

# **USER MANUAL**

## 3018-MAX CNC ROUTER MACHINE

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# Disclaimer

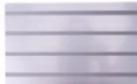


Please be careful when using your CNC engraving machines. This machine is an electrical equipment with moving parts and dangerous areas.

- This CNC Machines are for Indoor Use Only.
- You must be at least 18 years old to operate this machine unless supervised by a professional who is familiar with the machine.
- Wear appropriate personal protective equipment.
- Always place the CNC machine on a flat surface.
- Do not touch the rotating shaft of the machine or place any body part near the working area while the machine is in operation. Serious injury may occur.
- Do not leave the machine unattended while it is running.
- Do not leave a child unattended to use a CNC machine, even if it is not in operation, damage may occur.
- Make sure your CNC machine is in a well ventilated area, some materials may emit some smoke during operation.

# Part 1 Parts List

## Mechanical Parts List



① Working Desk  
(15\*180\*300mm)



② 2 x Aluminum  
(40\*40\*290mm)



③ 2 x Aluminum  
(20\*40\*360mm)



④ 2 x Guide Rail  
(X Axis,Φ12\*360mm)



⑤ 2 x Guide Rail  
(Y Axis,Φ12\*290mm)



⑥ X Lead Screw  
(X Axis ,T8/390mm)



⑦ Y Lead Screw  
(Y Axis,T8/ 325mm)



⑧ Aluminum side plat  
(small hole)



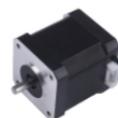
⑨ Aluminum side Plate  
(large hole)



⑩ Aluminum front Plate  
(small hole)



⑪ Aluminum back Plate  
(large hole)



⑫ 2 x Stepper motor(42\*48mm)



⑬ Spindle(48v\11000rmp)



⑭ X-Z Axis Assembly



⑮ 2 x Slider



⑯ Nut Seat

## Electrical Parts List



⑰ USB Wires (1.5m)



⑱ Control Board



⑲ Power Supply (48V 12.5A)



⑳ 3 x Motor Harness (60cm)



㉑ U Disk (2G)



㉒ Offline Controller(Optional)

## Tolls Parts List



⑬ Engraving Bit Kit  
(Φ3.1754mm|20°|0.1mm)



⑭ Winding Tube (2m)



⑮ 4 x Clamp



⑯ Allen Wrench  
(5mm、4mm、3mm、2.5mm、2mm、1.5mm)



⑰ Brush



⑱ Rolled Strip



⑲ Laser Mount



⑳ 2 x Hand heel



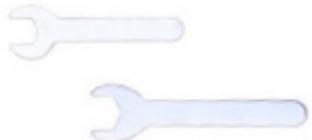
㉑ 4 x Rubber feet



㉒ Chuck



㉓ Pressure



㉔ ER Wrench (15mm、17mm)



⑤ Spindle Cable



⑥ connector



⑦ screwdriver

## Optional Parts List



⑧ 3 x Limit Switch  
(Optional)



⑨ Emergency Stop  
(Optional)



⑩ X-axis limit fixing plate  
(Optional)



⑪ Y-axis limit fixing plate  
(Optional)



⑫ Z axis limit acrylic  
(Optional)



⑬ 6 x M2.5\*10Bolt  
(Optional)



⑭ 6 x M3\*6 Bolt  
(Optional)

## Screws/Other Parts List



④5 6 x M5\*10 Bolt



④6 40 x M5\*16 Bolt



④7 12 x M5\*25 Bolt



④8 8 x M6\*16 Bolt



④9 8 x M3\*14 Bolt



⑤0 4 x M4\*10 Bolt



⑤1 14 x Slider Nut



⑤2 4 x M4 T-Nut



⑤3 2 x M5 T-Nut



⑤4 2 x Coupling



⑤5 2 x Copper Nut



⑤6 2 x Bearing seat



⑤7 2 x Spring  
(0.8\*12\*30mm)

# Part 2 Mechanical Assembly

## Step 1: Install the base components

What you will need?



② 2 x Aluminum  
(40\*40\*290mm)



⑤ 2 x Guide Rail  
(Y Axis,Φ12\*290mm)



⑩ Aluminum front Plate  
(small hole)



⑪ Aluminum back Plate  
(large hole)



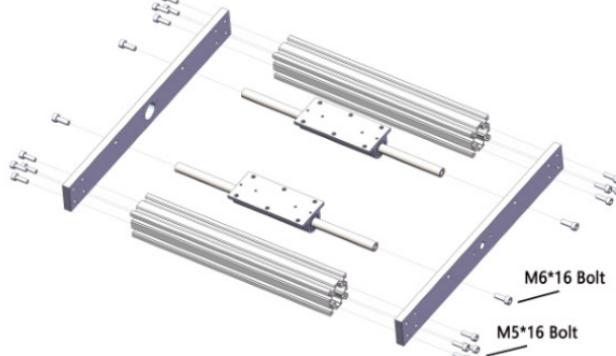
⑯ 2 x Slider



⑭ 16 x M5\*16 Bolt



⑮ 4 x M6\*16 Bolt



1. As shown in the picture, insert the Y-optical axis into the slider, and then fix the aluminum with M5\*16 screws. Finally, the Guide Rail is fixed with M6\*16 screws.

## Step 2: Install the Y-axis stepping motor

What you will need?



