



CNC ROUTER

4040-XE

USER MANUAL

Please read this manual carefully before using.

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Preface

Dear Users,

Congratulations! You're a member of the FoxAlien Family now!

We hope you can explore the CNC world and unleash your creativity with FoxAlien machines. With enough patience, learning and time, you will master CNC and be able to transfer your thoughts into actuals.

It is never easy to start with something new. There is a learning curve to master CNC. You will learn about g-code and machinery because DIY CNC machines will require lots of adjustment, testing and debugging before you make the most beautiful works. We highly recommend you to spend some time on watching video tutorials, reading in the forums and sharing with other users in order to gain more different CNC knowledge.

Besides, we founded a Facebook group to make CNC learning easier for you. In the FoxAlien CNC group, FoxAlien families share their thoughts, experience, and offer support to each other. And you will get to know the latest news about FoxAlien machines, too! Our tech support person is in the group and follow up your needs and problems.

We hope you guys enjoy CNC engraving as much as we have making these.

Let's get started with CNC!

- FoxAlien Team

Warranty & Disclaimer



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

- 4040-XE CNC Machine is for Indoor Use Only.
- Wear the proper protection equipment while operating.
- Always place the CNC Machine on a stable surface.
- Never disassemble the Power Supply or Electrical Components. This may cause damage and will VOID the warranty.
- DO NOT TOUCH the machine spindle, or place any part near the working area when the machine is operating. 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.

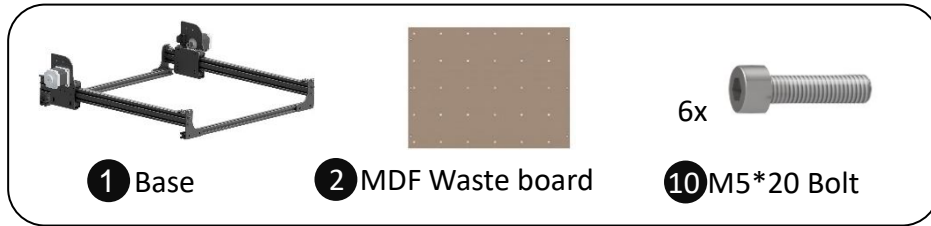
One Year Warranty

- This product is warranted against any defective material or workmanship for a period of twelve months from date of delivery.
- Any parts determined by the manufacturer to be defective will be replaced in whole or part as determined by the manufacturer, but no labor costs or other claims for damages will be allowed.

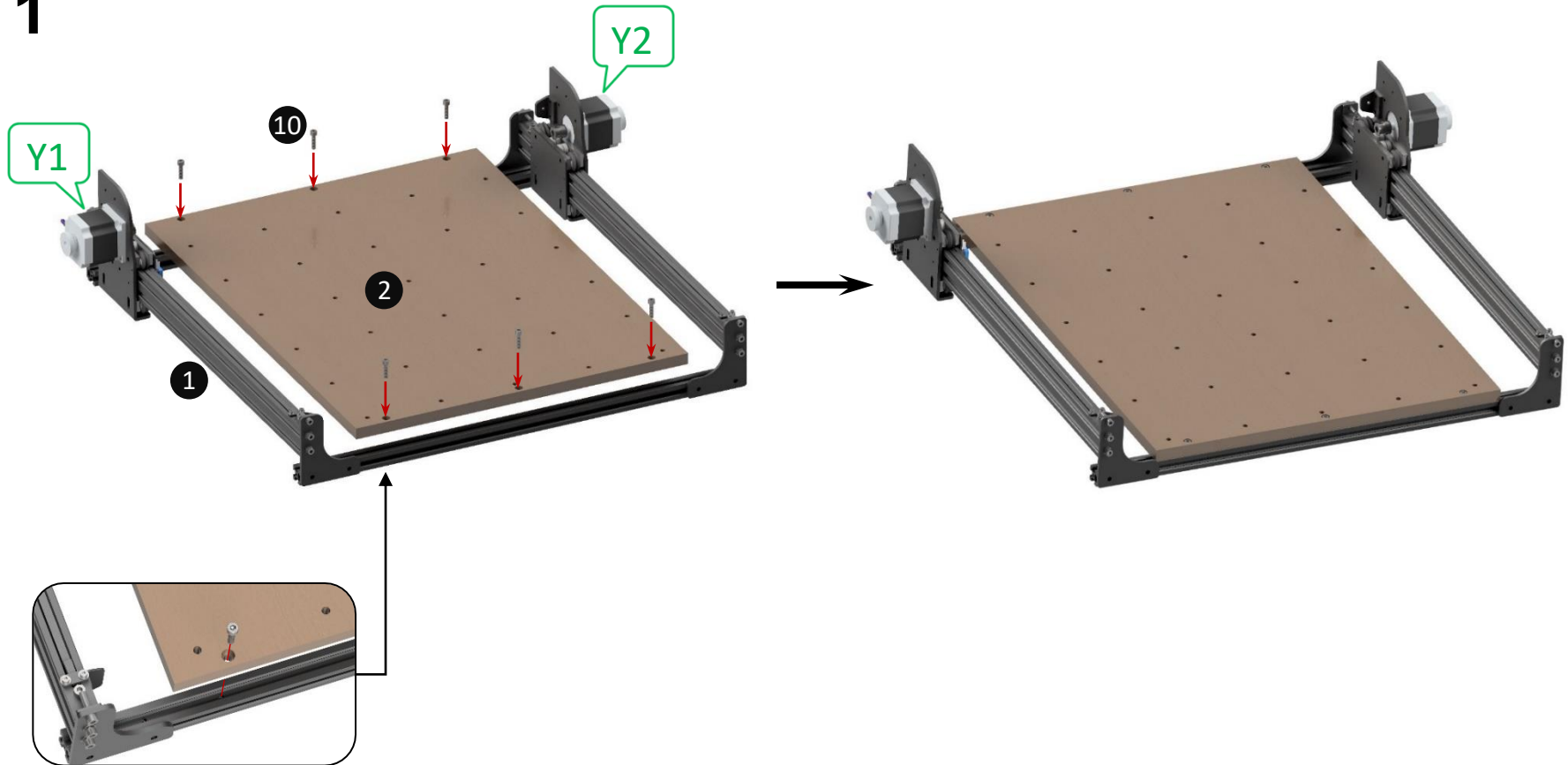
Product Specifications

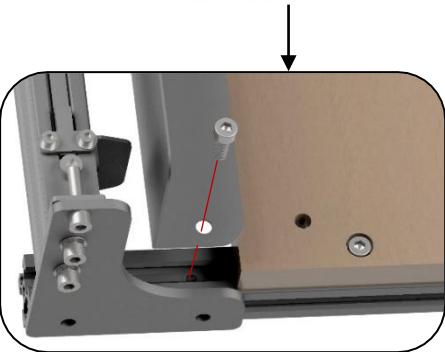
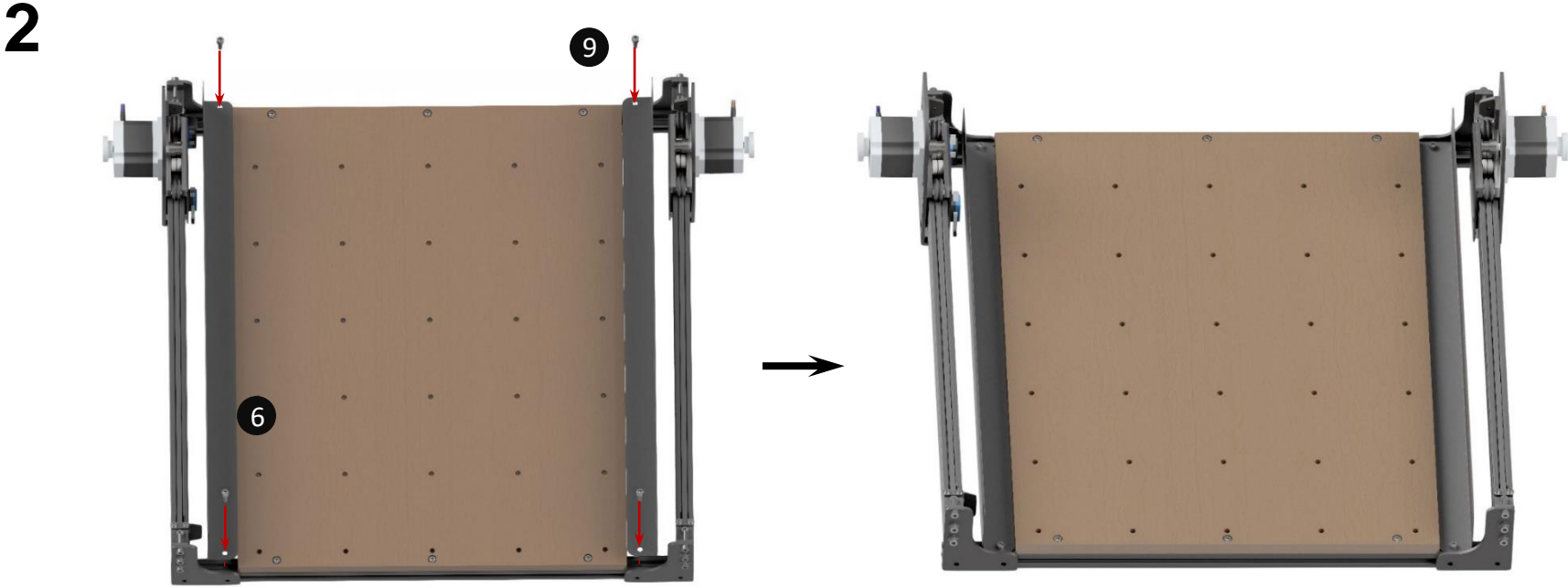
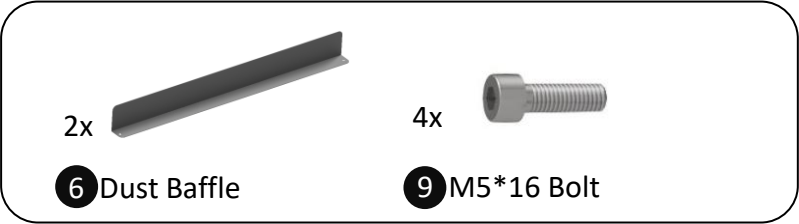
| | |
|------------------------------|-------------------------------------------------------------|
| Model | 4040-XE |
| Working Area | 400 x 400 x 55mm (15.75" x 15.75" x 2.16") |
| Input Voltage | 110V/220V |
| Input Current | 110V/10A; 220V/5A |
| Spindle Power | 300W |
| Spindle Speed | 11000 rpm/min |
| Motor | NEMA23 |
| Firmware Version | 1.1H |
| Limit Switch | X, Y, Z |
| Emergency Stop Switch | Yes |
| Support OS | Windows XP, Windows 7, Windows 8, Windows 10, Linux, Mac OS |
| Software | Grb1control(Candle), other GRBL compatible software |
| Offline Working | Yes |
| Support Add-ons | Laser (NOT included) |

