



ACADEMY SERIES OWNER'S MANUAL

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WELCOME TO THE ACADEMY SERIES

Congratulations on your purchase of a Simply Technologies **ACADEMY Series** CNC machine. You have chosen a fully integrated, education-focused platform designed to deliver safe, consistent, and reliable CNC performance in classroom and training environments.

The ACADEMY Series is built as a complete, plug-and-play solution. Your machine arrives fully assembled and ready for operation, with no complex setup or installation required. Designed specifically for schools and shared learning spaces, it features a fully enclosed system and simplified controls that allow students and educators to focus on learning, not configuration.

At Simply Technologies, we believe CNC technology in education should be structured, accessible, and dependable. This manual will guide you through safe operation, best practices, and ongoing maintenance, so you can confidently integrate CNC into your classroom and focus on teaching real-world skills.

We highly recommend visiting youtube.com/@Simply.Technologies to access our growing library of setup guides, owner tutorials, maintenance procedures, troubleshooting videos, software training, and project demonstrations designed to help you get the most from your CNC machine.

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

- Read this manual in full before using the machine.
- 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 ACADEMY Series requires 110V, Single Phase 15A (or optional 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 ACADEMY Series is equipped with an Emergency Stop Button located on the back panel. 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.
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. Reinitialize the machine by performing a Home operation.
3. Verify all workpiece clamps and tool settings before restarting any job.

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 (if applicable on your machine).

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 ACADEMY Series is engineered to provide reliable CNC capabilities with a strong focus on educational, prototyping, and light production environments.

Below are the general specifications across ACADEMY models. Specific details may vary slightly depending on model number and spindle configuration.

	ACADEMY 1	ACADEMY 2	ACADEMY 4
SKU	ACADEMY1 / ACADEMY1E (EDU)	ACADEMY2 / ACADEMY2E (EDU)	ACADEMY4 / ACADEMY4E (EDU)
X-Axis Travel	12" (305mm)	24" (610mm)	24" (610mm)
Y-Axis Travel	12" (305mm)	12" (305mm)	24" (610mm)
Z-Axis Travel	5.5" (140mm)	5.5" (140mm)	7.87" (200mm)
Spindle Type	1HP Air Cooled	1HP Air Cooled	1HP Air Cooled
Spindle Configuration	ER11 (1/8" & 1/4")	ER11 (1/8" & 1/4")	ER11 (1/8" & 1/4")
Controller	eCNC (7" Screen)	eCNC (7" Screen)	eCNC (7" Screen)
Rapid Feed Rate	150ipm (3.81m/min)	150ipm (3.81m/min)	150ipm (3.81m/min)
Resolution	± 0.00393" (0.10mm)	± 0.00393" (0.10mm)	± 0.00393" (0.10mm)
Power Requirements	AC 110V, 50-60Hz, 15A, 1-Phase (Optional 220V, 50-60Hz, 10A, 1-Phase)	AC 110V, 50-60Hz, 15A, 1-Phase (Optional 220V, 50-60Hz, 10A, 1-Phase)	AC 110V, 50-60Hz, 15A, 1-Phase (Optional 220V, 50-60Hz, 10A, 1-Phase)
Machine Base	High Rigidity Aluminum Extrusion	High Rigidity Aluminum Extrusion	High Rigidity Aluminum Extrusion
Working Table	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
Gantry Supports	Steel Plate	Steel Plate	Steel Plate
Machine Dimensions	31.5"L x 29.1"W x 36.8"H (800mm x 740mm x 935mm)	31.5"L x 43.7"W x 69.7"H (800mm x 1110mm x 1770mm)	43.7"L x 43.7"W x 69.7"H (1100mm x 1110mm x 1770mm)



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: GETTING STARTED (PLUG & PLAY)

5.1 What's Included

When unboxing your **ACADEMY Series CNC Machine**, ensure you have the following components:

Machine Components:

- ACADEMY Series CNC Router, Enclosure, and Vacuum System
- eCNC Controller with 7" Touchscreen
- ER-11 Collets (1/8" and 1/4")
- Tool Touch-Off Puck
- Collet Wrenches (2)
- Hold Down Clamps (2)
- Dust Shoe
- Set of replacement Carbon Brushes

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

Your **ACADEMY Series** CNC machine is designed to be ready for use right out of the box. There is no mechanical assembly or complex setup required.

