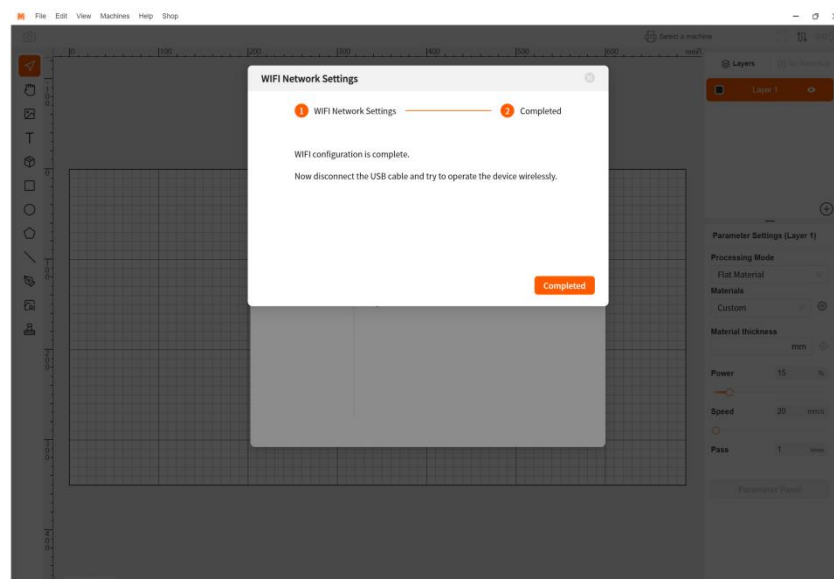
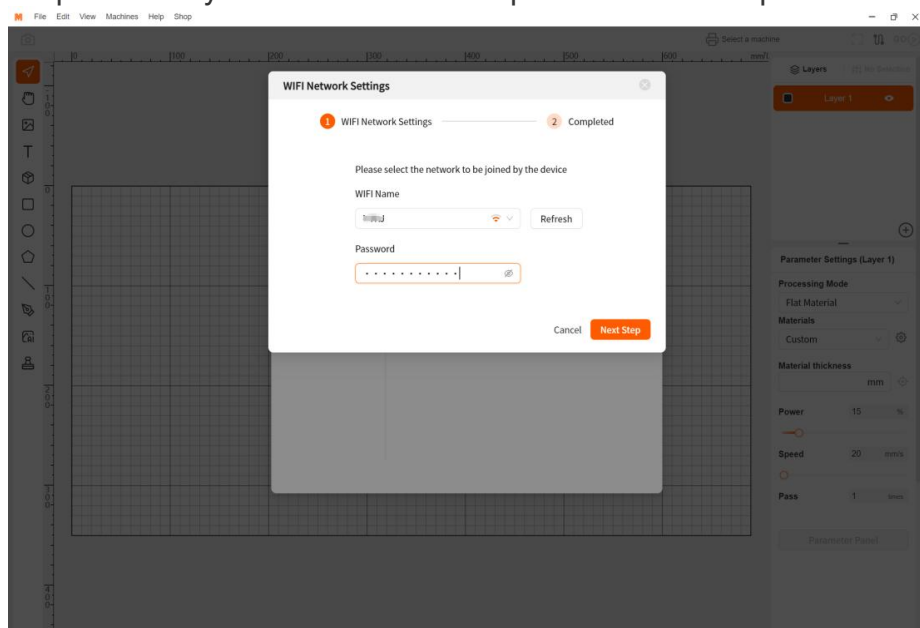


Step 6: Open the device settings window, and then click on the "Settings Network" option on the right side of the Wi-Fi

settings.



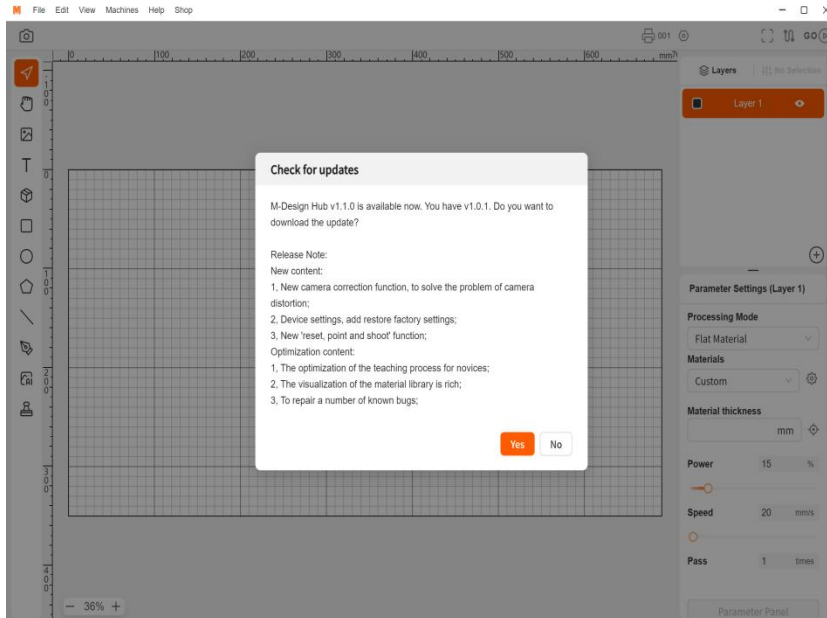
Step 7: Enter your Wi-Fi name and password to complete the Wi-Fi setup.



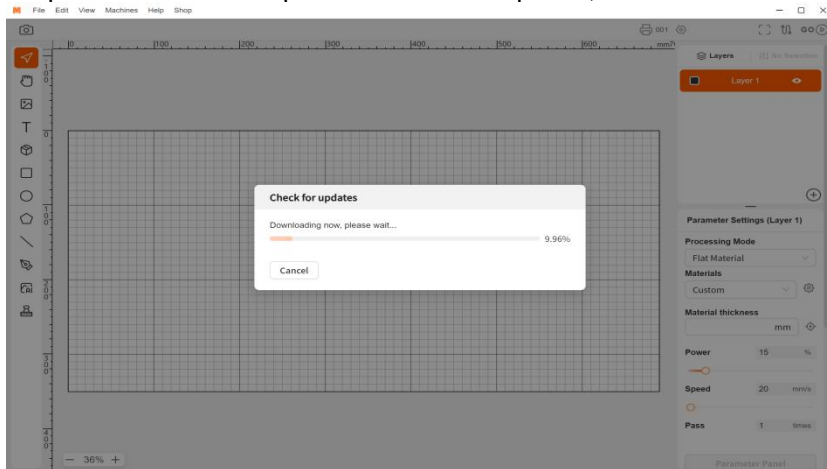
If you encounter any problems during the wiring process, please contact our after-sales staff immediately:
support@monportlaser.com

2.3 Upgrade the firmware of Mega-S

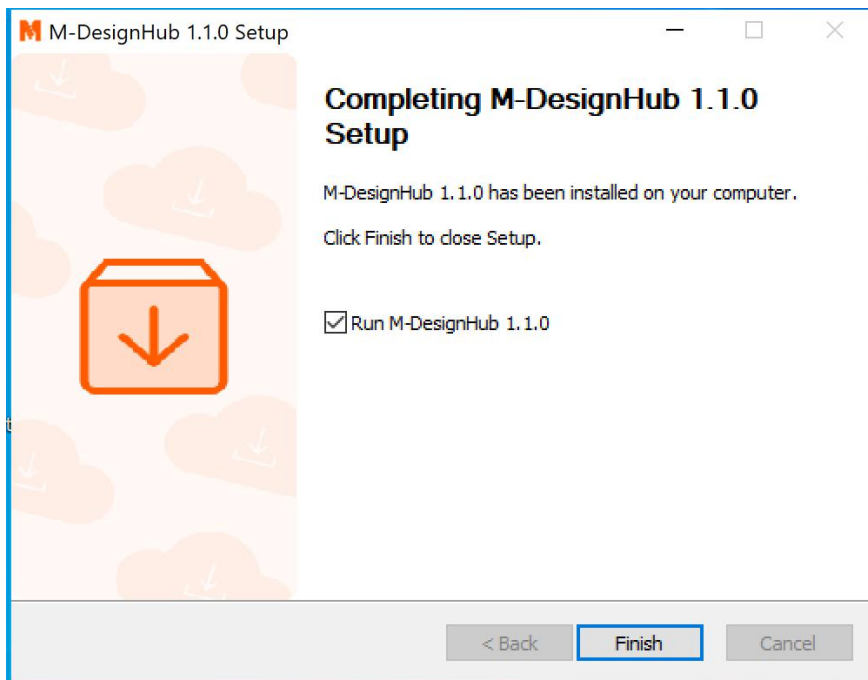
The firmware upgrade to V1.0.0.9 is carried out automatically through the M-Design Hub software. Please make sure your M-Design Hub is at the latest version of V1.1.0. If the software is an older version, opening the software will prompt for an update to V1.1.0; if the software is already the latest version, simply proceed to step 4.



