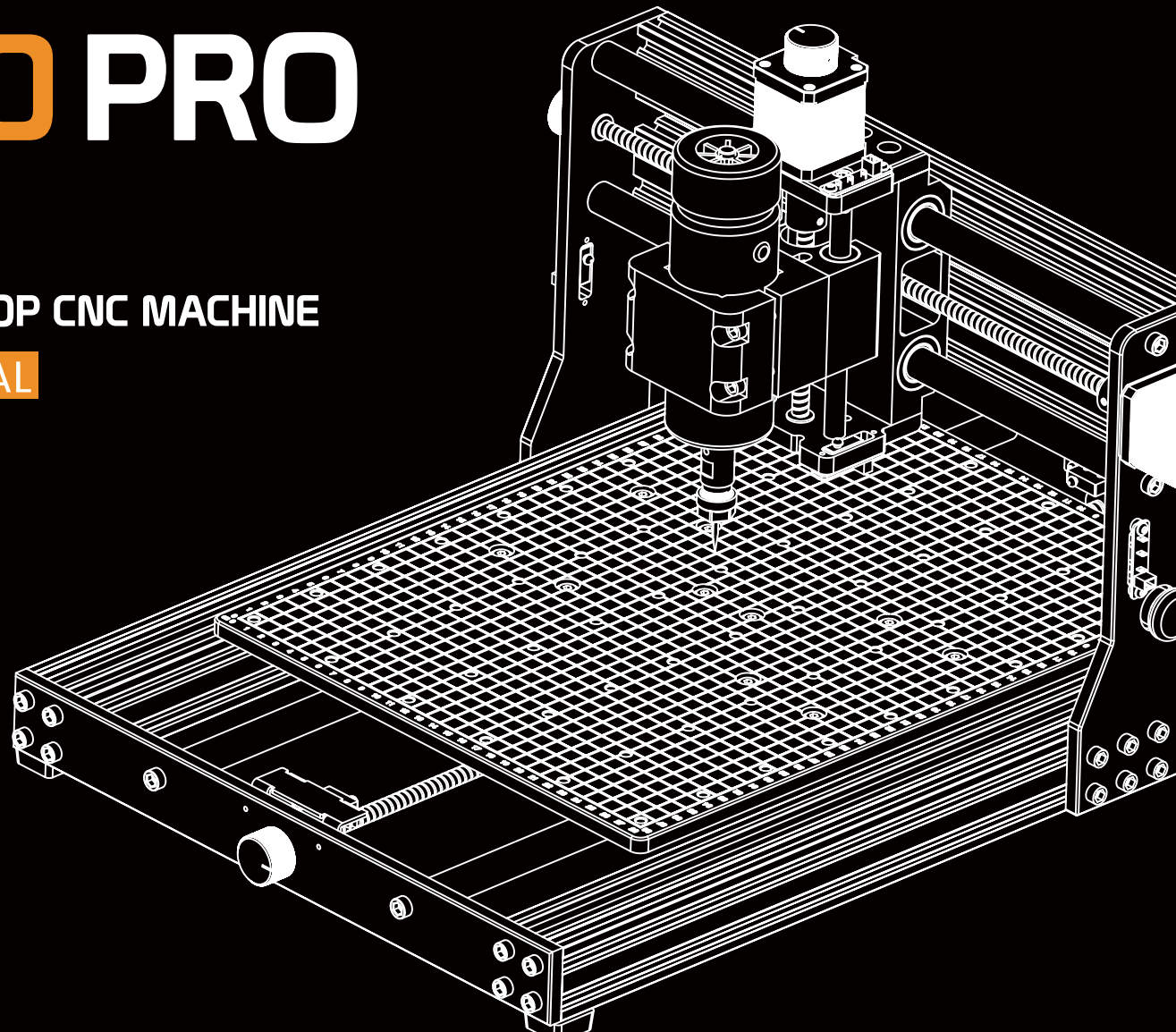
4030 PRO

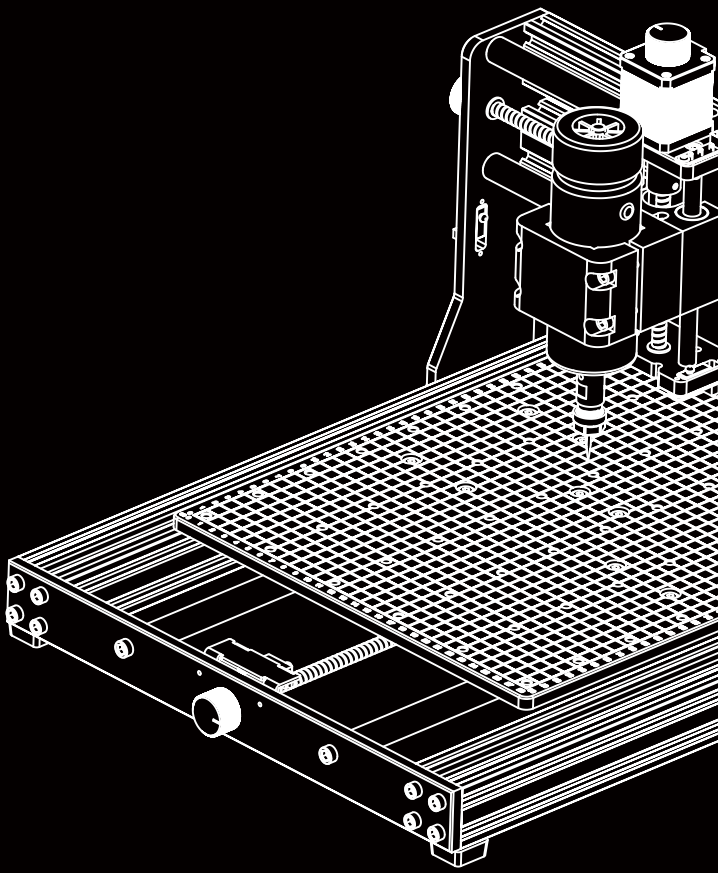
500W DESKTOP CNC MACHINE

USER MANUAL



Contents

4030 PRO



1. Specifications

Overall Size:	632 x 458 x 355 mm (24.9 x 18 x 14 inch)
Working Area:	300 x 400 x 73 mm (11.8 x 15.7 x 2.8 inch)
Power Supply:	48V 10.4A
Stepper Motor:	42 x 48 mm、0.55N.m
Limit Switch:	X、Y、Z (both ends)
Precision:	0.1mm
Emergency Stop Switch:	Yes
Power Of Spindle Motor:	500W
Speed Of Spindle Motor:	11000rpm/min
Offline Controller:	Yes
Support Add-ons:	Laser (not included)
Weight:	14.8KG (32.6 pounds)
System:	Windows: XP/7/8/10/11,Mac OS
Software:	Grblcontrol (Candle) / Other GRBL compatible software

2. Disclaimer

Please be careful when using your CNC engraving machines.
This machine is electrical equipment with moving parts and dangerous areas.

- The Machines are for Indoor Use Only.
- You must be 18 years or older to operate this machine unless supervised by a knowledgeable adult familiar with the machine.
- Wear the proper Personal Protection Equipment (Safety Glasses etc.).
- Always place the CNC Machine on a stable surface.
- The CNC Machine is supplied with Switchable Power Supply 230VAC or 115VAC. Never use a different power supply; it may cause malfunctions or damage to the machine.
- The CNC 4030 PRO 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.
- Ensure the Emergency stop button is easily accessible at all times.
- Never disassemble the Power Supply or Electrical Components. This will VOID the warranty.
- Do not touch the machine spindle, or place any body part near the working area when the machine is operating. Serious injury may occur.
- Do not leave children unsupervised with the CNC Machine even when it's not operating. Injury may occur.
- Do not leave the machine unattended while it's operating.
- Ensure your CNC Machine is in a well-ventilated area. Some Materials may discharge smoke or fumes during operation.

3. Accessory List

3.1 Mechanical Part List

① Base Assembly

② X-Z Axis Gantry

③ 500W Spindle with ER11 collet

④ 52mm Front Spindle Clamp

⑤ 52mm Rear Spindle Clamp

⑥ 65mm Front Spindle Clamp

⑦ 65mm Rear Spindle Clamp

3.2 Electrical Part List

⑧ 3 x Stepper Motor Cable

⑨ 6 x Limit Switch Cable
(5 x 60cm / 1 x 80cm)

⑩ Spindle Cable

⑪ USB Cable (1.5m)

⑫ USB Flash Dish (2G)

⑬ Controller Board

⑭ Power Supply (48V/10.4A)

⑮ Power Cord

⑯ Offline Controller (Optional)

3.3 Tools / Accessories Parts List

⑰ 4 x Clamp

⑱ Brush

⑲ Allen Wrench (2.5mm)

⑳ Allen Wrench (4mm)

㉑ 2 x Limit Switch Board

㉒ Emergency Stop Button With Cable(60cm)

㉓ Cable Ties

㉔ 2 x Wrench (13mm/17mm)

㉕ Laser Fixing Plate

㉖ 1 x Three Flute Milling Cutter (Φ6.35mm)

㉗ 6 x Engraving Bit Kit (Φ3.175mm/20°/0.1mm)

㉘ 2 x Flute Ball Nose End Mill (ϕ3.175mm/22mm/38mm)

㉙ 2 x Flute Flat Nose End Mill (ϕ3.175mm/22mm/38mm)

㉚ Z-Probe

㉛ Screwdriver

㉜ Spindle Connector

㉝ Cable Protector(1m)

㉞ Velcro

㉟ 2 x Power Fixing Plate

㊱ Laser Conversion Collar

3.4 Screws / Other Part List

㊲ 16 x M5*25 Screw

㊳ 4 x M5*10 Screw

㊴ 4 x M3*8 Screw

㊵ 4 x M4*6 Screw

㊶ 2 x M5*8 Screw

㊷ 4 x M5*30 Screw

㊸ 4 x M5*16 Screw

㊹ 4 x M5 Gasket

㊺ 6 x M5 T Nut

㊻ Collet (Φ6.35mm)

4. Installation Instructions

4.1 Install the X-Z axis Gantry

What you will need?