⑦ Y Lead Screw  
(Y Axis,T8 /325mm)



⑫ 2 x Stepper motor(42\*48mm)



⑯ Nut Seat



⑳ 1 x Hand heel



④ 2 x M5\*10 Bolt



④ 4 x M3\*14 Bolt



⑤ 1 x Coupling



⑥ 1 x Copper Nut

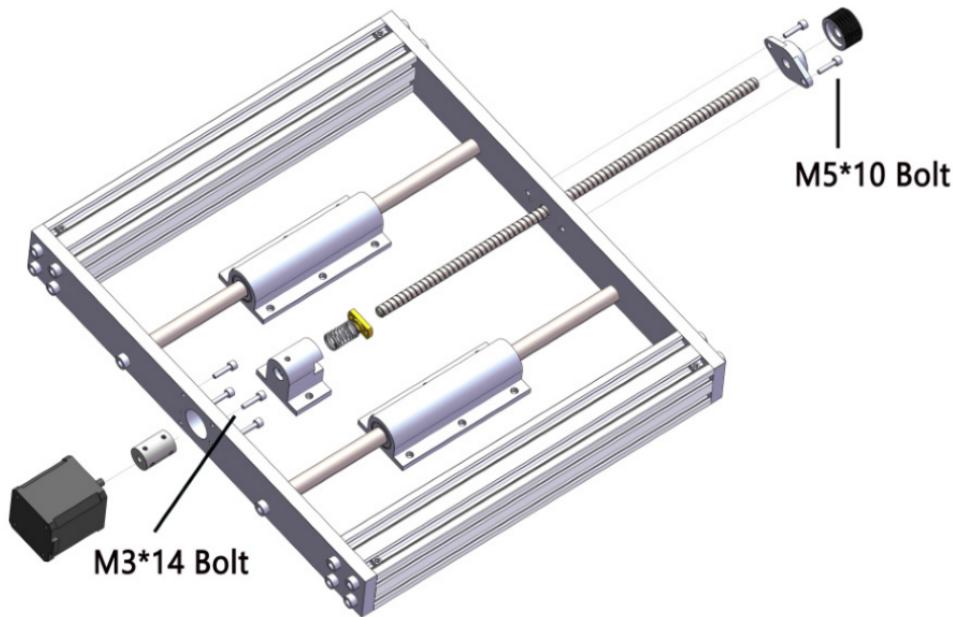


⑮ 1 x Bearing seat



⑯ 1 x Spring  
(0.8\*12\*30mm)

1. As shown in the figure, install the coupling on the stepper motor first, keep 1mm gap between them, and then fix the stepper motor on the aluminum plate with M3\*14 screws.
- 2.Put the screw through the brass nut, spring and nut base, the brass nut and spring should be close to the nut base, and then insert the screw into the coupling, tighten the screw.
- 3 .Put into the bearing seat, tighten the M5\*10 screws, and then insert the hand wheel into the screw, tighten the screws.



## Step 3: Install counter tops

What you will need?



① Working Desk  
(15\*180\*300mm)

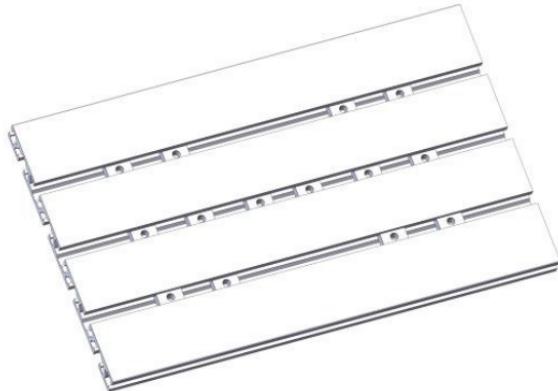


④ 14 x M5\*16 Bolt

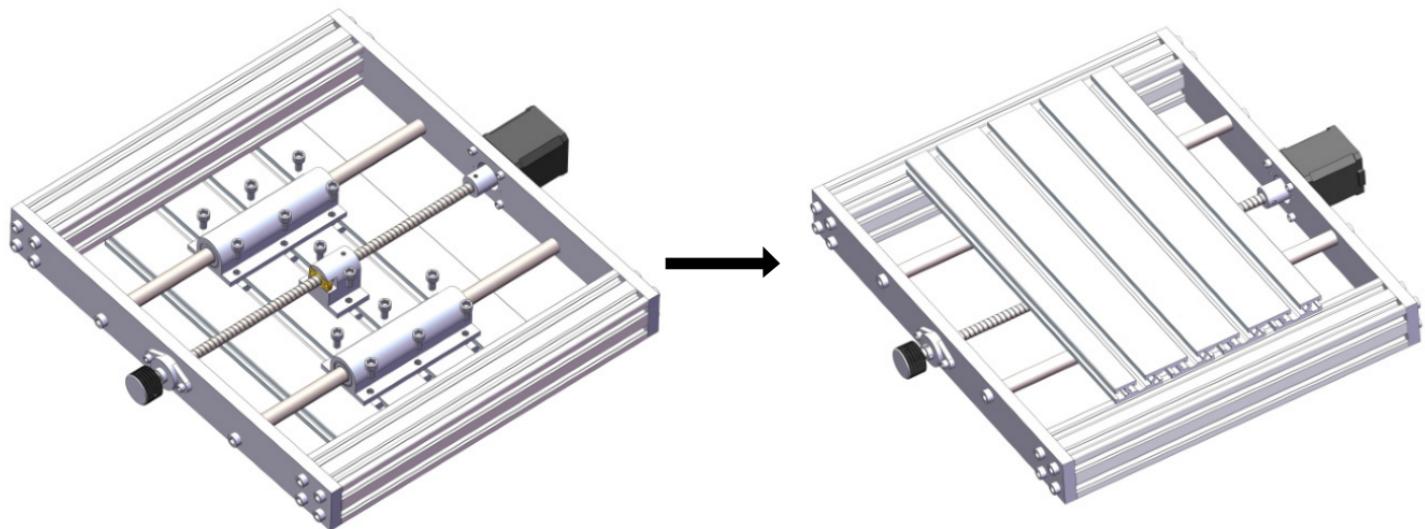


⑤ 14 x Slider Nut

1. As shown in the figure, first put the slider nut on the workbench



2.Fix the slider and nut base with M5\*16 screws



## Step 4: Install the X-axis stepper motor

What you will need?