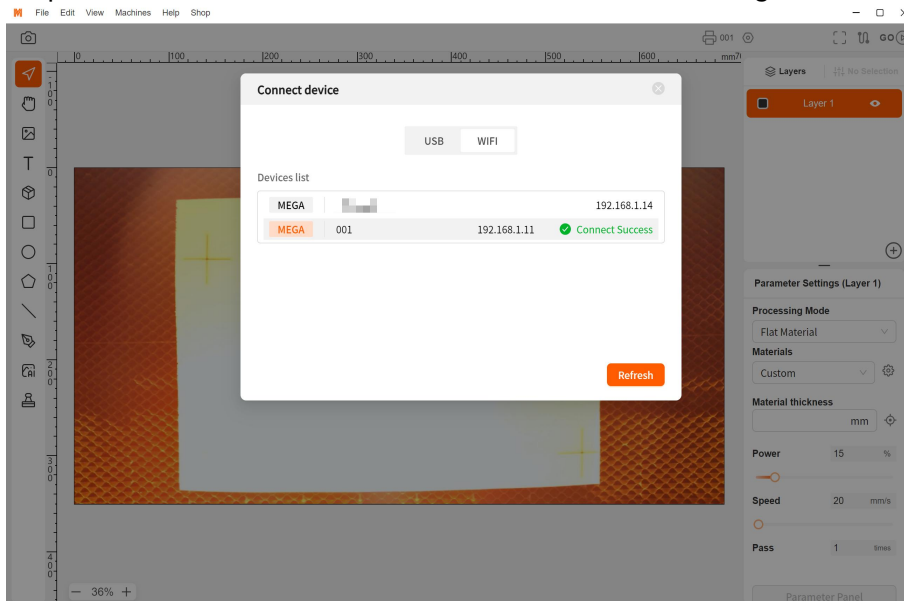
Step 1: Click 'YES' to proceed with the update;



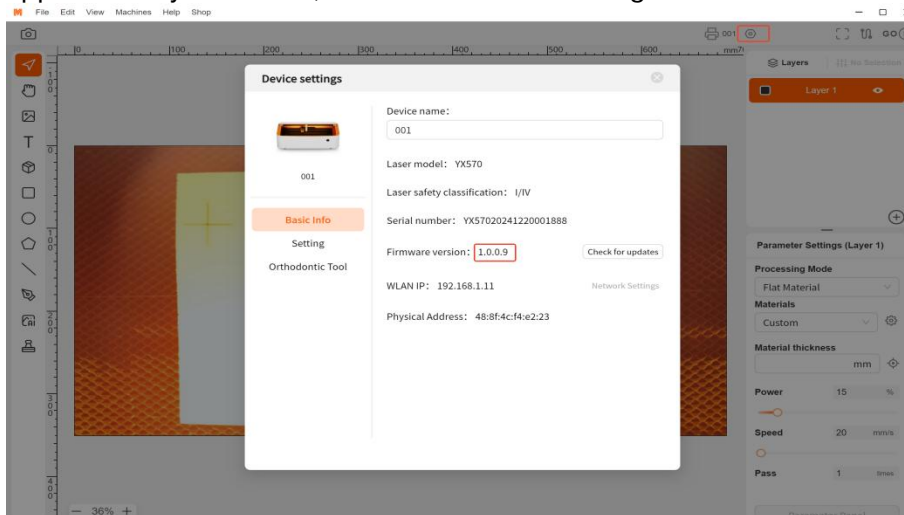
Step 2: Wait for the "Download Complete" message to appear. Once it does, a prompt box indicating successful installation will be displayed.



Step 3: Click 'Finish', the software will restart. After restarting, it will connect to the machine via WiFi.



Step 4: After the connection is successful, the firmware will automatically update in the background. Wait for approximately 3 minutes, then click 'Device Settings' to view the latest version number.



If you encounter any problems during the upgrade process, please contact our after-sales staff immediately:
support@monportlaser.com

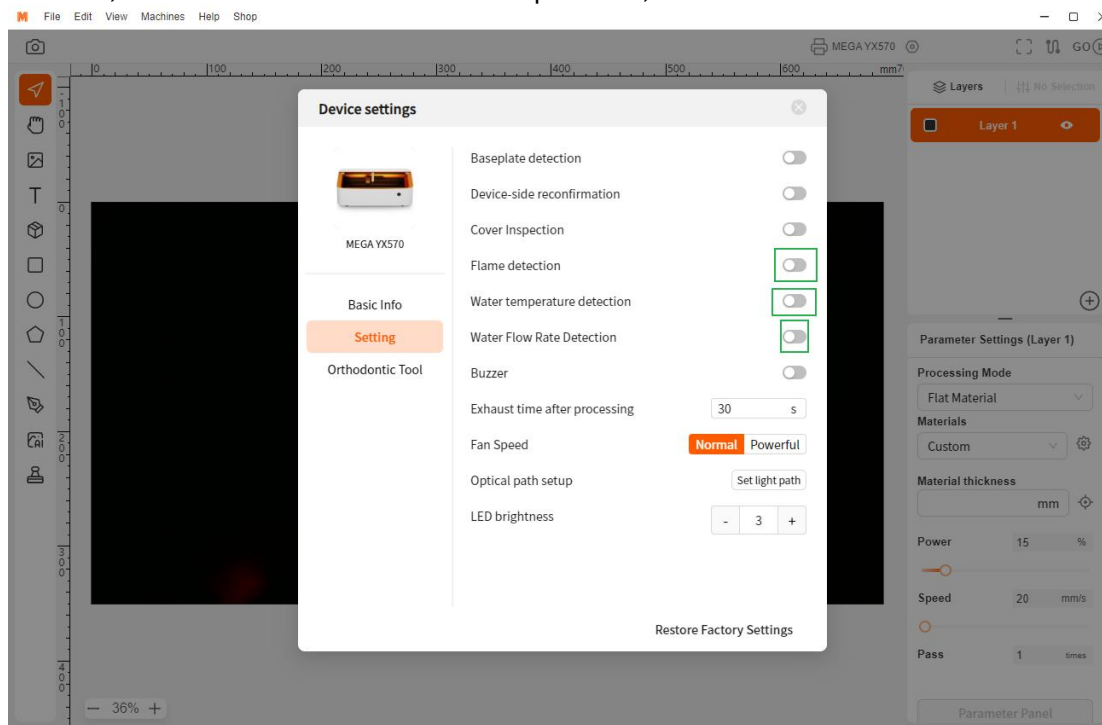
3 The setup before the beginning of the first work by MDH

Special Note 1: The flame detection sensor is overly sensitive and prone to false alarms. If you notice that the Mega-S keeps sounding the alarm but there is no flame inside the device, there is no need to panic. The flame detection software is still undergoing more sensitivity compatibility tests. Currently, the flame detection sensor is more likely to trigger false alarms. If it is confirmed that the alarm is caused by software issues, we recommend temporarily disabling the flame detection function in MDH and waiting for the release of the new firmware version (on March 15th) before reactivating it.

Special Note 2: Due to the actual influence of temperature and altitude in different regions on the flow speed, the flow speed measurement software needs further iteration to be applicable to more customer situations. To avoid affecting the use of basic functions by customers, we recommend that customers disable the flow speed function in the MDH client when ensuring normal water flow. We will implement this function in the upcoming software version iterations.

3.1 Machine settings and default parameter settings

The flame detection and water detection functions need to be disabled (the current version has not fully developed these features, which will affect the customer experience, so these functions need to be turned off).



Modify the default parameters for grbl's acceleration and deceleration (In subsequent MDH versions, the parameter adjustment function will be added, and there is no need to operate it in Lightburn)

Before starting to use the machine, we recommend that you modify some default motion parameters to achieve the best engraving and cutting results.

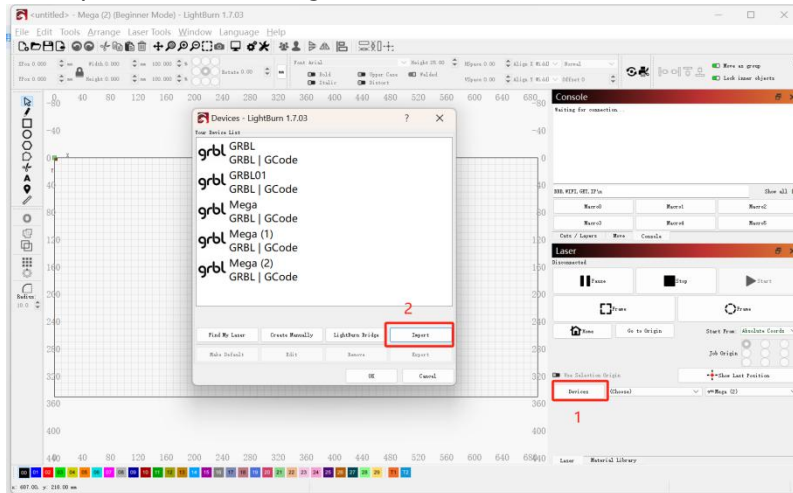
Here, we recommend using Lightburn for configuration.