Before powering on the machine, complete the following quick checks:

- Ensure the machine is placed on a stable, level surface.
- Verify proper power connection based on your facility requirements.
- Confirm that all packaging materials have been removed from the machine and enclosure.
- Check that the emergency stop is accessible and functioning properly.



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:** 110V AC / 220V
- **Amperage:** 15A / 10A
- **Phase:** Single Phase
- **Plug Type:** Plug type varies depending on machine voltage configuration.

Important: This machine requires a dedicated 110V / 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

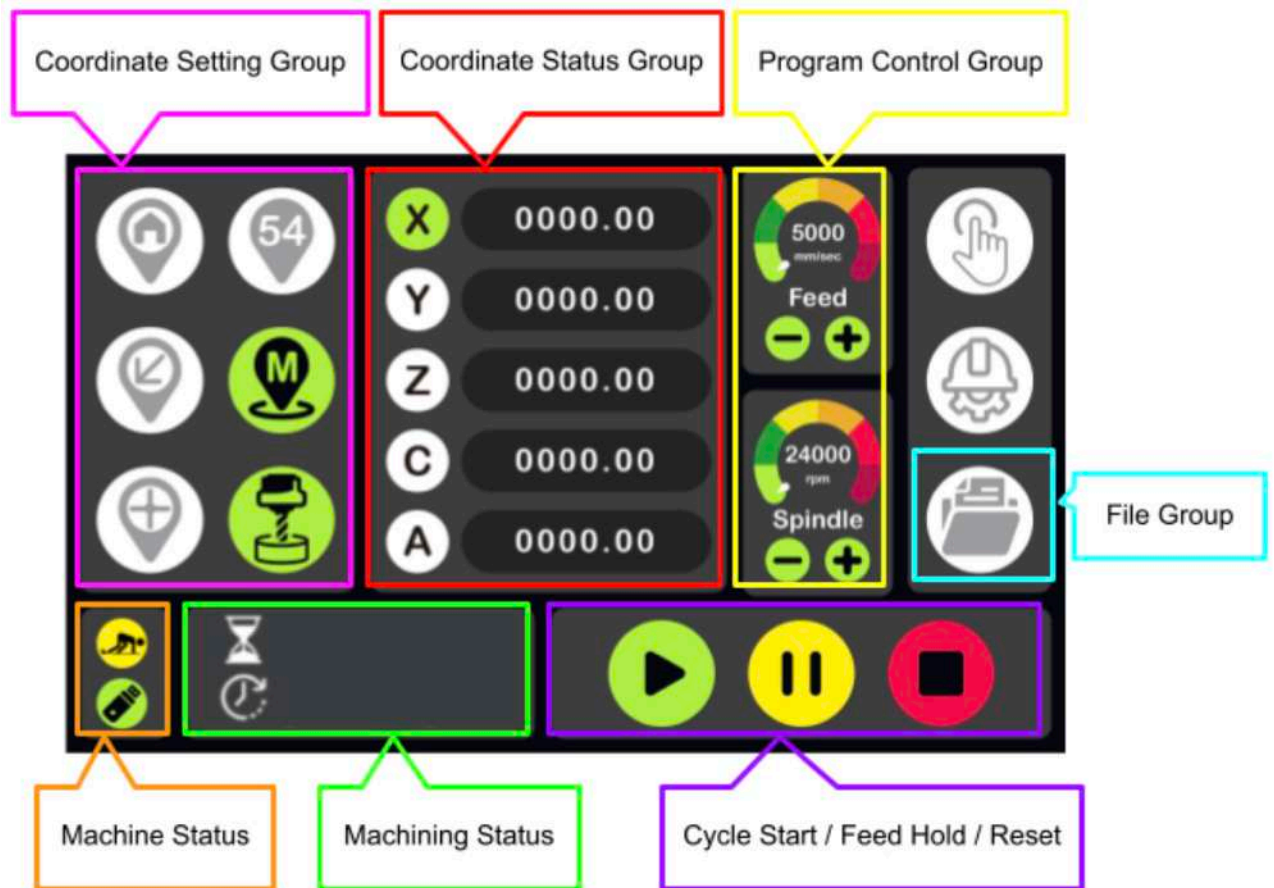
- Route all cables safely to prevent damage or tripping.
- Do not place heavy objects on power cords.
- Ensure cables are not stretched, pinched, or exposed to heat.

