USER MANUAL

4040 Turbo

User Guide

Contents

Safety Guide

Please be careful when using your CNC machine. This machine is an electrical device with moving parts and dangerous areas.

1. The CNC Machine are for Indoor Use Only.

2.You must be 18 years or older to operate this machine, unless s upervised by a knowledgeable adult familiar with the machine.

3.Wear gloves to install the machine,Wear the proper Personal Protection Equipment when using machines (Safety Glasses etc.).

4.Always place the CNC Machine on a stable surface.

5.The CNC Machine is supplied with Switchable Power Supply 220VAC or 110VAC. Never use a different power supply; it may cause malfunctions or damage to the machine.

6.The 4040 CNC utilizes a high amp power supply. It is recommended that you do not plug the CNC Router into an extension cord, or power strip as it may damage the machine. (Need finalconfirmation)

7.Ensure the Emergency stop button is easily accessible at all times.

8.Never disassemble the Power Supply or Electrical Components. This will VOID the warranty.

9.DO NOT TOUCH the machine spindle, or place any body part near the working area when the machine is operating. Serious injury may occur.

10.DO NOT leave children unsupervised with the CNC Machine even when it's not operating. Injury may occur.

11.DO NOT leave the machine unattended while it's operating.

12.Ensure your CNC Machine is in a well-ventilated area. Some Materials may discharge smoke or fumes during operation.

Specifications

Work Area	400*400*110mm
Drive Type	Chrome Plated Shaft & T10 Screw Rod
Control Board	4 Axis V3.0 GRBL 1.1f
Stepper Motor	nema23 57x56mm(1.5N.m)
Stepper Motor Drive	A4988
Spindle	500W/1.5KW/2.2KW/Trimmer
Power	110V
Max Motion Speed	5000mm/min(Z axis: 3000mm/min)
Max Process Speed	4000mm/min(Z axis: 2000mm/min)
Max Accelerated Speed	200mm/s^2(Z axis: 100mm/s^2)
Accuracy	±0.1mm
Limit Switch	Yes (X1, X2, Y1, Y2, Z1, Z2)
E-Stop	Yes
Z-Probe	Yes
Software	Candle
Laser	Support laser module with 40mm width 12V/24V
Operating System	Windows XP/7/8/10/11 Linux
Overall Machine Size	636x683x538mm
Machine Weight	32kg

Pack List

|					
1. XZ-Axis Module 1pc	2. Y-Axis Module 1pc	3. Control Box 1pc	4. Power Wire 1pc	5. Spindle Holder 2pc	6. Spindle Motor 1pc
7. Z-probe 1pc	8. Lube 1pc	9. Hold Clamps 4pcs	10. CNC Bits 2pc	11. Brush 1pc	12. Rule 1pc
13. Tool Box 1pc	14. Pan Head Screw M5*12 6pcs	15. 1/8 Collet 1pc	16. Wrench 3# 1pc	17. Wrench 4# 1pc	18. Wrench 5# 1pc
19. U Diske 1pc	20. USB Type-c Line 1pc	21. Ribbons 1pc	22. Limit Switch 2pc	23. User Manual 1pc	

Package Content
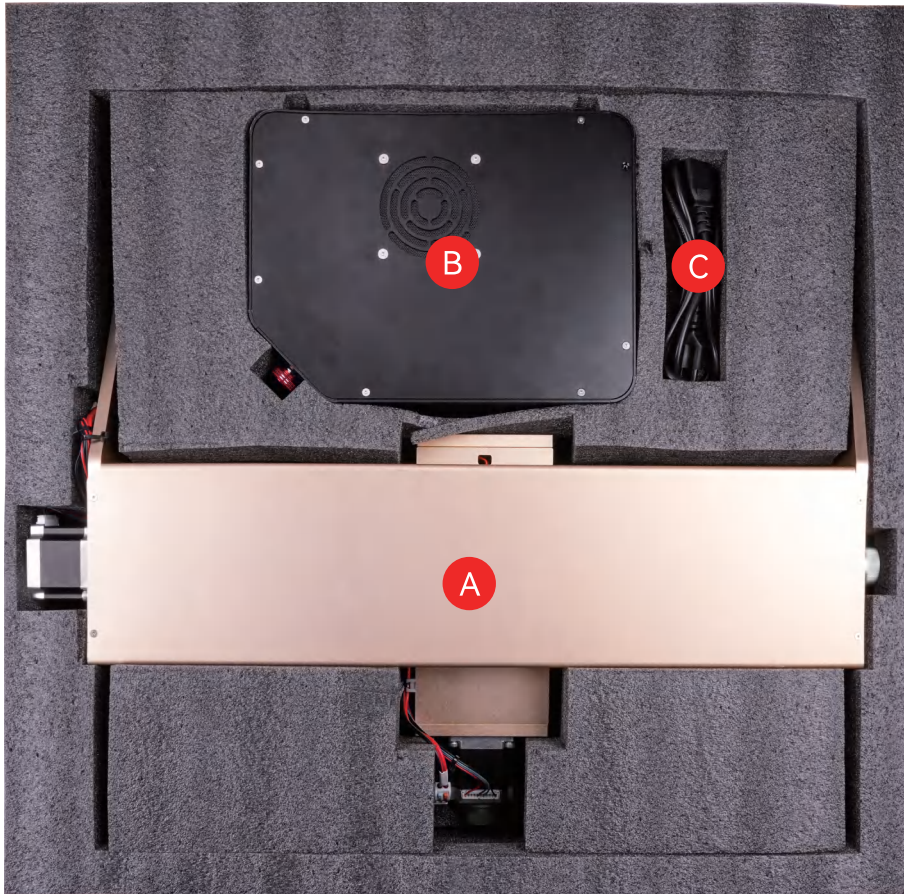
(A) 1. XZ-Axis Module 1pc

(B) 3. Control Box 1pc

(C) 4. Power Line 1pc
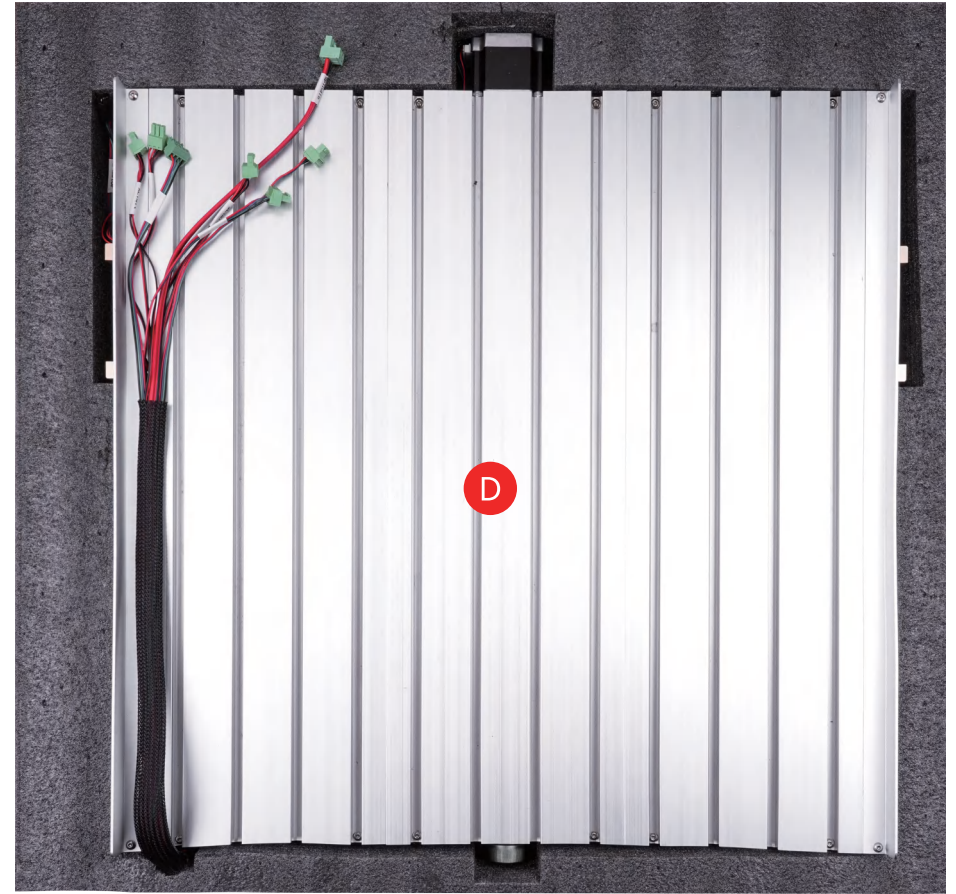
(D) 2. Y-Axis Module 1pc
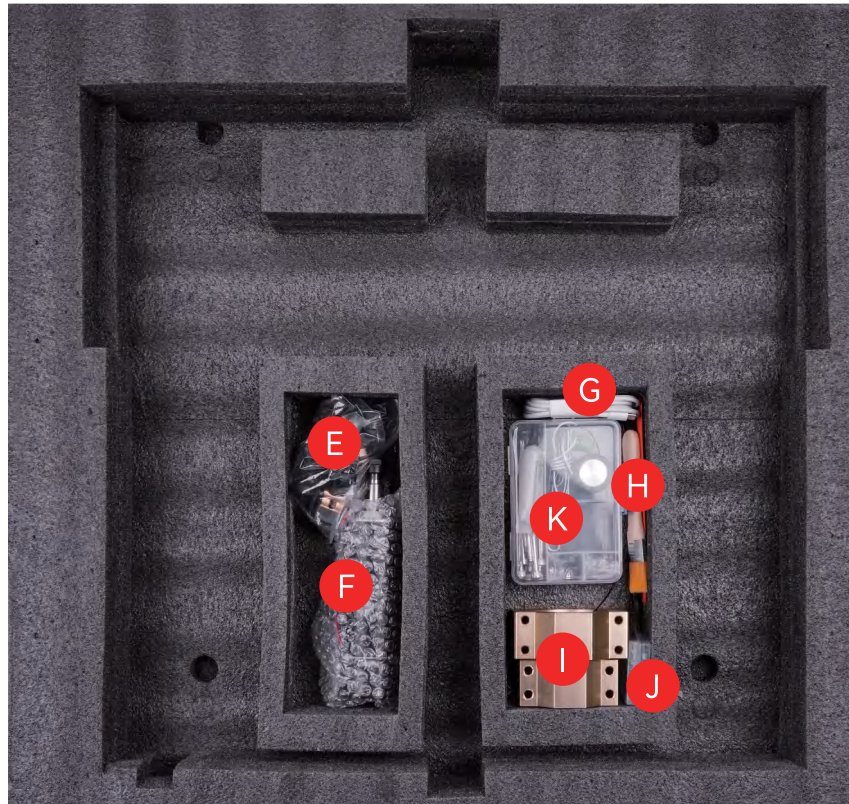
(E) 9-Hold Clamps 4pc

(F) 6-Spindle Motor 1pc

(G) 20-USB Type-c Line 1pc

(H) 11-Brush 1pc & 12-Ruler 1pc

(I) 5-Spindle Holder (52mm,65mm)

