

MDX-40 and ProtoWizard Set Up

This tutorial will guide you through the various steps required for setting up the MDX-40 for use with the ProtoWizard software and hardware.

Materials Required:

- 6mm Pin
- 6mm Collet (not 1/4" collet supplied with machine)
- Z-Origin Sensor
- 3mm Hex Tool
- Dropout.exe program (firmware zip file)

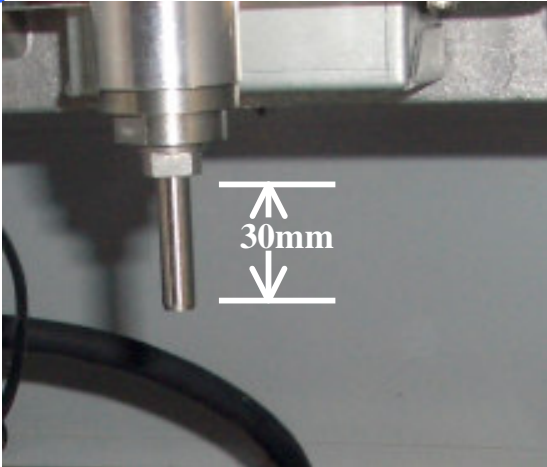


Steps involved:

- Install 6mm pin used for sensing
- Install Z-Zero Sensor
- Perform 4th axis centering
- Install ProtoWizard Software
- Install ProtoWizard Hardware


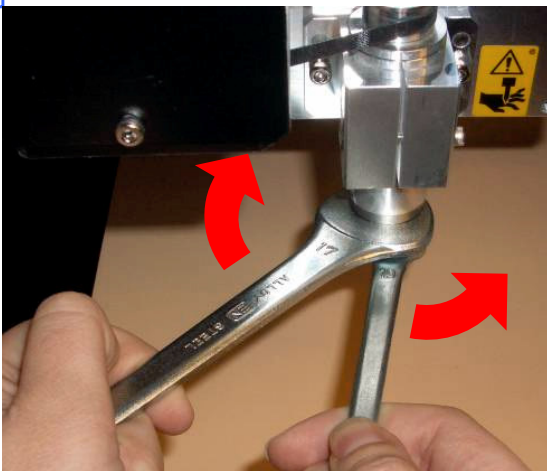
Performing Y-Center

1




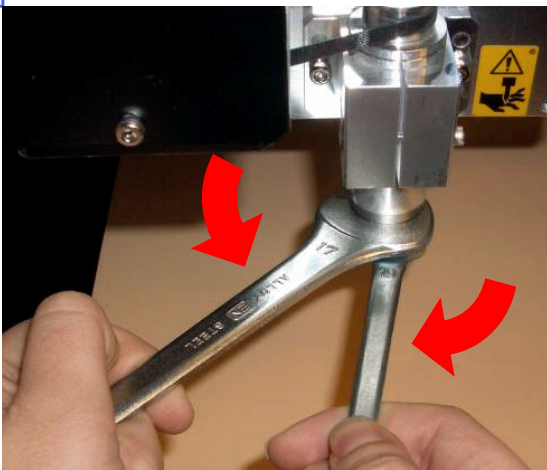
Install 6mm collet and 6mm pin. Leave at least 30mm of the pin exposed. **Please note that the MDX-40 comes with a 1/4" collet and 6mm collet. Please use only the 6mm collet for this procedure.**

2



Install the collet using the 2 wrenches supplied with the machine. Place the 17mm tool in your left hand 1st and over the spindle nut as shown. Place the 10mm tool in your right hand and over the collet. To tighten, pull the wrenches away from each other.

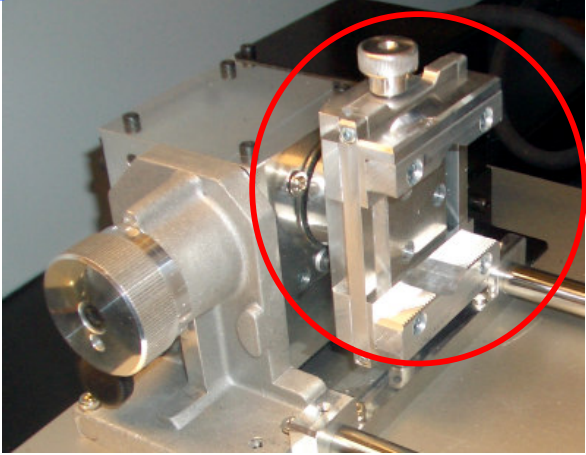
3



Pull the wrenches toward each other to loosen the collet.

