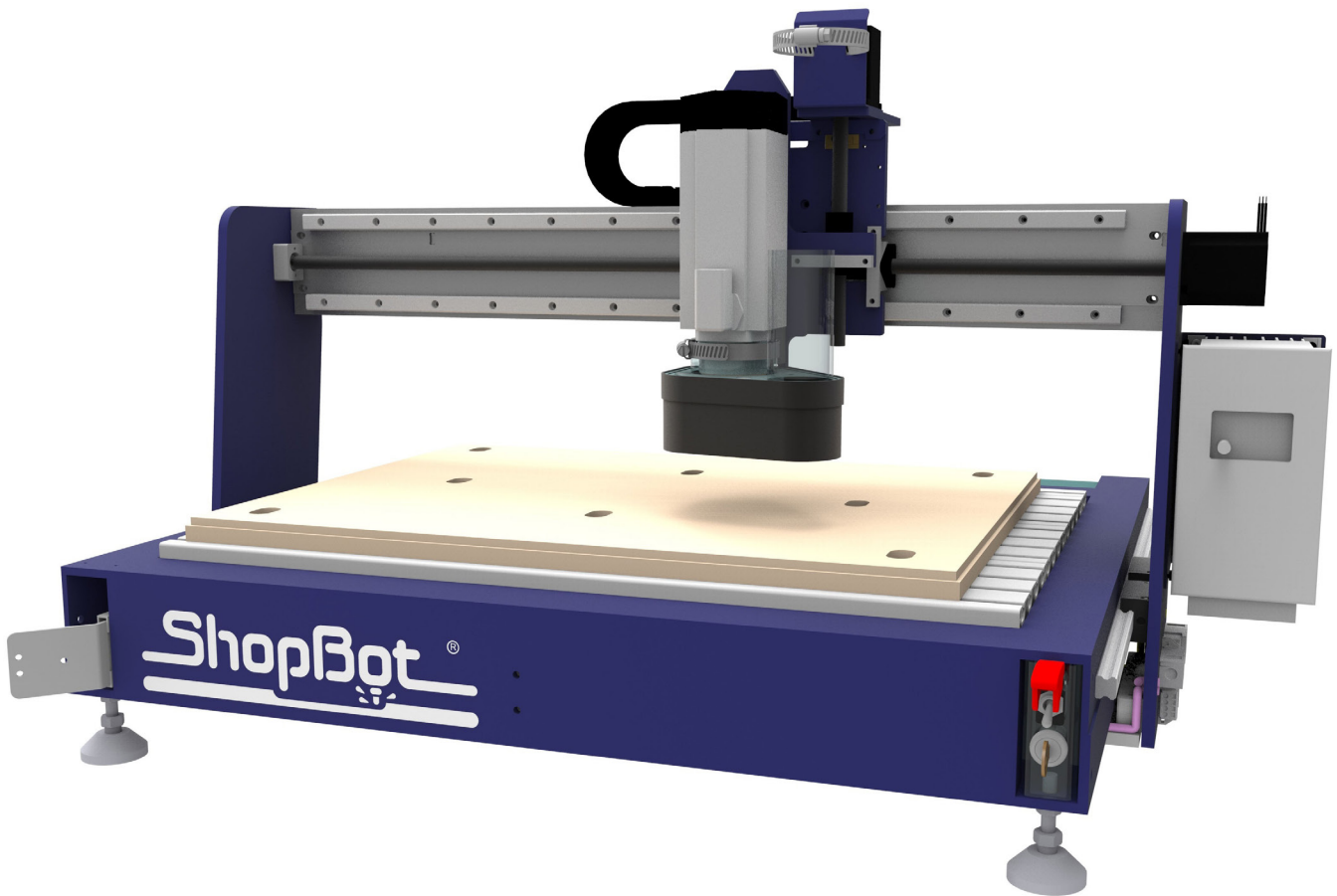




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Desktop Quick-Start Guide



*Tool shown with optional spindle and speed controller.

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General Safety and Precautions

This safety summary contains general safety warnings that should be understood during operation of this machine. Failure to observe these precautions could result in injury.



Learn and understand safe use of the machine. Do not allow untrained individuals to operate the machine without supervision. Be aware of the location of the Emergency Stop switches at all times.



Eye and ear protection **MUST** be worn by the machine operator as well as any bystanders or observers. Flying sawdust, material chips, and other debris can cause serious eye injury.



Wear closed-toe shoes at all times.



Ensure material is properly secured before cutting, and be aware of any small parts that may come loose after being cut. If a small part catches the edge of a spinning bit, it can be thrown forcefully in any direction, causing injury or damage.



DO NOT place hands on the rails of the ShopBot. Be aware that the machine may move unexpectedly in any direction, which can cause serious injury if hands are in the path of movement.



Never wear gloves while operating the machine. As with any power tool, a glove can get caught in moving or spinning parts and pulled into the machinery.



Never leave a machine running and unattended. A spinning tool generates friction and heat, creating a risk of fire. This risk is minimized by using correct chip load, using sharp bits, and by always double-checking files before cutting. Be prepared to pause or stop the cut if something seems incorrect or unsafe.

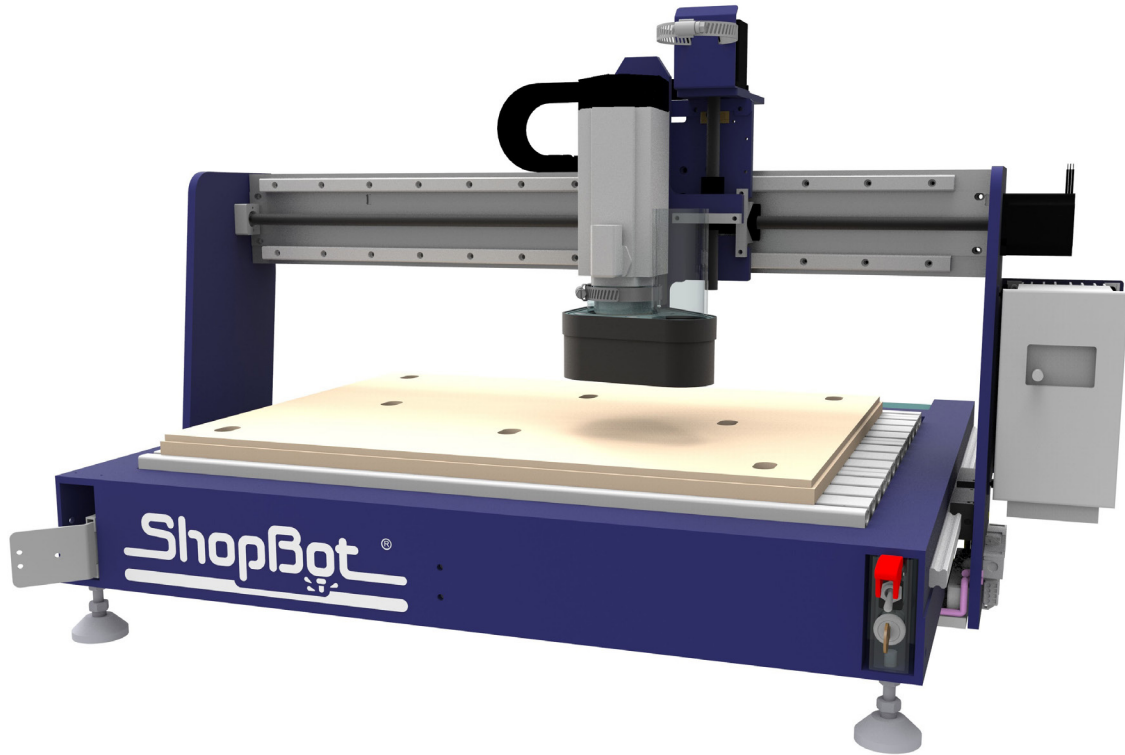


Keep a working fire extinguisher within reach of the machine.

