SIMPLY TECHNOLOGIES

PERFORMANCE SERIES
OWNER'S MANUAL

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WELCOME TO THE PERFORMANCE SERIES

Congratulations on your purchase of a **Simply Technologies PERFORMANCE Series** CNC machine. First and foremost, we want to thank you for trusting us to be a part of your CNC journey. You have invested in a professional-grade solution designed to deliver precision, reliability, and productivity for your business, shop, or educational space.

Our PERFORMANCE Series machines are built on a heavy-duty welded steel frame, featuring precision ball screws and linear guide rails for consistent accuracy. Powered by a 3HP liquid-cooled spindle and controlled by the iCNC system, the Performance Series is built for serious work, day in, day out.

At Simply Technologies, we believe technology should empower people, not complicate their workflow. This manual provides the foundational knowledge to safely install, operate, and maintain your machine for years of reliable service.

If you have any questions, visit **www.simplytechnologies.xyz/support** or contact us directly at **steve@simplytechnologies.xyz**.

SECTION 1: SAFETY INFORMATION

Safety is everyone's responsibility. Please read and understand this section before operating your machine.

1.1 General Safety

- Only trained and qualified personnel should operate this machine.
- Do not bypass any safety systems or operate the machine with guards removed.
- Always wear appropriate Personal Protective Equipment (PPE) including:
    - Safety glasses or face shield
    - Hearing protection
    - Dust mask or respirator when cutting materials that generate fine dust
- Tie back long hair, remove jewelry, and avoid loose clothing.
- Keep children, visitors, and untrained personnel away from the work area.

1.2 Electrical Safety

- The PERFORMANCE Series requires **220V, Single Phase, 10A** power with proper grounding.
- Do not use adapters or modify the supplied plug.
- Only qualified electricians should perform wiring changes.
- Inspect all cords regularly for damage and replace if necessary.
- Avoid using extension cords. If unavoidable, use a heavy-duty, grounded cord no longer than 10 feet.

1.3 Workspace Safety

- Ensure the floor can support the machine's weight and workpieces.
- Keep the area clean, dry, and free of obstacles.
- Avoid placing materials on or leaning against the gantry or rails.
- Properly secure dust collection hoses to avoid drag on the gantry.
- Ensure adequate clearance around the machine for safe material handling.

1.4 Operational Safety

- Never leave the machine unattended while running a program.
- Always be ready to activate the Emergency Stop button.
- Ensure all workpieces are properly clamped before starting.
- Avoid touching moving parts, especially the spindle and cutting tools.
- Let tools cool before handling after use.
- Regularly inspect bits and collets for wear or damage.

SECTION 2: E-STOP & LOCKOUT PROCEDURE

2.1 Emergency Stop (E-Stop) Function

Your PERFORMANCE Series is equipped with an Emergency Stop Button located on the back panel of your machine, with an additional E-Stop available on the iCNC Controller for quick access. Use this button to immediately stop all machine motion and spindle operation in the event of unsafe conditions or unexpected behaviour.

How to Activate the Emergency Stop

1. Press the Red Emergency Stop Button firmly *(this will immediately cut power to the spindle and pause all motion).*
2. Assess the situation to ensure no one is at risk and that the machine is safe to restart.

How to Reset After Emergency Stop

1. Twist the Emergency Stop Button clockwise to release it.
2. Power on machine and perform Homing sequence.

2.2 Lockout Procedure

To prevent unauthorized or accidental operation—especially in schools or shared workspaces—the Emergency Stop Button can be locked out with a standard padlock.

How to Lock Out the Machine

1. Press the Emergency Stop Button to engage it.
2. Insert a padlock through the designated hole in the button.
3. Secure the lock and remove the key, storing it in a safe location.

Note: Only authorized personnel should have access to the lockout key.

Locking out the machine ensures that it cannot be restarted until the lock is removed, adding an extra layer of safety in environments with multiple users.

SECTION 3: MACHINE SPECIFICATIONS

The PERFORMANCE Series is built for heavy-duty, precision CNC work. Below are the core specifications for all Performance Series models. Specific details may vary slightly depending on model number and spindle configuration.

	PERFORMANCE 6	PERFORMANCE 8	PERFORMANCE 8ATC	PERFORMANCE 16	PERFORMANCE 16ATC
X-Axis Travel	24" (610mm)	24" (610mm)	24" (610mm)	48" (1220mm)	48" (1220mm)
Y-Axis Travel	35.82" (910mm)	47.63" (1210mm)	47.63" (1210mm)	48" (1220mm)	48" (1220mm)
Z-Axis Travel	5.9" (150mm)	5.9" (150mm)	5.9" (150mm)	7.87" (200mm)	7.87" (200mm)
Spindle Type	3HP Water Cooled	3HP Water Cooled	3HP ATC Water Cooled	3HP Water Cooled	3HP ATC Water Cooled
Spindle Configuration	ER20 (1/4" & 1/2")	ER20 (1/4" & 1/2")	ISO20 ATC (1/4" & 1/2")	ER20 (1/4" & 1/2")	ISO20 ATC (1/4" & 1/2")
Controller	iCNC (15.6" Screen)	iCNC (15.6" Screen)	iCNC (15.6" Screen)	iCNC (15.6" Screen)	iCNC (15.6" Screen)
Rapid Feed Rate	300ipm (5m/min)	300ipm (5m/min)	300ipm (5m/min)	300ipm (5m/min)	300ipm (5m/min)
Resolution	± 0.00393" (0.10mm)	± 0.00393" (0.10mm)	± 0.00393" (0.10mm)	± 0.00393" (0.10mm)	± 0.00393" (0.10mm)
Power Requirements	220V, 50-60Hz, 10A, 1-Phase	220V, 50-60Hz, 10A, 1-Phase	220V, 50-60Hz, 10A, 1-Phase	220V, 50-60Hz, 10A, 1-Phase	220V, 50-60Hz, 10A, 1-Phase
Machine Base	Welded Steel	Welded Steel	Welded Steel	Welded Steel	Welded Steel
Working Table	High Rigidity Aluminum Extrusion	High Rigidity Aluminum Extrusion	High Rigidity Aluminum Extrusion	High Rigidity Aluminum Extrusion	High Rigidity Aluminum Extrusion
Gantry Bridge	High Rigidity Aluminum Extrusion	High Rigidity Aluminum Extrusion	High Rigidity Aluminum Extrusion	High Rigidity Aluminum Extrusion	High Rigidity Aluminum Extrusion
Gantry Supports	Aluminum Alloy Gravity Cast	Aluminum Alloy Gravity Cast	Aluminum Alloy Gravity Cast	Aluminum Alloy Gravity Cast	Aluminum Alloy Gravity Cast
Machine Dimensions	51.18"L x 37.36"W x 30.27"H (1300mm x 950mm x 770mm)	62.99"L x 37.36"W x 30.27"H (1600mm x 950mm x 770mm)	68.9"L x 37.36"W x 30.27"H (1750mm x 950mm x 770mm)	64.7"L x 62.1"W x 59.8"H (1643mm x 1577mm x 1518mm)	69.1"L x 62.1"W x 59.8"H (1755mm x 1577mm x 1518mm)
Machine Weight	317.7 lbs (144.1 kgs)	349.9 lbs (158.7 kgs)	375.7 lbs (170.4 kgs)		

SECTION 4: GLOSSARY OF TERMS

Term	Definition
CNC	Computer Numerical Control – the automation of machine tools via a computer executing pre-programmed sequences of commands.
G-Code	The programming language used to control CNC machines, defining toolpaths, movements, and operations.
Toolpath	The route or path a tool follows to cut or engrave a part.
Spindle	The rotating component that holds and spins the cutting tool.
Workpiece	The material being machined.
Fixture	A device used to securely hold the workpiece in place during machining.
Z-Axis	The vertical axis in a 3D coordinate system, typically representing up and down movement.
X-Axis	The horizontal axis (left to right movement on most machines).

Y-Axis	The depth axis (front to back movement on most machines).
Router Bit	A cutting tool used in CNC routing, typically for woodworking.
Feed Rate	The speed at which the cutting tool moves through the material, typically in inches or mm per minute.
Plunge Rate	The speed at which the tool lowers into the material.
RPM	Revolutions Per Minute – how fast the spindle or cutting tool rotates.
Step-Over	The horizontal distance the tool moves over between passes.
Pass Depth	The maximum depth the tool will cut in a single pass.
Home Position	The machine's reference point, often set at the start of a job (0,0,0).
Origin	The starting coordinate for the toolpath, often set by the operator on the workpiece.
Zeroing	The process of setting the machine's tool to the origin point.
Post Processor	A software component that translates CAM toolpaths into G-code specific to a CNC machine or controller.
CAM	Computer-Aided Manufacturing – software used to create toolpaths from CAD designs.
CAD	Computer-Aided Design – software used to create precise drawings and models for manufacturing.
Stepper Motor	A type of motor commonly used in CNC machines that moves in fixed steps for precise positioning.
Controller	The hardware and software interface that interprets G-code and drives machine movement.

SECTION 5: SETUP & ASSEMBLY

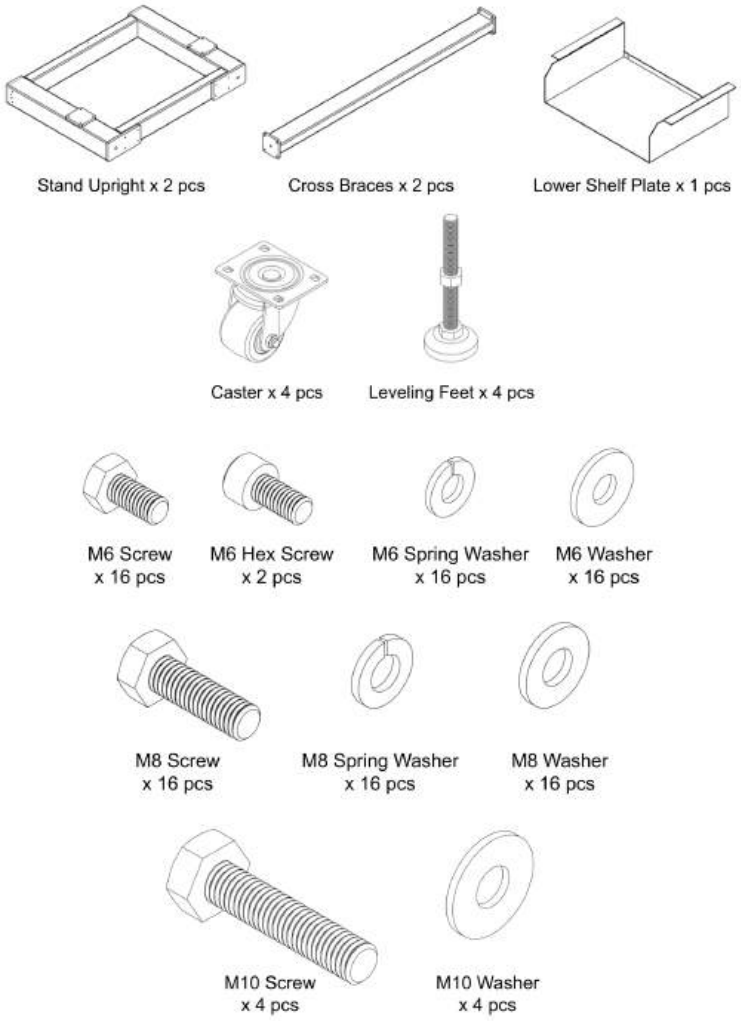
5.1 What's Included

When unboxing your **PERFORMANCE Series**, ensure you have the following components:

- PERFORMANCE Series CNC Router
  (Pre-Assembled, Z-Axis Motor Packed Separately)
- iCNC Controller (Tablet)
- Controller Cable
- 3HP Liquid-Cooled Spindle (Pre-installed)
- ER-20 Collets (1/4" and 1/2")
- Tool Touch-Off Puck
- Collet Wrenches (2)

5.2 Stand Assembly (If Applicable)

Stand Components (If Purchased):

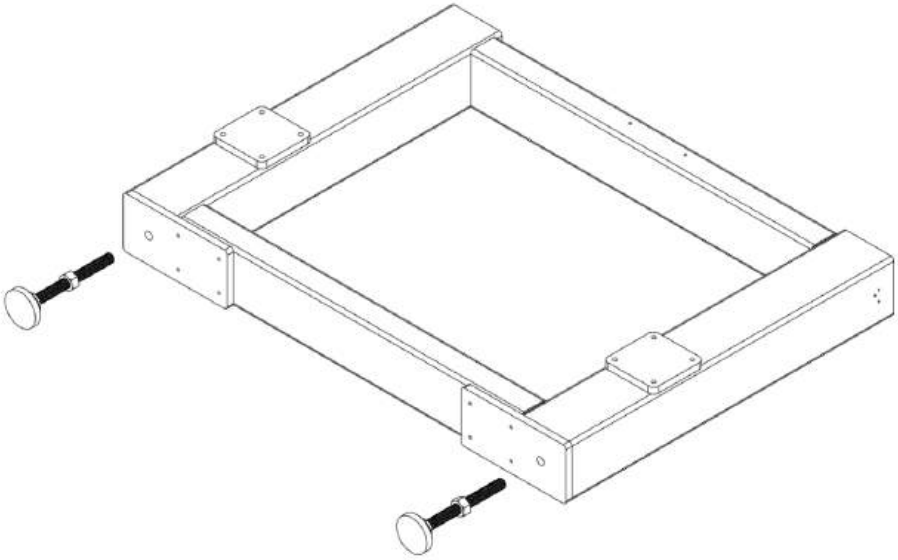


Tools Required (Not Included):

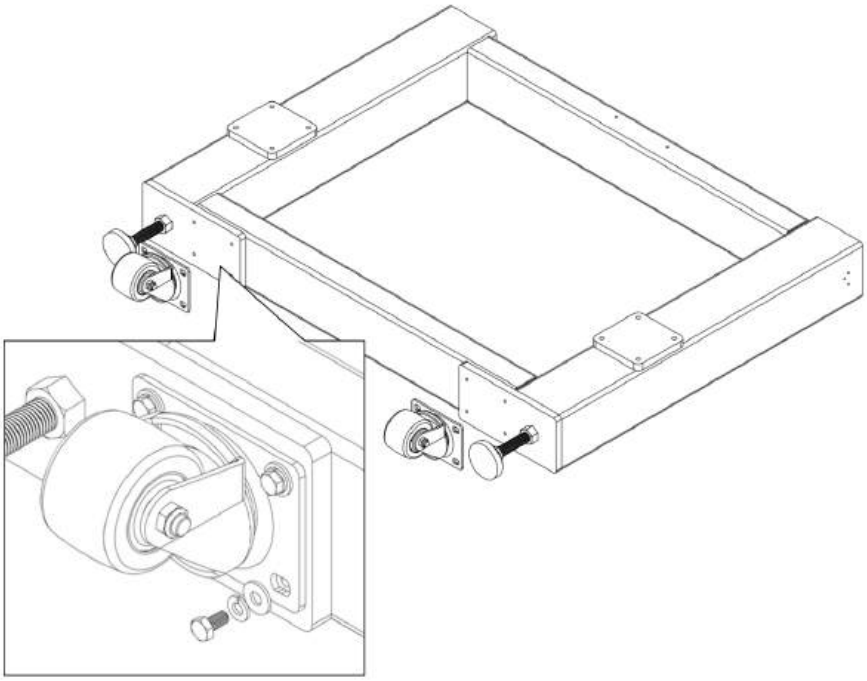
- Metric Allen Wrenches (2mm–5mm)
- Metric Socket Set (10mm–17mm)
- Phillips Screwdriver

Note: Do not discard packaging until assembly is complete. Inspect all parts before disposing of shipping materials.

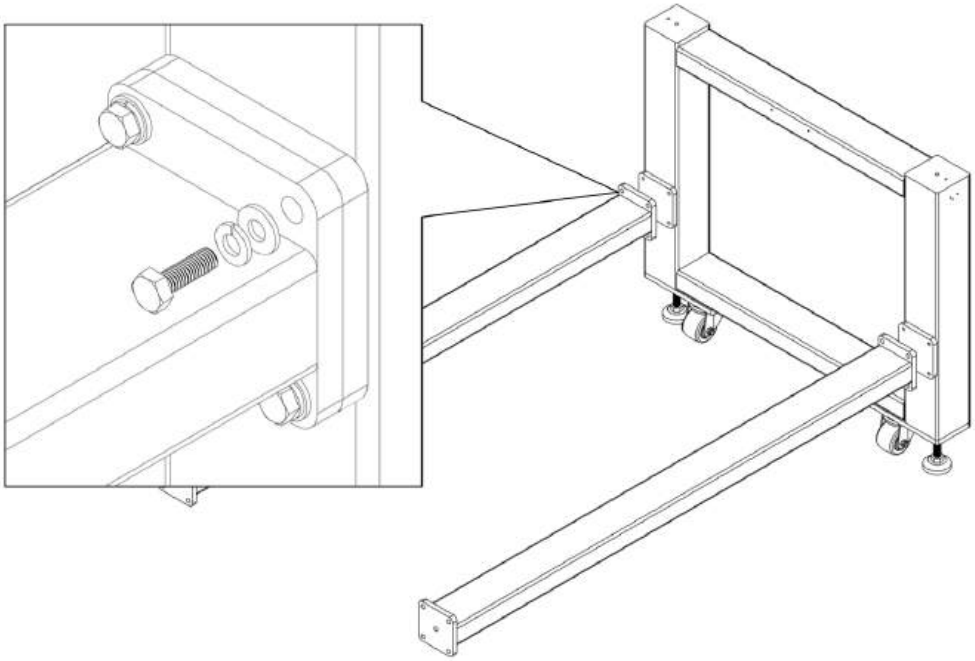
1. **Levelling Feet Installation**
   Screw the Levelling Feet into the bottom of the Stand Upright posts.



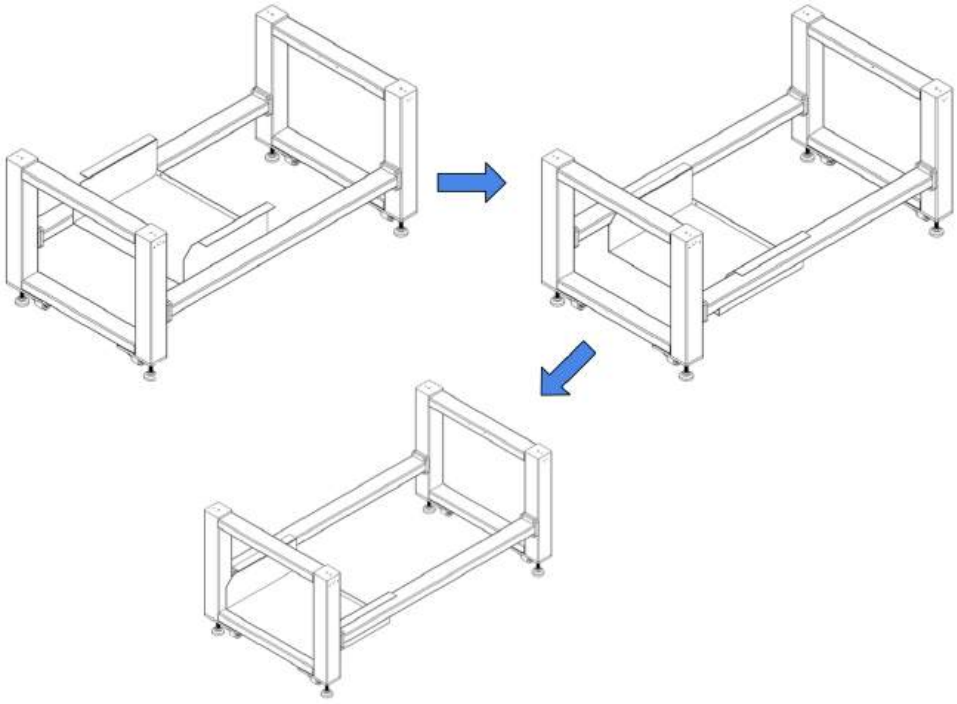
2. **Caster Installation**
   Screw the Casters into the bottom of the Stand Upright, insert M6 screws, along with M6 spring washers and M6 nuts.



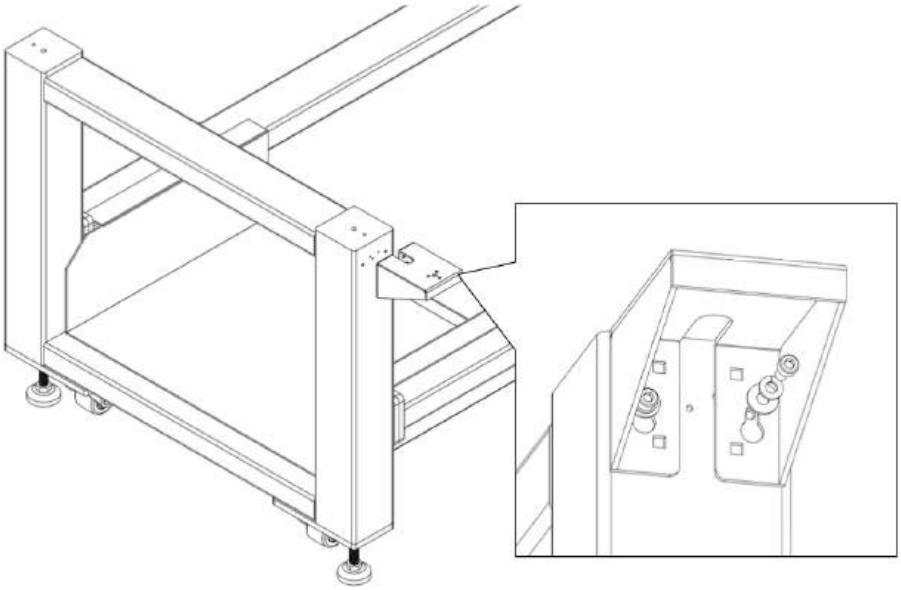
3. **Cross Braces Assembly**
   Connect Cross Braces to the Stand Upright posts using M8 screws, along with M8 spring washers and M8 washers.