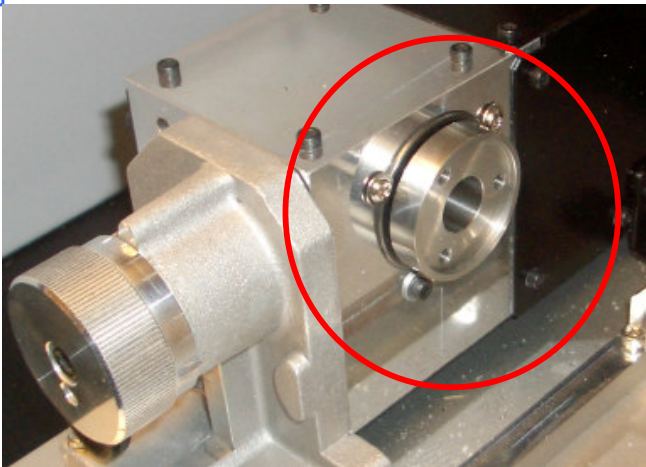
Performing Y-Center

4



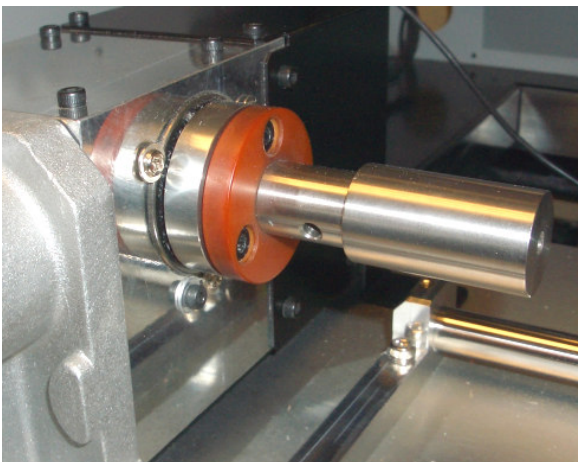
Remove self centering clamp from the Rotary Axis by removing 3 hex screws.

5



Rotary Axis without self centering clamp.

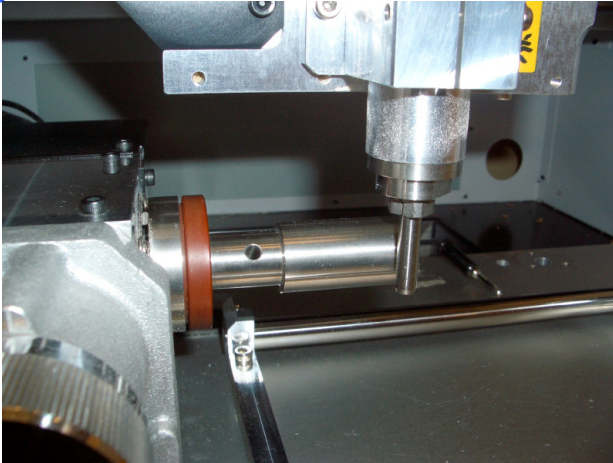
6



Mount Z-origin sensor on 4th axis.

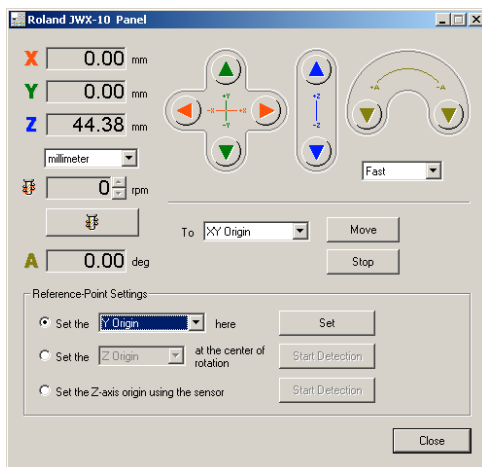
Performing Y-Center

7



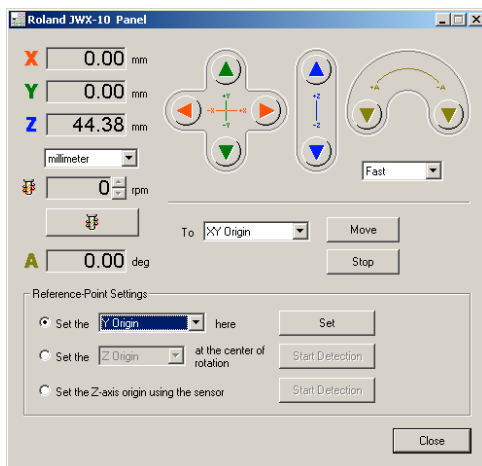
Move the 6mm pin until it just touches the front of the sensor.

8



Set your Y-Origin here at this point using the virtual panel.

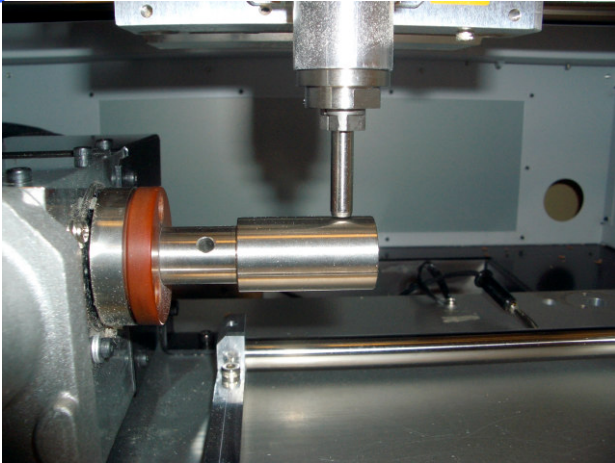
9



Using the virtual panel, move the tool up, then move it back 13mm. Set the Y-Origin here again.