(J) 10-CNC Bits 2pc

(K) 7-Z-Probe 1pc

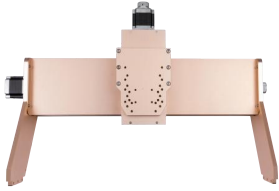19-4G USB Diske 1pc

22.Limit Switch 2pc

14-M5*12 6pc

8-Lube 1pc

Tip: When you cannot find the required part, you can find the location of the accessory in the packaging based on the name and serial number of the part. If not, please contact us.
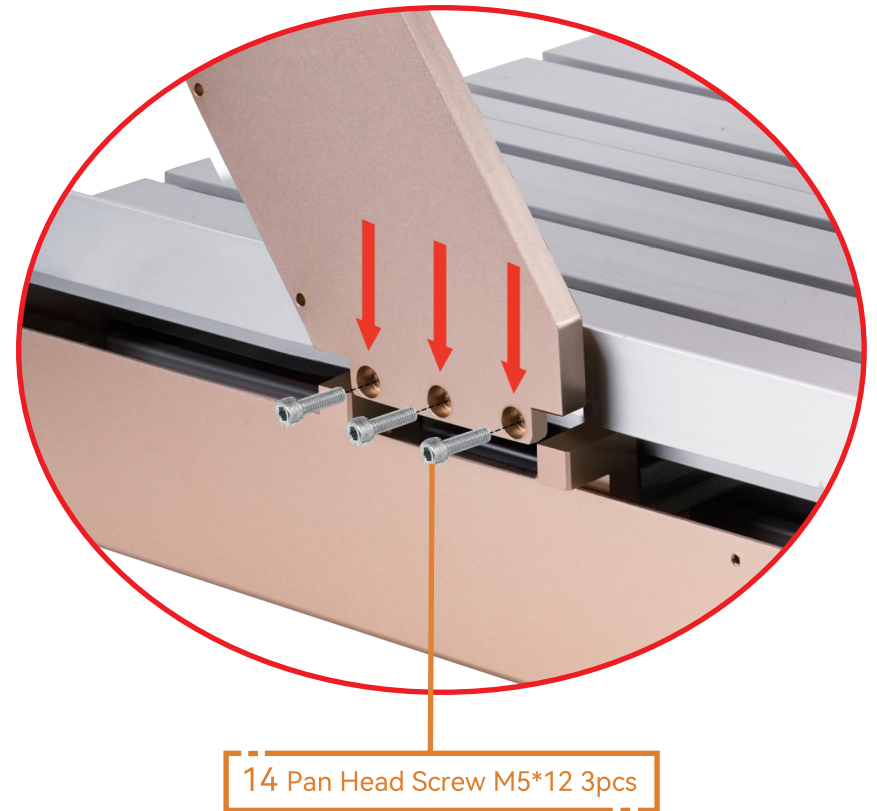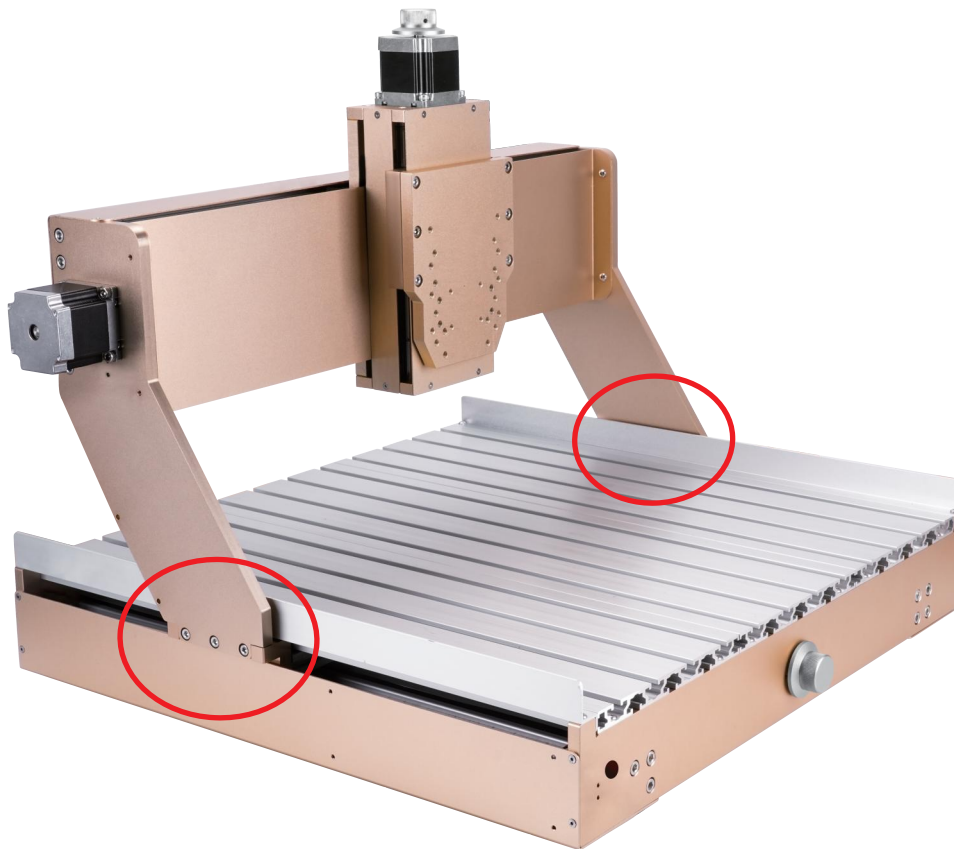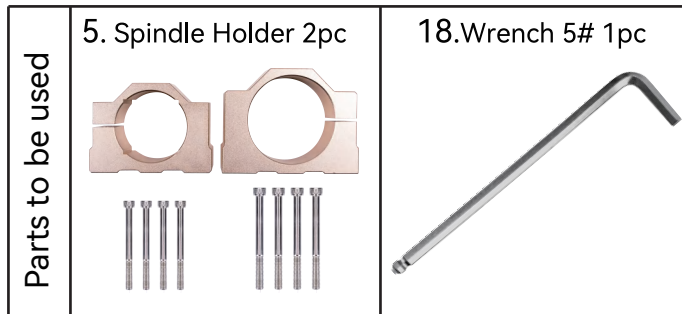
Assembly Instructions

❶ X Y Z Module Assembly

| Parts to be used	1. XZ-Axis Module 1pc	2. Y-Axis Module 1pc	14. Pan Head Screw M5*12 6pcs	17. Wrench 4# 1pc

14 Pan Head Screw M5*12 3pcs

❷ Install the Spindle Holder

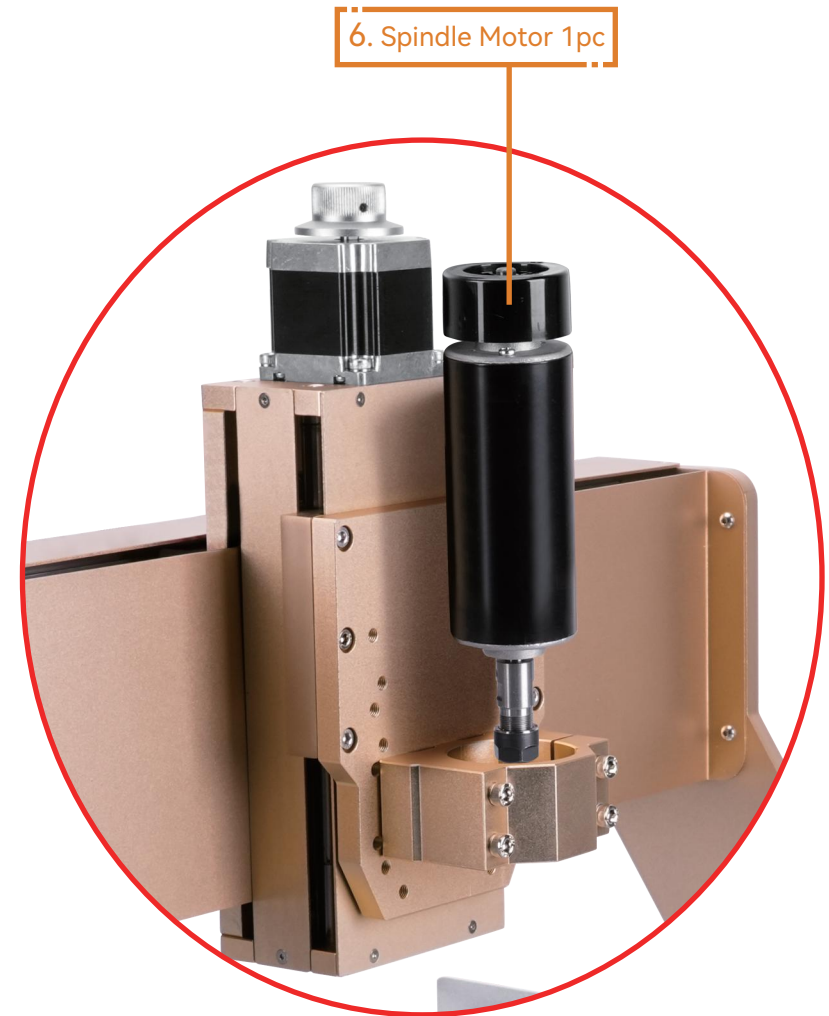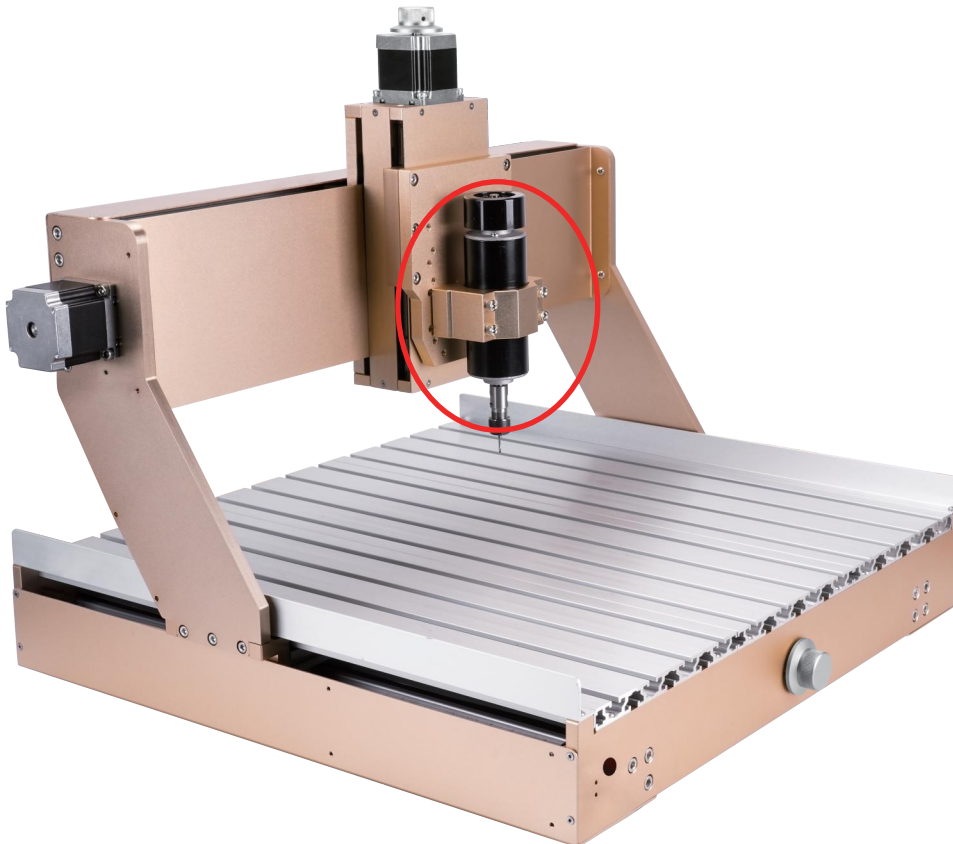| Parts to be used	5. Spindle Holder 2pc	18.Wrench 5# 1pc

Tip:
First, tighten the two screws on the non slotted side of the spindle fixture.After the spindle is inserted into the spindle Holder, tighten the two screws on the slotted side.

5. Spindle Holder 1pc
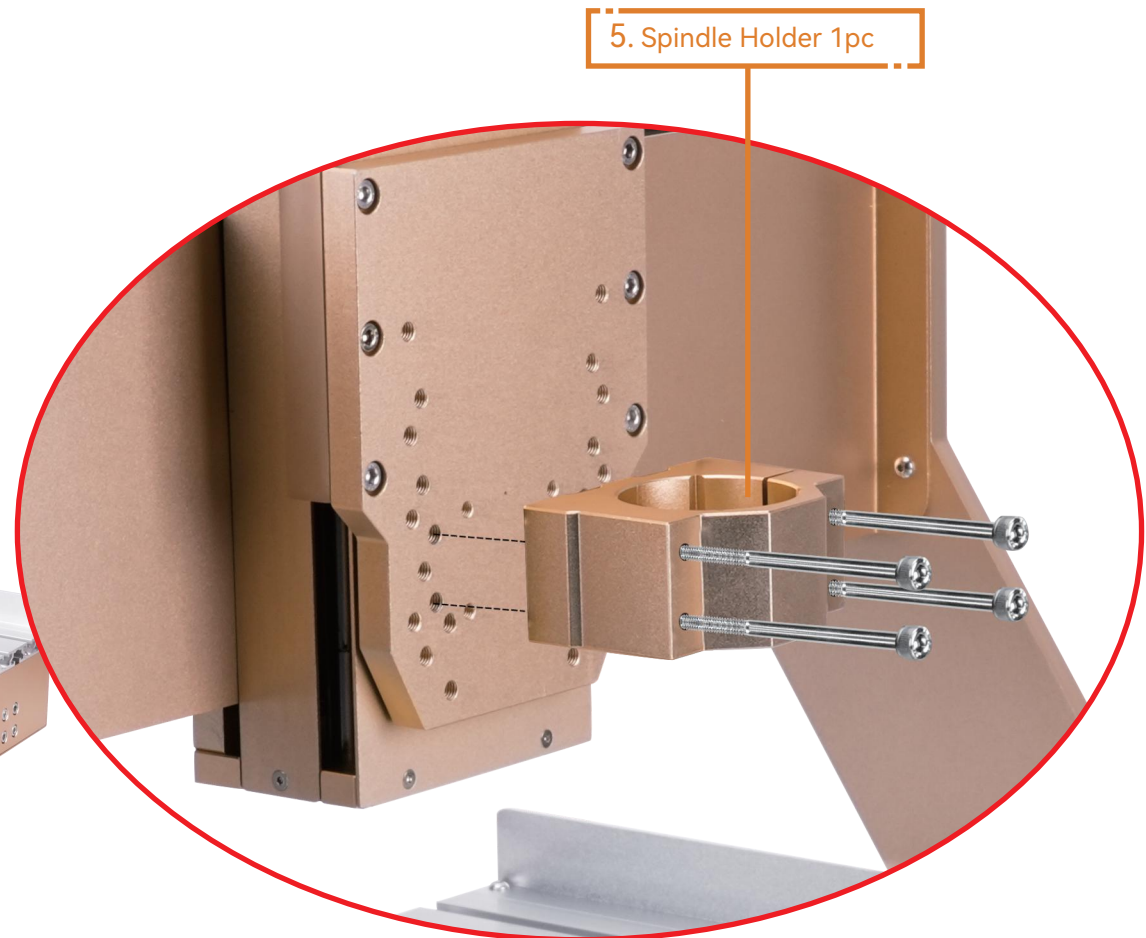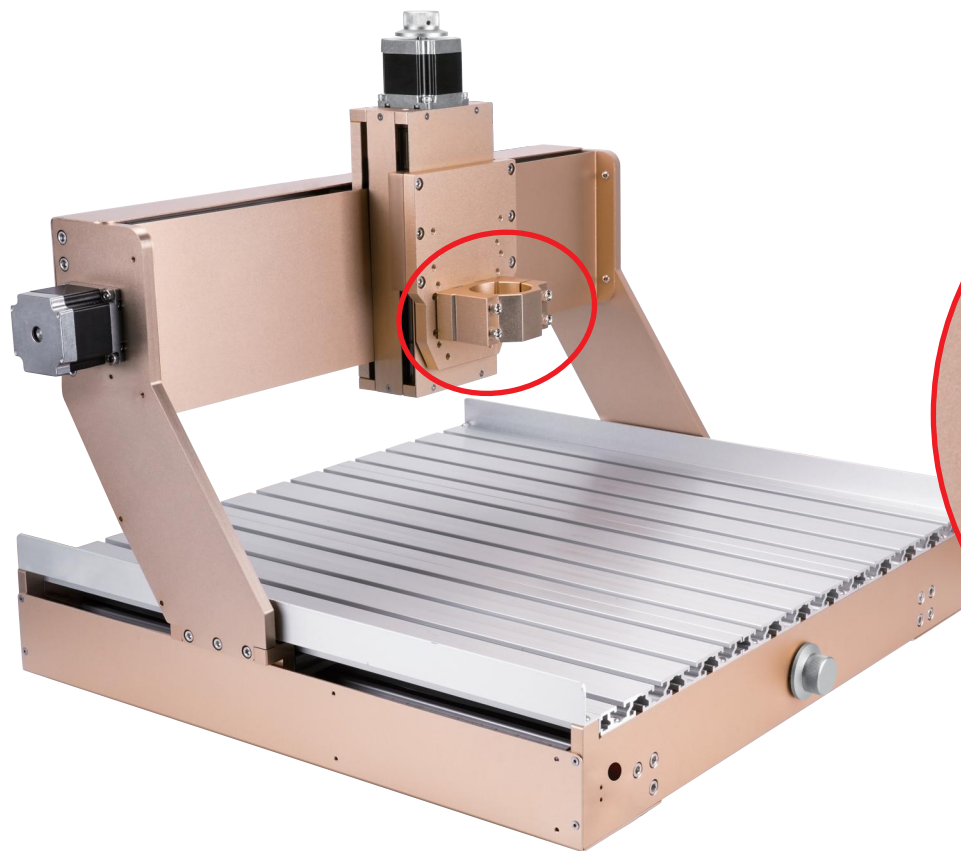
❸ Install the Spindle