1. Download the lightburn configuration file for Mega-S

https://drive.google.com/file/d/1ChJII_XqApQjNX1V2q9xYMowRkDYBEVL/view?usp=drive_link

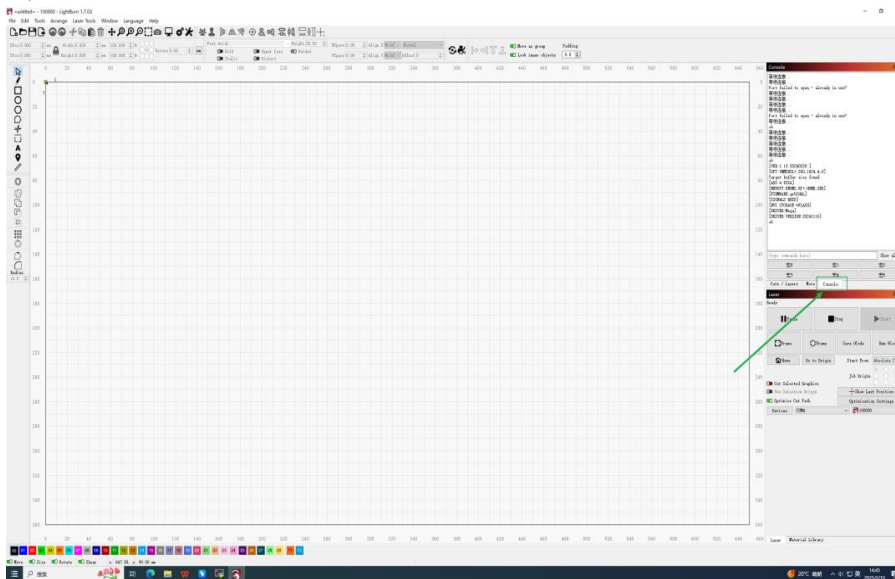


2、Import the file into Lightburn;

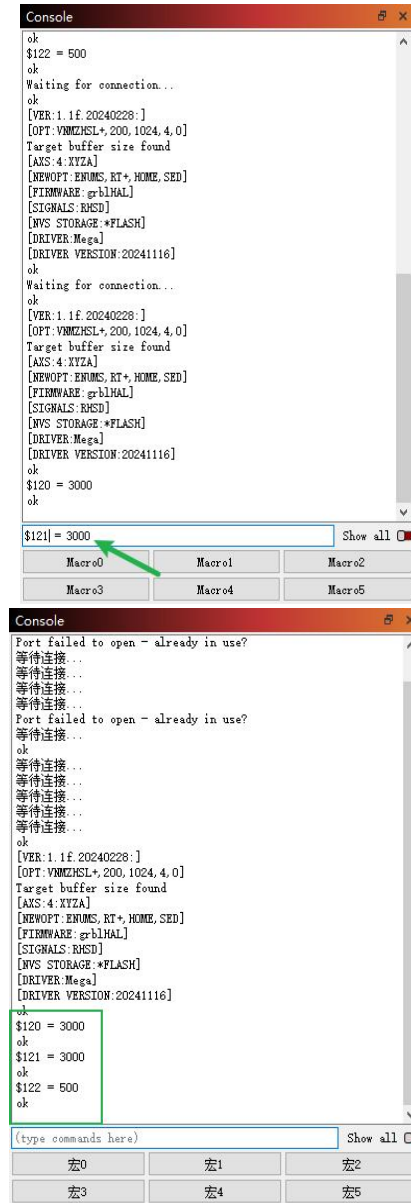
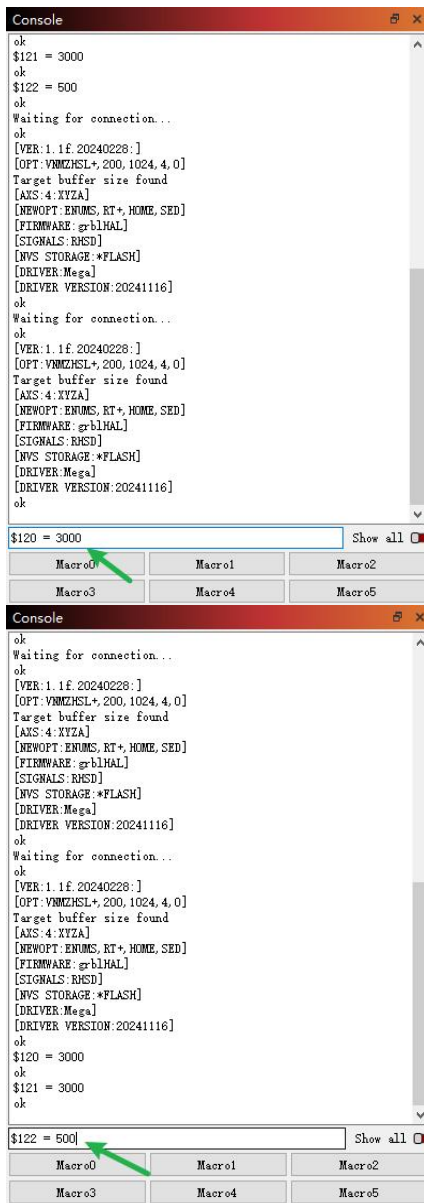


Parameter configuration - Acceleration and deceleration settings. Download parameter configuration (using Lightburn to set acceleration and deceleration)

1、Click the console

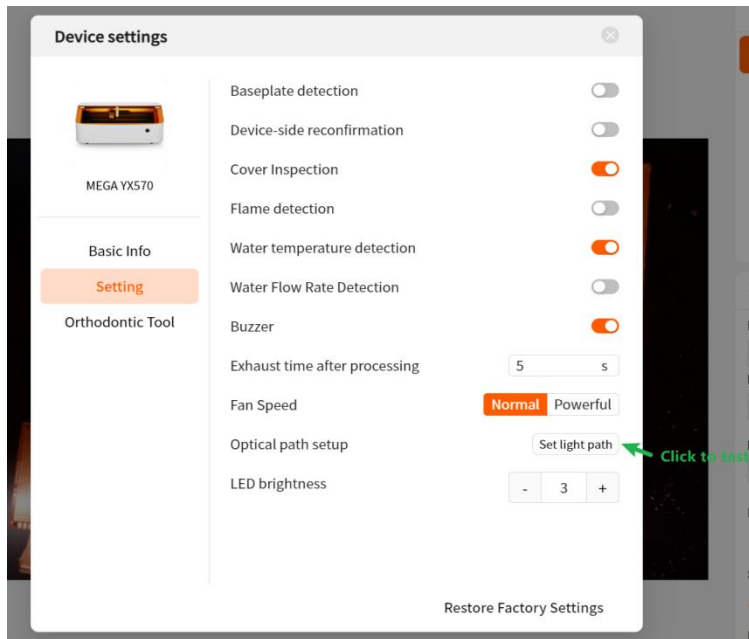


2、Enter the following values: \$120 = 3000, \$121 = 3000, \$122 = 500 (Set the optimal parameters of the machine)



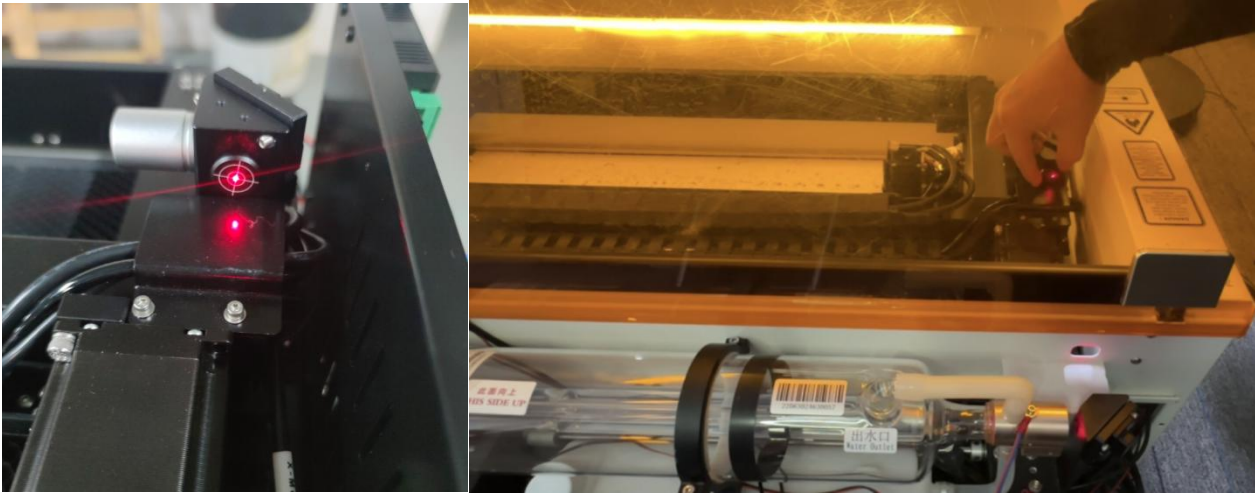
3.2 Adjust the light source and focus the light spot