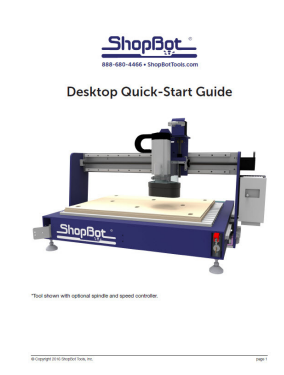
In the Crate

Desktop D2418

Shown with optional spindle and speed controller.



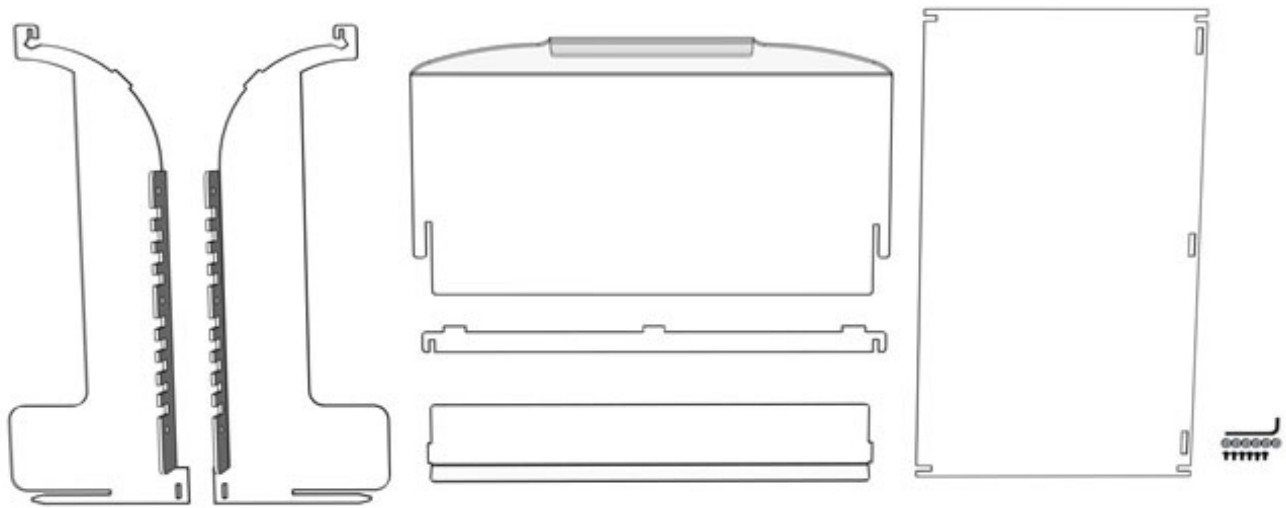
Thumb drive with software



Quick-Start Guide



Command Reference Guide



Dust Enclosure (Optional)



1/4" and 1/2" Spindle or Router Collet Sets



Collet Wrenches



Bit Kit (Optional)



