CNC Router

4540 Desktop CNC Machine

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1. Disclaimer

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

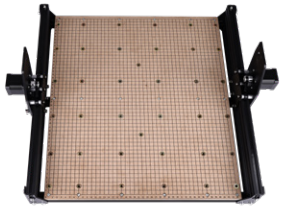
- This machine is for Indoor Use Only.
- People under18 should operate this machine supervised by adults familiar with the operation.
- Wear proper Personal Protection Equipment (safety glasses etc.).
- Always place the CNC Machine on a stable surface.
- The CNC Machine is supplied with Switchable Power Supply 230VAC or 115VAC. Never use a different power supply, or it may cause malfunctions or damage to the machine.
- The CNC 4540 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 running. 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.

2. Specifications

Model	4540
Product size	650 × 532 × 320mm (25.59 × 20.94 × 12.60 inches)
Working area	430 × 390 × 90 mm (16.93 × 15.39 × 3.54 inches)
Power supply	48V 10.4A
Stepping motor	42 x 48mm
Limit switch	X, Y, Z (both ends)
Emergency stop switch	Yes
Power of spindle motor	500W
Speed of spindle motor	11000rpm/min
Offline controller	Yes
Software	Grblcontrol (Candle), other GRBL compatible software
System	Windows XP / 7 / 8 / 10
Support Add-ons	Laser (not included)
Weight	11.55kg (25.46 pounds)

3. Accessories

3.1 Mechanical Parts



1 Base assembly

2 X-axis drag chain assembly (544mm)

3 Y-axis drag chain assembly (480mm)

4 X-axis aluminum profile (40 × 40 × 544mm)

5 X-Z axis assembly

6 500W spindle motor

7 Drag chain fixing plate on Y-axis (rear)

8 Drag chain fixing plate on Y-axis (front)

9 Drag chain fixing plate on X-axis (left)

10 Drag chain fixing plate on X-axis (right)

3.2 Electrical Parts

⓫ USB cable

⓬ Power supply & control board

⓭ Offline device / cable

⓮ U disk (2G)

3.3 Tool Parts

⓯ Allen wrench (4mm)

⓰ Allen wrench (2mm)

⓱ Double end spanner

⓲ Open spanner (13mm/17mm)

⓳ 4 x Clamp

⓴ Synchronous belt

㉑ Cable ties

㉒ 10 x Milling cutter (Φ3.175mm/20°/0.1mm)

㉓ Collet

㉔ Collet nut

㉕ Brush

㉖ 2 x Coil on side plate

㉗ Z probe

㉘ Spindle connector

㉙ Slotted screwdriver

3.4 Screw / Other Parts

㉚ 8 x M5*12 Screw

㉛ 10 x M3*8 Screw

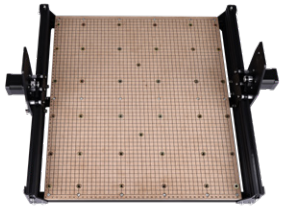
㉜ 12 x M3*5 Screw

㉝ 10 x M3 T nut

4. Installation Instructions

4.1 Drag Chain on Y-Axis Assembly

4.1.1 Accessories Needed



❶ Base assembly

❸ Y-axis drag chain assembly (480mm)

❼ Drag chain fixing plate on Y-axis (rear)

❽ Drag chain fixing plate on Y-axis (front)

⓰ Allen wrench (2mm)

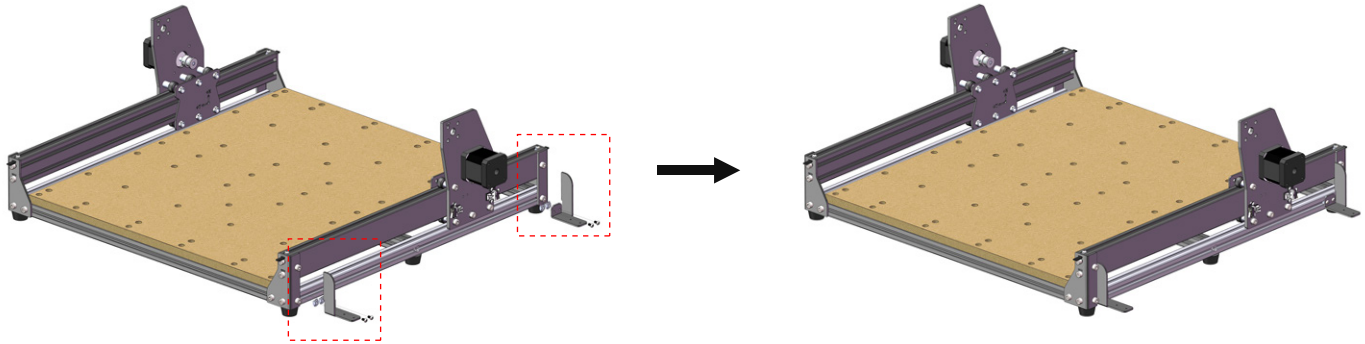
㉛ 4 x M3*8 Screw

㉜ 6 x M3*5 Screw

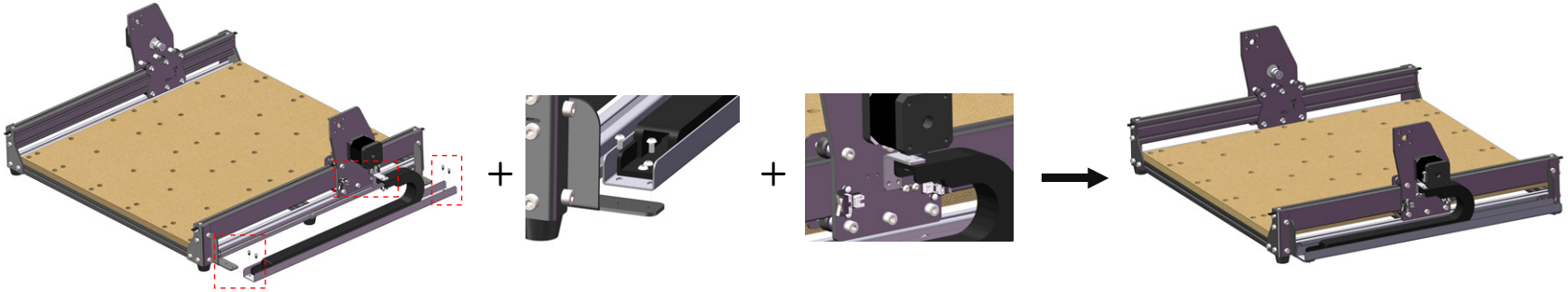
㉝ 4 x M3 T nut

4.1.2 Operating Steps

1. Tighten the front and rear fixing plates with M3*8 screws and M3 T nuts as shown below.



2. Fix the Y-axis drag chain assembly with M3*5 screws.



4.2 X-Z Axis Assembly

4.2.1 Accessories Needed

❹ X-axis aluminum profile (40 × 40 × 544mm)