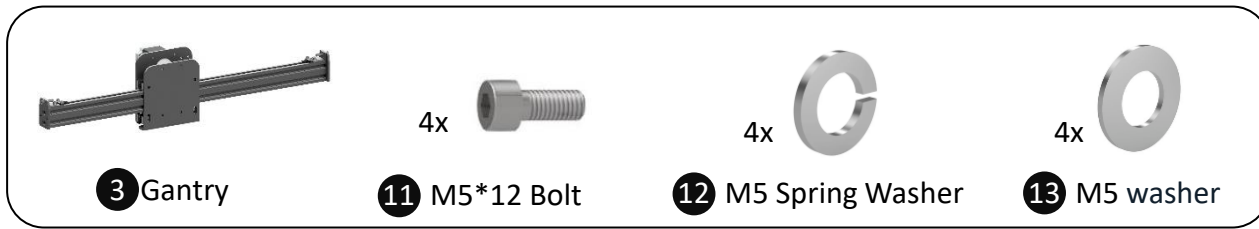
How to Assemble the Machine



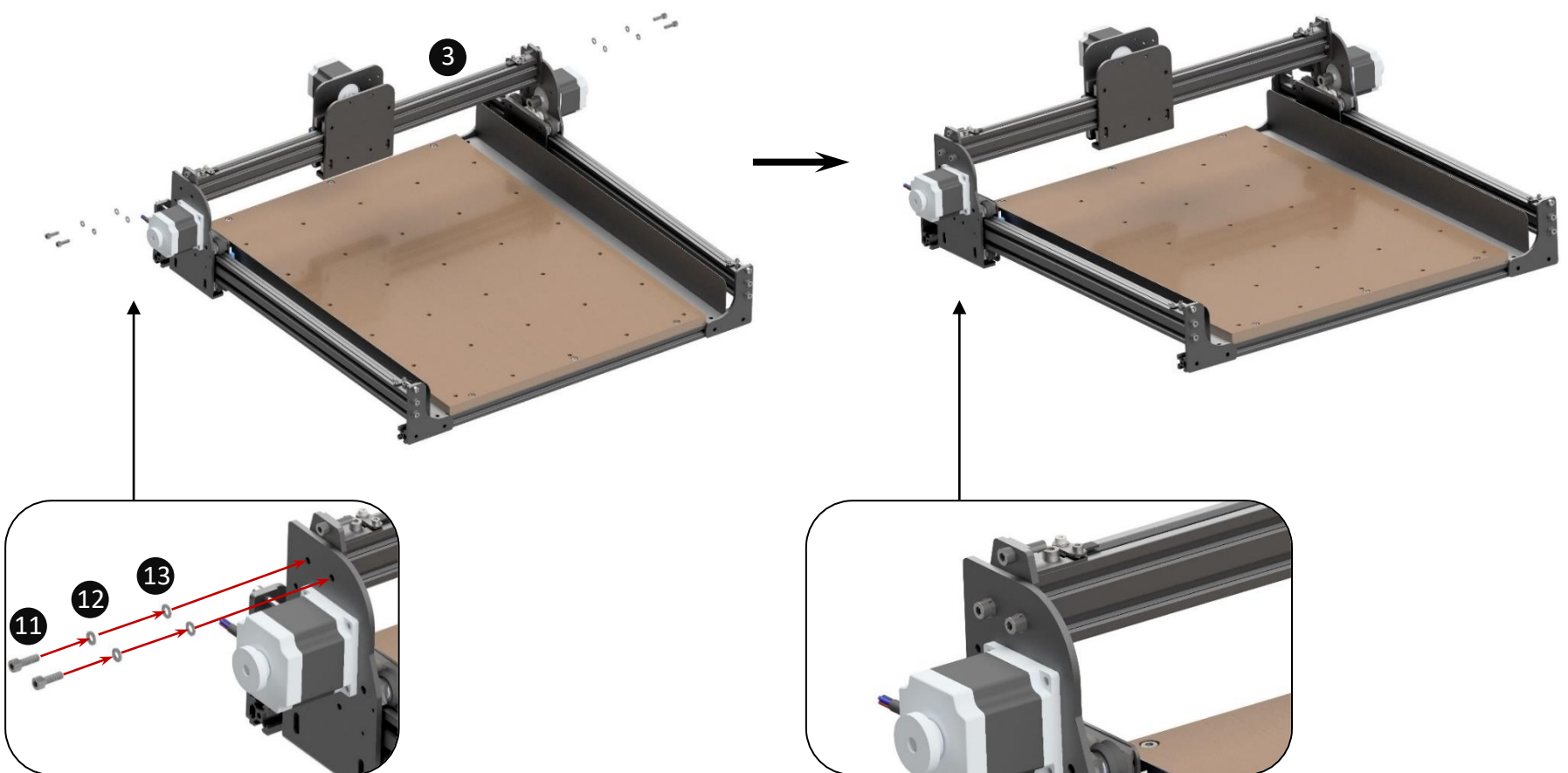
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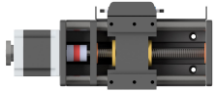






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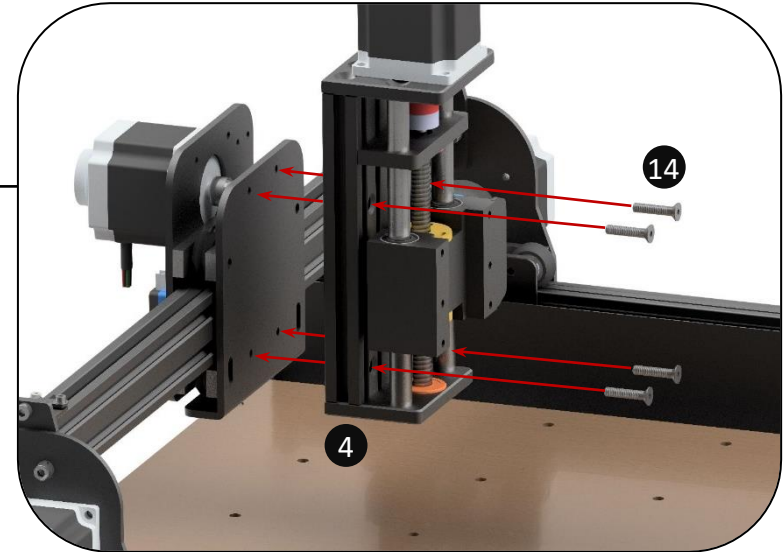
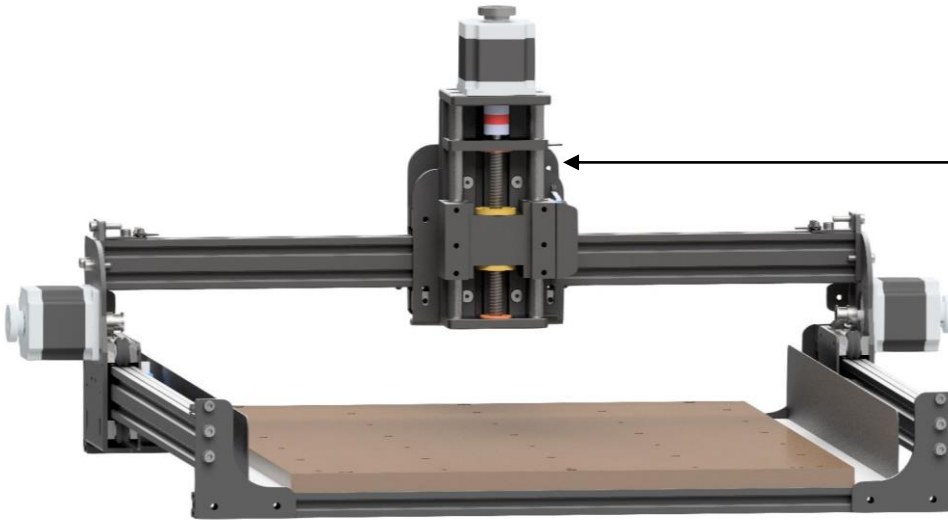
4x

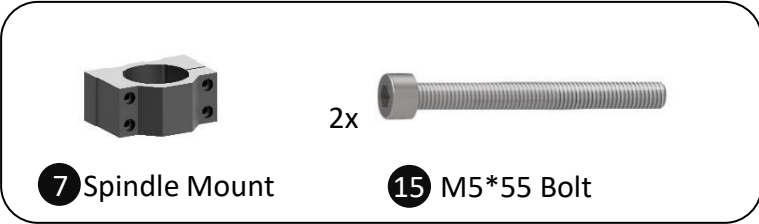


4 Z-axis assembly

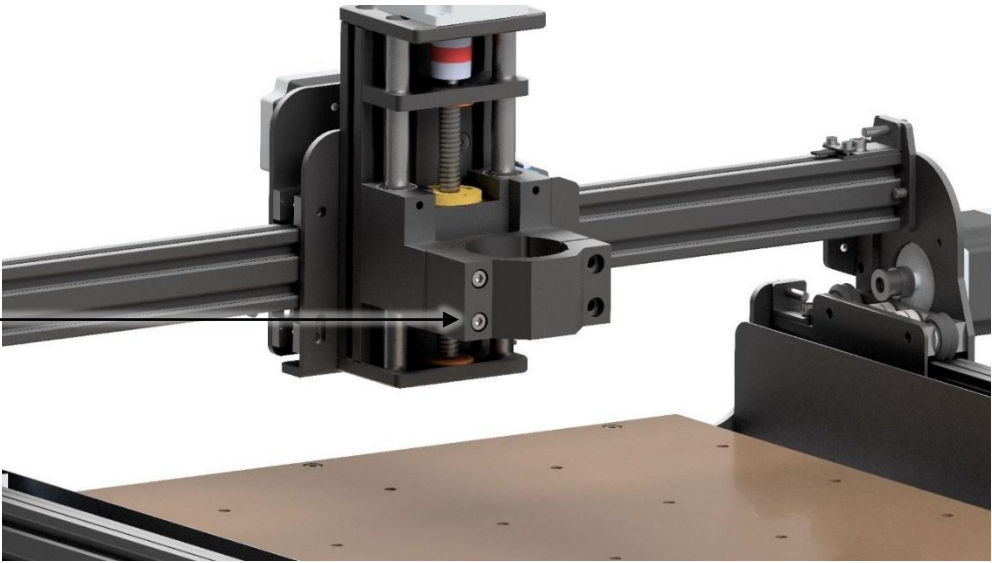
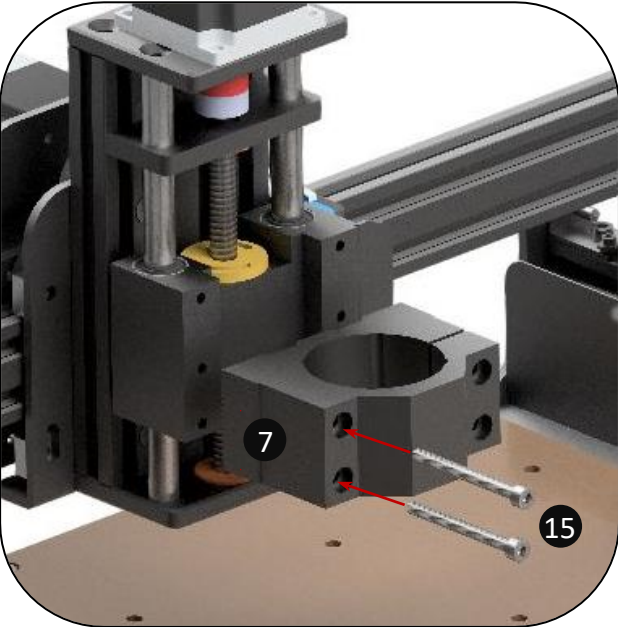
14 M5*25 Flat Head Cap Screw

