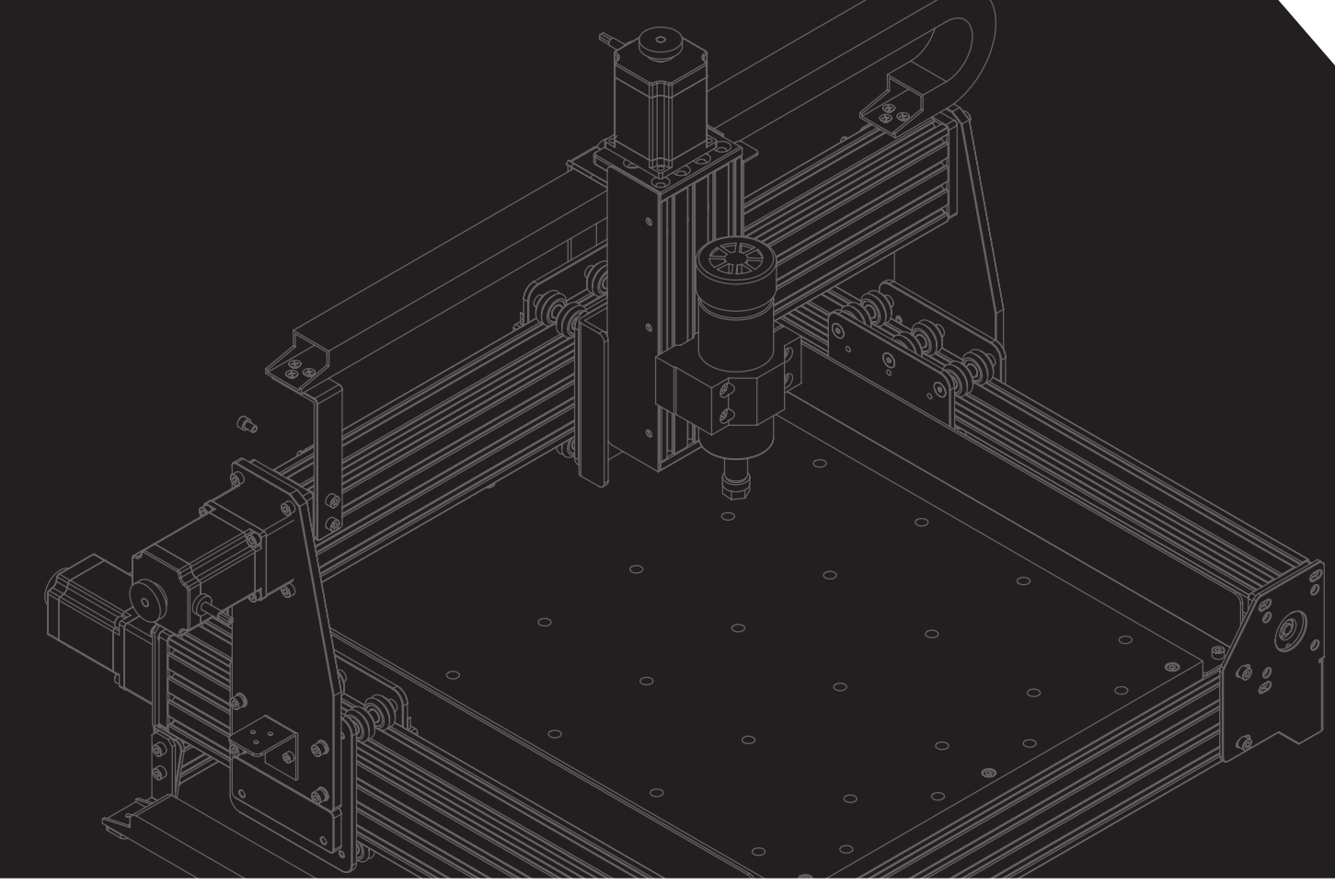


USER MANUAL

Genmitsu

PROVerXL 4030 CNC Router

V1.2 Nov 2020

Contents

Welcome

Thank you for purchasing the Genmitsu PROVerXL 4030 CNC Router from SainSmart.

Included in your package will be a USB Stick, you will find:

- PDF version of this manual
- Windows USB Driver
- GrblControl/Candle software for Windows
- Sample files

Please visit SainSmart Online Resource Center installing drivers and software for your CNC.
https://docs.sainsmart.com/proverxl-4030

The driver and software can also be found on the included USB stick.

For technical support, please email us at ***support@sainsmart.com***.

Help and support is also available from our Facebook group.
(SainSmart Genmitsu CNC Users Group)

Scan QR code to join the group

Disclaimer

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

- Genmitsu CNC 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 SainSmart Genmitsu 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 PROVerXL 4030 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.

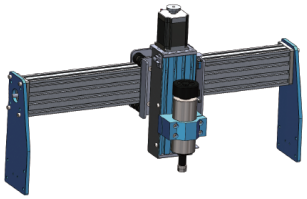
Specifications

Work Area	400 x 300 x 110mm (15.75 x 11.8 x 4.33inch)
Frame	C Beam Structure and Linear Rails
Drive System	ACME Leadscrew (T10)
Control Board Compatibility	GRBL 1.1h
Stepper Driver	TB6560
Stepper Motors	NEMA 23 (2 Phase, 3A)
Spindle	300W 6A, 12,000 RPM
Max speed	2000mm/min
Extra Mount	Aluminum DeWalt DWP611 mount (DWP611 router not included)
Accuracy	0.01mm (0.000393701inch)
Power Supply	600W, 7A, 0-48V
CAM Software	Candle, Carveco Maker, Easel
Homing Switches	X, Y, Z Limit Switches + ESTOP
Leadscrew Size	X-658mm, Y-528mm, Z-208mm
Leadscrew Type	T10 2mm pitch, 5mm lead 5 start acme leadscrew
Overall machine size	641 x 755.5 x 580mm (25.23 x 29.74 x 22.83inch)
Controller box size	400 x 200 x 60.7mm (15.75 x 7.87 x 2.39inch)
Machine Weight	26kg (57lbs)
Shipping Weight	30kg (66lbs)

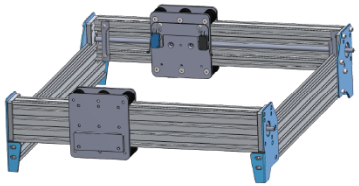
Part 1 - Unboxing

Please make sure all the following parts are included. If you are missing any part or have any questions, please email us at ***support@sainsmart.com***

Mechanical Parts List



1 X-Axis & Spindle Z-Axis Assembly

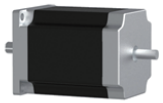


2 Y-Axis Base Assembly

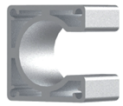
3 Spindle

4 Collet

5 (2) Dust Baffle



6 (4) NEMA 23 Stepper Motor
(The Z axis motor was pre-assembled)



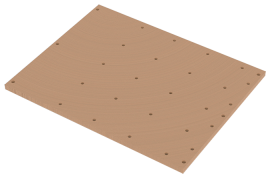
7 (4) Stepper Motor Mount
(The one for Z axis was pre-assembled)

8 Drag Chain Mount

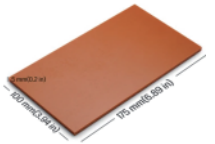
9 Drag Chain Mount

10 (2) Drag Chain Mount

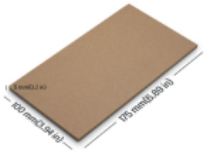
11 Cable Management



12 MDF Spoil Board



13 Bakelite Sheet
175 x 100 x 5mm



14 MDF Board
175 x 100 x 5mm

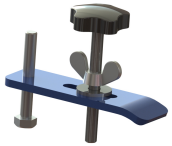
Electrical Parts List

15 PROVerXL
Control Center

16 USB Cable A-B

17 Power Cable (1.2m)

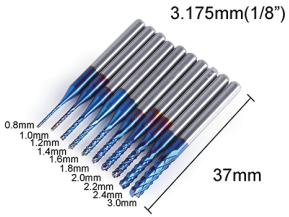
Tools/Accessories Parts List



18 (4) Material Clamp

19 Probe
Z-Height Mapping Probe

20 (10) Engraving Bit Kit
30 Degree, 0.2mm Cutting area,
3.175 Diameter

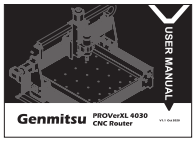


21 (10) Nano Blue Coat Bits
3.175mm Shank, Cutting Edge
Diameter: 0.8-3.0mm

22 (4) Allen Wrench
2.0mm, 3.0mm, 4.0mm, 5.0mm

23 Wrench

24 Nylon Braided Wrap
340mm



25 User Manual

26 USB Stick

Screws/Other Parts List

27 (2) M5 T- Nut
(Pre-assembled)

28 (4) M5 x 8mm
Socket Cap Screw

29 (14) M5 x 16mm
Socket Cap Screw

30 (6) M5 x 20mm
Socket Cap Screw

31 (8) M5 x 50mm
Socket Cap Screw

32 (4) M5 x 55mm
Socket Cap Screw

33 (2) M4 x 6mm
Socket Cap Screw

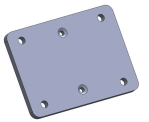
34 (2) M4 x 8mm
Socket Cap Screw

35 (3) Coupler

36 (10) 5mm
Spring Washer

37 (10) 5mm
Flat Washer

38 (4) Fuses

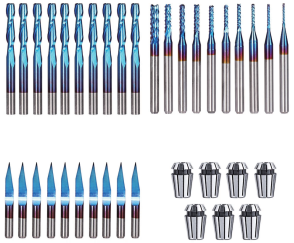


39 Laser Mount

Optional Accessories (Not Included)