Parts to be used

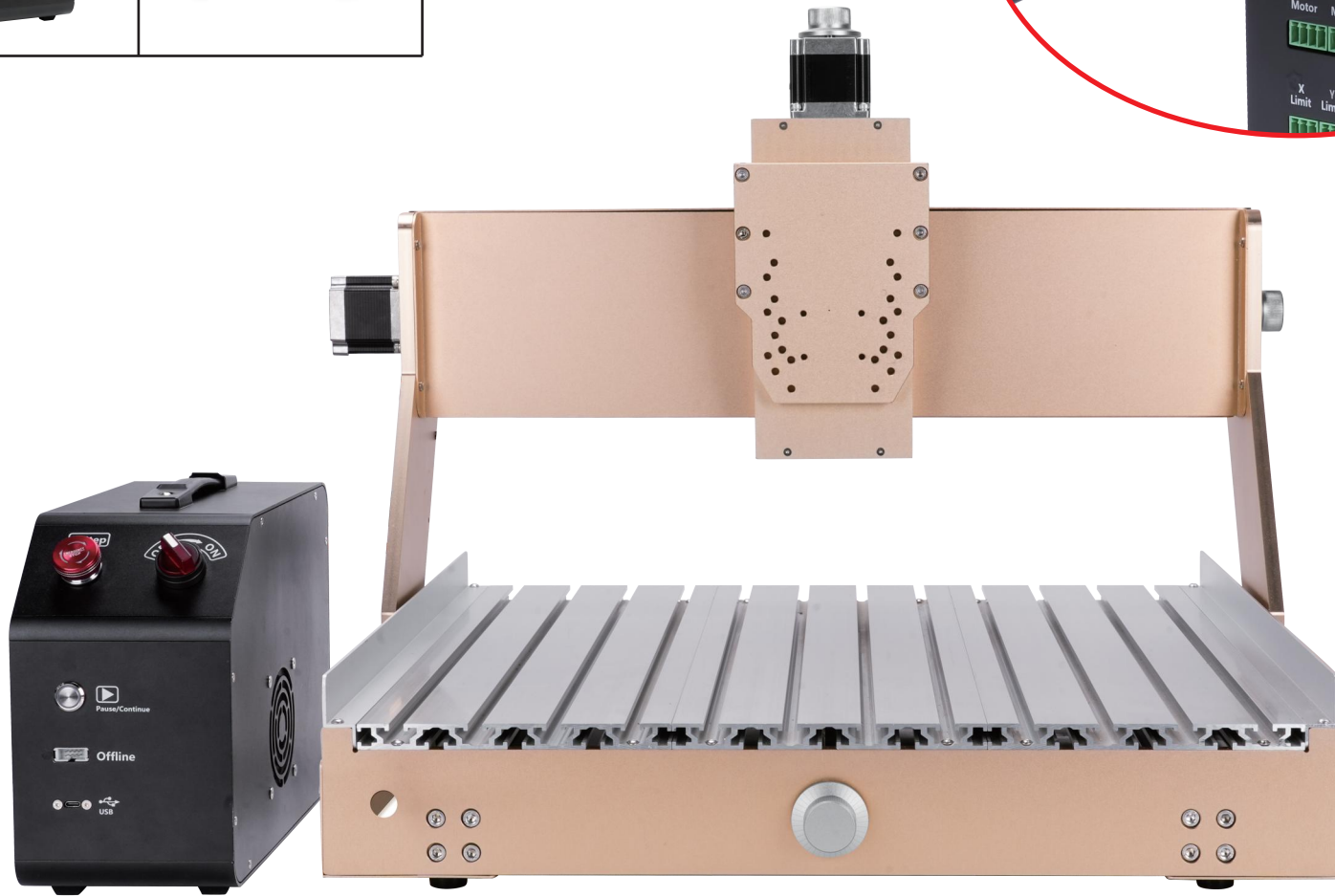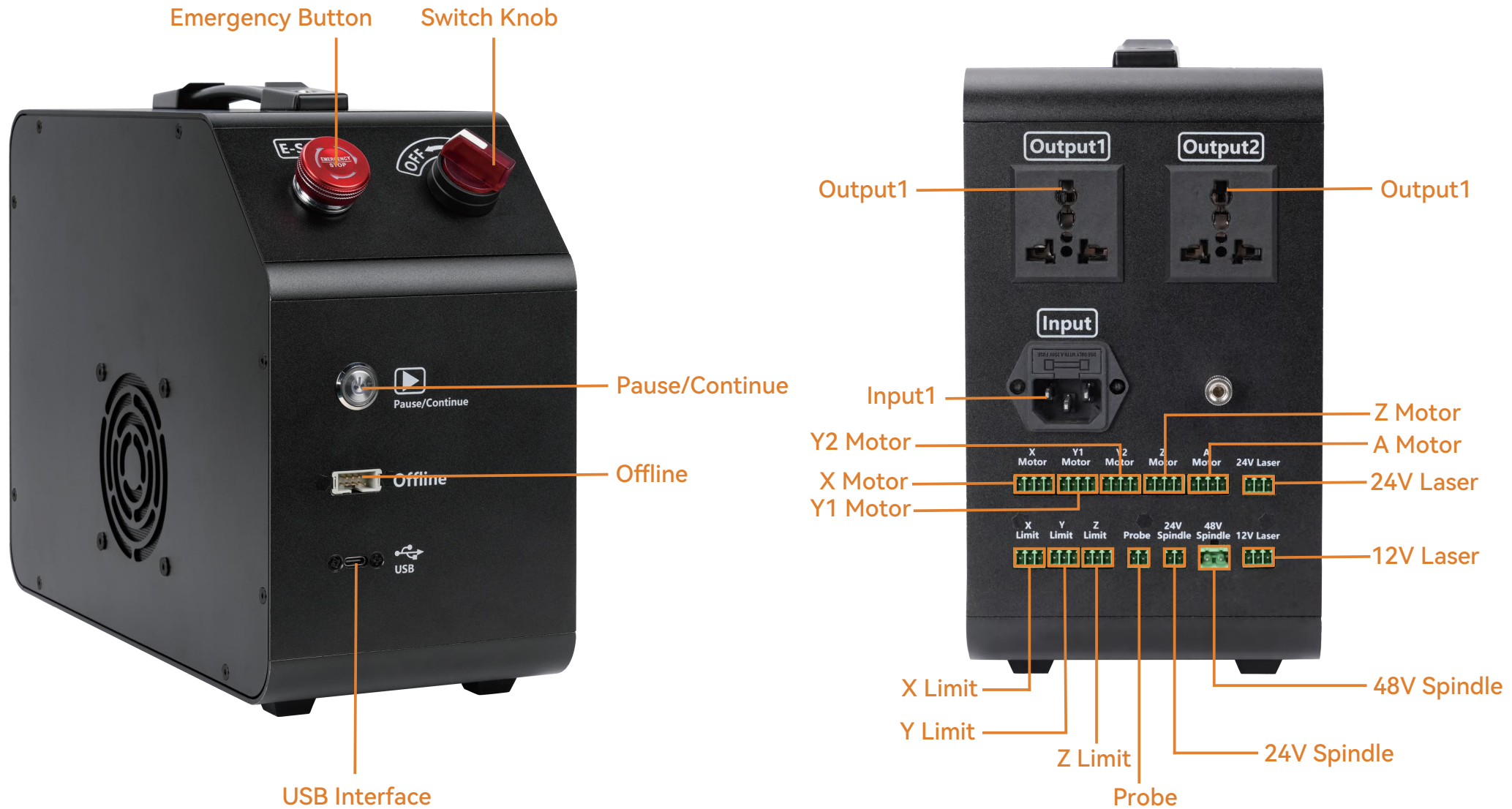| 6.Spindle Motor 1pc	18.Wrench 5# 1pc

6. Spindle Motor 1pc

Tip:
You need to insert the spindle motor first, then tighten the two screws on the right.

❹ Install the Control Box

3.Control Box	4.Power Line

Input

X Motor Y1 Motor Y2 Motor Z Motor A Motor 24V Laser

X Limit Y Limit Z Limit

Pause/Continue

Offline

USB

10

Control Box Function Introduction

Emergency Button

Switch Knob

Pause/Continue

Offline

USB Interface

Output1

Output1

Input1

Y2 Motor

X Motor

Y1 Motor

Z Motor

A Motor

24V Laser

12V Laser

X Limit

Y Limit

Z Limit

Probe

24V Spindle

48V Spindle

Tip: For detailed wiring method, please refer to the QR code on the last page of the instruction manual.

◆ Driver Installation ◆

❶ Install the Machine's Driver (CH340SER)

If not available on the USB drive, you may download it here: https://bit.ly/3gFOhVG

NOTE FOR MAC USERS: If your Mac is running Mojave OS or higher, Don't install the driver, as the OS has native support for the CH340. If you are running Sierra or High Sierra, please contact LUNYEE Technical Support for additional guidance.
If the driver installation fails, please click Uninstall and then select Install again.

The CH340 driver is installed to ensure that the CNC engraving machine or controller can communicate stably and reliably with the computer through the USB interface.
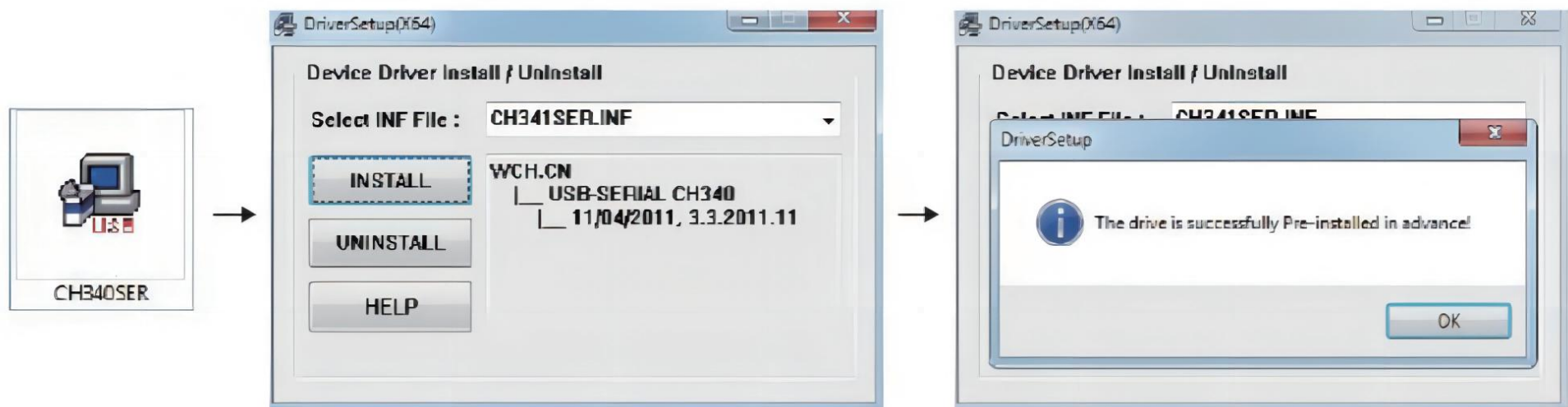
❷ Determine Your Machine's COM Port(Windows Computers)

·WindowsXP : Right click on My Computer,select Manage,then Device Manager.
·Windows7 : Click on Start on the task bar,right click on Computer,select Manage,then Device Manager
·Windows10 : inthesearch box on the task bar,type Device Manager,then select it from the menu.
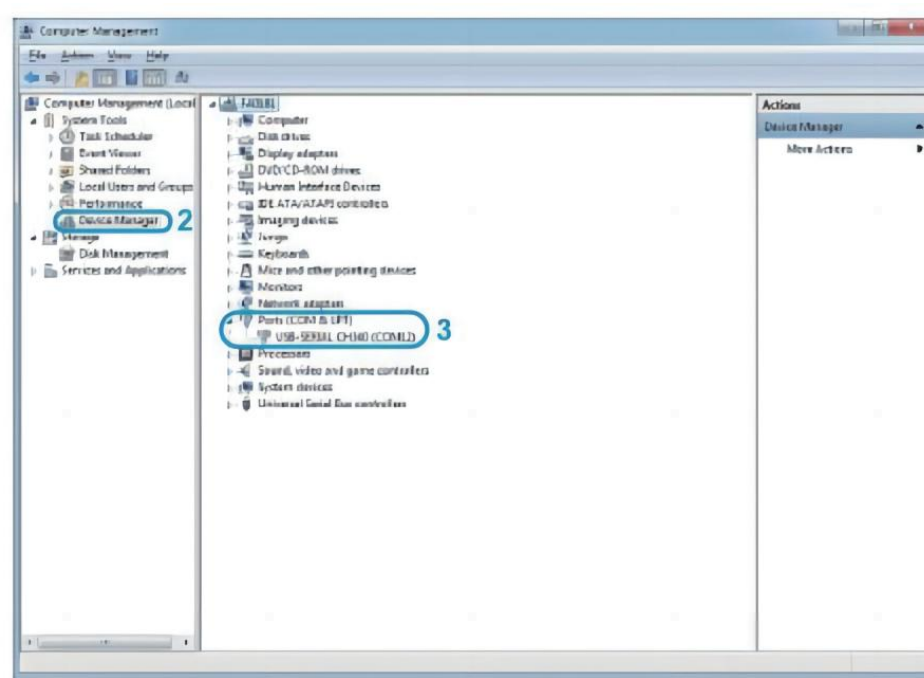
Note:
Machine must be connected to your computer in order for a COM port to be assigned.