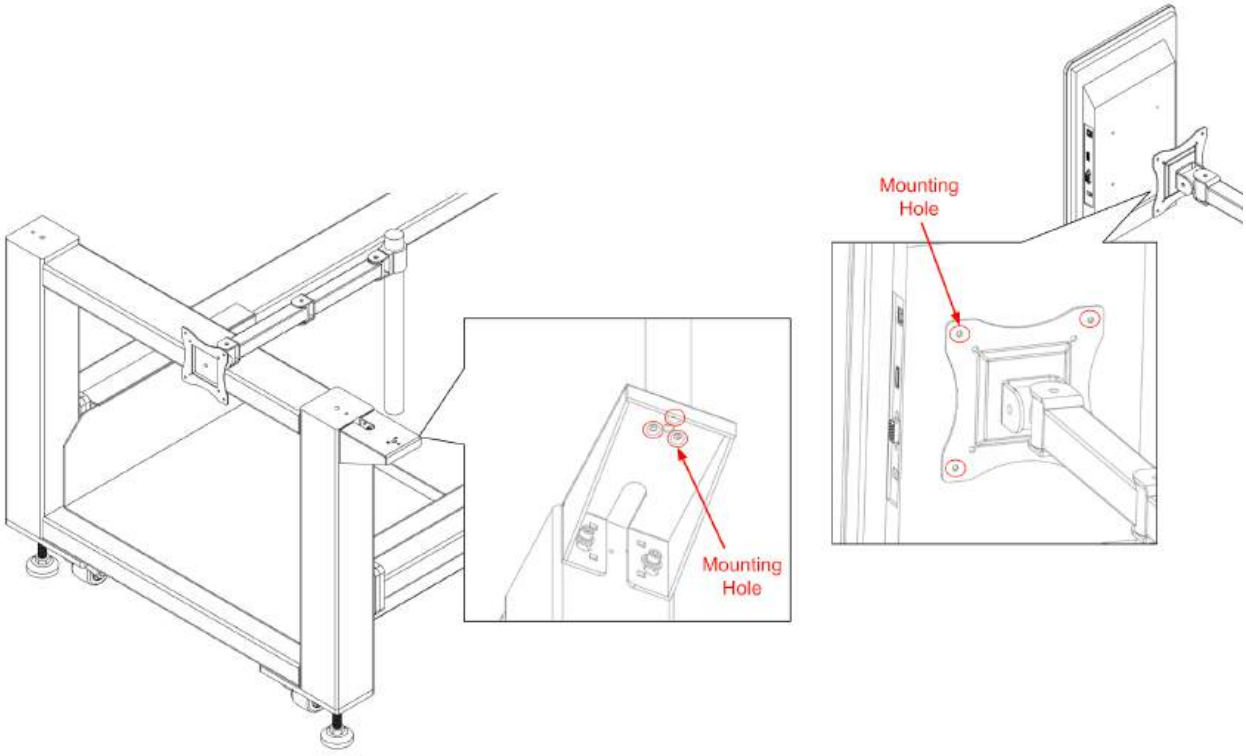
4. **Lower Shelf Plate Installation**
   Insert the Lower Shelf Plate between the two horizontal cross braces as shown below. Push the plate forward until it can no longer move.



5. **Monitor Mounting Plate Assembly**
   Attach the Mounting Plate to the stand using M6 hex screws, along with M6 spring washers and M6 washers to secure it.



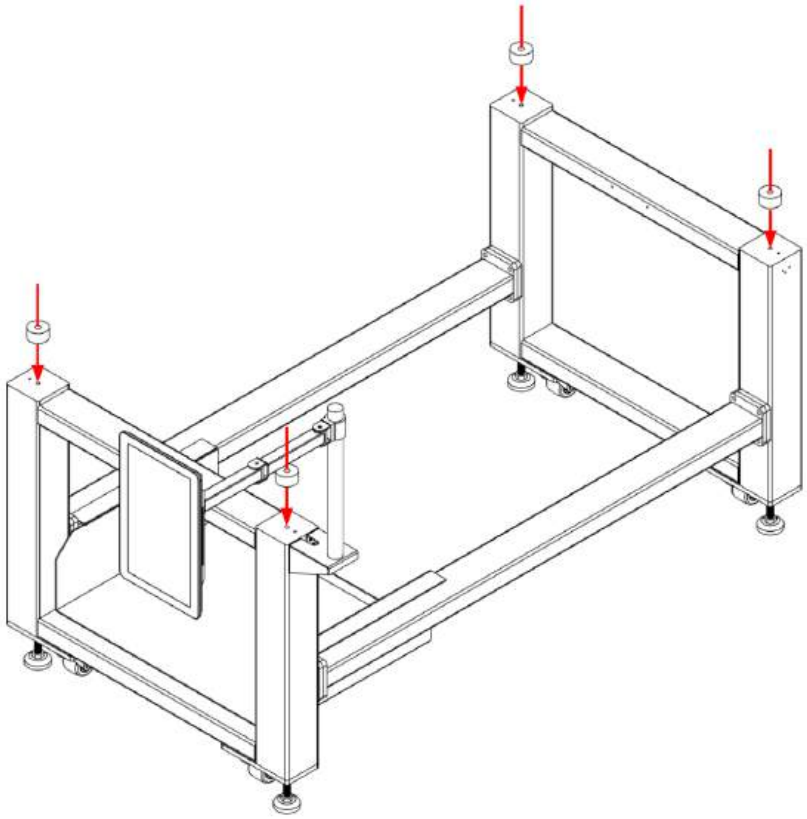
6. **Monitor and Monitor Arm Installation**
   Attach the Monitor Arm to the mounting plate. For Monitor Arm assembly assistance, please refer to **this online manual**.



5.3 Mounting the Machine

Caution: *Do not lift the machine by the gantry. Machine should only be lifted using a forklift or several people, to carefully and safely position the machine on the stand.*

1. **Machine Positioning**
   Locate the M10 holes on the top of the stand. Place the Rubber Pads, then position the machine on top and fasten it with M10 screws, along with M10 washers. Use a level on the spoilboard and adjust levelling feet as needed.

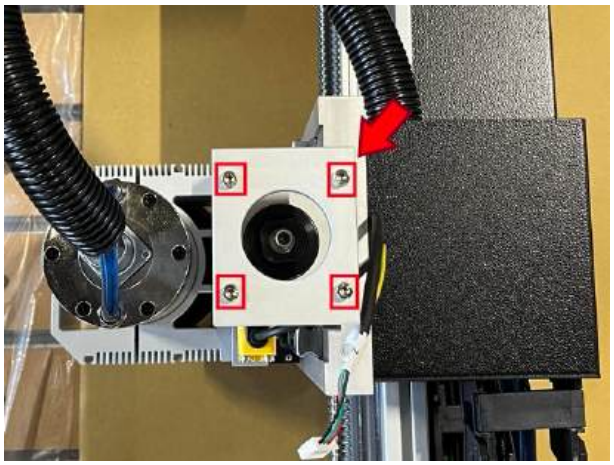


5.4 Final Electrical & Mechanical Setup

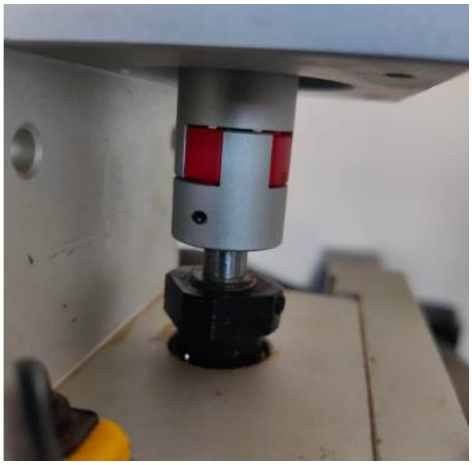
1. **Controller Installation:**
   - Place the controller box on the shelf or inside the stand toolbox.
   - Route cables through openings and connect to the machine.
2. **Connect Handheld Controller:**
   - Plug controller cable into the front of the controller box.

3. Install Z-Axis Motor:

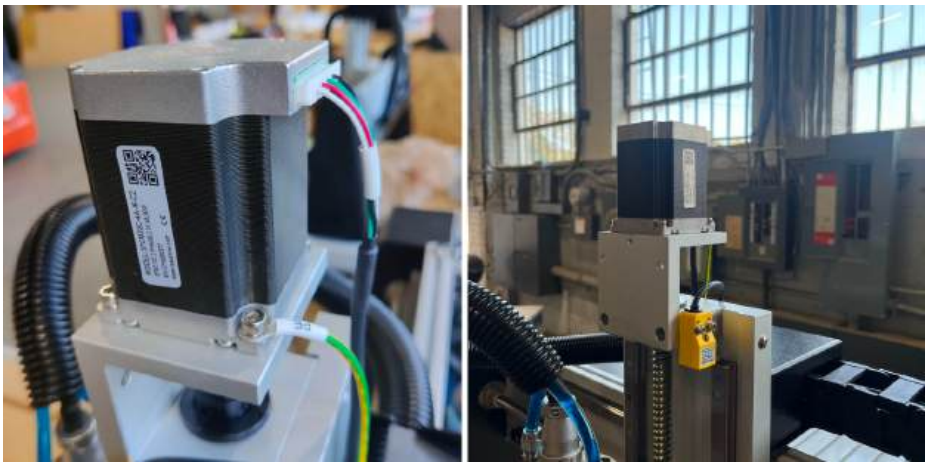
- Unfasten the four screws with lock washer that are positioned on the top of the Z-Axis frame.



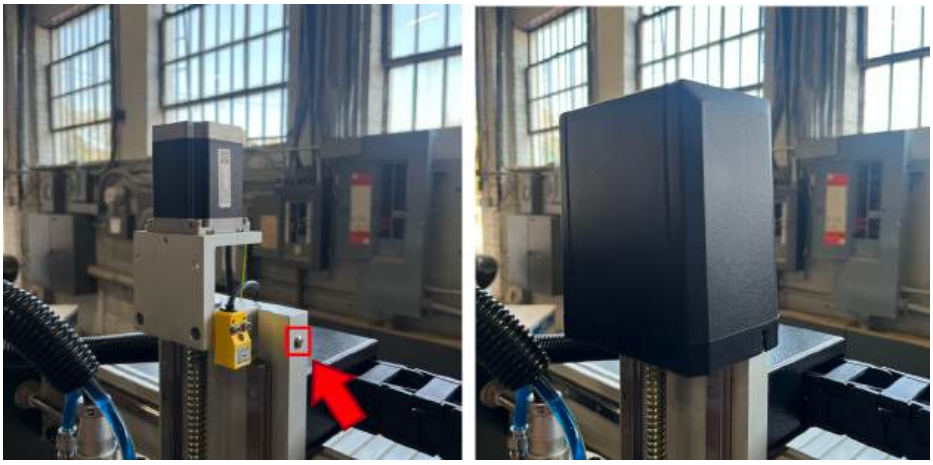
- Mount the couplers of the Z-Axis Stepper Motor onto the Z-Axis Screw. Next, fully tighten the coupler screws.