❺ X-Z axis assembly

⓯ Allen wrench (4mm)

⓰ Allen wrench (2mm)

⓴ Synchronous belt

㉖ 2 x Coil on side plate

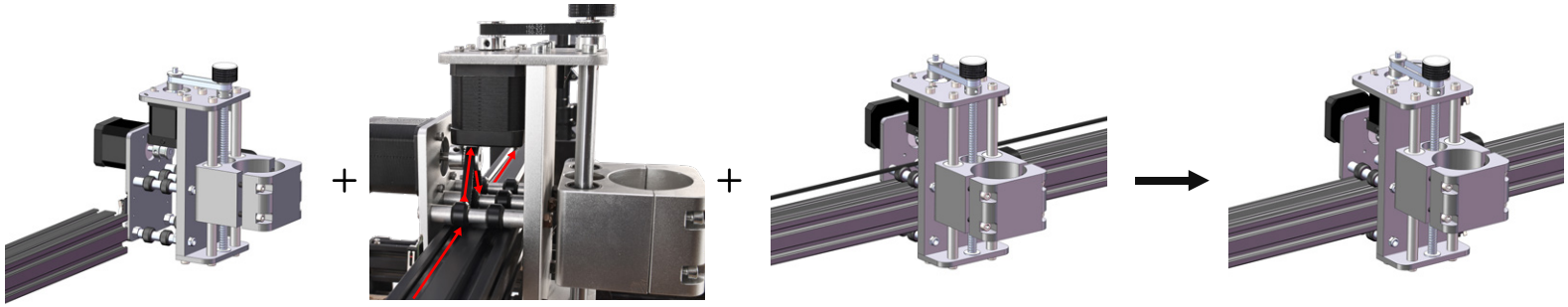
㉚ 8 x M5*12 Screw

㉛ 2 x M3*8 Screw

㉝ 2 x M3 T nut

4.2.2 Operating Steps

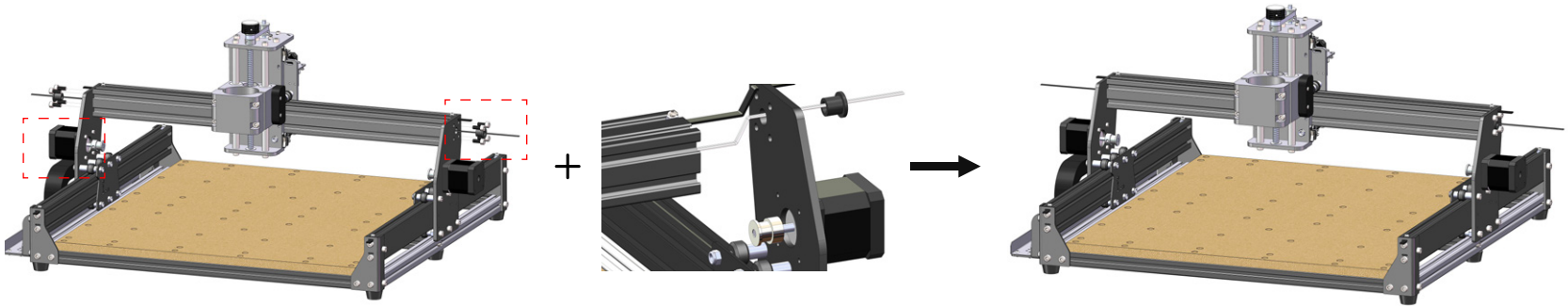
1. First pass the aluminum profile through the X-Z assembly, then install the synchronous belt as shown below, and secure it with M3*8 screws and M3 T nuts.



2. As shown below, pass the Y2 stepper motor wire through: Winding coil → left plate → X-axis aluminum profile → right plate → winding coil.

3. As shown below, pass the synchronous belt through the holes in the left and right side panels, meanwhile, install the X-axis aluminum profile between the side panels with M5*12 screws.

Note: You can properly pull the side panels outward to install the X-axis aluminum more easily.



4.3 Drag Chain on X-axis Assembly

4.3.1 Accessories Needed

❷ X-axis drag chain assembly (544mm)

❾ Drag chain fixing plate on X-axis (left)

❿ Drag chain fixing plate on X-axis (right)

⓰ Allen wrench (2mm)

