

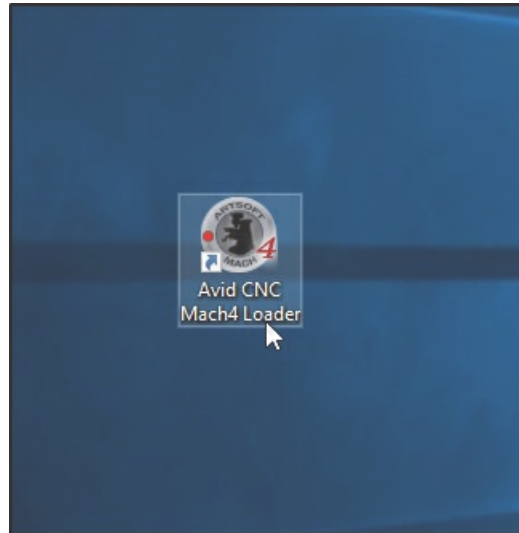


Mach4 Configuration Guide

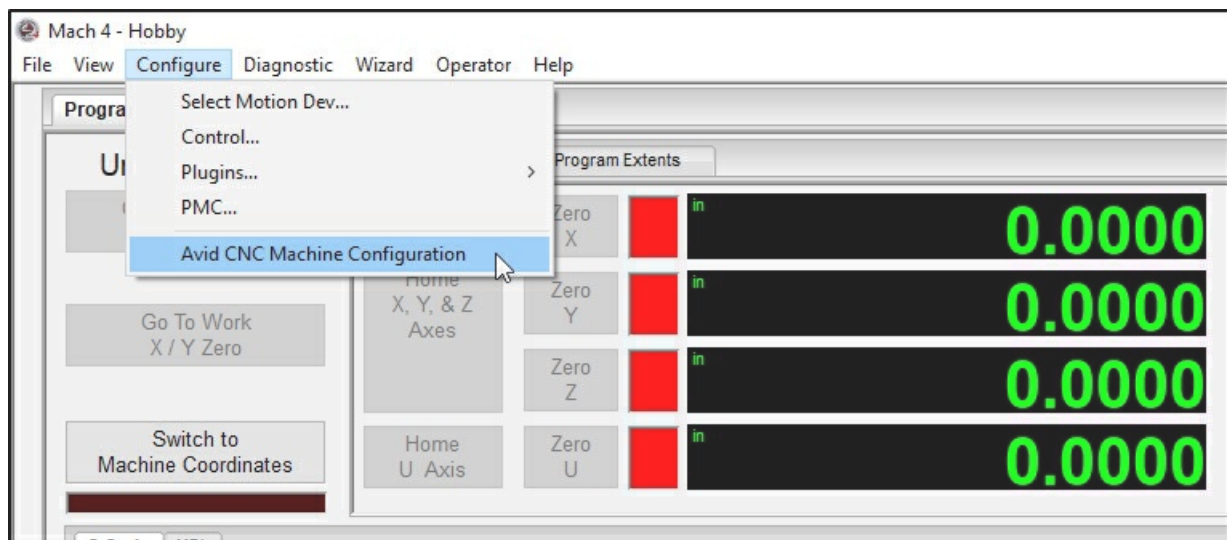
Version 2019Q4.1

Follow the instructions below to configure Mach4 for your specific machine. Instructions to license your Mach4 software will follow this Mach4 Configuration guide. You can configure and run Mach4 in demo mode prior to licensing the software