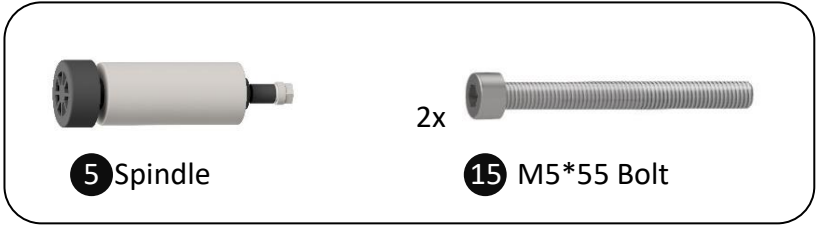
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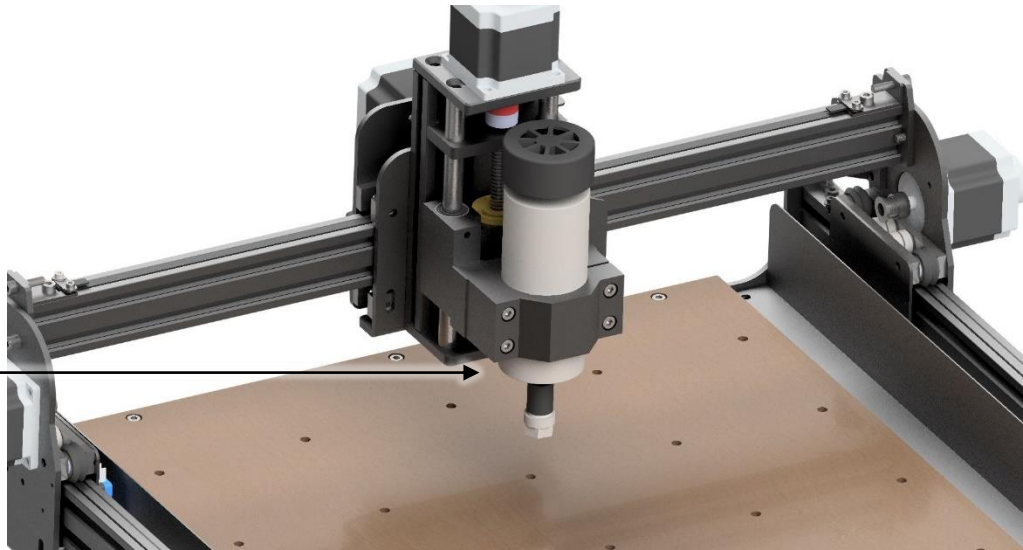
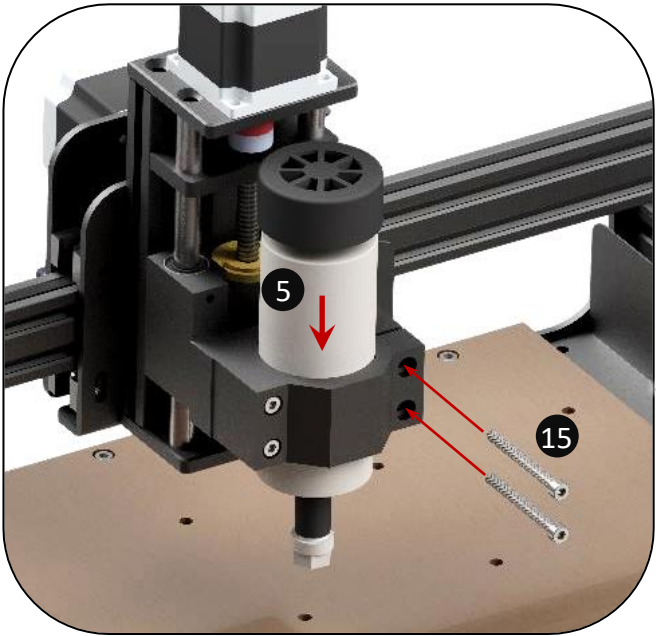


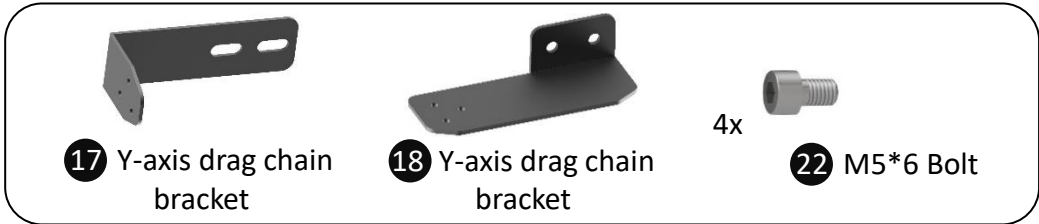
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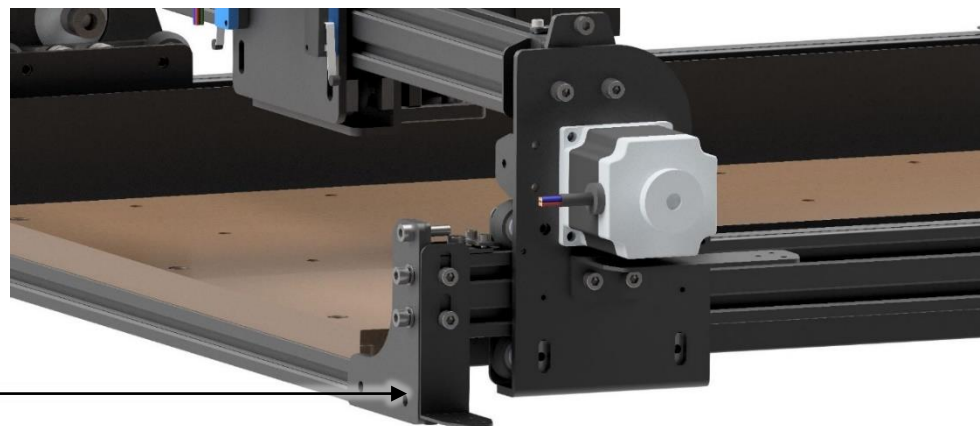
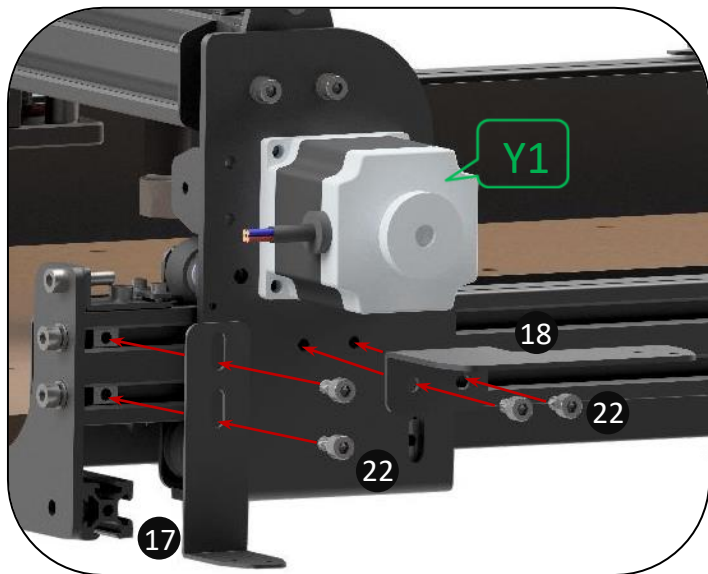