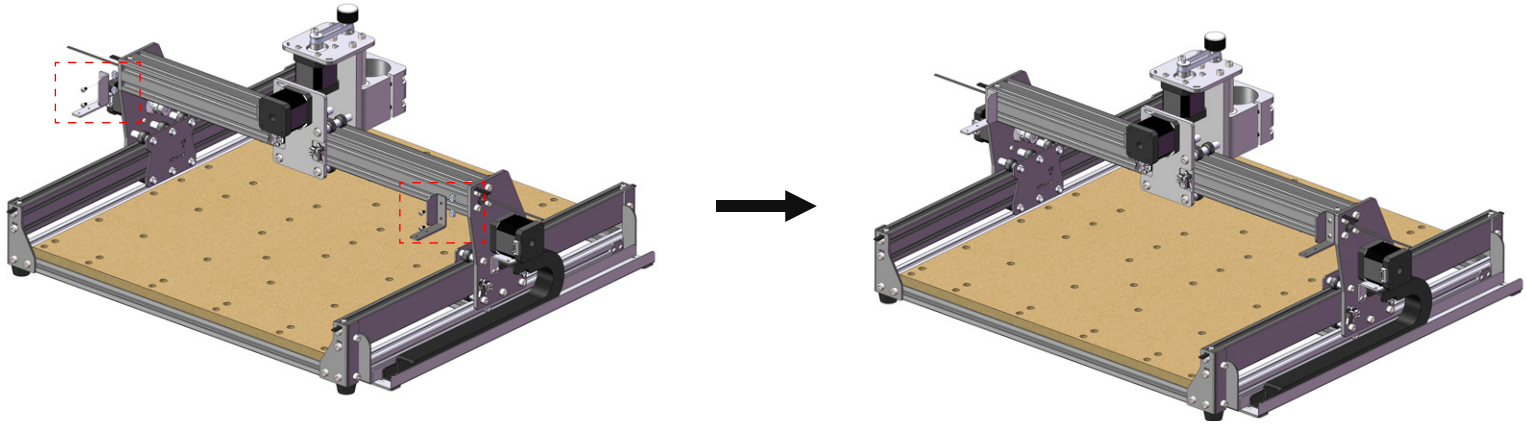
㉛ 4 x M3*8 Screw

㉜ 6 x M3*5 Screw

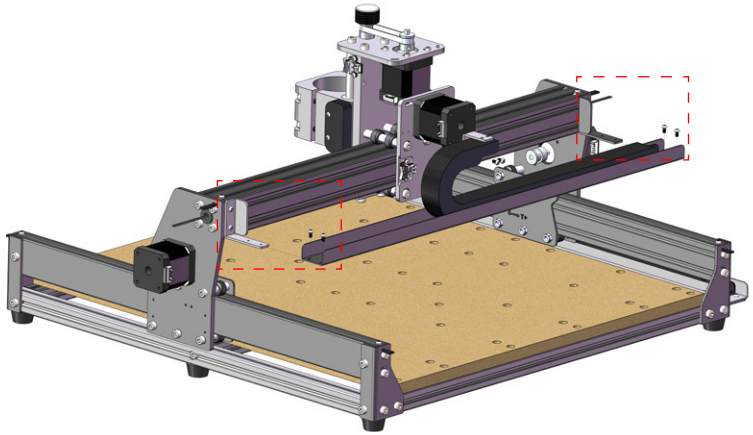
㉝ 4 x M3 T nut

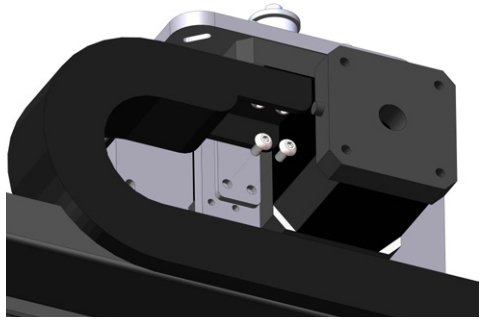
4.3.2 Operating Steps

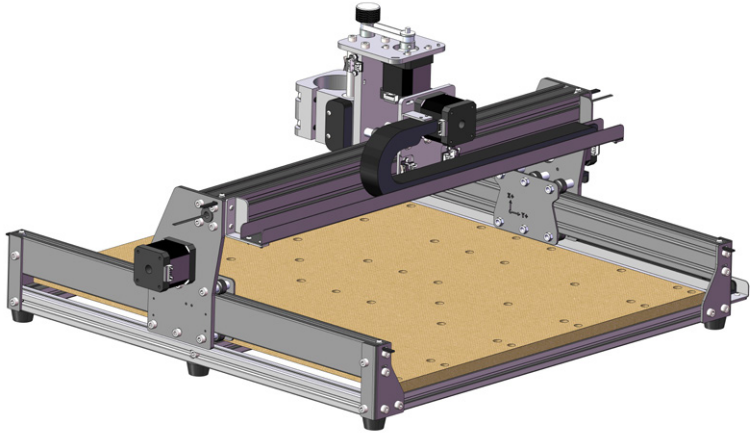
1. As shown below, install the fixing plates on the left and right sides of the X-axis with M3*8 screws and M3 T nuts.

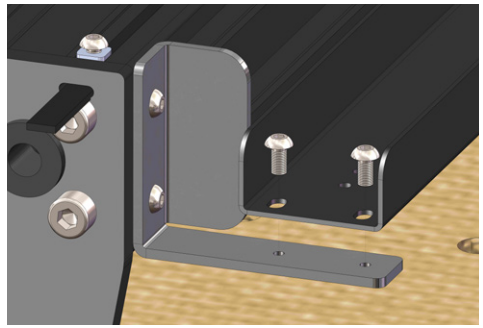


2. Install the X-axis drag chain assembly with M3*5 screws.









4.4 Spindle Motor

4.4.1 Accessories Needed

❻ 500W spindle motor

⓯ Allen wrench (4mm)

⓲ Open spanner (13mm/17mm)

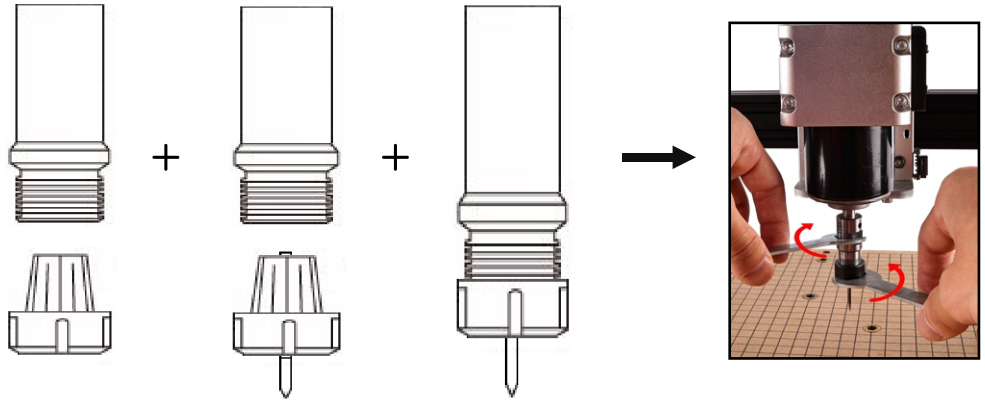
㉒ 10 x Milling cutter (Φ3.175mm /20°/0.1mm)

