

Finding Offsets for Multiple Spindles/Air Drills





Introduction

This document explains how to determine the distances between the cutting heads (including drills, routers and spindles) – the distance one is offset from the main spindle position. When centering routine is completed for all cutting heads, offsets are saved in the my_variables.sbc file in the ShopBot directory and is available when referenced in ShopBot Part files that make use of multiple cutting heads.

Items Required

- Z zero plate with clean 5/8" hole already cut. The plate should be connected to input #1.
- Drill rods. ¹/₄" x 2-3" long. One for each cutting head.
- Clamps or duct tape to attach the plate to the table.

Instruction



Put a ¹/₄" drill rod into each cutting head. Zero the Z (and A-axis) spindle(s) with Zzero.sbp (C2) (or Azero.sbp) to the table surface.

Attach the Z Zero clip (ground) to the spindle's collet or drill chuck. Test the connection by tapping the Z Zero plate to the bottom of the 1/4" drill rod.

Input #1 light should come on (If the light does not come on, see Z Zero instructions for testing and connecting centering plate).

Securely attach Z Zero plate to the table with clamps or duct tape. Do not move the plate until all cutting heads have been calibrated. Movement in the Z zero plate during this process will introduce errors in head offsets.

Open Tools ShopBot Setup (TS) in the ShopBot Control software (V3.5.4 or higher) and start the routine. When the routine starts, it will give some general information about the file. Click next. At the bottom of the next screen, check all common accessories that apply to the machine. Make sure that the last selection is checked - I have 2 cutter heads... pneumatic drill heads. Click next. The next two screens concern the Z zero plate and Prox switches. Fill in if necessary then click next.

ShapBot Setup (First Step) You pet up and running quickly this program will ask you some questions about your. Shopbot and prompt you to fill in some measurements it will use this information to customize your my_variables.sbc file. Your my_variable.sbc file contains all kinds of information that's specific to your particular tool, like prox swetch offsets and Z-zero plate thickness. Those values are used to fill in the inputs in this Setup program, so you can use it as an easy editor of sorts to change the values of any of those settings. If you would rather change them manually you can find your my_variables.sbc file in the	There are a couple of zeroing routines included with the ShopBot software that we can help you customize for your particular ShopBot. Do you have any of the following accessories? I have a z-axis zeroing plate and want to setup the Z_zero routine I have prox switches (or something similar) and want to setup the XY_zeroing routine
CUSTOM folder in your SBPARTS folder and edit it with the ShopBot editor or any other text editor III CAUTION. If you manually change your my_variables file by directly typing in new values be VERV careful to keep the formats and data types the samea mis-typed value can cause lots of troubleff Click the Next button to get started.	I have 2 cutting heads2 routersor the ShopBot pneumatic drill head
KPrevious Step	<previous step<="" td=""></previous>



Select whether the air drill is a single valve (shipped

prior to Jan 2011) or double valve unit.



In the Multiple Heads Step 1 screen, select the picture that most closely matches the number of cutting heads and air drills on the ShopBot and click next.

In the ShopBot Setup (Multiple Heads Step 2) window, there should be an X & Y offset location for each additional cutter/drill. Click the Make It Easy On Me button in the middle of this screen. The Cutter Offset Setup window will open and describe what is needed during the file. Click Get Offsets.

		by
Cick Here To Make & Earry	On Me	
X-axis distance from Router1 to Cvill 1 V-axis distance from Router1 to Cvill 1		7
X-axis distance from Router1 to Drill 1 Y-axis distance from Router1 to Drill 1	-	7. 7.
X-axis distance from Router1 to Drill 1 Y-axis distance from Router1 to Drill 1 X-axis distance from Router1 to Drill 2		7



Follow the directions on the software. Center spindle #1 and click OK. If the drill rod is not in the center of the hole in the Z Zero plate, use the KeyPad to position it by clicking Yes when asked. Press Esc to close KeyPad and continue.

Pause in File			
You will need to	move the tip o	f spindle #1 into the ce	ntering hole
	OK	Cancel	

Start Keypa	id?		
Do you wan	t to open the k	nypad? Press Esc	when Done
[Yes	No	
a na seren de la	Contraction of the second		Service and

Use the arrow keys to move the primary head over the hole in the plate and then down into the hole. Be careful not to touch the table. This could cause the drill rod to drag and possibly give a misreading or loss of position. When the drill rod is in the hole, hit Esc.

