Manual 5 Axis-Series CNC

3040 | 6040 Versions

Welcome

Automation Technology Inc. is a supplier of motion control and CNC equipment. Featuring both the best of domestic American motion control brands, as well as high-value imported machine components. Automation Technology Inc. has the devices you need, in stock in America, and ready to ship. With in-house engineering expertise, amazing prices and our new online presence, we hope to be your first choice in motion control!
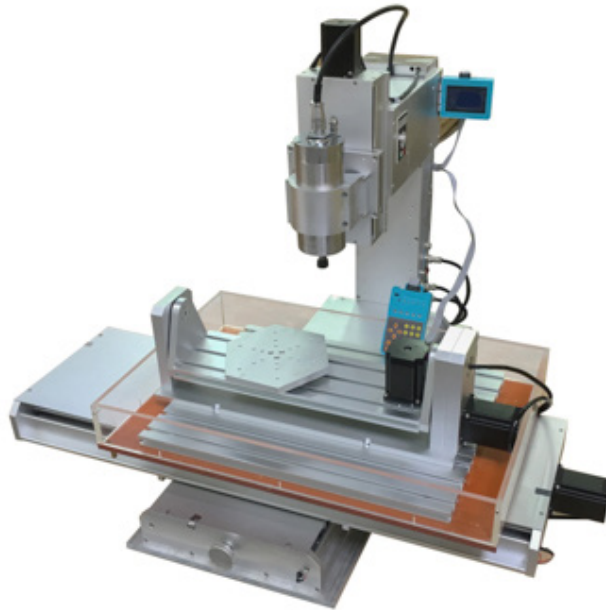
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1   Mach3 CNC Control Software

Mach3 turns a typical computer into a 6-axis CNC machine controller. It is very rich in features, works on most Windows PC's, and is customizable for many applications. Mach3 is the most intuitive CNC control software available.
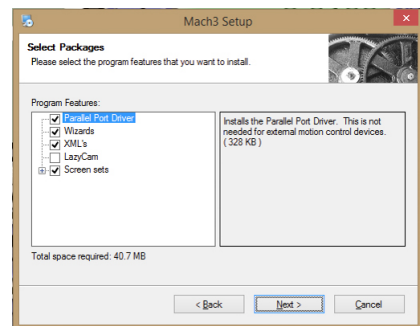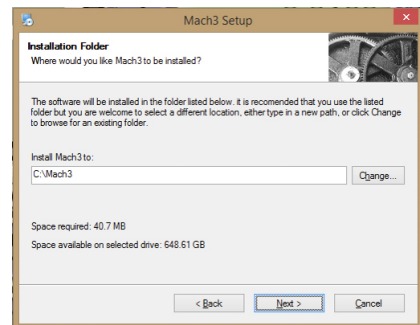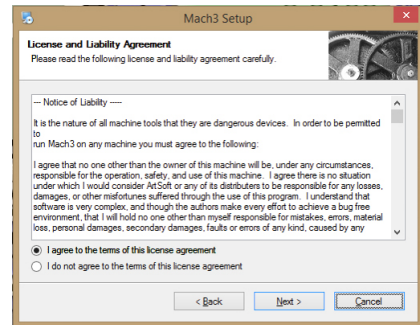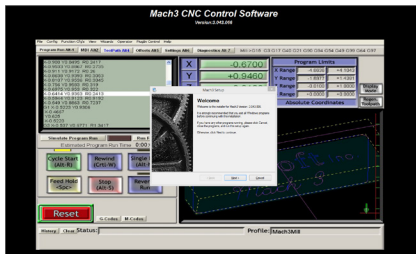
Download Mach3

Go to Mach3 website and download the newest Mach3 version.

