Artsoft Helpdesk

Where do I start? Are there steps?

Imported User 6 - 2019-04-29 - in FAQ's

Yes! For anybody just beginning with CNC, the following steps are absolutely essential. Even pros with many years of experience may be able to pick up a few pointers. All machine controls are different, and even a person who has run, worked on, built, or installed CNCs for many years using any particular control will experience a learning curve when using a different control. Mach3/Mach4 is quite capable of controlling a machine, but there will be differences between it and any other controller. Also, the hardware used in a CNC can have a dramatic effect on how the software and complete system operate. The bottom line: each system will behave slightly differently. The control (no matter whose) is not capable of understanding the operator; therefore the operator/designer must be capable of understanding the control and creating their system.

- 1) **Read the manuals.** Even the most seasoned pro will often reference the manuals when they have a question. Reading the "Mach3Mill Install and Config Guide" in its entirety, and making notes of any questions it may prompt, is a great first step. It is important to fully understand how the software operates to create and use the system that is created. The knowledge the manual provides can reduce the chance of expensive or time consuming rework.
- 2) **Watch the tutorial videos.** These are fairly short and loaded with information. They can be found on the Tutorial Videos page of the website.
- 3) **Establish requirements and write them down.** List the requirements the machine must achieve, such as the tolerance it must hold, repeatability, rapid speeds, feed rates, acceleration, coolant, power source, etc.
- 4) **Gather information.** Collecting any and all relevant documentation available from the outset of the project. This includes any manuals or data sheets for the machine and/or the components. Components or machines with poor documentation may require careful consideration.
- 5) **Make an I/O map.** Using a spreadsheet to list all of the I/O (inputs and outputs) and document which pin of which device they will be wired, can save effort with both configuring Mach3/Mach4 and troubleshooting any issues. This will likely be used for the life of the machine.
- 6) **Draw diagrams.** Diagrams for the electrical, pneumatic, hydraulic, coolant, etc. systems can be important when troubleshooting a machine. If the machine is a retrofit and did not come with any diagrams, it may be well worth the time to create them.
- 7) **Generate a parts list.** Document what parts are needed, where to acquire them,

their cost, part numbers, etc.

- 8) **Review, edit, and update.** At this stage, there should be a solid understanding of what type of machine is desired, what parts are necessary to produce it, and a pretty good idea of how everything ties together. Chances are that along the way, required adjustments have been made, so now is the best time to update the documents accordingly to reflect these changes.
- 9) **Gather components.** It should now be possible to make educated decisions about the components required to build the machine and feel confident they will give the desired results. If this is not the case, it is time to backtrack as far as necessary in the process to reach that comfort level before actually ordering any parts.
- 10) **Bench test.** Once the components are gathered, it is time to assemble and test them. It is advisable to initially perform this process on a bench (desk, table, work shop bench). Testing before permanently installing the hardware and routing the wires in the machine will often save a lot of time, trouble, and frustration. It is not unusual for things to fail to work exactly as expected with a new setup.
- 11) **Assemble and test.** After the hardware has been bench tested, it is time to install it on the machine. It is the responsibility of the builder to make sure that assembly is done correctly in order for the machine to meet the specifications that were set. Care should be taken to ensure that everything is done properly the first time. If questions arise, they should be researched and addressed before continuing otherwise the machine may not perform as expected.
- 12) **Purchase Mach3/Mach4 & Enjoy!** If everything has been done correctly up to this point, the only thing left to do is purchase a license for the software. If everything has not been done correctly, the decision must be made as to whether or not the results are acceptable or if things need to be adjusted.