6





7





19 X-axis drag chain bracket



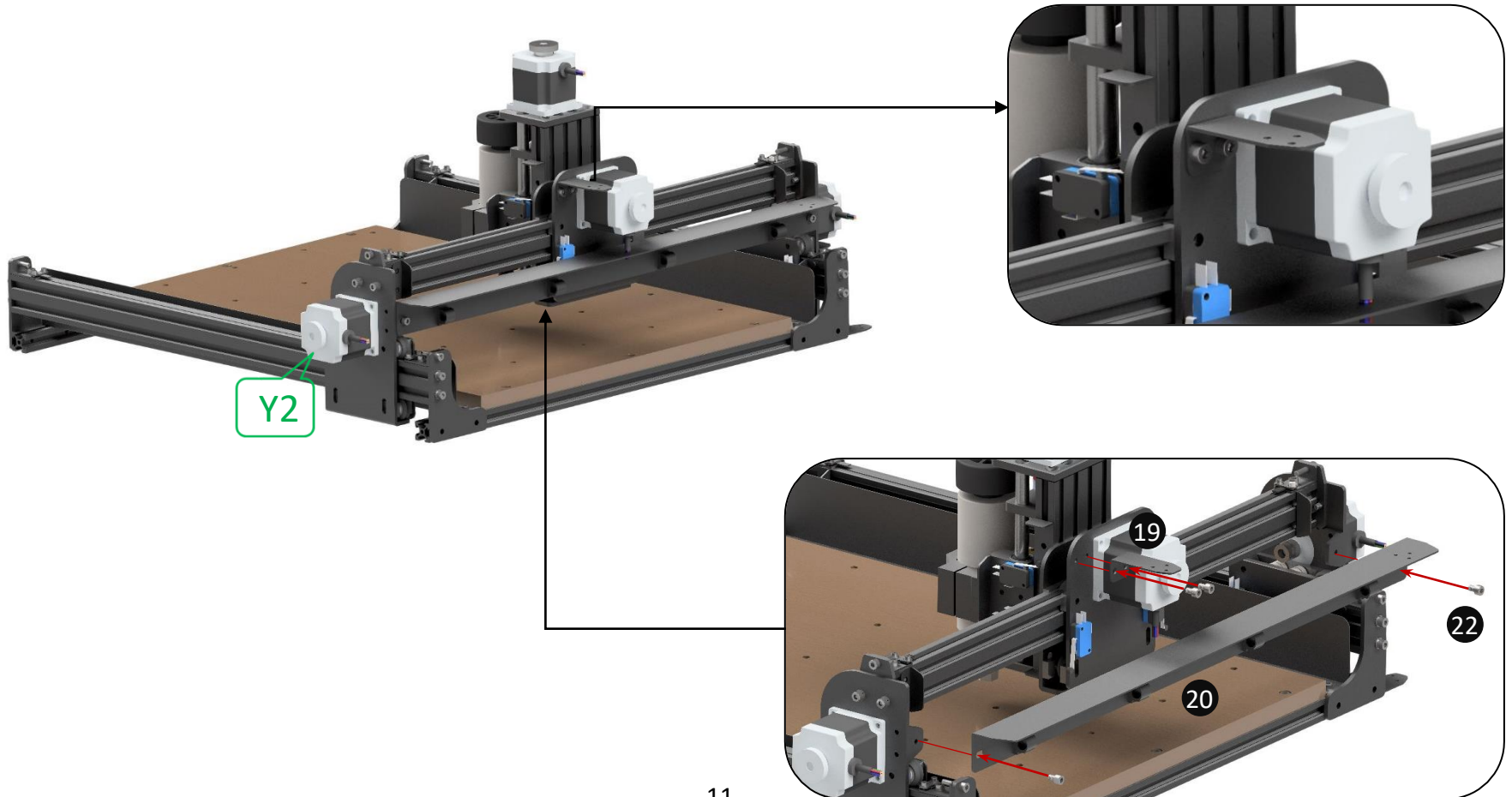
20 X-axis drag chain bracket



4x

22 M5*6 Bolt

8





16 X-Axis Drag Chain

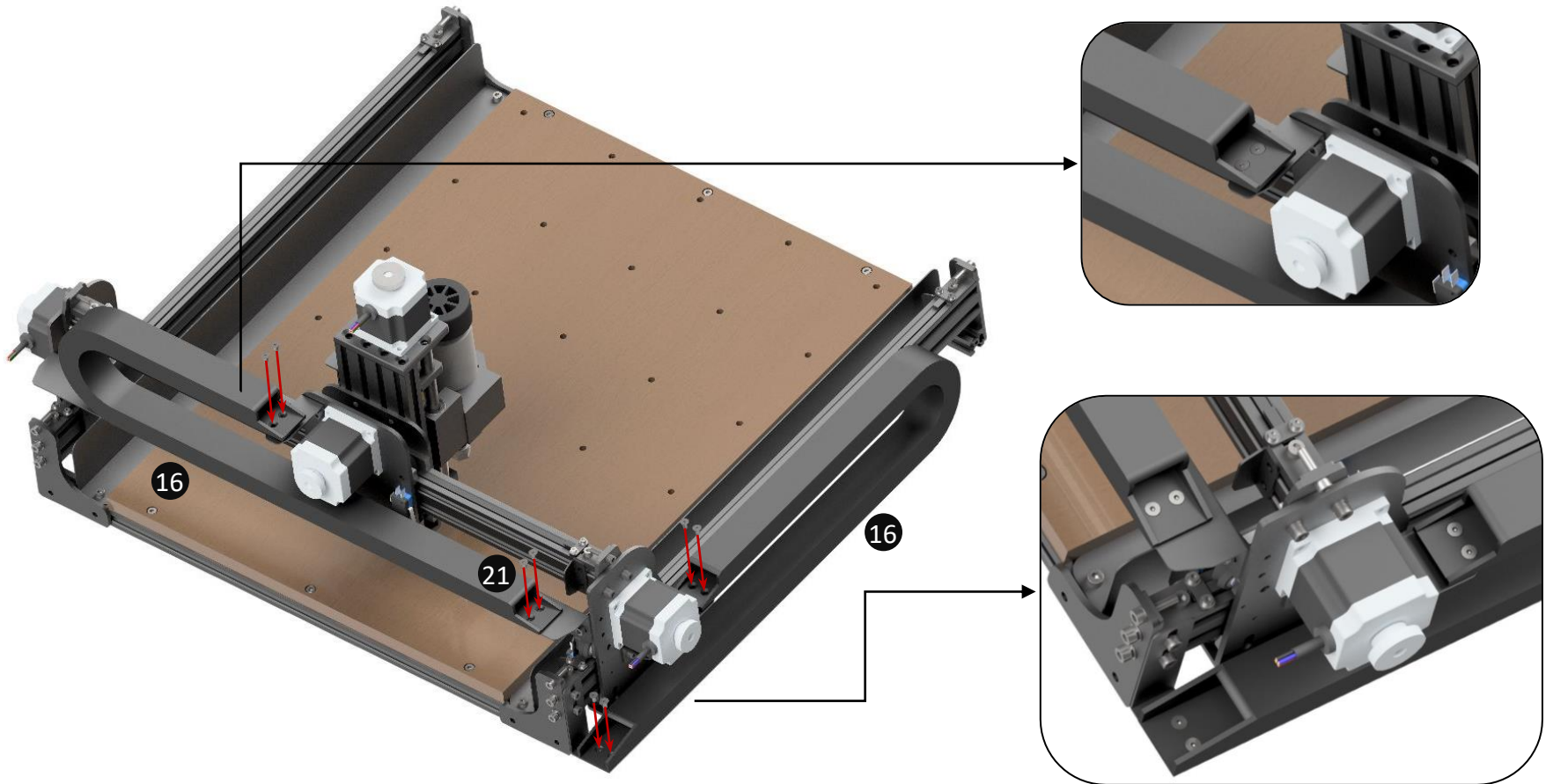


16 Y-Axis Drag Chain

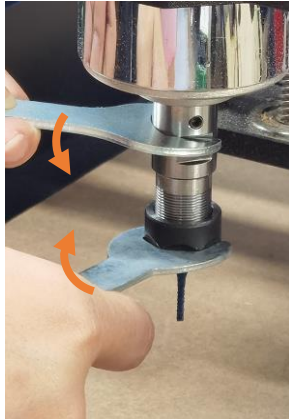


8x
21 M4*6 Flat Head Cap Screw

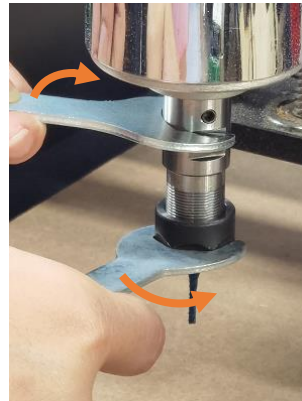
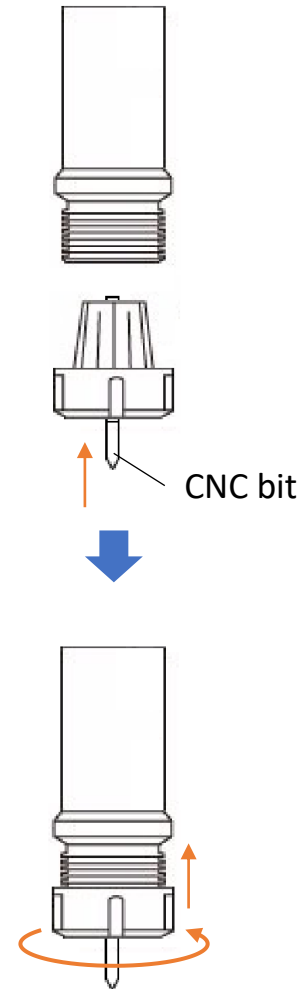
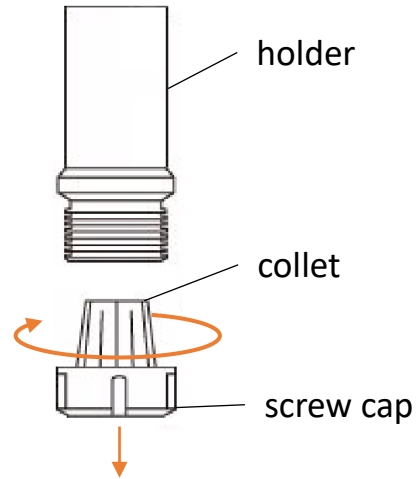
9



How to Install the Router Bit

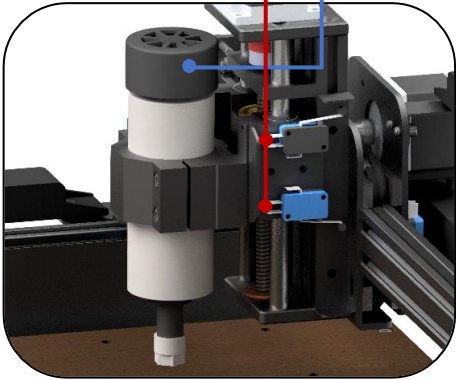
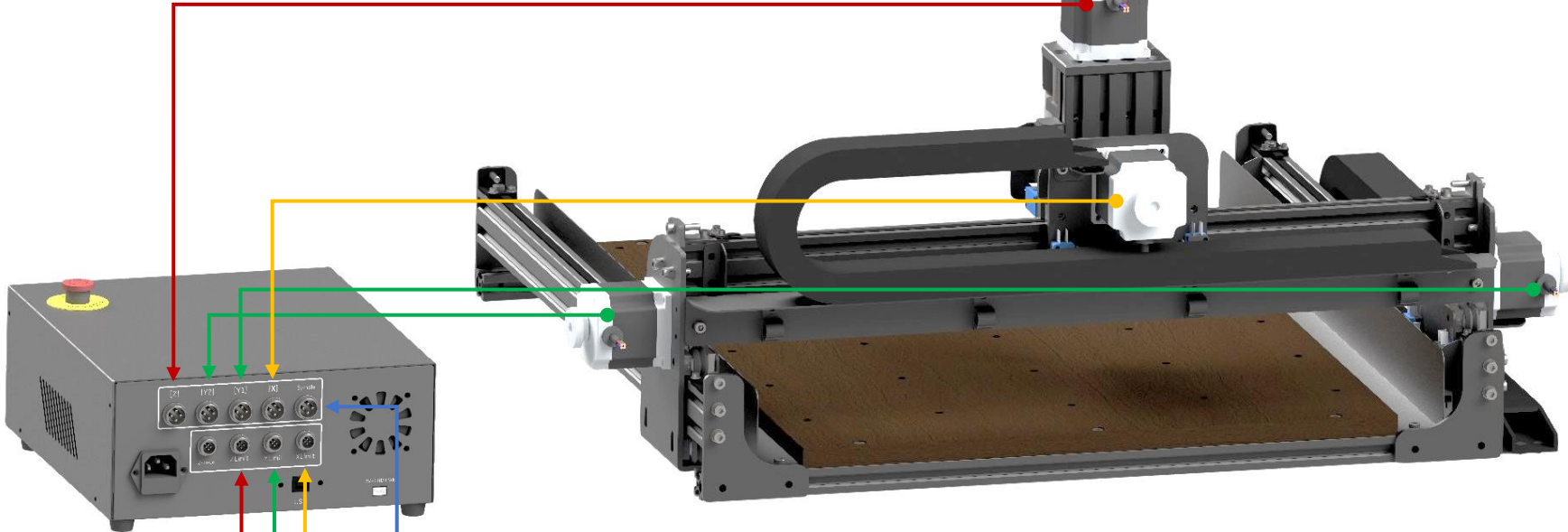