Z Zero Assembly

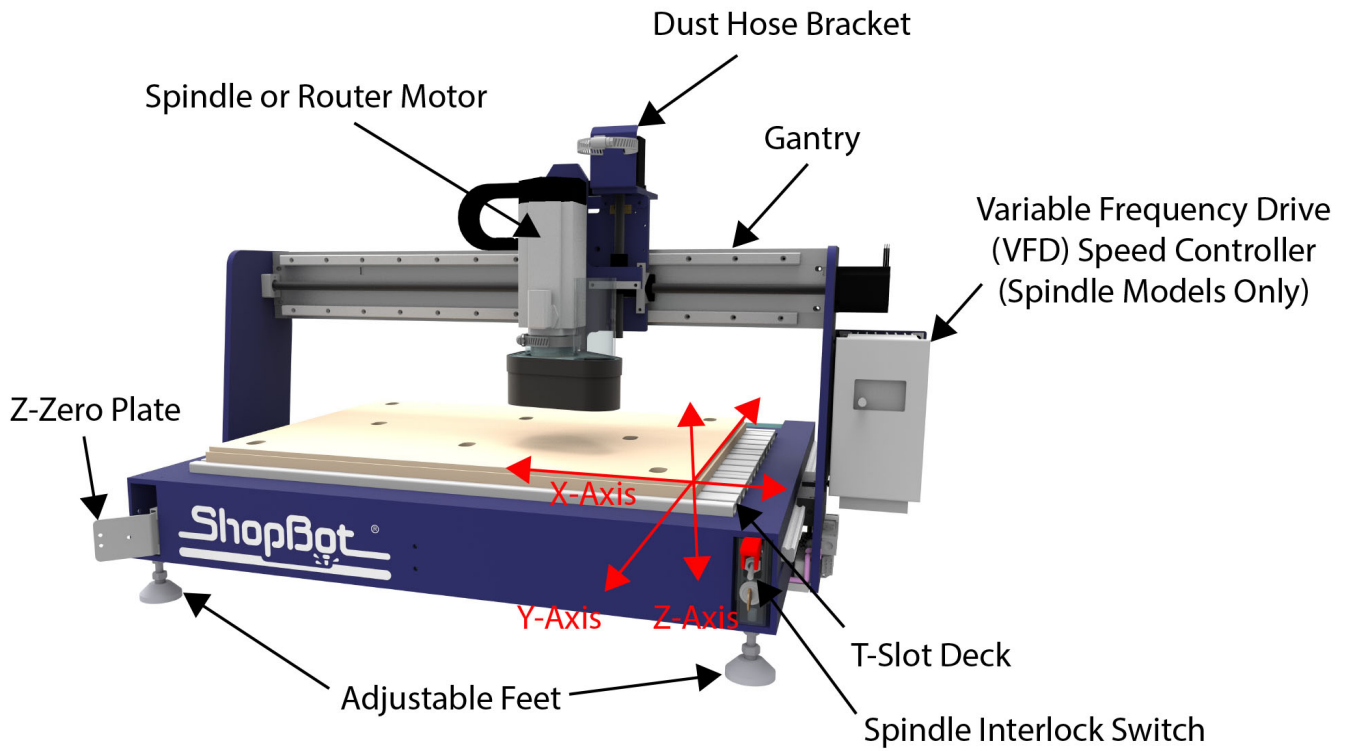


Power Cord

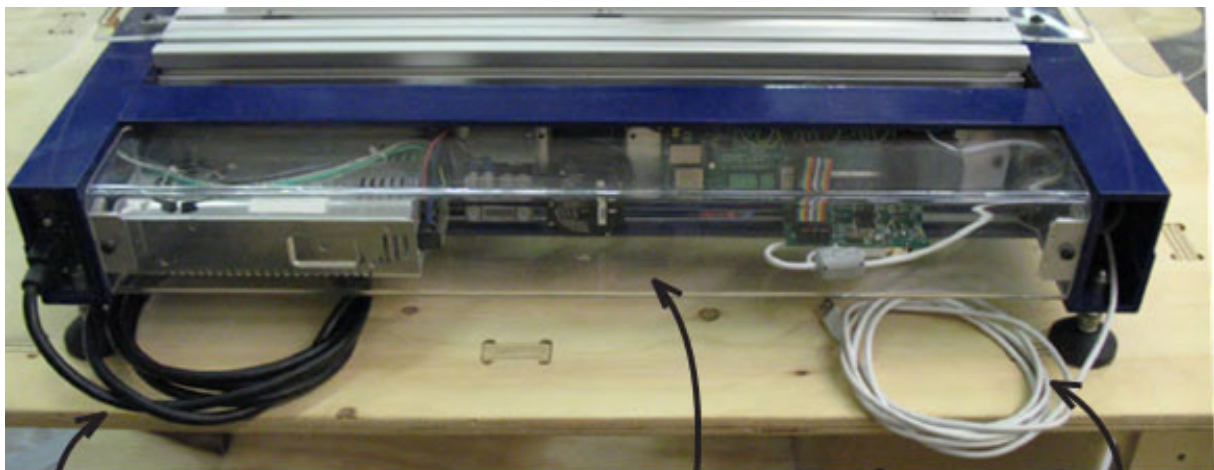


Hold Down Bolts

Main Parts of the ShopBot Desktop D2418



Back View



Power cord and connection

Electronics

USB cable

Introduction

This quick start guide covers the basics of computer number controlled (CNC) digital routing using the ShopBot Desktop tool. It also provides essential information about machine set up and operation - information used almost every time the machine is run. Additional training and web resources that go beyond the basics are located in the back of this guide. For questions or technical help, contact ShopBot technical support. Also feel free to visit the forum at TalkShopBot.com, as many questions are answered there.

Uncrating



Tools Required:

Hammer, Claw

CAUTION: clips are under tension and can cause damage when sprung.

Remove cardboard packing materials, and the sides of the crate.



Lift Desktop tool onto a sturdy table or bench.

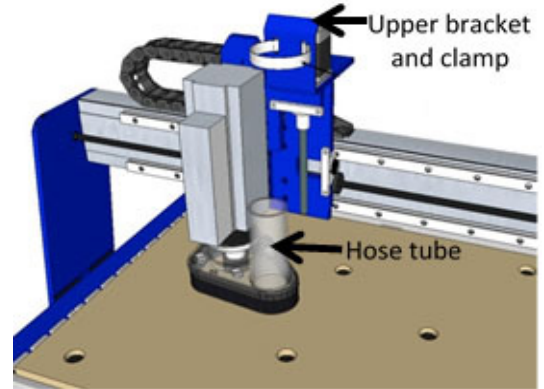
CAUTION: The ShopBot Desktop can weigh up to 150 lbs. Have AT LEAST one more person help lift the tool.

Assemble Parts



Adjust the leveling feet so tool doesn't rock.

Note: If using a dust collection system, refer to the DT dust collection setup document found on shopbotdocs.com.

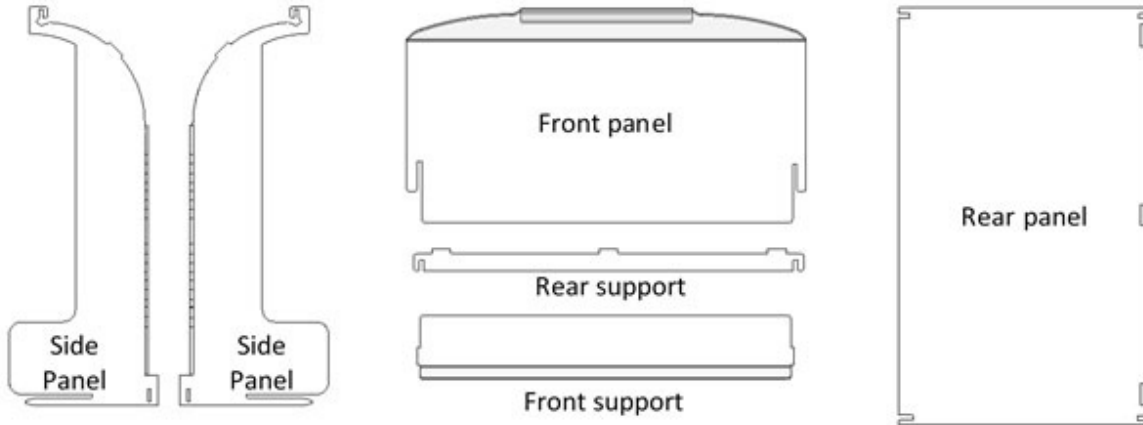


Plug in the Z zeroing assembly cable into its receptacle at the front left of the machine. Store the Z zero plate in the space below the plug.

Install Dust Enclosure (Optional)

Note: the following steps are only relevant for the optional enclosure. If not applicable, skip to the “Load the software” section.

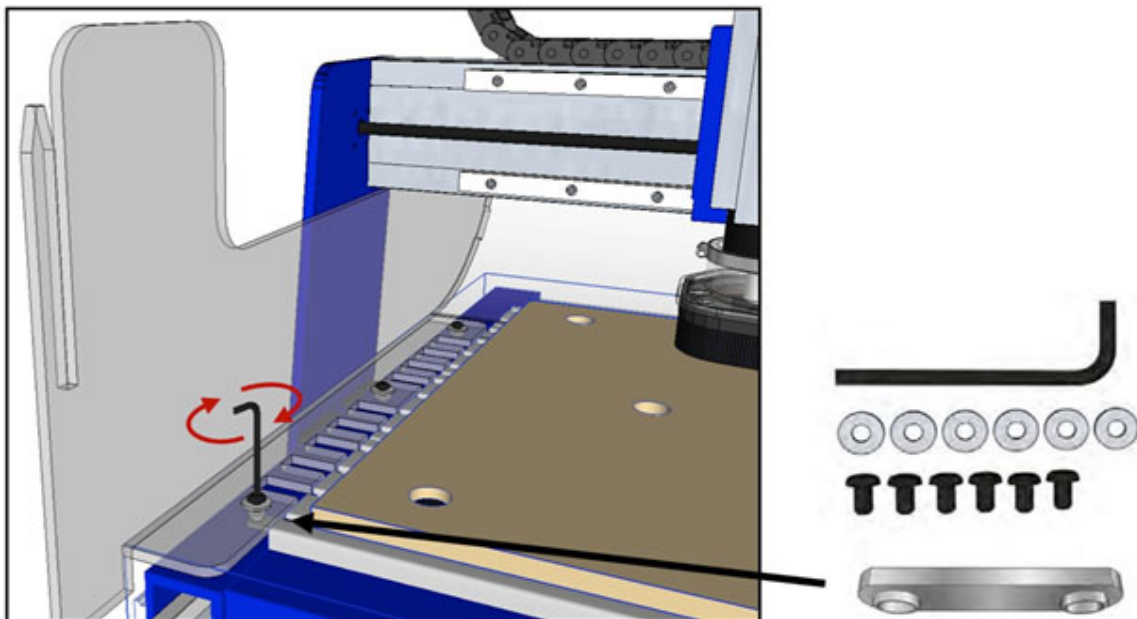
Parts Required:

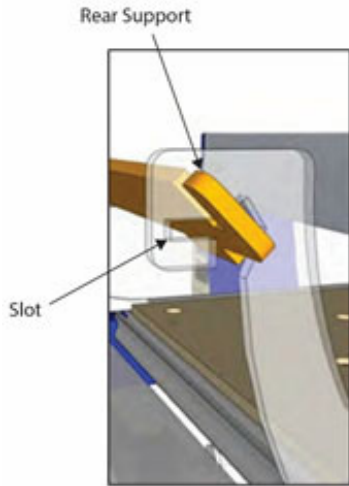


Tools Required:

- Allen Wrench
- Flat Washers
- 1/4” button head bolts
- Double nuts (pre-installed)

Attach side enclosure panels to the pre-installed double nuts.





Install rear support into slot (Figure A) and rotate it into position (Figure B).