① Base Assembly

② X-Z Axis Gantry

④ 52mm Front Spindle Clamp

⑤ 52mm Rear Spindle Clamp

⑳ Allen Wrench (4mm)

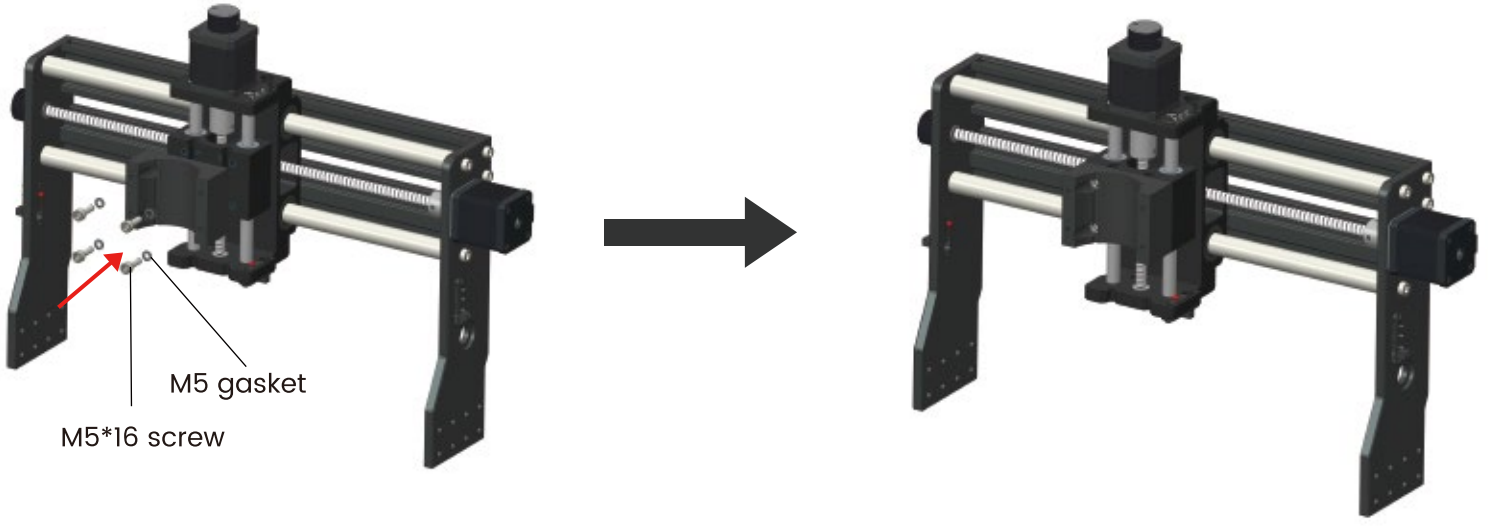
㊲ 16 x M5*25 Screw

㊷ 4 x M5*30 Screw

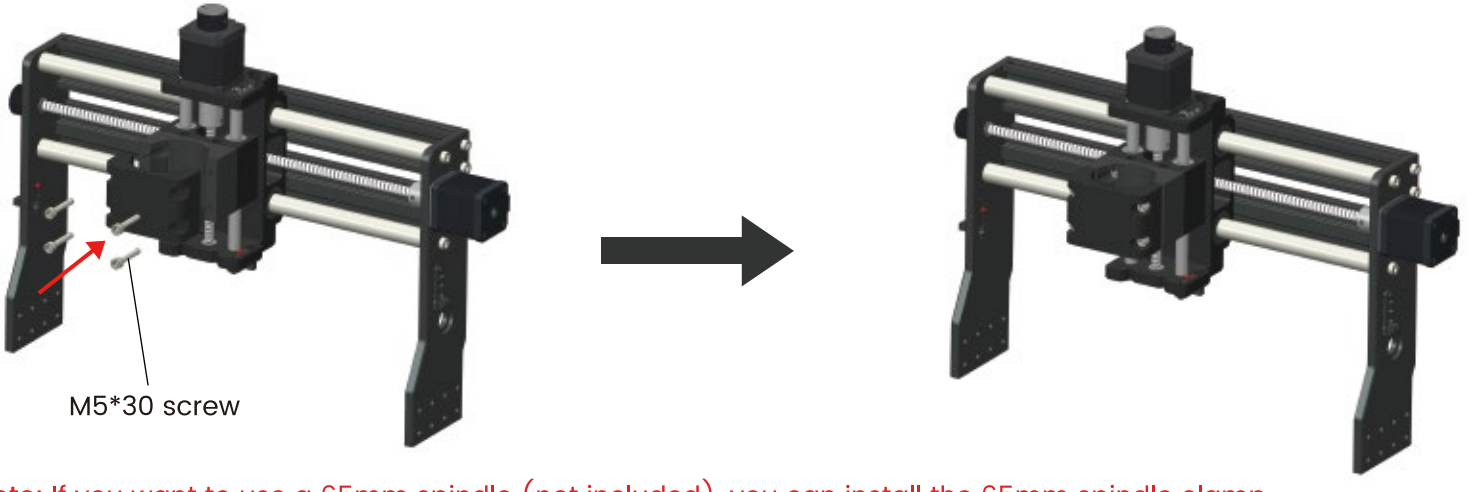
㊸ 4 x M5*16 Screw

㊹ 4 x M5 Gasket

1. Attach the 52mm rear spindle clamp to the Z-axis with M5*16 screws and M5 gasket, tighten them with the 4mm wrench.

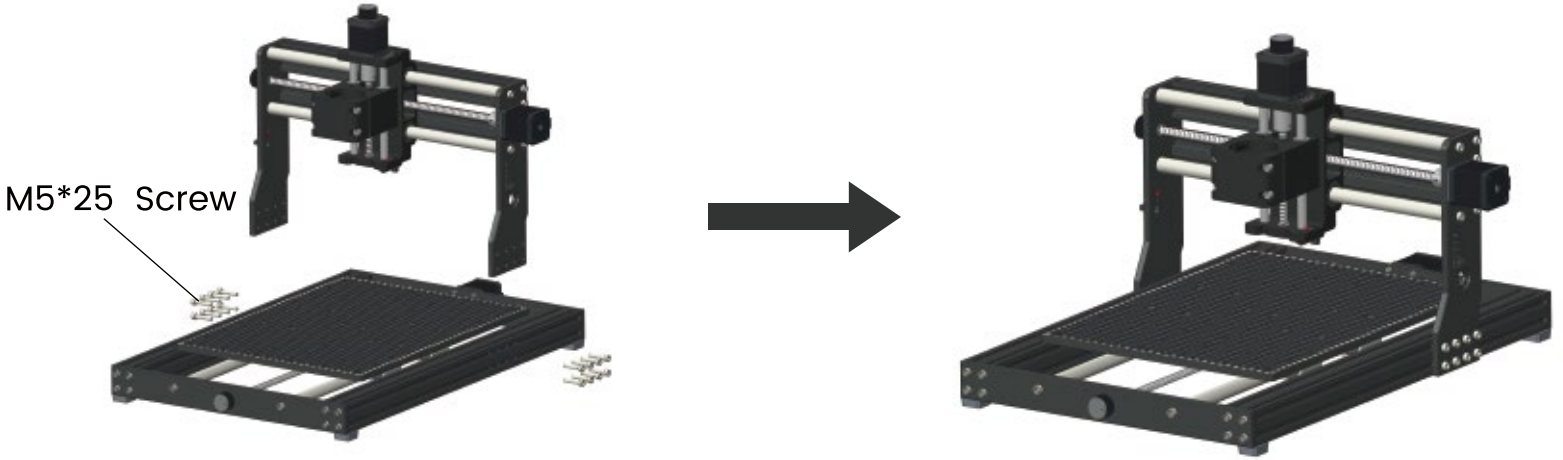


2. Attach the 52mm front spindle clamp to the rear spindle clamp with M5*30 screws, tighten them with the 4mm wrench.



Note: If you want to use a 65mm spindle (not included), you can install the 65mm spindle clamp.

As shown in the picture, install the X-Z axis gantry to the base assembly, adjust the hole alignment, and fix the left and right side plates with M5*25 screws.



4.2 Install the Y-axis Limit Switch Board

What you will need?

⑲ Allen Wrench (2.5mm)

㉑ 2 x Limit Switch Board

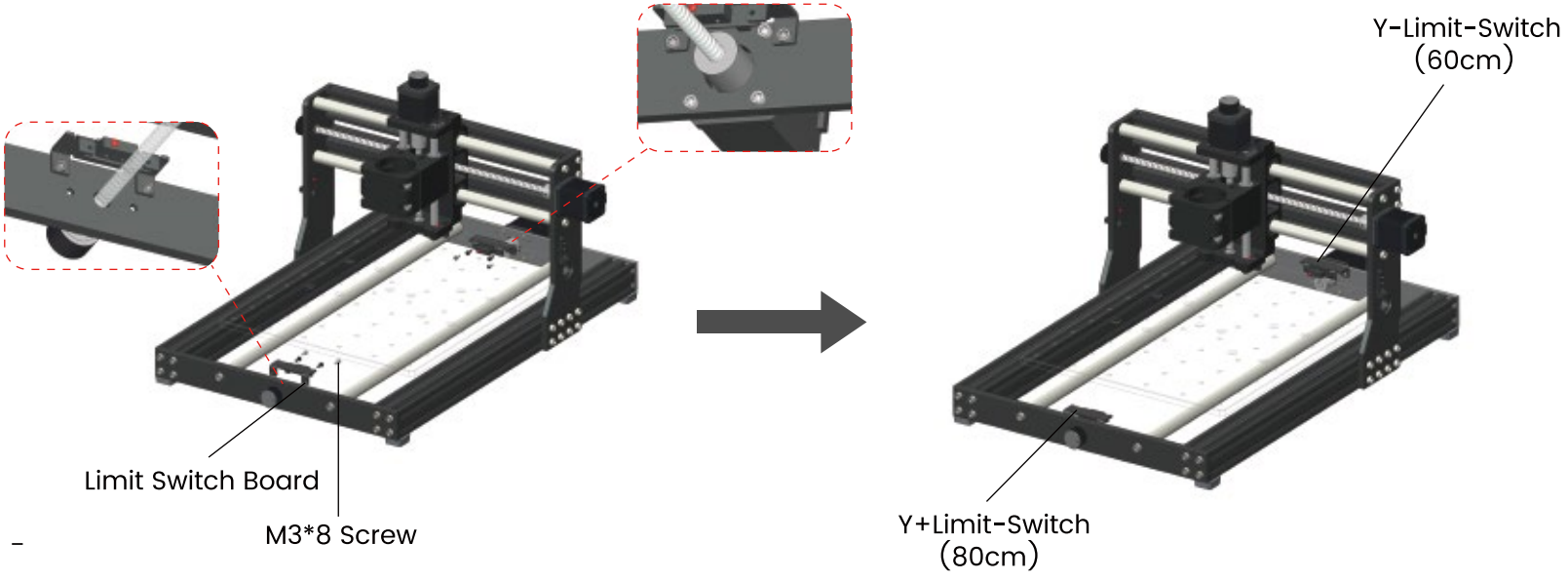
㊴ 4 x M3*8 Screw

As shown in the picture, fix the limit switch board to the front and rear aluminum plate with M3*8 screws.