Loosen

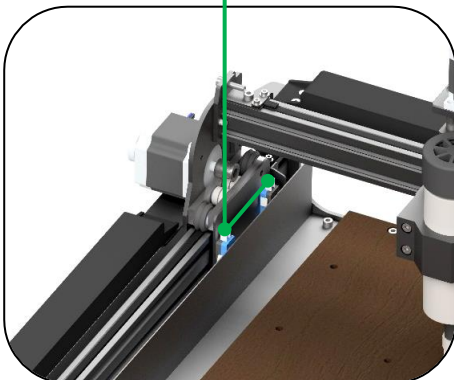


Tighten

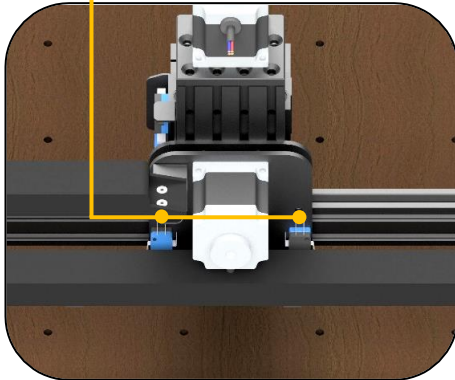
Wiring Diagrams



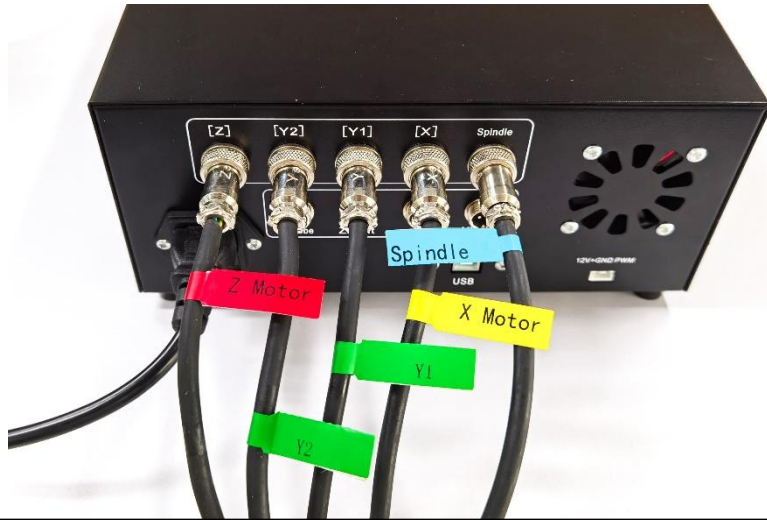
Z-Limit



Y-Limit



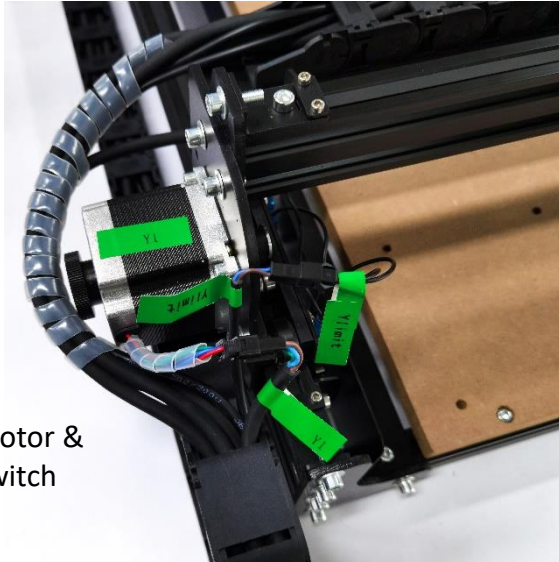
X-Limit



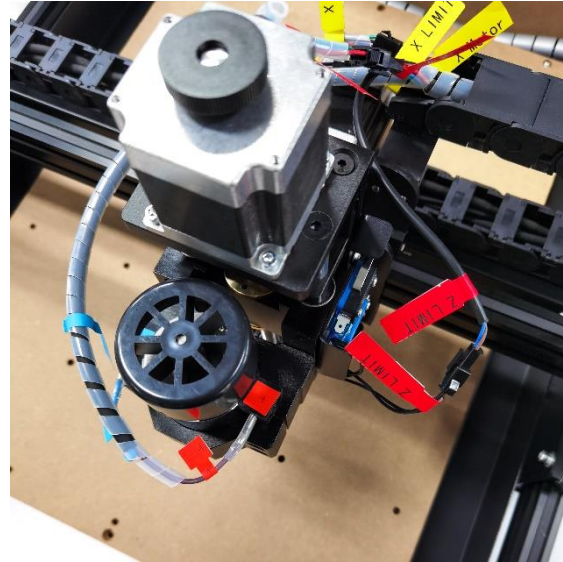
Spindle &
X/ Y1/ Y2/ Z Stepper motor

X-axis limit switch
Y-axis limit switch
Z-axis limit switch

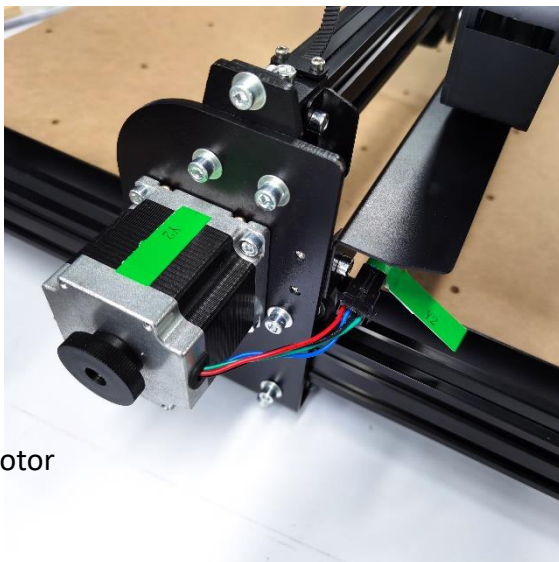




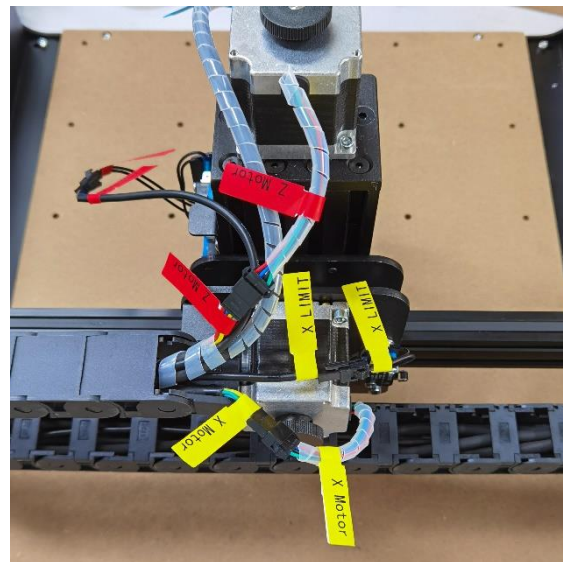
Y1 Stepper motor &
Y-axis limit switch



Spindle &
Z-axis limit switch



Y2 Stepper motor



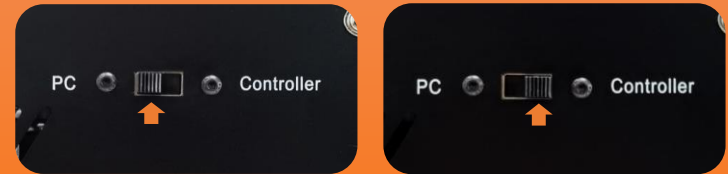
X Stepper motor &
Z Stepper motor &
X-axis limit switch

Switches Introduction

When using laser engraving, turn the switch to the left.
When using the spindle, turn the switch to the right.



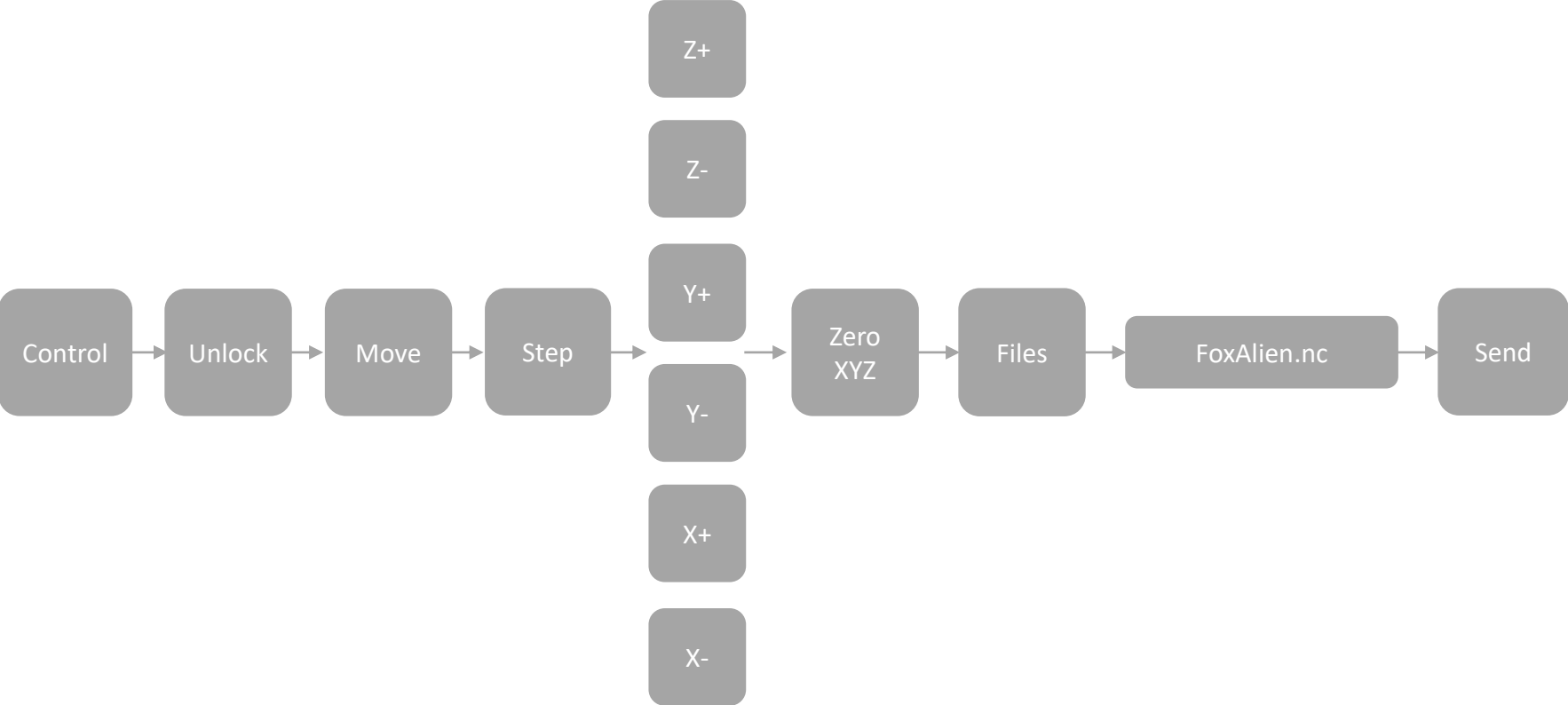
Two working modes



PC mode and Controller mode cannot be used at the same time. So when using the controller mode, please disconnect the software connection in computer or unplug the USB cable directly, otherwise it may cause errors, deviation or unusual stopping during engraving.