In the tree, expand Ports (COM & LPT) Your machine will be identified by the USB Serial Port (cOMX), where the "X' represents the COM number, for example COM3.
If there are multiple USB serial ports right click on each one and check the manufacturer,the machine's should be "CH340".
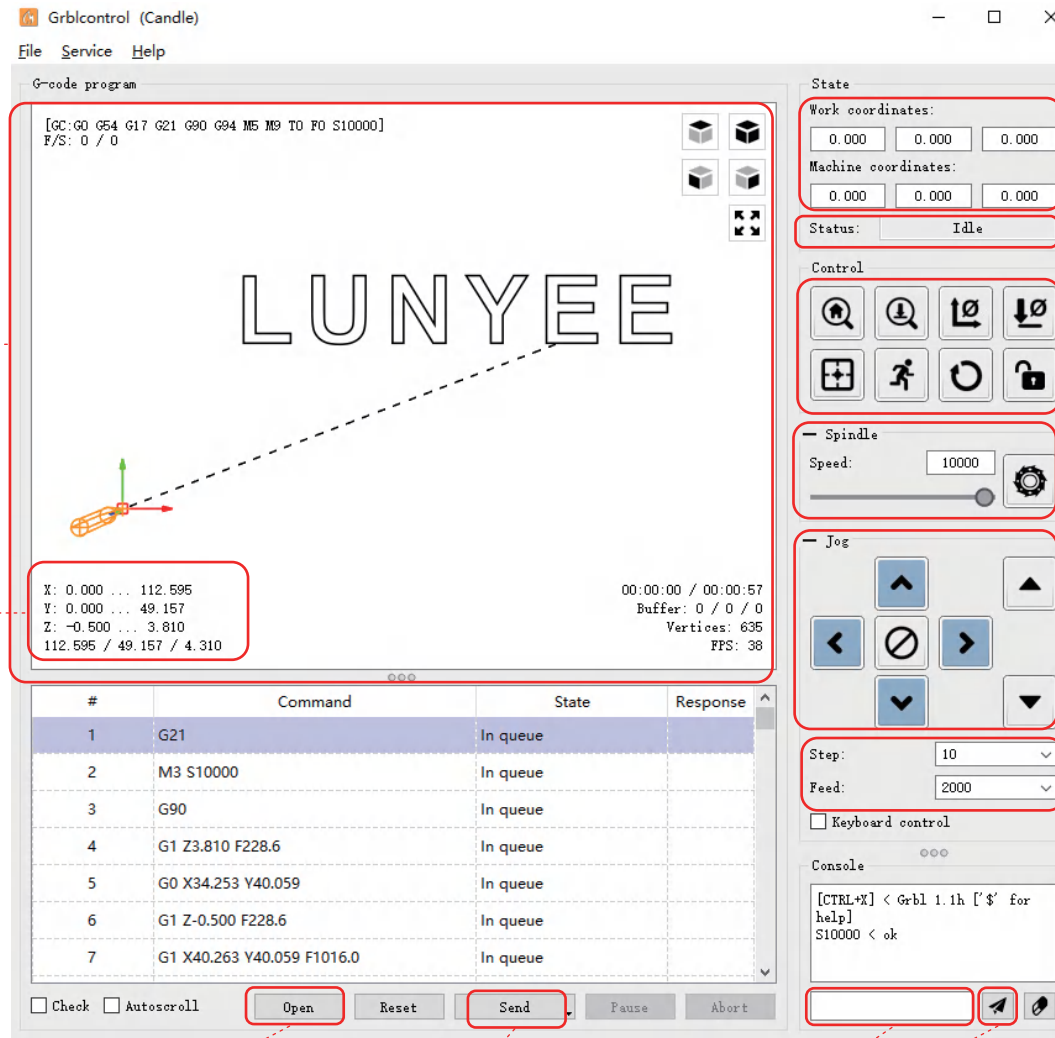
How to Use Grblcontrol (Candle)

❶ Candle Interface Introduction

3D preview interface, hold the left mouse button, can rotate Angle, scroll the mouse wheel, can be enlarged, or reduced.

If you cannot see anything, you need to change to a computer with support for OpenGL2.0 graphics cards.

Pattern size

Coordinate display

Status display

Common operation button, the mouse icon on the above shows the specific function

Spindle ON/OFF. Because it is manual speed control, the software can only control the spindle on/off, and cannot perform software speed control, so the progress bar does not work

Manual operation Direction buttons

Step and Feed value E.g.: Step value=10 means moving distance is 10mm. Feed value=2000 means 2000mm/min
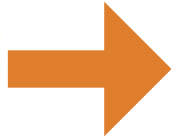
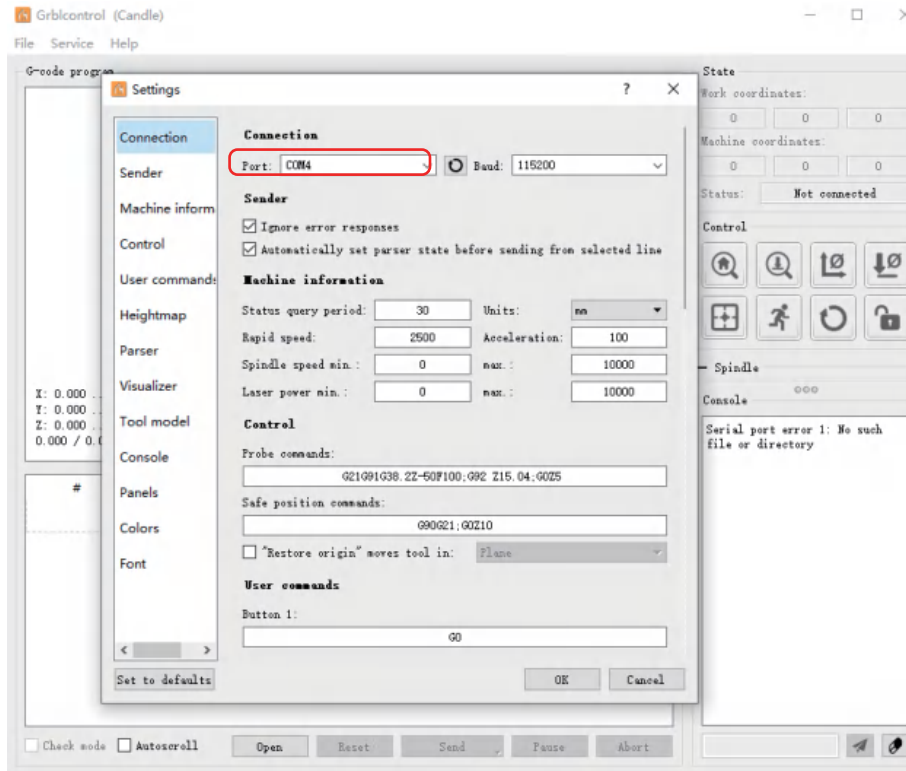Open G-code file   Send G-code file   Command input box   Send command
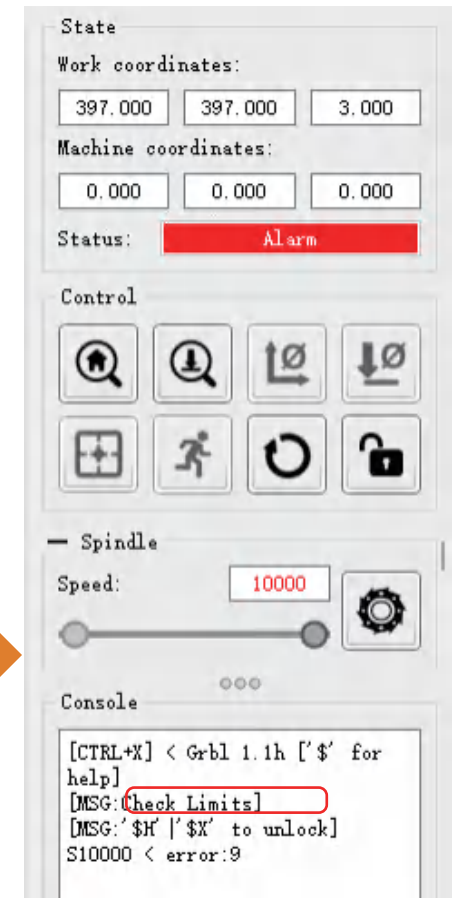
❷ Make Your First Cut


Double click to start Grblcontrol (Candle)

Connect USB cable to computer and machine, click Service->Port select COM port. Click "OK"

If Status becomes Alarm and [MSG: Check Limits] appears in the console at the same time, please check whether the limit switch is triggered. You can power off and release the limit switch manually
or refer to page 21 of the manual to release the limit via software.
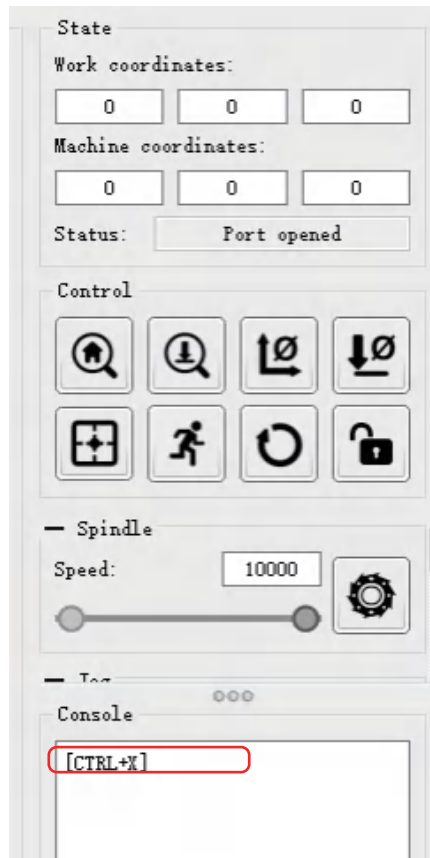
Console window prints "CTRL+X" indicates that the connection is failed. Need to check whether the E-stop is pressed down. If yes, turn the E　stop clockwise, and then click "Unlock".
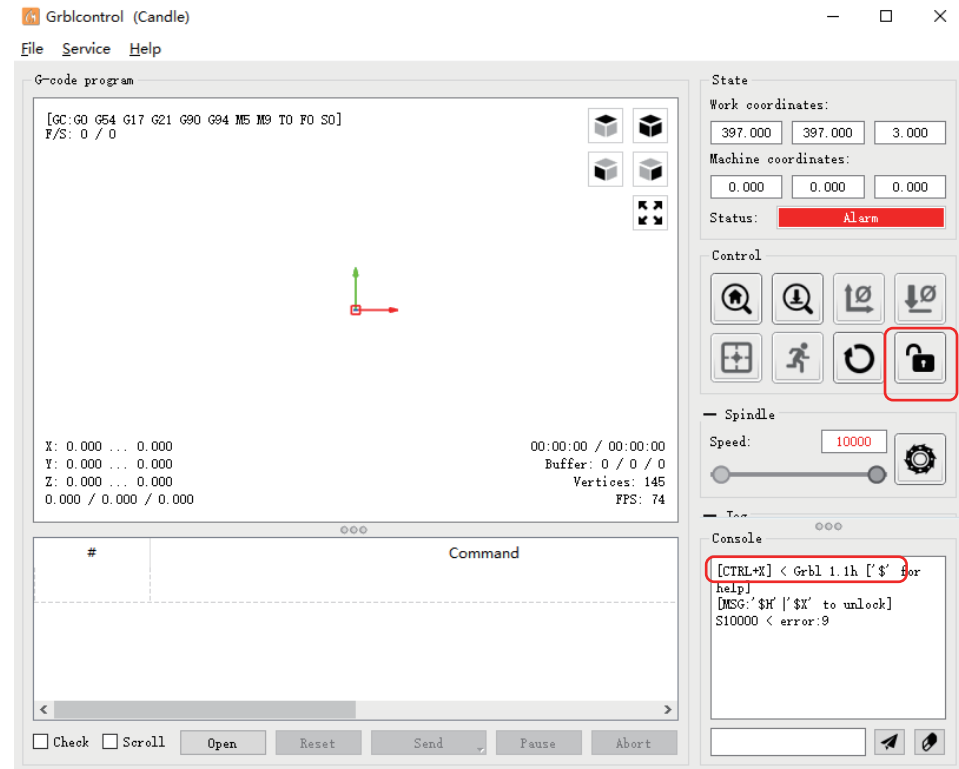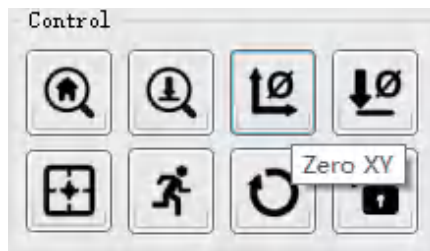
Console window prints "[CTRL+X] < Grbl 1.1f ['$' for help]" if the connection is successful. Click "Unlock".
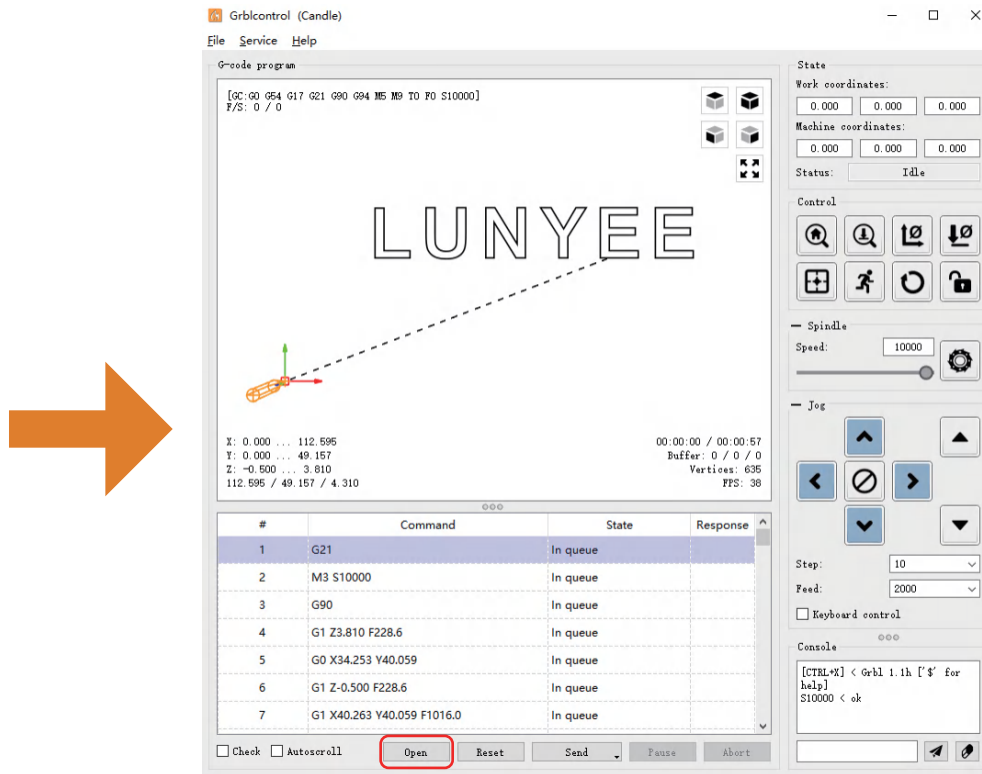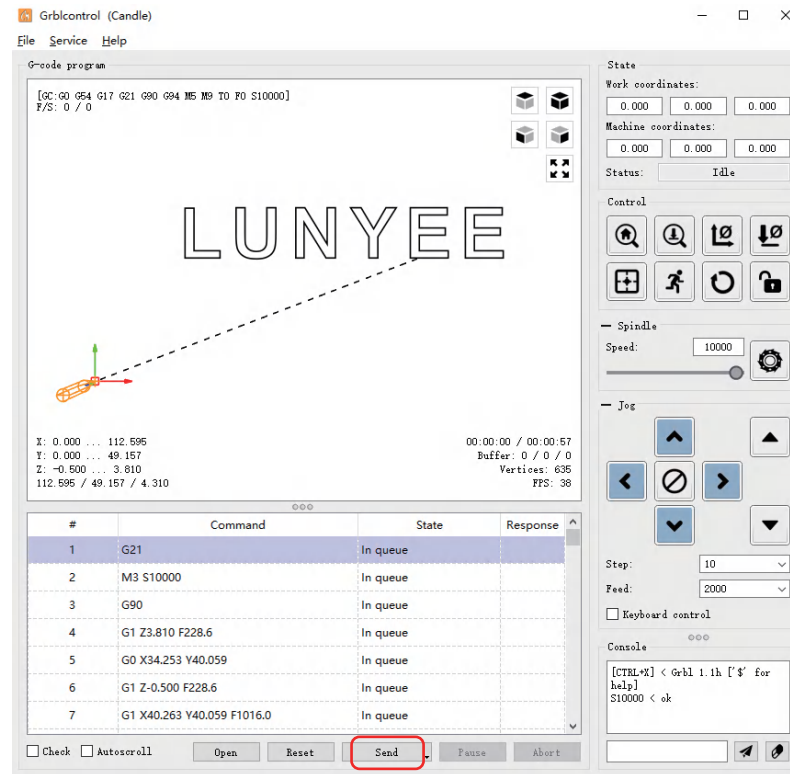
Open a G-code file, Preview G-Code

