OPERATING MANUAL

FOR INDUSTRIAL CNC PRO SERIES MODELS

Important Note

This manual assumes that you have already followed the instructions in your **Installation Manual** and followed the Computer **System Requirements and Set Up Guide,** installed and configured your Mach3 Software, hooked your CNC Router to your power supply and computer and installed the included XML file and configured your Mach3 Software per those instructions.

If you have not, please do so before proceeding.

Getting Started

A few things to check before you get started:

-Make sure that your parallel cord is connected securely to your computer and to the Router.

-Make sure that your E-Stop button is not engaged.

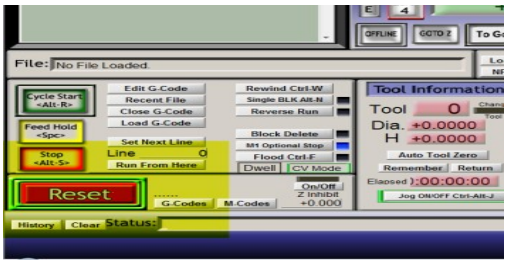
-Make sure that the round inverter button is pressed in.

<u>Do not adjust the buttons on the control box touch-pad.</u> This may reprogram your inverter so that it is no longer controlled by the Mach Software. The only feature you will use is the dial which controls your spindle speed.

Mach Controller Use

Open the software from the desktop icon **Mach 3 Loader**. Select the name of the profile you were e-mailed (usually IND CNC). Click Open. The Main Mach 3 screen should open up and the profile name should appear in the bottom right of your Mach Screen.

If the **Reset Button** is flashing, press it once. All commands are disabled when this is flashing. This button also functions as an E-Stop button.



Jogging The Machine

You can move the spindle manually using the arrow keys on your keyboard. This is called **Jogging.**

The left/right arrow keys on your keyboard jog the spindle left and right along the X Axis.

The up/down arrow keys jog the gantry front to back along the Y Axis.

The Page up/Page down arrow keys jog the spindle up and down on the Z Axis.

There are two Jog Speeds. **Fast Jog** and **Slow Jog**. Holding the SHIFT key on your keyboard while clicking the arrow key for the direction you want to move will initiate Fast Jog.

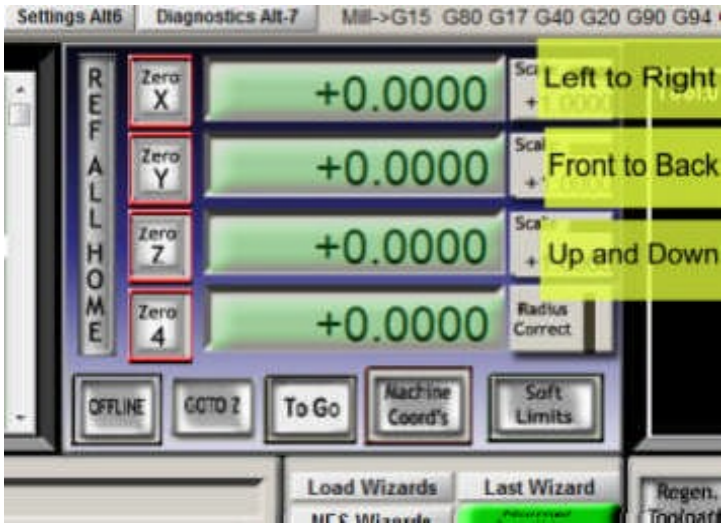
Slow jog is the movement caused by simply hitting the direction buttons.

Fast Jog is the speed obtained by hitting your Shift Key at the same time as your arrow keys.

