



Installing a 3" Indexer: Desktop Tools

built after October, 2012

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Overview

This document covers basic set-up and installation of the indexer for ShopBot Desktop Tools built after October 2012. There is an additional wiring step for earlier models, which is referenced in a separate document for older models.

Please Note: if the indexer was purchased along with the Desktop tool, the wiring installation has already been completed. Skip to “Connecting the Motor Cable”.

Install Driver

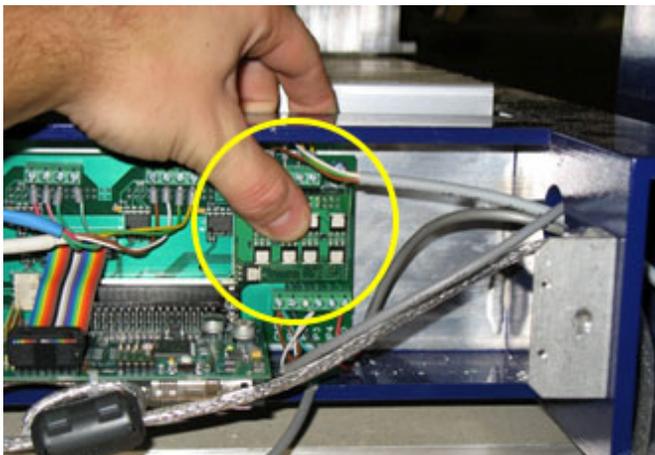
RISK OF ELECTRIC SHOCK: Unplug power to the ShopBot before starting this process. Failure to do this can result in electric shock and/or damage to the ShopBot.

Remove the two Phillips head screws and Plexiglass cover from the back of the machine.



The small driver card that came with the indexer kit fits into the plug directly underneath the green terminal blocks, on the right side of the board. Ensure it is properly aligned and press it into the plug until it's fully seated.

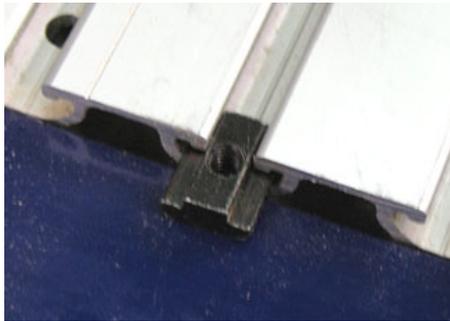
IMPORTANT: The control board may be damaged if any of the pins are out of line. Take care to align it properly.



Connect Motor Cable

Plug one end of the motor cable into the gray Wago connector mounted on the back of the machine frame, and the other end into the matching plug on the indexer motor. These connections fight tightly, so check that the plugs are fully seated before continuing.

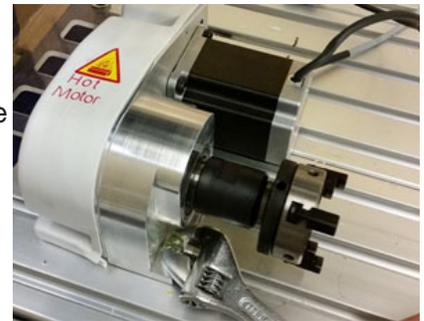
Replace the plexiglass cover on the back of the machine with two Philips screws.



Install Headstock

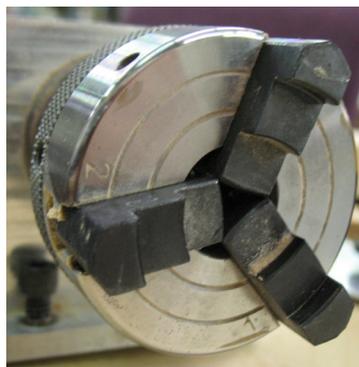
The headstock can be installed anywhere on the left side of the table. Choose two adjacent grooves and slide a pair of T-nuts into each of them.

