Tool Setup

USING MACH MOTION'S CNC CONTROL

MachMotion

Specializing in CNC Automation and Motion Control

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This manual covers the setup and configuration of tools using Mach3.

Formatting Overview:
- Menus, options, icons, fields, and text boxes on the screen will be bold (e.g. the **Help** icon).
- Clickable buttons will be bold and within brackets (e.g. the [**OK**] button).
- Directory names, commands, and examples of editing program files will appear in `Courier New` font

This manual as well as all other MachMotion manuals can be found at www.MachMotion.com

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A0099

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1   INTRODUCTION

The MachMotion CNC control is designed to be as simple to operate as possible. This manual provides a step by step procedure to set up machine tooling. If there already is an existing tooling setup, skip to Future Tool Setup to see how to add additional tools.

Note: This manual assumes that the system has the Ultimate Screen provided by MachMotion.

2   INITIAL TOOL SETUP

Follow the steps below to set up tooling:

1. Start the Mach3 software.

2. Reference or home the machine by selecting [**Ref Home**] on the bottom menu bar. Then press [**Ref Home**] in the sub menu to home all the axes at once or they can each be homed individually.

FIGURE 1 REFERENCE MACHINE

3. Go to the **Diagns** screen and then select **Mach Settings** .

FIGURE 2 MACH SETTINGS PAGE

Enter in the tool change location for the X, Y, and Z axes. This is based off of machine zero not part zero.

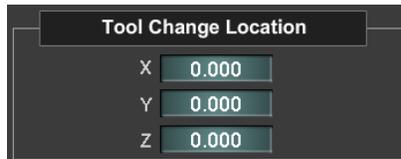*Note: If an axis should not move during a tool change, type 9999 in the location value for that axis.*

FIGURE 3 TOOL CHANGE LOCATION

4. Return to **Prog Run** screen and press the [**Tool Offset**] tab.

FIGURE 4 TOOL OFFSET TAB

Below is a summary of the main features on the **Tool Offset** Tab.

To switch between tools press [**T++** or **T—**], then press [**Cycle Start**]. Notice that the **Status Bar** will ask for [**Cycle Start**] to be pressed after changing a tool.
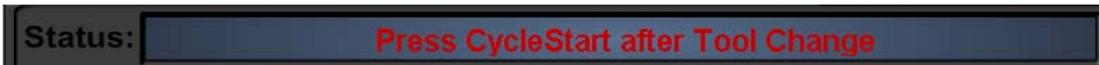

FIGURE 5 STATUS BAR

[**Offsets On/Off**] enables and disables the tool offsets.

Go to Tool Change Position goes to the machine coordinates shown in the **Diagns** screen. If 9999 is entered into any of the three fields, that axis will not move when this button is pressed.

Ignore M6 Tool Change disables the M6 macro from running. This allows for switching between tools without actually moving the machine to the tool change position. Example: assume that tool 3 is currently loaded. To move to tool 5 without moving the machine, have **Ignore M6 Tool Change** selected and then press the [**T++**] button two times. The machine will then show it has tool 5.

The [**Tool Table**] button gives an overview of all the tools. The system can have a maximum of 253 different tools. In the tool table allows descriptions to be entered for each tool.

FIGURE 6 TOOL TABLE

The Current Gauge Block Height is only used if tool set up is being done with a gauge block. Make sure that this value is zero if a gauge block is not being used.

The basic Tool Offset window can be found on multiple screens. The [**Tool Table**] button can also be found in the **Offsets** screen under **Offset Setup**.

FIGURE 7 TOOL OFFSET SETUP UNDER THE OFFSETS TAB

The machine tool can also be change in the **Offsets, MDI** and **Diagns** tabs in the small tool change block.