- Fasten the Stepper Motor on the top of the Z-Axis frame. Then connect the ground wire onto any of the four screws placements and Z wire to the Stepper Motor.



- Unscrew the two screws, one on each side. Then, place the cover on top and fasten the same to two screws.

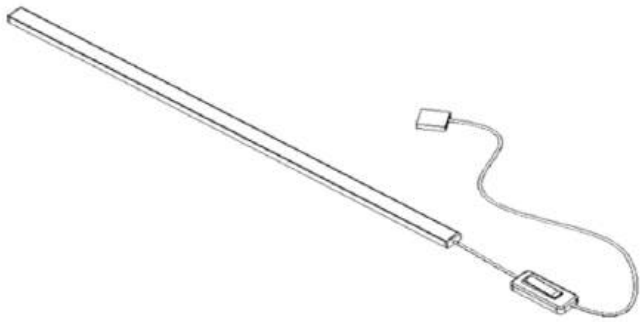


4. **Inspect and Verify Connections:**
   - Ensure all cables are securely connected.
   - Confirm that no wires are pinched or stressed.

5.5 LED Installation (If Applicable)

5.5.1 Kit Components

1. LED Tube (Magnetic)
2. Iron Sheets

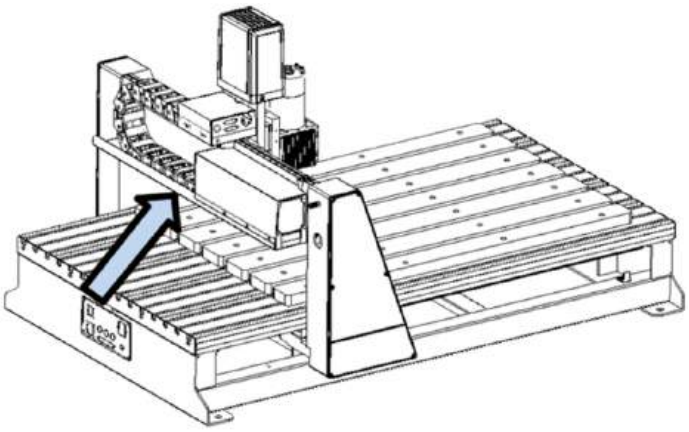


5.5.2 Safety Notice

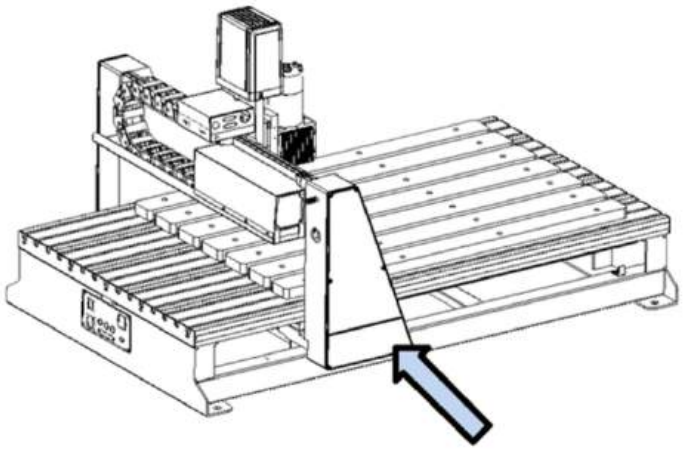
- Ensure the **machine is powered off** and **unplugged** before installation.
- Do not cut or modify the LED strip unless the product instructions specify cutting points.
- Keep wiring **clear of moving parts** to prevent damage during machine operation.

5.5.3 Installation Steps

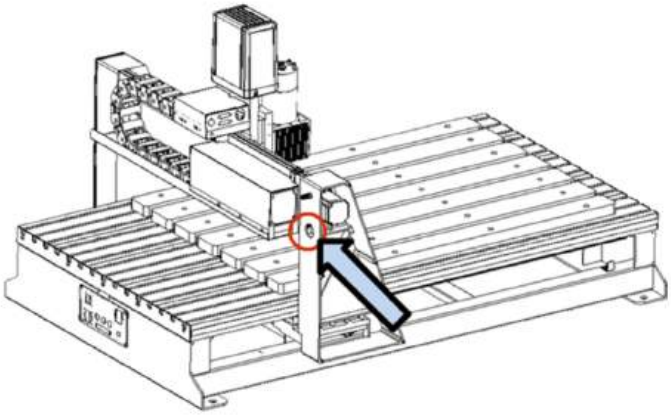
1. Determine your preferred location. LED Tube is magnetic and can be attached on the sheet metal. Two Iron Sheets with double-sided tape can be used when a magnetic location is not available.



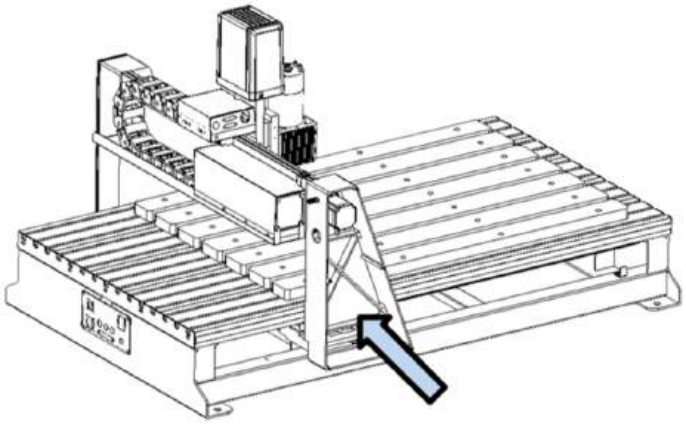
2. Using a No. 2.5 Hex Wrench, remove the left-side cover, and find the LED connector.



3. Run LED Tube cable into the location, as shown below.



4. Connect LED Tube cable to the LED connector, and turn on the switch.



SECTION 6: ELECTRICAL CONNECTIONS

⚠️ **WARNING:**
All electrical connections must comply with local electrical codes. Installation should be performed by a qualified electrician if you are unsure of your power source or wiring requirements. Improper installation can result in equipment damage, fire, or serious injury.

6.1 Power Requirements

- **Voltage:** 220V AC
- **Amperage:** 10A
- **Phase:** Single Phase
- **Plug Type:** NEMA 6-20 (Pre-installed)

Important: This machine requires a dedicated 220V circuit. Do not use power bars, adapters, or modify the supplied plug.

6.2 Grounding Instructions

Proper grounding is essential for safe operation.

- This machine is equipped with a **grounded power cord** and **NEMA 6-20 plug**.
- Ensure the outlet is properly installed and grounded in compliance with **national and local codes**.
- Never remove the ground pin or use ungrounded adapters.

If you are unsure about grounding or circuit requirements, **contact a licensed electrician**.

6.3 Extension Cords

⚠️ **Warning:** Extension cords are not recommended. If absolutely necessary:

- Use **only** a **10-gauge or heavier, grounded, 3-conductor cord**.

- Limit length to **10 feet (3 meters)** or less.
- Inspect regularly for damage.
- Avoid creating a trip hazard.

6.4 Cable Management

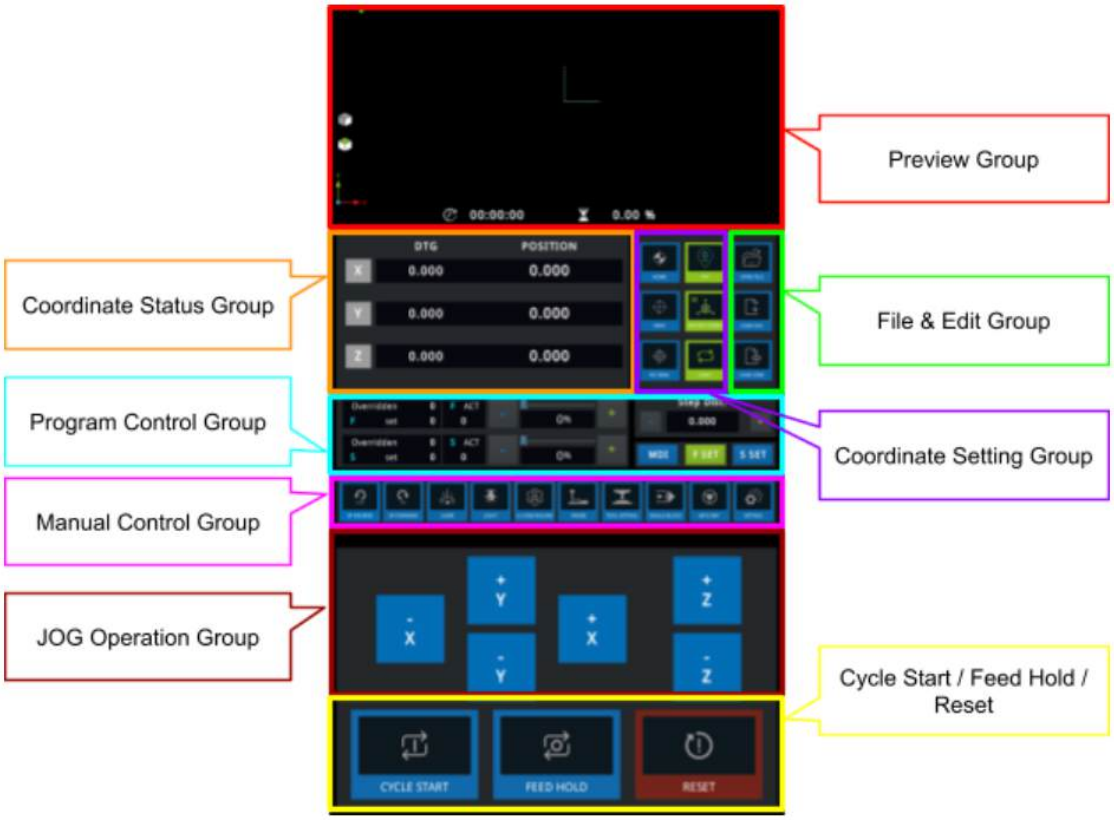
- Route all cables safely to **prevent damage or tripping**.
- Do not place heavy objects on power cords.
- Ensure cables are **not stretched, pinched, or exposed to heat**.