http://www.machsupport.com/software/downloads-updates/

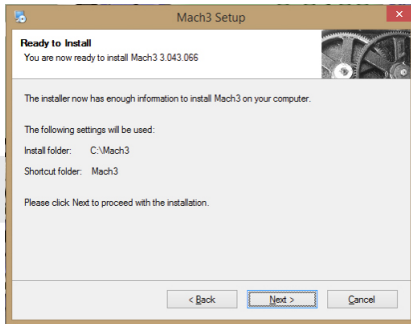## Install Mach3
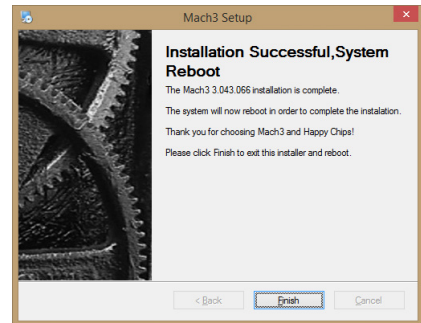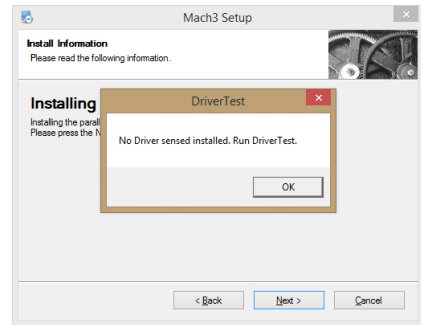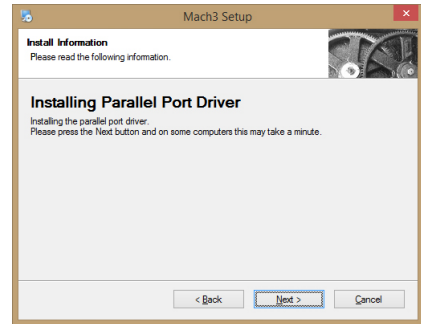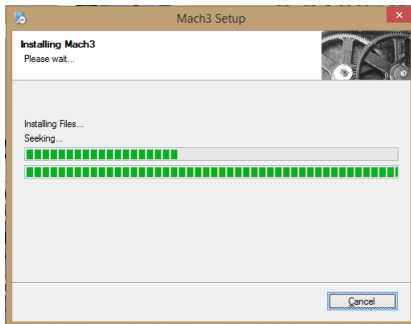
Once downloaded, run the installation of Mach3.
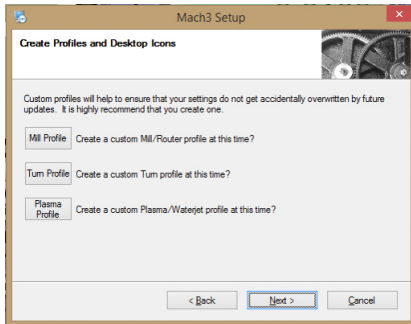
No need to set up a custom profile. We will set one up here in a few minutes.
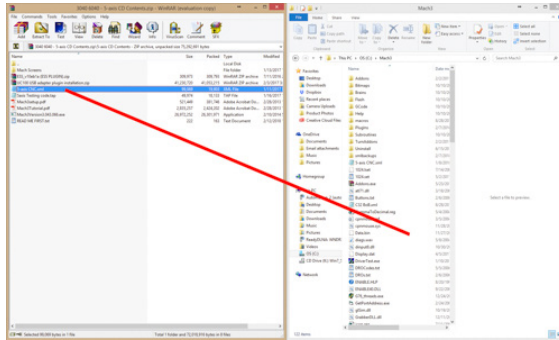
It is best to leave the default installation location.

Mach 3 Profile Installation

If you ordered a machine from us, we have a machine profile already set up for your machine.

You can download it here: https://goo.gl/qn4SY3

Copy the 5-axis CNC.xml file and paste into your Mach3 directory (C://Mach3)

You can now skip the following topics,

Creating a Machine Profile
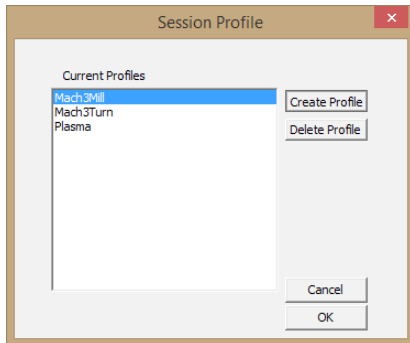
Configuring Mach3