Open the MDH software, connect the device, set the device parameters, and click on the optical path test. A red light will

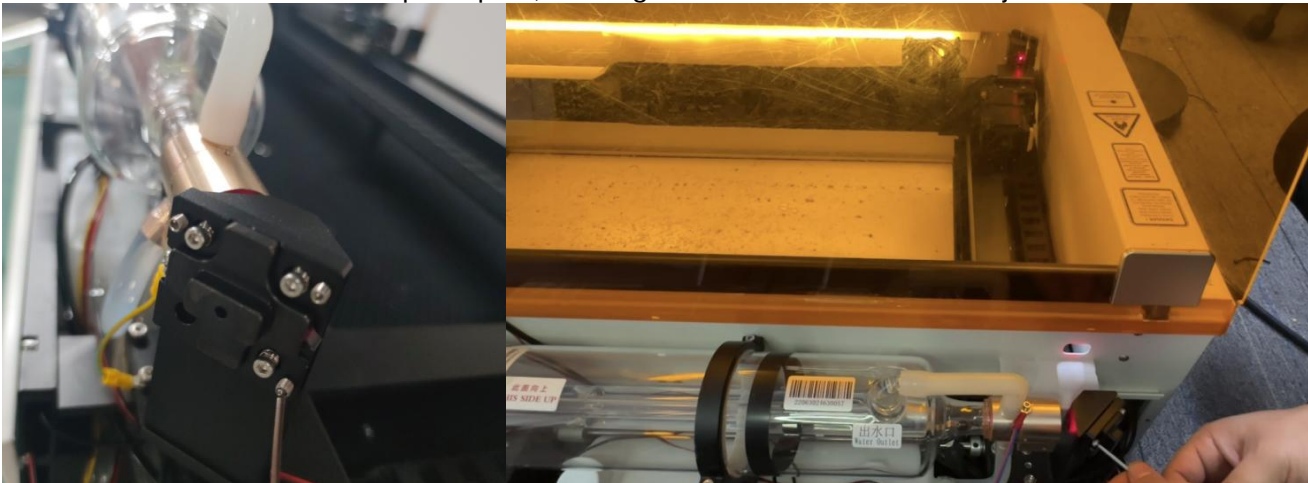


appear.

First, place the light target in the second mirror holder. Then, move the X-axis up and down to check if the light path between the first and second mirrors is normal.



To correct the deviation of the optical path, a hexagonal wrench is needed to adjust the anti-reflection mirror seat.

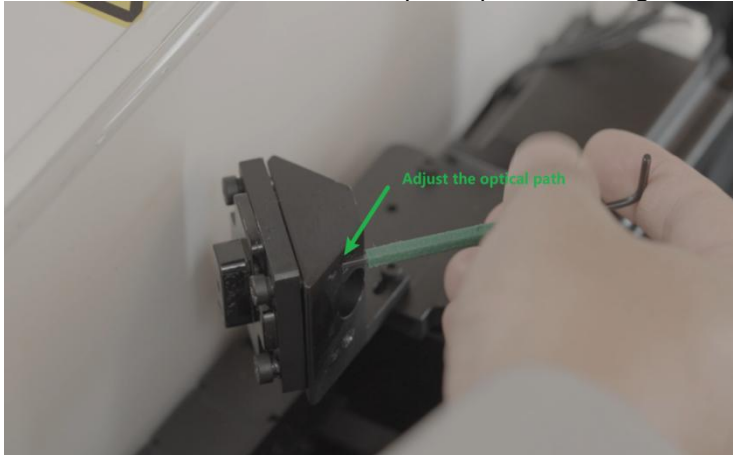


Optical path calibration method 1:

Then place the light target inside the laser head, and move the laser head back and forth to check if the light path between the second mirror and the laser head is normal.



To correct the deviation of the optical path, a hexagonal wrench is needed to adjust the second mirror base.



The optical path adjustment is complete. Shut down the optical path test.

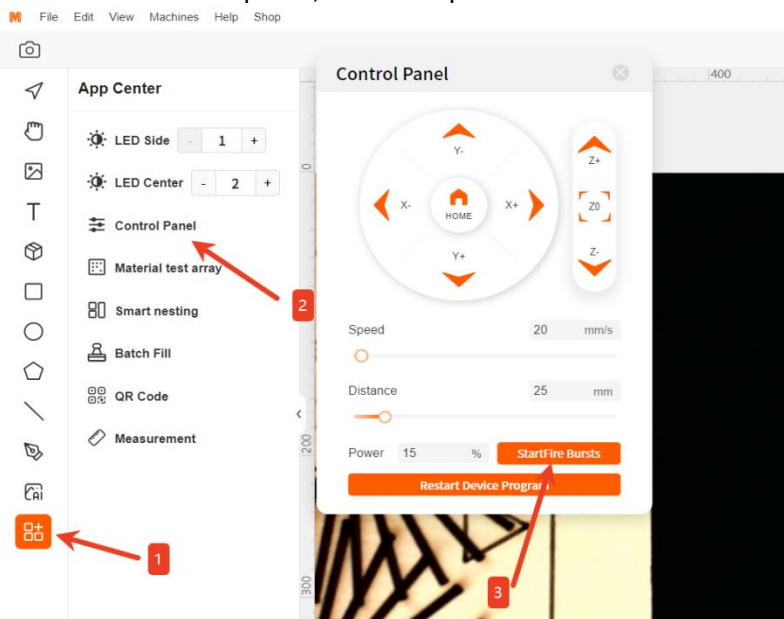
Optical path calibration method 2:

If the position deviation between the auxiliary red light and the light emission position is too large, you can apply masking tape to redirect the emitted light to calibrate the optical path. (Judge whether the light path is centered by checking the actual light emission position.)

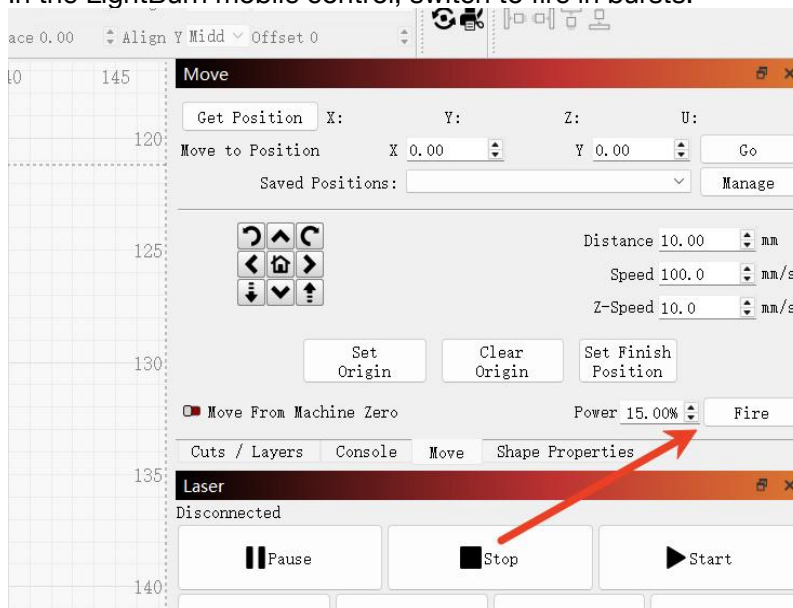


After removing the beam expander, the auxiliary red light and the main light will converge at the same point. (After disassembly, this requires recalibrating the optical path.)

In the MDH control panel, switch to perform burst fire



In the LightBurn mobile control, switch to fire in bursts.