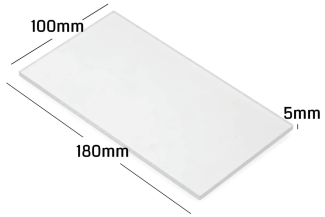
Consider following optional upgrades or accessories to make your CNC experience better!
You can find them on ***www.sainsmart.com***.
Save 10% with discount code **PROVerXL**

5.5W Laser Module



CNC Router Bits
Essential Kit

Resin Board for CNC
Engraving, 2-Pack



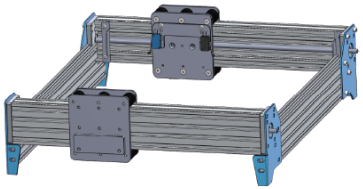
Acrylic Sheet for CNC,
180 x 100 x 5mm, 4-Pcs

Scan QR codes to learn more

Part 2 - Mechanical installation

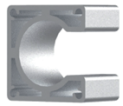
2.1 Preparing your Base Assembly

What you will need



2 Y-Axis Base Assembly

35 (2) Coupler



7 (2) Stepper Motor Mount

6 (2) NEMA 23 Stepper Motor

31 (8) M5 x 50mm Socket Cap Screw

22 Allen Wrench

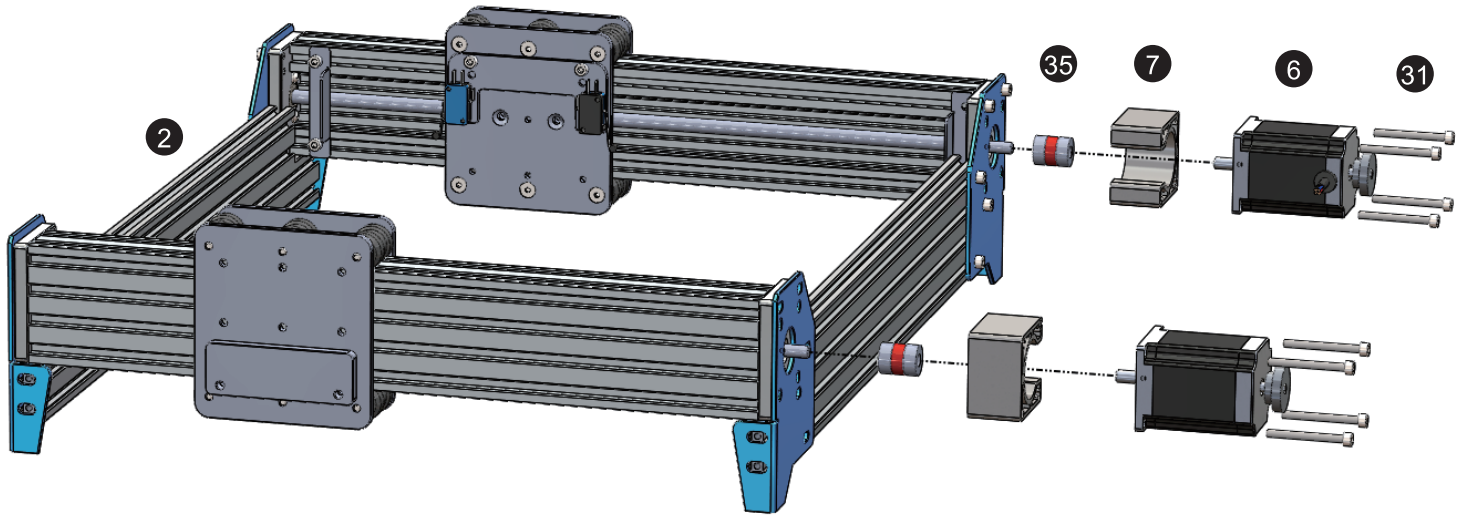
Step 1: Inspect your Base Assembly after removing it from the packaging. Before starting assembly, verify the base is square by using a 90-degree straight edge, as shipping may have caused things to shift.

Step 2: Install the flexible coupler onto each Y-Axis leadscrew. Loosen the small set screw to ensure the Lead Screw will completely seat inside.

Step 3: Tighten (2) M6 x 16mm screws to secure the lead screw mount.

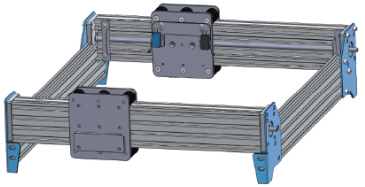
Step 4: Next comes the Motor Mounts & Stepper Motor. Lay the Stepper Mount on your flat surface, positioning it so the open side will not face down when installed. Place the NEMA-23 Motor onto the mount aligning the screw holes. Insert the M5 x 50mm screws.

Step 5: Holding the Mount & Motor together with the screws, install the assembly to base as shown in the diagram.



2.2 Finishing your Base Assembly

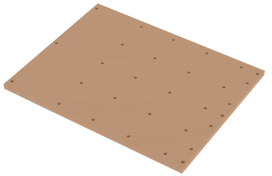
What you will need



2 Y-Axis Base Assembly

29 (4) M5 x 16mm Socket Cap Screw

30 (6) M5 x 20mm Socket Cap Screw



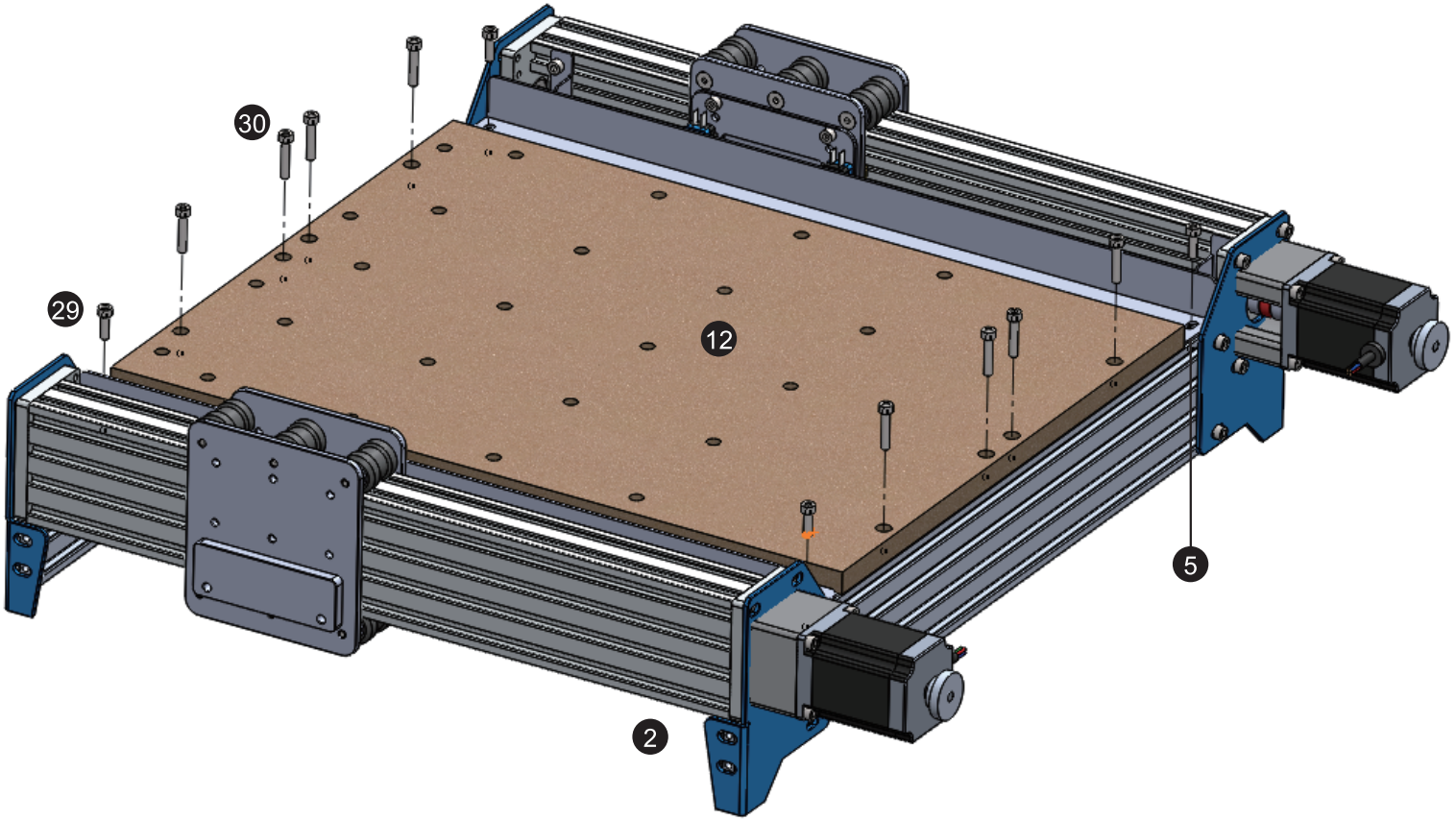
12 MDF Spoil board

5 (2) Dust Baffle

22 Allen Wrench

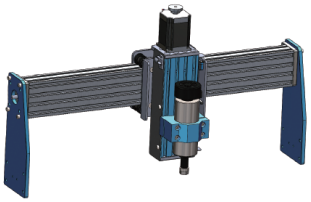
Step 1: Position the MDF Spoilboard on the PROVerXL Base and align each Dust Baffle to the side of the spoilboard. Align with the screw holes and tighten down with the M5 x 16mm screws.

Step 2: Align the MDF Spoilboard with the screw holes at the front and back of the machine. Be sure the board is right side up (Threaded Inserts should be towards the bottom. If you install it in reverse the mounting screws will protrude from the top of the spoil board). Tighten with M5 x 20mm crews.