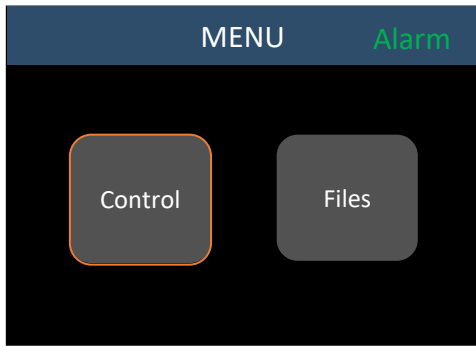
How to Use Controller

Operation Procedure Overview



Make Your First Cut

1



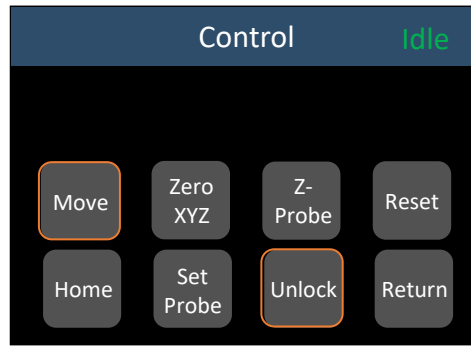
Check the emergency stop and limit switches before operating, make sure they are not pressed down or triggered.

Select the controller mode, and then turn on the power. After booting, status shows "Alarm" in the upper right corner. Enter "Control" interface.

Click "Spindle/Laser" to check if the spindle can turn on normally.

Click "Return" to previous menu.

(The spindle speed can only be adjusted through the knob, and the software can only turn on/off the spindle, and cannot adjust the speed.)

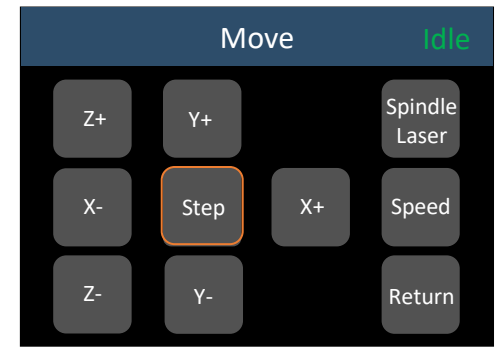


Click "Unlock", and then status will change to "Idle".

Then click "Move".



Adjust Z-axis, the proper gap between the bit and object's surface is that only an A4 paper can move through tightly.



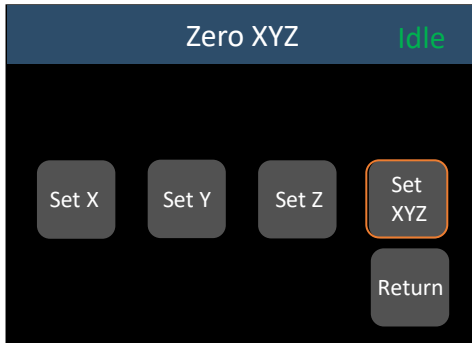
First, click "Step" to choose step setting (4 available steps: 0.05, 0.1, 1, 10mm).

Default step is 0, if you don't click to choose a step, machine will not move.

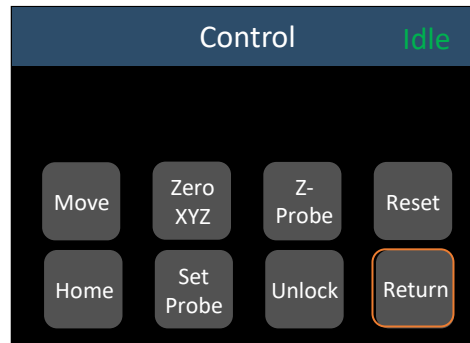


As above picture shows, click direction buttons (X+/X-/Y+/Y-/Z+/Z-) to move bit to zero point.

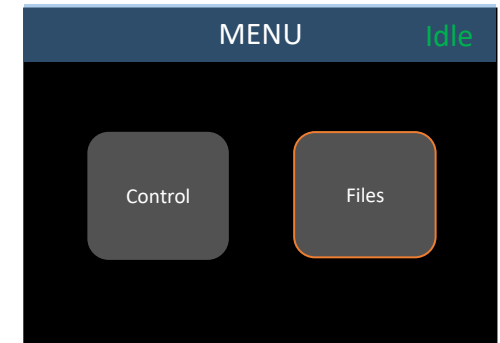
2



Click the "Set XYZ" buttons to set zero. You can see that the coordinates of the three axis have become 0.00. Then click "Return" to previous menu.



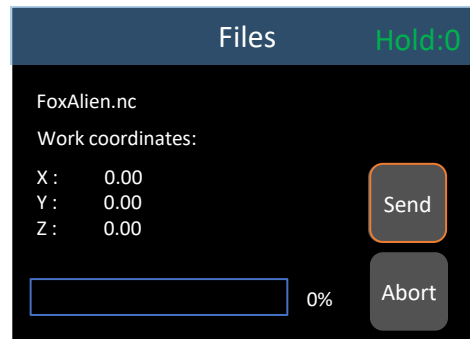
Click "Return" to previous menu.



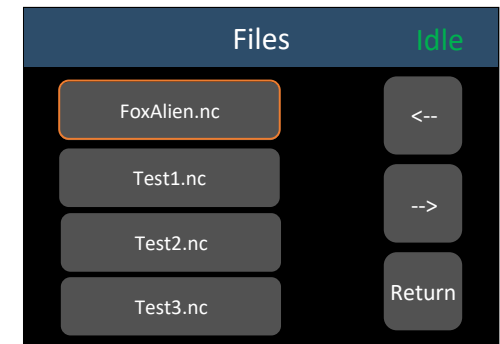
Click "Files".



Finish.



Click "Send" to start engraving. If you want to abort engraving in advance, click "Abort". Progress bar will show rate of engraving process.

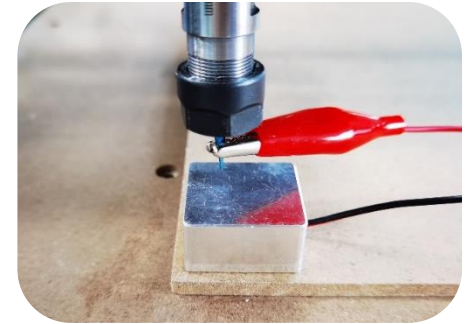
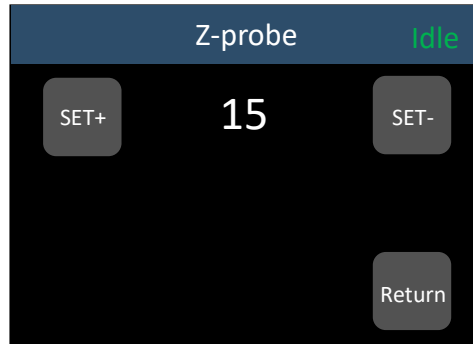


Left column shows the g-code files pre-stored in the SD card. For example, choose "FoxAlien.nc".

How to Use Z-Probe



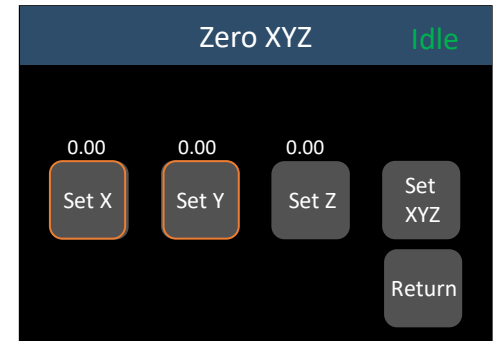
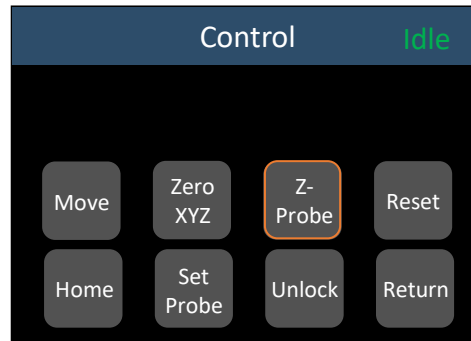
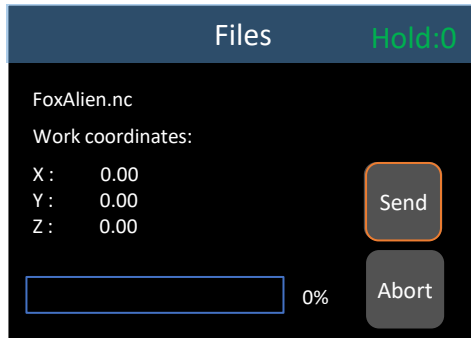
Measure thickness: 15mm



Place the Z-probe as picture shows



Enter "Set Probe" in Control interface. The included Z-probe's thickness is 15mm, so change it to 15; and then click "Return" to previous menu.



Return to first level menu, enter "Files" to choose g-code file, click "Send" to start engraving.

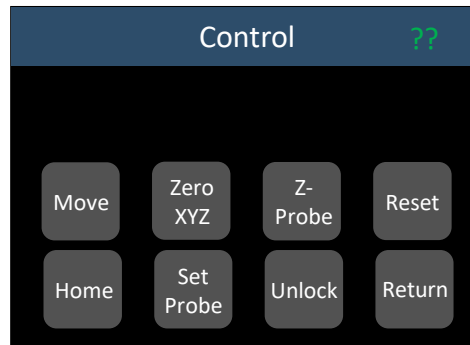
Click "Z-probe" to start zeroing. Remove Z-probe after zeroing. If there is any fault during setting, just click "Reset".

Click "Zero X" and "Zero Y", then return back to previous menu.

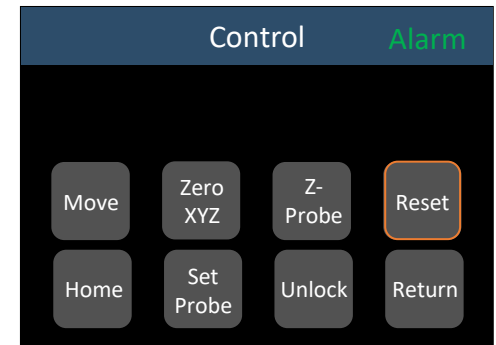
How to Unlock Limit Switch



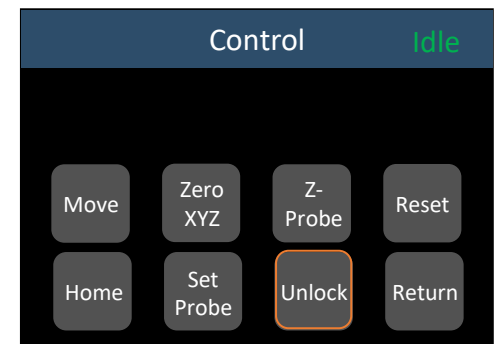
Limit switch will trigger when the machine runs out of active working area.