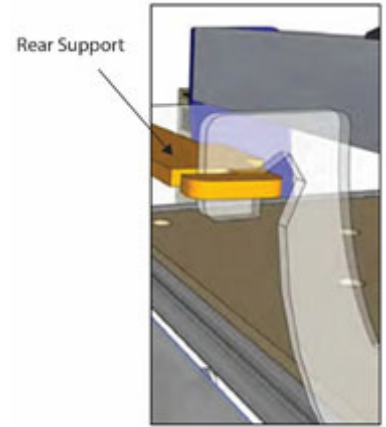
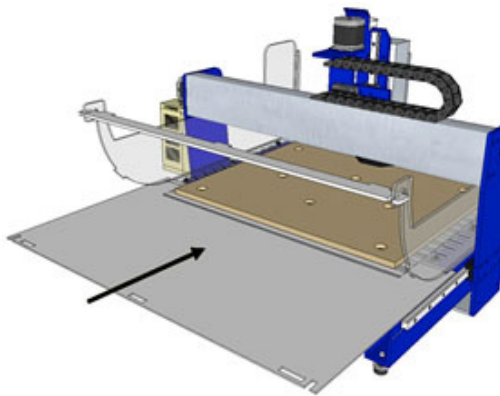
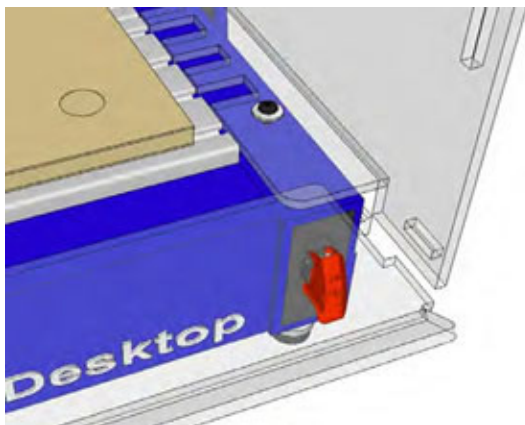
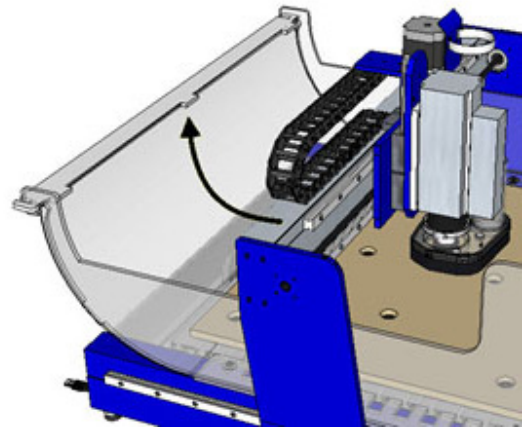


Figure B

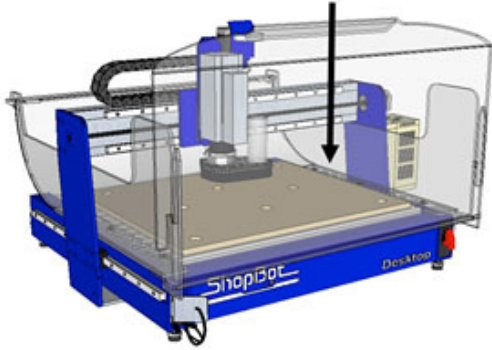


Slide the rear panel in from the back.

Wrap the rear panel up and clip it in place.



Slide the front support under the side panels so the end tabs clip into the notches in the side panels. The lip should face up.



Complete assembly by sliding removable front panel into place.

Load Software

Minimum computer requirements:

Required: A PC running Windows XP, Vista (Home Premium / Business or higher), Windows 7, or higher.

Also recommended: The equivalent of a dual core (or higher) Pentium processor and a minimum of 4GB RAM (8GB preferred).

The ShopBot Desktop requires one USB port for connection to the tool. Additional USB ports may be required for a mouse, keyboard, and other USB peripherals. An open USB port to transfer part files to the computer from a thumb drive is also helpful.

For schools: This software runs best with full administrative permissions enabled. It is **strongly advised** against setting up separate administrator and user accounts on the control computer.

For International customers: The computer used to run the machine **MUST** have the language set to “English (United States)” for the software to run correctly.

Computer Configuration

Important: To ensure trouble-free installation and operation, ShopBot recommends the following, prior to installation:

Install program using administrative account.

Set User Account Control (UAC, not applicable to Windows XP) to “Never Notify.”

Disable network connection.

Disable security and antivirus software.

Make sure the USB cable from the ShopBot is **not** plugged in.



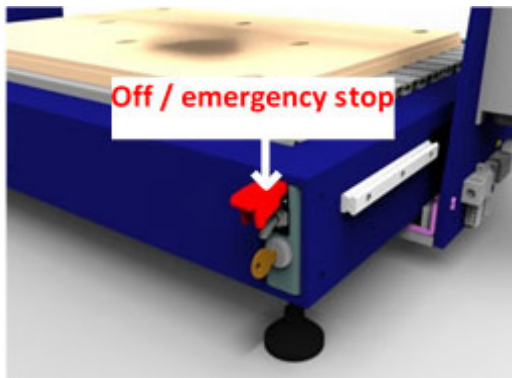
Plug in the ShopBot thumb drive that came with the tool. Install ShopBot 3 and VCarve software. Refer to Uninstalling and Reinstalling ShopBot and VCarve Software document which was part of the binder received with the tool, or can be downloaded from shopbotdocs.com.



These three shortcut icons should be present on the computer after installation.

Connect Power

Important Safety Note

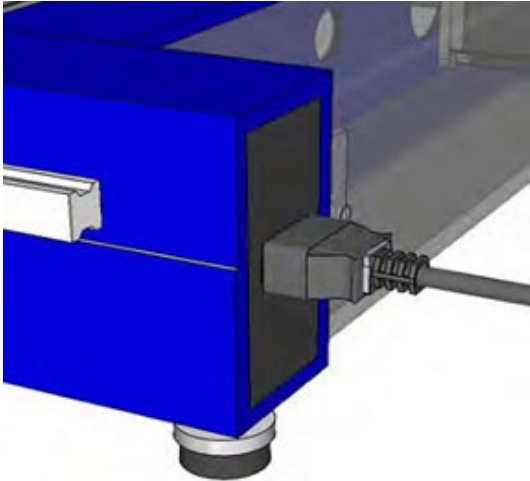


If it is necessary to abruptly terminate the tool action (to prevent damage to people, material, or the tool), push down the red off/emergency stop switch. This will completely cut power to the Desktop and stop all movement.

Keep in mind that the presence of an emergency stop switch does not alter the need for good safety procedures while operating the ShopBot tool.

For more information, see the section “Restarting after an emergency shut down”, on page 28.

For non-emergencies, simply hit the space bar on the computer keyboard. This will pause the tool while maintaining XYZ coordinates, allowing the cut file to resume without starting over.



Install the power cord into socket at the back of Desktop.

Plug in the power cord into a standard 110 volt 15 amp receptacle.

Note: Do not use a ground fault interrupt (GFI) circuit.

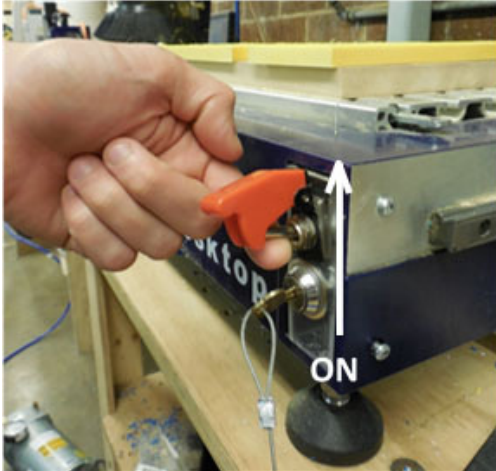


Unravel the USB cable from the back of the machine.