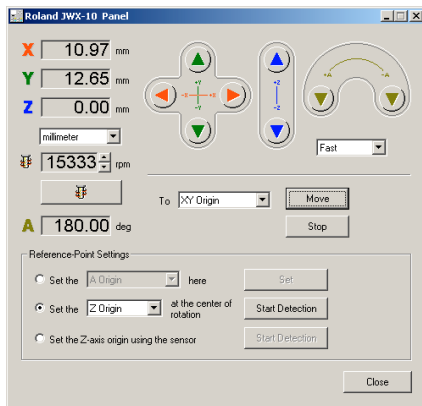
Performing Y-Center

10



Move the 6mm pin until it just touches the top of the sensor.

11



Set your Z-Origin here at this point using the virtual panel. Move the tool off the end of and clear of the sensor and lower the tool 10mm. Set the Z-Origin again. The tip of the tool should be at the center of the rotary axis.

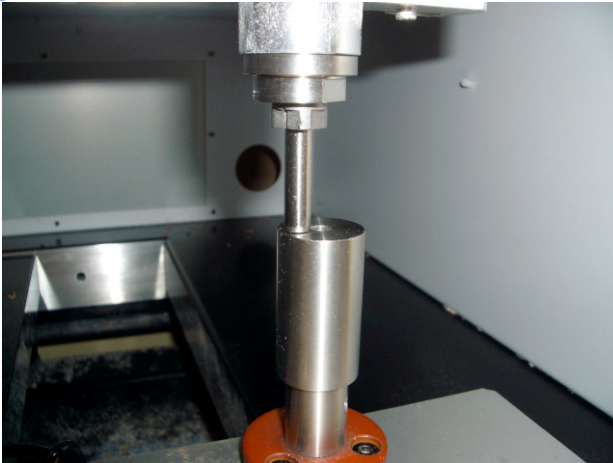
12



Remove the Z-Origin sensor from the rotary table and put it back to its original location. Be sure you plug the cable back into the cross hole.

Performing Y-Center

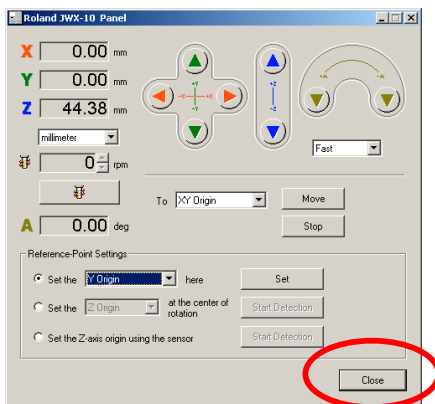
13



Move the 6mm pin to the top of the sensor and lower it slowly until it touches the top of the sensor. White down this value.

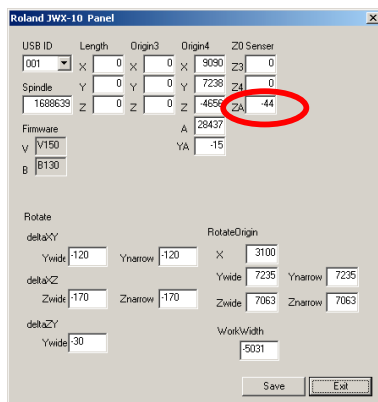
For example, the Z-Value may read around $-.10$ mm or $.10$ mm

14



With the Control Panel open, press Ctrl, Alt, & Shift all at the same time on the keyboard, and using the mouse, click on the Close button. A new panel will open. Do not change anything unless instructed to.

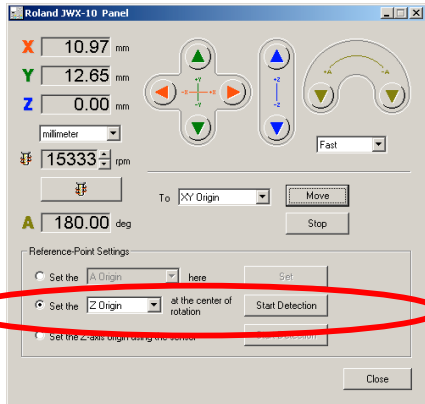
15



If your Z-Value was $-.10$ mm, change the ZA value circled here to -10. If your value was $.10$, this should be 10. All these numbers in this panel do not use decimals...2 places are assumed. After entering the value needed, press the Save button.

Performing Y-Center

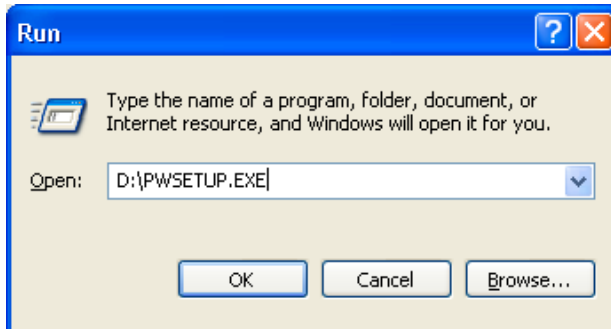
16



You will need to turn off the machine and turn it back on. **After turning on the machine, record the Z value. Then run the “Set the Z-Origin at the center of rotation” detection method.** Compare the new Z value to the previous value recorded. It should be within 0.01mm.