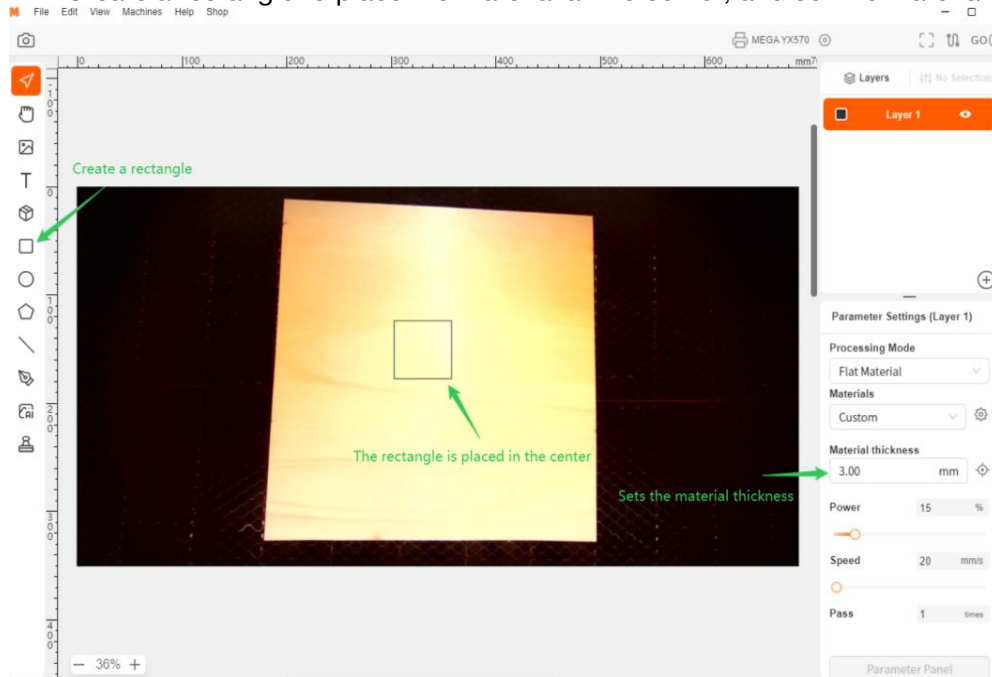


3.3 Check whether the laser output is normal.

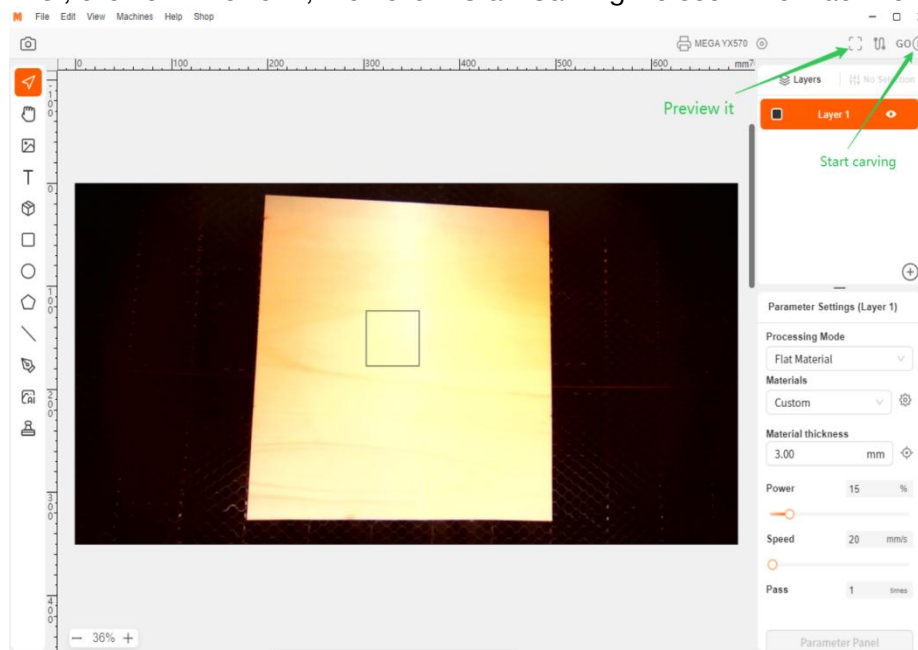
Check if the laser emits light normally through software and hardware.

1. Software: Use the MDH software for engraving to check if the laser is present. During the software engraving process, check if the laser tube emits light. (The speed and power need to reach the emission standard. Refer to a 50×50 rectangle, 15% power, and a 20mm/s speed.)

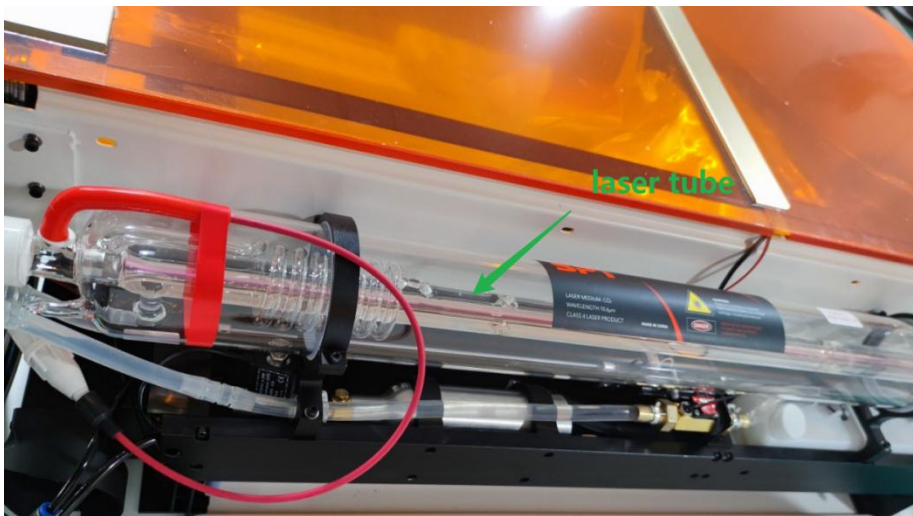
Create a rectangle to place the material at the center, and set the material thickness.



First, click on "Preview", then click "Start Carving" to see if the machine has successfully carved out the pattern.



During the carving process, observe whether the laser tube is emitting light.



2.Hardware: When the software is performing the engraving process, check if there is any laser emitted from the laser tube. If the laser tube does not emit light, then check if the side laser emitter is showing a green light (the yellow light of the machine startup automatically turns on).



3.4 Remove the cover of the camera

You need to use a sharp tool like a utility knife to open the side of the cover. Do not rotate the cover, and do not twist the lens as it may cause the focal length to change and make the captured images blurry.



Remove the camera cover. The surface of the camera is normal (do not rotate the camera)



3.5 Camera frame calibration

Before proceeding with further operations, we need to calibrate the camera and the canvas of Mega-S. This will enable you to achieve more precise positioning and layout.

https://drive.google.com/file/d/1bSUxcotalmM20TxAzQ4-d8PSI6onLXo6/view?usp=drive_link

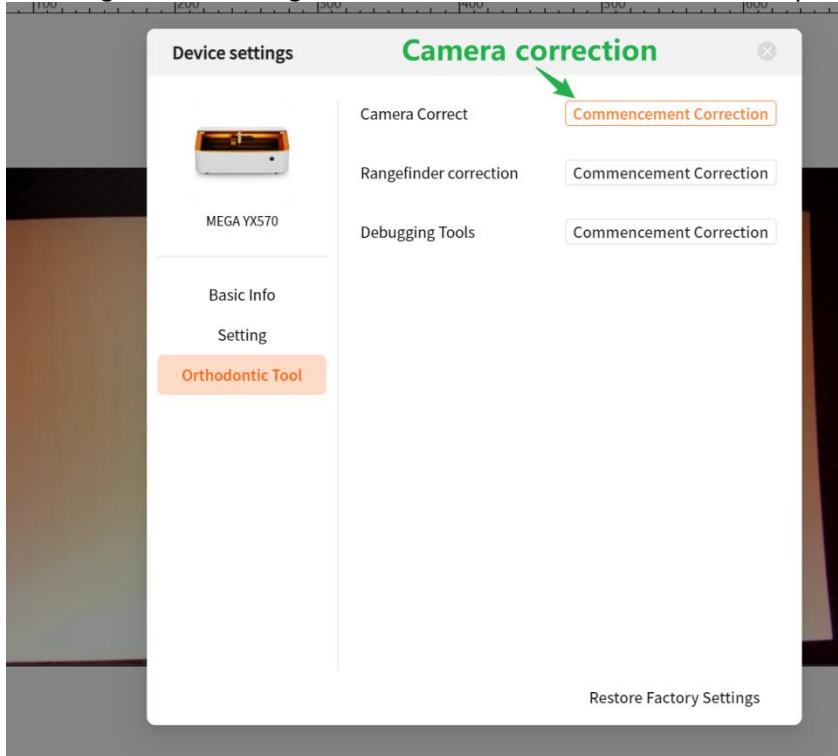
You can also refer to the complete video tutorial on camera calibration that we have provided.

