



## Application Note #----

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### USING MACH3 DRIVERS WITH GALIL

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#### Overview

The Mach3 drivers are a low-cost CNC software package that allows the user to command a machine tool with a Galil controller using standard G and M-codes. The Mach3 package can control up to a total of 6 axes, and will require a free plug-in to work with a Galil Controller. For this application note, a Galil DMC-18x2 controller was set up to run with the Mach3 Mill program.

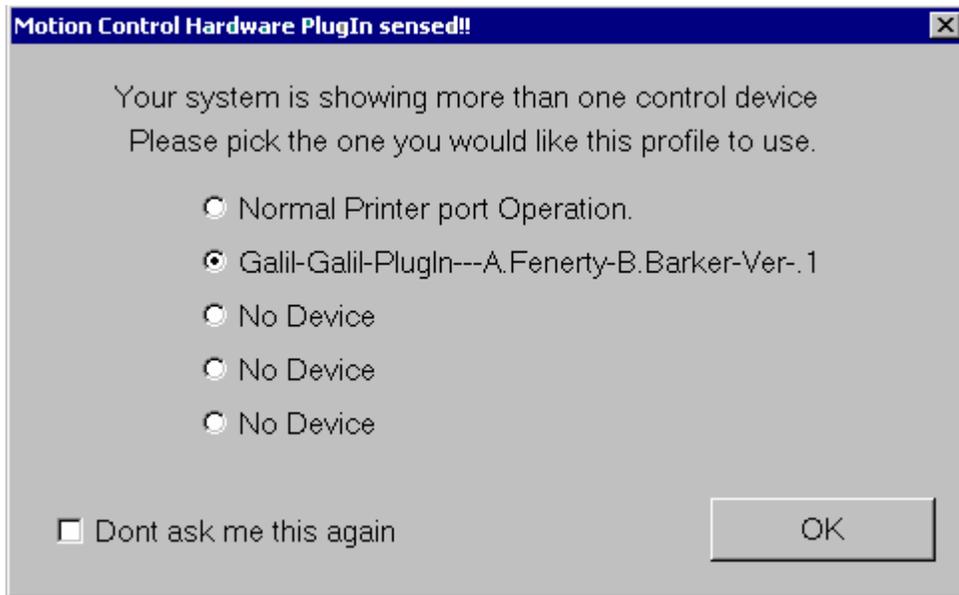
#### Installation

The Mach3 plug-in communicates to the Galil controller via the Galil factory drivers. To install the Galil drivers, SmartTERM will need to be installed. SmartTERM can be downloaded here: (<http://www.galilmc.com/support/download.html>). For more details on setting up SmartTERM, please refer to application note [4417](#). Once SmartTERM is configured and communicating to the Galil, install the Mach3 application. Follow the installation instructions and re-boot the computer for proper Mach3 setup.

The Galil plug-in is available here: <http://www.artsoftcontrols.com/PlugIns/Galil.m3p>. Installing this plug-in is quick: double-click / run the Galil.m3p file which will install itself. Note that if more than one controller is registered, the plug-in will automatically connect to controller 1. The plug-in will work with both PCI as well as Ethernet based controllers, just as long as the controller is registered correctly.