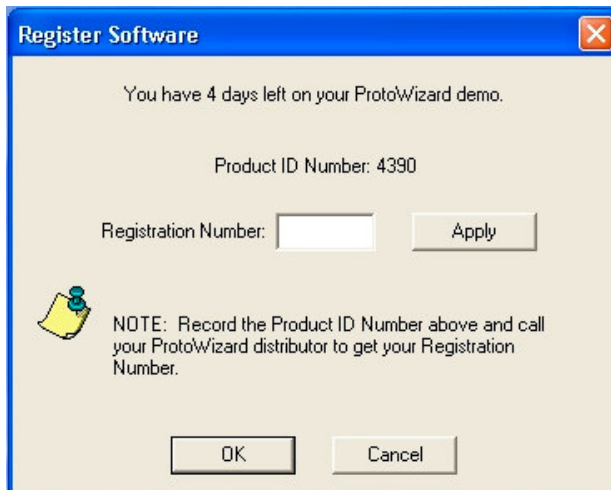
ProtoWizard Software

1



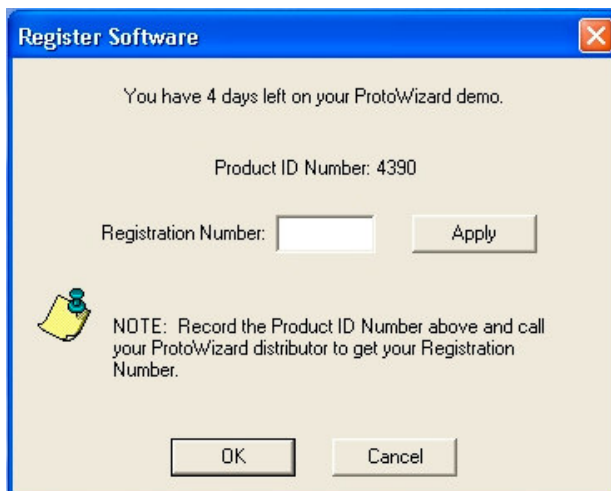
Before inserting the ProtoWizard CD, close all programs. Insert the ProtoWizard CD in your computer, wait for the set up menu to appear. If the set up menu does not appear, install ProtoWizard manually by selecting the windows START button and then RUN. Press the BROWSE button and select the PWSETUP.EXE from the CD. Press OK to run the installation and follow the instructions.

2



To register ProtoWizard, you must first obtain a registration number from your dealer. You must provide the dealer with the Product ID Number as shown in ProtoWizard's startup screen. You may also get this from CEAT directly by emailing your Product ID Number and proof of purchase to support@protowizard.com.

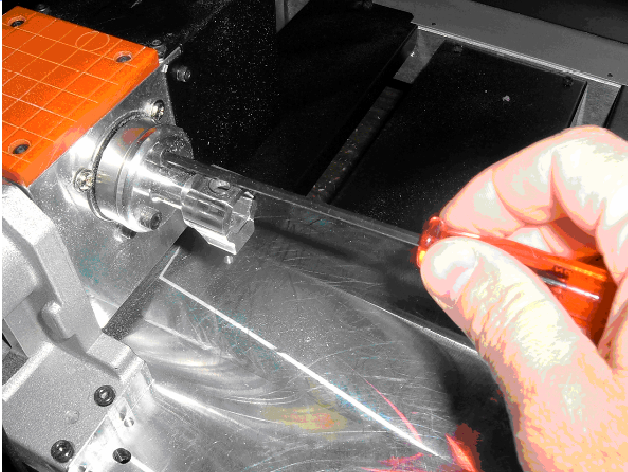
3



Using the Product ID Number, the dealer will obtain a Registration Number on your behalf. You may continue using ProtoWizard for 10 days before you MUST put in the correct Registration Number. Enter the Registration Number and press Apply, then OK to continue. You will not see this screen again provided the Registration Number is correct. If you have any problems, please call your dealer. If your dealer cannot assist you, contact support@protowizard.com.