1. Open Mach4

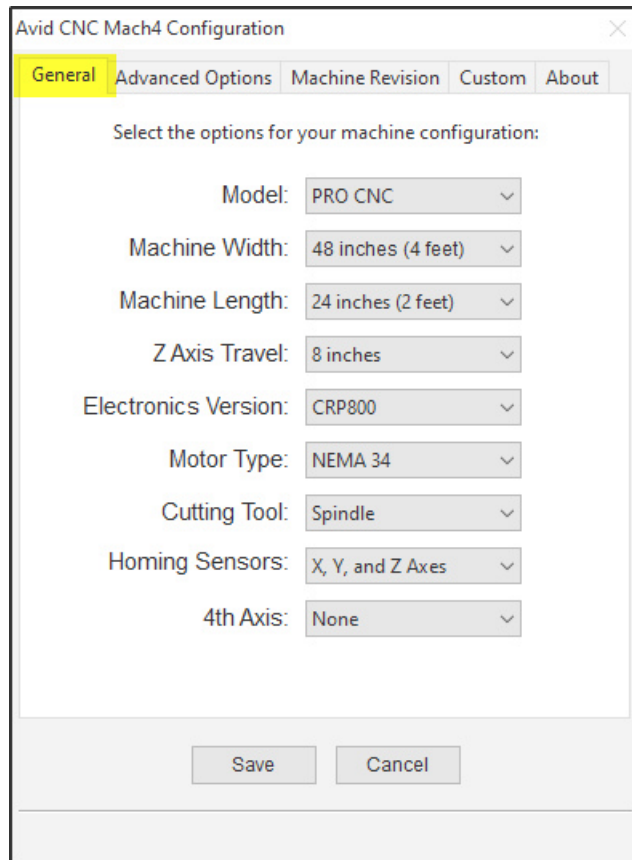


- With your Plug and Plug Electronics control box powered on and connected to your PC, open Mach4 using the "Avid CNC" shortcut on your desktop.

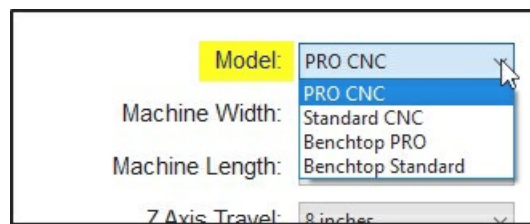


- Open the "Avid CNC Machine Configuration" window located in the Configure tab.

2. General Settings



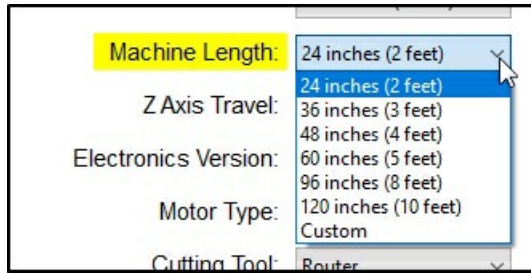
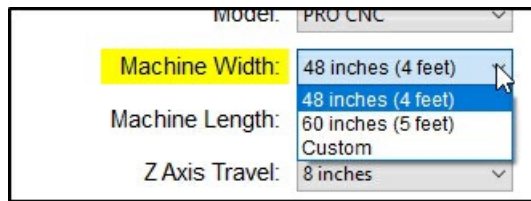
The **General** tab contains options to help setup Mach4 based on your machine's configuration. For each item, choose the appropriate selection (selection options will vary depending on machine model). When you click "**Save**" this will reconfigure Mach4 with your new settings. You can click "**Cancel**" to exit without reconfiguring Mach4 and any selections you may have changed will not be saved.



Model: Select the model of your machine.

Selection Note

"PRO CNC" and "Standard CNC" are large-format machines. If you have a benchtop machine, be sure to select the appropriate benchtop model.

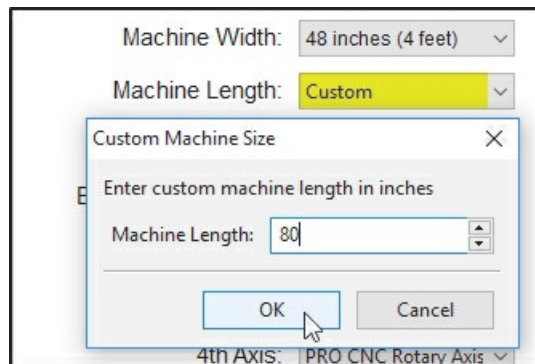


Machine Width: Select the width of your machine.

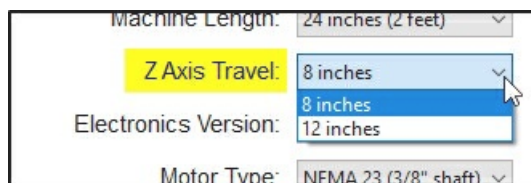
Machine Length: Select the length of your machine.

Selection Note

If you have a custom sized PRO CNC machine there is an option for "Custom" Length and Width, described below.