Note:

①. Before installing the limit switch board, you need to plug the limit switch wire into the limit switch first.

②. When connecting the limit switch wire of Y-axis as shown in the figure, connect the 80cm limit switch wire to the limit switch of Y+.

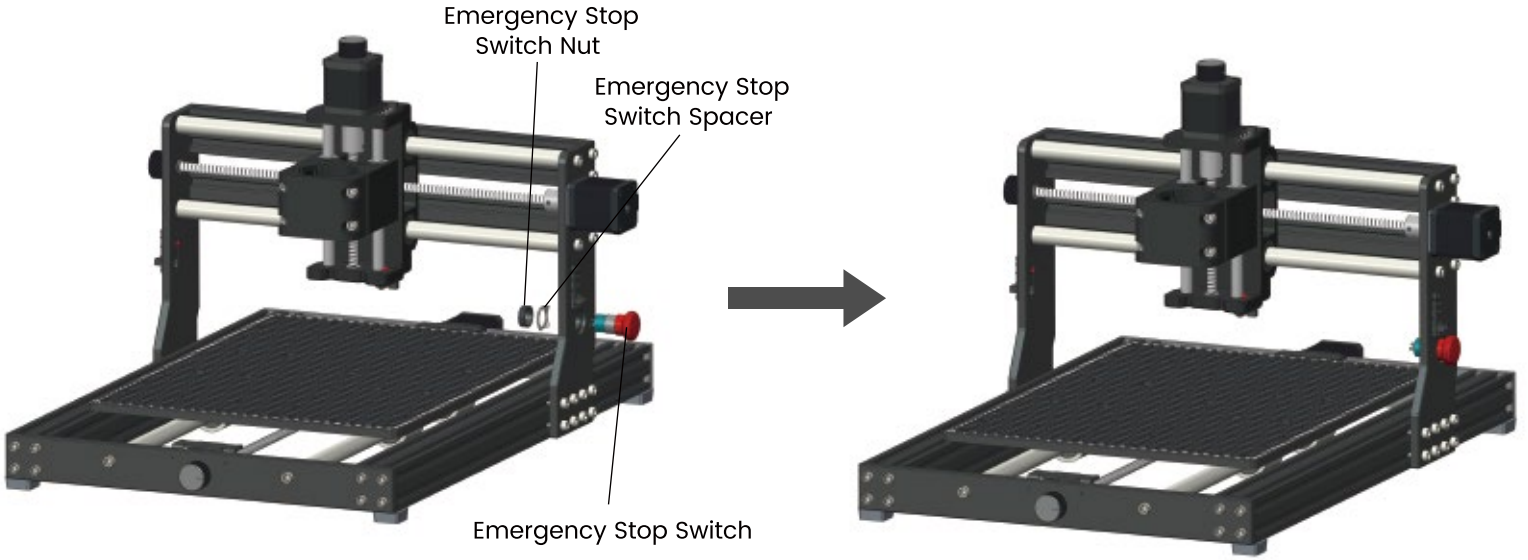


4.3 Install the Emergency Stop Button

What you will need?

㉒ Emergency Stop Button
With Cable(60cm)

Disassemble the emergency stop button and mount it on the side panel of the CNC machine as shown in the figure.



Note: Please check to make sure the emergency stop switch is inactive when installing, otherwise the machine will not turn on.

4.4 Install the Spindle Motor

What you will need?

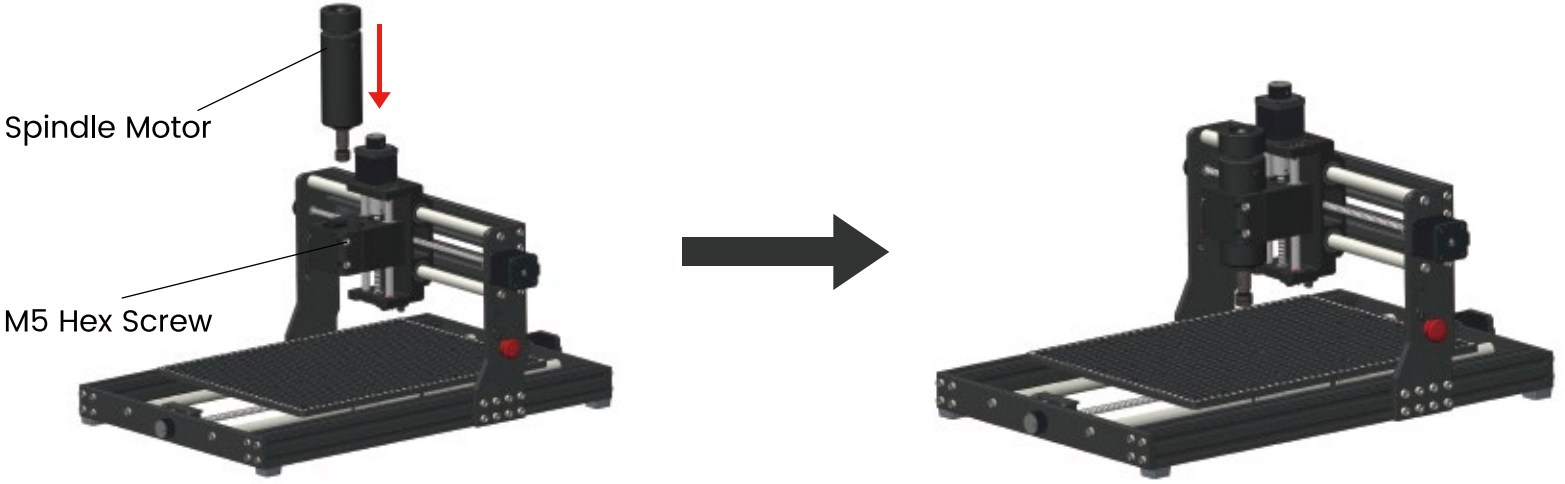
③ 500W Spindle with ER11 collet

㉔ 2 x Wrench (13mm/17mm)

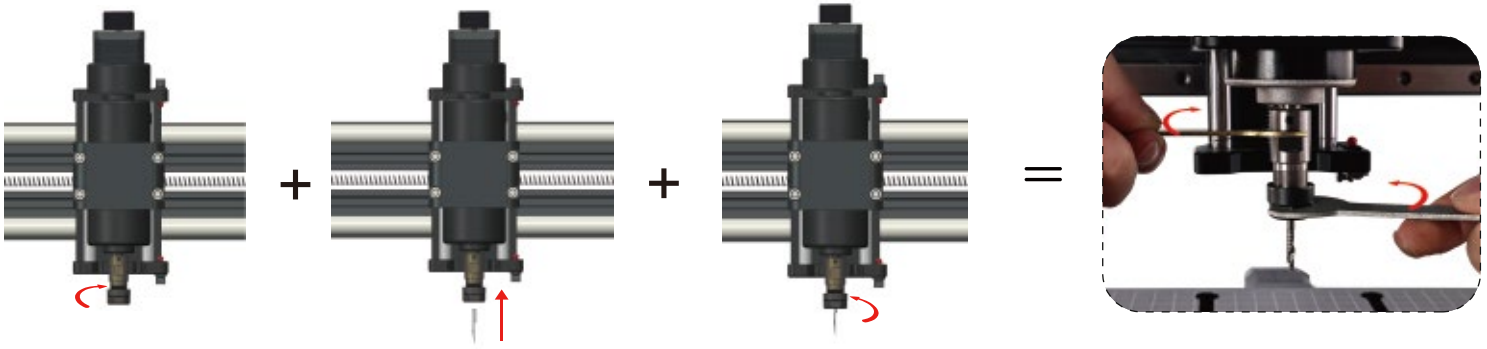
⑳ Allen Wrench (4mm)

㉖ 1 x Engraving Bit Kit (Φ3.175mm/20°/0.1mm)

1. Loosen the screws with the 4mm wrench, insert the spindle motor into the spindle clamp, and then tighten the screws.



2. Loosen the collet nut, insert the engraving bit into the collet, and tighten the collet nut with 13mm and 17mm wrenches.



Note: If you want to use a 6.35mm CNC drill bit, you need to unscrew the collet nut from the spindle, remove the 3.175mm collet from the collet nut, replace it with the 6.35mm collet, and then install the 6.35mm CNC drill bit and tighten it with the wrenches.

4.5 Install the Control Board

What you will need?

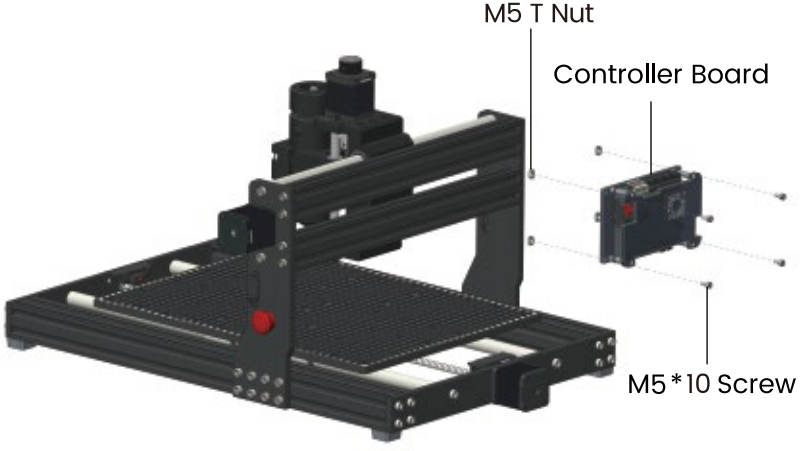
⑬ Controller Board

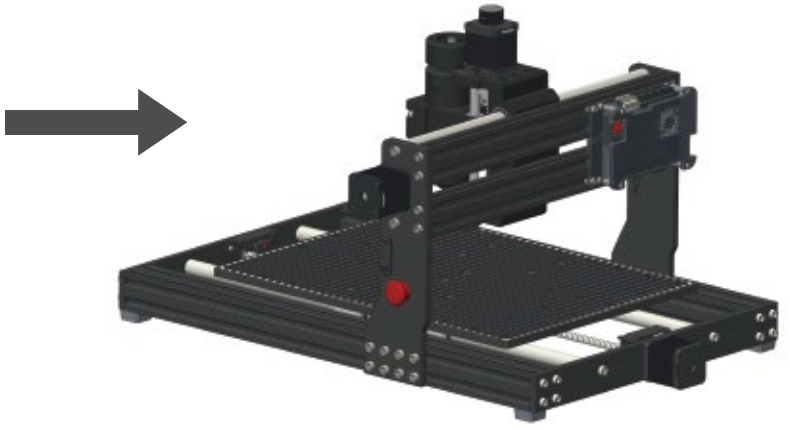
⑳ Allen Wrench (4mm)

㊳ 4 x M5 * 10 Screw

㊺ 4 x M5 T Nut

Secure the control board to the back of the CNC machine with M5*10 screws and M5 T nuts as shown in the figure.