SECTION 7: CONTROLLER OVERVIEW (iCNC)

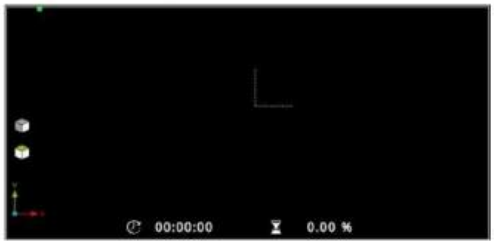
7.1 Introduction to the iCNC Controller

Your Performance Series CNC comes equipped with the **iCNC Controller**, designed for simple operation with professional-level features. The **handheld controller** provides full control over machine movement, file management, and job execution.

7.2 Controller Layout

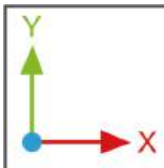
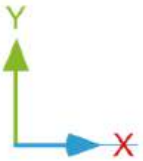
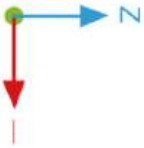
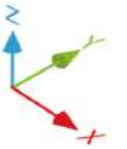


7.2.1 Preview Group Icons

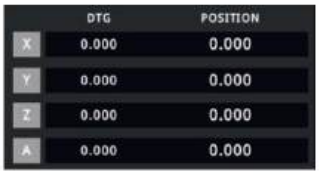


Preview Group

Icon	Name	Function
	Run	Machine Status: Processing
	Standby	Machine Status: Standby
	Alarm	Machine Status: Alarm Alert
	XY & XZ Complex Plane XY & XZ	Rotating about the Y-axis as the fixed axis, with the viewing angle of X and Z set at a 45° angle.
	XY Plane	Viewed from the Z-axis direction overlooking the X and Y planes. This is also the initial perspective when loading the G-Code file.
	XZ Plane	Overlooking the X and Z planes from the Y-axis direction.
	YZ Plane	Overlooking the Y and Z planes from the Z-axis direction.

	Rotation Of Coordinate Axis System	Coordinate System for Path View
	Rotation Of Coordinate Axis System	Coordinate System for Path View
	Rotation Of Coordinate Axis System	Coordinate System for Path View
	Rotation Of Coordinate Axis System	Coordinate System for Path View
	Rotation Of Coordinate Axis System	Coordinate System for Path View
	Processing Time	Processed Time
	Estimated Processing Time	Estimated Processing Time

7.2.2 Coordinate Status Group Icons



Coordinate Status Group

Icon	Name	Function
X	X-Axis	Axis Display Enabled
Y	Y-Axis	Axis Display Enabled
Z	Z-Axis	Axis Display Enabled
A	A-Axis	Axis Display Enabled

7.2.3 Coordinate & Setting Group Icons

Coordinate & Setting Group

Icon	Name	Function
	Home	Homing all axes
	Zero	Move to the work origin
	Set Zero	Set working origin (The coordinate values will be zero.)
	G54	Coordinate System Selection - G54
	G55	Coordinate System Selection - G55
	G56	Coordinate System Selection - G56
	G57	Coordinate System Selection - G57
	G58	Coordinate System Selection - G58
	G59	Coordinate System Selection - G59

	Working Coordinate	Switch to Machine Coordinate
	Machine Coordinate	Switch to Working Coordinate
	Cont. Mode	Switch to Continuous Mode
	Step Mode	Switch to Step Mode
	Distance	Custom Distance

7.2.4 File & Edit Group Icons

File & Edit Group

Icon	Name	Function
	Open	Open the File
	Load File	Load the File
	Copy	Copy
	Delete	Delete
	Rename	Rename
	Select All	Select All
	Cancel All	Cancel All
	USB	Read USB Drive
	Edit File	Open File Editing Page

	New File	Create New File
	Save	Save File
	Add	Insert a line in G-code editing.
	Edit	Edit G-code
	Delete	Delete one line in G-code
	Find	Search Query
	Replace	Searching for all target words within the G-code, replace them with the required words.
	Transfer	Transfer the file to the controller's internal memory
	USB	Read USB Drive
	File Explore	File Explore
	Home	Back to Home
	Code View	Code View

7.2.5 Program Control Group Icons

Program Control Group

Icon	Name	Function
Overridden F set	Overridden FSet	Set the Feed Rate
Overridden S set	Overridden SSet	Set the Spindle Speed
F ACT	F Active	Current Feed Rate
S ACT	S Active	Current Spindle Speed
+	Increase Magnification	Increase magnification by pressing the "+" button.
−	Decrease Magnification	Decrease magnification by pressing the "-" button.
100%	Increase or Decrease Feed Magnification	Increase or Decrease Feed Magnification
200%	Increase or Decrease Spindle Magnification	Increase or Decrease Spindle Speed Magnification
	Step Distance	Select step distance through the "+" and "-" buttons.
+	Increase Step Distance	Increase step distance by pressing the "+" button.
−	Decrease Step Distance	Decrease step distance by pressing the "-" button.
MDI	MDI	Input desired G-Code commands
F SET	F Set	Setting manual mode Feed Rate
S SET	S Set	Setting manual mode Spindle Speed

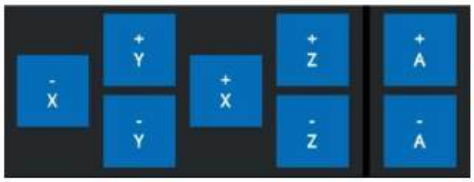
7.2.6 Manual Control Group Icons

Manual Control Group

Icon	Name	Function
	SP Reverse	Spindle Reverse The function is only available in the metalworking series.
	SP Forward	Spindle Forward
	Manual	Manual Operation Functions List
		
	Laser	Power On/Off Laser
	Vacuum	Power On/Off Vacuum
	Dust Shoe	Power On/Off Dust Show
	Spray	Spray Type Dispensing of Metal Cutting Fluid
	G-Code Resume	Resume machining from the last program interruption point.
	Light	Power On/Off Light
	Tool Change	**Automatic Mode**: Each click advances the spindle tool to the next in sequence.
		Manual Mode: Click to extend and open the tool carousel. One click clockwise advances tools; press and hold for 3 seconds to retract. Current tool number is displayed on the icon.
		
	Move In	Insertion of Tool Magazine
	Move Out	Ejection of Tool Magazine
	Tool Change	Select the tool position, then click to change the tool.
	UNCL Tool	Press and hold for 1 second to release the blade handle.
	Correct T No.	Assign the tool on the spindle to the target tool position. After selecting this position, press and hold for 1 second, then release. The spindle will be set to the target tool position.
	Probe	Click to execute the measurement mode set in the Probe (there will be a confirmation window). Setting the workpiece plane Z0.
		
	Chip Conv. Up	Conveyor Forward The function is only available in the metalworking series.
	Chip Conv. Down	Conveyor Reverse The function is only available in the metalworking series.

	Vacuum	Power On/Off Vacuum
	Column	Power On/Off Cutting Fluid
	Spray	Power On/Off Blow & Spray
	Auto Zero	Measure the tool length at the current position.
	Single Block	Click once to execute a line of G-Code in the program file.
	MPG	Power On/Off Handwheel Simulation Mode
	Setup	Machine Basic Functions Setting

7.2.7 JOG Operation Group & Machining Icons



JOG Operation Group

Button Icon	Name	Function
+ X	X Positive Button	"+" and "–" control axial JOG movement.
– X	X Negative Button	"+" and "–" control axial JOG movement.
+ Y	Y Positive Button	"+" and "–" control axial JOG movement.
– Y	Y Negative Button	"+" and "–" control axial JOG movement.
+ Z	Z Positive Button	"+" and "–" control axial JOG movement.
– Z	Z Negative Button	"+" and "–" control axial JOG movement.
+ A	A Positive Button	"+" and "–" control axial JOG movement.
– A	A Negative Button	"+" and "–" control axial JOG movement.

Cycle Start, Feed Hold, Reset

Button Icon	Name	Function
	Cycle Start	Execute Machining File
	Feed Hold	In the course of program execution, the temporary pause of the feed function.
	Reset	**Off State**: Clicking will trigger an alarm and stop the machine. **On State**: Clicking will reset the alarm and clear errors.

7.2.8 Setup Icons

Setup

Button Icon	Name	Function
	Home	Back to Home
	Account	Account Mode Setting (The password is necessary.)
	Warning	Warning Message Report
	Alarm	Alarm Message Report
	Advanced	Advanced Mode Setting (The password is necessary.)
	Cal/TP	Calibration of Touch Screen
	System Update	System Upgrade and Update Procedures
	Next	Next Page
	Previous	Previous Page

7.3 Starting Up & Homing the Machine

1. Power on the controller and machine.
2. Release the Emergency Stop Button if engaged.
3. Press  to move the machine to Home position

7.4 Setting Work Zero (Origin)

X and Y Zero:

1. Move the spindle to your desired start position on the material.
2. Press  to save.

Z Zero (Using Touch-Off Puck):

1. Place the **touch-off puck** on the material.
2. Move the spindle above it.
3. Press  to automatically set Z zero.

Z Zero (Using Paper Method)

1. Place a piece of paper on the workpiece.
2. Adjust the axis travel magnification to 10% and lower the Z-Axis spindle gradually.
3. When approaching switch the Continuous Mode 
4. Set the distance to 0.01mm~0.01mm 

5. Operate Z-Axis  downward until the tool touches the paper (there is a slight resistance feedback when pulling the paper.
6. Click the Z-Axis until it is highlighted in yellow, press Automatic Zero 
7. Click Set Zero.  And the Z-Axis in the coordinate box will reset to 0.

7.5 Loading and Running a Job

1. Insert a **USB drive** with your **.mmg** toolpath file.
2. Press   to choose your file, then select  to store internally.
3. Once the file is transferred, press  and  to load your file.
4. Allow machine simulation to load and confirm that all parameters are correct.
5. Press  to begin machining operation.

7.6 Adjusting Machining, Rapid, and Feed Speed

Feed Rate (F-Value) Adjustment

Press the + and - to adjust the feed magnification, corresponding to the changes in the F-Value set by your GCODE. Recommended machining speed adjustment (cutting speed): 2000-3500 mm/min.

Spindle Speed (S-Value) Adjustment

Press the + and - to adjust the feed magnification, corresponding to the changes in the S-Value set by your GCODE. Recommended machining speed adjustment (cutting speed):

- Woodworking: 18,000-24,000 RPM
- Metalworking: 24,000 RPM

During machining, choose CODE VIEW  to view the real-time processing status in G-Code.

- Real-time parameter: S ACT / F ACT
- Adjustment of Spindle Speed: S+ to increase, S- to decrease.
- Adjustment of Feed Rate: F+ to increase, F- to decrease.

7.7 Machining

1. Ensure that the machine work table is clear, and two away any relevant tools.

2. Confirm that the workpiece is securely fastened.

3. Activate your dust collection system (if applicable).

4. Select your machining file, and begin your machining process.

- On initial projects, it is recommended to place your fingers on RESET allowing for immediate stop in case of emergency.