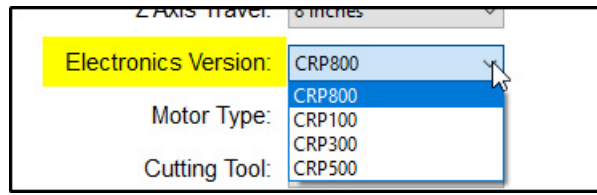


Custom Width or Length: Enter the appropriate width or length dimension of your machine, in inches. Click "OK" to save this custom value.



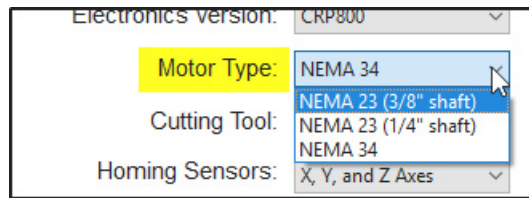
Z-Axis Travel: Select the travel of your Z-Axis. The default Z-Axis travel is 8 inches unless you specifically ordered your PRO CNC or Standard CNC machine with 12 inch Z-Axis travel.





Electronics:

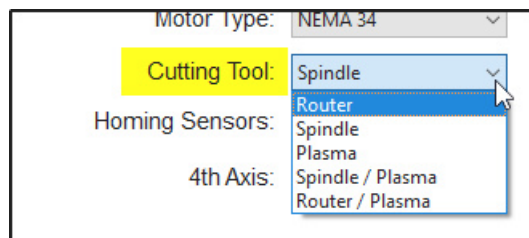
- **CRP800:** Avid CNC Plug and Play control systems (either NEMA 23 or NEMA 34).
- **CRP100:** DIY packages with our NEMA 23 motors and an MX3660, MX4660, or G540 stepper drives.
- **CRP300:** Control systems with our NEMA 34 motors, Gecko G201X or G203V drivers, and PMDX-126 breakout board.
- **CRP500:** Older versions of Avid CNC plug and play control systems, built prior to February 2015, using our NEMA 23 motors paired with our CRP5042 digital drivers and breakout board.



Motor Type: Select the type of motors your machine has.

Selection Note

The default shaft size for NEMA 23 motors is 3/8". You will only have NEMA 23 (1/4" shaft) motors if you specifically ordered this option.

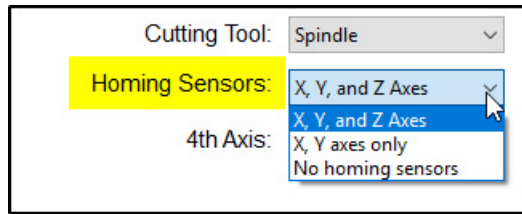


Cutting Tool: Select the type of cutting tool your machine has. If your machine has both milling and plasma cutting tools, select either "Spindle / Plasma" or "Router / Plasma". The Mach4 Users Guide will describe how to switch between cutting methods.

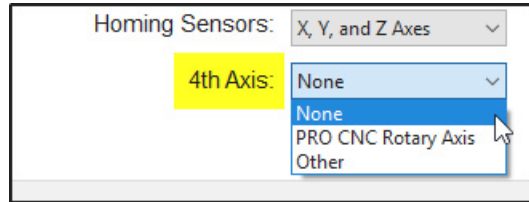
Selection Note

If you select "Spindle / Plasma" or "Router / Plasma" you will see a screen appear to select the layout of your dual Z axes. This is used to set the correct X axis home offsets.