㉓ Collet

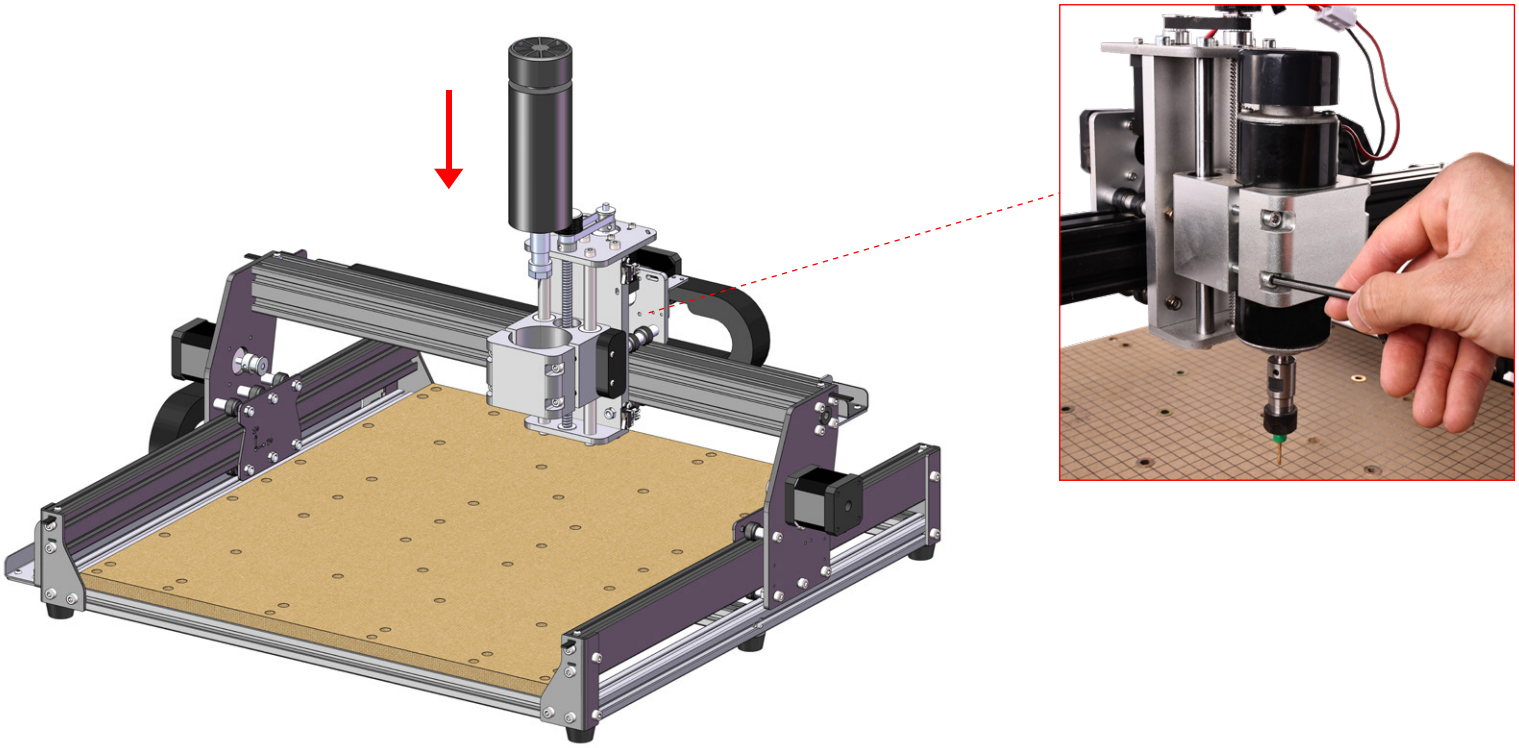
㉔ Collet nut

4.4.2 Operating Steps

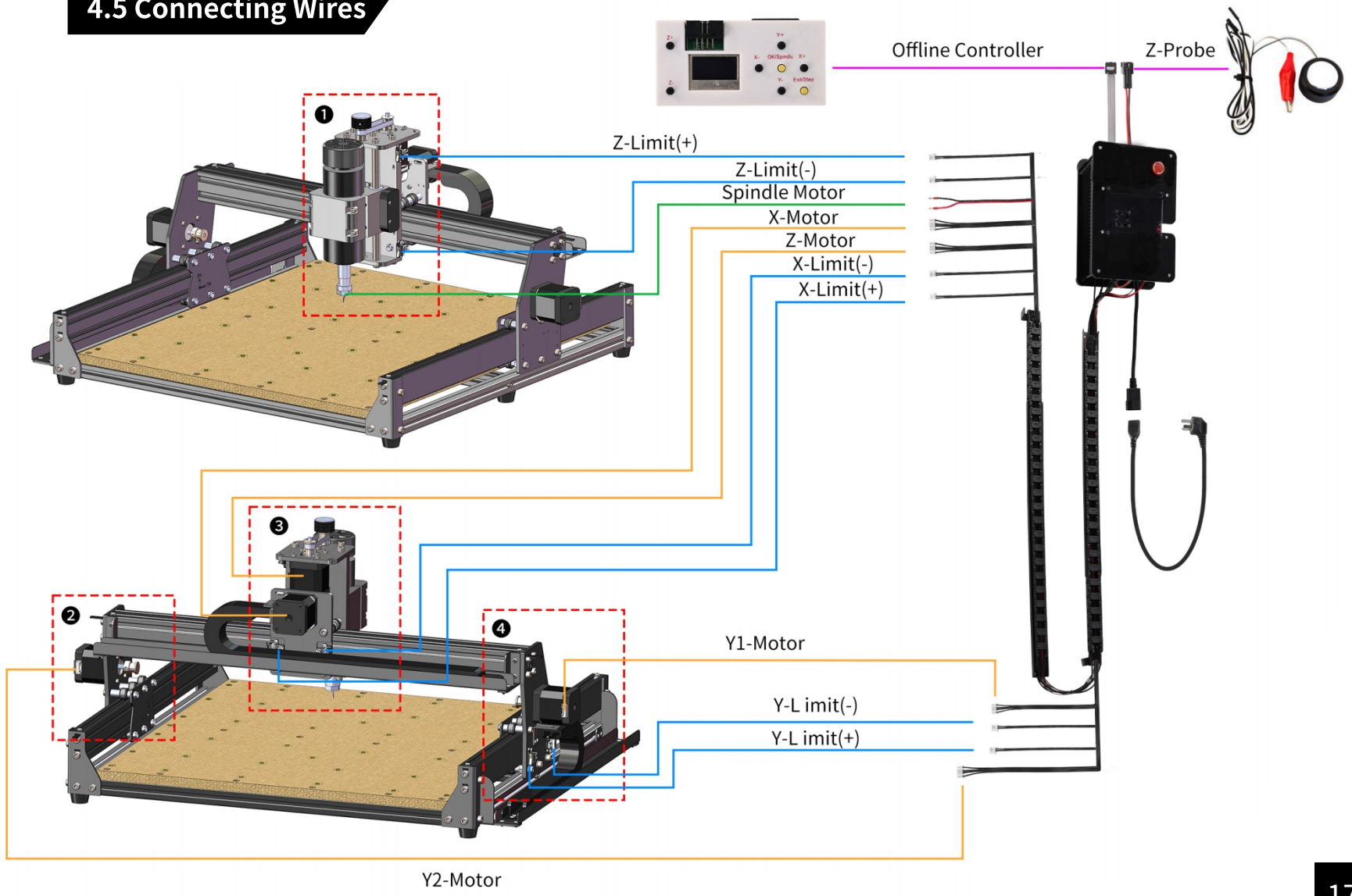
1. Install the collet into the spindle cap, insert the burin into the collet, and tighten the cap with 13mm and 17mm wrenches.