Position the headstock over the T-nuts, then thread the screws into the nuts to tighten them down. Follow the same process for the tailstock, but leave the screws loose in order to slide the tailstock along the grooves to accommodate different lengths of material.

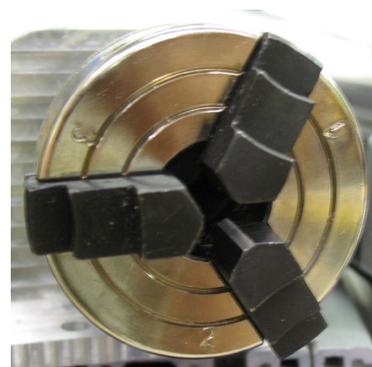


Using the Chuck

The chuck jaws can be reversed for gripping the inside of a surface (for example, a hole created with a forstner bit). This is useful for working on large-diameter stock. Rotate the knurled ring behind the chuck body to open and close the chuck jaws. Rough adjustments can be made by hand, but for better leverage, insert the black rods ("tommy bars") into the holes on the chuck body and knurled ring. Looking at the face of the chuck, rotate the ring clockwise to tighten the jaws, counter-clockwise to loosen them.



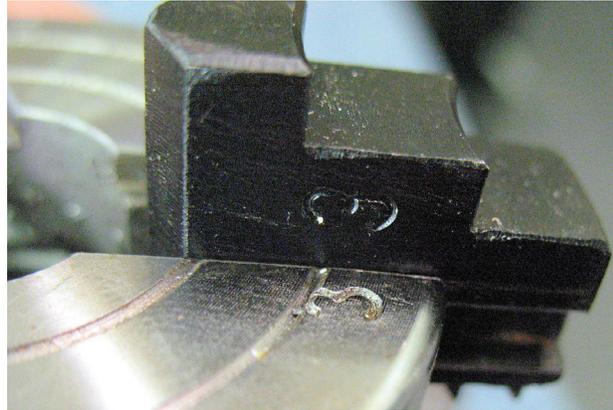
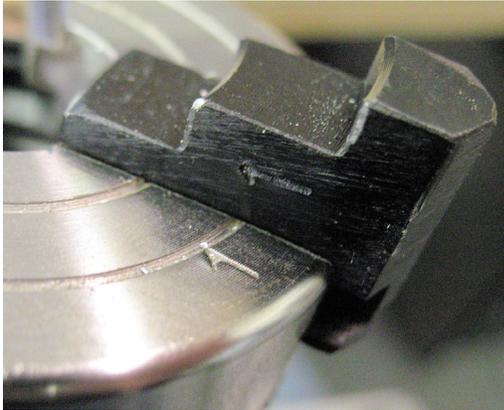
Chuck jaw gripping inwards



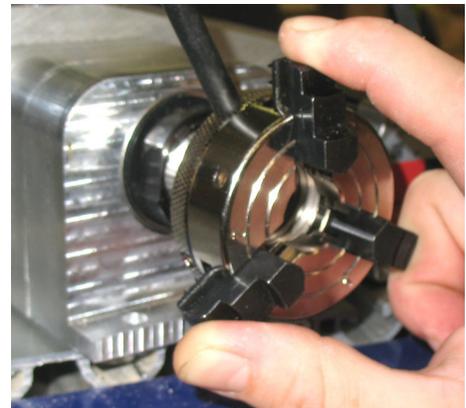
Chuck jaw gripping outwards

To remove the chuck jaws, open the chuck as wide as it will go and pull the jaws out one at a time. Wiggle the knurled ring back and forth if necessary while pulling outwards on the jaw until it comes free.

