







## **Advanced Calibration**

The purpose of this document is to assist users of the Roland MDX-540 fine tune the accuracy of their machine when using the 4th-axis option (ZCL-540) – The following steps will assist users who observe any shifts or offsets when performing double sided milling. We will cover two sections:

- Section 1 Setting Origins
- Section 2 Manual Adjustments



## Section 1

- Make sure to have your <u>ZCL-540 user manual</u> handy.
- Begin the Y-origin sensor detection process. (pg 43-46)
  - Connect the sensor cable to the Z-origin sensor. (pg 43)



o Install Y-origin sensor bar. (pg 44)



• Begin the "Detect Center of Rotation" process. (pg 45-46)

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I	Move Tool Add/Remove Tool		<ul> <li>The Sensor cable must be attached to the 2-origin sensor.</li> <li>The Y-origin detection pin is installed on stocker No. 1.</li> <li>The Y-origin sensor is installed on the rotary axis unit.</li> <li>Make sure of the following, then click [Continue].</li> </ul>
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	Drill Workpiece		
4	Adjust ATC Height		
	Detect Center of Rotation		
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ion c th the insert i	of Center of Rotation sensor cable from the Z-origin sen it into the Y-origin sensor. Continue Quit		Detection of Center of Rotation Rotate the spindle by hand half a turn, then click [Continue]. Continue Quit Detect Center of Rotation Detection of the axis of the center of rotation is complete Detach the sensor cable from the Y-origin sensor.

- Set your Y and Z origins at the center of the A axis. (pg 47-49)
  - Open Base Point settings and use the "Set \_\_\_\_\_ at center of rotation" drop down menu to set the Y-origin. (pg 47)

🔛 MDX-540	[RML-1] - VPanel	1	- Set Base Point	2
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			Set Z origin using tool sensor Start Detection	Quit
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Connect the sensor cable to the Z-origin sensor and install a tool. (pg 48)



 Open Base Point settings and use the "Set \_\_\_\_\_ at center of rotation" drop down menu to set the Z-origin. (pg 49)

MDX-540[RML-1] - VPanel	Set Base Point	
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No.1	Set Z origin using tool sensor Start Detection Out	it _
Virtual Panel	Virtual Panel	
Attach the sensor cable to the Z-origin sensor. After attaching, click [OK].	Measurement has finished. Please detach the sensor cable from Z-axis sensor.	
OK Cancel	ок 🖌	

- Set your X and A axis origins. (pg 50- 51)
  - Move your tool to the right of your work piece along the Xaxis and set your X-origin using the "Set <u>here</u>" drop down menu. (pg 50)

🔛 MDX-540[RML-1] - VPanel 🚺	Set Base Point
File Set Options Help	User Coordinate System 🔻
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Move you're Axis to a zero degree position and use the "Set <u>here</u>" drop down menu to set the A-origin. (pg 51)

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Coordinate System	Set A Origin   here  A Origin  A Origin A Or	Apply Apply Start Detection Quit

## Section 2

• Once you have milled out your part using double index milling, check the "seam" of the part to find any adjustment values. (pg 53)



 Observe what direction this shift occurs to determine what type of adjustment value you will use. For example, if the "top" of the part looks like it shifted upwards the Y direction, then your adjustment value will be negative. (pg 53)  Divide your adjustment value by two and use "Set Base Point" in VPanel to correct your Y origin position. For example, if you had a measured adjustment value of 2mm then you would change the location of your Y origin by 1mm only. (pg 53)



 Check your part in the Z direction for any similar adjustment values. (pg 53)



Positive adjustment value

Negative adjustment value

 Divide your Z adjustment value by two and use "Set Base Point" in VPanel to correct your Z origin position. Again, if you measure an offset of 2mm, your adjustment will be 1mm. (pg 53)



 Re-cut your part under these new origin settings to double check that your adjustments were correct. If you continue to have issues return to Section 2 and repeat the calibration process. You can also visit our product support page to download a 20mm cubic test file (ZCL-540\_Calibration\_Cube) to help with this process.