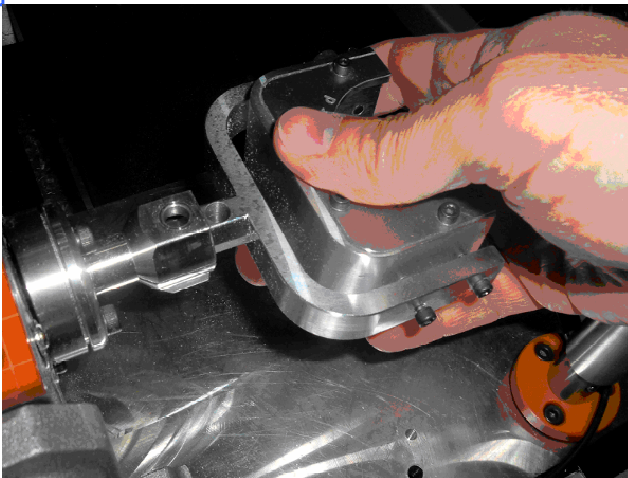
ProtoWizard Hardware

1



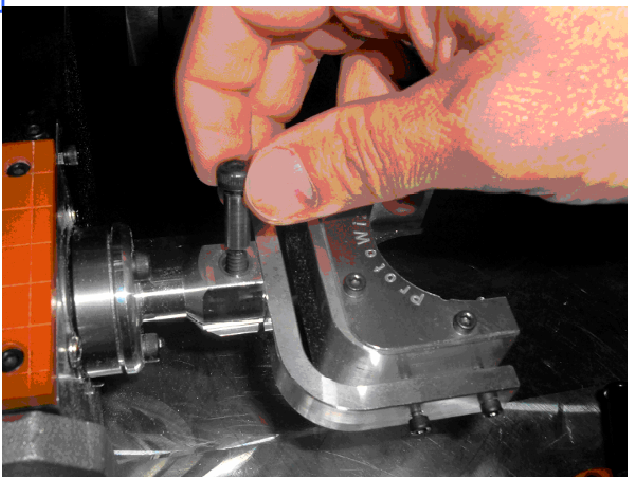
Using the three screws provided, carefully install the Rotary Adapter into the rotary table face. This should be a snug fit. Caution should be taken to not have this crooked. Gently rotating the adapter in the counter bore of the rotary table will help. Insert all three screw finger tight before tightening with the provided allen wrench.

2



Carefully insert the 3-Sided Flip Fixture into the Rotary adapter making sure the holes align in the center of the 2 parts.

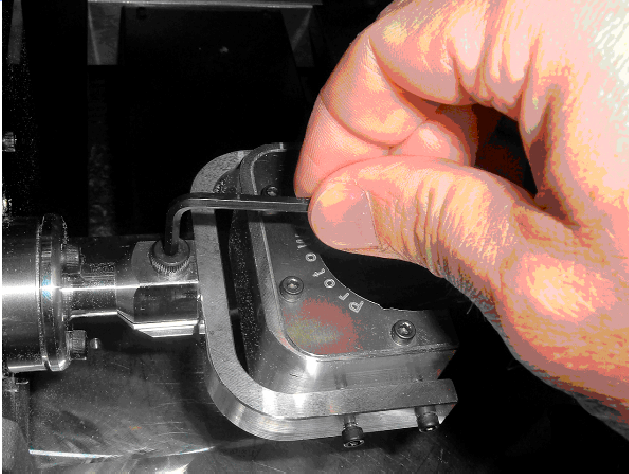
3



Next insert the shoulder bolt provided into the top hole of the adapter and though the hole in the flip fixture. Then thread the bolt into the bottom of the adapter.

ProtoWizard Hardware

4

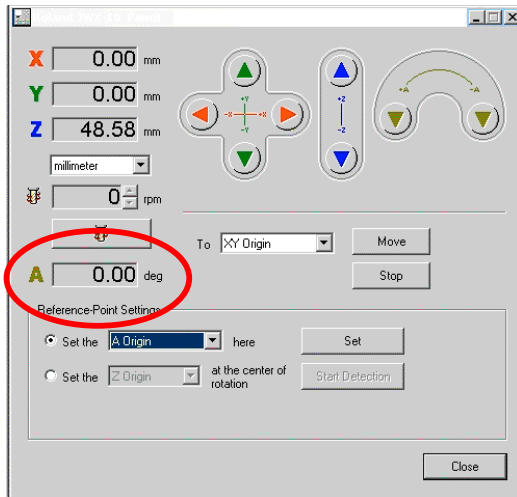


Finally, tighten the bolt with the allen wrench provided.

CAUTION: Do not over tighten the bolt. A gentle “snug turn” is all that is required.

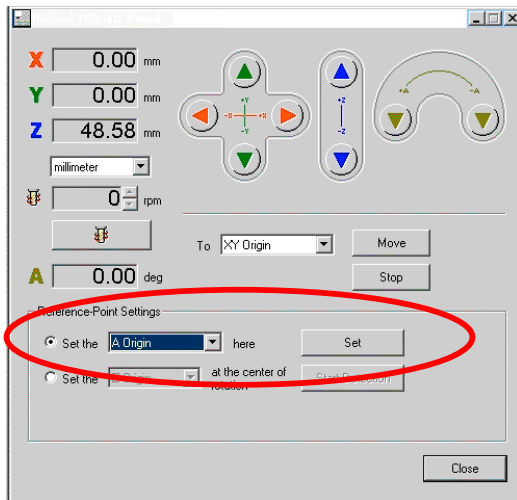
Roughly Align A-Origin

1



The object of this procedure is to set the fixture horizontally. If the fixture is set horizontally, then indicating Z on either edge should yield the same Z number. Therefore, what we will do is touch both edges of the fixture and then rotate the A axis a little until the Z values are the same on both sides.