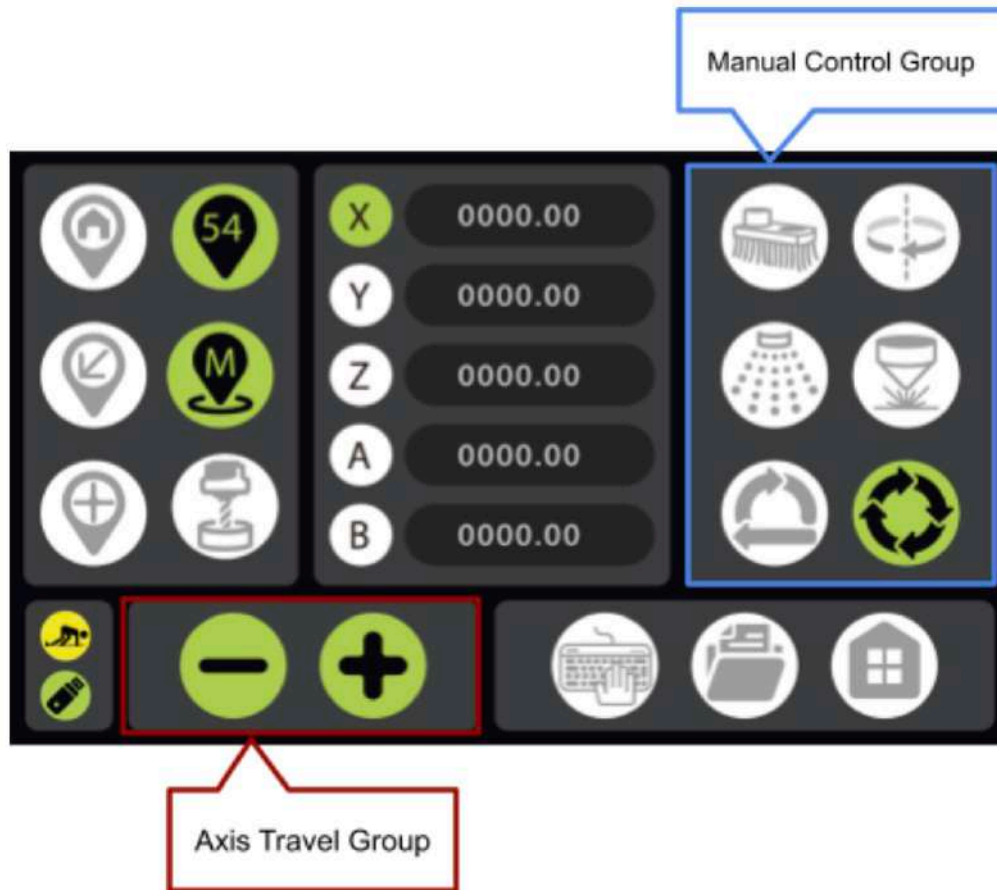






SECTION 7: CONTROLLER OVERVIEW (ECNC)




The ACADEMY Series uses the **eCNC Controller**, a streamlined interface designed for straightforward machine control. This section introduces the key screens, functions, and workflows to help you confidently navigate the controller.

7.1 Controller Layout





 Cycle Start / Feed Hold / Reset		
Icon	Name	Function
	Home	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.

 File Group		
Icon	Name	Function
	Open	Open the File
	Load File	Load the File





Coordinate Setting Group

Icon	Name	Function
	Home	Homing all axes
	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
	Zero	Move to the work origin
	Machine Coordinate	Switch to Working Coordinate
	Working Coordinate	Switch to Machine Coordinate
	Set Zero	Set working origin (The coordinate values will be zero.)
	Probe	Set the tool to zero (Z0) position.





Machine Status




Icon	Name	Function
	Standby	Machine Status: Standby
	Stop	Machine Status: Stop
	Run	Machine Status: Processing
	USB	Read USB Drive








Program Control Group

Icon	Name	Function
	Feed Rate	Current Feed Rate
	Spindle Speed	Current Spindle Speed
	Increase Magnification	Increase magnification by pressing the "+" button.
	Decrease Magnification	Decrease magnification by pressing the "-" button.