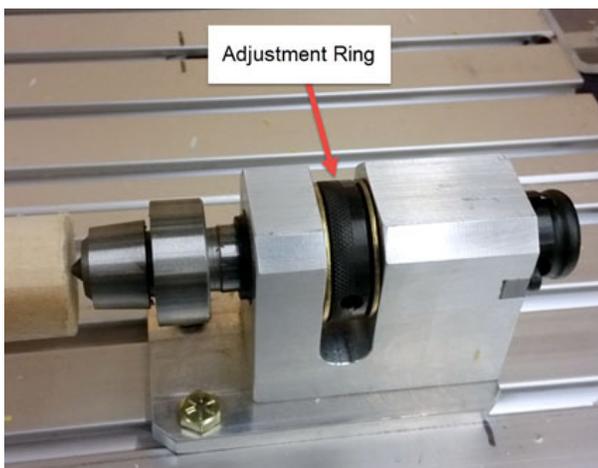
To put the jaws back in, seat them in the correct slot. Slots are numbered 1 through 3 on the chuck face, which corresponds to the number stamped on the chuck jaw. Jaw #2 always sits in the same slot, but jaws 1 and 3 will have to switch places when switching from inwards-gripping to outwards-gripping.



Once the jaws are in the correct slots, maintain even pressure on each jaw while rotating the knurled ring clockwise. Be sure that the jaws are moving evenly towards the center of the chuck. If they seem uneven, reverse direction to remove the jaws and start over.



Adjusting Tailstock



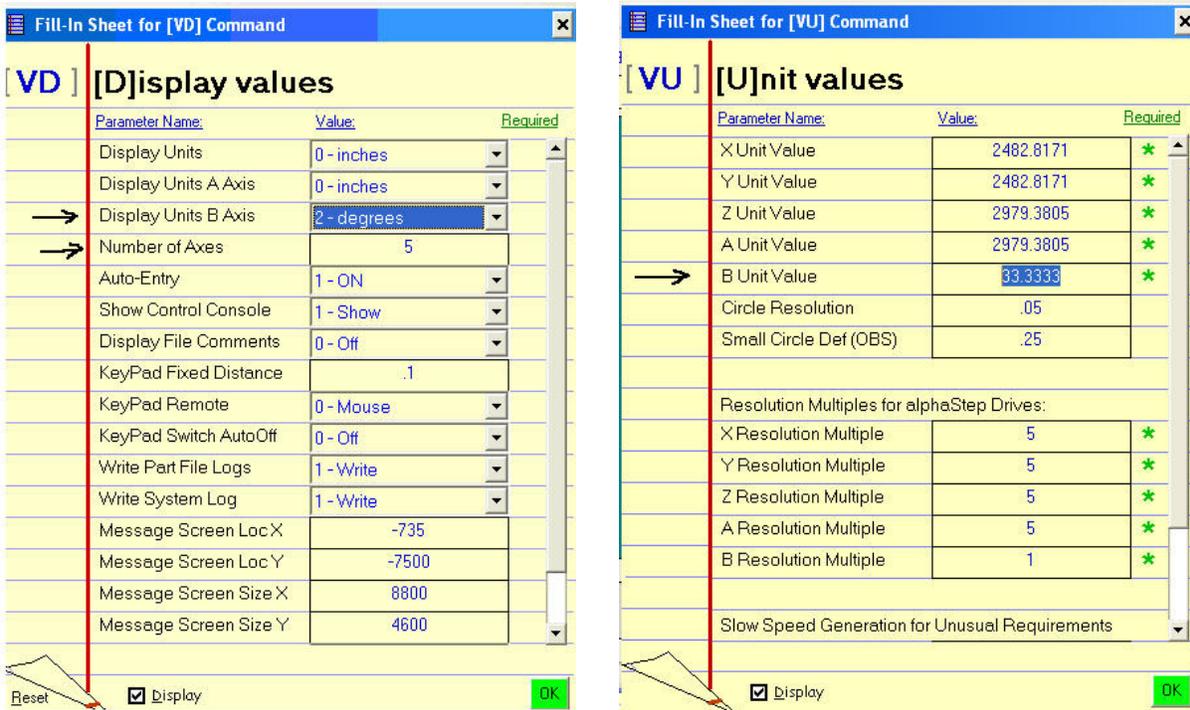
The knurled ring on the body of the tailstock allows for adjusting the pressure of the center point against the material. Once the material clamped in the chuck jaws, rotate this ring so that the center point recedes back into the tailstock. Slide the tailstock up against the material and tighten down the screws. Rotate the ring in the opposite direction to push the center point into the material.