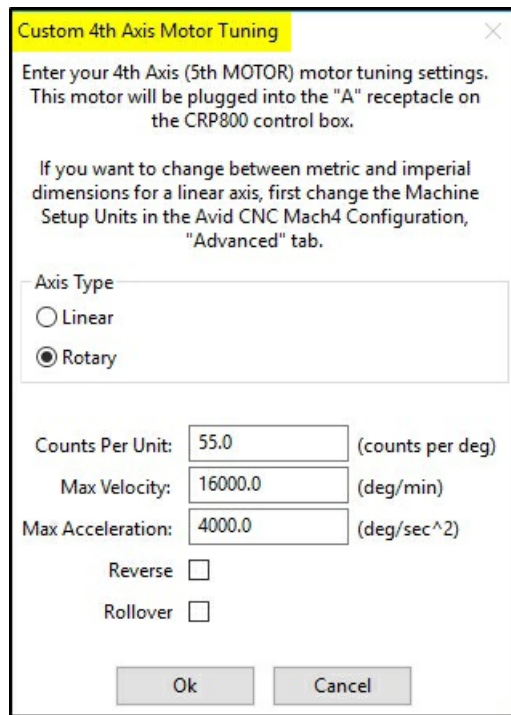




Homing Sensors: Select the axes on your machine which have homing sensors. The current [Avid CNC Proximity Sensor Kits](#) include homing sensors for X, Y, and Z axes.

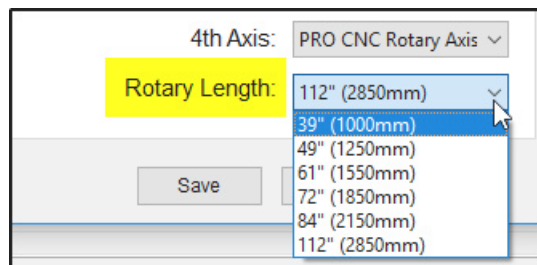


4th Axis: If your machine has an additional 4th Axis, select the appropriate option. "Custom" will allow you to enter your own motor tuning parameters for the motor controlling your 4th axis. This is described in more detail below.



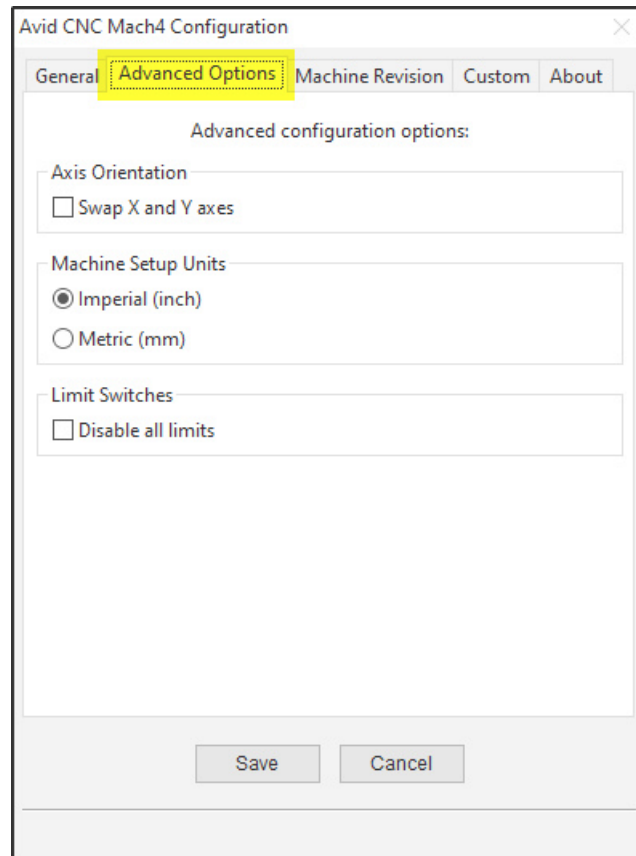
Custom 4th Axis: If you selected "Other" for the 4th Axis option, you will be able to specify the parameters listed below for motor tuning. If you want to use different units for motor tuning, first change the "Machine Setup Units" in the Advanced Settings tab.

- **Axis Type:** Select if this is a linear or rotary axis.
- **Counts Per Unit:** Enter the number of steps per unit of your stepper motor.
- **Max Velocity:** Enter the maximum velocity in the units shown.
- **Max Acceleration:** Enter the maximum acceleration in the units shown.
- **Reverse:** Select this checkbox to reverse the motion of the motor.
- **Rollover:** Select this checkbox to enable as a rollover axis. This can be only be selected with a "Rotary" axis type.



Rotary Length: If you selected an "Avid PRO CNC Rotary Axis" 4th Axis, you will have an option to specify the overall rotary length.