Connect the USB cable to the computer. Windows will recognize a “New Device.”

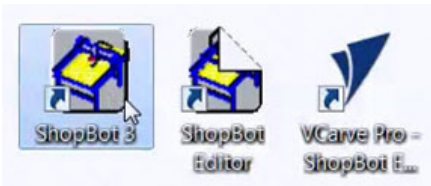
NOTE: It is best to use the same USB port every time the Shop-Bot is connected to the computer.





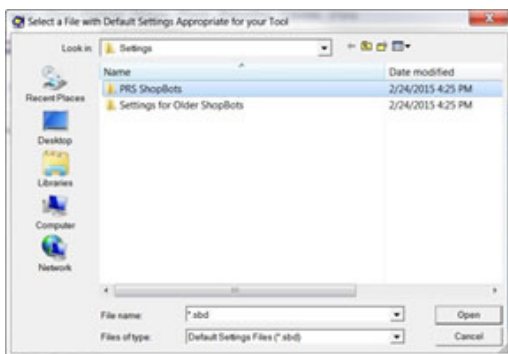
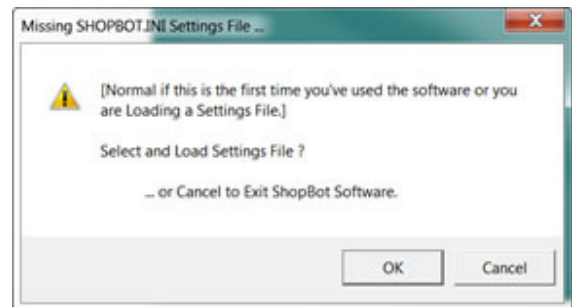
Turn ON the machine.

Launch Software



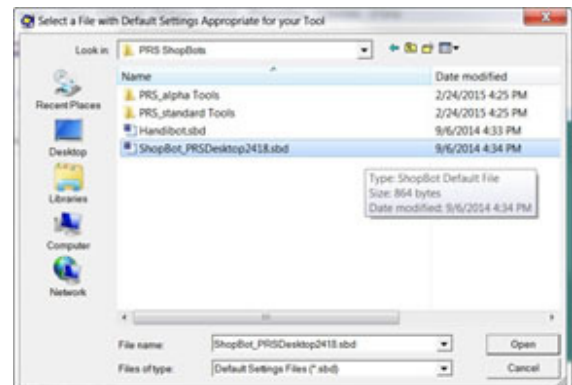
Click on the ShopBot 3 icon.

Note: The first time the program is opened, there will **not** be a settings file for the machine. Click “OK” and a prompt appears to load a settings file for the machine.



Double-click the PRS ShopBots folder.

Double-click the desktop setting file, “ShopBot_PRS-Desktop2418.sbd”.



Move the Desktop Tool

The “Easy” Control Panel



The “Easy” control panel provides essential machine information and controls.

Click on the yellow button to bring up the “KeyPad” panel.

The KeyPad

This window allows the operator to manually move the X-, Y-, and Z-axes. Click on the blue arrows or cursor buttons on the keyboard to move the machine’s spindle/router and gantry.

Use the “Page Up” and “Page Down” buttons on the keyboard to move the Z-axis up and down.

Move the spindle/router to a safe Z position below the Z proximity switch and near the middle of the deck.

Click on the “X” in the upper right corner to close the yellow KeyPad.





Switch Off Router or Spindle First

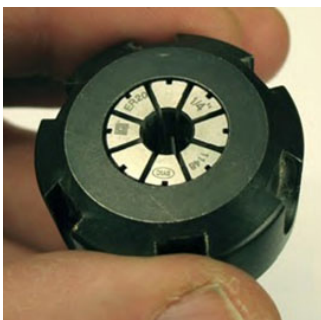
If a router is used, ensure the switch is turned off.

For BOTH ROUTERS and SPINDLES, make sure the switch under the main power switch is turned to OFF (counter-clockwise).



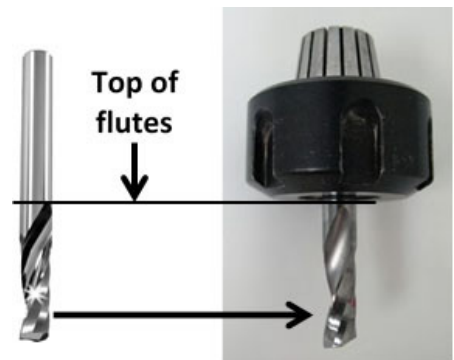
Note: The 1/4" collet and the spindle collet nut works for spindles only.

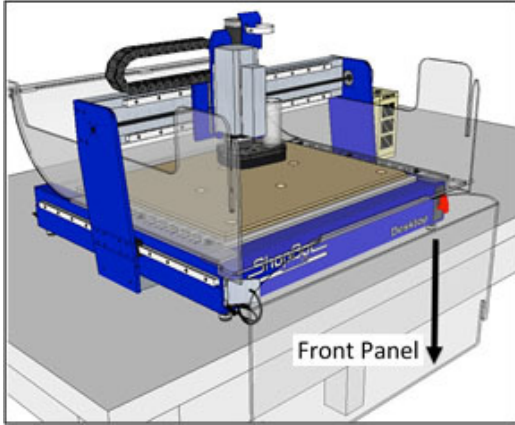
The collet nut and collet come locked together as a single unit for routers only.



Press the spindle collet into the spindle nut and listen for the "click." It may be necessary to press it in at a slight angle. Hold the nut upside-down to confirm that the collet is snapped in place (shown on left). It should hang freely and not fall out.

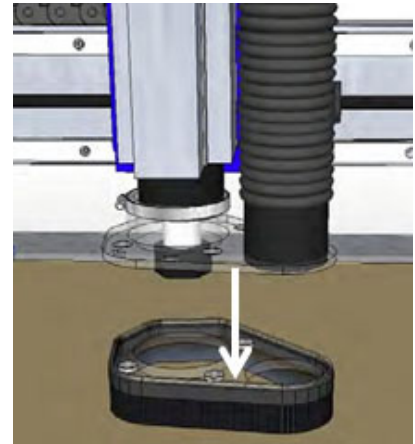
Slide the 1/4" diameter upcut spiral bit into the collet. The shank of the bit should fill up at least 75% of the collet to provide sufficient gripping surface. Only allow the shank of the bit to extend above the top of the collet a maximum of 3/8". Keep the top edge of the flutes outside of the collet.





If applicable, remove the front enclosure panel and store it on the front support bar.

Push down on the bottom of the dust foot and remove it. Set the dust foot away from the Desktop.



Hold the end of the spindle to keep it from moving, and thread the collet nut onto the spindle. If resistance is encountered, do NOT apply more force. Try again until it goes smoothly. Reposition the bit as necessary.

Tools Required:

- Wrenches, Collet (included)

Tighten nut with wrenches.

NOTE: Over-tightening will make the collet difficult to remove and possibly damage it. Under-tightening will allow the bit to slip during operation.

A firm one-hand squeeze (approximately 59 ft-lbs) is usually sufficient.