2

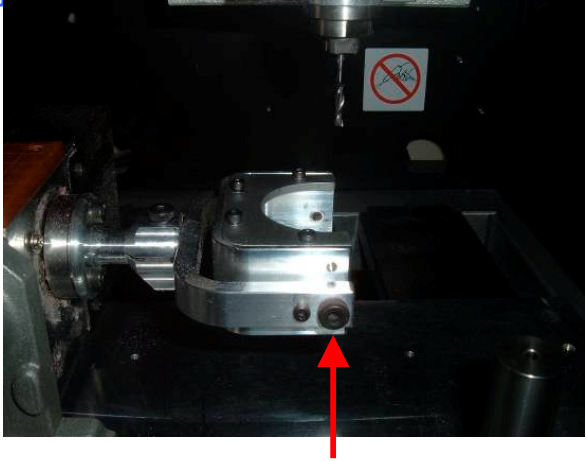


At this time, it is not totally necessary to perfectly align the rotary table. We mostly want to simply set the A Origin so the ProtoWizard Flip Fixtures in the horizontal position. This can be achieved by simply visually setting the A Origin horizontally.

Set the A Origin as shown.

Roughly Align X-Origin

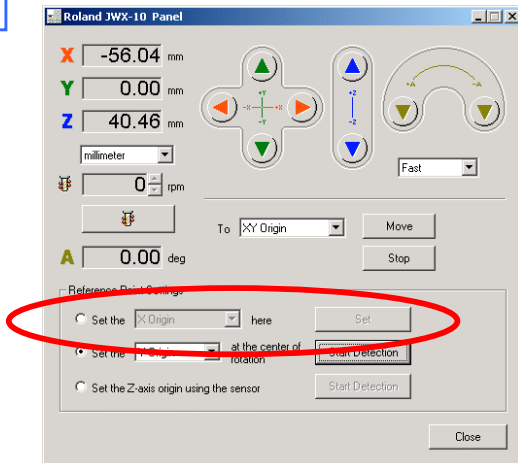
1



The objective of this step is to roughly setup the X Origin so we can run a test part. This test part will be used for the final calibration.

Jog the X axis out so that the tool is located between the two outer pivot screw heads as shown. Estimating this location is close enough.

2



Set the X Origin as shown.

Running the Test Program

1



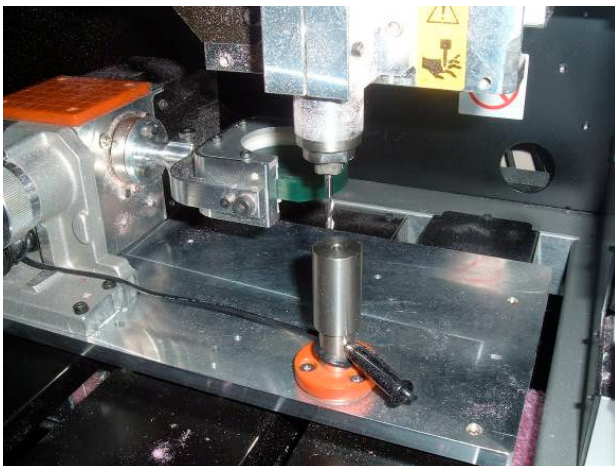
Insert the 1/8" Flat End Mill into the spindle. Always leave approximately 20mm of the tool exposed.

2



Insert a 10mm wax blank. Use both a thick and thin spacer on both sides to center the blank.

3



With the machine out of View mode (the View light should be off), start the Z Origin detection

Running the Test Program

4



Start the Dropout.exe program.

Open the RotaryAlignment.prn file. Press Output to run the program.

5



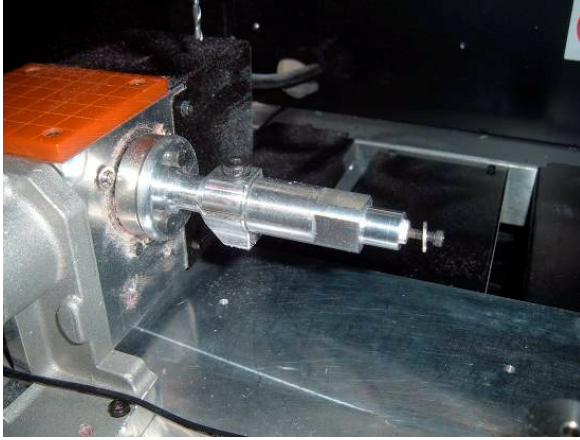
Once the program has completed and the spindle has stopped, remove the part from the wax by breaking it from the supports holding it in the blank wax

NOTE:

This program is used to setup the 8mm Core file. Therefore, you should be able to measure the thickness of this part after it has been removed from the wax blank. The thickness should be 8mm +/- 0.05. If you are not in this range, the Z Origin calibration has not been set properly. Contact Roland immediately and do not proceed until this problem has been corrected.

Align X and A Origins

1



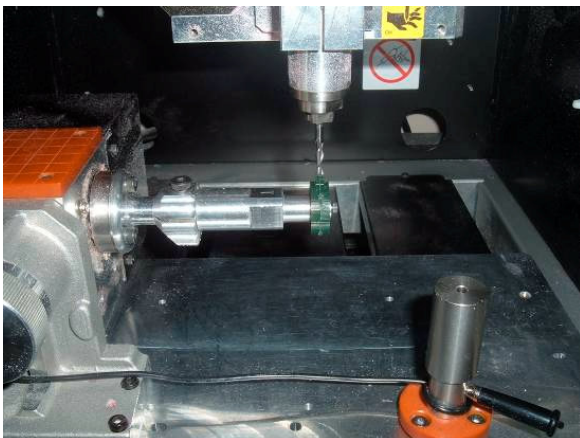
Remove the ProtoWizard Flip Fixture and install the ProtoWizard Ring Arbor.