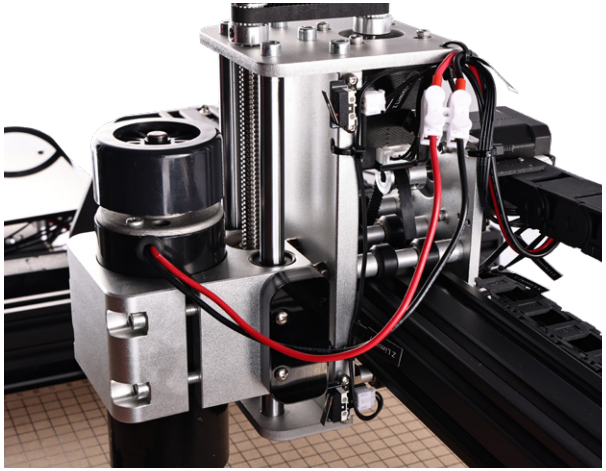


2. Loosen the screws with a 4mm Allen wrench, insert the spindle motor into the U-clamp, and tighten the screws.

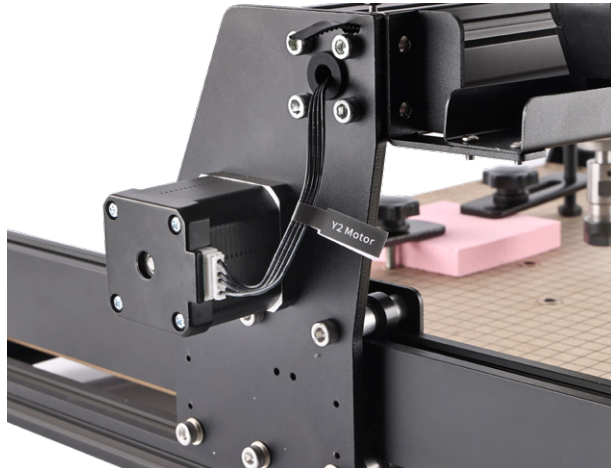


4.5 Connecting Wires

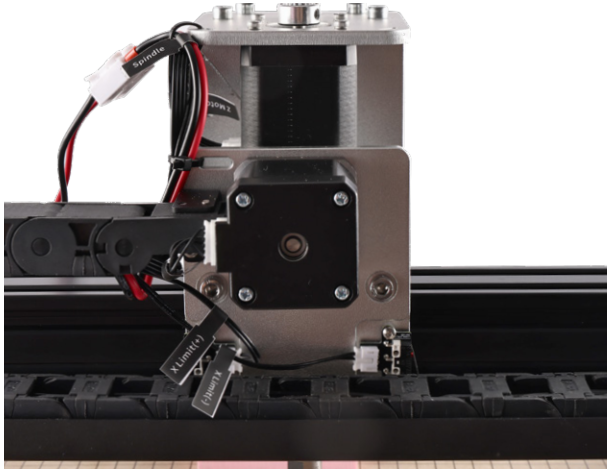




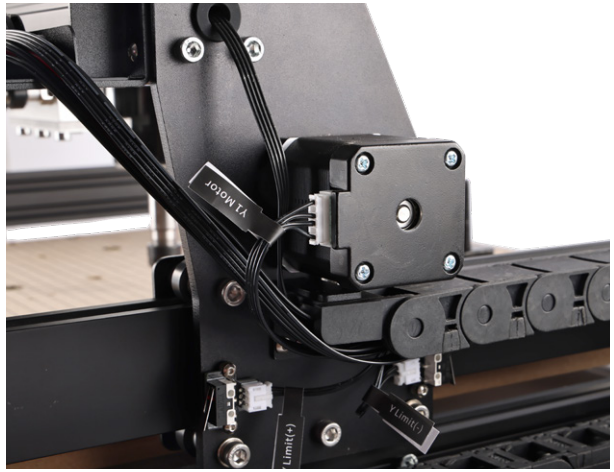
❶ Spindle Motor & Z-Limit(+) & Z-Limit(-)



❷ Y2 Motor



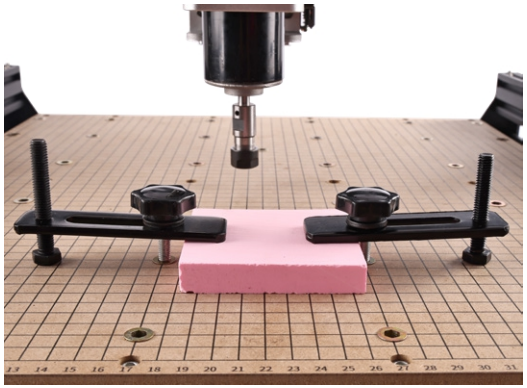
❸ Z Motor & X Motor & X-Limit(+) & X-Limit(-)



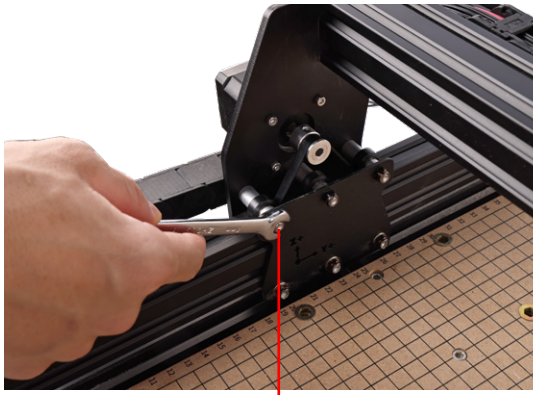
❹ Y1 Motor & Y-Limit(+) & Y-Limit(-)

4.6 Tips

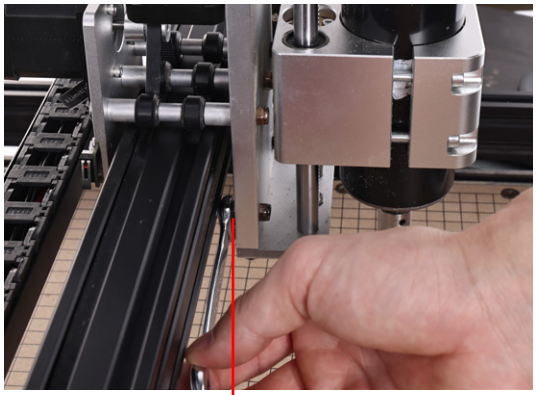
1. The correct usage of the clamp is shown below.