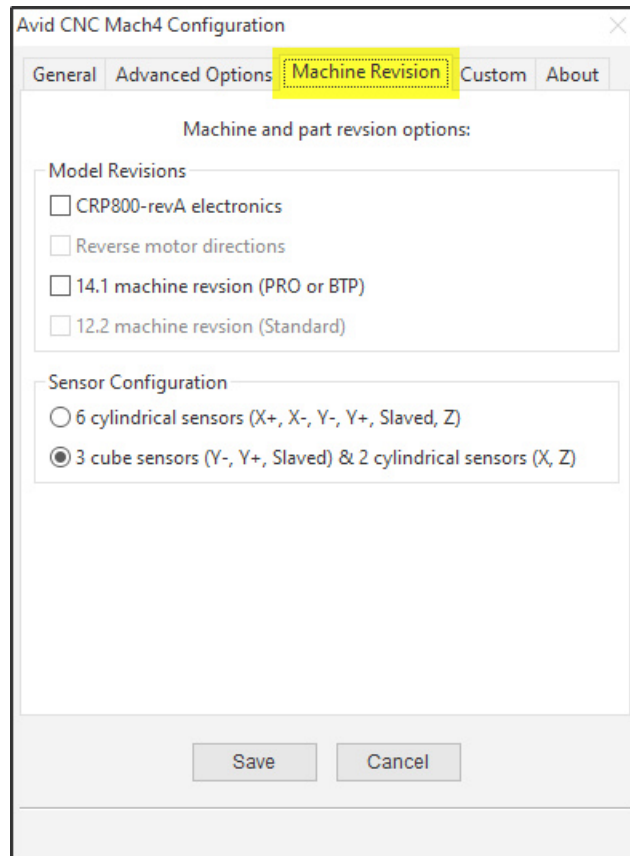
3. Advanced Settings



The **Advanced Settings** tab contains additional options for configuring Mach4.

- **Swap X and Y axes:** Enabling this option will swap the orientation of the X and Y axes. The table axis will be the X axis and the gantry axis will be the Y axis. Motor directions are changed to maintain right-handed coordinate system.
- **Machine Setup Units:** You can chose between metric or imperial dimensions for the machine setup units. These are the units used for parameters such as motor tuning. If you are using custom 4th axis motor tuning, those values will use the machine setup units you have selected here.
- **Disable all limits:** * *Enabling this option will disable ALL limit switches. Homing sensors will still be active.* Only use this option after consulting with [Avid CNC Support](#)***.

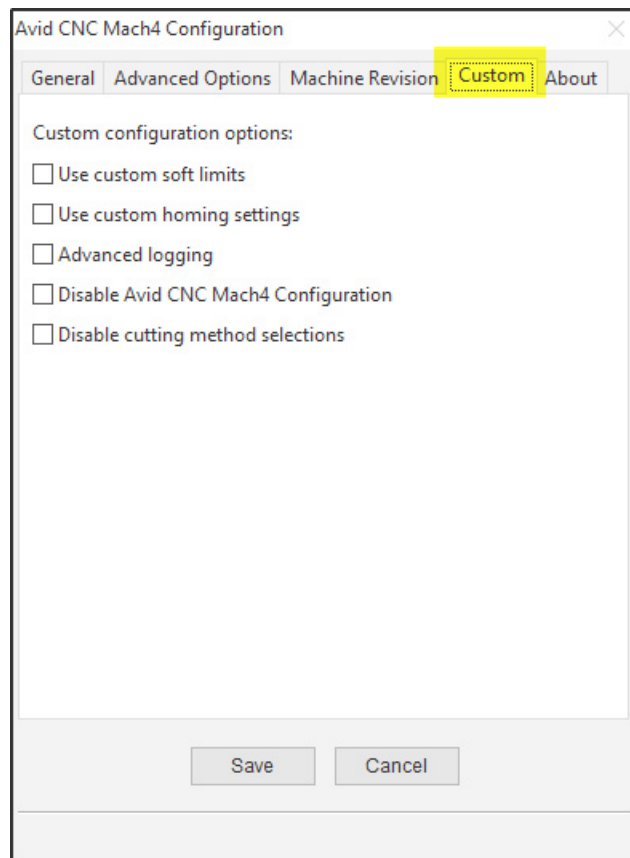
4. Machine Revisions



The **Machine Revisions** tab contains settings that apply for previous machine and electronics revisions.