 JOG Operation Group		
Icon	Name	Function
	Positive	Control axial JOG movement.
	Negative	Control axial JOG movement.



 Manual Control Group		
Icon	Name	Function
	Manual	Switch to the Manual Page
	Spindle	Manually Start the Spindle Spindle Status Display (Flashing indicates the spindle has not reached the set speed)
	Step Mode	Switch to Step Mode
	Cont. Mode	Switch to Continuous Mode




7.2 Adjust Machine Coordinates, Center Point & Tool Setting




Power on and wait for the system to complete the startup process before proceeding with equipment operation.

1. Press RESET  and ensure the RESET button is not flashing.
2. HOME  all Axes.
3. Enter the JOG OPERATION Page 
4. Switch the MACHINE COORDINATE  to WORKING COORDINATE 
5. Move the  and  Axes to set the work origin using  and  keys.


NOTE: You may choose between STEP mode  and CONTINUOUS mode 

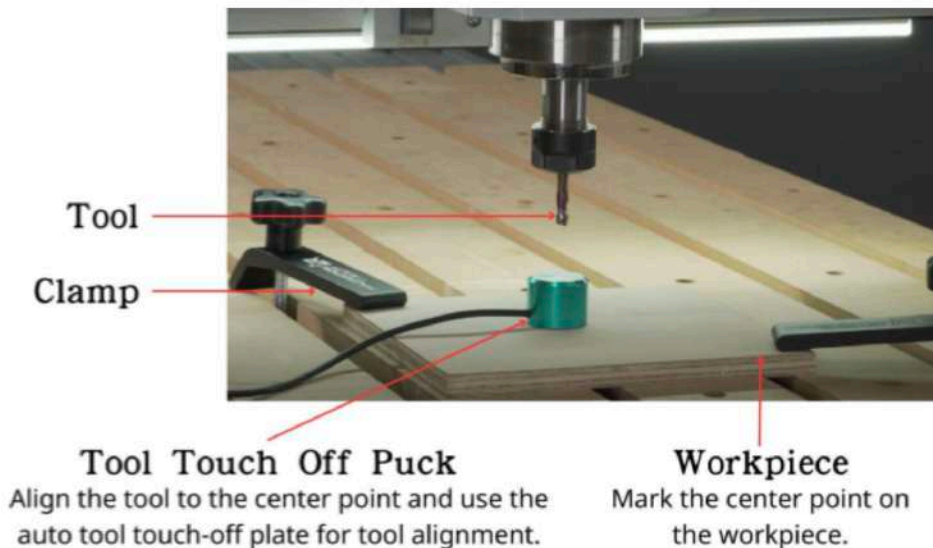
In STEP mode, you can adjust the step distance by selecting , adjusting the step distance  and selecting  again to confirm the move distance.

In CONTINUOUS mode, select the , adjust the movement speed,  and select  again to confirm the speed.


6. After confirming the machining position, press SET ZERO . The selected coordinate will reset to zero 
7. After setting the working origin for X and Y, ensure your material is secured to your machine, and that the correct tool is installed. Plug in the Tool Touch Off Puck and place it on your workpiece or spoilboard (depending on where you set your Z Origin in your design software. Manually jog the Z-Axis down towards the puck until you are 1/2"-1" above it. Select PROBE  The Z-Axis will slow descend until the tool tip touches the puck. At this point, the machine will automatically set the Z-Axis working origin.

CAUTION: While using the Tool Touch Off Puck procedure, it is recommended that you place your finger on the RESET  button, allowing for an immediate stop in case of emergency.

NOTE: You may also choose to manually set your Z-Axis working origin using the same instructions as the X and Y origins. You will manually jog the tool until it is barely touching your workpiece/spoilboard, and then select SET ZERO  to reset the coordinate to zero.






7.3 File Selection & Machining

1. Save your machining file in the CNCfile folder on your USB Stick. Insert the USB into your machine's USB Port. You can ensure that the USB Stick is recognized by checking for the  icon at the bottom-left corner of the HOME page.

NOTE: If you are using a new USB Stick, insert it into the machine's USB Port prior to use. After powering on the machine, remove the USB Stick. This process will automatically create the CNCfile and Firmware_Update folders on your USB Stick.