2. If the lock nut or eccentric is loose, you can adjust it with a double end spanner.



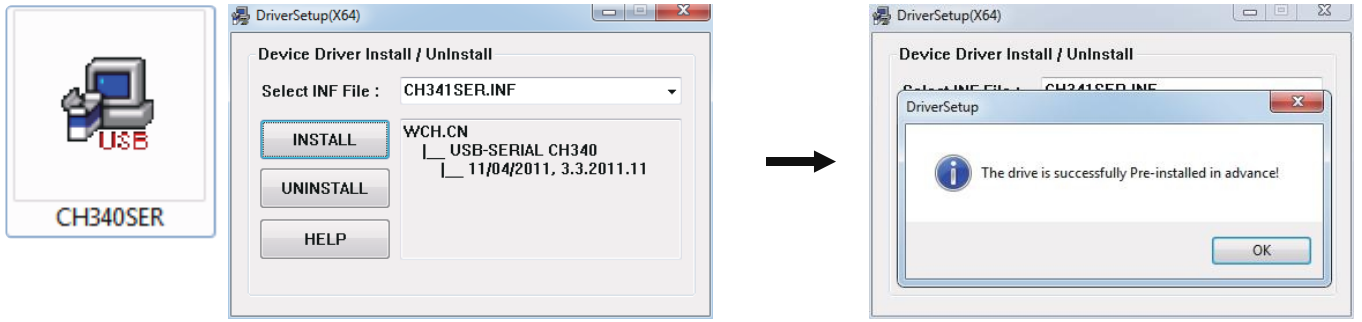
lock nut



eccentric

5.1 Install Driver

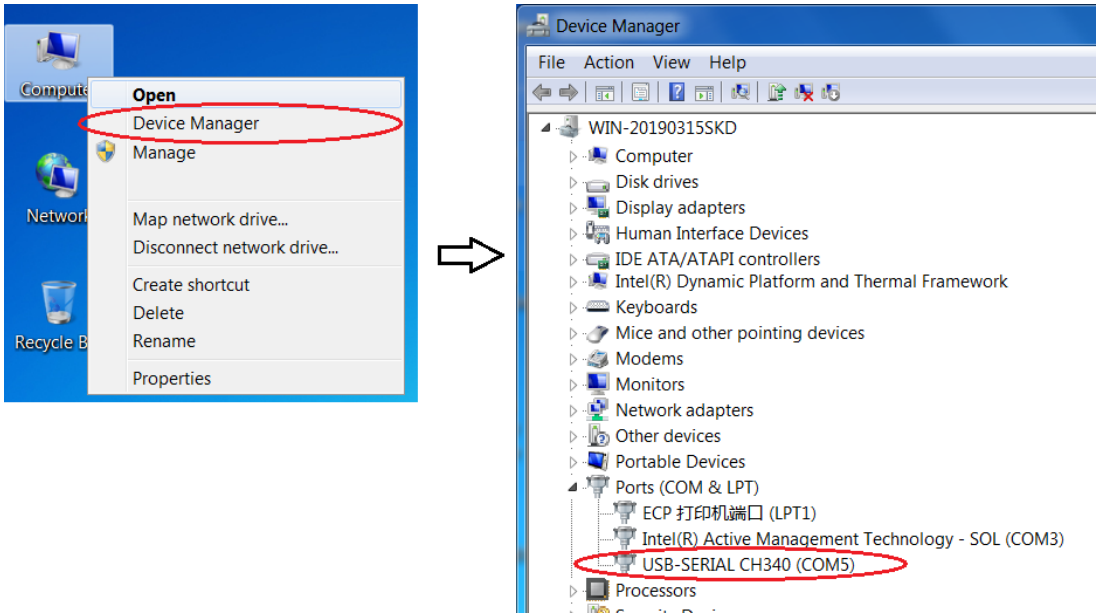
Install the driver (Software→Driver→CH340SER.exe).



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

5.2 Determine COM port

- Windows XP: Right-click on “My Computer”, select “Properties”, then select “Device Manager”.
- Windows 7, 8 and 10: 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.

5.3 Open the Software

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

Grblcontrol (Candle).exe

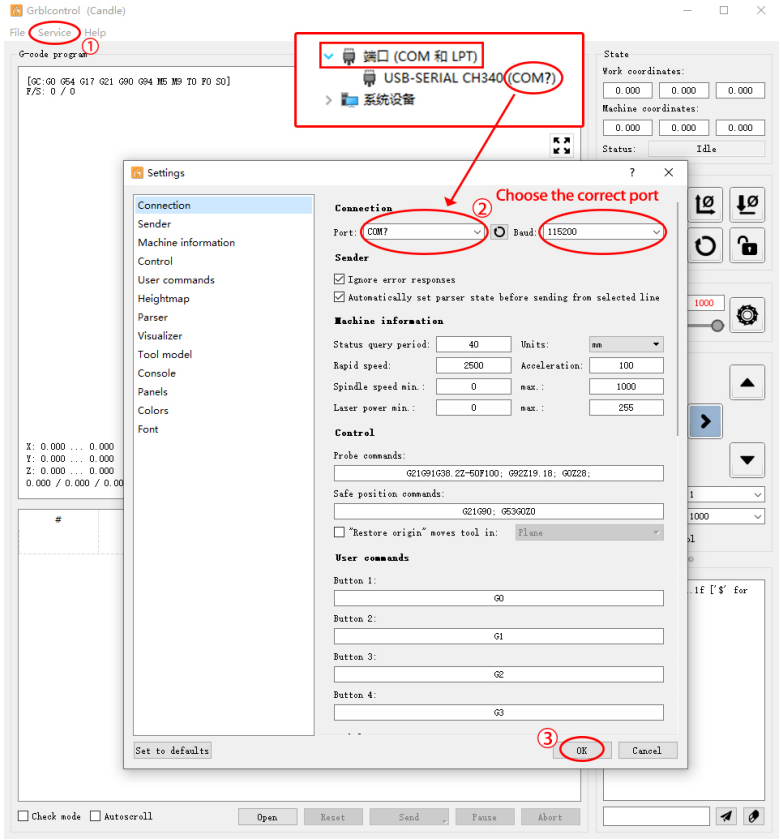
Note: You can copy the entire Grblcontrol folder to your local computer for daily use.

5.4 Connect the Software

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.



6. Test Project

1. Grblcontrol

3D preview interface
Hold the left mouse button to rotate the angle, scroll the mouse wheel to enlarge or reduce siz.

If you cannot see anything, you need to change 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.
It is manual speed control, so the software can only control the spindle on/off, not the speed. Therefore the progress bar does not work.

Manual operation directionbuttons

Step and Feed value
E.g: Step value = 1 means moving distance is 1mm. Feed value=1000 means 1000mm/min.