2



Place the triangle cutout of the test part on the Ring Arbor's triangular nose and secure it with the washer and screw provided. Lightly tighten the screw with the hex wrench provided.

3



With the Y and A axis at 0.000, jog the X axis directly over the 1/8" square head on the sample part.

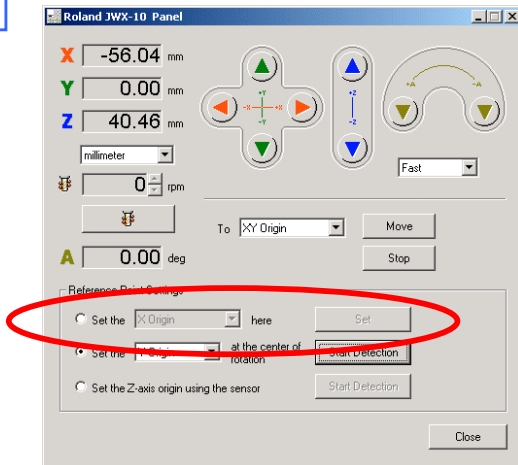
Align X and A Origins

4



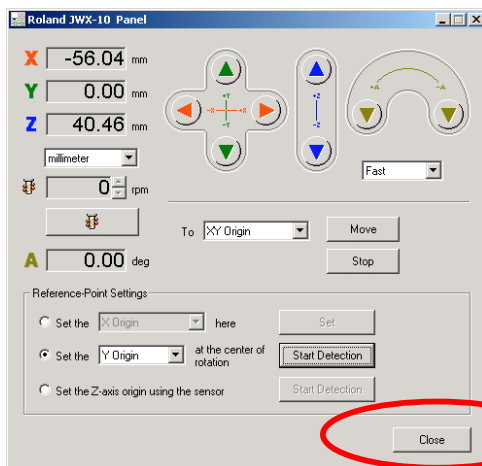
Jog the A axis to rotate the part to align the 1/8" square under the 1/8" tool.

5



With both the X and the A axis perfectly aligning the 1/8" tool over the 1/8" square, set the origins of both X and A as shown.

6



While holding down the ALT key on your keyboard, press the CLOSE button on the Panel.

A new window will popup on the screen.

This hidden panel contains all of the offsets stored on the machine's internal memory. The Column labeled "Origin4" contains our "X" origin number. Write this number down or printout this screen for safe keeping. This "X" origin is for the Ring Arbor when using a 8mm core.

Now you are ready to make
a full 3 sided ring.

Also, this alignment **MUST** be used only with 8mm core files. Although ProtoWizard supplies other core file sizes, the 8mm core is the most versatile and can be used for all ring applications. Should you switch to another core thickness, for example 10mm, an adjustment in the X origin will be required.

Align X for 90° Flip

1



Using the 10mm piece from the previous alignment procedure or a new piece, load the XAlignmentTest.prn file in the dropout program.

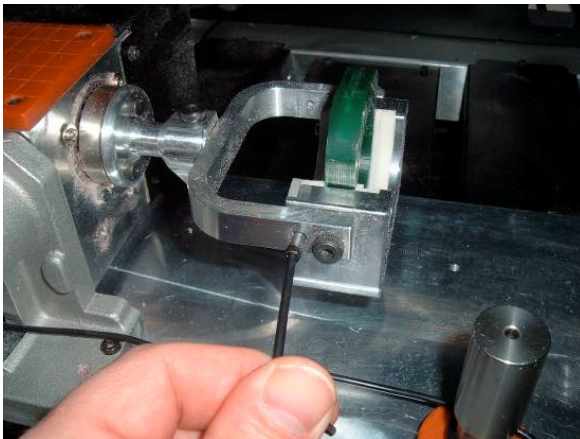
Using the 1/8" End mill, this program will mill a channel on both sides of the wax leaving a 1/8" thick web.

2



Using the hex wrench provided, loosen the small screw on the left of the pivot bolt. Back this out until the inside fixture can be pulled toward you and flipped vertical.

3



Push the inside fixture toward the back until it seats and re tighten the screw.