Then, save your machine files in the CNCfile folder. Only files stored in this folder can be read by the eCNC Controller.

2. Open the  file folder.
3. Select the machining file and press LOAD FILE  Once the file is loaded, the system will automatically return to the HOME page.
4. START  machining.

NOTE: The machine will immediately begin operation. Ensure that there are no safety issues prior to beginning.

7.4 Adjust Machining Speed & Feed Rate



Feed Rate (F-Value) Adjustment

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



Spindle Speed (S-Value) Adjustment

Press the + and - keys to adjust the spindle speed magnification, corresponding to the S-Value set in your design file. Recommended machining speed adjustment (cutting speed) to begin: 18000-24000 RPM.



SECTION 8: CONTROL PANEL OVERVIEW

8.1 Introduction

The ACADEMY Series Control Panel provides convenient access to the machine's primary electrical controls and status indicators.

Before operating the machine, familiarize yourself with the location and function of each control.

The control panel is located on the front of the machine enclosure and provides access to machine power, dust collection controls, USB connectivity, and safety system controls.

8.2 Control Panel Components

The ACADEMY Control Panel includes the following features:

- USB Port
- Dust Collection Status Indicator
- Safety Door Release Button
- Main Power Switch
- Emergency Stop (E-Stop)



8.2.1 Main Power Switch

The Main Power Switch controls power to the CNC machine, and will activate the eCNC Controller.

To Power On the Machine

1. Verify the Emergency Stop button is released.
2. Turn the Main Power Switch to the ON position.
3. Confirm the machine powers up successfully.

To Power Off the Machine

1. Close all active programs.
2. Return the machine to a safe position.
3. Turn the Main Power Switch to the OFF position.

8.2.2 Emergency Stop (E-Stop)

The Emergency Stop button immediately removes power from machine motion systems.

Using the Emergency Stop

Press the Emergency Stop whenever an unsafe condition exists, including:

- Unexpected machine movement
- Material becoming loose
- Tool breakage
- Operator safety concerns

Resetting the Emergency Stop

1. Rotate the E-Stop button clockwise.
2. Allow the button to spring outward.
3. Restart the machine if necessary.

Warning: Always identify and correct the cause of the emergency before resuming operation.

8.2.3 USB Port

The USB port allows users to transfer toolpath files, firmware updates, and other machine data between a computer and the eCNC Controller.

First-Time USB Drive Use



The first time a USB drive is inserted into the eCNC Controller, the controller will automatically create two folders on the drive:

CNCFile

This folder is used to store CNC toolpath files.

FirmWare_Update

This folder is reserved for controller firmware updates.

This process is normal and only occurs once when the USB drive is first recognized by the controller.

Important: Toolpath files must be saved directly inside the CNCFile folder in order for the eCNC Controller to locate and display them. If a toolpath file is saved outside of the CNCFile folder, it may not appear in the controller's file browser.

Recommended Workflow

1. Insert a blank USB drive into the eCNC Controller.
2. Allow the controller to automatically create the required folders.
3. Remove the USB drive.
4. Insert the USB drive into your computer.
5. Save all CNC toolpath files directly into the **CNCFile** folder.
6. Safely eject the USB drive.
7. Insert the USB drive into the eCNC Controller and load the desired file.

Firmware Updates

The **FirmWare_Update** folder should only be used when instructed by Simply Technologies Technical Support.

Do not place toolpath files inside the FirmWare_Update folder.

Note: For best results, dedicate a USB drive specifically for CNC machine operation and avoid storing unrelated files on the drive.

8.2.4 Dust Collection Indicator Light

The Dust Collection Indicator Light provides a visual confirmation that the built-in dust collection system is powered on.

Light Illuminated

- Dust collection system is operating.



Light Off

- Dust collection system is not operating.

This indicator is intended as a quick visual reference for the operator and does not provide information regarding airflow, filter condition, suction performance, or maintenance requirements.

Important: Even if the indicator light is illuminated, operators should periodically verify that the dust collection system is functioning correctly and that airflow is not restricted by a clogged filter, blocked hose, or closed blast gate.

8.2.5 Safety Door Release Button

The Safety Door Release Button allows access to the machine enclosure.

When pressed, the safety relay disengages, allowing the enclosure doors to open.