Click the direction button to move the bit to the surface of the object. The proper gap between the bit and object's surface is that only an A4 paper can move through tightly.

Click "Zero XY"

Click "Zero Z"

Click "Send" to start engraving

Engraving Finished.

❸ Z-Probe Operating

Thickness: 19mm


```
G21G91G38.2Z-50F100;G92 Z19;G0Z5
```

Edit Z-probe parameter. Default value is Z19
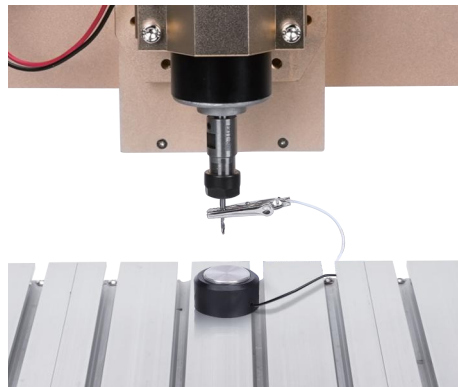
Place the probe as shown
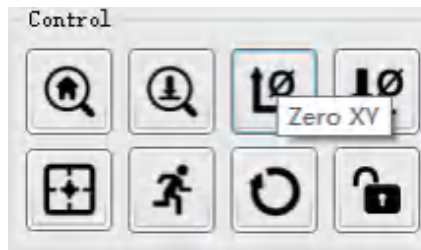
Click "Zero XY"
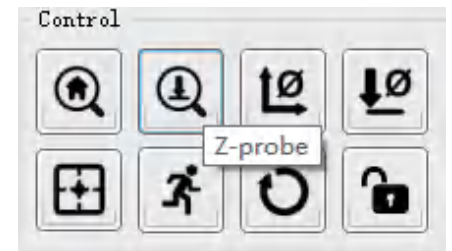
Click Z-probe button to start detecting. After Z-probe detection finished. Remove Z-probe, click "Send" to start engraving

❹ How to Unlock Limit Switch
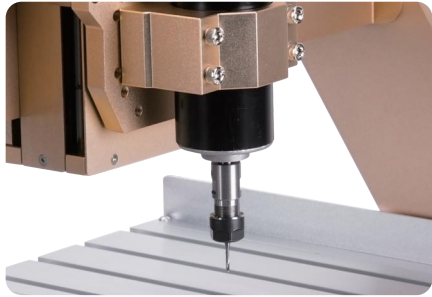
Limit switch will trigger when the machine runs out of active working area.
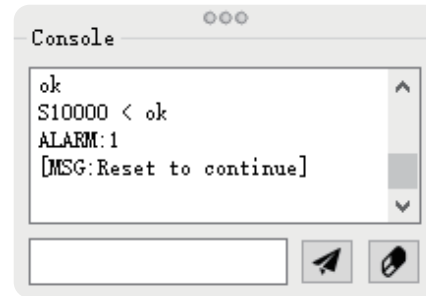
Command window will show: "ALARM:1[MSG: Reset to continue]"
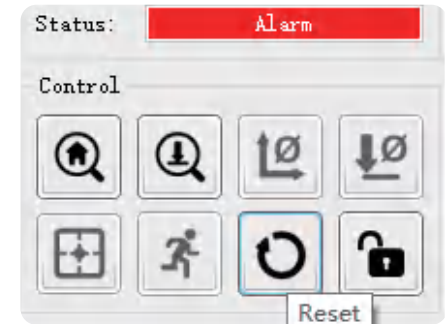
Click "Reset"
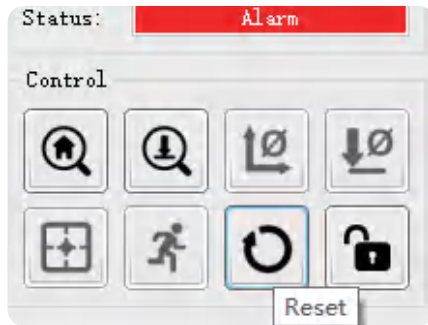
If status change to "Alarm" again, that means it does not entirely move away from the limit switch, just repeat the previous steps to unlock.
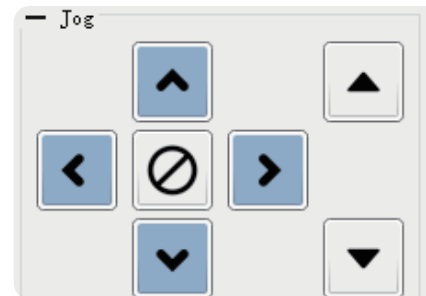
Click direction buttons to move the axis way from limit switch.
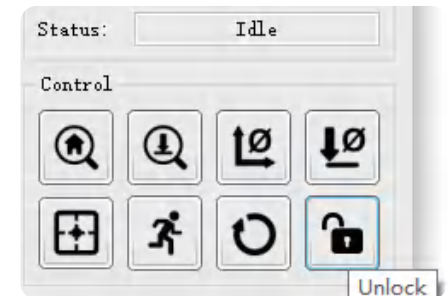
Click "Unlock"

❺ How to Use E-stop

Press down E-stop when
the machine malfunctions
to avoid damage.

Rotate clockwise to release
the E-stop.

❶ Open Easel

Step 1: Login to Easel

We recommend that our customers use a web application called Easel,which is developed by invent-ables for their X carve machines.

Easel is an easy-to-use online CNC(-computer numerical control) software for designing creating and controlling CNC engraving and cutting projects.

It works great with the the LUNYEE 3018 too.It is free (the pro version is not really needed) powerful and easy to use to design and carve your proj-ects.

Go to easel.inventables.com and click on the blue Sign in through invent-ables button

E ♟ SEL

Easel is the all-in-one software solution for 3D carving machines.

Designed by Inventables, Easel is the easiest way to get started in the world of 3D carving.
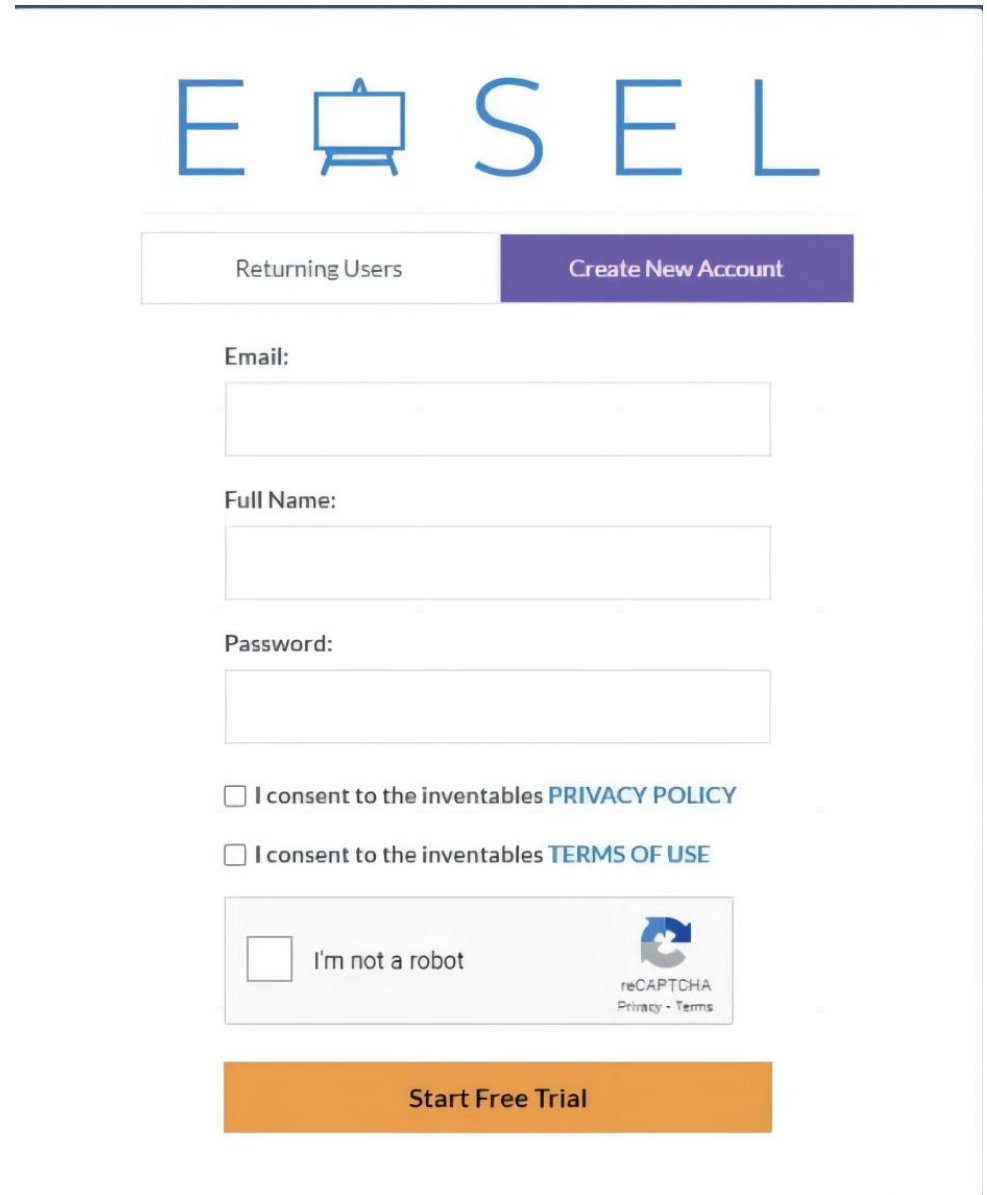
Sign in through Inventables

Step 2： Create your account in Easel

·Click on the"Create New Account"option
·Enter your personal information.
·When you are done, click on the orange
  Start Free Trial button.

Note:
Inventables defaults all new accounts to a
free 30-day trial of Easel Pro. At the end of
that trial, you can continue with a paid Pro
subscription, or revert to a FREE Easel
account.

❷ Software Settings

Step 1: Your first project in Easel !