⑨ Aluminum side Plate  
(large hole)



⑫ Stepper motor(42\*48mm)



⑭ 6 x M5\*25 Bolt

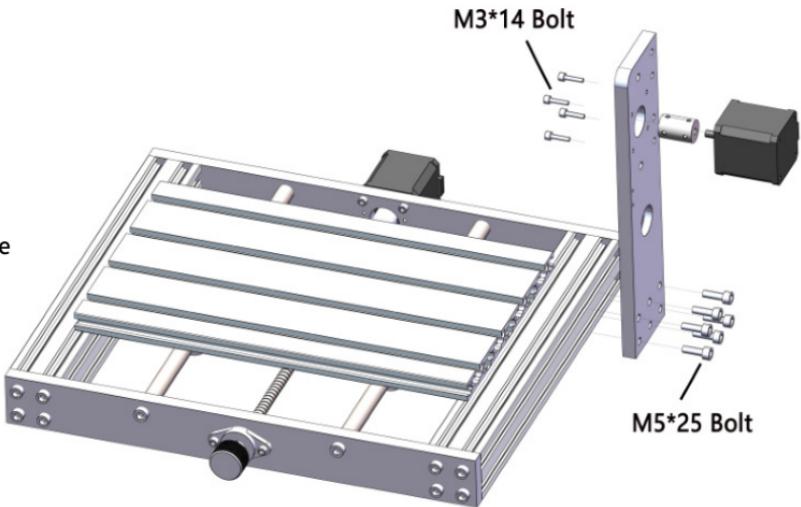


⑯ 4 x M3\*14 Bolt



⑮ 1 x Coupling

- As shown in the figure, install the coupling on the stepper motor first, keep 1mm gap between them, and then fix the stepper motor on the aluminum plate with M3\*14 screws. Finally fix the aluminum plate with M5\*25 screws.



## Step 5: Install X-Z components

What you will need?



❸ 2 x Aluminum  
(20\*40\*360mm)



❹ 2 x Guide Rail  
(X Axis,Φ12\*360mm)



❺ X Lead Screw  
(X Axis,T8/390mm)



❻ X-Z Axis Assembly



❻ 4 x M5\*16 Bolt



❽ 2 x M6\*16 Bolt

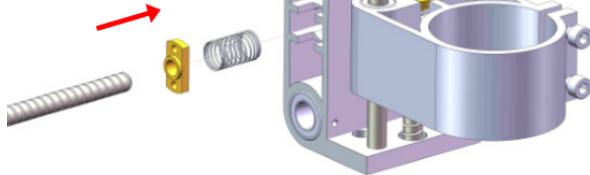


❼ 1 x Copper Nut

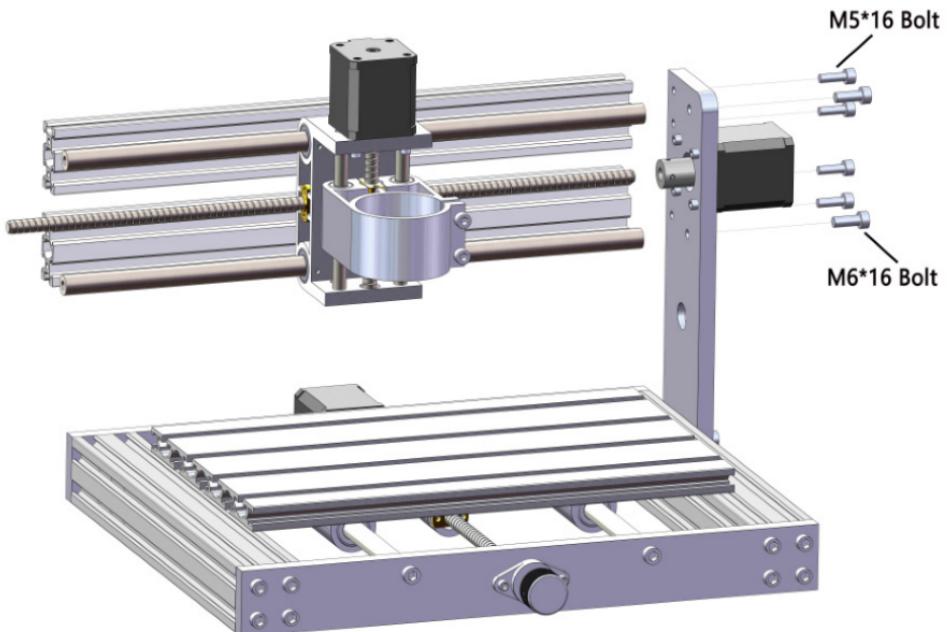


❾ 1 x Spring  
(0.8\*12\*30mm)

1. As shown in the figure, first pass the screw through the brass nut, spring and X-Z axis assembly, and then tighten the screw on the coupling when the screw is in full contact with the coupling.



2. Then pass the X-ray axis through the X-Z axis assembly as shown in the picture, fix the aluminum profile with M5\*16 screws and fix the X-ray axis with M6\*16 screws.



## Step 6: Install the left aluminum plate

What you will need?



⑧ Aluminum side plate  
(small hole)



⑩ 1 x Hand heel



⑪ 2 x M5\*10 Bolt



⑫ 4 x M5\*16 Bolt



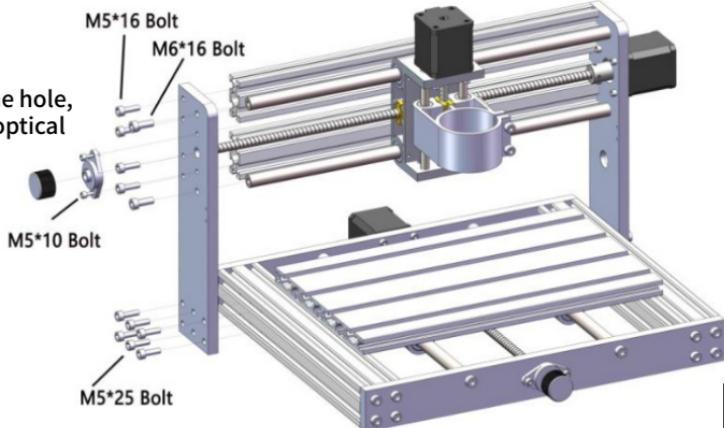
⑬ 6 x M5\*25 Bolt



⑭ 2 x M6\*16 Bolt



⑮ 1 x Bearing seat



1. As shown in the figure, first tighten the M5\*25 screw to the hole, then tighten the aluminum with the M5\*16 screw and the optical shaft with the M6\*16 screw.