30
29
12
5
2

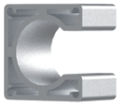
2.3 Preparing your X-Axis Gantry

What you will need



1 X-Axis & Spindle Z-Axis Assembly

35 Coupler



7 Stepper Motor Mount

6 (2) NEMA 23 Stepper Motor

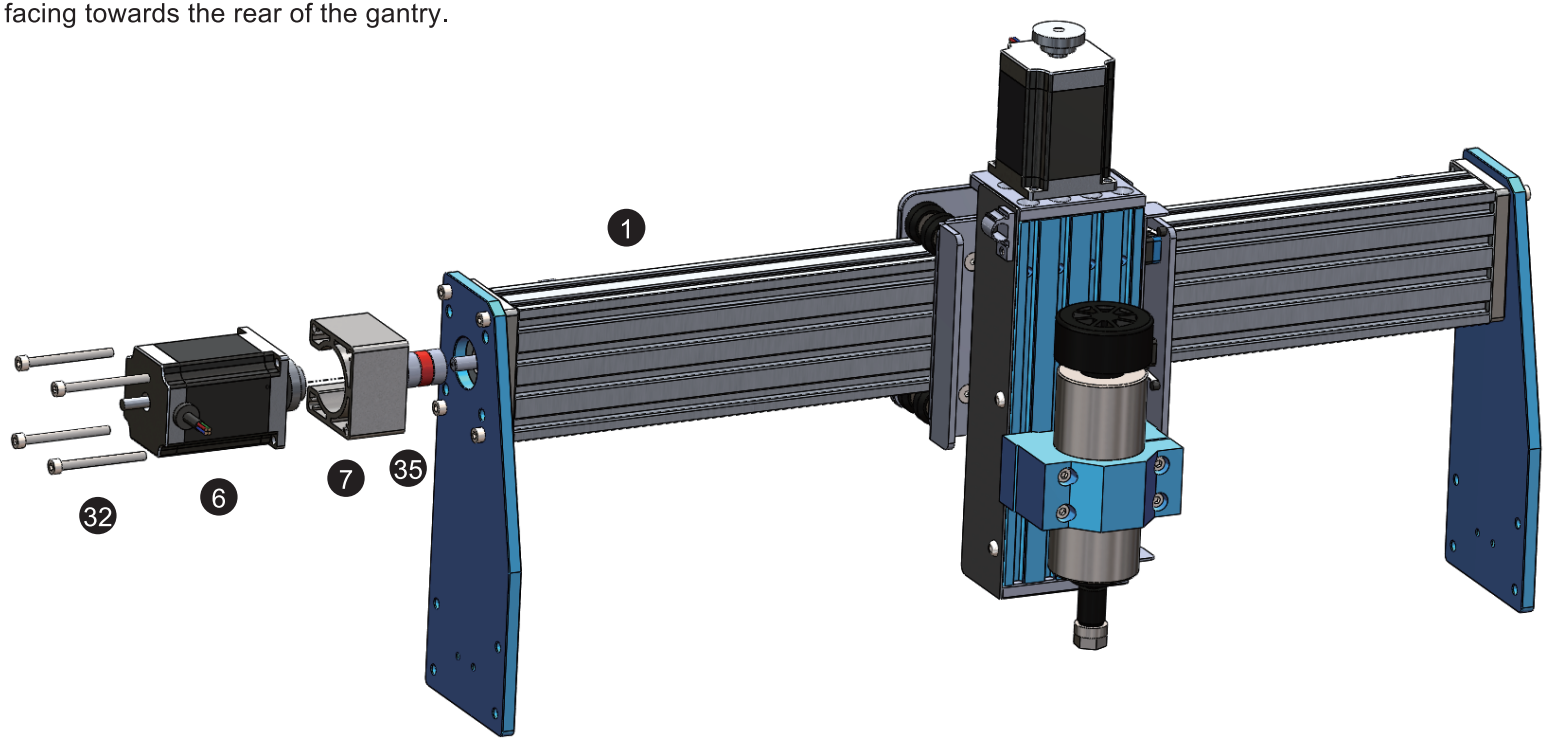
32 (4) M5 x 55mm Socket Cap Screw

22 Allen Wrench

Step 1: Install the flexible coupler to the X-Axis Leadscrew. Be sure to loosen the grub screws to ensure the shaft full seats inside.

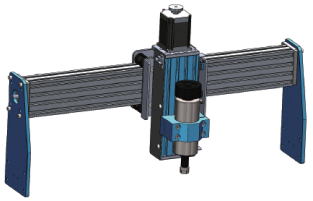
Step 2: Just like the Base preparation. Prep your Stepper Motor Mount + NEMA 23 Motor and 4 socket cap screws and remember to position the mount with the opening facing towards the rear of the gantry.

Step 3: Mount the assembly to the X-Axis. Tighten the grub screws on the coupler. Manually twist the wheel on the Stepper Motor to verify smooth movement of the Gantry on the X-Axis.



2.4 Finishing your X-Axis Gantry

What you will need



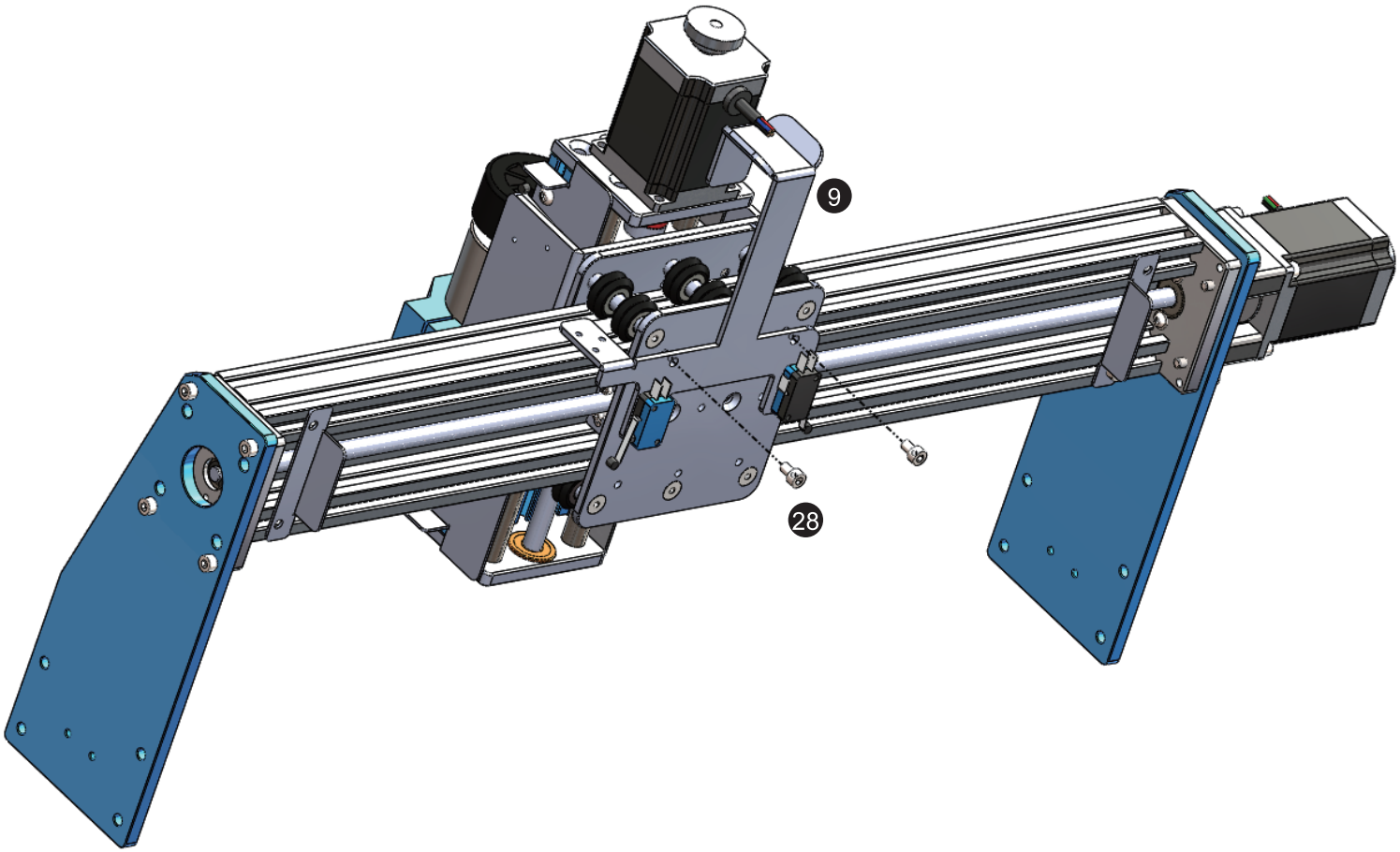
1 X-Axis & Spindle Z-Axis Assembly

9 Drag Chain Mount

28 (2) M5 x 8mm Socket Cap Screw

22 Allen Wrench

Step 1: Position the X-Axis Limiter to the rear of the Spindle Carriage as shown in the diagram. Install the bracket and tighten the screws.