- **CRP800-revA electronics:** CRP800 electronics purchased prior to July 2015.
- **Reverse motor directions:** Enabling this option will change the direction of all assigned motors. This will only be applicable for some machines with CRP800-revA electronics and NEMA 23 motors. Contact [Avid CNC Support](#) if you need assistance determining if this is a correct setting for your machine configuration.
- **14.1 machine revision:** This option is for PRO or Benchtop PRO machines utilizing a V-Con Z-Axis.
- **12.2 machine revision:** This option is for Standard machines utilizing a V-Con Z-Axis.
- **Sensor Configuration:**
 - **6 cylindrical:** This is the default sensor configuration for current Standard, Benchtop PRO, and Benchtop Standard machines. PRO machines purchased prior to February 2019 also use this configuration.
 - **3 cube and 2 cylindrical:** This is the default sensor configuration for current PRO machines.

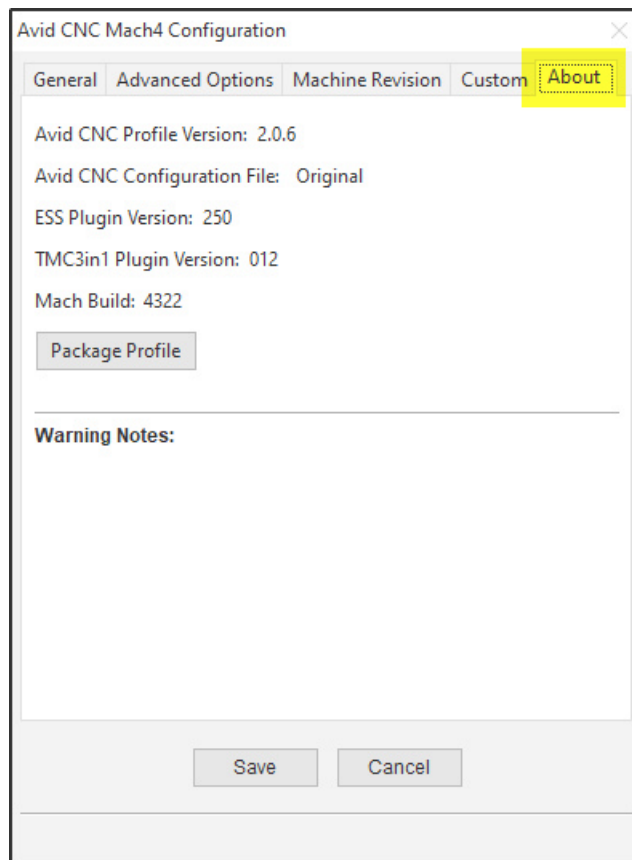
5. Custom



The **Custom** tab contains additional options to customize your Mach4 configuration.

- **Use custom soft limits:** Enabling this option will allow you to specify your own maximum and minimum soft limits for all axes. Using this feature will be explained in more detail in the Mach4 Users Guide.
- **Use custom homing settings:** Enabling this option will allow you to specify your own settings for home order, home offset, and home direction. Using this feature will be explained in more detail in the Mach4 Users Guide.
- **Advanced logging:** Enabling this option will output additional configuration information that can be seen in Mach4's logging feature.
- **Disable Avid CNC Mach4 Configuration:** Enabling this option will prevent any configuration changes from being made when using the **Avid CNC Mach4 Configuration** window. When you check this box, you will see all options disabled on the *General*, *Advanced Settings*, and *Machine Revision* tabs. Click "Save" for this change to take effect.
- **Disable cutting method selections:** This option will disable the selection of cutting methods on the "Machine Setup" tab, detailed further in the Mach4 Users Guide.