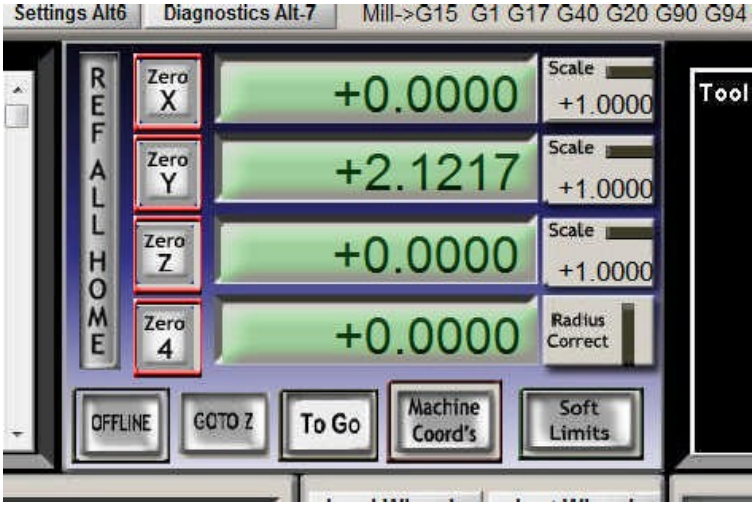
Jog speeds and settings can be changed by clicking your TAB key once. A window will open which allows you adjust the % of the slow jog mode. (Hit the Tab Key again to close the setting screen.)

You can track the movement of your Spindle using the Digital Read Out (DRO) Numbers. You'll notice there is a box for each axis, X, Y and Z.

Below is DRO at Zero

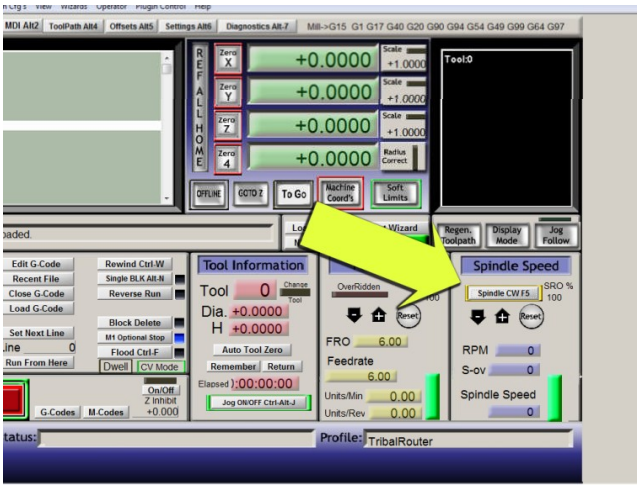


Below is DRO with Spindle 2.1217 inches Forward on Y axis



Spindle Function

Your spindle may be turned on and off through your Mach 3 Software using the Spindle CW F5 button. (Make sure the round inverter button on front of the machine is pressed IN).



When the Spindle is on the Button Border will flash yellow.

Your machine is now ready to run!

Running A File

Important Note

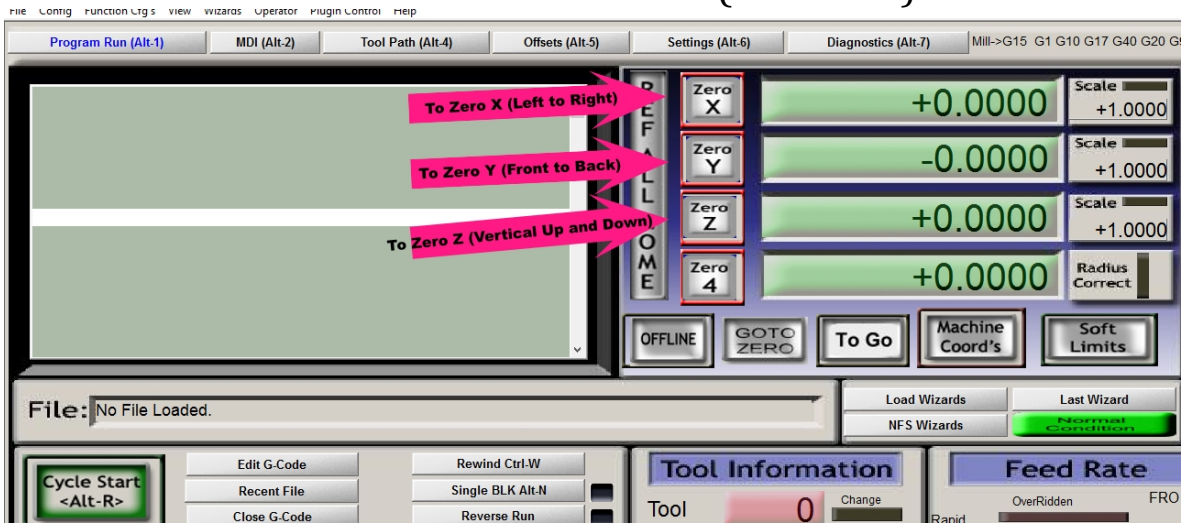
This section assumes that you have already followed the instructions in your cad/cam software (bobcad, artcam, vectric, enroute etc) and have a properly posted file ready to run.