9
28

2.5 Finishing Frame Assembly

What you will need

36 (8) 5mm Spring Washer

37 (8) 5mm Flat Washer

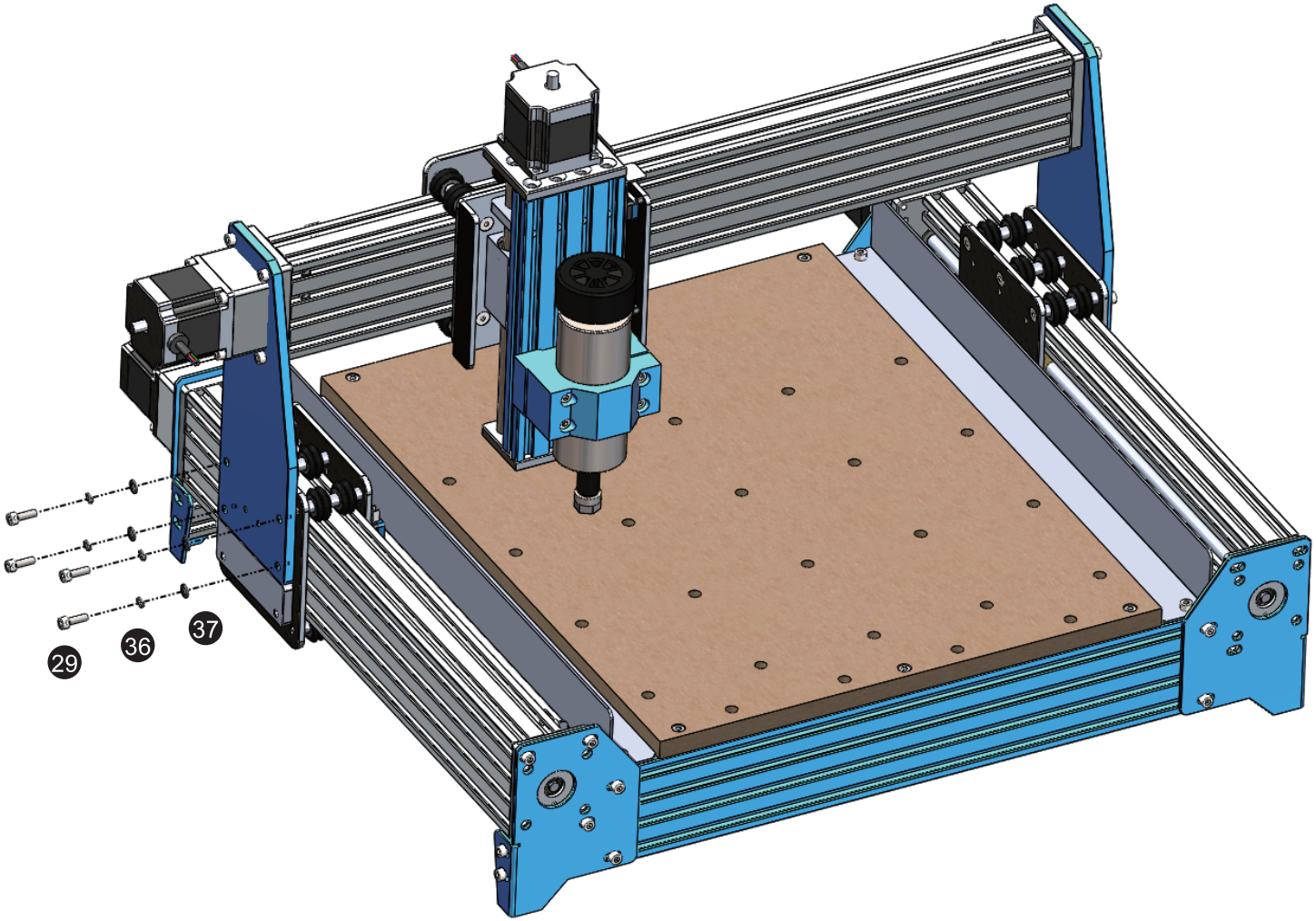
29 (8) M5 x 16mm Socket Cap Screw

22 Allen Wrench

Step 1: Position the X-Axis gantry onto the Y-Axis carriage mounts as shown in the diagram. Each carriage has an acrylic plate that will hold the gantry at the appropriate height. Install the gantry using a 5mm washer, 5mm spring washer then M5 x 16mm screw as shown in the diagram.

Step 2: Secure the opposite side to complete the installation.

Step 3: Rotate both wheels on your Y-Axis stepper motors to ensure smooth movement of the X-Axis Gantry along the Y-Axis.


29
36
37

2.6 Installing the X-Axis Drag Chain

What you will need

8 Drag Chain Mount

27 (2) T- Nut M5

22 Allen Wrench

28 (2) M5 x 8mm
Socket Cap Screw

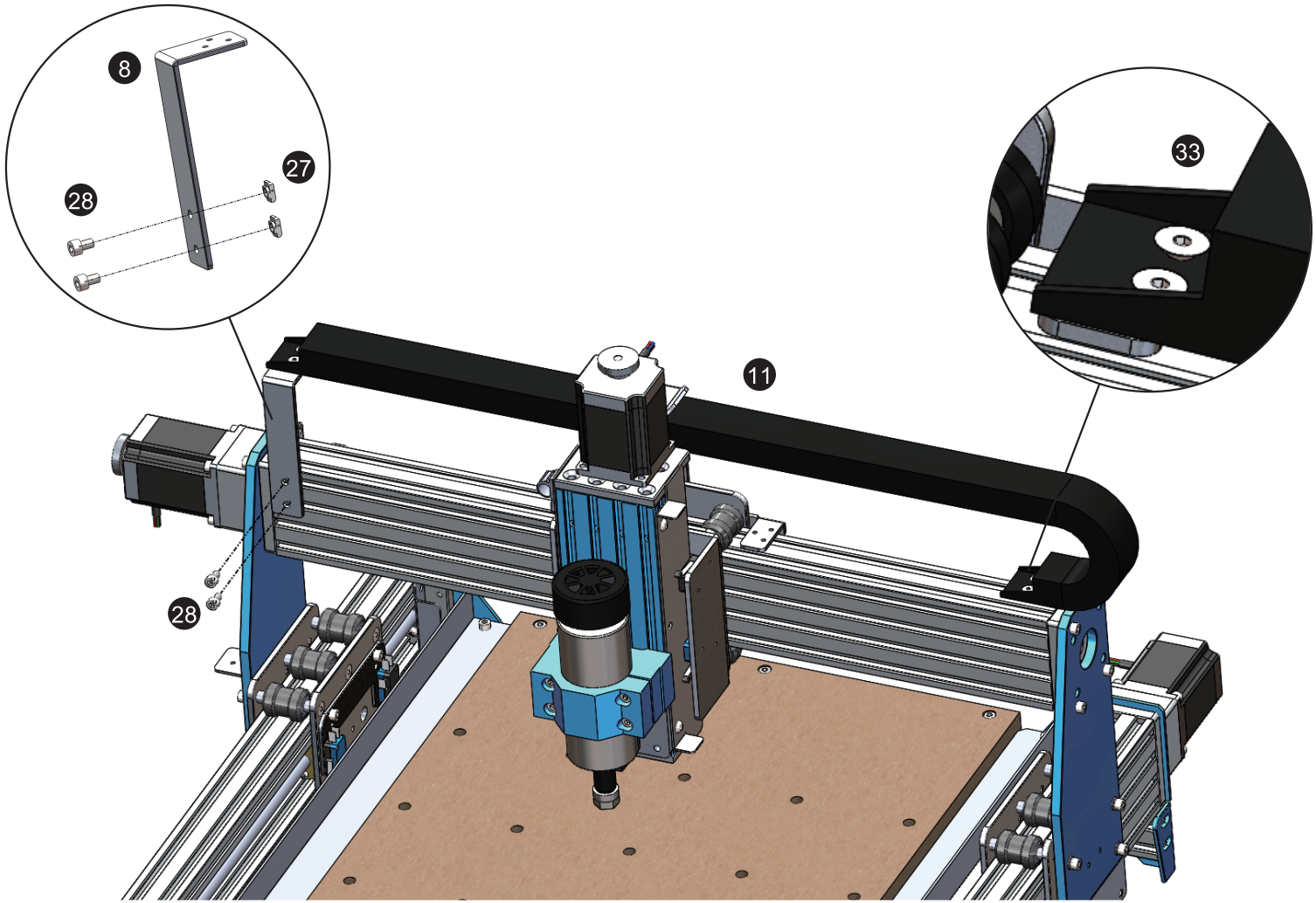
33 (5) M4 x 6mm
Socket Cap Screw

11 Cable Management
Drag Chain

Step 1: Per the diagram you will install the X-Axis drag chain mount. Align the T-Slot nuts with the bracket (the screws and nuts will be positioned on the top 2 channels of the C-Beam.) Secure the bracket with the screws.

Step 2: Position the Drag Chain as shown in the diagram. Start with securing the side closest to the Spindle Gantry and secure with (3) M4 x 6mm screws.

Step 3: Run the Drag Chain underneath the X-Axis limiter as shown in the diagram and secure to the Drag Chain Mount with your M4 x 6mm screws.