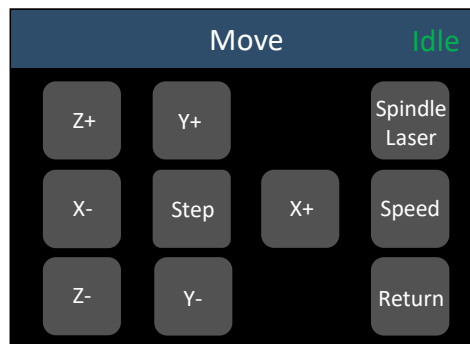
After limit switch is triggered, status in the upper right corner will change to "??".



Click "Reset", and then status will change to "Alarm".



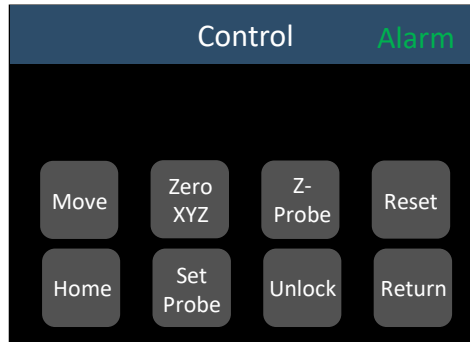
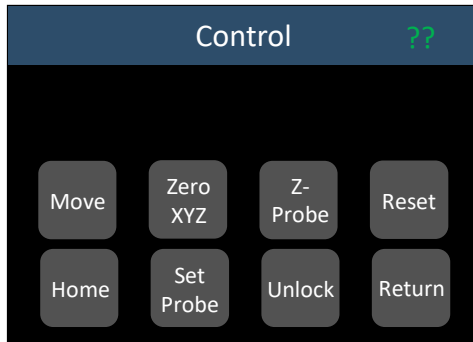
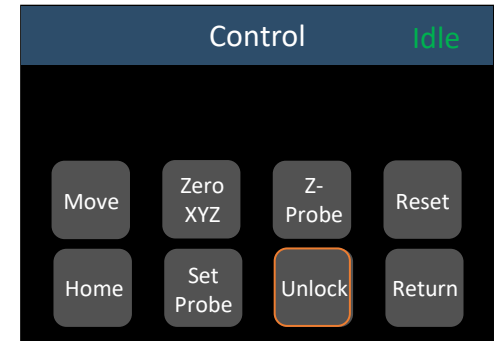
Click "Unlock", status will change to "Idle".



Click direction buttons to move the axis way from limit switch.

Status will change to "??" again, that means it does not entirely move away from the limit switch, just repeat the previous steps to unlock until the status changes to "Idle".

How to Use E-stop



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

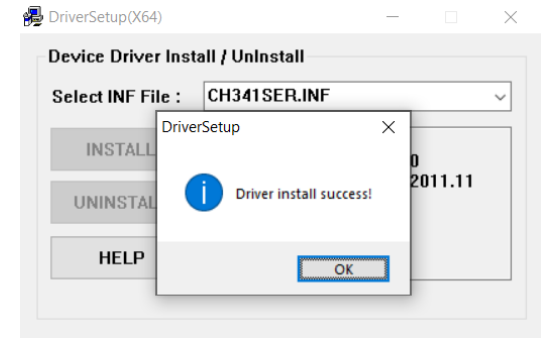
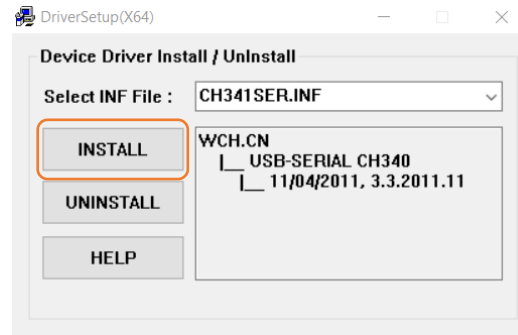
When E-stop is triggered, status will change to "??".

Rotate clockwise to release the E-stop. Status will change to "Alarm".

Then click "Unlock", status will change to "Idle". Machine is back to normal status.

How to Use Grblcontrol (Candle)

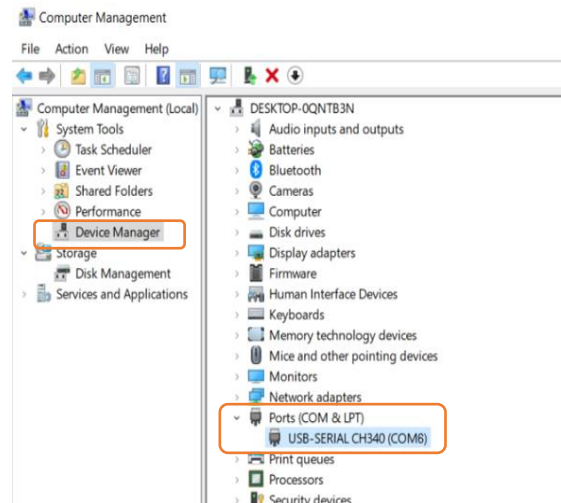
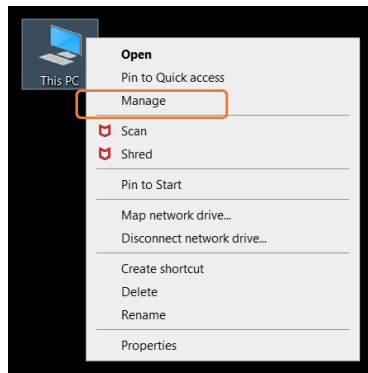
Driver Installation



Download from U disk. Double-click to start installation.

Click "INSTALL"

Wait until it shows "Driver install success"



To Determine your Machine's COM port

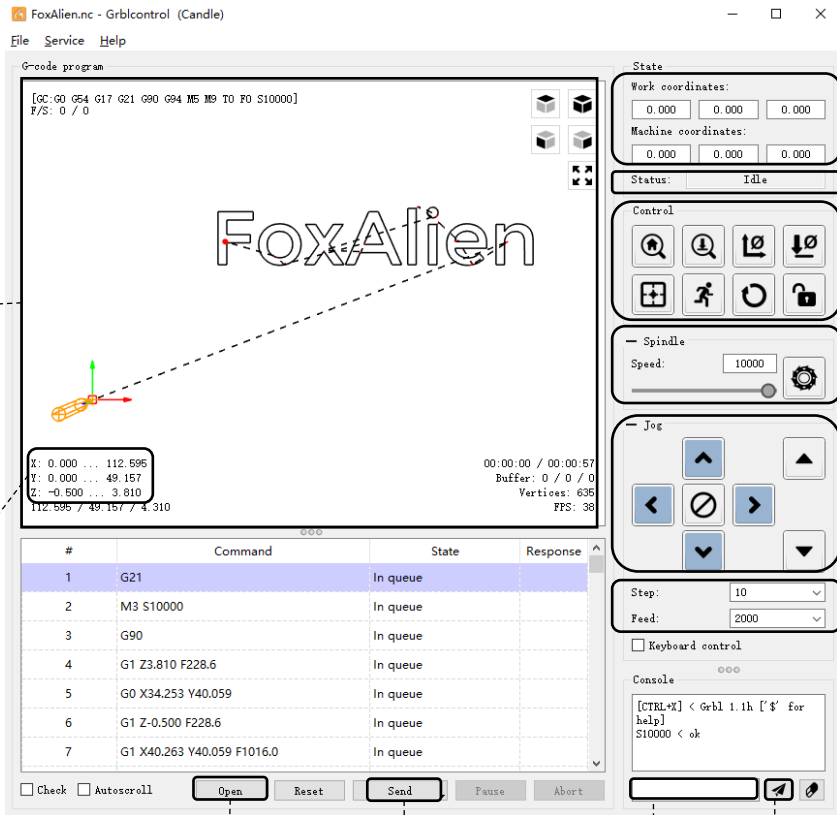
- **For Windows XP:** Right click "My Computer" → Select "Manage" → Select "Device Manager".
- **For Windows 7:** Right click "Computer" → Select "Manage" → Select "Device Manager" from left pane.
- **For Windows 10:** Right click "This PC" → Select "Manage" → Select "Device Manager" from left pane.
- In the tree, expand "Ports (COM & LPT)", your machine will be the USB Serial Port (COMX), where the "X" represents the COM number, for example COM6.
- If there are multiple USB serial ports, right click each one and check the manufacturer, the machine will be "CH340".

Grblcontrol (Candle) Working 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

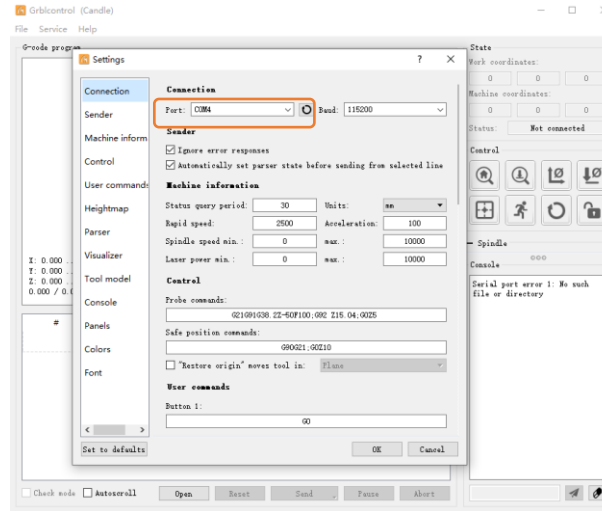
Make Your First Cut



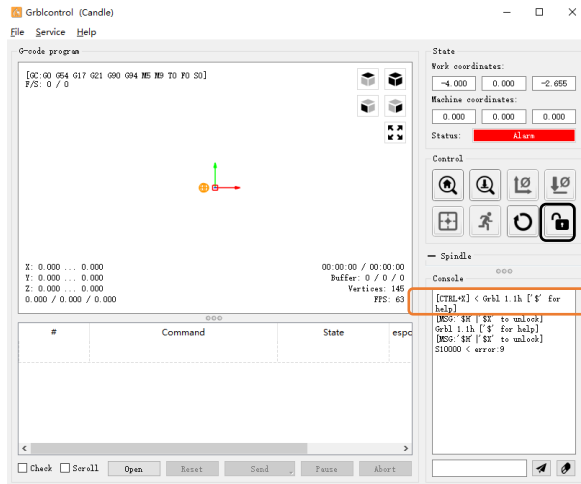
Select PC mode, press the power switch



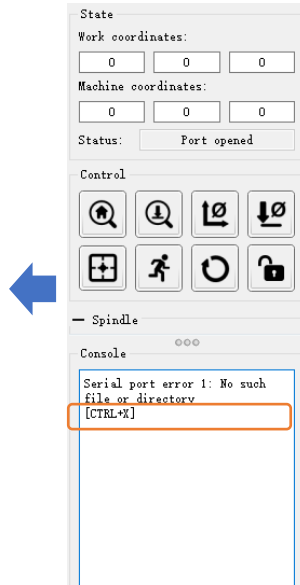
Double click to start Grblcontrol (Candle)



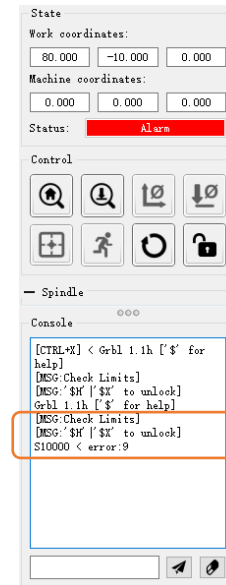
Connect USB cable to computer and machine, click Service->Port select COM port. Click "OK"



Console window prints "[CTRL+X] < Grbl 1.1h ['\$' for help]" if the connection is successful. Click "Unlock".