Setting Job Zero

To properly run your file, you will need to establish your Job Zero, (AKA Job Coordinates). *Your Job Zero must match what you set in your posted file*. Most people chose the default of lower, left corner, top of material as their job zero.

Simply, place your material on the table and jog to the lower left corner of the material and lower the bit until it touches the top of the material.

Click The Zero buttons next to the Axis (X Y and Z)



The Job Zero on your machine is now set.

Click the LOAD G CODE button and select the file you wish run.

Once selected, you will see the string of Gcode appear on the left side of your Mach screen and an image of the cut lines in the Box on the right of the screen.

Click CYCLE START and your file will run.

Advanced Settings

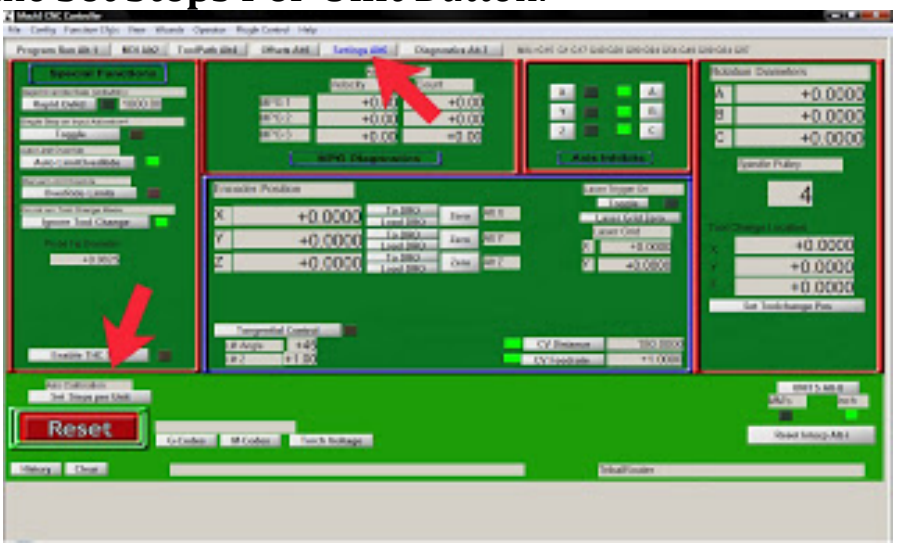
Computers can have a slightly different pulse stream. If you notice your parts are not coming out to size, you will want to perform an Auto Axis Calibration.

Auto Axis Calibration

To make sure that your machine is tuned properly and actually traveling the distance it says it is in the DRO's, you may need to adjust the Motor Tuning. Each axis has its own motor (two for the Y axis although you will treat them as one) and should each be checked.