8
27
28
33
11
28

2.7 Installing the Y-Axis Drag Chain

What you will need

29 (2) M5 x 16mm Socket Cap Screw

36 (2) 5mm Spring Washer

37 (2) 5mm Flat Washer

34 (2) M4 x 8mm Socket Cap Screw

10 (2) Drag Chain Mount

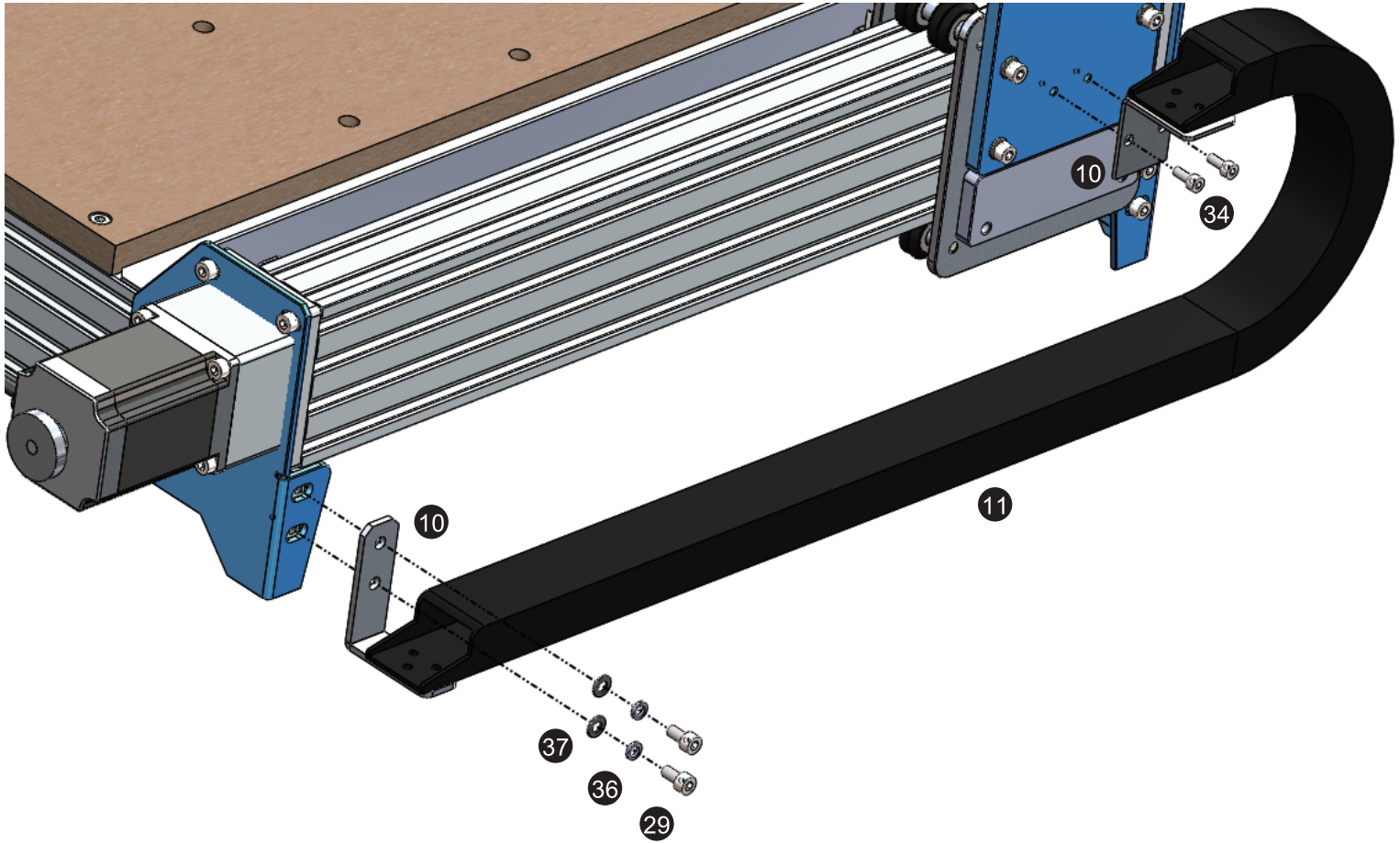
11 Cable Management

22 Allen Wrench

Step 1: Position the narrow drag chain mount to the rear of the machine as shown in the diagram. Attach the bracket with (2) M6 x 10mm socket cap screws.

Step 2: Install the bracket to the carriage as shown in the diagram using (2) M4 x 8mm socket cap screws.

Step 3: Position the drag chain per the diagram using (6) M4 x 6mm screws. (The side with the Compression DIN Connector for the spindle goes to the Control Box.) While mounting the drag chain take care not to damage any of the cables or connectors.



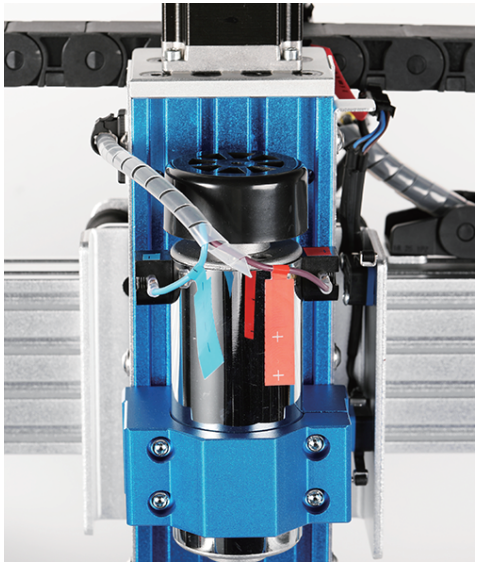
Congratulations! Now your PROVerXL machine body is fully assembled!

Part 3 - Wiring

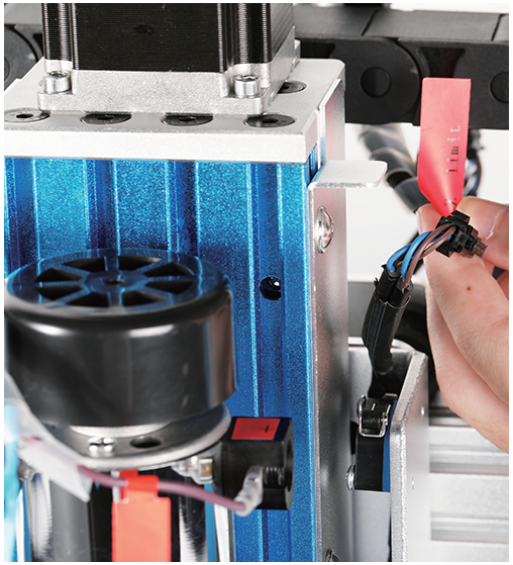
3.1 Wiring Your Electronics

Step 1: Start with the Spindle and X-Axis Carriage. Using the labeled cable ends you need to connect the Z-Axis Limit Switches to the Cable whip and wire the Spindle (there is no requirement for which color goes onto which side of the spindle).

Spindle

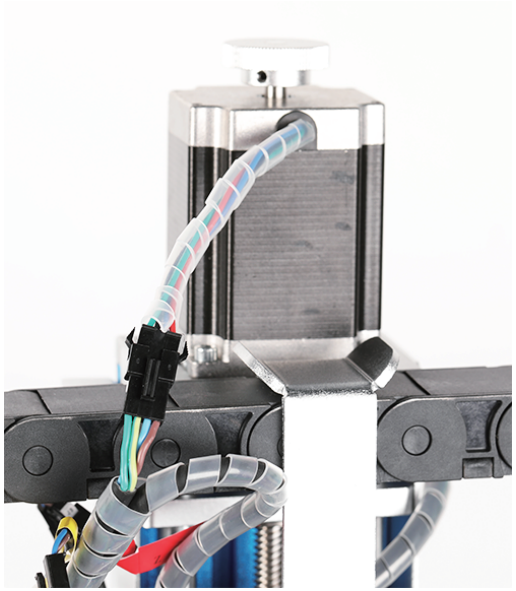


Z-Axis Limit Switches



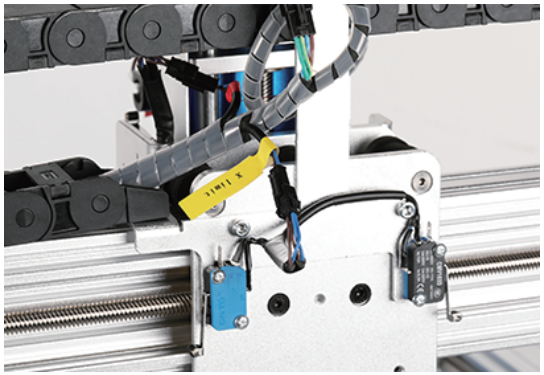
Step 2: Connect your Z-Axis Stepper Motor

Z-Axis Stepper Motor

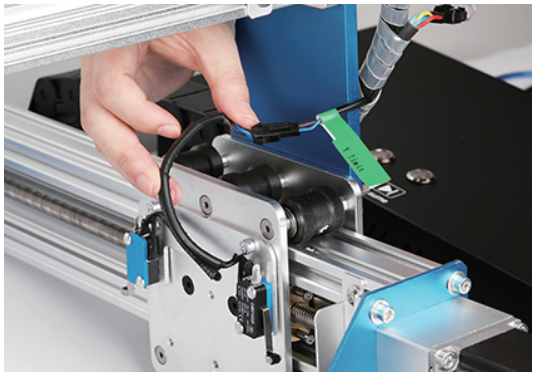


Step 3: Connect your Limit Switches

X-Axis Limit Switches



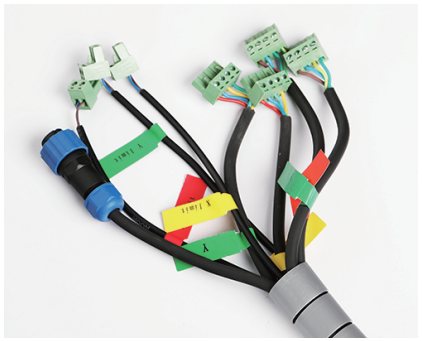
Y-Axis Limit Switches



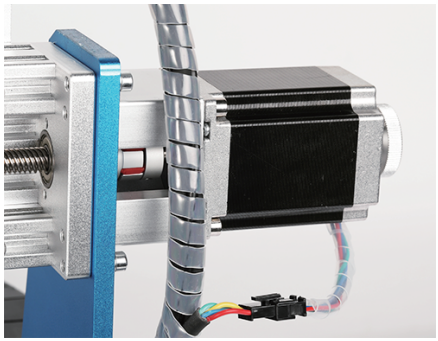
Step 4: Wire the Y-Axis Stepper Motors. Find the longer Y-Axis Motor cable (Y2) and run that to the left side while reserving the shorter cable marked X for the X-Axis Motor and finally the medium length cable (Y1) for the right-side Y-Axis motor.