ShopBot KeyPad	
Go To Location	đ
× .000	-
Y -886	Go
2 -000	То
	Jog Nest
Remote	
1 2 3 4 5	<u>େ 7 8</u> ଚିତ୍ରିଚି





The KeyPad will close and a confirmation window will ask if the drill rod is in the hole of the plate. Click Yes if this is true and the centering routine will start. The ¼" drill rod will start moving in the positive X direction and touch the plate. The ¼" drill rod will move in the negative X direction and touch the plate. This will center the drill rod in the X-axis. The routine will con-

tinue in the Y axis. Once the X and Y have touched the plate, the tool will move to the center of the hole and move the Z-axis out of the hole. This gives a starting point to calculate the offsets for your additional cutting heads.

When the primary cutting head has pulled up a window will open stating that the current XY location is the center of the hole. This information will be stored within the my_variables. sbc file automatically at the end of the file. This window only calls out attention to the user of the current location.

Pause in File		×		
X/Y Location Currently Displayed is Center of Hole				
OK Cancel				
Summing and a second				

Pause in File			
ShopBot will now C	lose and then rest	art to find the offse	et fot the Next Cutter
	ОК	Cancel	

When the spindle has finished centering, the software will shut down the SB control software and then restart to find the offset of the next cutter.

Note: The software may continue on to center a second spindle. For purposes of this document, the single spindle two air drill configuration will be reflected.

Pause in File 🛛 🔀				
Is slide valve off for drill number(Up Position) 1?				
OK Cancel				
		4. C		

When the SB control software reopens the software will prompt the user on the next cutter or drill to be centered.

WARNING: Pay close attention to the following instructions. Failure to do so may cause bodily harm.

If the drill is to be centered it will raise the Z-axis up to a height of six inches and prompt the user, asking if the slide valve of a particular air drill is off (Up Position). Confirm the slide valve is in the up position. Make sure that all hands, material, clothing, etc. are out of the way, and click OK - the file will trigger the corresponding air drill's solenoid, which will allow it to lower.





The software will continue to prompt the user.

Pause in File			×
You will need t	to move the tip	of Drill #1 into the cer	ntering hole
	OK	Cancel	

Move the appropriate drill # into the centering hole and click OK.

If the drill rod is not in the center of the Z zero plate hole, use the KeyPad to position it by clicking Yes when asked. Press Esc to close KeyPad and continue.





Use the arrow keys to move the primary head over the hole in the plate and then down into the hole. Be careful not to touch the table - this could cause the drill rod to drag and possibly give a misreading or loss of position. When the drill rod is in the hole, hit Esc.



Click Yes to confirm whether the drill rod is in the hole of the plate.

Start Keypad? 🛛 🛛 🕅			
Is the tip of	the drill roo	d in the hole of th	ne plate?
	Yes	No	
	Yes	No	

The ¼" drill rod will first move in the positive X direction and touch the plate, then into the negative X direction and touch the plate, centering the drill rod in the X-axis. The process will repeat for the Y-axis.

Once the X and Y have touched the plate, the tool will move to the center of the hole and move the Z-axis out of the hole.

Pause in File 🛛 🔀		
X/Y Location Currently Dis	played is Cente	r of Hole
OK	Cancel	

When the designated drill has pulled up, a window will open stating that the current XY location is the center of the hole. This information will be stored within the my_variables.sbc file automatically at the end of the file.



Pause in File			
ShopBot will now Close and then restart to find the offset fot the Next Cutter			
ОК	Cancel		

When the appropriate drill has finished centering, the software will shut down the SB control software and then restart to find the offset of the next cutter.

Note: This document used the single spindle two air drill configuration, so the previous drill centering prompts would have continued for the second air drill.

When the window prompts that the file is done, click OK.



≽ Finished		
You're just about done. A you're filled in and then clic by the ShopBot software t over and over again. And it to change these values, just these values already filled i changes will be saved.	Il that's left to do is to check k the Done button below. I o customize several of the you ever make changes t t rerun the setup program n. Change the ones that you View and Print My Settings	k over all the values that fhose values will be used routines that you'll use o your ShopBot and need and it will open up with ou want and all your
	i'm done	
<previous step<="" td=""><td></td><td>Next></td></previous>		Next>

The file will return to Tools Setting (TS) file where the user has the option of exiting (I'm done) or viewing and printing the settings for a backup.

Note: The offsets found throughout this routine are not saved to the my_variables.sbc until the (I'm done) button is clicked.

My ShopBot is a	Save	
I have one or more air drill(s) Drill 1 X Offset4.325 Drill 1 Y Offset6345 Drill 2 X Offset6.427 Drill 2 Y Offset1.325 My X unit values are	My ShopBot is a	PRS Alpha
Drill 2X Offset	I have one or more air Drill 1 X Offset Drill 1 Y Offset	drill(s) 4.325 6345
My X unit values are1273.2395 My Y unit values are1273.2395 My Z unit values are1273.2395	Drill 2X Offset Drill 2Y Offset	-6.427 -1.325
	My X unit values are My Y unit values are My Z unit values are	1273.2395 1273.2395 1273.2395