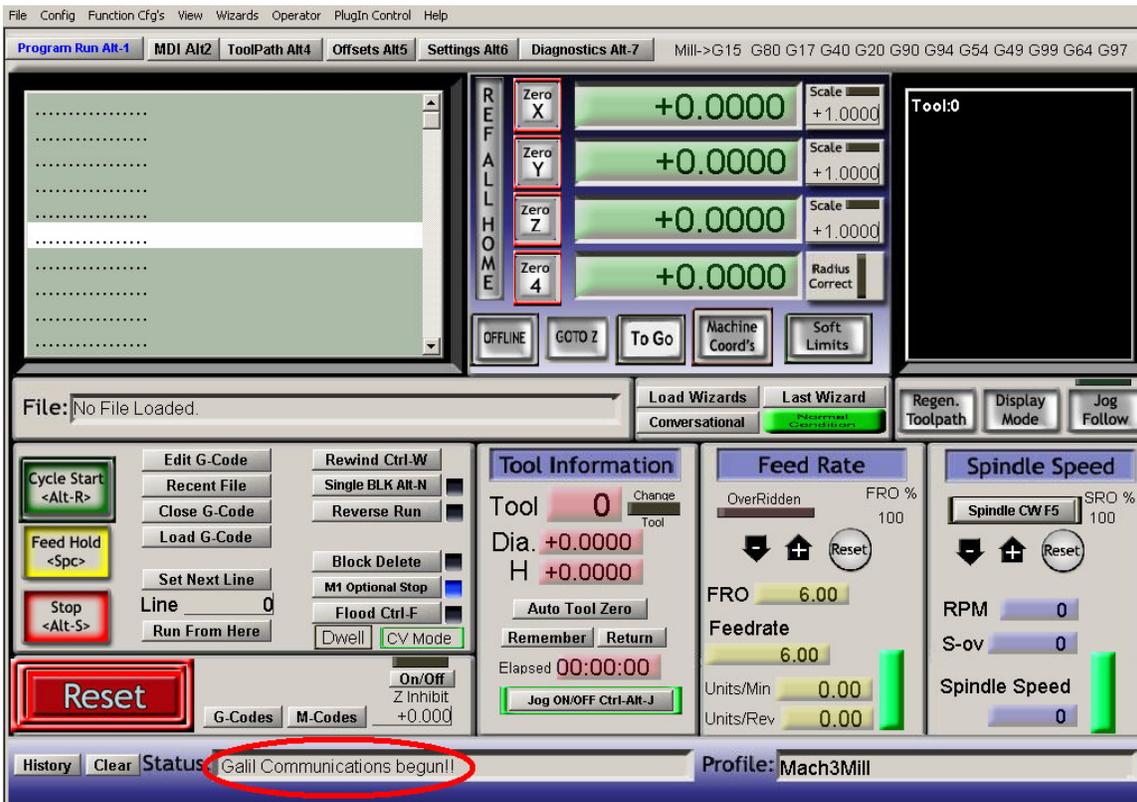
#### Starting Mach3

Once the installation and setup process has taken place, Mach3 is ready to run. On program startup, a small dialog will popup (Figure 1) asking which plug-in to use.



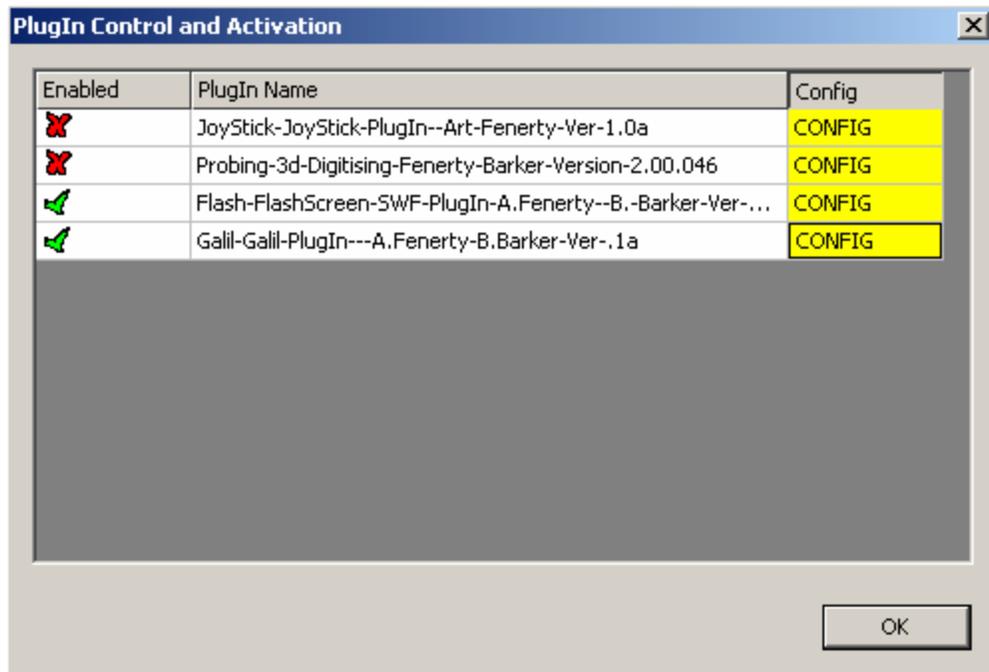
**Figure 1:** Plug-in selection dialog box

Select the Galil plug-in, and click ok to continue. A message (Figure 2) indicating that we are successfully communicating to the controller should appear in the bottom of the window.



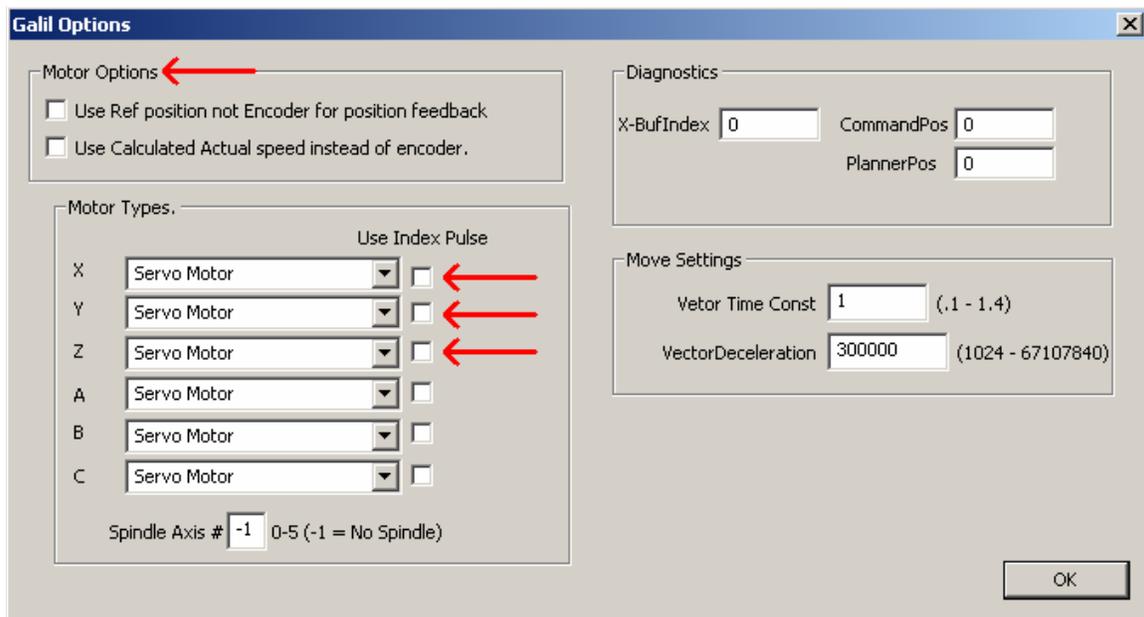
**Figure 2:** Mach3 screenshot illustrating a proper connection to the Galil controller