Y2 to Left Motor and Y1 to Right Motor

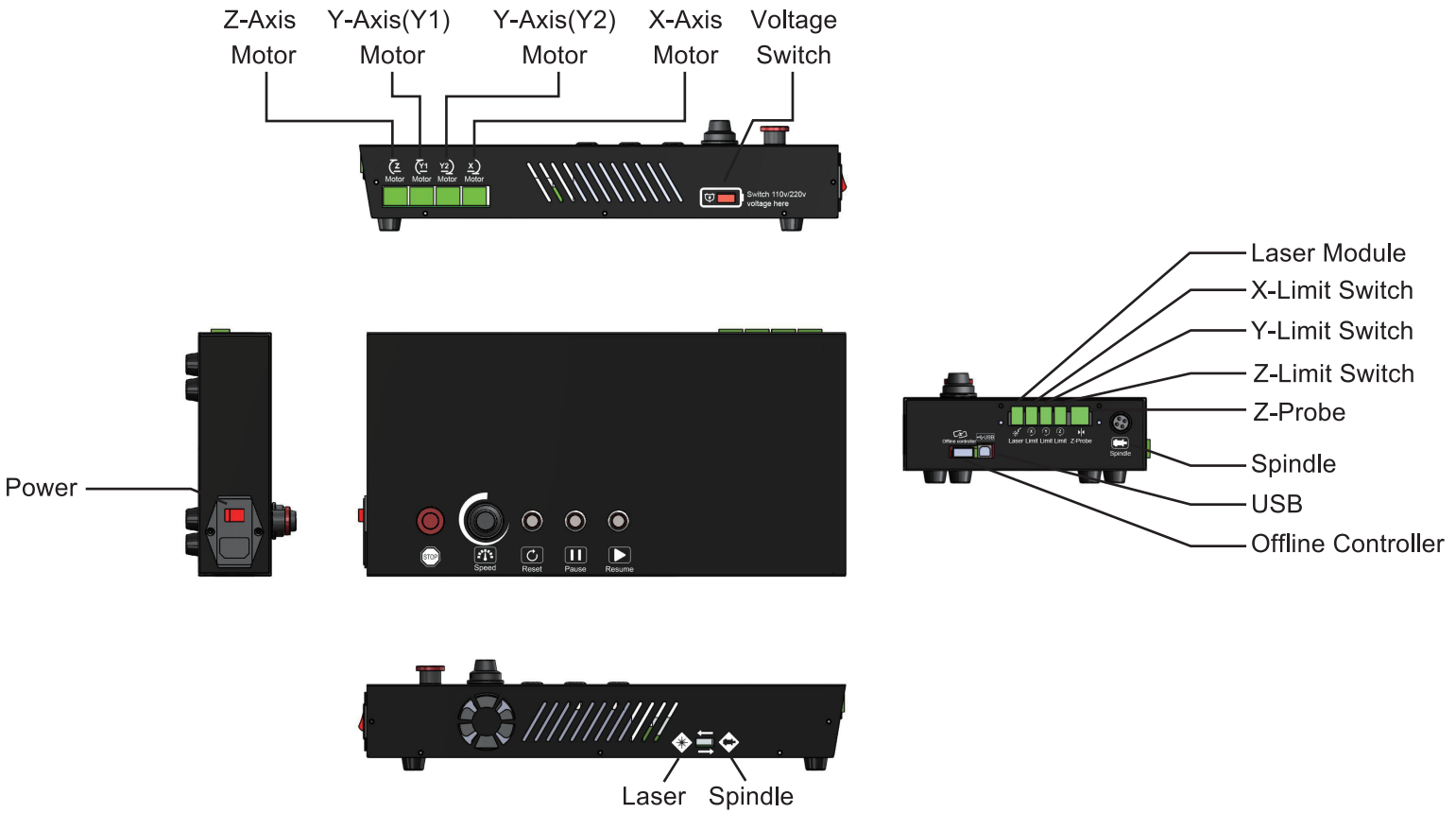
Cables to Control Box side



X Axis



Step 5: Follow the Wiring Diagram Below in order to connect all the wires from the Cable Whip (Looks like central image above).



Note: Push the switch to select laser engraving or milling engraving.

Check your voltage selection before powering on.

3.4 Label Description

Mark	Description	Mark	Description
USB	USB interface	**-LASER**	Laser module interface
Power	AC Power Input	**Speed**	Spindle RPM Speed
ON	Power ON	**Unlock**	Unlock Motors
OFF	Power OFF	**Spindle +**	Positive
Offline controller	Offline controller (Note: Only connect to our offline controller)	**Spindle -**	Negative
		X	X Axis motor interface
ESTOP	Emergency stop switch interface	**Y**	Y Axis motor interface
Z-PROBE	Z Zero Tool interface	**Z**	Z Axis motor interface
X	X limit switch	**Reset**	Reset Mainboard
Y	Y limit switch	**Pause**	Pause Operations
Z	Z limit switch		

3.5 Final Checks

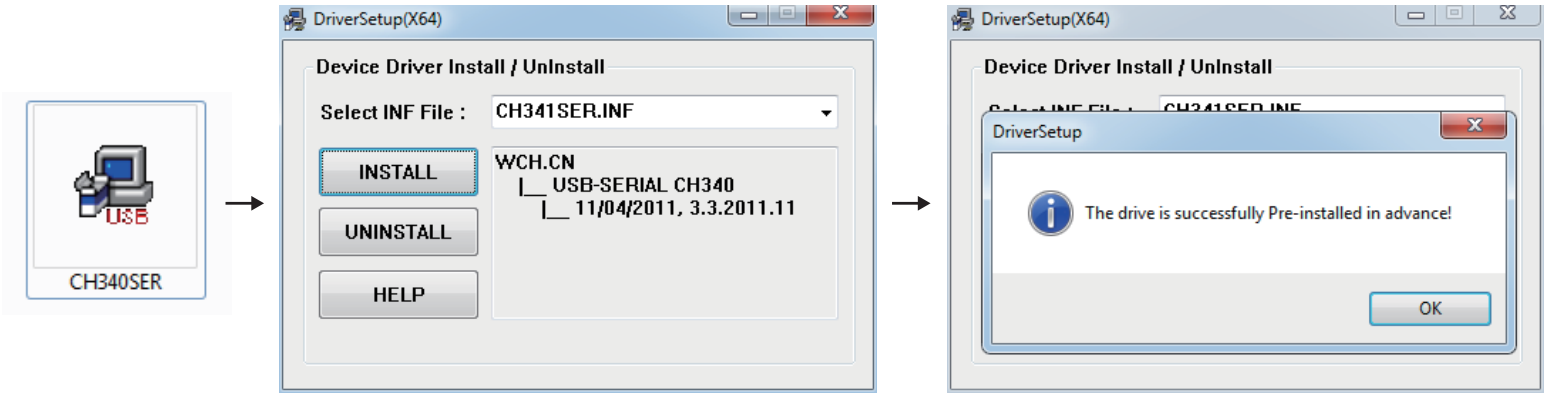
Lubricate the Axes	The Axis leadscrews are lubricated at the factory; however, we recommend you inspect drive screws and reapply if needed. It is suggested you use a “Dry” PTFE based lubricant or similar product (not included) to help prevent debris and dust from sticking to the rods or leadscrews. **Please Note:** Recommended normal maintenance includes cleaning of the threaded rods and lubricating as needed.
Check Cables and Connections	Ensure cables connecting the Z Axis and Spindle are not obstructed and mill move freely along the Z and X axis. Check limit switch connections and all motors. Verify the PROVerXL Control Box voltage switch is on the proper voltage for your region, default setting is 110V.
Emergency Stop Button	Before powering on your machine ensure the Emergency Stop Button is in the released position by turning the button in the direction of the arrows and letting it spring out.

Part 4 - Software Setup

Driver installation

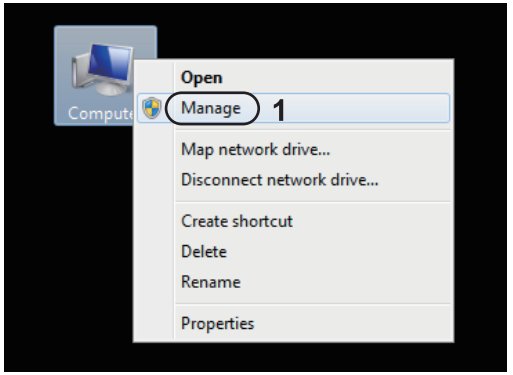
1. Driver Installation

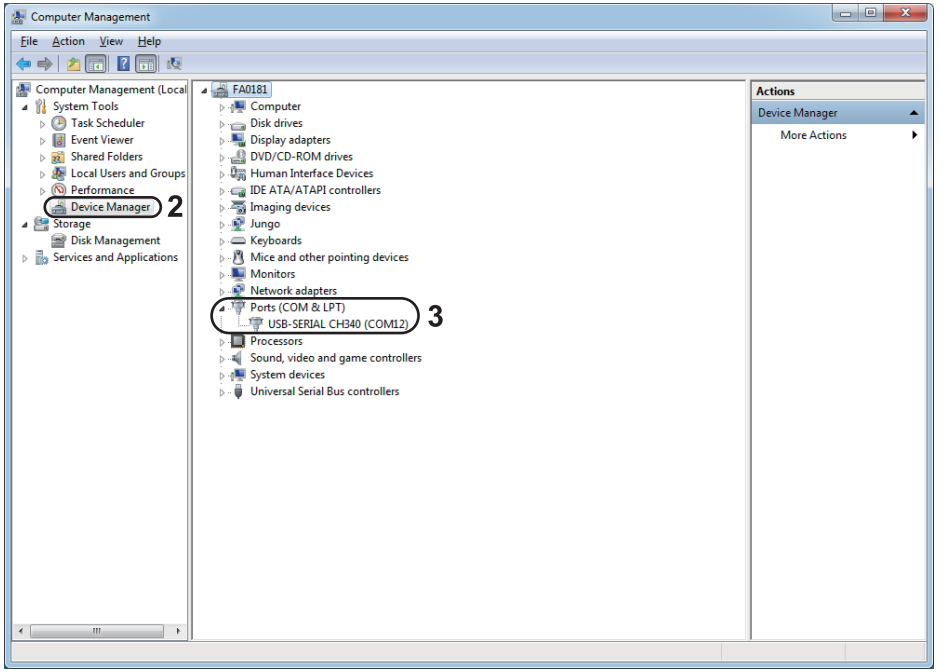
Install the driver (software → Driver → CH340SER.exe)



2. To Determine your Machine's COM port:

- Windows XP: Right click on "My Computer", select "Manage", select "Device Manager".
- Windows 7: Click "Start" ➔ Right click "Computer" ➔ 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 COM12.
- If there are multiple USB serial ports, right click each one and check the manufacturer, the machine will be "CH340".