2. Pass the bearing seat through the screw rod as shown in the figure, then tighten it with M5\*10 screws, and finally tighten the screws on the hand wheel.

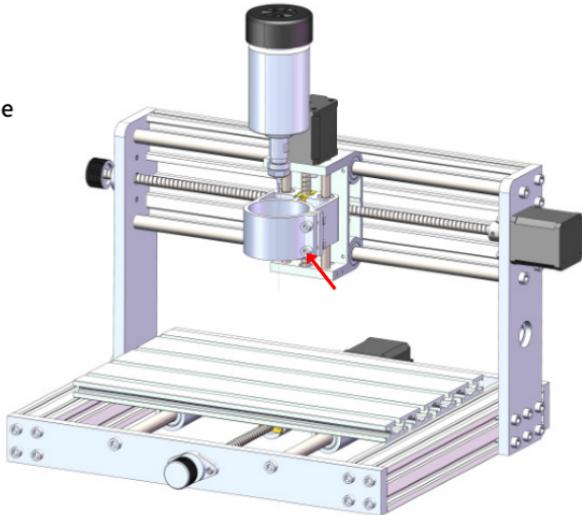
## Step 7: Install spindle motor

What you will need?



1. First put the chuck into the pressure cap, and then insert the cutter into the chuck, and finally put the pressure cap on the spindle motor, tighten it.

2. As shown in the picture, install the spindle motor on the U-shaped fixture.



## Step 8: Install the control board

What you will need?



⑩ Control Board

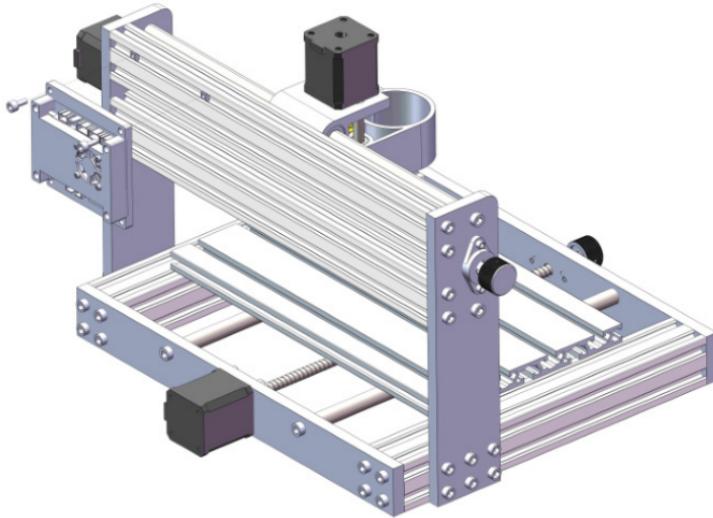


④ 2 x M5\*10 Bolt



⑤ 2 x M5 T-Nut

1. As shown in the figure, fix the control plate to the machine with M5\*10 screws and M5T nuts, just fix the upper row.



## Step 9: Install the rubber feet

What you will need?



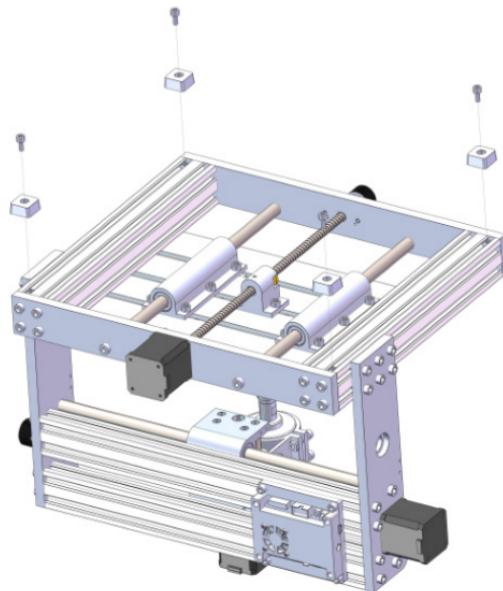
❶ 4 x Rubber feet



❷ 4 x M4\*10 Bolt



❸ 4 x M4 T-Nut



As shown in the picture, put the machine upside down, and then place the rubber feet on the four feet respectively, and then fix the rubber feet with M4\*10 screws and M4 T-nut.

## Step 10: Install limit switch and emergency stop switch

What you will need?



③8 3 x Limit Switch  
(Optional)



③9 Emergency Stop  
(Optional)



③⑩ X-axis limit fixing plate  
(Optional)



③⑪ Y-axis limit fixing plate  
(Optional)



③⑫ Z axis limit acrylic  
(Optional)