The plug-in will be configured to run with stepper motors by default. To change motor type, go to the config menu, then config plug-ins. A pop-up box similar to the one shown in Figure 3 should be presented.



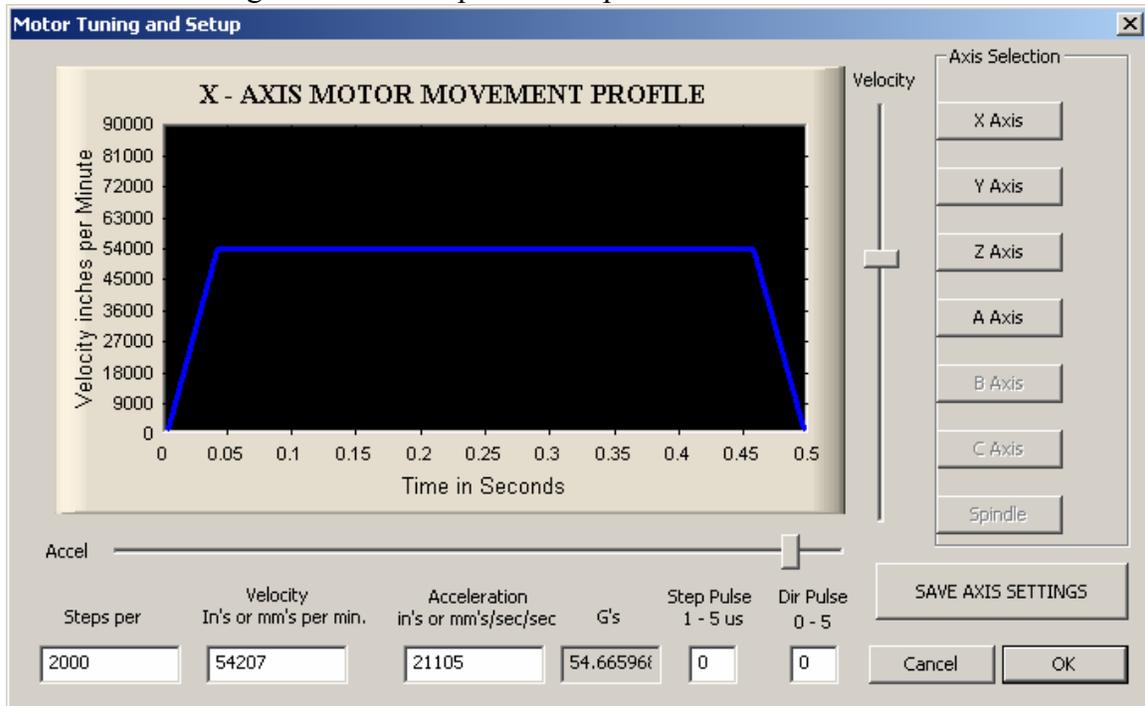
**Figure 3:** Plug-in configuration dialog

Choose the Galil-Galil-PlugIn, by clicking on the corresponding yellow CONFIG button. A properties window (Figure 4) will appear allowing the user to adjust the motor type along with a few other motor option settings.



**Figure 4:** Controller setup where motor type and encoder feedback options are available.

The speed of the profiled motion can be adjusted in Mach3 under the Config... Motor Tuning menu selection. This is not where the operator adjusts the PID tuning required for servo motor control. The PID tuning process must take place outside of Mach3. Shown below in Figure 5 is the simple motion profile editor.



*Figure 5: Mach3's tuning editor*

## Conclusion

Mach3 is a straight forward CNC software package that allows quick connection and configuration of a Galil motion controller. If the machine uses stepper motors, no other software is required, however if the machine uses closed-loop servo motors, consider using Galil's WSDK tuning software.

More information about Mach3 is available at:  
<http://www.machsupport.com/artsoft/index/index.htm>