4.6 Install the Power Supply

What you will need?

⑭ Power Supply (48V/10.4A)

⑲ Allen Wrench (2.5mm)

⑳ Allen Wrench (4mm)

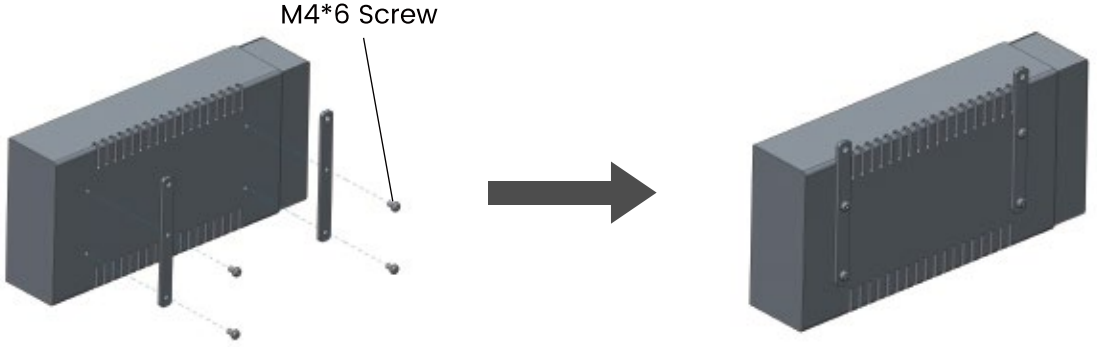
㉟ 2 x Power Fixing Plate

㊵ 4 x M4*6 Screw

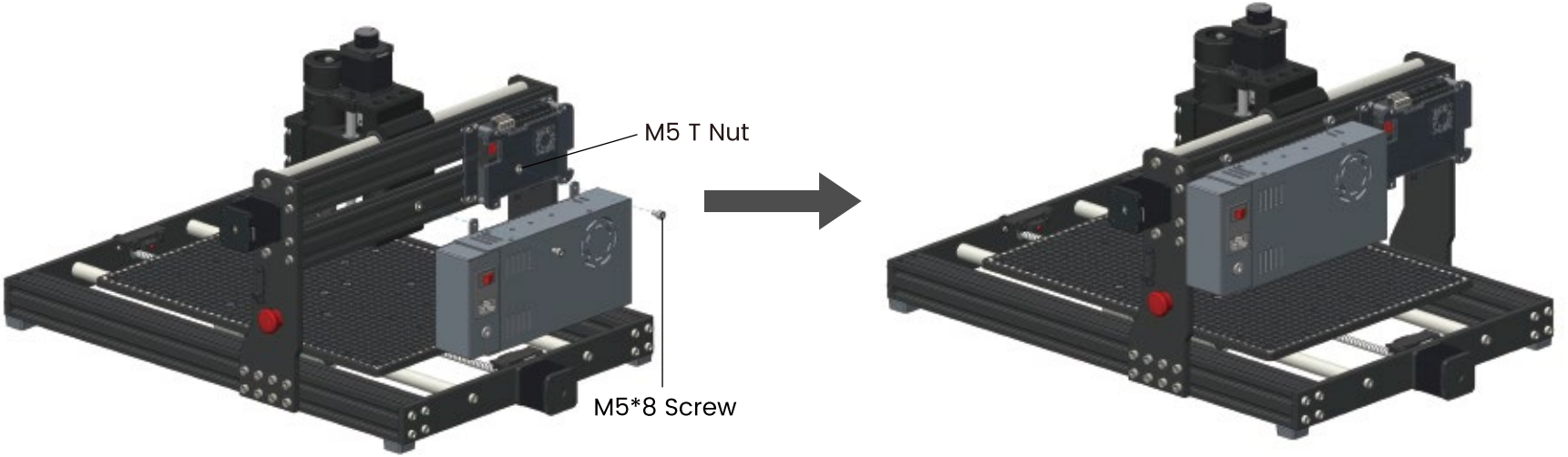
㊶ 2 x M5*8 Screw

㊺ 2 x M5 T Nut

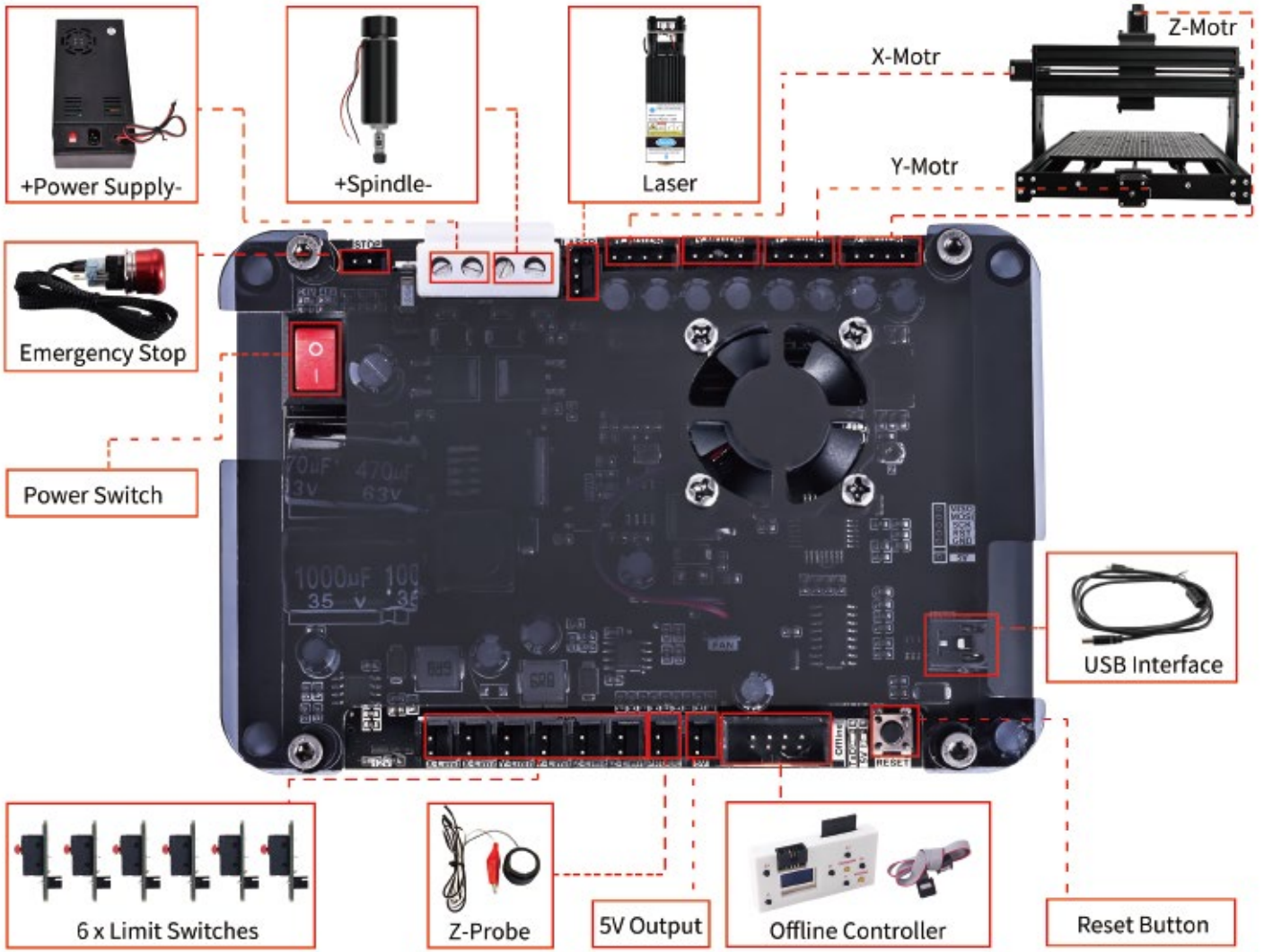
1. Install the fixed plate on the power supply with M4*6 screws and 2.5mm wrench.



2. Secure the power supply to the back of the CNC machine with M5*8 screws and M5 T nuts as shown in the figure.



5. Connecting Wire



5.1 Connect the Limit Switches

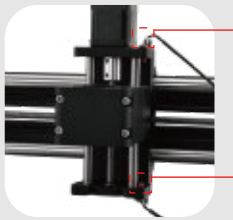
Plug the X, Y, and Z limit switches cable into the X, Y, and Z ports of the control board.