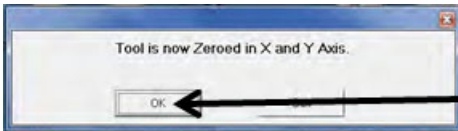


Zero the X- and Y-Axes

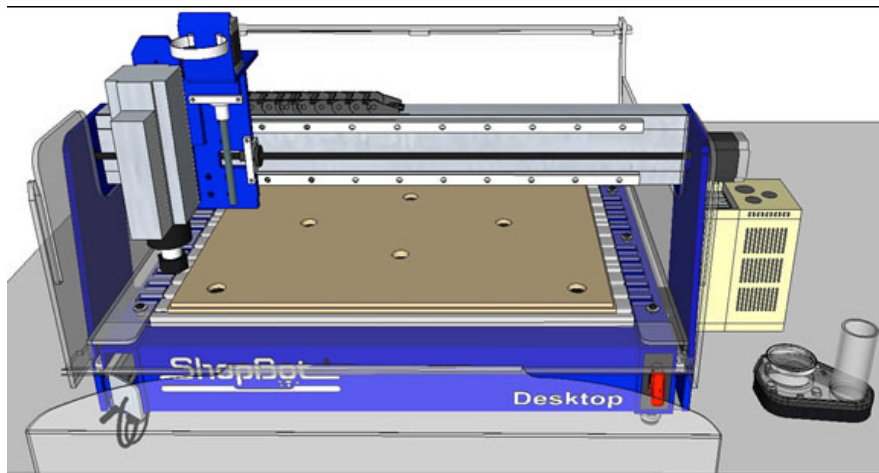


Click the middle white button marked with the X, Y to zero the X- and Y-axes to the left lower (front) corner of the machine.

The X and Y locations in the control panel should now read .000 in.



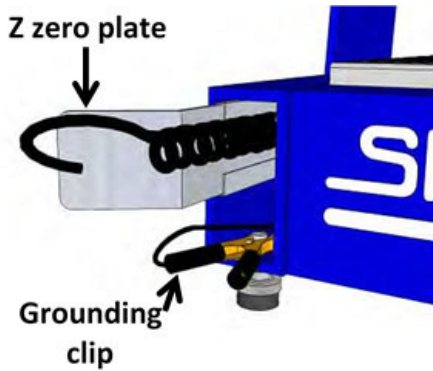
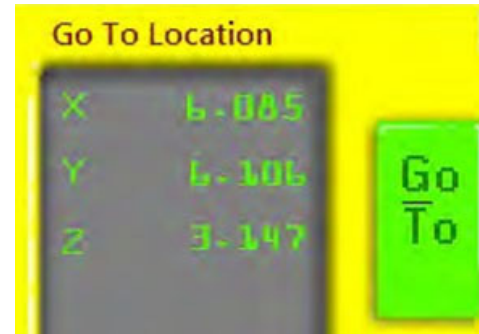
Click OK.



The spindle/router should now be in the left lower (front) corner of the deck. X=0, Y=0 position.

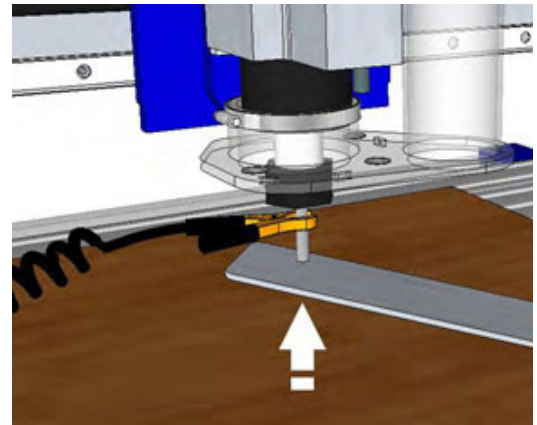
Zero the Z-Axis

Open the yellow KeyPad and move the spindle to approximately X=6, Y=6. Close the KeyPad.



Remove the Z zero plate and the grounding clip from their location.

Attach the grounding clip to the router bit (or collet) and touch the Z zero plate to the bottom of the bit.



Input 1 should light up, then go off when the Z plate is removed.

Check this each time the grounding clip is connected. If Input 1 doesn't light up, verify the grounding clip is well connected and try again.

Lay the Z zero plate on top of the spoil board, below the router bit.

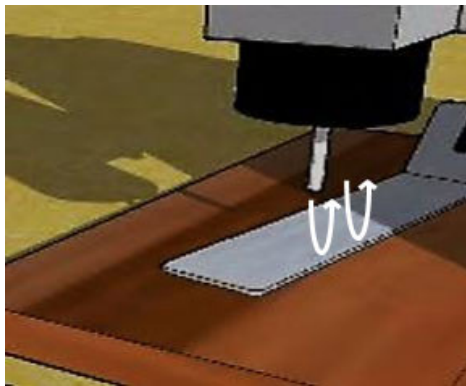
Note: Z zeroing can be performed to the top of the spoil board or on the top of the project material, depending on how it is set in the design file.





Click the white button marked “Z”.

The message at right will appear. Double check the location of the Z zero plate and click OK. An alarm will sound signifying that the Z-axis will start moving down in couple of seconds. Hold the angled end of the Z zero plate in place while the Z zero routine takes place.



The spindle/router bit will lower to contact the Z zero plate, then immediately repeat the process.

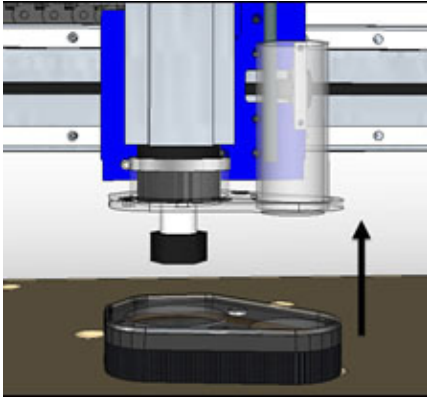
Note: Wait until the router bit has contacted the Z zero plate twice before removing the Z zero plate or the grounding clip.



The router bit will retract to a position of 1/2” above the deck. The Z-axis is now zeroed to the top of the MDF deck.

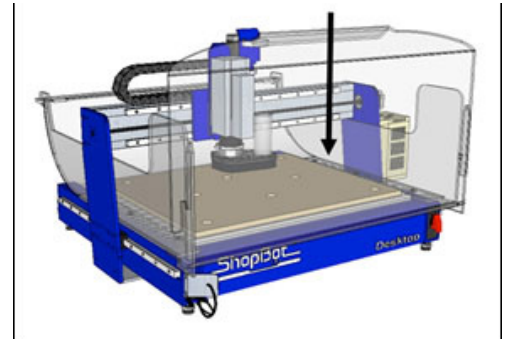
Put away the clip and Z zero plate.
Press “OK” to exit the program.





Reattach the dust foot.

Place the front enclosure panel back into place if applicable.

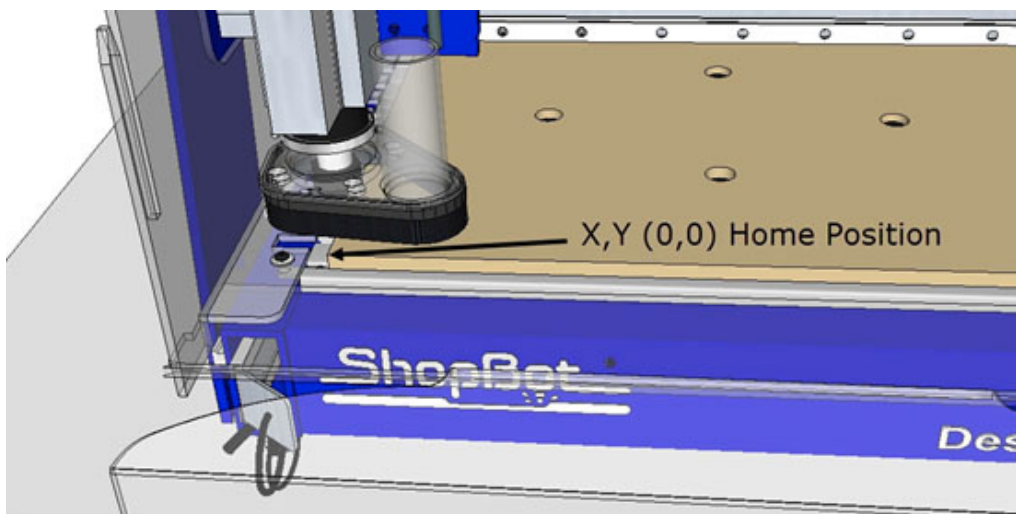


Move to Home Position



Click the white button marked 0,0.