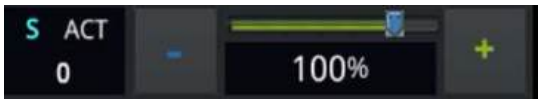
- When encountering situations during machining, press FEED HOLD to pause the operation.

- When encountering situations during machining, press RESET to reset the operation.

- In case of any issues during the machining process, press the E-Stop button.

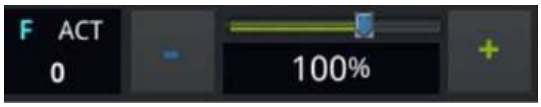
Real-time Adjustment of Spindle Speed during processing:

Use the S ACT proportional slider to increase or decrease the spindle speed.



Real-time Adjustment of Feed Rate during processing:

Use the F ACT proportional slider to increase or decrease the feed speed.



SECTION 8: SPOILBOARD SURFACING

Why Surfacing Matters

Your machine comes with a pre-installed **MDF spoilboard** mounted to the aluminum T-slot table. While the MDF board is machined flat at the factory, slight variations can occur during shipping, installation, or environmental changes (humidity, temperature).

Surfacing your spoilboard ensures:

- A **flat reference plane** for consistent cutting depths.
- Improved accuracy when cutting through materials.
- Extended spoilboard lifespan by resetting the surface.

Recommended Surfacing Tool

Use a **large diameter surfacing bit (e.g., 1.5" or 2")** for best results.
Ensure the tool is sharp and properly secured in the collet.

Creating a Surfacing Toolpath

You can create a surfacing toolpath using software like **VCarve, Aspire, or Carveco**.

Toolpath Parameters Example:

- **Tool**: 1.5" Spoilboard Surfacing Bit
- **Cut Depth**: 0.5mm (0.02") per pass
  (Use multiple passes if needed)
- **Stepover**: 80% of tool diameter
- **Feed Rate**: 150 IPM
- **Spindle Speed**: 18,000 RPM (or as recommended by bit manufacturer)

Note: Ensure the toolpath is slightly **larger than the spoilboard area** to cover the full surface.

Running the Surfacing Toolpath

1. Secure the spoilboard to the machine table if it has been removed.
2. Load the toolpath file onto your USB drive.
3. Set XY zero to the front-left corner of the spoilboard.
4. Set Z zero to the surface of the spoilboard using the touch-off puck.
5. Run the toolpath, monitoring the process at all times.

Spoilboard Maintenance Tip

After surfacing, check your **hold-down methods (clamps, screws, etc.)** and re-adjust them if necessary.

Repeat surfacing periodically to maintain a flat working surface as needed.

Section 9: iCNC Mobile App User Guide

Step 1: Download and Install the App

1. Download the iCNC App via this link.
   (https://drive.google.com/file/d/1nHr08davbYtTRt7YrKfbtDHOxrbcz64x/view)

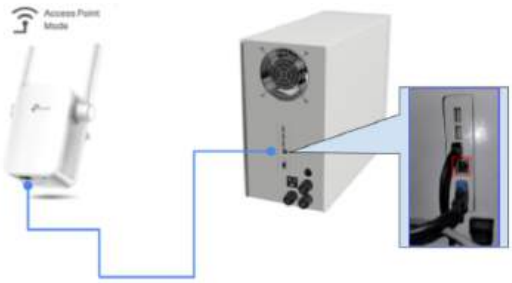
2. The App only supports Android (v10.0 or above) systems currently.

Step 2: Connect the Control Box to the WiFi Router

1. Prepare a WiFi Router with Access Point (AP) mode capability.

2. Set the router to AP Mode following the router's manual.

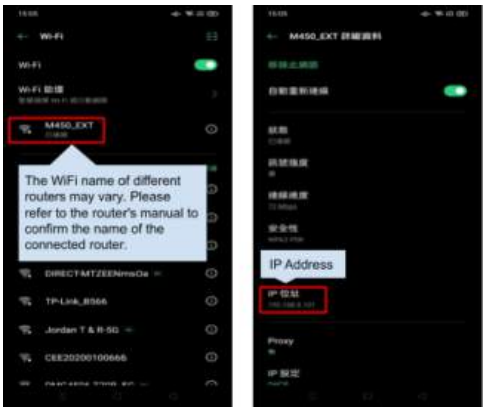
3. Connect the router to the iCNC Control Box using an Ethernet cable.



Step 3: Connect Your Mobile Phone to the WiFi Router

1. Turn on WiFi on your mobile phone and connect to the router.
   (WiFi name will vary; check your router's manual for details.)

2. After connecting, verify the WiFi IP address and return to the iCNC system.



Step 4: Confirm the IP Address in the iCNC System

1. Select **SETTING** on the iCNC controller home page.

2. Confirm the **first three digits** of the IP **match your router's IP**, and ensure the **fourth digit is unique**.

    - Example: Router IP = 192.168.0.101
      Enter: **192.168.0.xxx** where **xxx is not 101**.

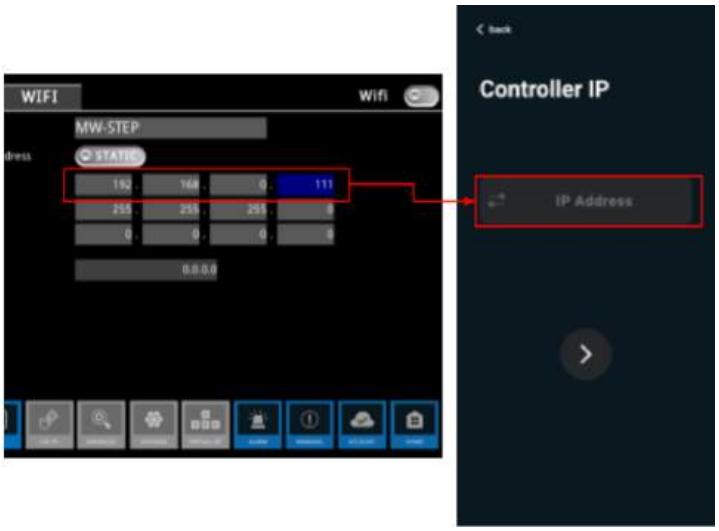
3. **Restart the control box** after confirming the IP address changes.

Step 5: Activate the App

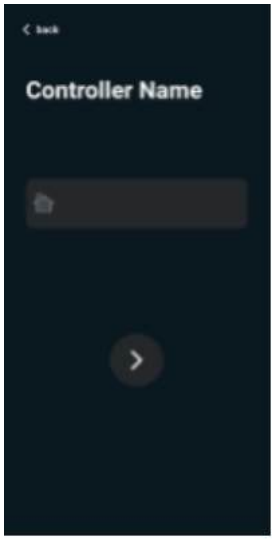
1. Open the iCNC Mobile App.
    - Access the **homepage** and click the **option in the bottom right corner**.

2. Click the **top right corner** option and select **“Add"**.

3. Enter the **IP address** from **Step 4**.



4. **Create a controller name** for reference.



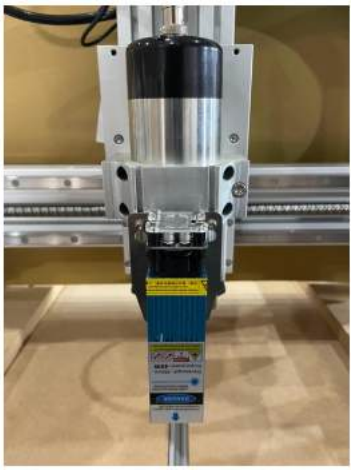
5. Tap **"Start"** to proceed.

6. **Swipe left or right** on the **operation page** to switch between control screens.

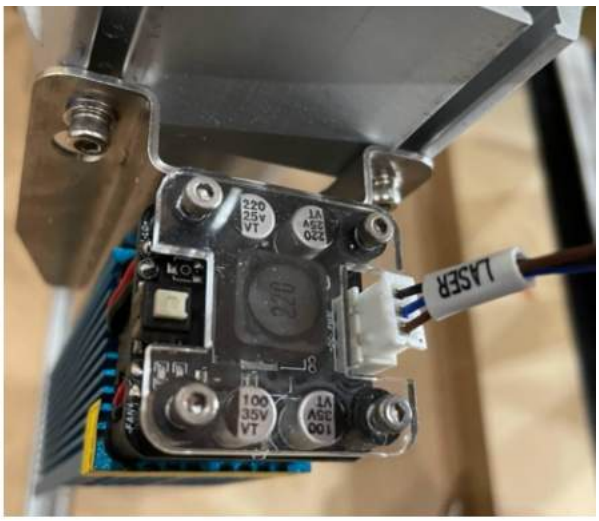
Section 10: Laser Operation

Step 1: Install the Laser

1. Prepare the **laser unit** and **installation screws**.
2. Install the laser unit **at the bottom end of the spindle clamp**.

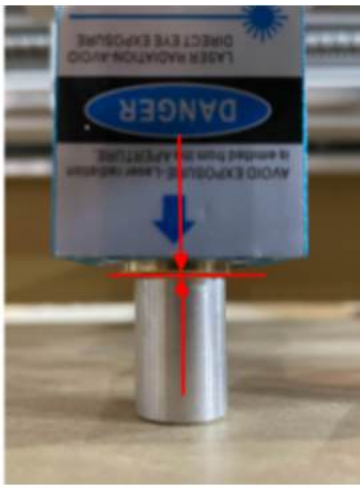


3. Locate the **laser cable** at the rear end of the **Z-axis** and **connect it to the top** of the laser unit.



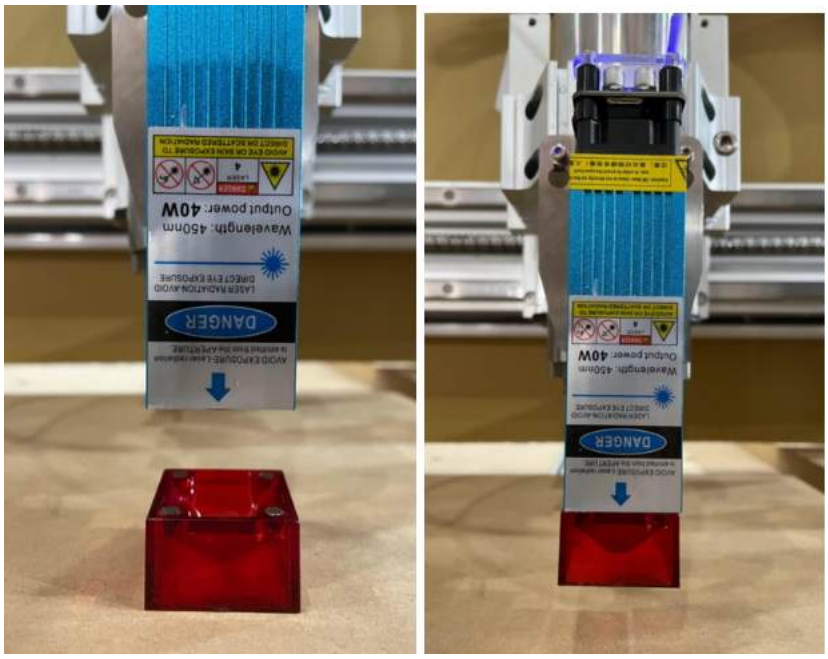
Step 2: Laser Origin Setup

1. Place the **focusing fixture** on the work surface.
2. Lower the **Z-axis** until the **laser head touches the fixture**.