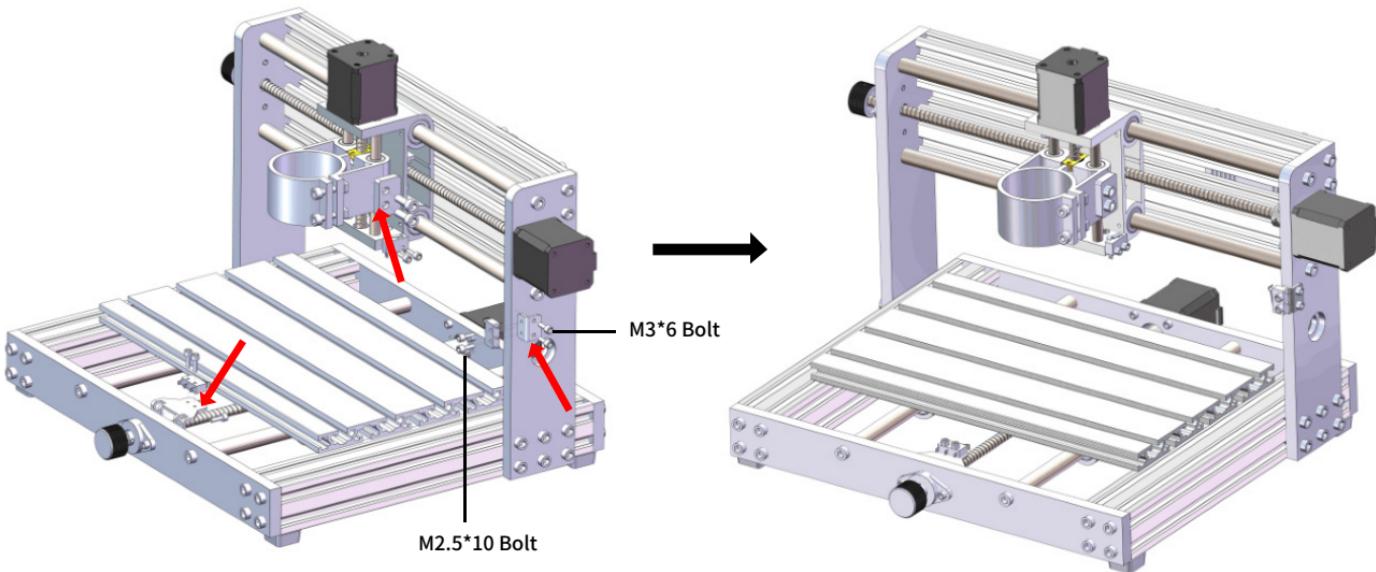


③⑬ 6 x M2.5\*10 Bolt  
(Optional)

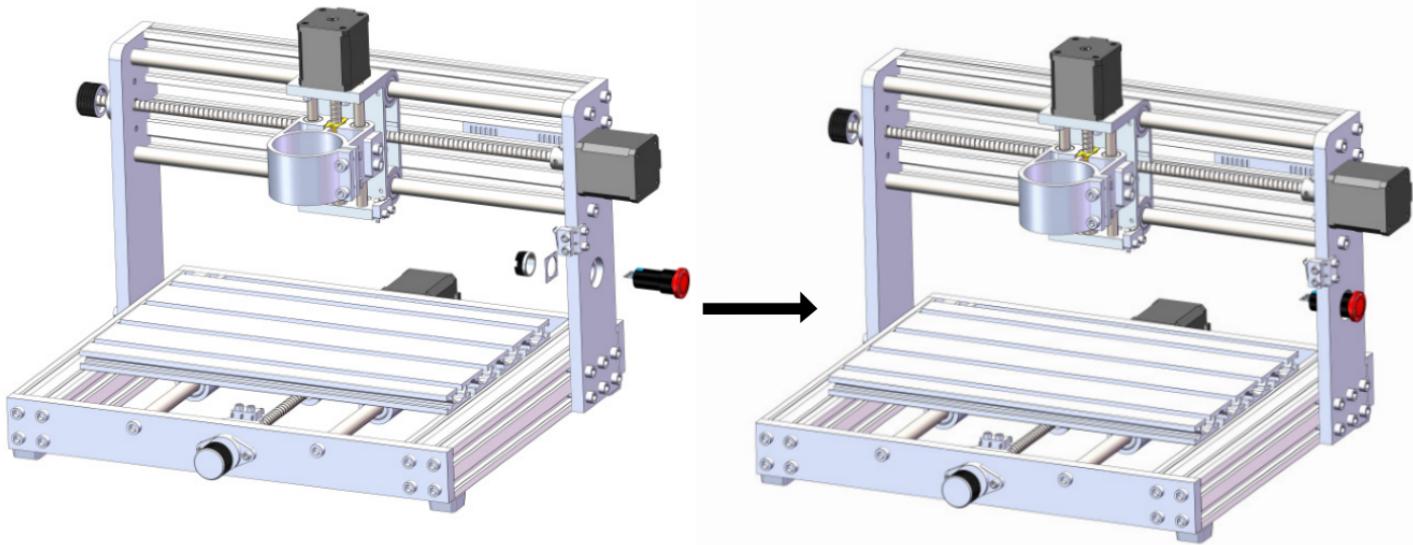


③⑭ 6 x M3\*6 Bolt  
(Optional)

1. As shown in the figure, use M3\*6 screws to fix the X and Y limit fixing plates and the Z axis limit acrylic.
2. As shown in the picture, fix the limit switch with M2.5\*10 screws.



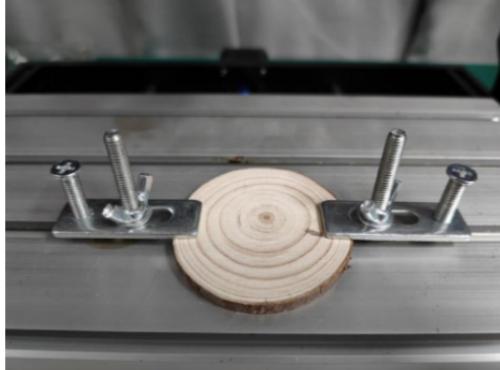
3. As shown in the picture, unscrew the knob of the emergency stop switch, put it on the Aluminum side plate (large hole), and then screw it on.