The spindle/router will move to the home position in the left lower (front) corner of the machine.



Warm Up (Spindle Models Only)



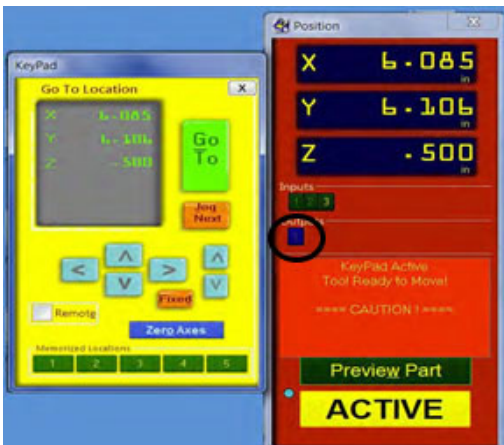
Desktops equipped with a spindle also have a variable-frequency drive (VFD), which is used to control the spindle RPMs.

A spindle interlock switch locks out the spindle power for additional safety.

Turn the key clockwise to turn ON the spindle interlock switch.

Adjust the VFD to read F 100. F 100 equals 6,000 RPM - half of the typical operating speed for cutting wood.

A spindle requires a warm up cycle to bring the bearings to operating temperature. Run the spindle at 1/2 of the intended cutting RPM for 10 minutes at the beginning of each day and after the spindle has been idle for more than three hours before using it to cut.



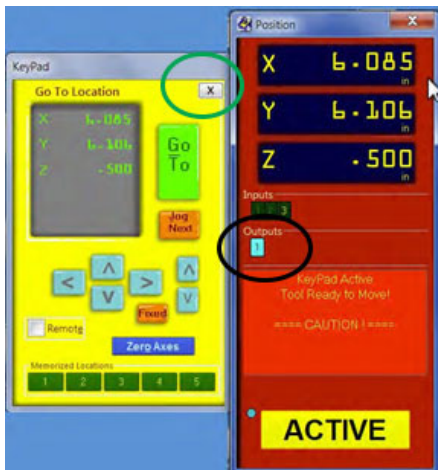
Open the yellow KeyPad. Click on the Output 1 button in the position window (circled in black on left).

Click "OK" in the NOW STARTING ROUTER/SPINDLE window. Allow spindle to run for 10 minutes.

After the spindle has run for 10 minutes, adjust the VFD to F200. The spindle will increase in speed as the dial is adjusted.

F200 equals 12,000 RPM and is a common operating speed for carving and cutting wood.





Turn off the spindle by clicking on the output #1 button (circled in black).

Close the yellow Keypad (circled in green).

Desktop spindle RPM settings



To translate frequency to RPM, multiply the listed frequency by the Hertz setting.

Frequency to RPMs for 60Hz (US, Canada, and Mexico. May apply to other countries):

Display	Spindle RPM
300	18,000
266	16,000
233	14,000
200	12,000
166	10,000
133	8,000
100	6,000

Frequency to RPMs for 50Hz (Europe and most other regions):

Display	Spindle RPM
300	15,000
266	13,300
233	11,650
200	10,000
166	8,300
133	6,650
100	5,000

Preparing to Cut

Safety Reminder

To abruptly terminate tool action (to prevent damage to people, material, or the tool), push down the red off/emergency stop switch. This will completely cut power to the Desktop and stop all movement.

For non-emergencies, simply hit the space bar on the computer keyboard. This will pause the tool while maintaining XYZ coordinates, allowing the cut file to resume without starting over.

Restarting After an Emergency Shut-Off

If the Desktop's main power switch was used to stop the machine during a cut, or if the tool loses power unexpectedly (including a power outage, a tripped circuit breaker, or any other event), it is important to understand that there is nothing holding the motors in place and they may slightly move out of position. Therefore, when turning on the machine back, do not expect the motors to be aligned with where the cutting stopped. The location coordinates on the computer monitor will probably no longer be accurate.

Turn the Desktop's power switch back on.

If necessary, use the yellow Keypad function to move the bit to a safe Z height above the workpiece.

Zero the X-, Y-, and Z-axes. An error message may appear confirming lost communication. Click OK to continue past the message. If any further errors appear, or there is trouble opening the Keypad; exit and restart the software.

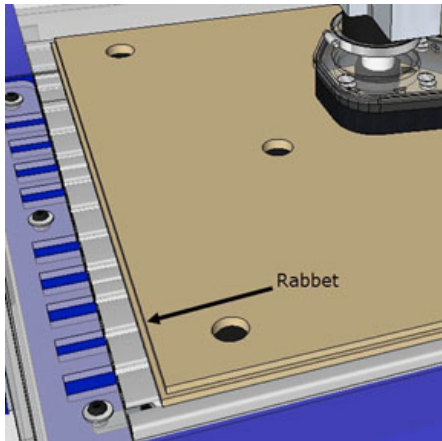
Pre-Cut Information

Prior to performing a cut, refer to the following documents, which are located in the binder that was shipped with the tool, or can be accessed via www.shopbotdocs.com:

Feeds & Speeds
Material Hold Down

Trim Deck and Rout Jig Holes

Note: Do not proceed with this section until the X-, Y-, and Z-axes are zeroed and the spindle is warmed up.



This process routs a rabbet around the Desktop's 18" x 24" cutting area.

Turn on dust extraction as applicable.

Click open the ShopBot 3 shortcut icon.



Click "Cut Part".

Access to www.shopbottools.com > ShopBot Docs > Desktop > Files > Desktop Work Area Cut File to download a zipped folder containing the rabbet .sbp file.



The file name appears in the display window in the ShopBotE-ASY controller.

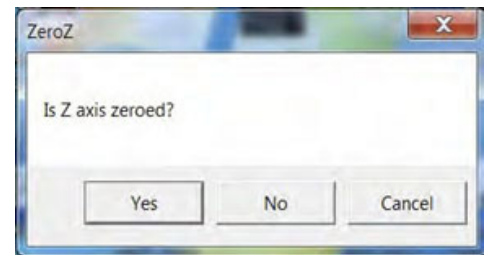
Click "START".

Verify that the 1/4" spiral upcut bit is installed. Click "Yes."

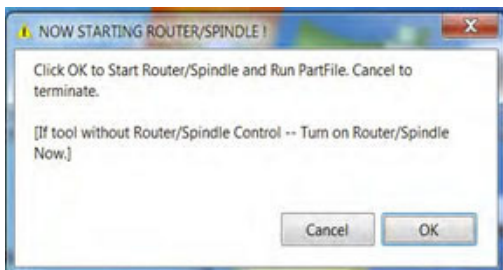
Note that the tool may be a number other than 1.



If the bit was zeroed to the top of the spoil board, click “Yes.”