FIGURE 8 TOOL CHANGE BLOCK

5.   Increment [**T++**] to tool 1. Press [**T++**] once and then press [**Cycle Start**]. The current tool will now be 1.
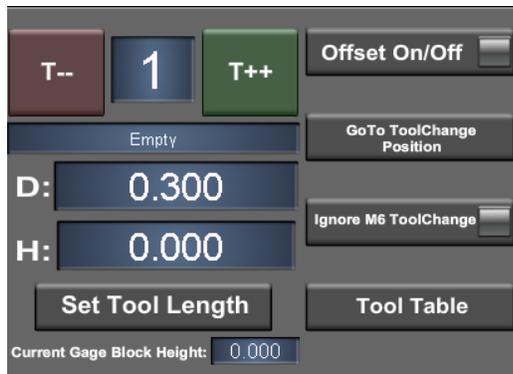
FIGURE 9 TOOL SETUP WINDOW

Use Figure 9 above for a reference for the next few steps.

6. In the field labeled **D:**, enter in the tool's diameter.

7. Load the tool into the spindle and then jog the Z axis down to the surface of the part being zeroed off of. If a gauge block is being used, make sure to enter in the block's height in the gauge block input.

8. With the Z axis at tool zero, select [**Offsets**] on the bottom menu bar and then zero the Z axis.

FIGURE 10 ZERO THE Z AXIS

WARNING
Only do this for the first tool. The offsets will be lost if the Z axis is zeroed on additional tools.

This is the master tool or the base offset. The Z axis will not have to be zeroed again while setting up tools. The first tool is now setup correctly. Continue to going through the next steps to setup more tools.

9. Press the [**T++**]. As long as the **Ignore M6 Tool Change** button is not enabled, the machine will move to the tool change location and then increment the tool number. Make sure to press [**Cycle Start**] after clicking on [**T ++**].

10. Again enter in the tool's diameter in the field labeled **D:**.

11. Load the next tool into the spindle and jog the Z axis down to the surface of the part being zeroed off of.

12. Now press [**Set Tool Length**]. The correct height will be saved with that tool.

FIGURE 11 SET TOOL LENGTH

WARNING
Do NOT press Z zero again!

Now the next tool is completely set up.

13. Repeat steps 9 through 12 until all the tools are set up.

3 FUTURE TOOL SETUP

To setup additional tools, follow the steps outlined below:

1. Load in a previously setup tool into the spindle. Next use the [**T++**] or the [**T—**] buttons to select the tool number of the tool in the spindle.

2. Jog the Z axis down to the surface of the part being zeroed off of.

3. Zero the work offset by clicking [**Offsets**], then [**Zero Z**] on the bottom menu bar.

WARNING
DO NOT press [**Set Tool Length**]. If it is pressed the tool will need to be set up again.

FIGURE 12 ZERO Z

Now more tools can be set up.

4. To add additional tools, repeat steps 9 through 12 as shown on page 8.

4   APPENDIX

4.1   Warranty Information

MachMotion guarantees all products to be free from manufacturer defects for a period of one year from the date of purchase. Products which prove to be defective under normal conditions and proper use, during the warranty period, will be repaired or exchanged free of charge. For warranty service the customer must contact MachMotion for an RMA number and then return the defective product to MachMotion. If a product is sent to MachMotion without an RMA number, the product may be misdirected or delayed. When a product or part is exchanged, any replacement item becomes the customer's property and the replaced item becomes MachMotion's property.

If the defect is found to be caused by improper use or installation, the warranty is void. Otherwise the product will be repaired or exchanged and returned to the address located on the Product Return/Repair Form.

MachMotion will cover ground shipping cost for the replacement/repaired product being returned to the customer. MachMotion does offer expedited shipping at the customer's expense.

If a replacement product is needed quickly, a replacement can be sent immediately. In this case the customer will be charged for the replacement part at the time of the order and be refunded that charge when the defective component is returned to MachMotion, assuming the defective item falls under the warranty guidelines. MachMotion will issue a refund within two work weeks after receiving the faulty component.

4.2   Additional Resources

Additional manuals and resources can be found at MachMotion.com

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