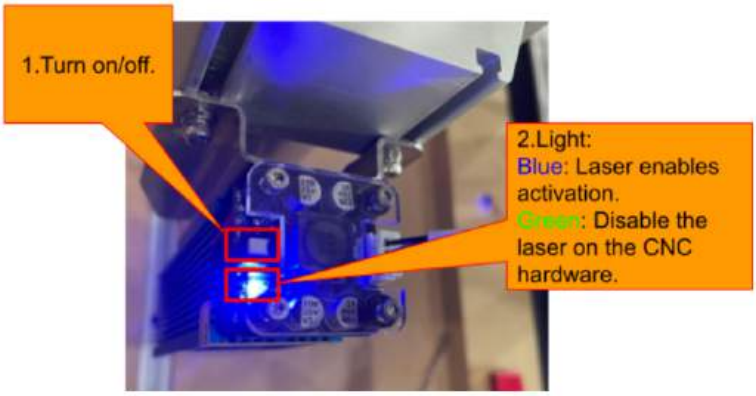
3. Set the **Z-axis working coordinate to 0**.

4. Raise the **Z-axis** and install the **light shield**.



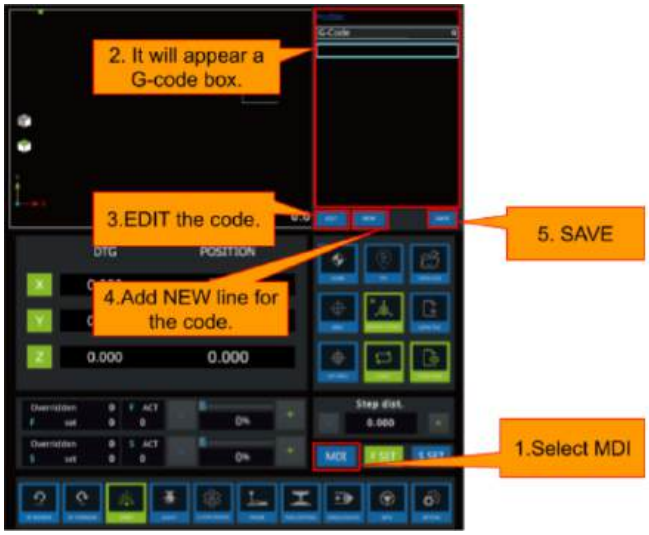
Step 3: Pre-Laser Operation Setup

1. **Turn on the laser** hardware.



2. **Activate the laser** using the **software interface**.

3. **Manually test the laser light** by entering the following G-code in MDI (Manual Data Input) mode.



4. After entering, press **CYCLE START** to test.

G-code Function Explanation:

- **M10** – Activate laser
- **M4 S1~9999** – Set laser power (1–9999 = 0–100% power)
- **G04 Pxxxx** – Pause for specified milliseconds (P = time)
- **M11** – Turn off laser

Step 4: Laser Operation

1. Insert a **USB drive** with your **.mmg** toolpath file.
2. Press   to choose your file, then select  to store internally.
3. Once the file is transferred, press  and  to load your file.
4. Allow machine simulation to load and confirm that all parameters are correct.
5. Press  to begin machining operation.

Laser Test & Reference Data

Laser	Materials	Engraving/ Cutting	Speed (F)	Power (Hz)	Success Count	Dust -proof goggles	Depth (mm)	Time	Focus	Air Pressure (Mpa)	Remarks
Laser Module: Laser 5.5W 	Plywood	Cutting	300mm /min	100%= 9999	1	Y	2mm	N	3mm	0.4	
	Plywood	Cutting	250mm /min	100%= 9999	1	Y	3mm	N	3mm	0.4	
	Plywood	Cutting	200mm /min	100%= 9999	1	Y	4mm	N	3mm	0.4	
	Plywood	Cutting	100mm /min	100%= 9999	1	Y	5mm	N	3mm	0.4	
	Plywood	Cutting	200mm /min	100%= 9999	2	Y	5mm	N	3mm	0.4	
	MDF board	Cutting	100mm /min	100%= 9999	1	Y	3mm	N	3mm	0.4	
	MDF board	Cutting	320mm /min	100%= 9999	2	Y	3mm	N	3mm	0.4	
	Black acrylic plate	Cutting	100mm /min	100%= 9999	1	Y	3mm	N	3mm	0.4	
	Black acrylic plate	Cutting	100mm /min	100%= 9999	3	Y	5mm	N	3mm	0.4	
Laser Module: Laser 10W 	Plywood	Cutting	500mm /min	100%= 9999	1	Y	2mm	N	3mm	0.4	
	Plywood	Cutting	450mm /min	100%= 9999	1	Y	3mm	N	3mm	0.4	
	Plywood	Cutting	400mm /min	100%= 9999	1	Y	4mm	N	3mm	0.4	
	Plywood	Cutting	240mm /min	100%= 9999	1	Y	5mm	N	3mm	0.4	
	MDF board	Cutting	180mm /min	100%= 9999	1	Y	3mm	N	3mm	0.4	
	MDF board	Cutting	120mm /min	100%= 9999	2	Y	3mm	N	3mm	0.4	
	Black acrylic plate	Cutting	120mm /min	100%= 9999	1	Y	3mm	N	3mm	0.4	
	Black acrylic plate	Cutting	120mm /min	100%= 9999	2	Y	5mm	N	3mm	0.4	
	Black acrylic plate	Cutting	50mm/ min	100%= 9999	1	N	7mm	N	3mm	0.4	
	Black acrylic plate	Cutting	500mm /min	100%= 9999	4	Y	3mm	48s	0mm	0.05	
	Black acrylic plate	Cutting	500mm /min	100%= 9999	11	Y	6mm	2min 25s	3mm	0.05	

	Pine board	Cutting	40mm/min	100%=9999	1	Y	10mm	N	3mm	0.4	
	Pine board	Cutting	40mm/min	100%=9999	1	Y	7mm	N	3mm	0.4	
	Pine board	Cutting	40mm/min	100%=9999	1	N	15mm	N	3mm	0.4	
	Pine board	Cutting	4500mm/min	100%=9999	N	Y	7mm	7min	3mm	0.05	
	Pine board	Cutting	1000mm/min	100%=9999	N	N	10mm	6min	3mm	0.05	Slightly not broken in the middle
	Pine board	Cutting	500mm/min	100%=9999	N	N	10mm	1min 53s	0mm	0.05	
	Pine board	Cutting	250mm/min	100%=9999	N	Y	10mm	2min 11s	0mm	0.05	
	Pine board	Cutting	50mm/min	100%=9999	N	Y	10mm	5min 8s	0mm	0.05	Surface unevenness with larger black spots.
	Paulownia board	Cutting	40mm/min	100%=9999	1	N	5mm	N	3mm	0.05	
	Paulownia board	Cutting	500mm/min	100%=9999	23	Y	10mm	4min 10s	3mm	0.05	
	Black acrylic plate	Cutting	500mm/min	100%=9999	10	Y	6mm	2min 09s	0mm	0.05	
	Black acrylic plate	Cutting	100mm/min	100%=9999	3	Y	6mm	1min 55s	0mm	0.05	Width increased by approx. 0.5mm.
	Black acrylic plate	Cutting	50mm/min	100%=9999	1	Y	6mm	1min 54s	0mm	0.05	Width increased by approx. 1mm.
	Black acrylic plate	Cutting	500mm/min	100%=9999	18	Y	9mm	3min 40s	0mm	0.05	
	Pine board	Cutting	200mm/min	100%=9999	1	Y	4.7mm Against the grain	N	3mm	0.4	
	Pine board	Cutting	200mm/min	100%=9999	1	Y	4mm Against the grain	N	0mm	0.4	
	Pine board	Cutting	300mm/min	100%=9999	1	Y	4.7mm With the grain	N	3mm	0.4	
	Pine board	Cutting	300mm/min	100%=9999	1	Y	4.5mm	N	0mm	0.4	

	Paulownia board	Cutting	50mm/min	100%=9999	7	Y	10mm	6min 50s	3mm	0.05	
	Wood core board	Cutting	4500mm/min	100%=9999	N	Y	15mm	2min 50s	3mm	0.05	Not severed in the middle.
	Wood core board	Cutting	1000mm/min	100%=9999	N	Y	15mm	N	3mm	0.05	
	Wood core board	Cutting	4500mm/min	100%=9999	1	Y	15mm	N	0mm	0.05	
	Nameplate	Engraving (CE)	3000mm/min	70%=7000	1	Y	0.1mm	N	3mm	0	

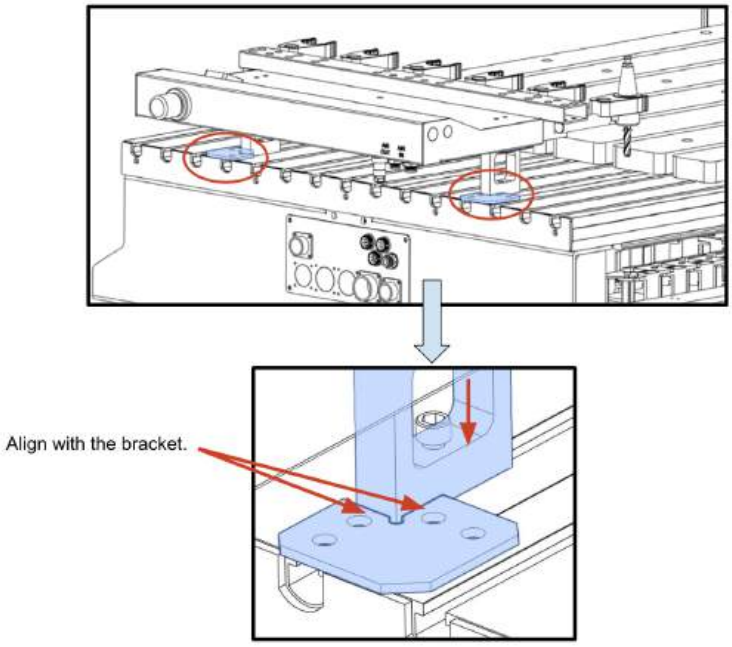
Section 11: ATC Operation

Precautions Before Use

- Ensure **air pressure** is maintained between **0.5 and 0.6 MPA** before performing any tool change operations.

Step 1: Assembly Instructions

1. Align both ends of the ATC stand with the positioning bracket, then tighten the screws on the stand to secure it in place.