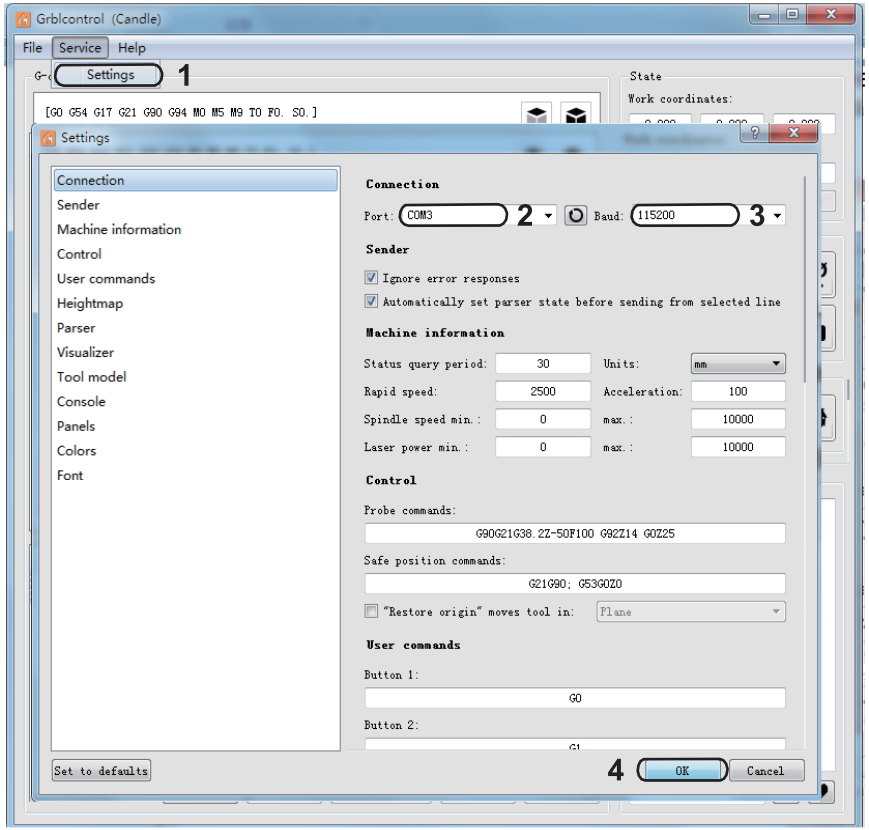
3. Grblcontrol (Candle) Connecting to the Controller

First time use will require you setup the appropriate COM PORT and Baud rate.

Step 1: Software should automatically select the port number.

Step 2: If it does not recognize automatically select the “Baud” drop down menu and select 115200.

Step 3: Click “OK” to save.

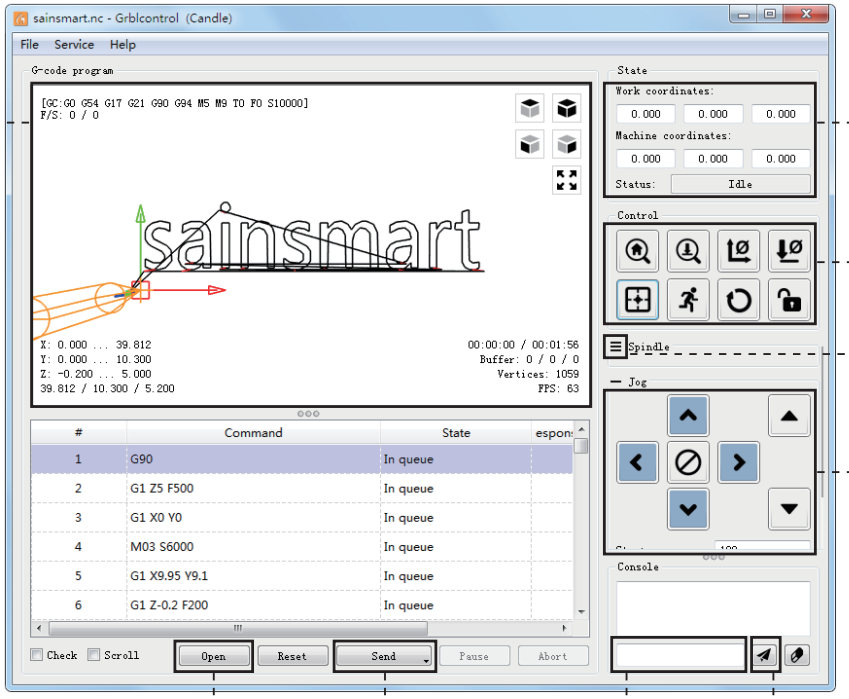


Part 5 - Test Project

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.



Coordinate Display

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

Click to expand

Manual operation interface

Open G code

Send G code

Command input box

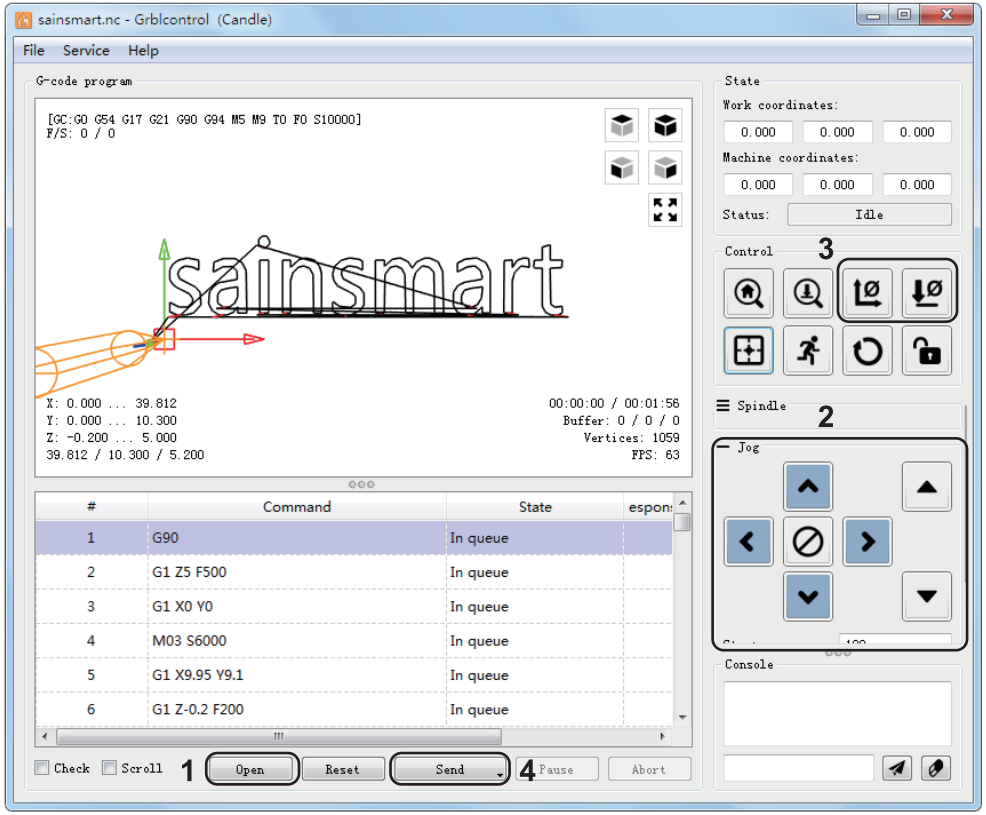
Send command

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【ZeroXY】【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 PROVerXL 4030.



Part 6 - Z Probe Setup

Probe function introduction

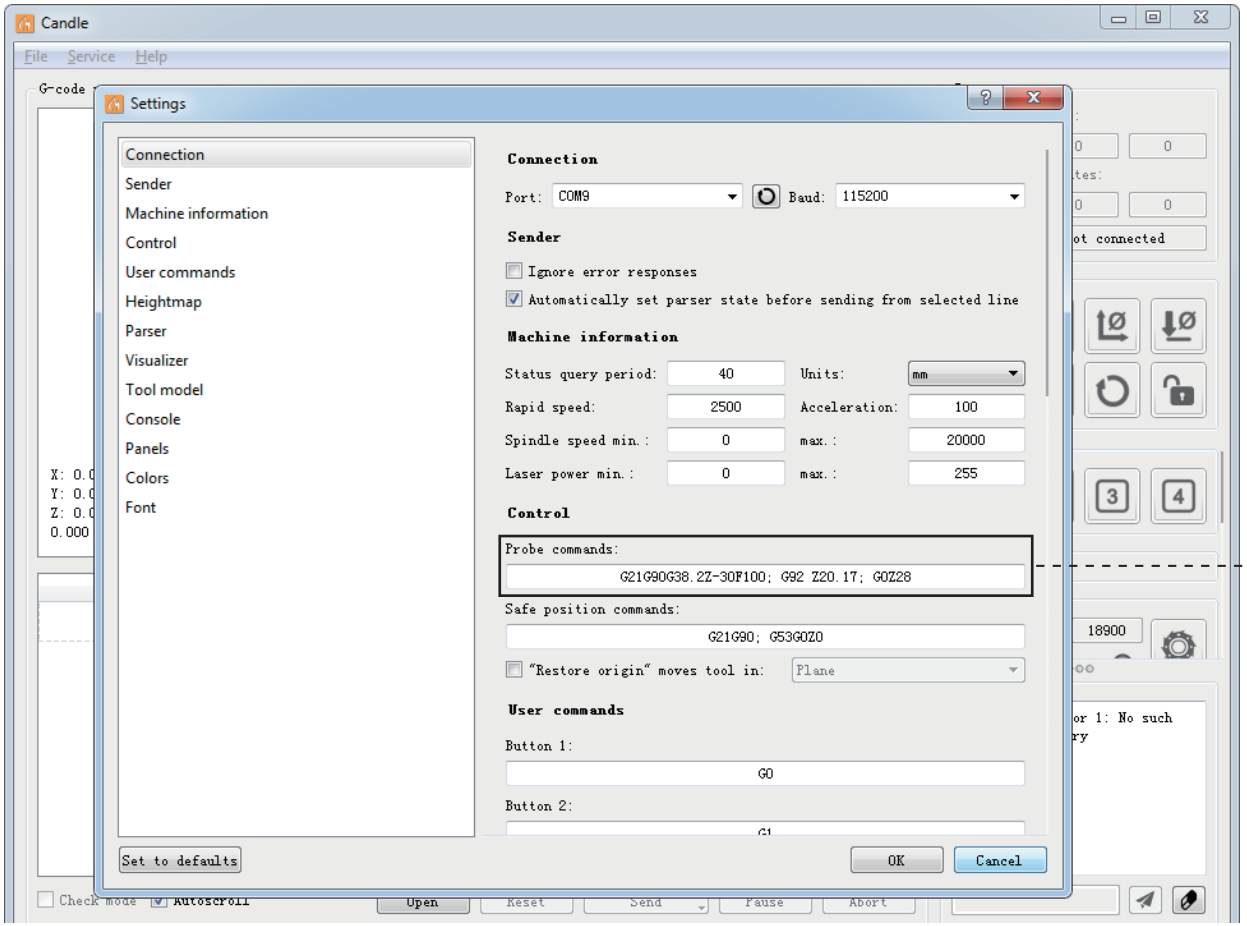
1. Grblcontrol (Candle) Probe operating instructions

