



HOW TO OPERATE CNC SHOPBOT-PR-SAlpha (ATC 120-60-8)



Material Preparation Guidelines

Types of Materials Suitable for CNC ShopBot Projects:

A

Woods are commonly used for applications such as packaging, mold making, and signage.

Woods:

Hardwoods:



Mahogany



Oak



Walnut

Softwoods:



Rosewood



Cedar



Pine

Manufactured Woods:



Plywood



MDF



Particleboard

Material Preparation Guidelines

B

Plastics are commonly used for applications such as sign making, prototyping and production runs.

Plastics:



Acrylics Sheets



Polycarbonate



PCV Sheets

C

Non-Ferrous metals are commonly used for applications such as engraving, machining of parts, and prototyping.

Non-Ferrous Metals:



Aluminum



Brass



Copper

Material Preparation Guidelines

D

Foams are commonly used for applications such as packaging, mold making, and signage.

Foams:



Expanded Polystyrene (EPS)



Extruded Polystyrene (XPS)



Polyurethane (PU)

E

Composites are commonly used for applications such as aerospace, automotive, and marine industries.

Composites:



Fiberglass



Carbon Fiber



Kevlar

Material Preparation Guidelines

A

- **Machine Maximum Size:**
129"x61"x8"
- **Machine Minimum Size:**
35"x35"
- **Recommended Material Maximum Thickness:** 3/4"
- **Recommended Material Minimum Thickness:** 1/8"



NOTE:

The CNC ShopBot can cut through any thickness as long as the drill bit is longer than the wood. And can cut thin materials but there's a high possibility of breaking so it's better to follow the recommendation.

Machine Operation

1

Screw your material in all four corners using a hand drill.

CAUTION!!

1. Always **ensure** that your work-piece is position within the bounds of the spoil board.
2. **Use** screws that are at least half an inch longer than the thickness of your material.
3. **Avoid** placing screws too close to the corners to prevent material damage.
4. **Make sure** to tighten all screws securely to prevent material breakage or shifting.



What are the appropriate type of screws to be use in securig a specific type of material??

FAQ/s

- A. Flat Head Wood Screws - works best for materials like softwoods, plywood, and mdx. **RECOMMENDED SIZE: #6 - #8.**
- B. Round Head Wood Screws - works best with materials like hardwood. **RECOMMENDED SIZE: #6 - #8.**
- C. Pan Head Wood Screws - works best with materials like Plastics. **RECOMMENDED SIZE: #6 - #8.**
- D. Flat Head Wood Screws - works best with materials like metals. **RECOMMENDED SIZE: #6 - #8.**

Machine Operation

2

Turn on the CNC ShopBot machine. make sure the power source is plugged in.

NOTE:

Turn on the red switch first and then **engaged** the spindle key in a clockwise direction. You can find the control box located below the right side of the machine. you should hear a click sound, indicating that the machine has been successfully turned on.



3

Turn on your dust collection system. it automatically turns on once its power source has plugged-in.

CAUTION!!

During the machining process, **keep an eye** on the dust hose to make sure it doesn't get clogged with debris. If you notice the dust hose is not collecting dust as effectively as it should, stop the machine and clear any blockages.



FAQ/s

What to do when the dust collection system is full of dust already?

1. Turn off the machine.
2. Remove the dust collector.
3. Empty the dust collection bin into the trash can.
4. Clean the dust collector's interior and exterior surfaces, including the filter, using a soft brush/-cloth. Avoid using liquids.
5. Reattached and secure the dust collector to the machine.
6. Restart the machine and ensure the dust collection system is functioning properly.

RECOMMENDATION: Clean the DCS after every use.

Machine Operation

4

Turn on the computer and connect it to the CNC by plugging in the two USB-to-Serial-PortAdapters that are connected to the CNC ShopBot

CAUTION!!

These adaters are used to convert USB signals from thr computer to serial signals that can be unrstood by the CNC controler. That's why they should be disconnected during operation.



Machine Operation

5

Press the reset button located in the middle of the control router.