X+ Limit Switch


X- Limit Switch

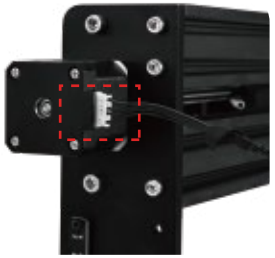

Y+ Limit Switch


Y- Limit Switch



5.2 Connect the Stepper Motor

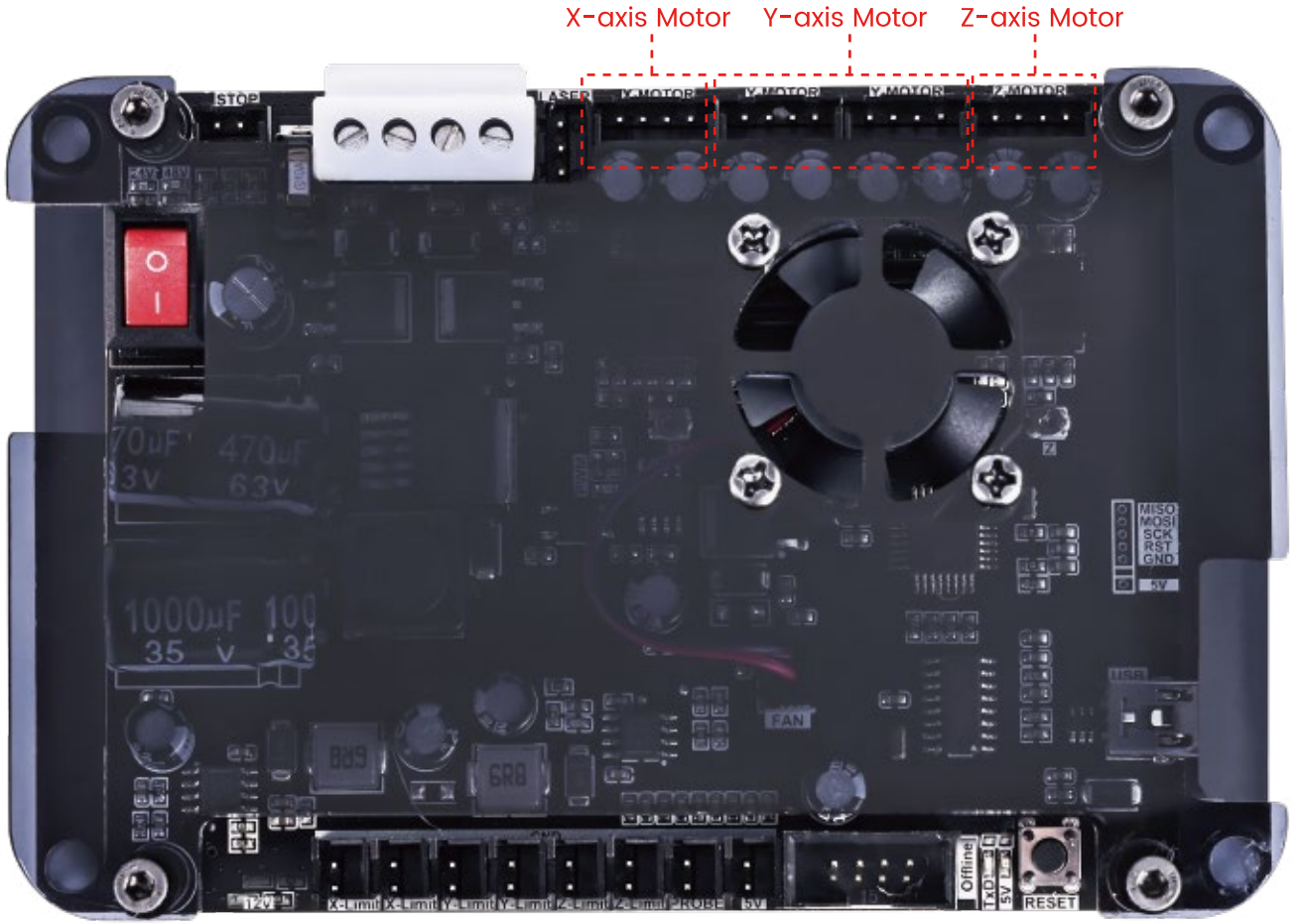
Insert the cable of the X, Y, and Z motor into the port of the X motor, Y motor, and Z motor. (There are two interfaces to connect the Y-axis motor, you can insert either of them.)



X-axis Motor

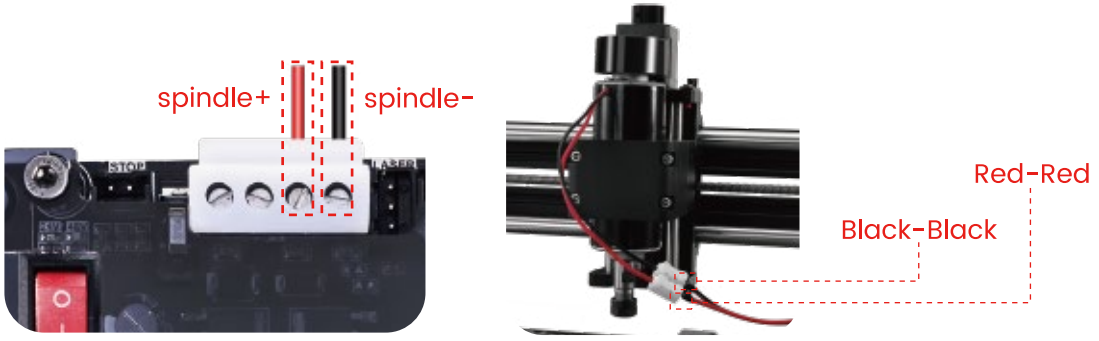
Y-axis Motor

Z-axis Motor



5.3 Connect the Spindle Motor

Connect the Spindle motor cable to the extension cable (red to red, black to black), then insert Spindle+ and Spindle- at the other end of the extension cable, and then unscrew the screw with the one-word screw, and finally tighten it.

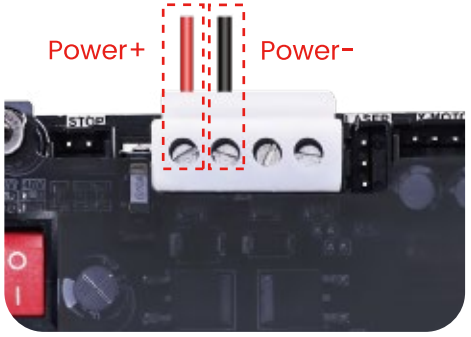


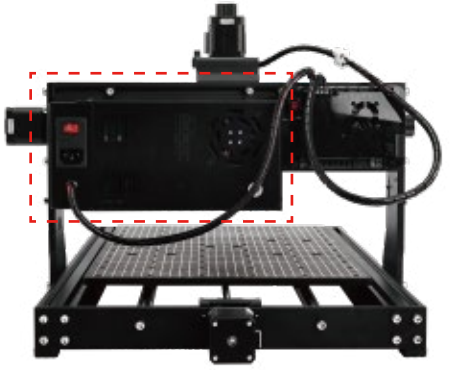
5.4 Connect the Emergency Stop Switch

Insert the emergency switch cable into the stop port of the motherboard and check whether the emergency stop switch is in a disconnected state. (Note: Pushing the button will trigger an emergency stop. The button will stay engaged once pushed. The button can only be released when twisted clockwise. This prevents double pushing the button from releasing the trigger.)

5.5 Connect the Power Supply

Connect the power red cable to the Power+ port and the black cable to the Power- port.Then lock the screws with a screwdriver.(Note:You can check whether the switching power supply is in the connect voltage range by checking the small window on the side of the power supply.We have adjusted your PSU to match your country's corresponding voltage range by default at the factory.However,we suggest you have a second check.If that is not the correct voltage range,you could use tweezers or s small screwdriver to adjust the paddle left and right.)



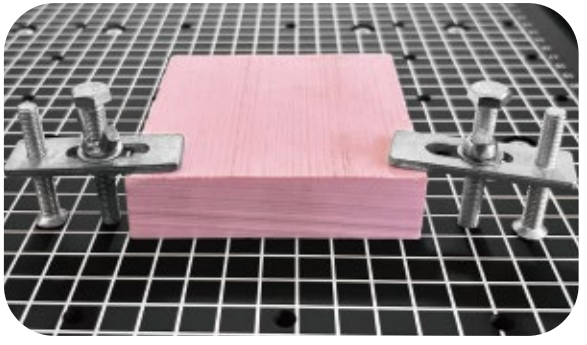


5.6 Use Velcro

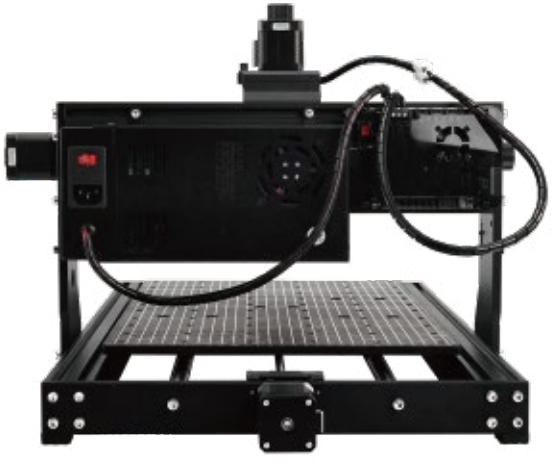
After all wiring is completed, use Velcro to wrap all cables and excess parts together.

Tips

1. Clamps Installation View

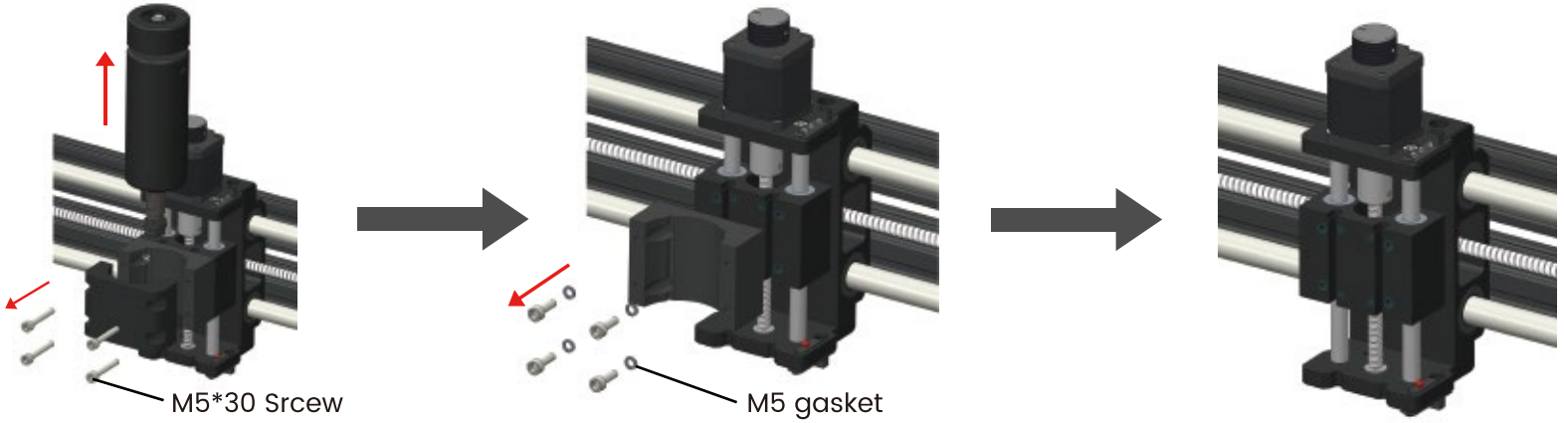


2. Cable Protector Installation View



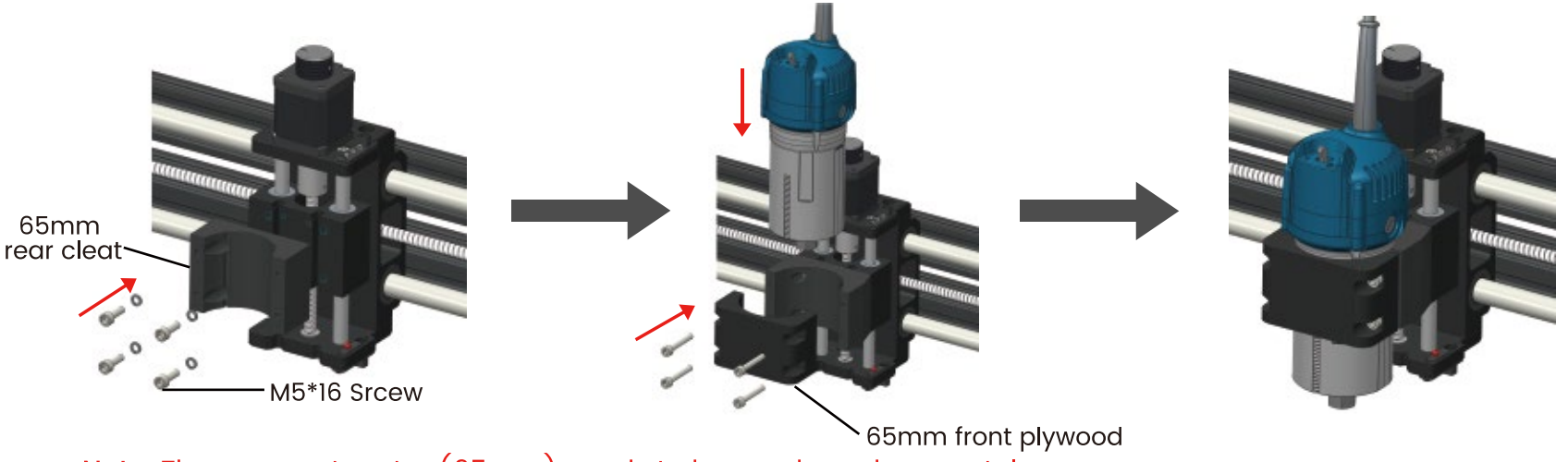
3. Replacement of 65mm Spindle Clamp

(1) Remove the 52mm spindle clamp with the 4mm Allen wrench



Note: Avoid losing gaskets when removing the 52mm rear spindle clamp.