Important: Opening the enclosure doors during machine operation will activate the safety interlock system.

When the safety interlock is triggered:

- Spindle operation is paused.
- Machine operation is interrupted.
- The safety indicator light changes status.

Always verify the spindle has come to a complete stop before reaching into the machine enclosure.

Safety Interlock System

The ACADEMY Series includes a safety interlock system designed to help protect operators during machine operation.

When an enclosure door is opened:

- The spindle is automatically paused.
- The safety system changes status.
- The machine cannot continue cutting until conditions are restored.

This feature is particularly important in educational environments where multiple users may interact with the machine.



8.3 Before Each Use

Prior to operating the machine:

- ✓ Verify Emergency Stop is released
- ✓ Verify enclosure doors are closed
- ✓ Confirm dust collection system is operational
- ✓ Confirm controller powers on correctly
- ✓ Verify USB media is removed when not in use
- ✓ Confirm all safety systems are functioning properly



SECTION 9: BUILT-IN DUST COLLECTION SYSTEM

9.1 Why Dust Collection Matters

Your ACADEMY 2 or 4 machine includes a built-in dust collection (not applicable for ACADEMY 1 machines) system designed to help maintain a cleaner, safer, and more efficient CNC environment.

During CNC operation, large amounts of dust and debris can be generated. Proper dust collection helps improve visibility around the cutting area, reduces airborne dust, and minimizes cleanup after machining operations.

Using the built-in dust collection system helps provide:

- Improved visibility during machining operations.
- Reduced airborne dust within the enclosure.
- Cleaner machine components and work surfaces.
- Extended spindle and machine component life.
- A safer and more enjoyable operating environment.

9.2 Dust Collection System Components

The ACADEMY dust collection system consists of the following components:

- Integrated vacuum unit
- Replaceable filter system
- Dust collection hose
- Magnetic dust shoe
- Adjustable blast gate
- Vacuum status indicator light
- Vacuum power control through the eCNC Controller

Each component plays an important role in maintaining effective dust collection performance.



9.3 Initial Setup

Before operating the machine for the first time, verify that the dust collection system has been properly assembled, including all hose connections in the cabinet. Turn on power on the vacuum system itself, and ensure that it is properly plugged in.

Filter Inspection

Remove the vacuum lid and inspect the filter to ensure all packaging materials have been removed prior to operation.

Failure to remove packaging materials may reduce airflow and negatively impact dust collection performance.

Dust Collection Hose

Verify that the hose is securely connected between the vacuum unit and the dust shoe.

Check all hose connections for proper fit and alignment.

Blast Gate Position

There are two Blast Gates location inside the machine's cabinet. Ensure that the blast gate leading to the Spindle assembly is fully open before operating the vacuum system. The second Blast Gate is for cleaning the bottom of the CNC unit, and can be left closed until needed.

Restricting airflow may reduce dust collection efficiency and place additional strain on the vacuum motor.

9.4 Operating the Dust Collection System

The dust collection system can be controlled directly from the eCNC Controller.

Starting the Vacuum

1. Power on the CNC machine.
2. Navigate to the dust collection controls within the eCNC Controller.
3. Activate the vacuum system.
4. Confirm the vacuum status indicator light is illuminated.



Stopping the Vacuum

1. Complete the machining operation.
2. Turn off the vacuum through the eCNC Controller.
3. Allow any remaining dust to settle before opening the enclosure.

9.5 Dust Shoe Installation

The magnetic dust shoe is designed to be easily installed and removed for tool changes and maintenance.

Installing the Dust Shoe

1. Align the dust shoe beneath the spindle.
2. Tighten bolt to ensure the dust shoe is secured and angled to the right.
3. Confirm the dust shoe is fully seated before operating the machine.

Removing the Dust Shoe

1. Support the dust shoe with one hand.
2. Gently pull downward to disengage the magnets.
3. Remove the dust shoe and set it aside.

Regularly inspect the brush skirt for wear and replace as required.

9.6 Filter Maintenance

Regular filter maintenance is critical for maintaining proper airflow and vacuum performance.

Cleaning the Filter

1. Turn off and unplug the vacuum system.
2. Remove the vacuum lid assembly.
3. Carefully remove the filter.
4. Gently remove accumulated dust using compressed air or by tapping the filter outdoors.
5. Reinstall the filter before operating the system.