Open G-code file

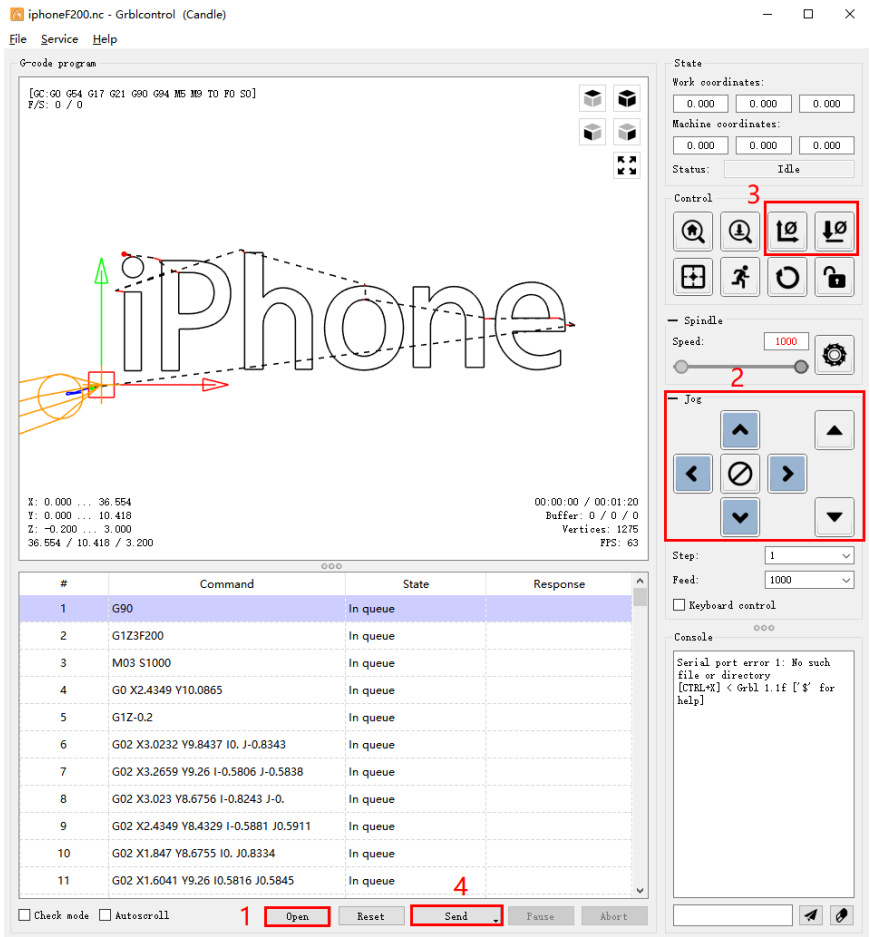
Send G-code file

Command input box

Send command

2. Run G-code for Processing

1. Click “Open”, and 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” to clear the XYZ axis coordinate.
4. Click ”Send” to run G code.



3. About Firmware Parameters

The parameters of the control board have been configured according to CNC 4540.

7. Z Probe Setup

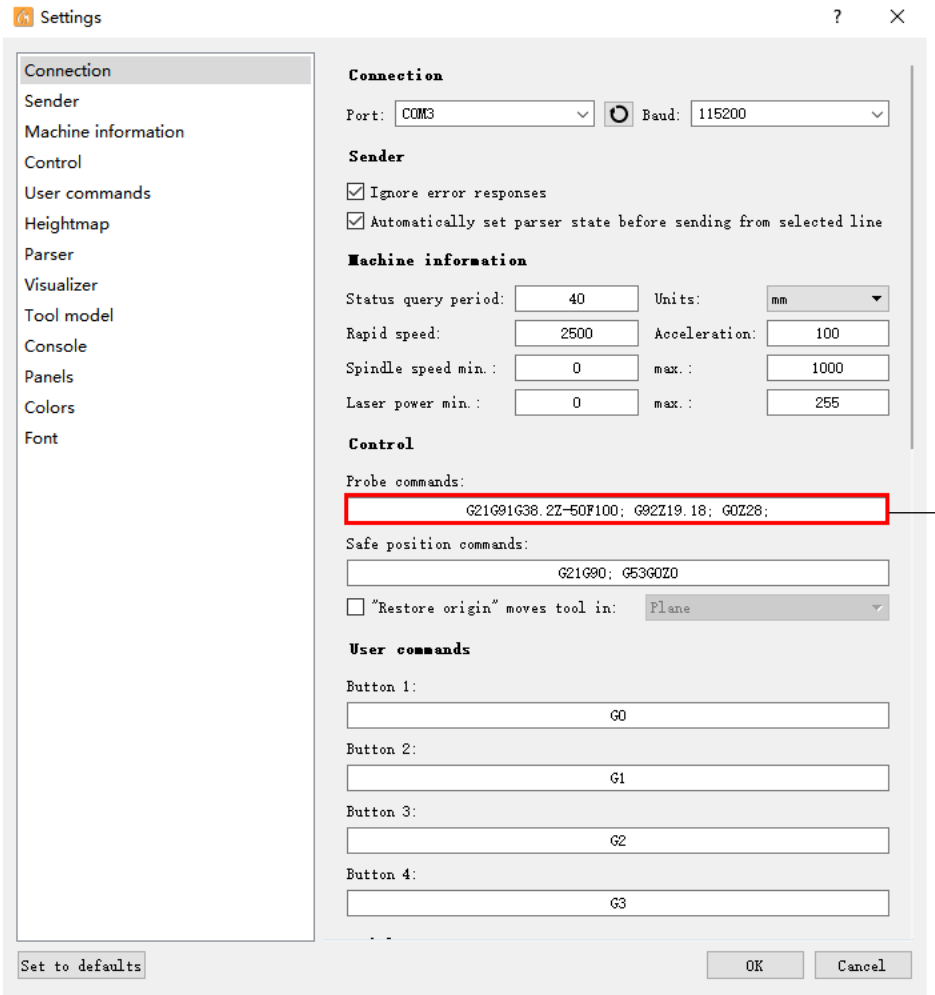
Probe Function

1. Probe commands editing

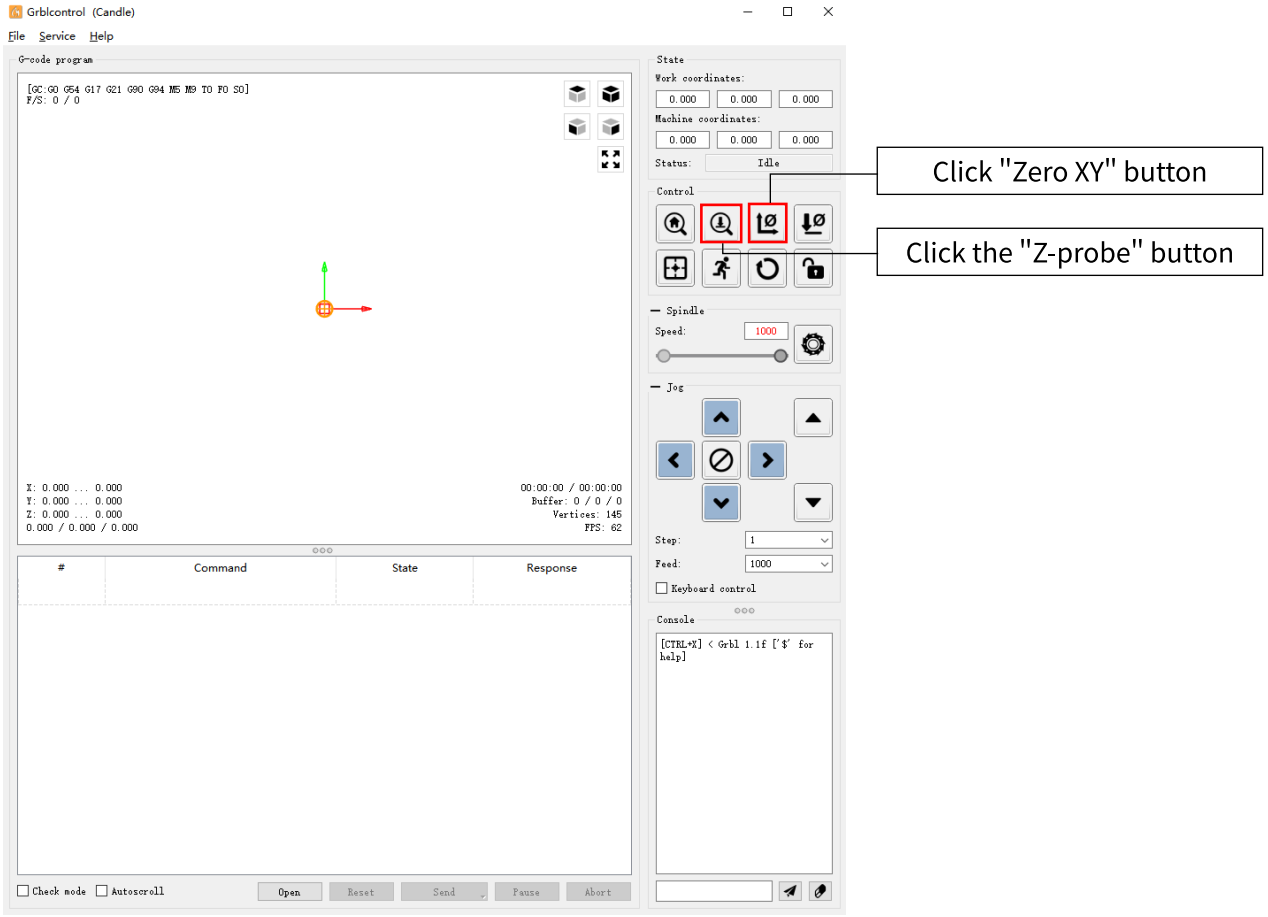
Z14 is the height of the tool setting block, which requires actual measurement, and Z25 is the height of the tool lifting, which can be configured as required.