(2)Secure the 65mm spindle clamp to the Z-axis with the removed screws and gaskets

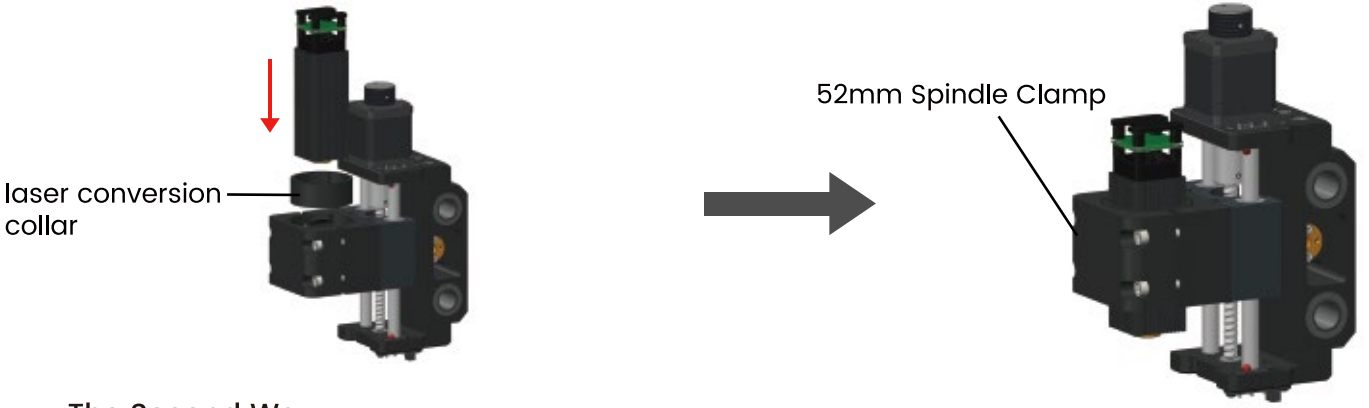


Note: The compact router (65mm) needs to be purchased separately.

4. Replacement of Laser Module

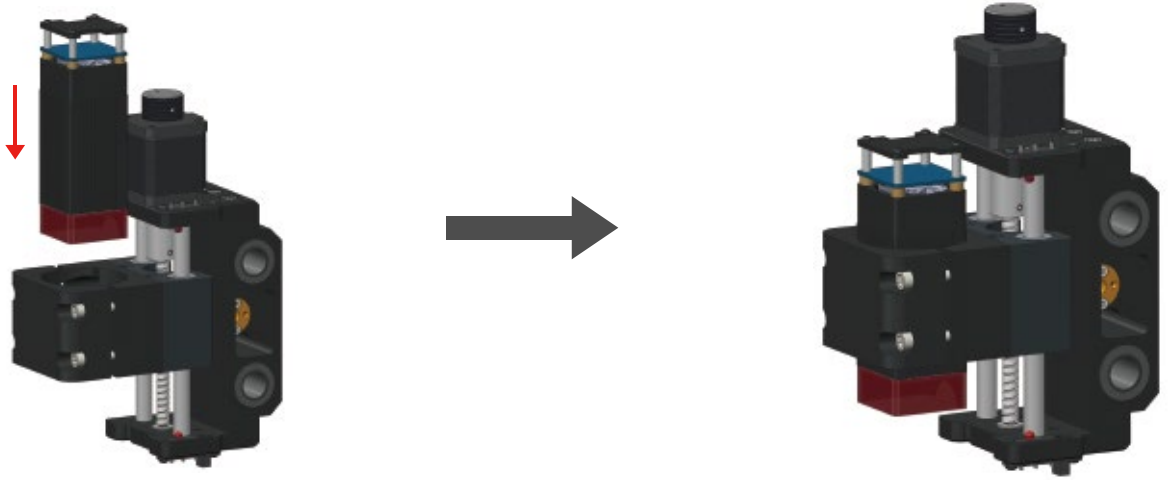
The First Way

The 33x33mm laser module can be fitted into the spindle clamp via the laser conversion collar.



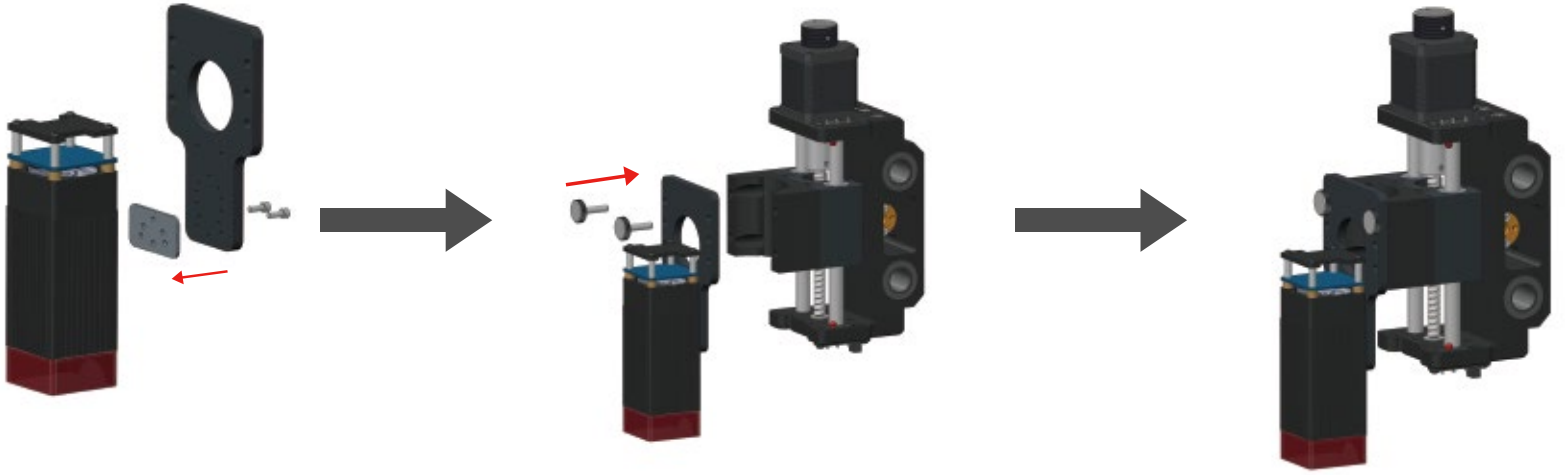
The Second Way

The 40x40mm laser module can be mounted directly into the spindle clamp.



The Third Way

1. Install the laser adapter plate and shim to the laser module with M3*16 screws and 2.5mm wrench.
2. Secure the laser module to the Z-axis with thumb screws.



Note: The corresponding laser instruction manual you can find on the U-disk.

5. Other tips

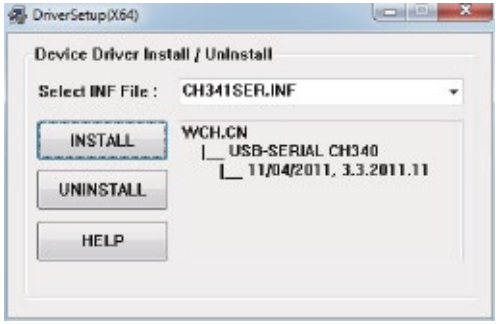
1. You can occasionally add a few drops of machine oil on the lead screw and optical axis to lubricate and prevent rust, which helps with the daily maintenance and upkeep of the machine.

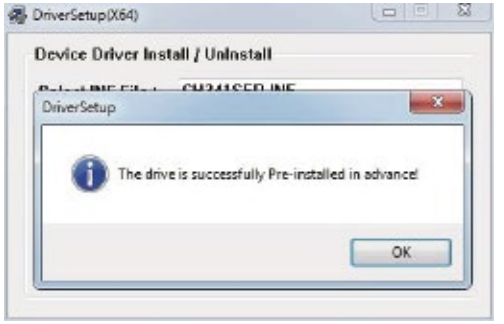
2. When cutting, you can use hot melt glue or tape to fix the object to the workbench, which can effectively prevent the object from moving during the cutting process and affect the cutting effect.