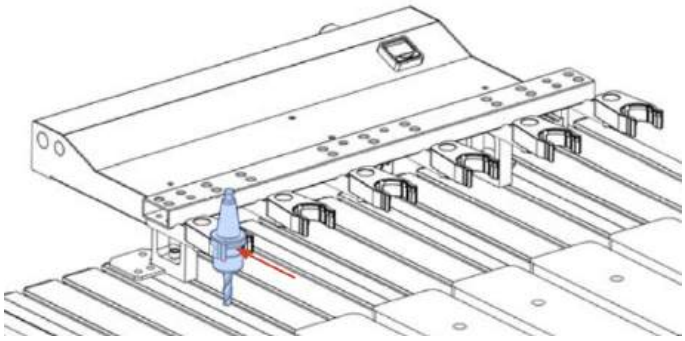
Step 2: Tools Setup

1. Power on your machine and press 

2. Press 

on the controller.
3. Click on an **empty slot** in the tool magazine to select the  **tool number** to be placed. It will indicate that the tool has been set.

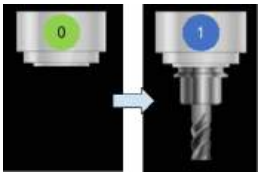
4. Insert the **groove of the blade holder** into the **spindle slot**, pushing in parallel until fully installed.



5. Select Tool Holder #1 

(it will be highlighted), and press Tool Change 

6. The spindle will move to the position of Tool #1 and perform the tool change. Once completed, the tool number on the spindle will change from 0 to 1, indicating a successful tool change.



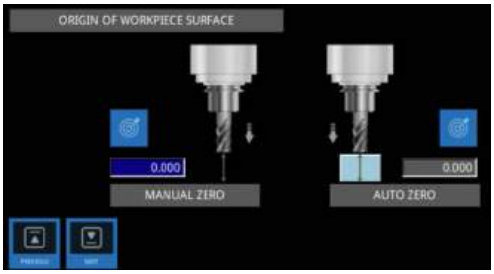
7. For subsequent tools, place them directly into the corresponding slots on the physical tool rack as needed. In the system, update the tool icons by changing them from “empty” to “loaded” for each tool number where a tool is inserted.

Note: During the first tool change, please closely monitor the process. If any issue occurs during the process, immediately press the E-Stop button or RESET.

Step 3: Tool Length Setup & Initial Tool Offset Setting

1. Switch to Machine Coordinate 
2. Move the X/Y/Z Axes to the center of the X-Axis travel. For example, if the total travel of the X-Axis is 1210mm, the center should be at 605mm, and move the Y-Axis to 150mm.
3. Click SET ZERO. 
4. Place the tool setter under the tool  on the Z-Axis on the table surface.
5. Ensure that Tool #1 is currently installed in the Spindle. 
6. Click Auto Zero 
7. The Spindle will move update to Z0 and then slowly descend until to tool tip touches the tool setter. The system will performance three consecutive touches to accurately measure the tool length. Once completed the Z-Axis will return to Z0, and the tool length will be recorded in the system.

8. At the same position, perform the PROBE 
9. Press the right automatic zeroing 
10. Once completed, the tool offset will be saved into the system.



11. Repeat the same process for other tools by manually changing to the corresponding tool holder and performing the AUTO ZERO at the same location.

Step 4: Tool Length Measurement Testing

1. After performing tool length measurement on all tools installed on the ATC, prepare a cardboard or soft object approximately 50-100mm high and place it on the working table.

2. Place the tool setting on the surface of the workpiece.

3. Using Tool #1  to set the Z-Zero for the workpiece surface.

4. SET ZERO as X0, Y0. 

5. Next, enter the following test G-Code on the MDI 

Reduce the feed rate (F Value) to 10% to avoid unexpected movement during the test.

   M06 T“X” (X: Enter the tool number that you want to replace.)
   G43 H“X” (X: Enter the tool number that you want to replace.)
   G00 X0. Y0. Z0.

6. Please CYCLE START 

If the test runs correctly, you can return the feed rate (F-Value) to 100%.

For example, to test if the tool length of Tool #6 is correct, enter the following G-Code:

M06 T6
G43 H6
G00 X0. Y0. Z0.

SECTION 12: MAINTENANCE

12.1 Maintenance Schedule

Proper maintenance ensures optimal performance and extends the life of your CNC machine.
Use the following **checklists** to maintain your machine.

Daily Maintenance (Before or After Use)

- Visually inspect **cables, hoses, and connections** for damage.
- Remove dust and debris from **rails, ball screws, and spindle area**.
- Ensure **spindle collet and nut** are clean and free of debris.
- Check for **loose bolts or fasteners** on the machine frame and gantry.

Weekly Maintenance

- Apply **light machine oil** to linear guide rails and ball screws.
- Inspect **spindle cooling system** (check coolant level if applicable).
- Confirm **gantry moves smoothly** without hesitation or grinding.
- Check **tool touch-off puck** for functionality.

Monthly Maintenance

- Perform a **full machine cleaning**, removing all dust from electrical enclosures.
- Inspect **belt tension** (if applicable) and adjust if necessary.
- Verify **controller buttons and display** are functioning properly.
- Test **emergency stop and safety features** for reliability.
- Inspect **spindle cooling system hoses and fittings** for leaks.

Quarterly Maintenance

- Check **spindle bearings** for noise or rough operation.

- Verify **controller firmware** is up to date (contact support if unsure).
- Review **machine level** and re-level if needed.

12.2 Cooling System Maintenance

The **3HP Liquid-Cooled Spindle** uses a **closed-loop coolant system**.
Inspect and maintain as follows:

- **Coolant Level:**
    - Ensure the reservoir is topped up with **distilled water** or **coolant solution** as recommended.
- **Hose Inspection:**
    - Check all hoses for **kinks, leaks, or wear**.
- **Pump Operation:**
    - Verify pump is running and **coolant is flowing** through the spindle before starting jobs.

Note: Do not run the spindle **dry** (without coolant).

12.3 Bearing and Rail Lubrication

Use **light machine oil** or **rail-specific lubricant** on:

- **Linear Guide Rails**
- **Ball Screws**

Do not over-lubricate, as excess oil attracts dust. Wipe off any buildup after application.

SECTION 13: FUSE LOCATIONS AND ELECTRICAL SAFEGUARDS

13.1 Fuse Protection Overview

Your Performance Series CNC machine is equipped with **fuse protection** to safeguard the control system and spindle from electrical faults.

If the machine becomes **non-responsive** or **fails to power on**, inspect the fuses before seeking service.

13.2 FUSE LOCATIONS

Main Controller Box Fuses:

- Located inside the **main control box** (lower access panel).
- Protects:
    - **iCNC Controller Board**
    - **Power Supply Circuitry**
    - **Spindle VFD (Variable Frequency Drive)**

Spindle VFD Fuses:

- Located inside the **VFD enclosure**.
- Protects:
    - **Spindle motor and VFD circuits**

13.3 Replacing Fuses

⚠️ **Warning:**
Always **disconnect power** before opening the control box or VFD enclosure.

1. Turn off the machine and unplug from power.

2. Open the control box panel using appropriate tools.
3. Locate the fuse holders.
4. Carefully remove and inspect each fuse.
5. Replace only with the same type and rating as specified on the fuse label or in the electrical diagram.
6. Reassemble the panel and restore power.

Note: Repeated fuse failures indicate an underlying electrical issue. Contact Simply Technologies Support before proceeding with further operation.

13.4 Electrical Safeguards Summary

- Always use a dedicated 220V, 10A, single-phase circuit with proper grounding.
- Do not bypass fuses or safety devices.
- Avoid exposing the controller to moisture, excessive dust, or heat.
- Regularly inspect cables, plugs, and connectors for wear or damage.
- Keep the control box closed during operation to prevent contamination.

SECTION 14: MACHINE TROUBLESHOOTING GUIDE

Even with proper use and maintenance, issues can occasionally arise. Use this guide to identify and resolve common problems.

14.1 Mechanical Issues

Problem	Possible Cause	Solution
Gantry moves unevenly or jerks	Dirty or dry rails/ball screws	Clean and lubricate rails and ball screws
Machine loses position or skips steps	Loose couplers or motor connections	Inspect and tighten all mechanical couplings
Inconsistent cut depth across material	Uneven spoilboard or improperly set Z origin	Resurface spoilboard and reset Z zero
Unusual noises during movement	Dry bearings or misaligned rails	Lubricate and inspect alignment
Spindle doesn't start spinning	VFD not running, incorrect spindle speed setting	Check VFD display and ensure spindle RPM is set

14.2 Electrical / Controller Issues

Problem	Possible Cause	Solution
Controller does not power on	Blown fuse, disconnected power	Check and replace fuse, verify power connection
No display or frozen screen	Controller cable loose or damaged	Reseat or replace controller cable
Machine won't Home or loses connection	Controller communication fault	Power cycle the machine, check cables
Spindle stops mid-job without error	Power interruption or VFD fault	Restart machine, check VFD display for errors
USB files not recognized	Unsupported file format or corrupt USB	Ensure file is in **.mmg** format, try a different USB
Breakpoint not resuming correctly	Incorrect origin reset after power loss	Re-home machine and verify origin before resuming
Emergency Stop won't reset	Button not released or damaged	Twist to release, inspect for mechanical failure

SECTION 15: WARRANTY INFORMATION

Limited Warranty Coverage

Simply Technologies warrants your Performance Series CNC Machine to be free from defects in materials and workmanship for a period of 12 months from the date of delivery.

What's Covered

- Frame and Structural Components
- iCNC Controller (hardware only)
- Motors and Drives
- Spindle Motor and VFD
- Electrical Components
- Included Accessories (Touch-Off Puck, Wrenches, etc.)

What's Not Covered

- Consumable Parts (Spoilboard, Bits, Collets)
- Cosmetic Damage or Normal Wear and Tear
- Damage Caused by:
    - Improper installation
    - Unauthorized modifications
    - Power surges or improper electrical setup
    - Abuse, misuse, or negligence
    - Operation outside specified guidelines
- Software or File Errors
- Third-party accessories not sold or approved by Simply Technologies

Warranty Claims Process

1. Contact **support@simplytechnologies.xyz** with a detailed description of the issue, including:
    - Machine serial number
    - Purchase date
    - Photos or videos of the issue (if applicable)
2. Our support team will assess the claim and provide instructions.
3. Replacement parts or repair services will be provided at Simply Technologies' discretion.

Note: Customer is responsible for shipping costs on non-warranty repairs.

SECTION 16: CONTACT & SUPPORT INFORMATION

At Simply Technologies, we believe that the purchase of a machine is just the beginning of the partnership. Our commitment to you doesn't end at delivery, we pride ourselves on offering industry-leading after-sales support to ensure you get the most out of your investment.

Every Simply Technologies customer receives **unlimited technical support** for both hardware and software, with access to real people who care about your success. Whether you're troubleshooting a setup issue, diving into new software features, or expanding your CNC skills, our team is here to help, every step of the way.

📧 steve@simplytechnologies.xyz

🌐 www.simplytechnologies.xyz/support