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

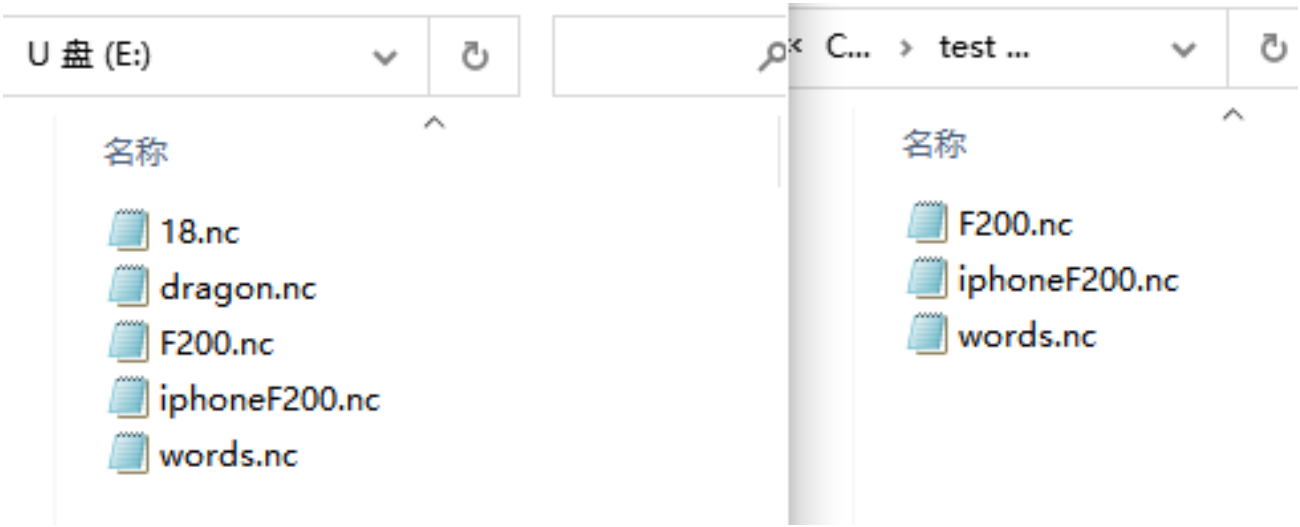


8. Off-Line Operation

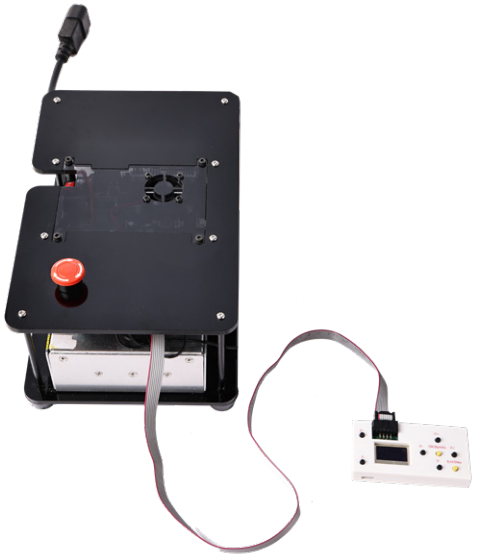
1. Connect the offline controller to the computer via USB cable.

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

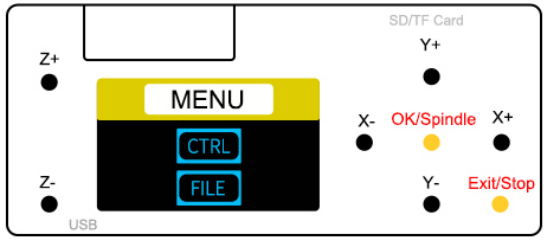
A. Menu page

Ctrl: machine control

Fite: Use Gcode files

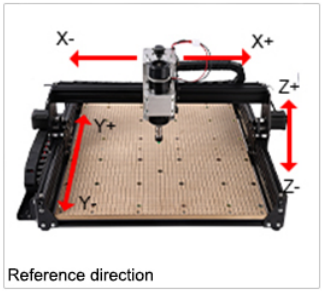
Press【y+↑】【y-↓】to select

Press【OK】to enter

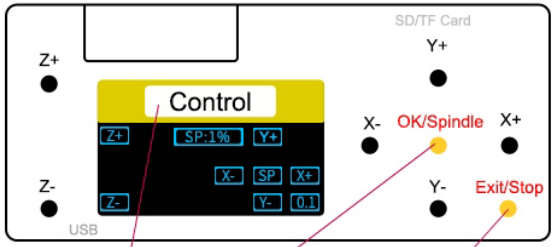


Main Page

B. Ctrl page



Reference direction



Change step/Exit (long press 0.1/1.5.10mm

Spindle On/Off

X± Y±Z±: Moving Axis

Note:The "Spindle" can be a motor or a laser

Spindle to spindle:Press {OK}+{Z+}=add

Press {OK}+{Z-}=reduce

Control page

C. File page

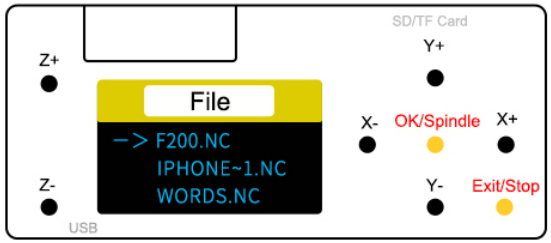
Commonly supported formats include .nc.txt.tap

Press {Y+↑}{Y-↓} to select file

Hold to enter

If you are ready {OK} start

Note: Long press {Exit} to stop machining



File page

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