6. Software Setup

6.1 Driver Installation

Install the driver(software→Driver→CH340SER.exe)



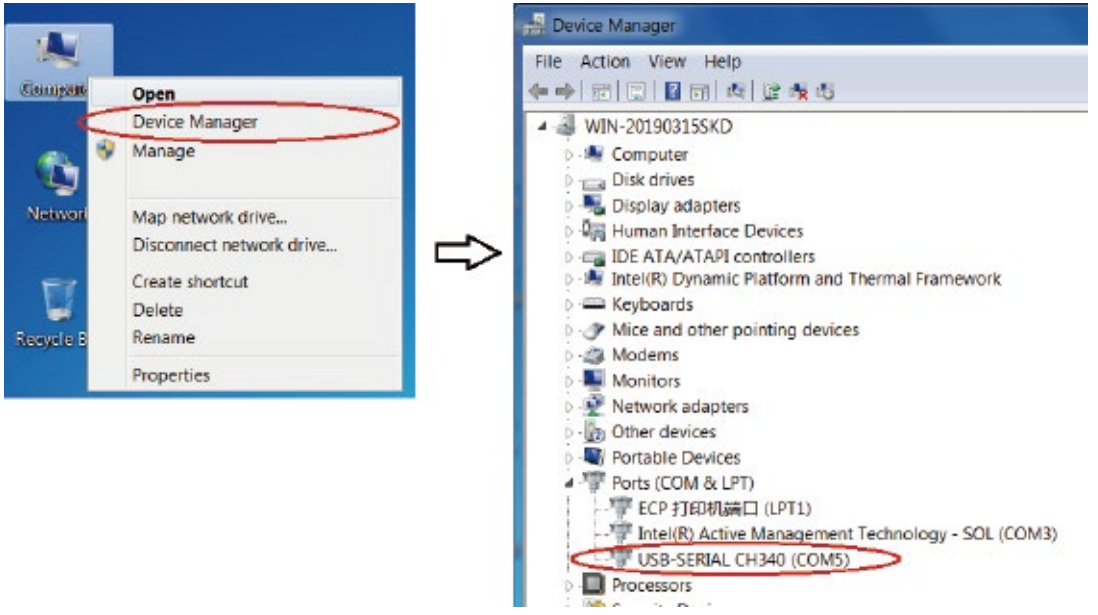


Note: You need to exit the anti-virus software before installing the driver

6.2 Determine the COM Port

- Windows XP: Right click on "My Computer", select "Properties", select "Device Manager".
- Windows 7/8/10/11: Click "Start" -> Right click "Computer" -> Select "Device Manager" -> "Ports (COM & LPT)"
- Your machine will be the USB Serial Port (COMX), where the" X "represents the COM number, for example COM5.
- If there are multiple USB serial ports, right click each one and check the manufacturer, the machine will be "CH340".

Note: You need to connect the control board and the computer to get the port number.



6.3 Open the Software

Click the icon of Grblcontrol to open the software (Software→Grblcontrol→Grblcontrol (Candle).exe).

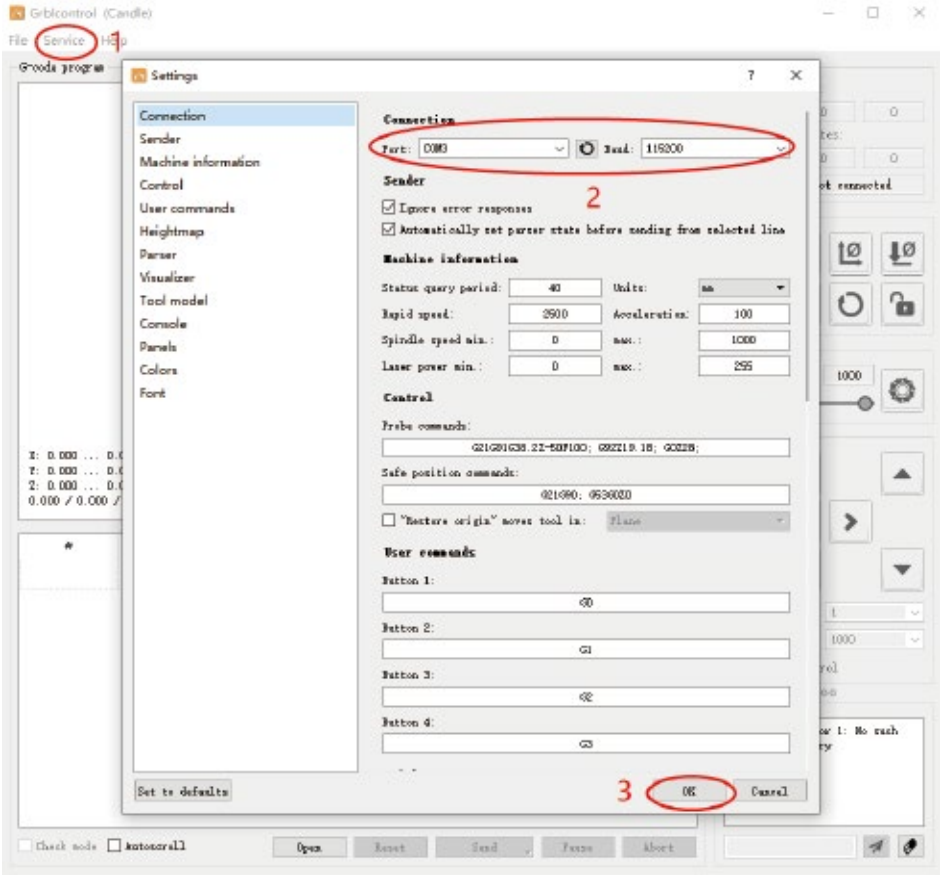
Note: You can copy the entire Grblcontrol folder to your local computer for daily use.

6.4 Software Connection

1. Click "Service"→"Settings" in the menu bar to enter the "Settings" dialog box.
2. Select the correct COM Port and Baud Rate

   COM Port: the port corresponding to CH340 driver

   Baud Rate: 115200
3. Click "OK "to save.



7. Test Project

1. Grblcontrol(Candle)

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 softwarespeed control, so the progress bar does not work.

Manual operation Direction buttons

Step and Feed value .E.g:Step value = 1means moving distance is 1mm.Feed value=1000 means 1000mm/min
(8)Manual operation Direction buttons

Open G-code file

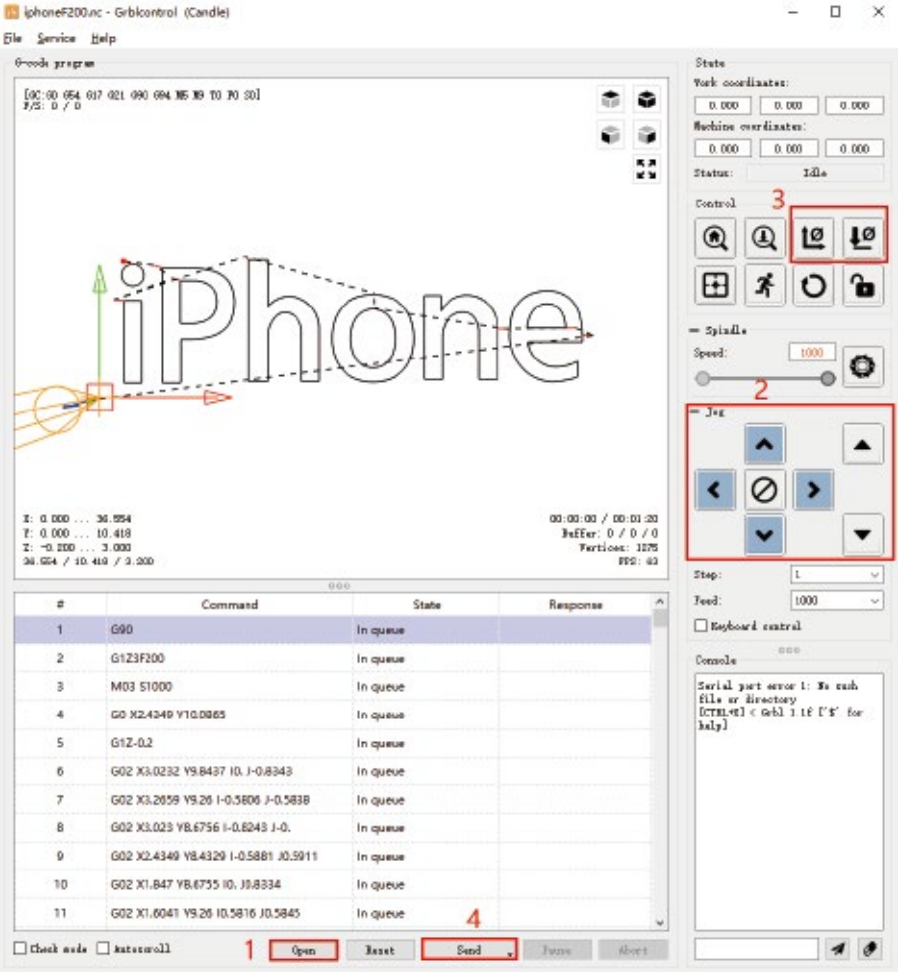
Send G-code file

Command input box

Send command

2. Run G-code for processing

(1) Click "Open", select the G code to run.
(2) Click on the manual operation panel, move the spindle to the starting. Point of the engraving, so that the tool and the workpiece just touch.
(3) Click "Zero XY"、"Zero Z" Clear the XYZ axis coordinate.
(4) Click "Send" running G code.



3.About firmware parameters

The parameters of the control board have been configured according to CNC 4030 PRO.

8. Z Probe Setup

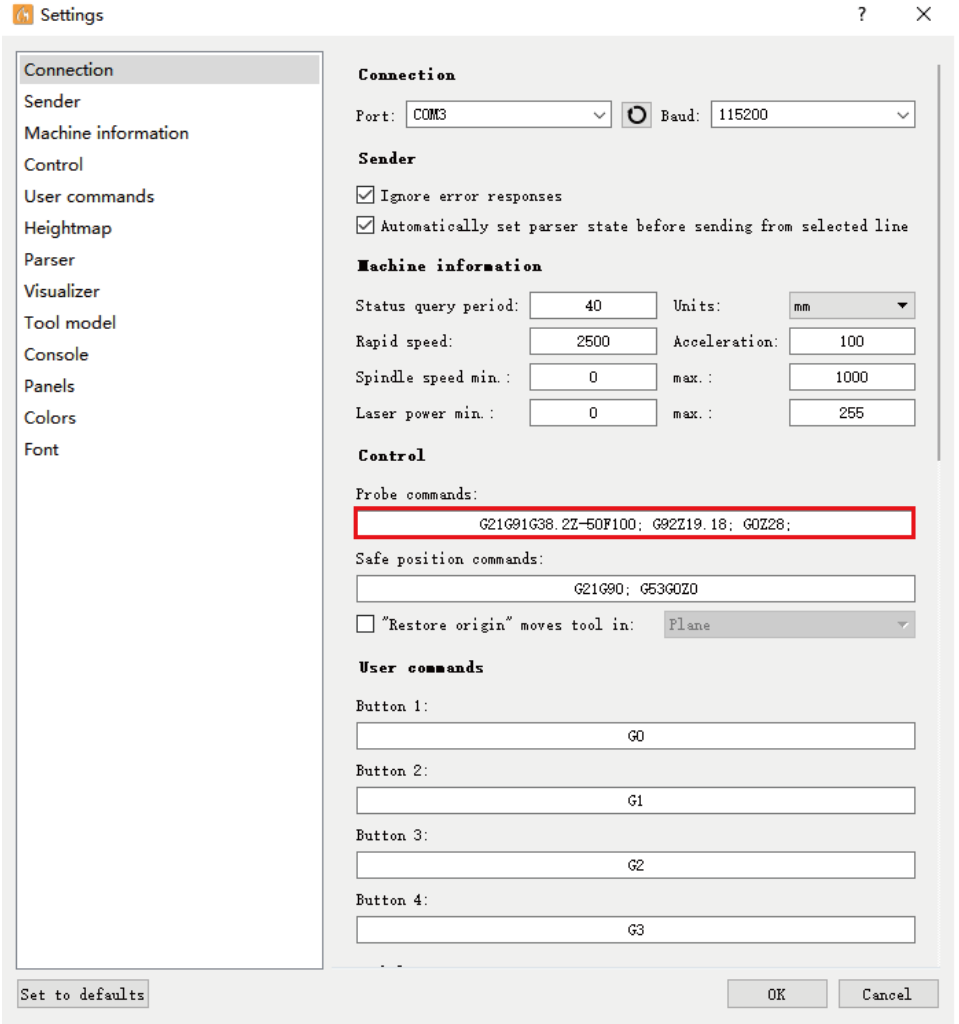
Probe function introduction

1. Probe commands editing

Z14 is the height of the tool setting block, which requires actual measurement, and Z25 is the height of the tool lifting, which can be configured as required.