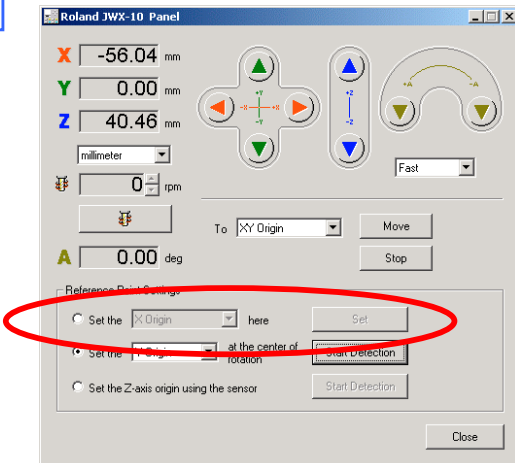
Align X for 90° Flip

3



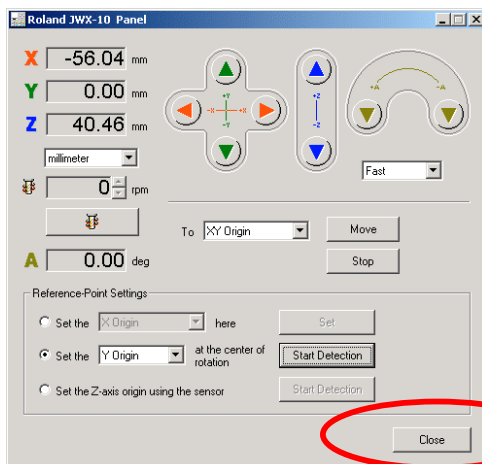
Jog the X axis over the center of the 1/8" channel. Center the 1/8" Tool directly over the 1/8" channel by jogging only the X axis.

4



With the X perfectly aligning the 1/8" tool over the 1/8" channel, set the origins of the X.

5

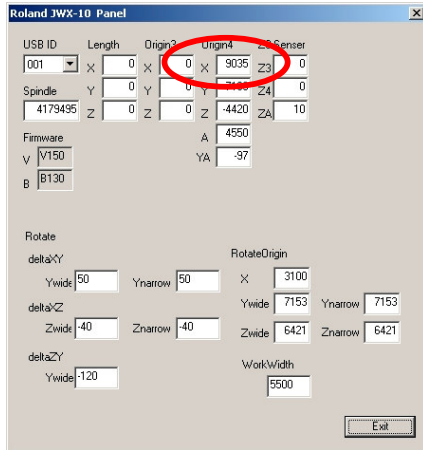


While holding down the ALT key on your keyboard, press the CLOSE button on the Panel.

A new window will popup on the screen.

Align X for 90° Flip

6



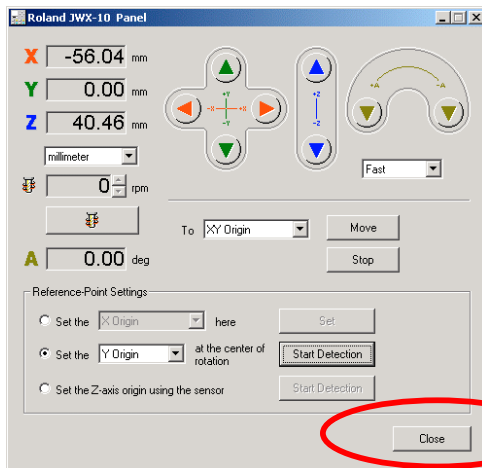
This hidden panel contains all of the offsets stored on the machine's internal memory. The Column labeled "Origin4" contains our "X" origin number. Write this number down or printout this screen for safe keeping. This "X" origin is for the 90 Flip when cutting Heads or Partial Rotary Rings.

NOTE:

The "X" Origin for the 90° Flip is a different number than that of the Ring Arbor set previously. You must save both of these numbers so that you can return to them easily. See the next section on how to reset or adjust an offset.

Resetting the X Offset

1

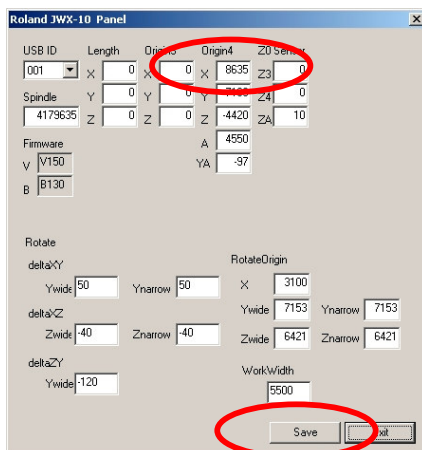


While holding down the CTL, ALT and SHIFT keys on your keyboard, press the CLOSE button on the Panel.

A new window will popup on the screen.

NOTE: You MUST hold down all three keys simultaneously.

2

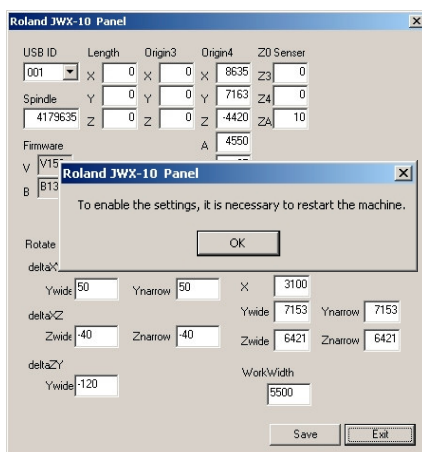


Now you can SAVE any changes made to the offsets.

Normally, changing the “X” offset in the Origin4 column allows you to switch to a different X offset.

Press the SAVE button to save your changes.

3



You must power off the machine for the new settings to be loaded and take effect.