Create a new project by selecting one document in the Project stab(it can be"Intro to Easel"or any Untitled")
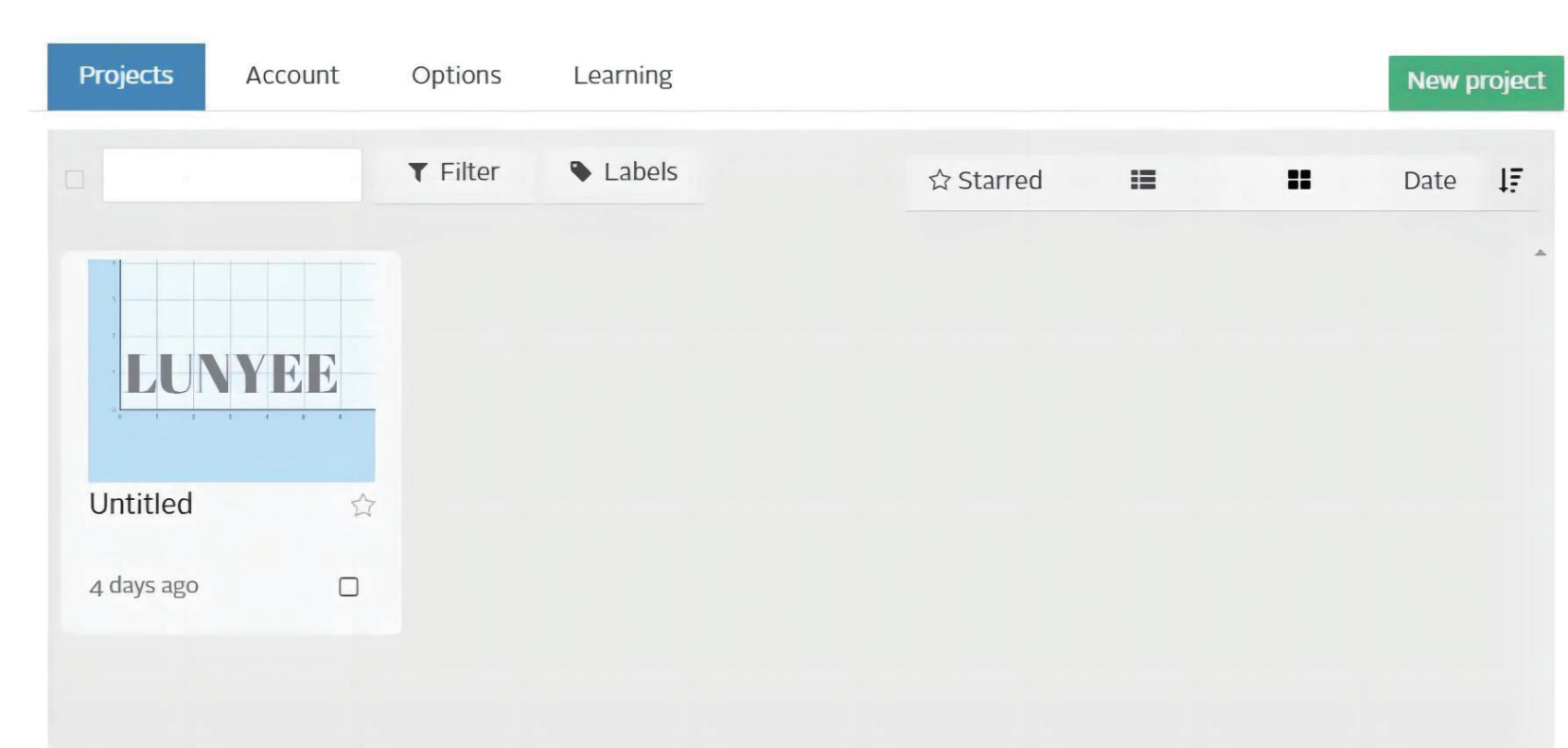
Next we are about to enter the machine setting process.We need to match the varous parameters of the machine with Easel so that the machine can successfully complete the connection.(The next page will introduce the functions of each section of Easel)

Step 2：Set up New Machine

Click on the"Machine"menu,and select the blue"Set up new machine" button.
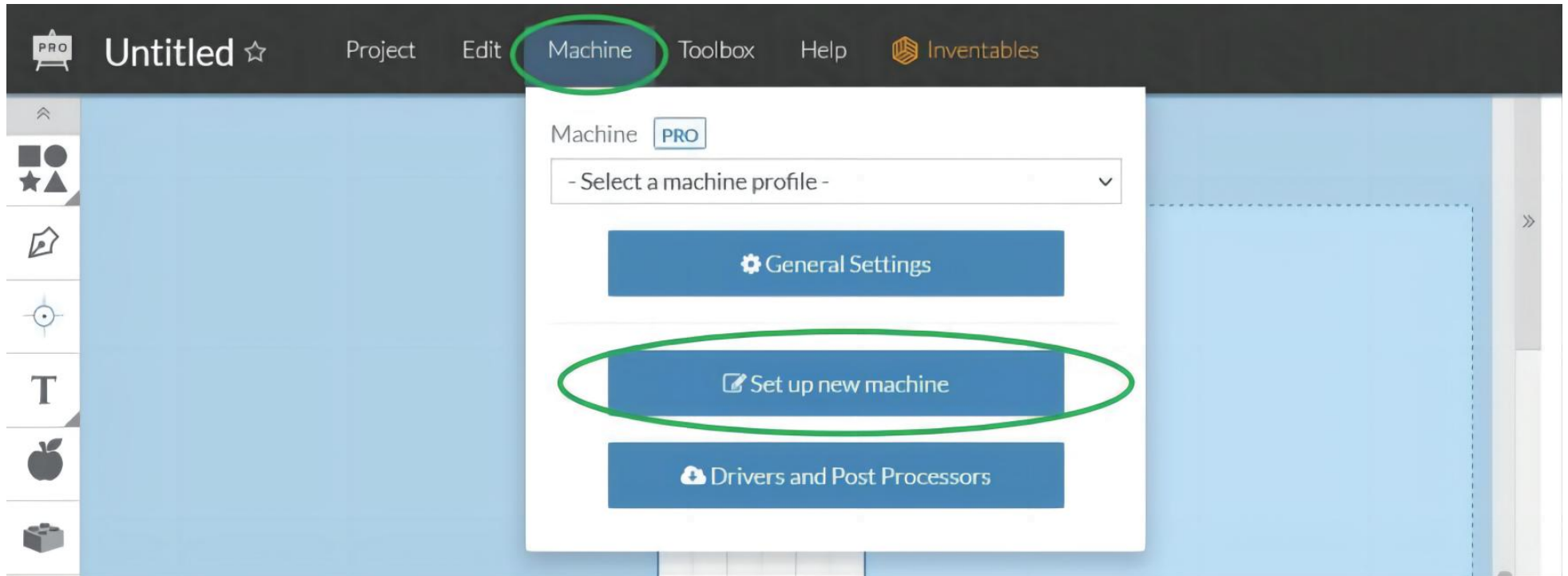
Step 3：Choose your machine

On the Choose your machine type screen,select the "Other(3rd Party Machines)"option.

Step 4: Enter your machine details

·Choose the options as shown in the picture.
·We are working with inventables to add the LUNYEE(Please configurand operate as shown on the rignt).
·If you have purchased the optiona dust show with your machine,check the box.
·Then click on the blue Confirm settings button.

Enter your machine details

Select the settings that match your machine. Click here for Shapeoko (1 or 2).

Make	Other
Motion Control	X-Controller or other GRBL based controller
Work Area X (mm)	400
Work Area Y (mm)	400
Dust shoe	☐

You must use the correct settings for your machine to run correctly.

Easel provides machine control for GRBL controlled machines. You will need to have the Easel Driver installed to set up your machine.

Confirm settings

Since our product is not entered into Easel, we need to manually configure the parameters. For make
select other, and for motion control, select X-controller or other...
work area X and Y respectively fill in the working area of the machine, X-400, Y-400

Step 5：Easel driver (Windows):

You will be automatically prompted to download and install Easel driver if it is not already installed; whether you're on a Mac or a Windows computer. This driver will allow Easel to talk to the USB port on your computer. If the window below doesn't open, you can access the driverversion here:http://easel.inventables.com/sender_versions

Congratulations on assembling your X-Carve!

Before you start carving with Easel, we'll make sure everything is set up correctly.

But first, you'll need to install the Easel Driver. This is a small program that lets Easel connect to your machine.
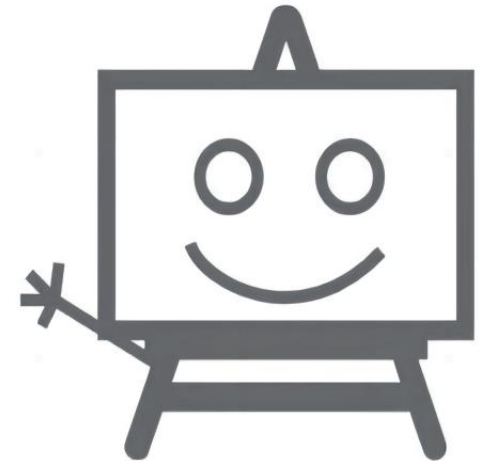
W1.Click the green Download for Windows button,the Easel driver wilautomatically down-load to your computer.

Most downloads are saved to the Downloads folder.

Download for Windows

Download for Mac

Download for Linux

Step 6: Install Easel driver (Windows)

· W2. Go to your Downloads folder, open the download and you should see the Easel Driver File (EaselDriver-0.#.##.exe).

· W3. Then, right-click on it, select "Run as administrator" and follow the installation prompt. Follow the Installer instructions to complete the installation. You may need to refresh your browser and, in some cases, restart your computer.
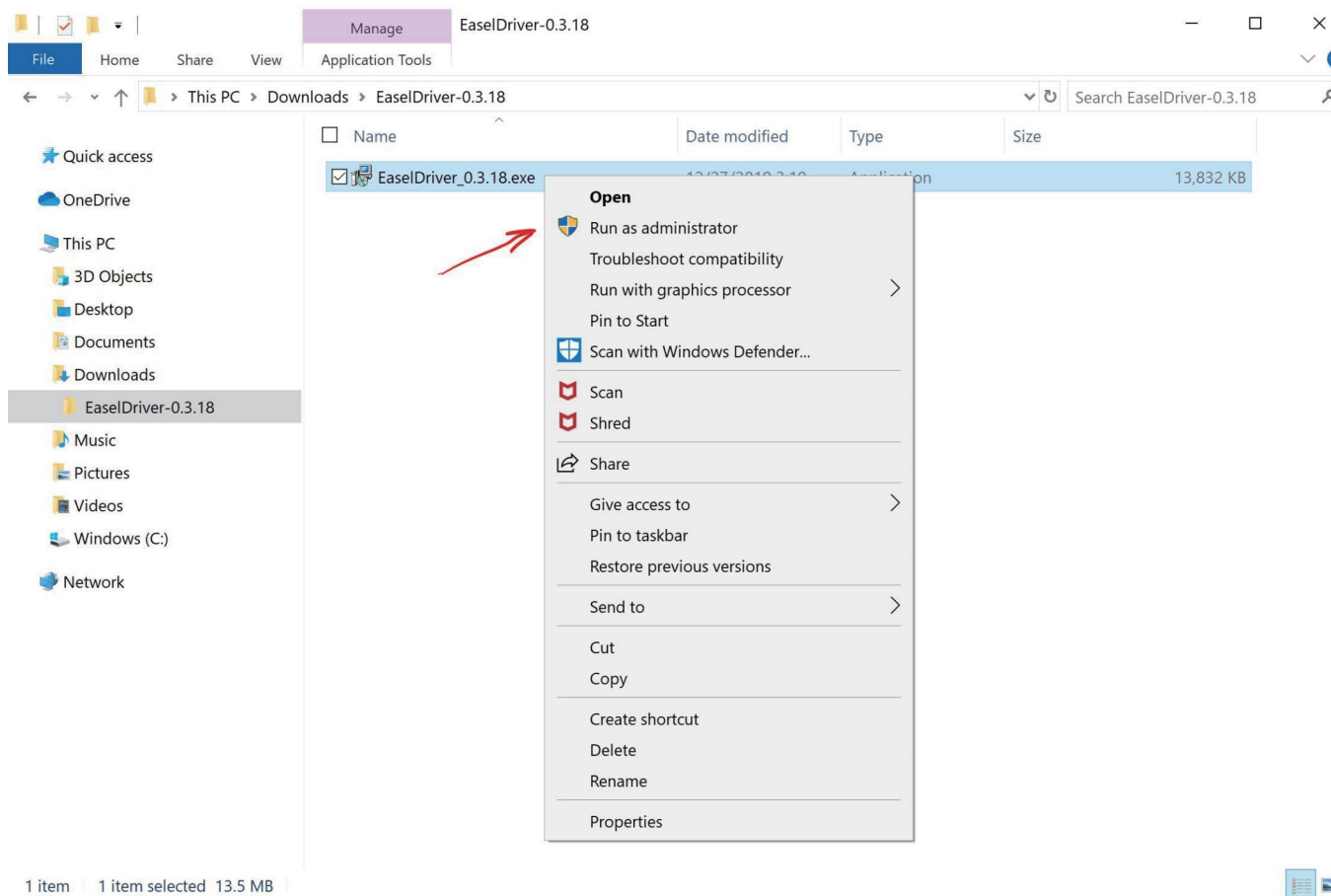
Important:
Windows 10 security settings may pop up to confirm if you want to install the driver.
You will need to click "More Info" and select "Run Anyway" to proceed with the installation.

30

Step 7: Download and Install EaseDriver (MacOS)

Congratulations on assembling your X-Carve!

Before you start carving with Easel, we'll make sure everything is set up correctly.

·M1.Click the green Download for Mac button. Easel Driver will automatically download to your computer.You may also see the download at the bottom of your browser.

But first, you'll need to install the Easel Driver. This is a small program that lets Easel connect to your machine.