## Tips:

1. The correct way to use the pressure plate:

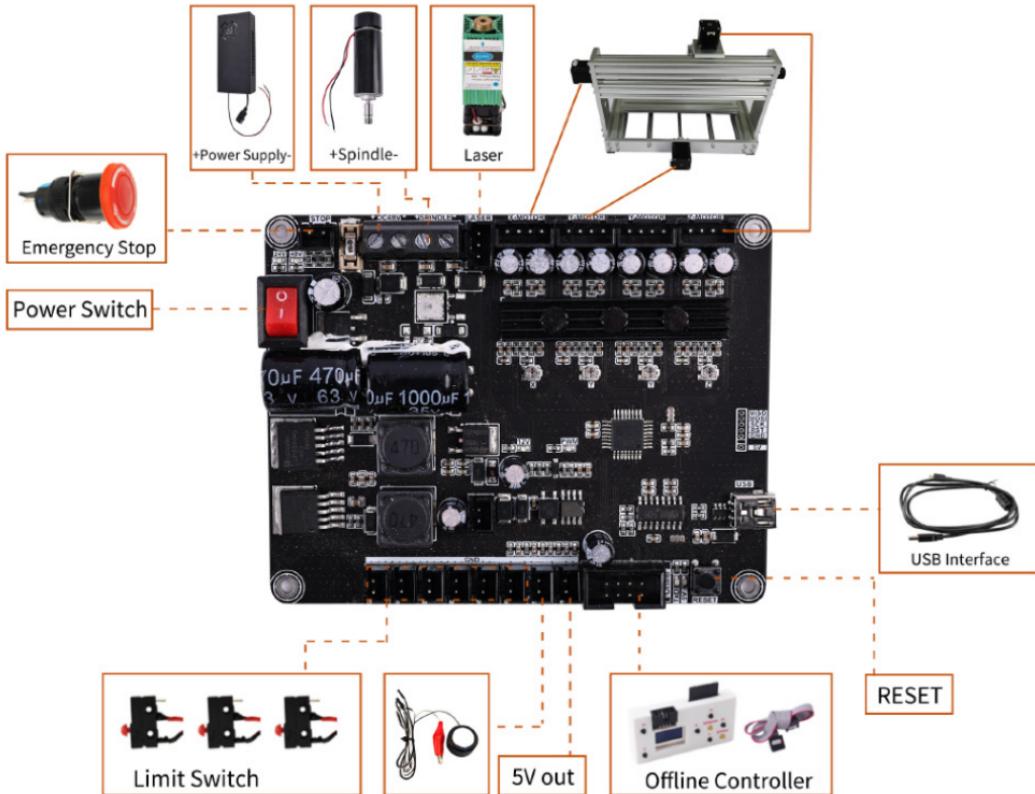
a. The installation method of the engraving material within 20mm is shown in the figure below



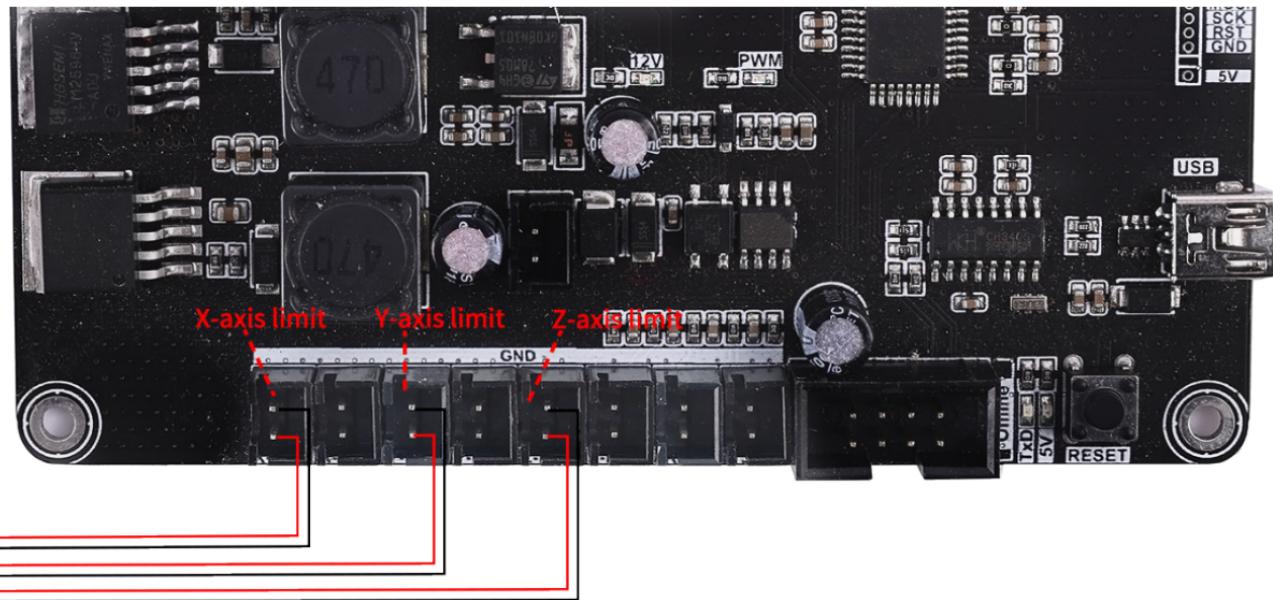
b. The installation method of the engraving material within 20mm~40mm is shown in the figure below



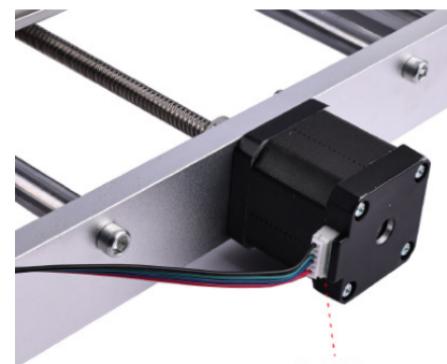
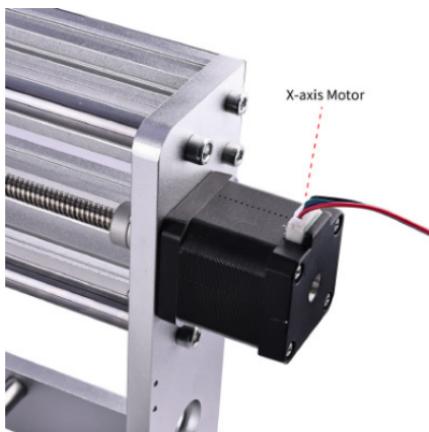
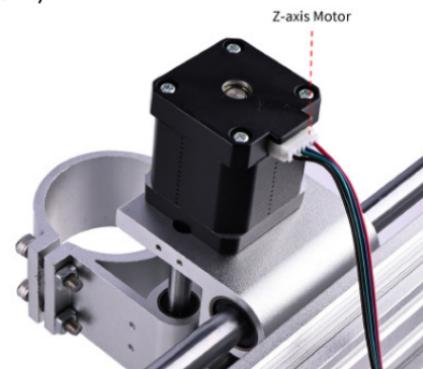
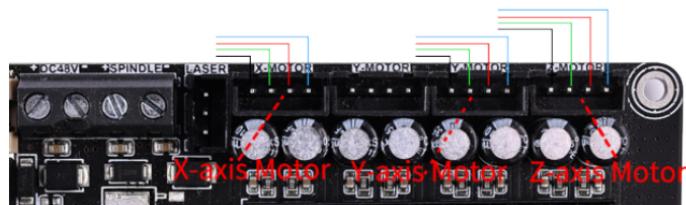
# Part 3 Wiring