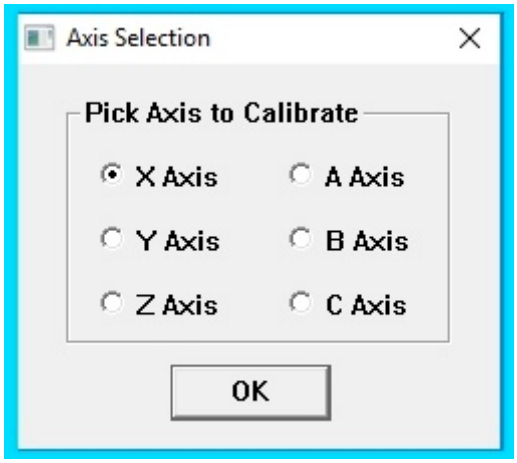
Mach 3 has an easy to use Automatic Axis Calibration utility to help with this.

1) Click the SETTINGS tab.
2) Click the **Set Steps Per Unit** Button.



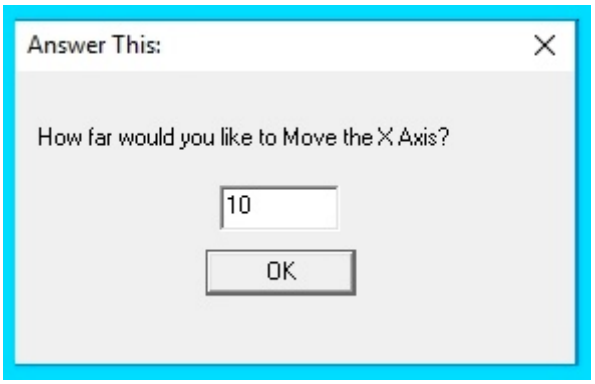
A pop up window will appear asking which axis you would like to calibrate.

Select an axis



Another window will then pop up asking how far you would like the axis to move.

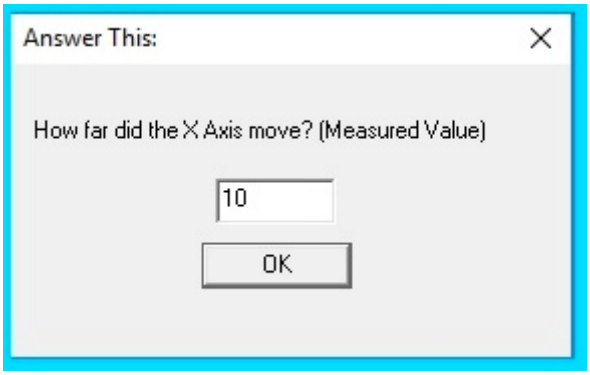
Enter a number (inches)



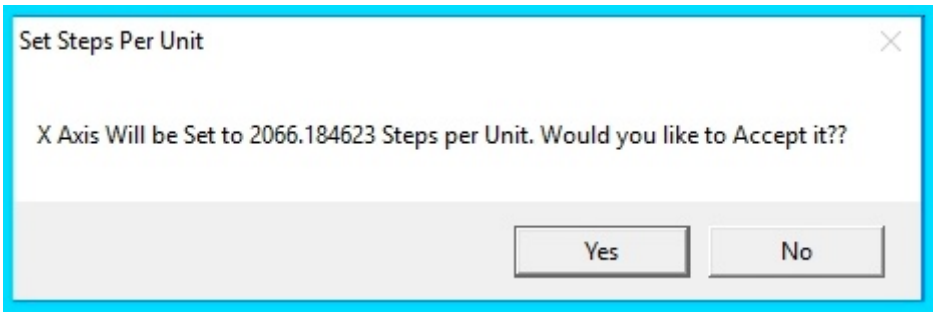
Be advised that when you enter a number it will then move the spindle that distance (or what it thinks is that distance.) The longer the distance the more any inaccuracy will be noticeable, so use a large number but make sure the spindle is far enough to the left or front that it can travel that distance.

As soon as the movement is done, another window will appear to ask you how far the machine actually moved.

Enter in the actual distance (in decimal) it moved. For example if you tell it to move 20” and it move 19 ¾” the value entered will be 19.75 (Measure center of bit to center of bit)



Mach will then suggest a number for your steps per unit. Accept it and Mach will automatically calibrate the axis to that setting.



Do this for X, Y and Z axis.

Finally, Click CONFIG and choose SAVE SETTINGS