https://drive.google.com/file/d/1bSUxcotalmM20TxAzQ4-d8PSI6onLXo6/view?usp=drive_link

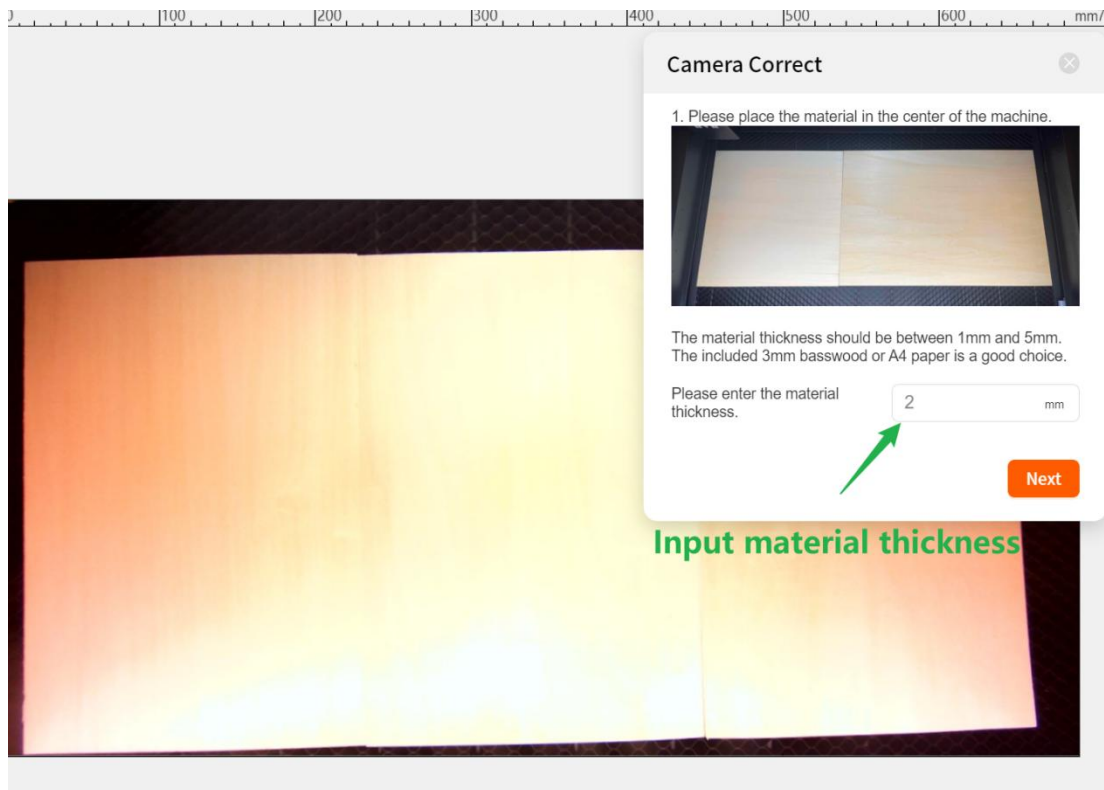


You can refer to the following detailed steps to complete the calibration of the camera canvas one step at a time:

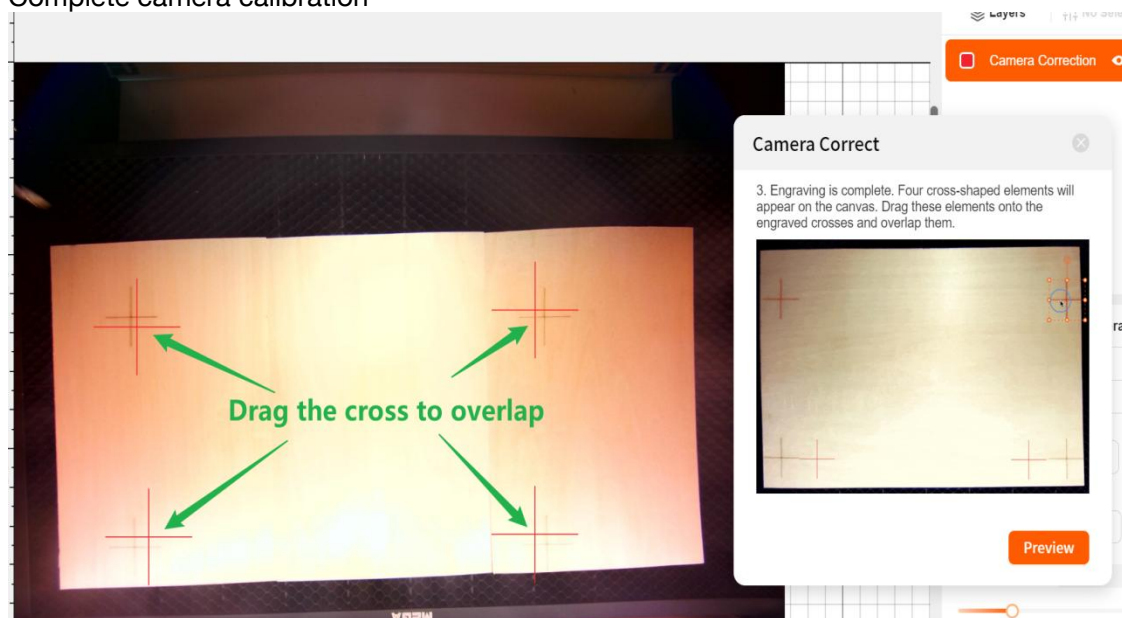
1.First, go to the settings and select the "Camera Correction" option under the "Correction Tools" section.



Insert the materials, input the thickness of the materials, and activate the engraving of the cross element.

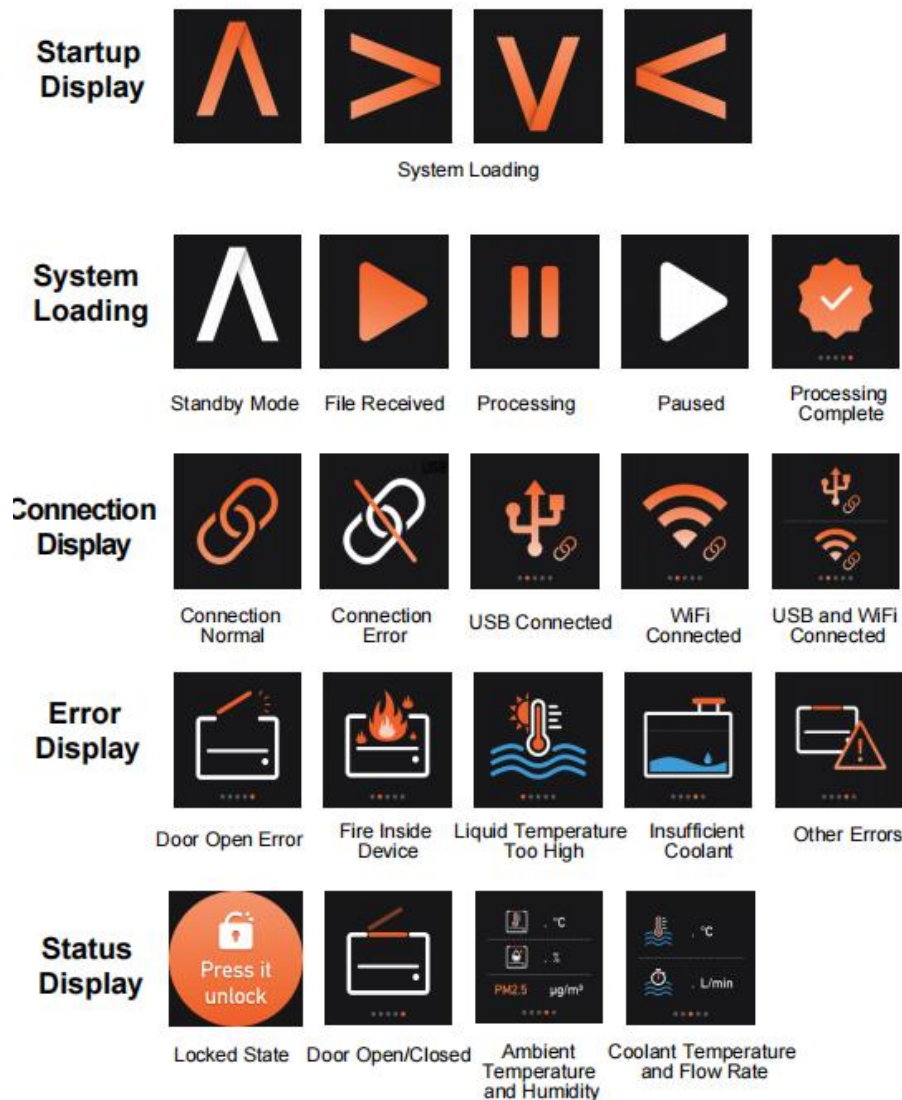


Drag the four cross elements into the engraved cross elements and overlap them.
Complete camera calibration