1. Connect the Limit Switches: Plug the X,Y,Z limit switches cable into X,Y,Z port of the control board.



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

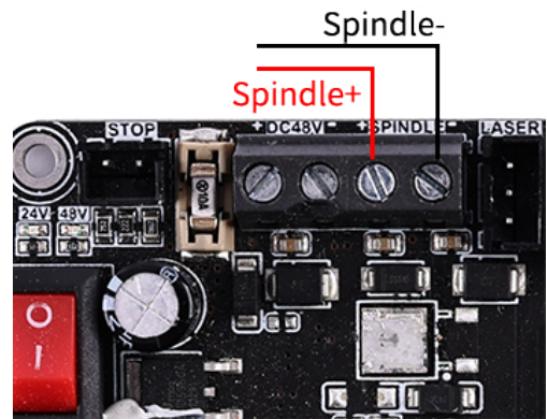


3. Connect the Spindle motor: connect the Spindle motor cable to the extension cable (red to red, black to black), then insert Spindle+ and Spindle- at the other end of the extension cable, and then unscrew the screw with the one-word screw, and finally tighten it.



Red - Red

Black - Black



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 the 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.)

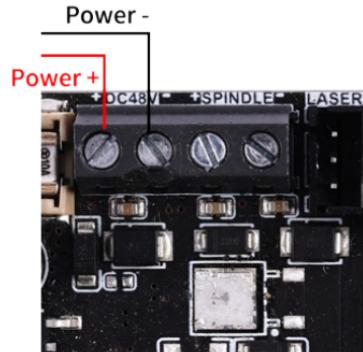
5. Connect the Power Supply: Connect the power red cable to the Power+ port and the black cable to the Power- port. Then lock the screws with a screwdriver.

(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 to check. If that is not the correct voltage range, you could use tweezers or a small screwdriver to adjust the paddle left and right. )

6. Install the Cable Protector: After finishing all the wiring, use the cable protector to wrap all the cable together and excess part of the wrap.



Step4



Step5



Step6

# Part 4 Grblcontrol

## 1 .Driver Installation

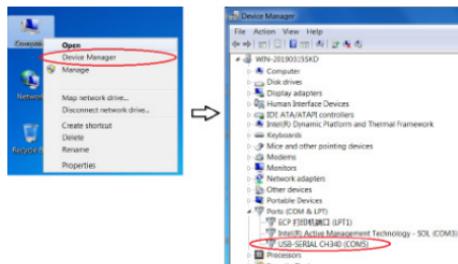
Install the driver(software->Drive->CH340SER.exe)



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

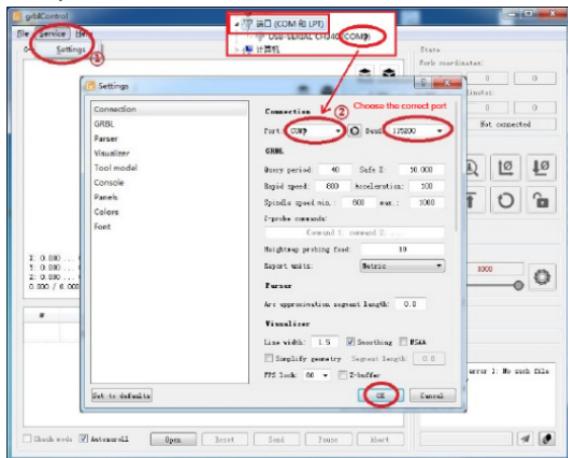
## 2. Determine your Machine's COM port:

- Windows XP: Right click on "My Computer", select "Properties", select "Device Manager".
- Windows 7: 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".



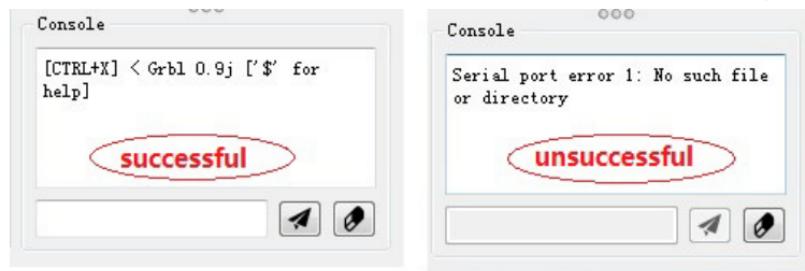
Note: You need a USB cable to connect the control board and the computer to see the port number.

### 3. Open GrblControl software (software -> Grblcontrol -> grblControl.exe)

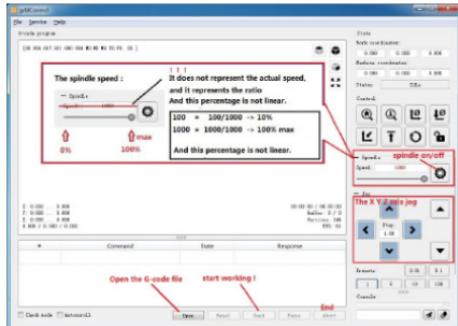


Tips: Right-click "Send to", select "Desktop Shortcut", and then you can open it directly on the desktop.