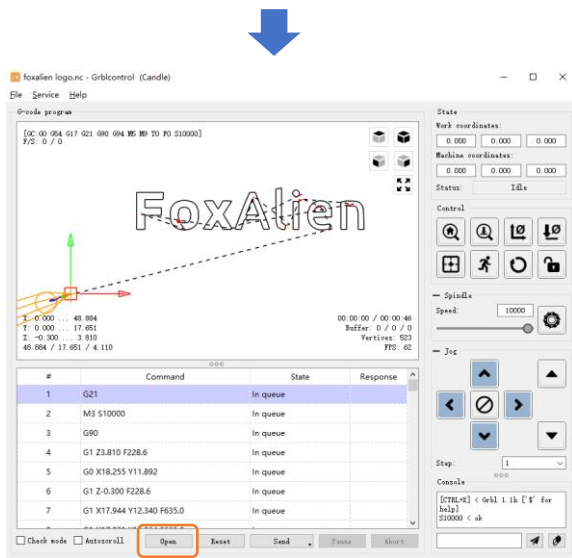


Console window prints "CTRL+X" indicates that the connection is failed. Need to check whether the E-stop is pressed down. If yes, turn the E-stop clockwise, and then click "Unlock".



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 28 of the manual to release the limit via software.





Open a G-code file, Preview G-Code



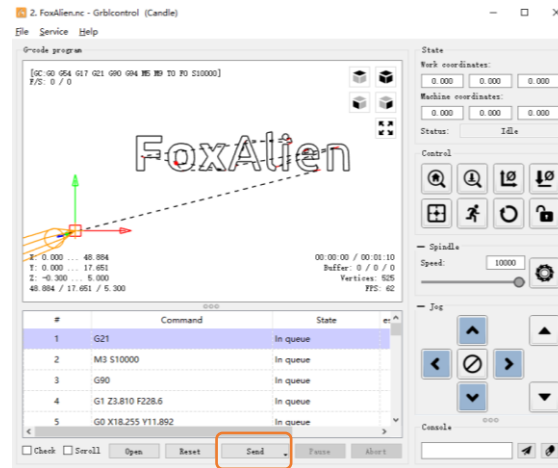
Click the direction button to move the bit to the surface of the object. The proper gap between the bit and object's surface is that only an A4 paper can move through tightly.



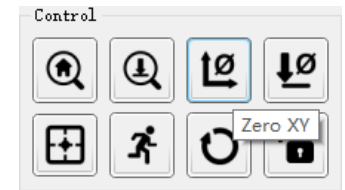
Turn the knob clockwise to adjust the spindle speed.



Engraving Finished.



Click "Send" to start engraving

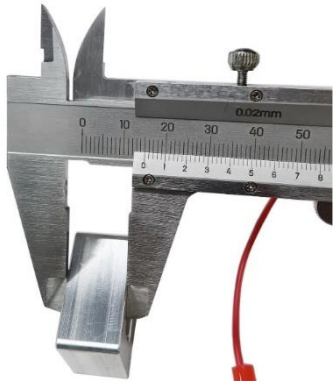


Click "Zero XY"

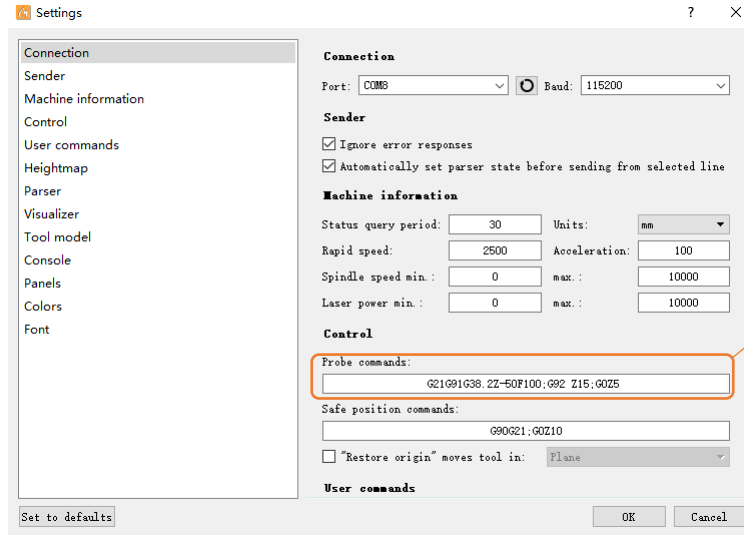


Click "Zero Z"

Z-Probe Operating

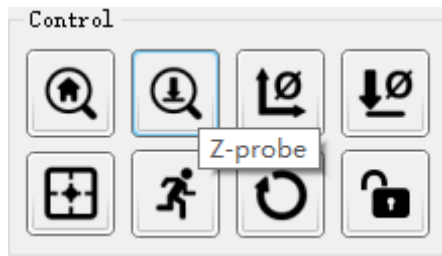


Thickness: 15mm



Control
Probe commands:
G21G91G38.ZZ-50F100;G92 Z15;G0Z5

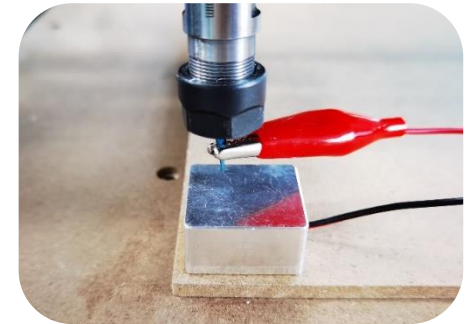
Edit Z-probe parameter.
Default value is Z15



Click Z-probe button to start detecting.
After Z-probe detection finished.
Remove Z-probe, click "Send" to start engraving.



Click "Zero XY"

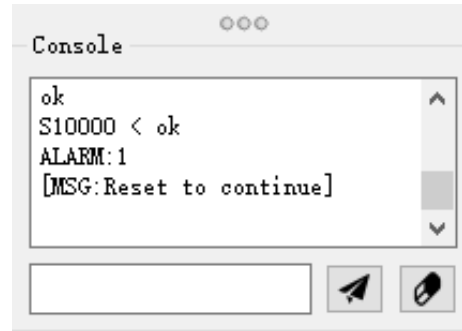


Place the probe as shown

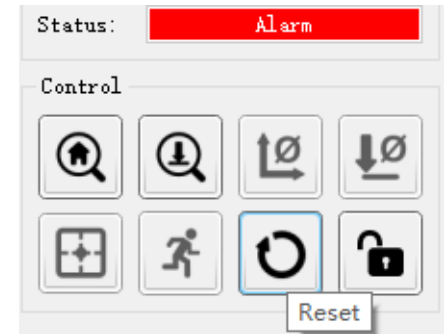
How to Unlock Limit Switch



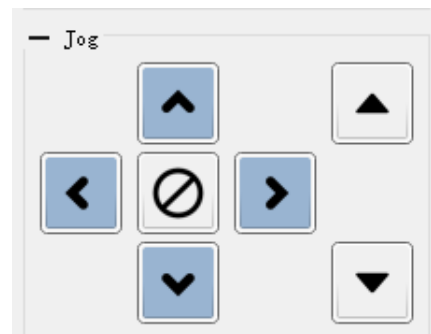
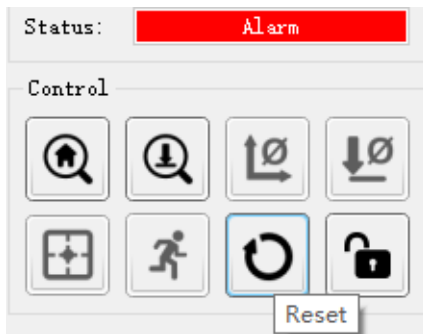
Limit switch will trigger when the machine runs out of active working area.



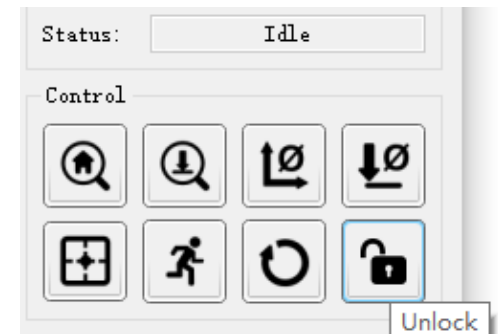
Command window will show: "ALARM:1 [MSG: Reset to continue]"



Click "Reset"



Click direction buttons to move the axis way from limit switch.



Click "Unlock"

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.

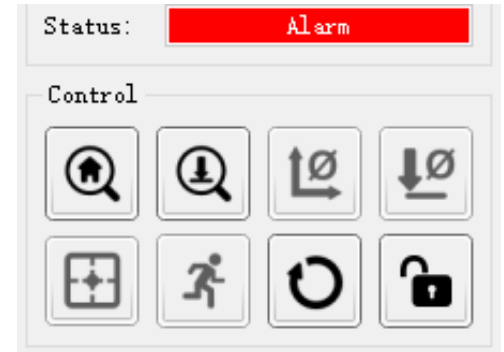
How to Use E-stop



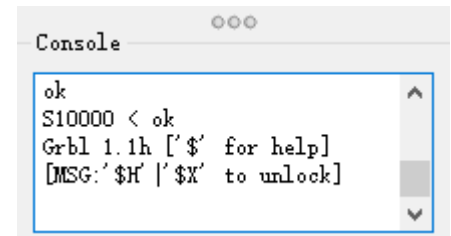
Press down E-stop when the machine malfunctions to avoid damage.



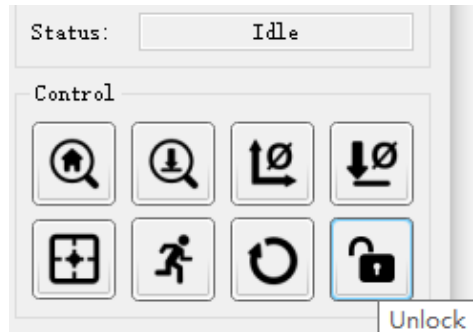
Rotate clockwise to release the E-stop.



Status in software will change to "Alarm".



Print "[MSG:'\$H' | '\$X' to unlock]"



Click "Unlock" to normal working status.

Please download the driver and software from the U disk included in the package.

It includes:

- USB Driver for Windows & Mac OS
- GrblControl (Candle) software for Windows & Mac OS
- Sample files

You can also download from this link:

Please visit www.foxalien.com for more CNC machine accessories products.

Feel free to contact us for technical support if you come across any difficulty during assembly and using.

E-mail: support@foxalien.com

We will response within 1 business day.



Facebook Group



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