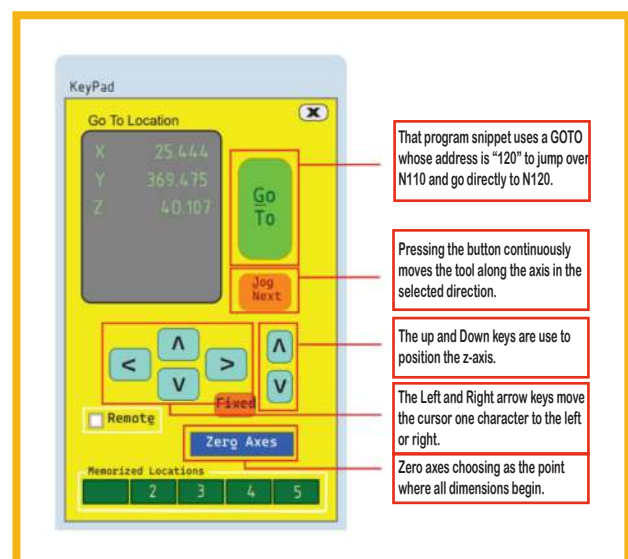
Green button is the START.
Blue button is for RESET.
Red button is for EMERGENCY STOP

NOTE:

You should feel a light click when the button is pressed. The machine should reset and initialize its control system after a few seconds. you can check the machine's display or control software to verify that the reset was successful.



Control Panel Software Icons.



Machine Operation

6

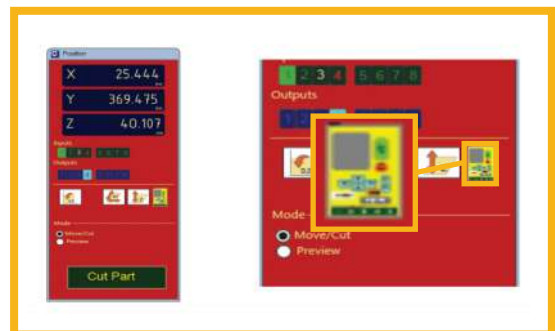
Launch the ShopBot software.



7

Zeroing the XY axis

A. Open the control panel software. The yellow icon is the keypad panel.



B. Jog the gantry to the lower left corner of your material to find the material's origin point. You can do this either manually or by using the arrow keys in the software or your keyboard.



Machine Operation

C. Once the spindle is in the correct position, **press** the “Zero Axes” button in the control panel software.



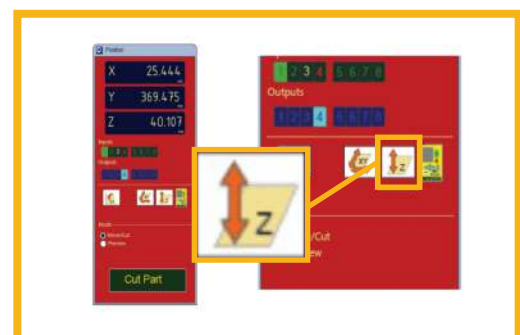
D. **Check** the box for both the XY axes and **press** enter to confirm this zero position for XY axes.



8

Zeroing the Z axis

A. **Open** the control software of your computer and **click** the Z-axis button. However, **do not click** “OK” yet.

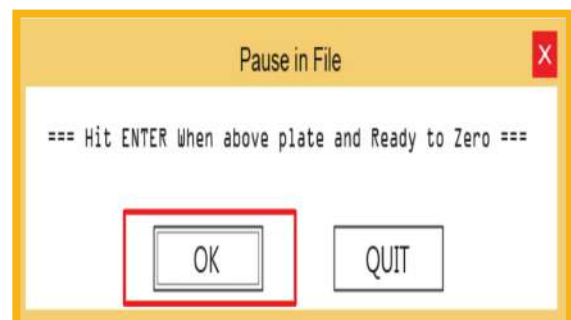


Machine Operation

B. Locate the touch plate on the frontal face of the YZ car and **place it** directly below the drill bit and above the material.



C. Click “OK” on the software to begin the zeroing process.



D. Click “OK” on the screen to finish zeroing process.



NOTE:

Once the zeroing is complete, **remove** the touch plate from the material and **return** it back to the XY car.

FAQ/s

How to change the drill bit?

Spindles: Put the collet into the nut and push it until you hear a “click” sound. If it doesn’t fit, try pushing it in at a slight angle. To check if it’s secure, hold the nut upside down and see if the collet stays in place without falling.

loosen the nut onto the spindle. Insert the bit into the collet and ensure you tighten the collet. Then tighten the lock nut securely on the spindle but make sure not to over tighten it.