Motor Tuning

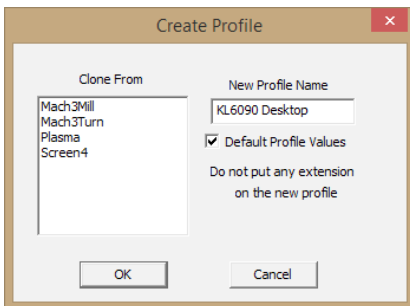# Opening the machine profile

Open Mach3 Loader.exe from your desktop. You should see the new profile that you just copied over.
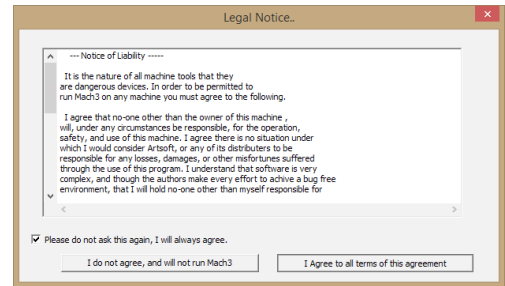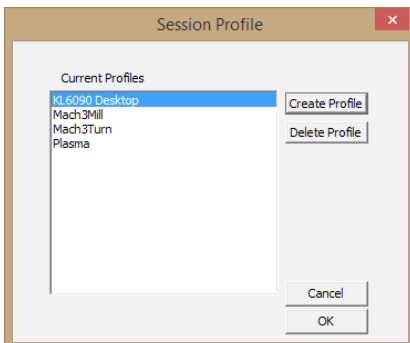
Creating a Machine Profile

Open Mach3 Loader from your desktop. You're going to want to create a new profile and load the default settings to begin.

Click create profile.

Give your profile a name.
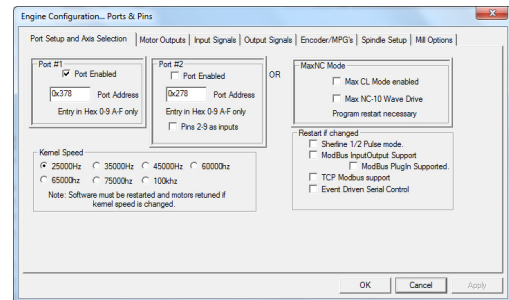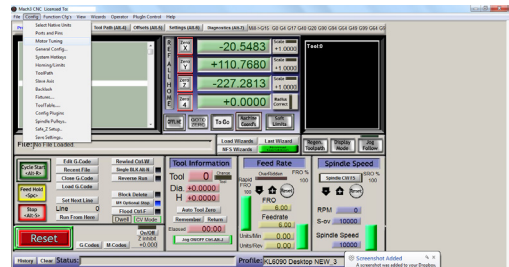

Check the box, and agree to the terms.

Configuring Mach3

Most of the important settings you will be changing are in the Config tab. Make the nessary changes to match the screenshots below.

Click Config > Ports & Pins to start.
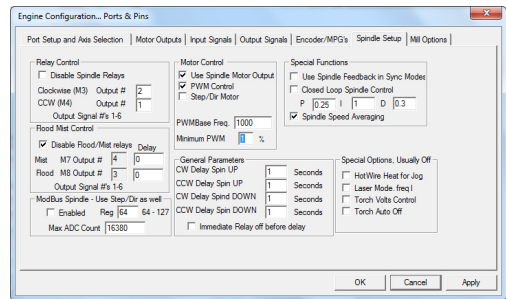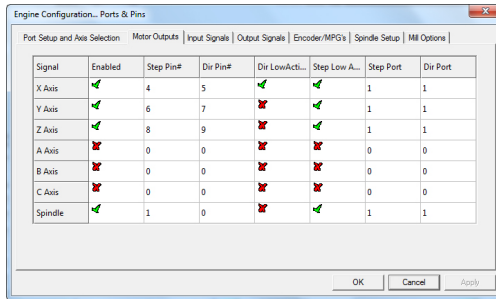
Motor Tuning

The next settings to set up are in Motor Tuning. These are ballpark values and you will be calibrating them in a littlw while. Make the nessary changes to match the screenshots below.