The center point only needs to be slightly indented into the material. Excessive force will shorten the life of the bearings inside the center and can stress the motor.

Make Changes to ShopBot Software

Open the control software and type **VD** into the yellow command box (or click **Values > Display Values** on the top menu bar.). A yellow fill-in sheet will appear, as shown in the picture below. Change **Display units B axis** to degrees, and change **Number of Axes** to 5. Click **OK** at the bottom of the sheet to save the changes.

Type a **VU** command or click **Values > Unit values**. Change the **B Axis Unit Value** to 33.3333 (go to four decimal places). Do not make changes to any of the other values. Click **OK** to save changes.



Parameter Name	Value	Required
Display Units	0 - inches	
Display Units A Axis	0 - inches	
Display Units B Axis	2 - degrees	
Number of Axes	5	
Auto-Entry	1 - ON	
Show Control Console	1 - Show	
Display File Comments	0 - Off	
KeyPad Fixed Distance	.1	
KeyPad Remote	0 - Mouse	
KeyPad Switch AutoOff	0 - Off	
Write Part File Logs	1 - Write	
Write System Log	1 - Write	
Message Screen Loc X	-735	
Message Screen Loc Y	-7500	
Message Screen Size X	8800	
Message Screen Size Y	4600	

Parameter Name	Value	Required
X Unit Value	2482.8171	*
Y Unit Value	2482.8171	*
Z Unit Value	2979.3805	*
A Unit Value	2979.3805	*
B Unit Value	33.3333	*
Circle Resolution	.05	
Small Circle Def (OBS)	.25	
Resolution Multiples for alphaStep Drives:		
X Resolution Multiple	5	*
Y Resolution Multiple	5	*
Z Resolution Multiple	5	*
A Resolution Multiple	5	*
B Resolution Multiple	1	*
Slow Speed Generation for Unusual Requirements		

Testing the Indexer

WARNING! Avoid rotating the motor by hand when the power is off. Doing so can generate an electric charge which may damage the driver and/or control board.

Turn on the Shopbot and switch the software to move/cut mode.

The indexer moves just like any other axis via the move command. Type an **MB** command (for Move B Axis) into the command box, followed by a degree value. Degrees are all referenced from zero. For example, if the screen currently reads at 10 degrees and the software is commanded to move to 15 degrees (type command MB 15), the total distance of travel will be 5 degrees.

Zeroing the Tool Before a Cut

Zeroing in B: If turning the stock to a finished shape, it generally won't be necessary to zero the B axis before cutting. However, if using it to make cuts in a very specific location, rotate the axis using move commands until the desired face or point is pointing straight up (perpendicular to the table surface). Type a **ZB** command for Zero B Axis.

Zeroing in XY: As with any other cut file, it will be necessary to zero the XY axis before beginning. Either use the **C3** command to run the XY homing routine, and/or move the tool to the desired start location on the table and type a **Z2** command to zero it in that location.

Zeroing in Z: There is an option to either zero to the center point, or the top of the material (outer diameter). Whichever option is chosen, make sure that the z-zero setting in the software matches what is done at the machine.

If zeroed to the center point, it will be necessary to move the Z-axis to that point using the keypad. Use the arrow keys to get it close, then click the button marked “**Fixed**” within the keypad move window. This will allow the axis to move in very small increments. Enter a small value (such as .05) and continue to move the Z-axis down until the bottom of the bit is on the same level as the centerpoint. Exit the keypad and type a **ZZ** command to zero the Z-axis in that location.

If zeroing to the top of the material is preferred, use the z-zero plate as usual.