3.6 Be familiar with the meanings of the Mega-S touchscreen icons

The intelligent button panel right in front of the Mega-S can display the status of various cutting machines. Below are the corresponding statuses for each icon:

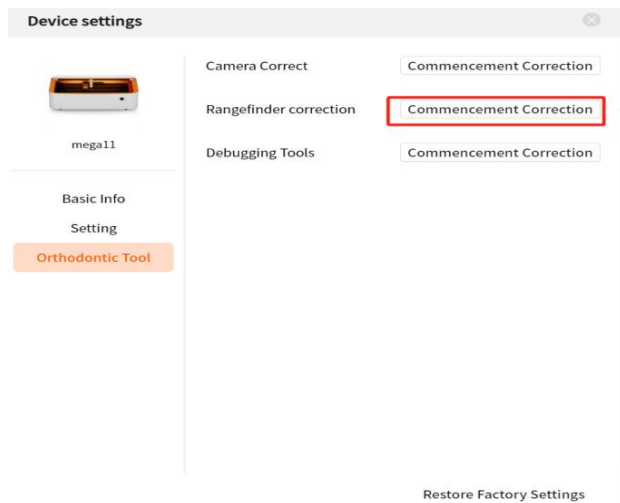


Currently, the device can only be controlled by swiping the screen and pressing, and cannot be controlled by using the knob.

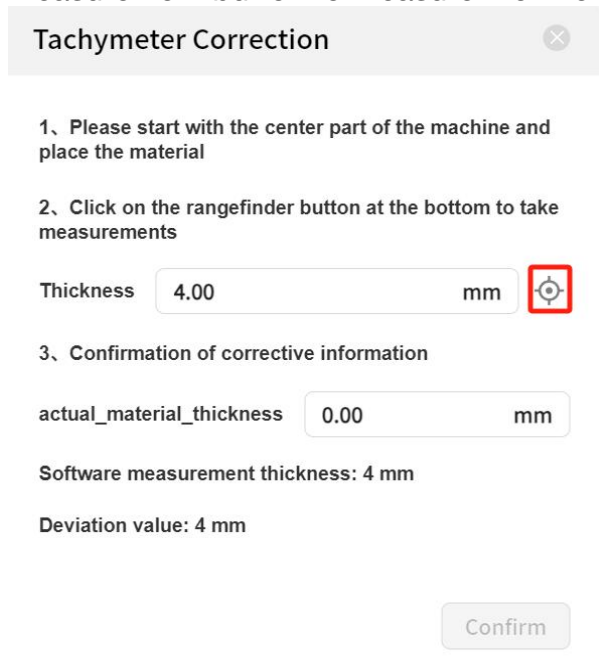
3.7 Distance measuring instrument calibration

If there is an issue with inaccurate measurement of material thickness, the distance meter needs to be corrected. After correction, the measurement accuracy can be improved.

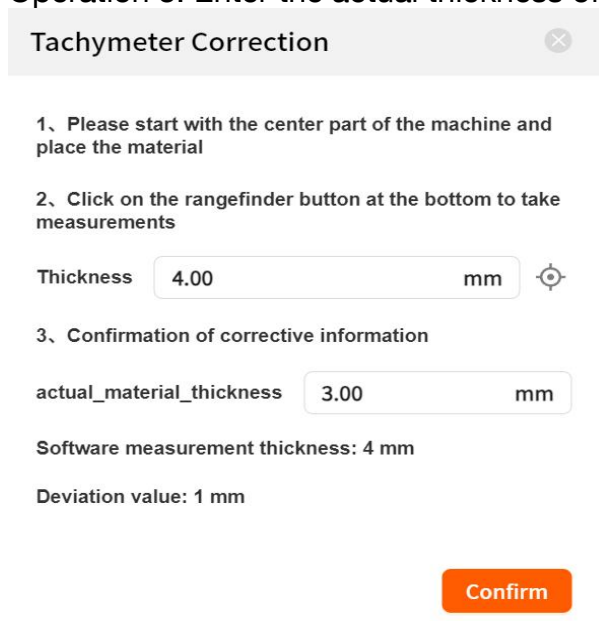
Operation 1: Equipment Settings - Correction Tools - Distance Meter Correction



Operation 2: Within the device, place the complimentary '3mm Linden Wood', then click the measurement button to measure the thickness.



Operation 3: Enter the actual thickness of the material as '3', then click "Confirm" to proceed.



4 Use MDH to complete your first work

4.1 Insert into the honeycomb panel

Open the base plate door as shown in the picture.

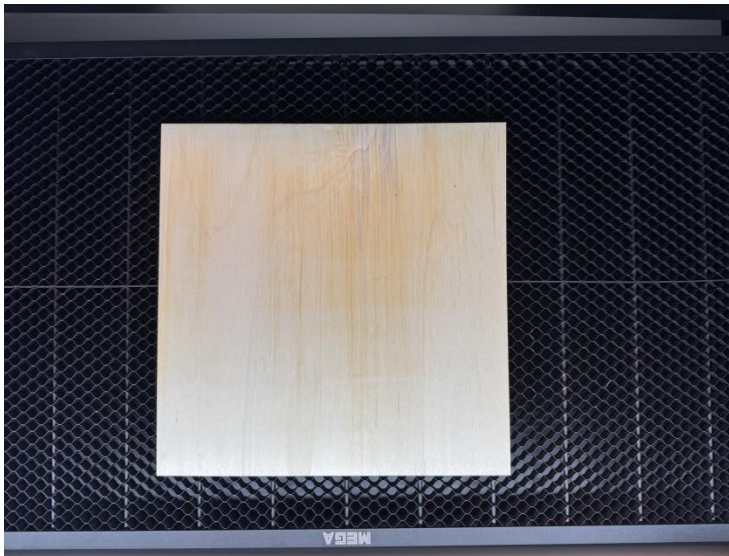


Place the cellular version into the cutting machine, as shown in the picture below.



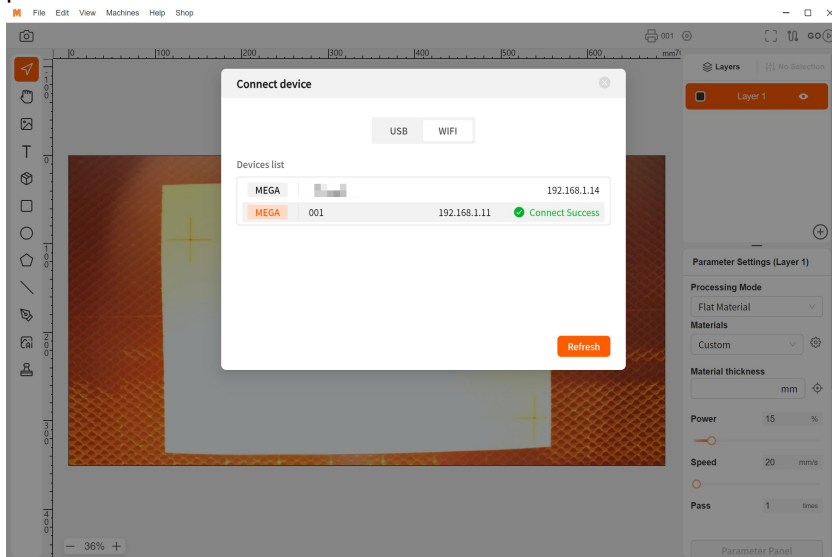
4.2 Place a 3mm thick forged wooden board

Place the 3mm section template in the middle position of the honeycomb board, as shown in the following picture:

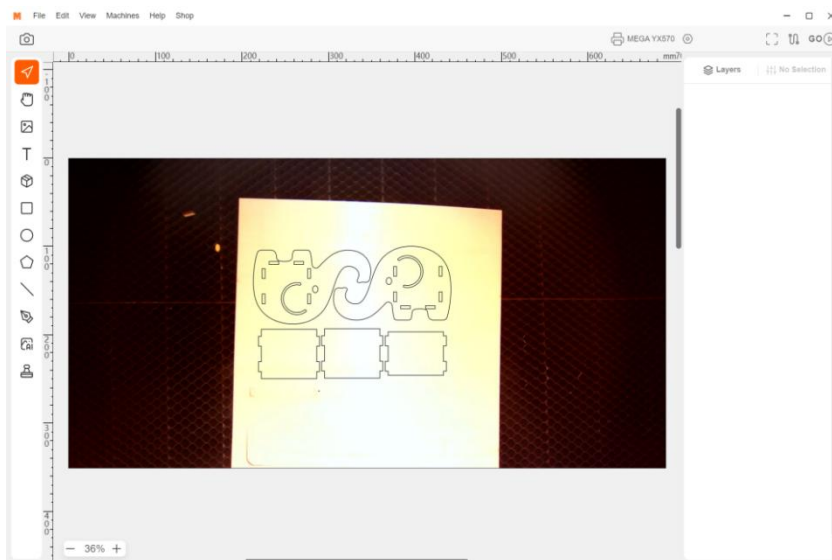
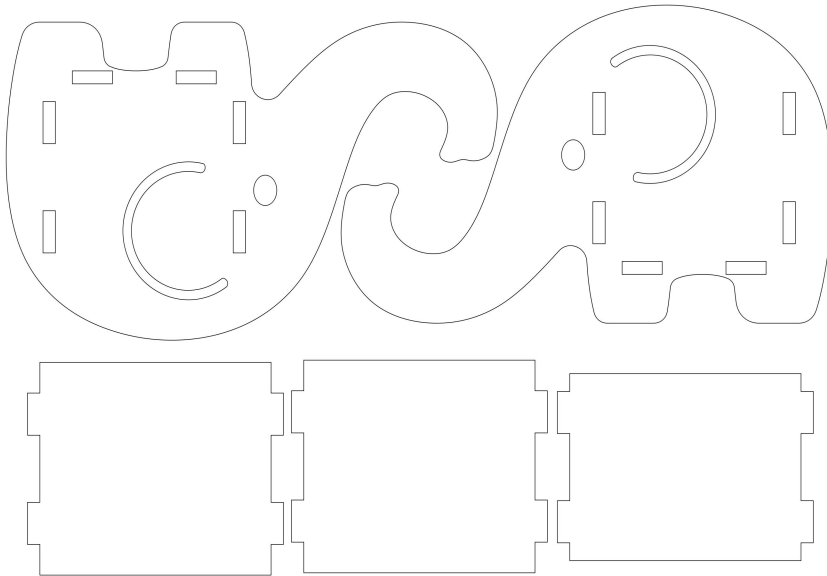


4.3 Refresh the camera & import the file

If you have already configured the network for Mega-S, you can find the device at the position shown in the following picture:

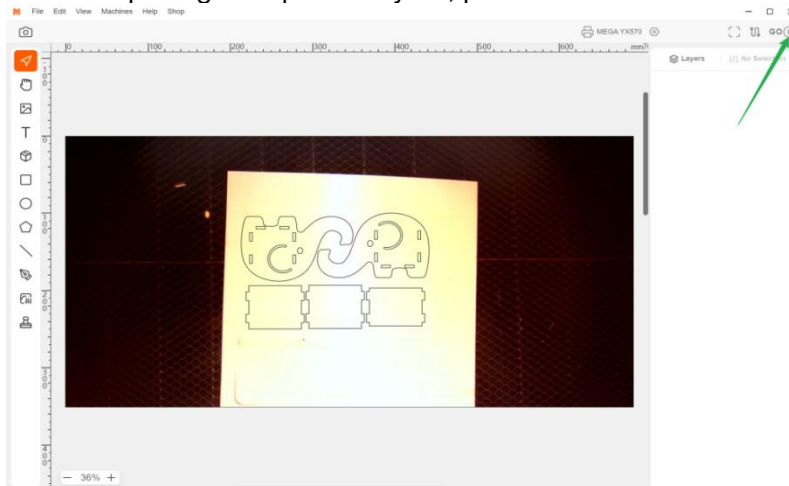


Download this file and import it into MDH.

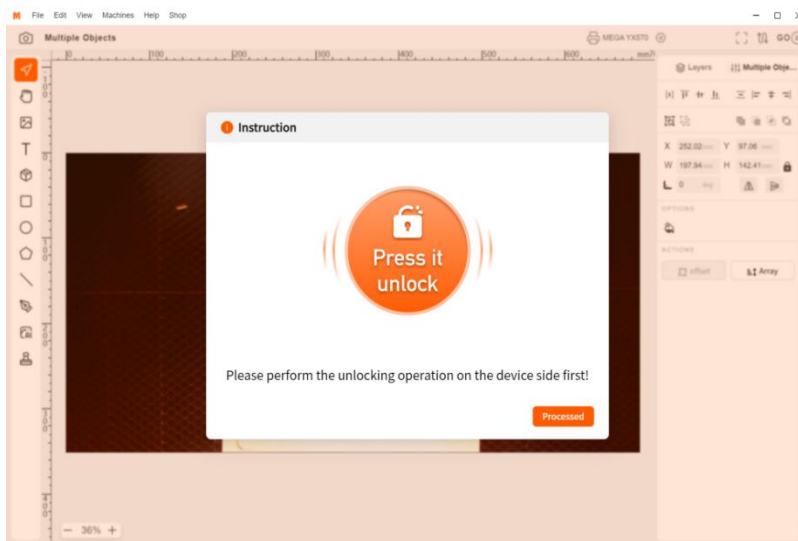


4.4 Upload the file and start the carving process.

After completing the specific layout, please click the icon as shown in the following picture:



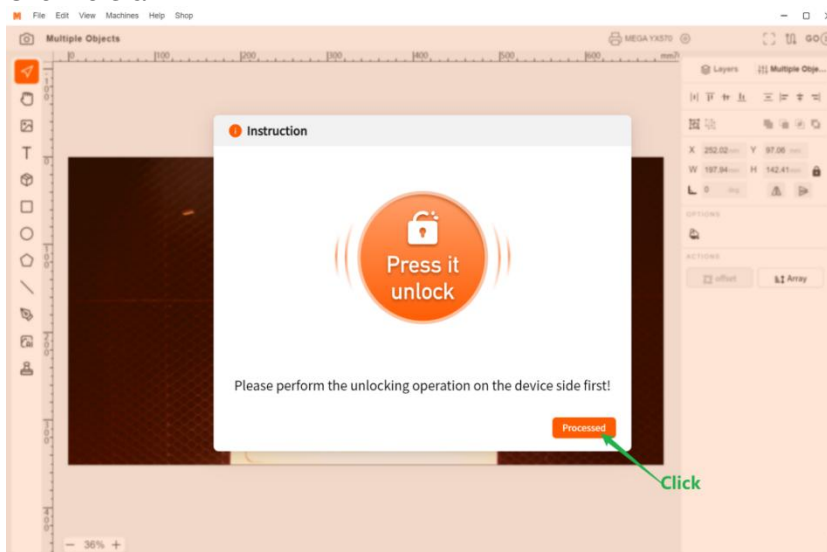
After clicking, you will see the following prompt as shown in the picture:



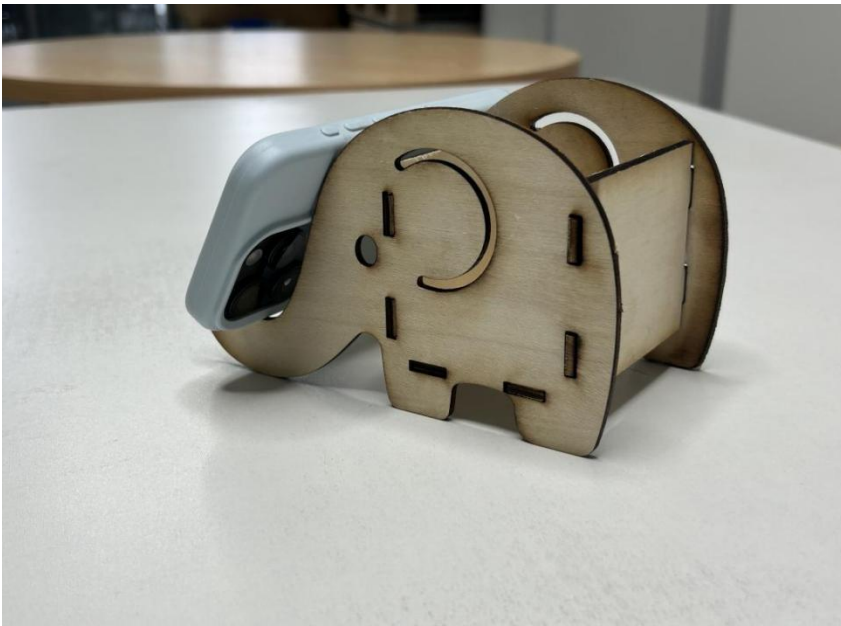
At the same time, you can see that on the circular display screen of the machine, the text "Press it to unlock" will appear, as shown in the following picture:



Click to start



The picture shows the final product:



Congratulations! You have completed the first work of Mega-S. Looking forward to seeing more interesting works created by you using Mega-S in the future.

feel free to contact us

- Facebook Group: <https://www.facebook.com/groups/8651579938232034>
- WhatsApp: <https://chat.whatsapp.com/GTTrZQ0FqKv9Ex58vq8ZXw>
- Support Email: support@monportlaser.com