Inspection Interval

Inspect the filter:

- Weekly in educational environments
- Monthly in light-use environments
- Immediately if suction performance decreases

9.7 Carbon Brush Inspection and Replacement

The vacuum motor uses replaceable carbon brushes to transfer electrical power to the rotating armature inside the motor.

Because carbon brushes are wear items, they require periodic inspection and replacement. One set of replacement carbon brushes are provided with your machine.

Recommended Inspection Interval

Inspect carbon brushes:

- Every 300-400 operating hours, or at least once per year.

Signs of Carbon Brush Wear

- Reduced suction performance
- Fluctuating motor RPM
- Difficulty starting the vacuum motor
- Intermittent operation
- Sparking visible through motor vents

Replacement Criteria

Replace the carbon brushes when:

- The carbon block wears to approximately 6 mm (1/4")
- Performance issues become evident
- Excessive sparking occurs



Accessing the Carbon Brushes

1. Turn off and unplug the vacuum.
2. Remove the vacuum lid assembly.
3. Remove 3 screws located on the vacuum lid.
4. Locate the black plastic brush holders mounted on opposite sides of the motor.
5. Remove the mounting screws securing each brush holder.
6. Carefully withdraw the brush assembly.

Installing New Carbon Brushes

1. Slide the replacement brush assembly into the holder.
2. Ensure the carbon tip makes firm contact with the commutator.
3. Reinstall the mounting screws.
4. Repeat for the opposite brush.

Note: Carbon brushes should always be replaced in pairs to ensure even wear and maximum motor life.

Troubleshooting

Issue	Possible Cause
Poor dust collection	Blast gate closed, clogged hose, dirty filter
Reduced suction power	Dirty filter or worn carbon brushes
Excessive motor sparking	Carbon brushes worn and require replacement
Vacuum motor struggles to start	Carbon brushes may require inspection

Recommended Maintenance Schedule

Task	Frequency
Empty dust collection system	As required
Inspect hose connections	Monthly
Clean filter	Weekly to monthly
Inspect dust shoe brushes	Monthly
Inspect carbon brushes	Every 300-400 hours
Replace carbon brushes	As required



SECTION 10: 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 or Aspire**.

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 11: MAINTENANCE

11.1 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.
- 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.

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.

11.2 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 12: FUSE LOCATIONS AND ELECTRICAL SAFEGUARDS

12.1 Fuse Protection Overview

Your ACADEMY 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.

12.2 Fuse Locations

Main Controller Box Fuses:

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

Spindle VFD Fuses:

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

12.3 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.

12.4 Electrical Safeguards Summary

- Always use a **dedicated 110V, 15A / 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 13: MACHINE TROUBLESHOOTING GUIDE

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

13.1 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

13.2 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	Check eCNC for possible error messages, power cycle the machine, ensure G-Code is correct
USB files not recognized	Unsupported file format or corrupt USB	Ensure file is proper G-Code, 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

Tip:

If you encounter a problem not listed here, visit www.simplytechnologies.xyz/support or contact steve@simplytechnologies.xyz for further assistance.



SECTION 14: WARRANTY INFORMATION

Limited Warranty Coverage

Simply Technologies warrants your **ACADEMY Series CNC Machine** to be **free from defects in materials and workmanship** for a period of **24 months** from the date of delivery.

What's Covered

- Frame and Structural Components
- eCNC Controller (hardware only)
- Motors and Drives
- Spindle Motor
- 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 jeremy@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 15: CONTACT & SUPPORT INFORMATION

Simply Technologies Support Team

 steve@simplytechnologies.xyz

 jeremy@simplytechnologies.xyz

 Support Portal: www.simplytechnologies.xyz/support

▶ YouTube Training & Support Library: youtube.com/@Simply.Technologies

The Simply Technologies YouTube channel contains a growing library of setup guides, owner tutorials, maintenance procedures, troubleshooting videos, software training, and project demonstrations designed to help you get the most from your CNC machine.

If you cannot find the answer you are looking for, our team is always available to assist with technical support, machine operation, software questions, maintenance, and troubleshooting.

Thank you for trusting Simply Technologies with your CNC production, education, and creative projects.

We are committed to helping you succeed and look forward to supporting your CNC journey for years to come.