Step 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

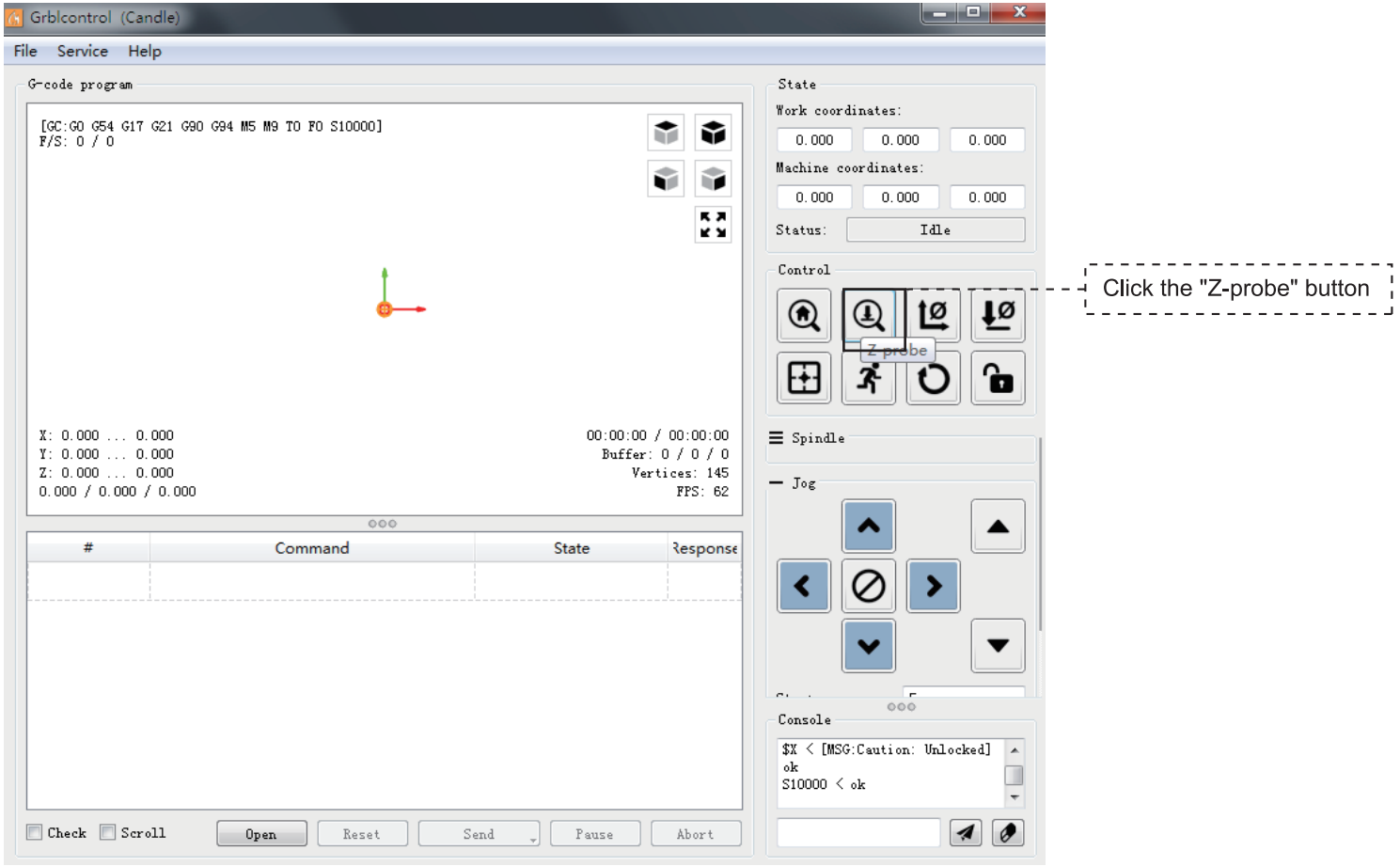
Probe G code	After editing	Probe Tool height
G90G21G38.2Z-50F100 G92 Z14 G0 Z25	G90G21G38.2Z-50F100 G92 **Z20.17** G0 **Z28**	

Step 2: Probe commands filled in Grblcontrol (Candle)



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

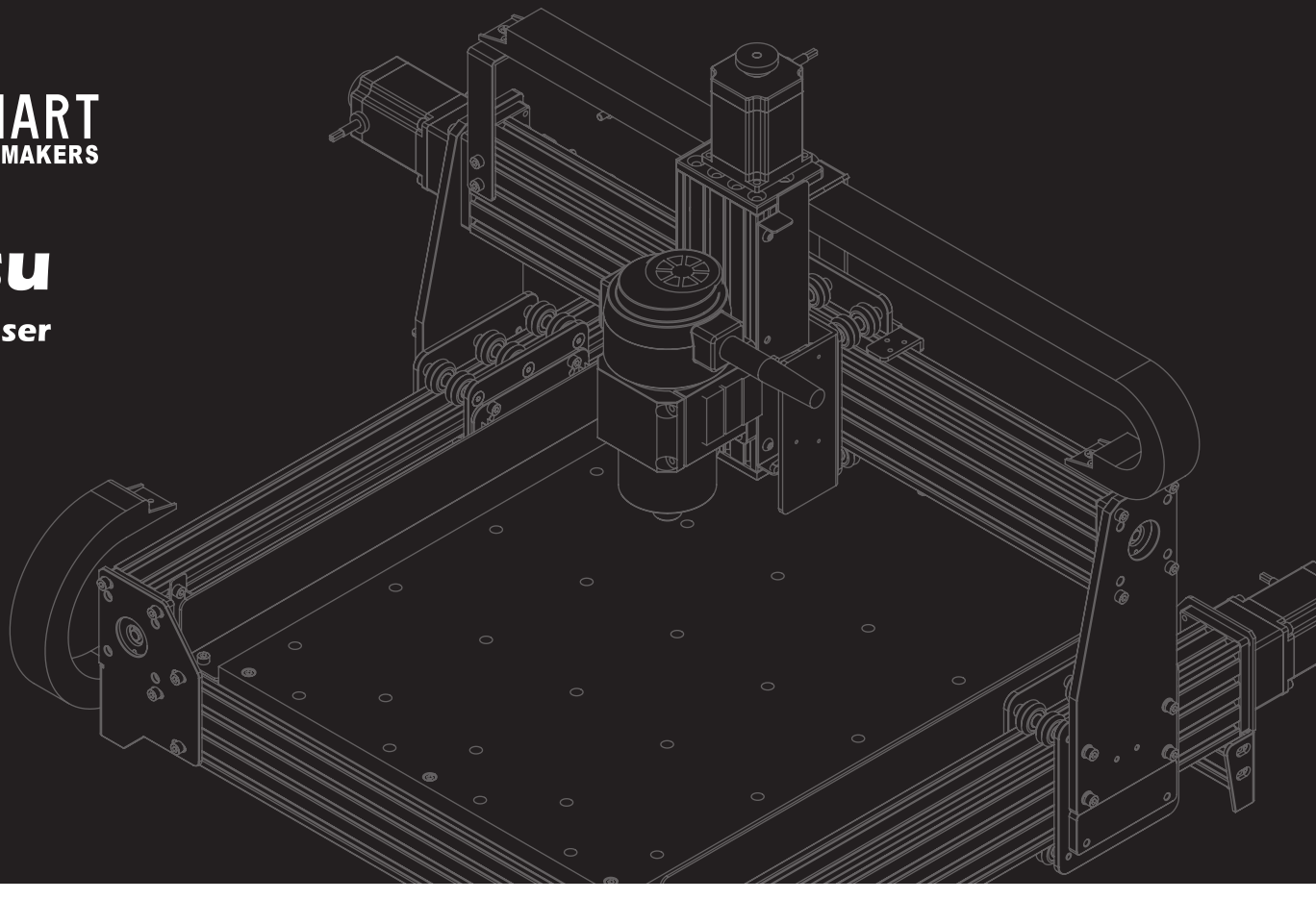
Step 4: Click the "Z-probe" button, Z-axis automatic tool to zero.



SainSMART
POWER TO THE MAKERS

Genmitsu

Desktop CNC & Laser



www.sainsmart.com
support@sainsmart.com

Vastmind LLC, 5892 Losee Rd Ste. 132, N. Las Vegas, NV 89081