Download for Mac

Download for Windows

Download for Linux

·M2. Click the downloaded file (Easel-Driver-0.#.##.pkg）file and open it to run the installer. Follow the Installer instructions to complete the installation. You may need to refresh your browser and, in some cases, restart your computer.

inch ⬤ mm

Workpieces for "Circle, diamond,

Open
Always Open Files of This Type

Show in Finder

EaselDriver-0.....pkg

Cancel
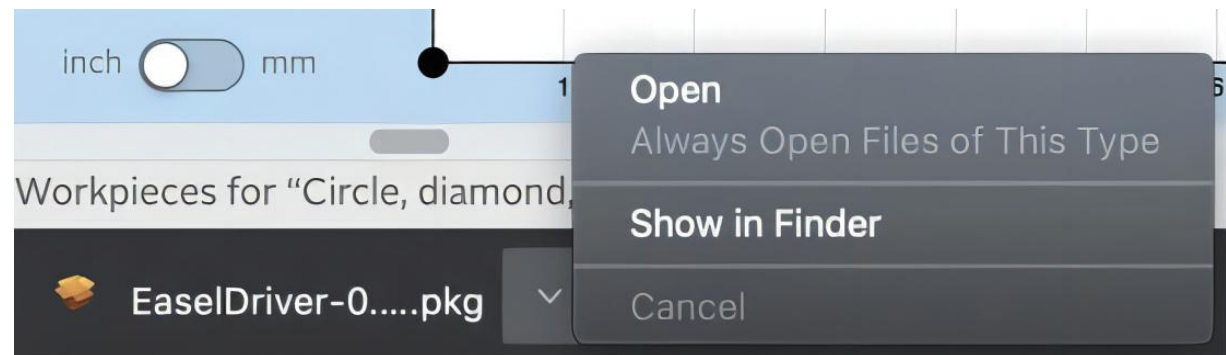
If you do not jump to the next step after installing thedriver, please restart the browser and log in to Easel again.

Step 8: Choose your machine

Step 9: Test your wiring

·When the machine successfully connects, you'll be presented with a set of controls for jogging your machine.Try-jogging the machine using the directional arrows.

·If everything is wired correctly you should get proper motion on each axis.
·If so, press on the Yes buttons for the X, Y and Z axis.
·If you press No, it will swap the directions and fix the issue for you.
·If the machine does not respond or stop suddenly when clicking the arrow it may be due to hitting the limit switch, Please first manually rotate the knob to return the axis to a safe positionthen find the machine's control panel and clickthe red reset button.
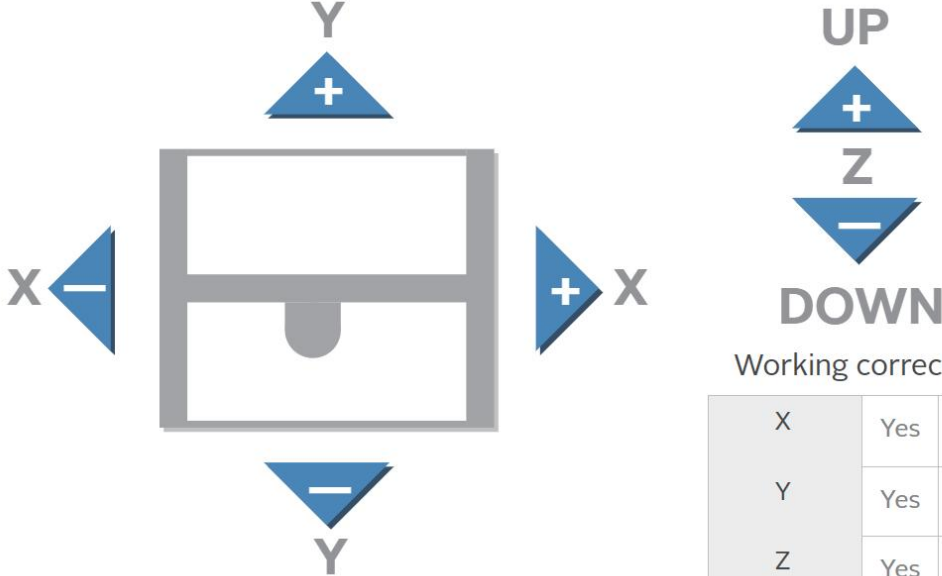
·Perform operation after reset.

Test your wiring

Now we'll test that your motors are wired correctly. Test each axis using the controls and confirm that each axis moves correctly. We'll troubleshoot any axes that aren't working in the next step.

If you have homing switches, be careful jogging your machine. The switches are currently disabled and can easily be crushed.

Working correctly?

X	Yes	No
Y	Yes	No
Z	Yes	No

Continue

Step 10：Spindle settings

After entering the spindle setting interface,select "automatic".

Spindle settings

If your machine is capable of automatic spindle control select automatic control to enable Easel to turn on/off the spindle. This setting can also be changed after setup in Machine>General Settings. If you are unsure please confirm with your machine manufacturers documentation.

Spindle control preference

Automatic

Save spindle preference

Step 11：Test the spindle

Select " Turn spindle on "
If the spindle can rotate normall(usually it only rotates for about 5 seconds during testing),then please click
" Continue " .

Test the spindle

Let's make sure your spindle is hooked up for automatic control.

Turn spindle on

Spindle not turning on?

Continue

Step 12: Limit switch setup

After you confirm your limit switches and Homing settings, you'll be prompted to enable or disable homing. Since the LUNYEE 4040 Turbo is equipped with limit switches,select the "Yes,enable homing" option then click " Start homing sequence ",the machine will go through a homing sequence to verify the limit switches.

Ensure there is nothing in the wayofanyaxes movement during this process.

Limit switch function: CNC limit switches are used to detect the movement range of the machine tool and prevent it from exceeding the set working area to protect the safety of the equipment and workpiece.

Homing switch setup

Does your machine have homing switches?

Yes, enable homing

No, disable homing

Test the homing switches

Starting the homing sequence should move your machine towards the homing switches. Press "Stop" immediately if the axes move the wrong direction or continue to move after hitting the limits.

Start homing sequence
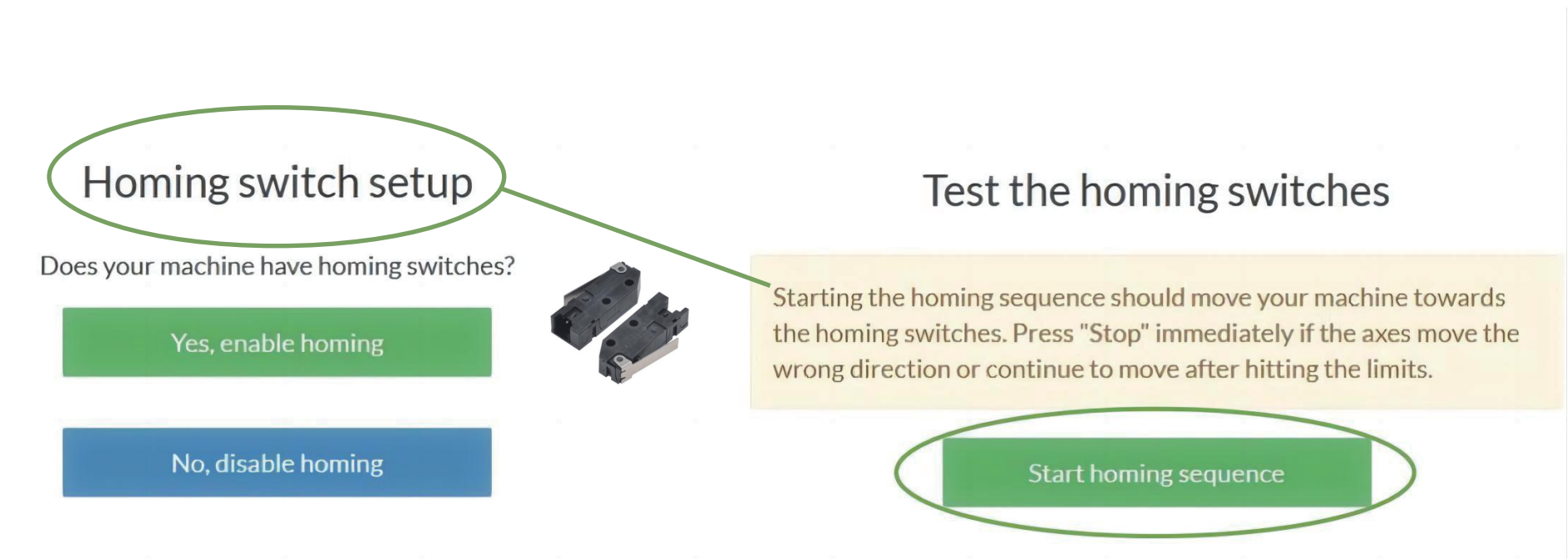
Step 13：Z-Probe Setup

The LUNYEE 4040 Turbo Machine does have a Z-Probe,click on the blue " Yes " button.

Step 14: Z-Probe Configuration

Follow the prompts on the screen to confirm operation of the Z-Probe.
Connect the cip to the colet of the spindle, and touch the probe plate to the colet.Test whether connectivity is normal.
The indicator wil turn green when contact is made.
Before continuing past this step, click on the "Advanced Settings" option to set the Z-Probe parameters.
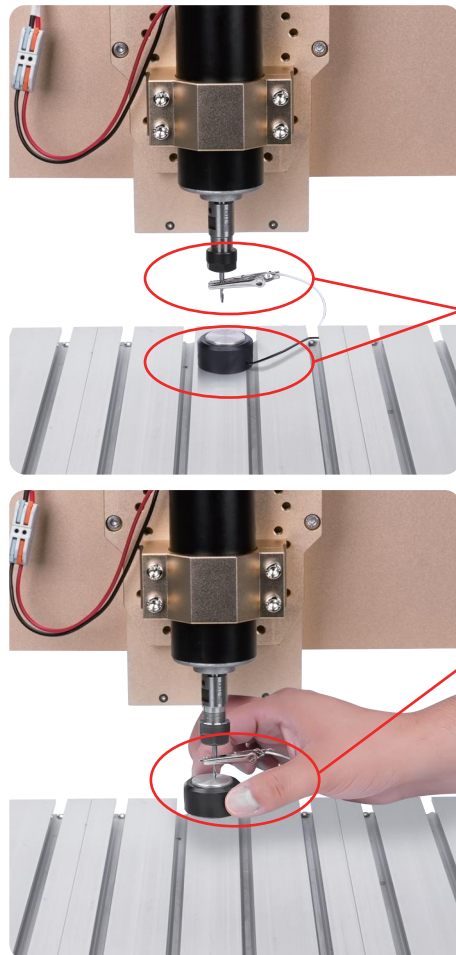
Setting up your Z-Probe

Plug the leads into the carriage **1**

Attach the clip to the collet **2**

Touch the touch plate to the collet **3**

Clip is attached

Not available

Advanced Settings

Continue

(To continue, make contact with the probe)

Step 15: Z-Probe Advanced Settings

Ensure the Touch plate thickness is set to 19mm.(You may need to select the "mm" option at the top of the screen).

Here we need to explain why 19mm is set, because the thickness of our tool presetter module is 19mm. All other options can be left at default.

Click on the " Continue " button.

Setting up your Touch Plate

Select Units in mm

Touch plate thickness

19 mm

Probe rate

127 mm / min

Retract height

6.35 mm

Maximum probing distance

78.74 mm

Test probe sequence   Use Defaults

(Sends the below gcode. Ensure leads are plugged in, clip is attached, and touch plate is under bit)

```
G21
G91
G38.2 Z-78.74 F12
G10 L20 P0 Z1.50
G91 G21 G0 Z6.35
```
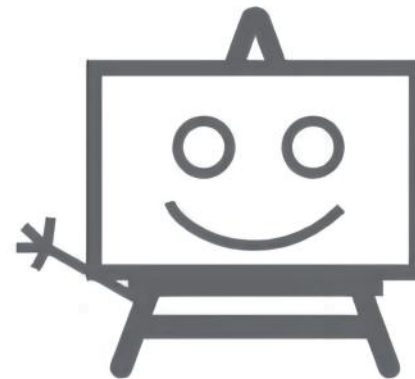
○ No contact

Continue

Step 16: Finish Screen

After setting up your machine, you will need to make a few more changes before you can run a test carve. Click on " Finish " and then you should be prompted to start a new project. Just click New Project and continue to the next step.

That's it! You're ready to carve!
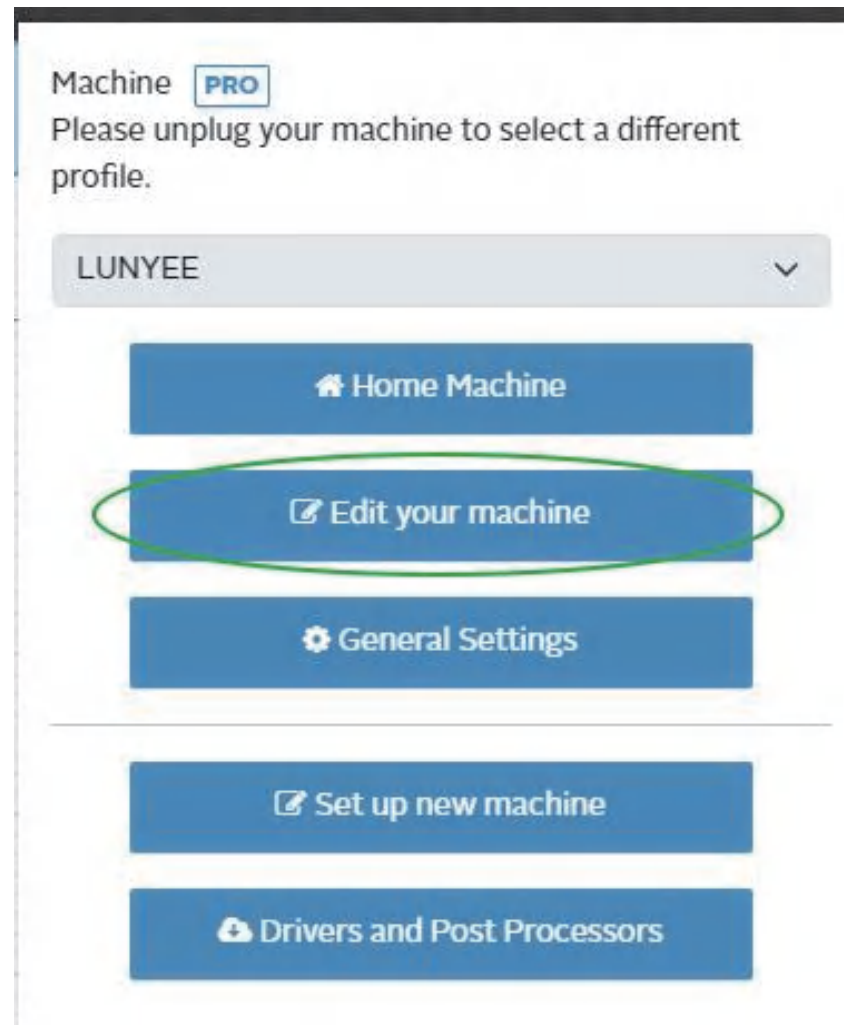
Hooray! You finished setting up your machine!