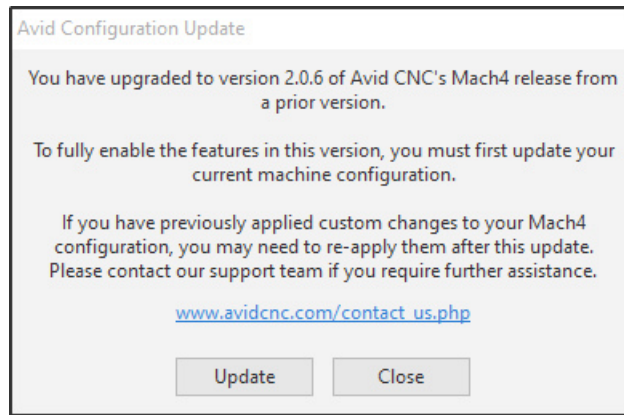
6. About



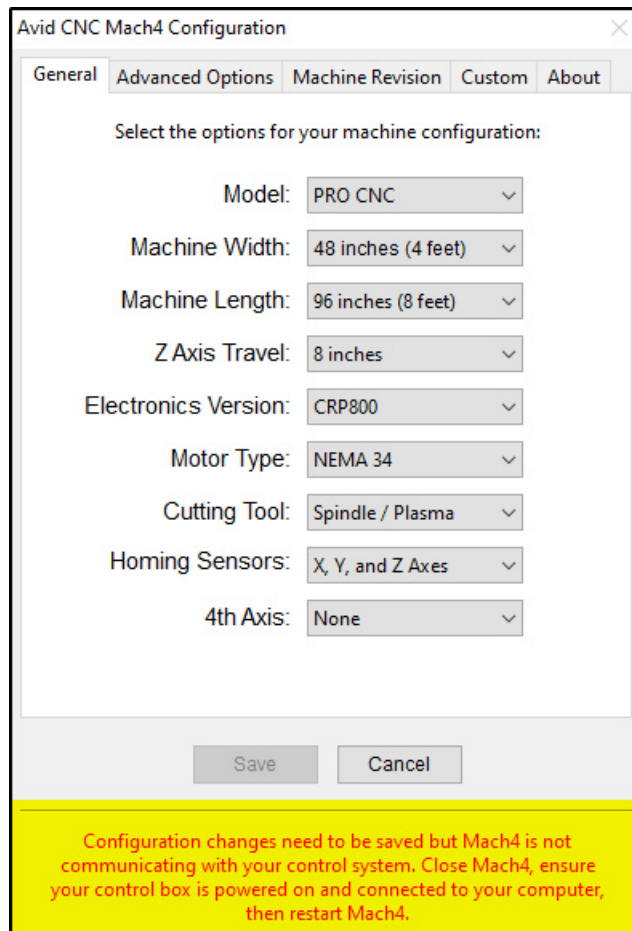
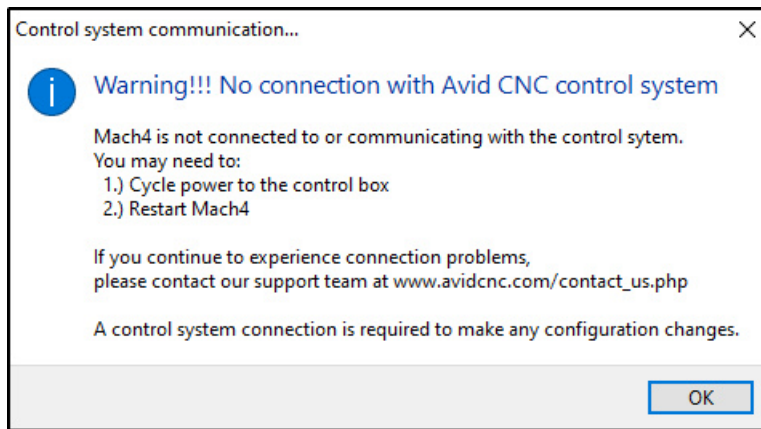
The **About** tab contains information that can be useful when talking with our support team.

- If there are any errors in your configuration file, or if your Mach4 install is using incorrect plugin versions, you will see additional messages displayed in the **Warning Notes** section.
- The **Package Profile** button is used to package the required files for our support team to assist in advanced troubleshooting. If this is necessary, they will provide additional instructions.

7. Warning Messages



- If you are updating Mach4 from a version prior to Avid CNC v2.0.0, you are required to save your machine configuration to allow full use of Avid CNC's Mach4 features. If you have made custom changes, please [Contact Us](#) for assistance with your update.



- Making changes to your Mach4 configuration requires active communications with your Avid CNC control system. If there is a communication error, you will be able to view configuration settings but are prevented from saving any changes. Follow the steps in the warning message to reestablish communication between Mach4 and your Avid CNC control system.