Probe G code	After editing	Probe toll height
G90G21G38.2Z-50F100	G90G21G38.2Z-50F100	
G92 Z21	G92 Z19.18	
G0 Z25	G0 Z28	

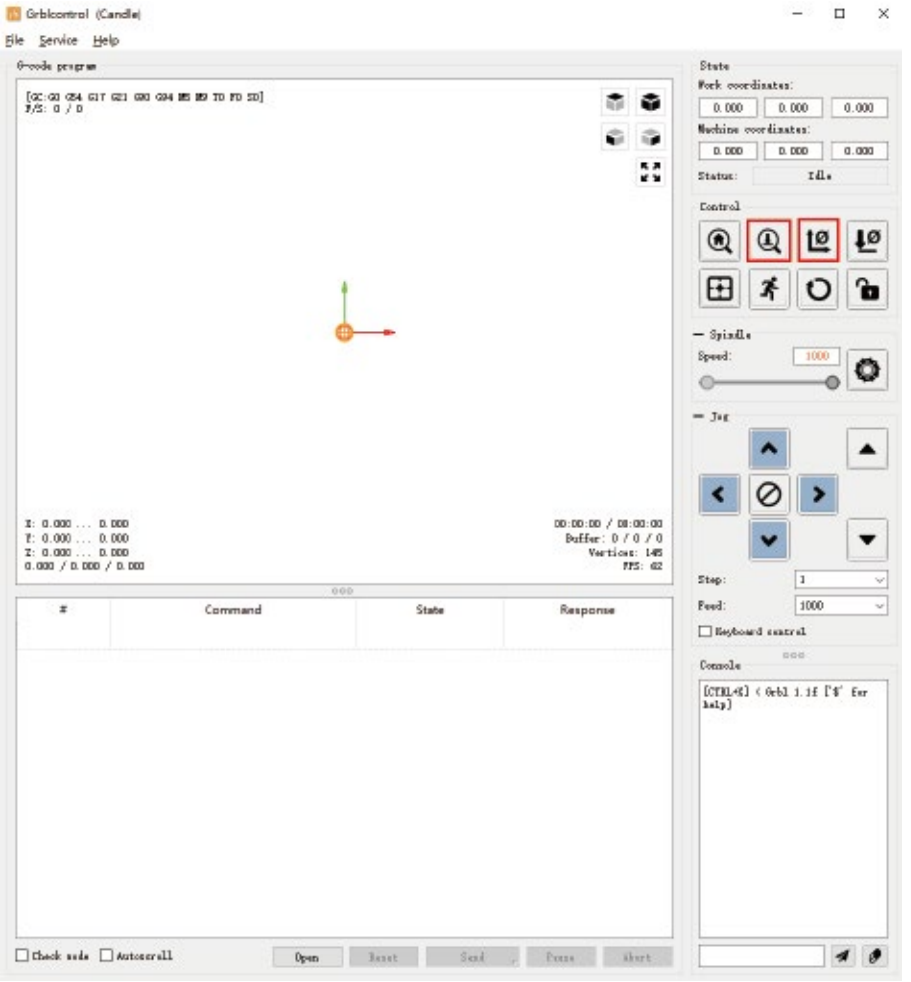
2. Probe commands filled in Grblcontrol (Candle)



3. Connect the probe tool to the controller probe interface.

4. Click the "Zero XY" button

5. Click the "Z-probe" button, Z-axis automatic tool to zero.

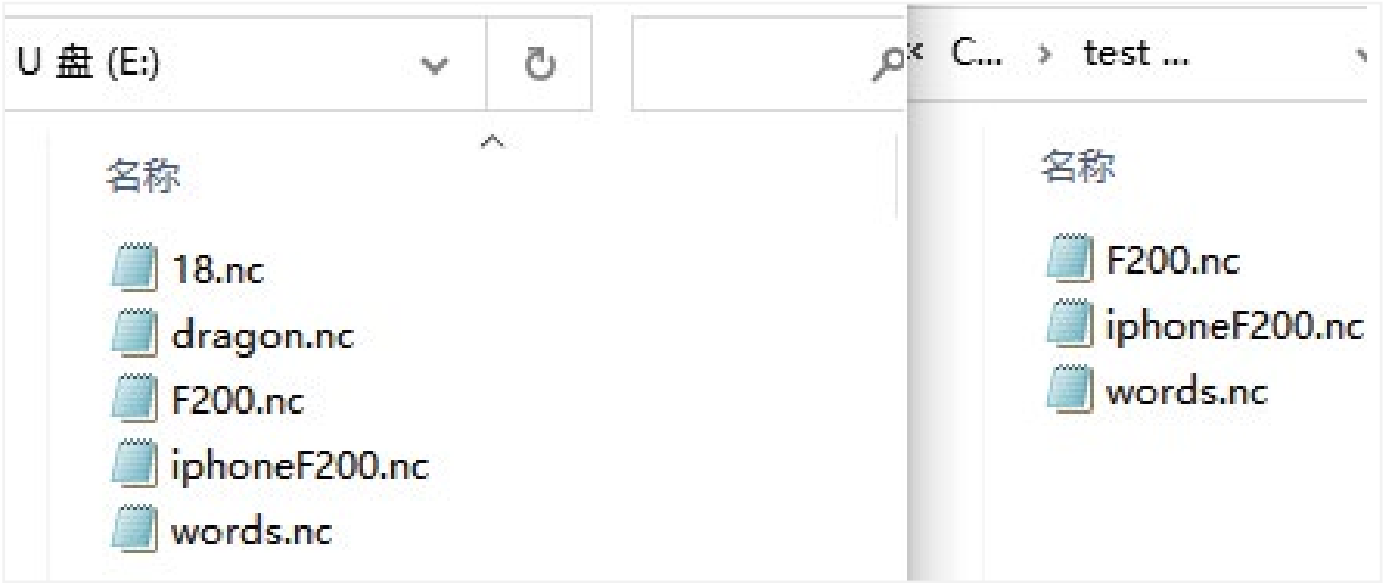


9. Off-Line Operation

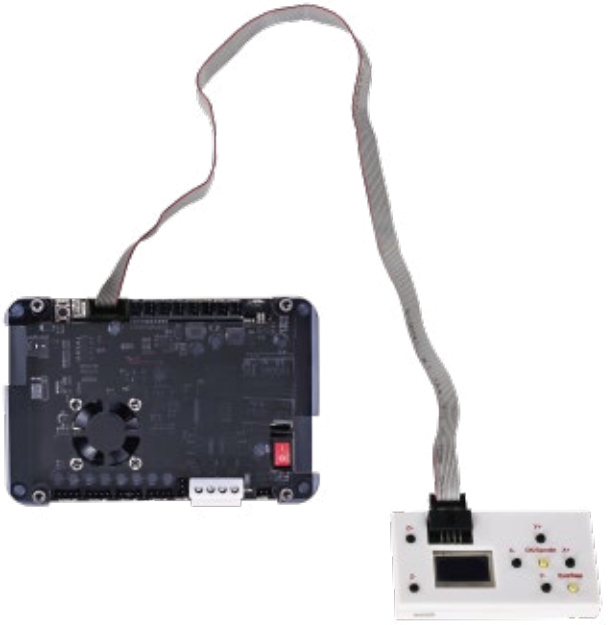
1. Connect the offline controller to the computer via USB cable.

Note: Use a USB cable to transfer files instead of inserting the SD card into the card reader, which may cause a crash.

2. Copy the NC file to the offline controller.



3. Connect the offline controller to the control board.



Note: When using the offline controller, you need to unplug the USB cable from the computer, for offline and the computer cannot be used together.

4. Press the [X+/X-/Y+/Y-/Z+/Z-] key to move the spindle to the machine origin (Tool setting method: The cutter just touches the object, press the [Exit] key), select the engraving file, and click [ok] Key to start carving.

5. Interface introduction

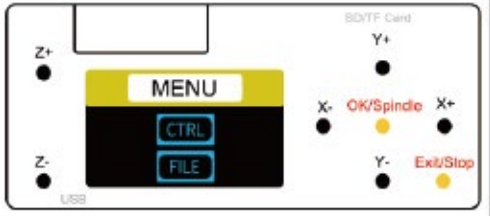
A. Menu Page

Ctrl: machine control

Fite: Use Gcode files

Press【y+↑】【y-↓】to select

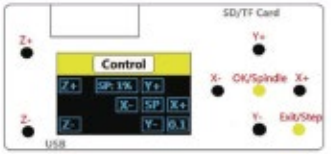
Press【OK】to enter



Main Page

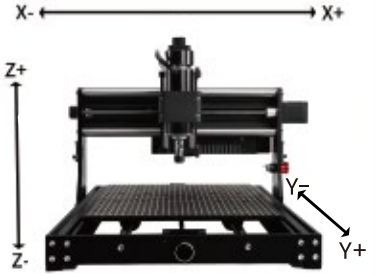
B. Ctrl Page

Control Page



X+	X-axis positive direction
X-	X-axis negative direction
Y+	Y-axis positive direction
Y-	Y-axis negative direction
Z+	Z-axis positive direction
Z-	Z-axis negative direction
OK/Spindle(SP)	SP On/Off
Exit/Step	Long press to exit,short press to change step(0.1/1/5/10mm)
SP:1%	Power to spindle (Press[OK]+[Z+]=add, Press [OK]+[Z-]=educe)

Reference direction



C. File Page

Commonly supported formats include .nc.txt.tap

Press {Y+↑}{Y-↓} to select file

Hold to enter

If you are ready {OK} start

Note: Long press {Exit} to stop machining

File page