Click Config > Motor Tuning to start.
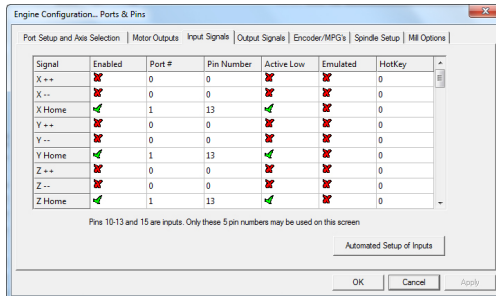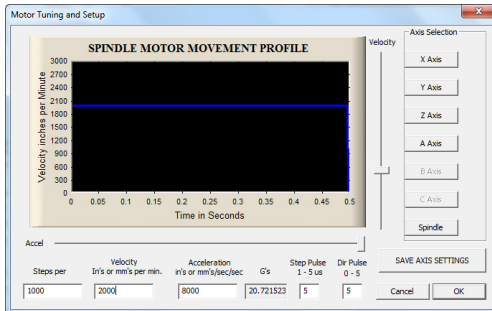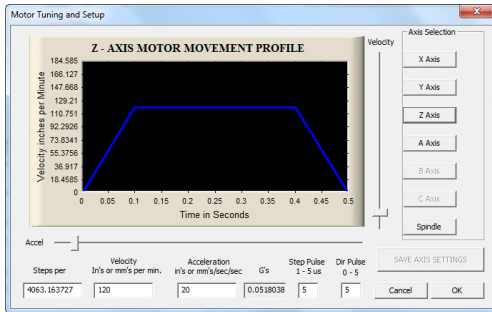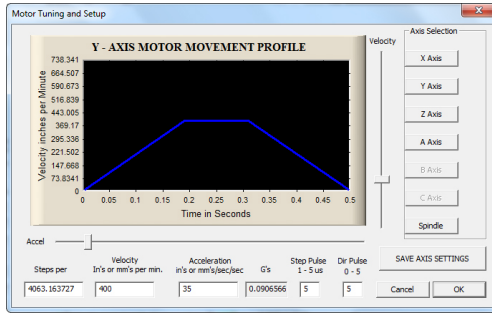
Movement Test

At this point you've got almost all settings defined. You should now be able to jog the machine around using the arrow keys along with Page Up and Page Down.
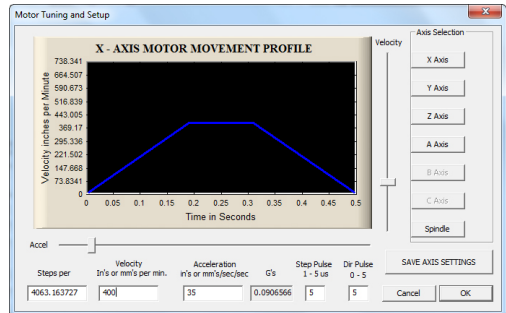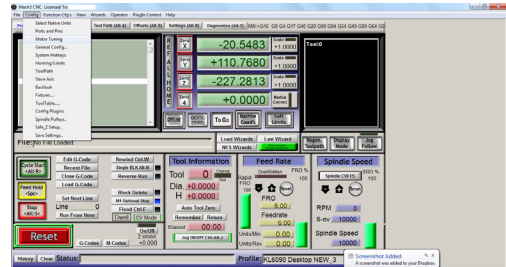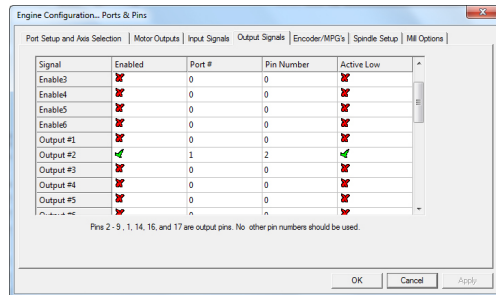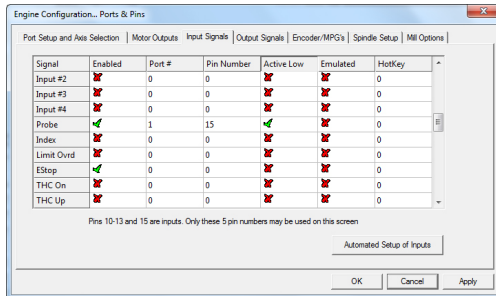
Right Arrow = Jogs X+