Run the test carve

Finish

Step 17：Verify Machine Settings 1/2

After you started a new project click on "Machine" at the top menu then click "Edit your machine".

Step 18： Verify Machine Settings 2/2

Confirm the following settings:
1.Work Area X:400 mm
2.Work Area Y: 400 mm
3.Spindle Controlled By: Hardware
4.Spindle: Other
5.Default Spindle Speen:12000
6.Check Z probe

If you have other accessories, you can also check them make sure the box is checked.

Z Probe will be checked is it was previously set up.

Click Save and you are ready for your test carve.

Machine Settings ✕

Name
LUNYEE

Machine
other

Serial Number

Work Area
X 400mm
Y 400mm

Spindle Controlled by
Hardware ⌄

Spindle
Other ⌄

Default Spindle Speed (RPM)
12000

Accessories
☐ Dust Shoe
☐ Z Probe
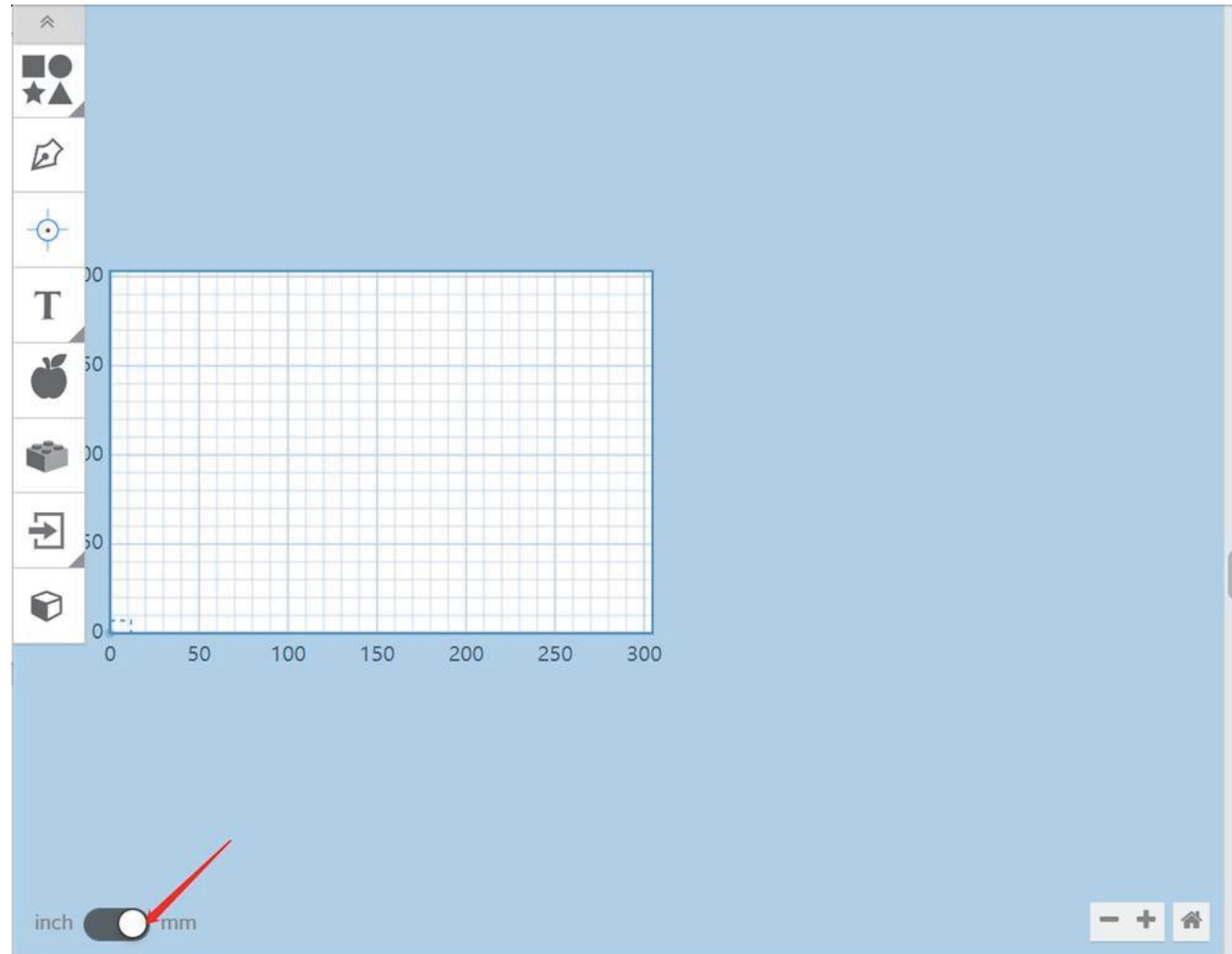☐ Coolant

Uninstall this machine

Cancel   Save

❸ Recommended Settings–Easel

Metric system settings in Easel

We recommend that our customers use the mm settings for better readings and precision,especially in the CNC world.
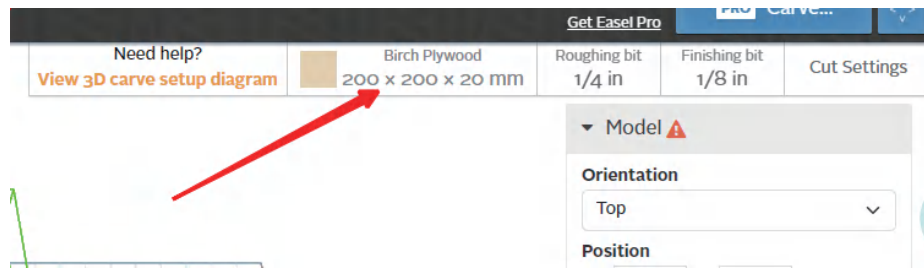
Material type and Dimensions

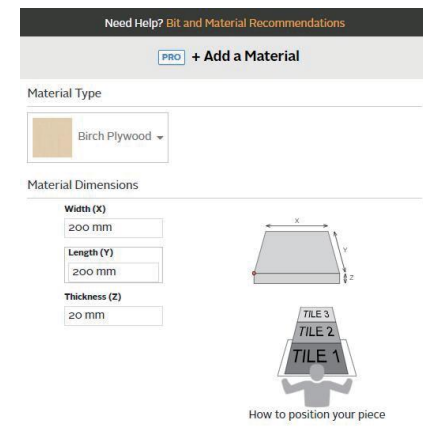1. Find the piece of wood or material you want to carve.

2. Select the material type in Easel.

3. Take the measurements (Length, Width, Depth) of your material.

4. Enter the Material Dimensions in Easel.

Bit settings

5. Clamp your material down your machine's table.
6. Insert your bit into your ER11. Specify the type of End Mills you inserted using other in Easel for any of the bits you have, This will allow you not to have to purchase the Easel Pro Version.

4040 Turbo: bits included in 4040 Turbo package:
4pcs 3.175*30°*0.1 sharp knives, end mill
4pcs triangular insert turning tools of 3.175*30°*0.1
4pcs single-flute spiral end mills of 3.175*2*12mm
4pcs single-flute spiral end mills of 3.175*12mm
4pcs 3.175*17mm double-flute spiral ball nose end mill

Cut settings

Selecting the material type in Easel allows the software to calculate cut settings. Preliminary testing has shown that these Automatic settings are a good starting point for most users.

The user will need to adjust settings based on their personal experience and how the machine is operating. For smaller diameter bits, speeds will need to be drastically reduced to prevent bit breakage.

Note: If you are a CNC beginner, we recommend that you use automatic settings. The automatically set parameters can complete most engraving tasks.

◆ After-sales Service ◆
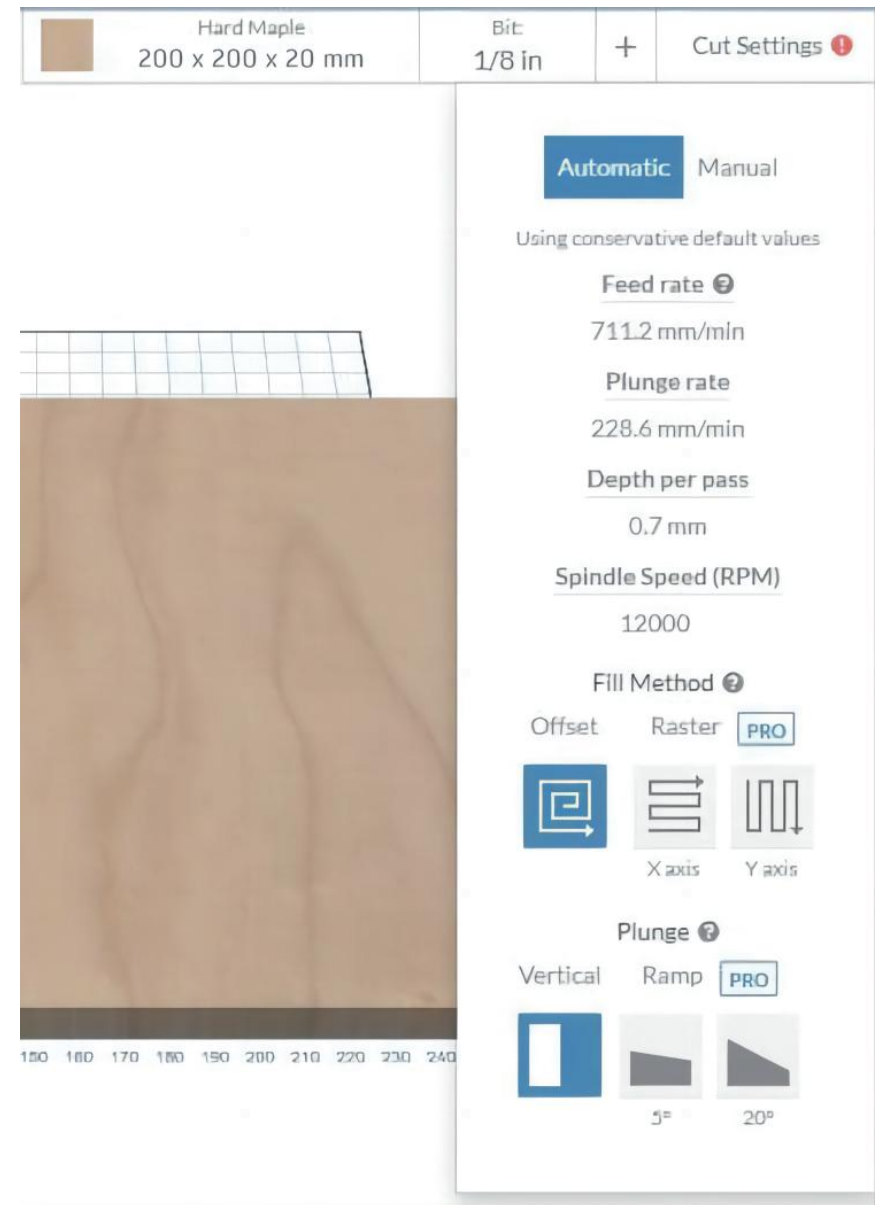
❶ Download the Driver and Software

①Please download the driver and software from the thumb drive included in the package.
It includes:
CH340 Driver
GrblControl(Candle) Software for Windows Sample files
GrblControl(Easel) Software Sample files
PDF User Manual
②Or download the above documents from google drive link:
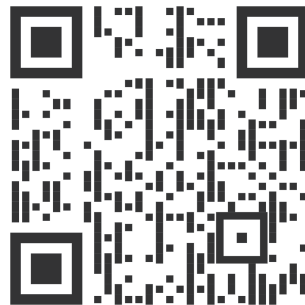https://drive.google.com/drive/folders/1QAaGsko9LkAd0ggenU0JUkax4GJb7lzP

❷ Technical Support

Pls feel free to contact us for technical support if you come across any difficulty during assembly and using. We will response within 1 business day.
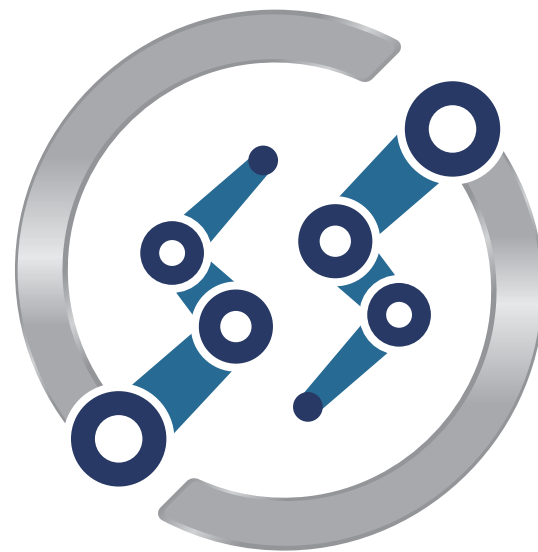E-mail: amazon@lunyee.com
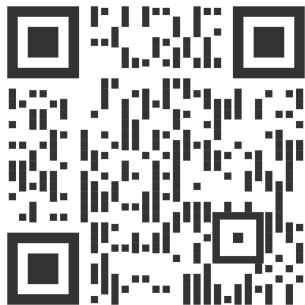
| After-sales | WhatsAPP | Youtube Website | Installation Tutorial |

LUNYEE