NOTE:

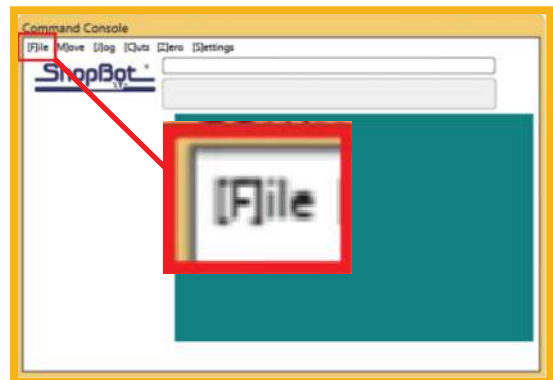
Spindles and routers have different collet styles.

Machine Operation

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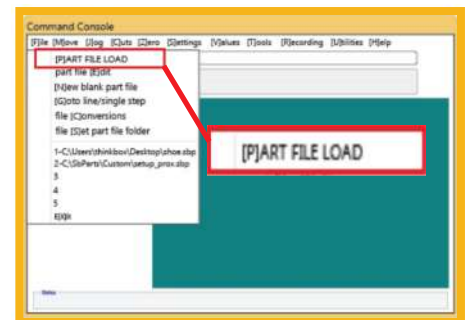
Opening the file to cut.

A. On your software, **find** the file text in the upper left corner.

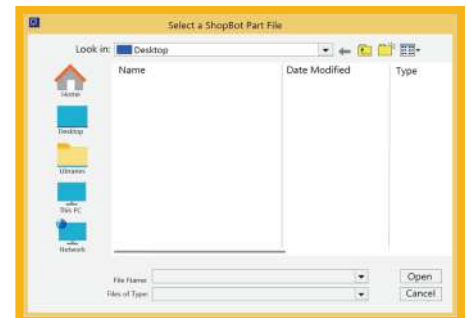


Machine Operation

B. Click the “File” and then find the “part file load”.



C. After clicking “part file load” and it will direct you to your files. Click your file and then hit “ENTER”.



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Cutting your material

A. Press the start button on the control router. It's the one on the side that's the color green.

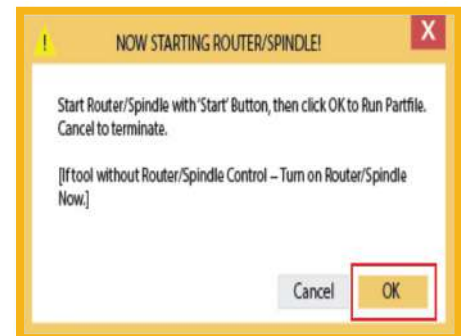


Machine Operation

NOTE:

Make sure that the bit is spinning before clicking OK to avoid it from breaking. when cutting is in process, do not leave the controller router because an incident may happen and you need to immediately push the button to avoid damage or further damage.

B. Wait for the drill bit to spin before click “OK” on your computer.

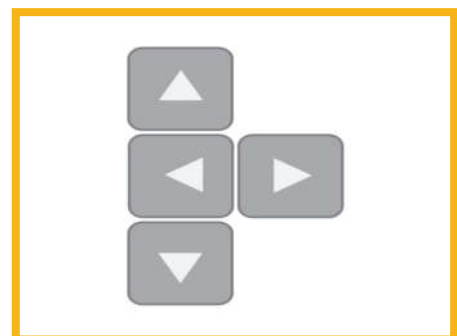


CAUTION!!

If an emergency occurs like if the board break during the cut, **press the emergency stop** on the control router or press the spacebar on your computer.

11

When the machine is done, **use** the keyboard keys to move the spindle out of your way and unscrew your material.



Machine Operation

12

Turn off your computer, dust collector, and the CNC ShopBot. Make sure to **unplug** all the connecting wires used during the production.



FAQ/s

What is the best type of bit to use on a project?

The End Mill is useful for making straight cuts and removing large amounts of material quickly, such as in a roughing toolpath.

The Ball Nose is best for creating contours, intricate details, finishing paths.

A Profile bit, like the V-carve, is an ideal for making lettering and signs.

What to do if the drill bit breaks while using the CNC machine?

1. Turn off the machine.
2. Remove the broken bit.
3. Inspect the spindle and collet before inserting a new bit.
4. Replace a new bit.
5. test the machine.

What to do if the material breaks in the process?

1. Hit the STOP button or thr spacebar on you keyboard.
2. Unscrew your material and use a different approach on your cut like changing the drill or changing the material.



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Machine Maintenance

CLEAN UP!

- **Store** all the drill bits and any other tools used in their designated storage area
- **Double-check** if the CNC machine and the surrounding areas are clean and tidy before leaving