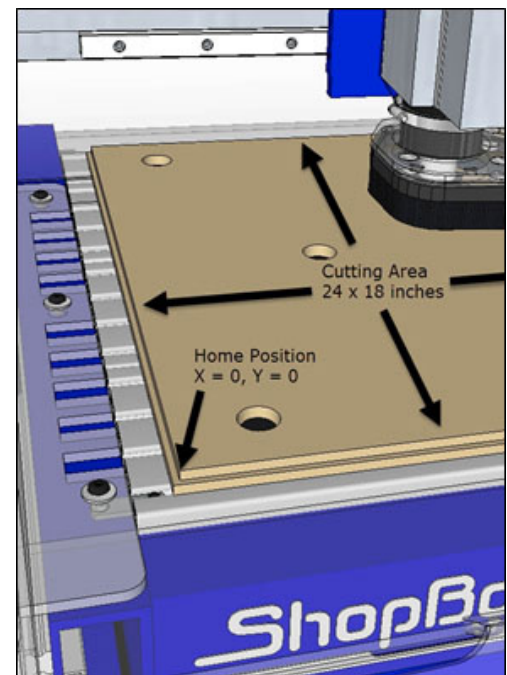
Turn on the power to the router/spindle. If using a router, engage the power switch, then turn the interlock key switch clockwise.



Click “OK”. The tool will make two passes around the perimeter of the deck, creating a rabbet approximately 1/8” wide by 3/8” deep.

Keep in mind:

- The center section of the deck represents the cutting area of the Desktop, 18” x 24”.
- The left front (lower) corner represents the home position for the X- and Y-axes.
- The router returns to this position after completing a cutting program.
- Home position aligns with the center of the bit.
- Most X and Y measurements for designing and routing are based off this location.



Switch to ShopBot FULL

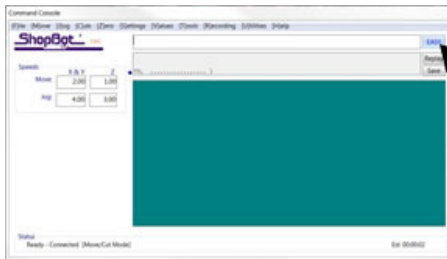
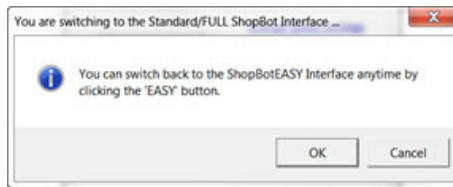


Switch to ShopBot FULL in order to use additional functions. To do this, click on the ShopBot EASY help (?) button.



Click on the “Switch to FULL” button.

Click “OK” on the popup window.

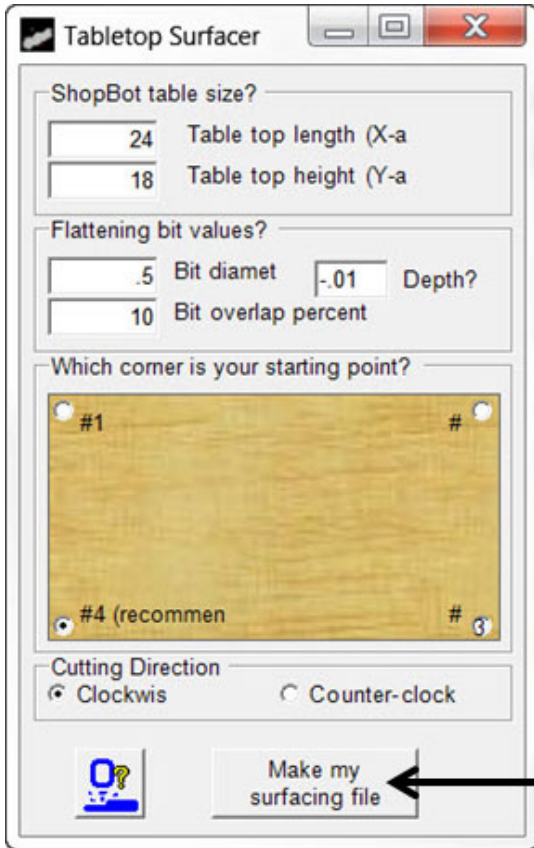


A command console should pop up. Note that the “EASY” button, will easily switch back to ShopBotEASY if desired.

Surfacing the Deck

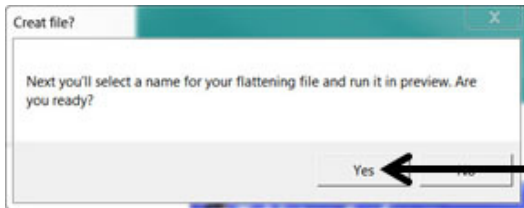


The basic Desktop deck is made out of medium-density fiberboard (MDF). It is a good sacrificial deck, but thickness can vary due to the manufacture of the material and changes in humidity. The MDF deck should be surfaced before cutting. Click on “Table Surfacer” under “Tools” in the FULL ShopBot control. It can also be accessed by typing “TU”.



Choose a straight bit 1/2” in diameter or greater. Zero the bit to the top of the MDF.

Default table size numbers are for a 96” X 48” table. Change these values to 24” x 18”, set the depth to -.01”, and change the bit diameter to the size of the bit chosen (1/2” in this example). Click the “Make my surfacing file” button.



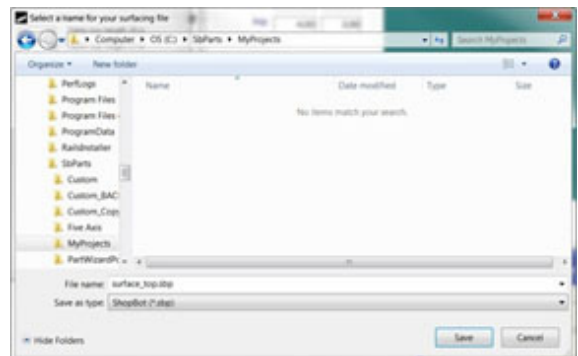
Click “Yes” on the pop up.

Name the file, and include the tool used in the name. Save the file in an easy to remember location.

Click “Save”.

The file will run.

If an area of the deck is left unsurfaced, re-zero to the area that was missed and re-run the surfacing program. Repeat this program any time the deck gets worn from use.



When the MDF deck gets thin and close to the bolts holding the deck to the machine, simply glue on a new piece of MDF.

Maintenance

Note: Maintenance generally includes cleaning up (vacuuming or blowing debris from the machine) after cuts are done. The motor drive screws are Teflon coated – DO NOT lubricate them, as the lubricant will cause the machine to not run properly.

Item/Duration	Maintenance
Motor Screws	Wipe screws with a clean dry cloth. DO NOT USE any kind of lube or solvent-based cleaner on the Teflon coated screws. Doing so could cause the Teflon to flake off.
Rails	Wipe them with a clean, dry rag, Apply a light coat of a machine oil. Wipe off excess oil as too much will attract dust.
After every 40 hours of use	Check for loose screws and parts.
On an as needed basis	Remove the clear plastic enclosure from the back of the machine and gently blow out any dust that has accumulated in the control area. This is especially true if cutting aluminum.
Prior to inserting a new bit	Wipe clean collets, collet nuts and collet end of arbor. Apply a light coat of machine oil with an oil damped rag (not soaked or dripping).
NOTE: Damage or wear due to misuse or an accident will require additional attention depending on the problem.	

Resources

ShopBot Tutorials & Videos

www.shopbottools.com/mSupport/tutorials.htm

ShopBot Training Classes

www.shopbottools.com/mSupport/training.htm

Information on a variety of different CAD/CAM software packages for design

www.shopbottools.com/mProducts/software.htm

Tooling, materials, and more

www.shopbottools.com/mSupport/resourcelist.htm

ShopBot Forum

<http://www.talkshopbot.com/forum/forum.php?>

Technical support

<http://www.shopbottools.com/support.htm>

Documentation

<http://www.shopbottools.com/ShopBotDocs/>