Left Arrow = Jogs X-

Up Arrow = Jogs Y+

Down Arrow = Jogs Y-

Page Up = Jogs Z+

Page Down = Jogs Z-

Axis Calibration

Next up, you are going to really dial in the tuning of the machines' axis. You're going to need a ruler, tape measure, or other precision measuring device. You will be doing this for all axes. And it's best to do a few times. And remember decimal places are very important.

What you need to do is take your measuring device and lay it on the table parallel to the axis you are going to calibrate. Jog the machine to line up an edge to a number on the measuring device. (you may need to switch tabs to Program Run to jog the machine)Lets start with X. Click the Settings tab in Mach3 and navigate down to the button, Set Steps per Unit.
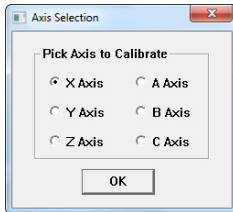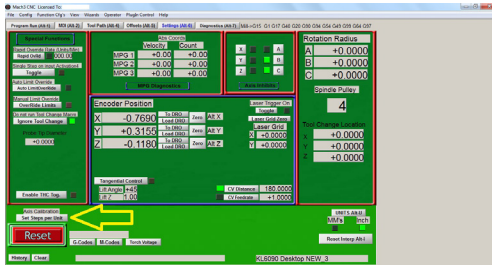
You're going to want to run through this process multiple times per axis, each time increasing the distance. We usually suggest three or four times.

Alternatively, if you would like a video explaining please visit the following link.
https://www.youtube.com/watch?v=EVrqObwaAF4

Pick the axis you are calibrating.

Input a small value, like 2. Once you press OK, the machine will jog to what it thinks is 2 inches.
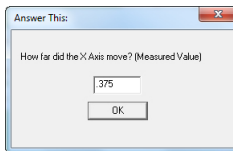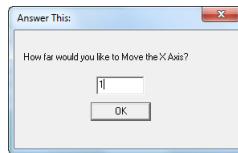
Measure the amount the machine actually moved and input here.
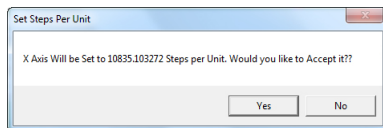
The machine will then automatically calculate the correct steps per unit you saw back in Motor Tuning.

2 Setting Up the CNC

Hardware

There are two tubes included for the water cooled spindle

Unscrew nuts on the spindle

Fit the tubes through the two nuts and tighten up.

Use the supplied bin as a water reservoir and drill two holes for the water tubes. (5/16)

Attach one water tube from the supplied pump (The use of heat may be required to stretch the tube) You can also grab a coupler fitting at the hardware store.
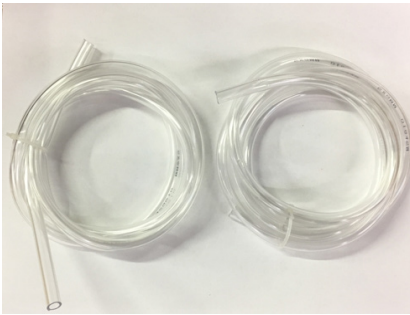
The blue and orange nozzle attachment is an accessory for flood coolant, if you go that route. You will want to use a seperate bucket and pump and filters in place to catch debris.

Mach3- The 5-Axis Screen

We have a different screenset to fit all 5 DRO's on the main screen of Mach3. You should already have the file from when you downloaded the machine XML profile.

If not, you can download it here: https://goo.gl/qn4SY3

You will see a folder called Mach Screens.

5-axis CD Contents > Mach Screens > Mach3

Copy the .set file into the Mach3 installation directory (typically C:\Mach3)

Copy the graphic directory into the Mach3\Bitmaps\MillBitmaps folder

Open Mach3 click View > Load Screens

Navigate to the 6Axis.set you placed into your Mach3 directory.