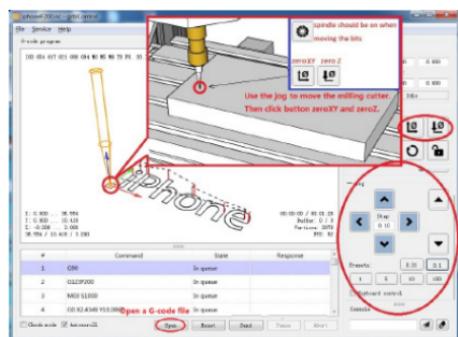
- Console window print "[CTRL+X] < Grbl 1.1f ['\$' for help]" If the connection is successful.
- Console window print "Serial port error 1: No such file or directory" indicate that the connection is failed.



## 4.Grbicontrol Use



## 5. Toll setting



Note: When performing knife setting, when the moving knife just touches the object, click "Zero xy" and "Zero z", and finally click "Send"

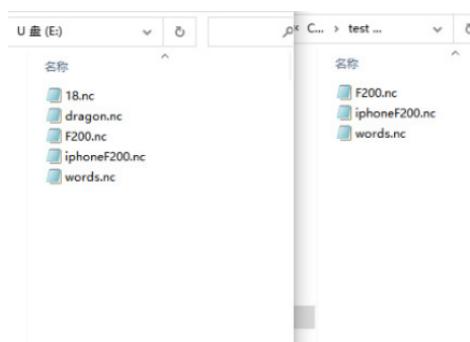
# Part 5 Offline controller

1. Connect offline controller to computer via USB cable(can not connect offline controller line)

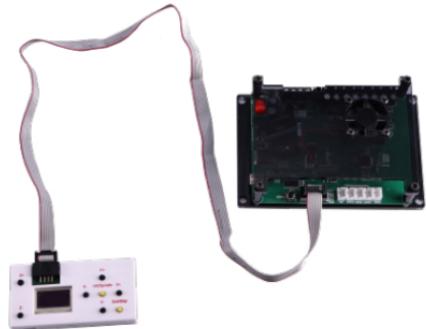


Note: Use USB cable to transfer files, don't insert SD card into card reader to transfer, it is easy to crash.

2. Copy the NC file to offline controller



### 3. Offline control connected to the control board

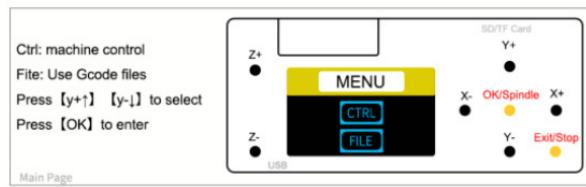


Note: When using offline controller, you need to unplug the USB cable from the computer, because offline and computer cannot be used together.

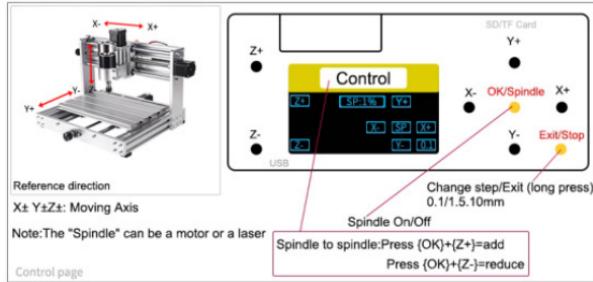
4. Press the [X+/X-/Y+/Y-/Z+/Z-] key to move the spindle to the machine origin (tool setting method: the cutter just touches the object, press the [Exit] key), select the engraving file and click [ok ] Key to start carving

### 5. Interface introduction

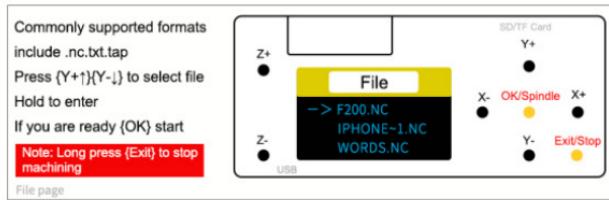
#### A. Menu Page



## B.Ctrl Page



## C.File Page



# Part 6 Common Problem

1.Q:What format files does the Grblcontrol(Candle) software support?

A:Support Gcode files of nc, ncc, ngc, tap, txt

2.Q:What file formats does the Lasergrbl software support?

A:Support nc, cnc, tap, gcode, ngc, bmp, png, jpg, gif, svg

3.Q:What should I do if the control board cannot be connected?

A:Exit the software, unplug the wire, and reconnect it. Or update the firmware.

4.Q:The X, y, and z axes of the machine cannot be moved, what should I do?

A:First check whether the wires are correctly connected, whether the power switch of the control board is pressed, and then check whether the lower coupling is off.

5.Q:What materials can the milling cutter generally engrave or cut?

A:Wood, acrylic (acrylic), pcb, pvb, soft metal, iron, glass, stone .It can not be engraved, too hard or fragile to engrave.

6.Q:What materials can the laser generally engrave or cut?

A:Wood, acrylic (acrylic), leather, kraft paper, metal paint, plastic, bamboo

7.Q:What thickness of wood or acrylic can generally be cut by laser?

A:3~5mm wood board (acrylic), speed setting 100, power setting 1000

8.Q:The engraved image is reversed, what should I do?

A:Enter \$3=2 or \$RST=\* command

9.Q:How to modify the parameters when the limit switch is activated?

A:Enter \$21=1 and \$22=1 commands.

10.Q:How to view the default parameters of the three-axis control board

A:Enter \$RST=\* (restore the default value) first, and then enter \$\$, you can view the parameters in the control window.

11.Q:What software is generally used to create NC files?

A:Recommend Inkscape, Artcam or Beijing Jingdiao

12.Q:What should I do if the driver and software cannot be installed successfully?

A:First install Win7\8\10\XP under the supported system, then re-install or exit the anti-virus software and re-install.

13.Q:What should I do if the laser stops working?

A:First check whether the laser line is in good contact, and then enter M3 S50 on the software to observe whether the laser can be bright

14.Q:The laser can't burn wood, what should I do?

A:Adjust the laser focus to the minimum, and then set the power higher (above 600).

