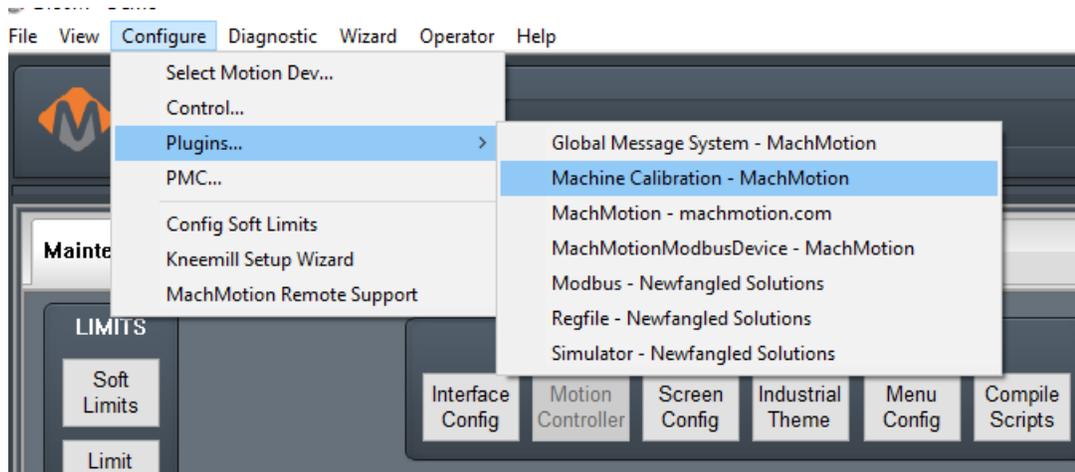


Mach4 Axis Motor Calibration

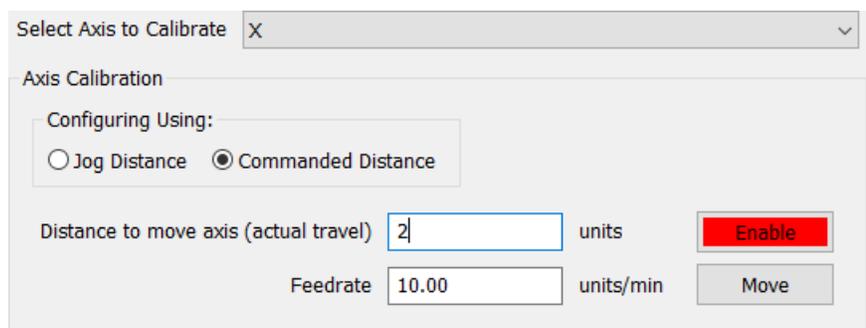
If your machine is moving incorrect commanded distances, it might be a matter of being calibrated incorrectly. Or, maybe you're setting up a machine for the first time. In either case, follow either of these two procedures to calibrate your machine and make sure an inch is an inch! We also refer to this as "steps per unit" calibration.

First, to access either of the calibration methods, select Configure->Plugins->Machine Calibration to select your method of calibration.



Manual Calibration

In the manual calibration method, you will need a dial indicator to measure the distance moved by the machine. It's quite simple; command a distance, measure it, and put the measured distance into Mach. It will do the calibration for you!

A screenshot of the 'Manual Calibration' dialog box in Mach4. At the top, there is a dropdown menu labeled 'Select Axis to Calibrate' with 'X' selected. Below this is the 'Axis Calibration' section. It contains a group box 'Configuring Using:' with two radio buttons: 'Jog Distance' (unselected) and 'Commanded Distance' (selected). Below the radio buttons are two input fields. The first is labeled 'Distance to move axis (actual travel)' and contains the value '2', followed by the unit 'units'. To its right is a red 'Enable' button. The second input field is labeled 'Feedrate' and contains the value '10.00', followed by the unit 'units/min'. To its right is a grey 'Move' button.

1. Once you have selected "Manual Calibration," select the axis you want to calibrate on the first drop-down.
2. Choose the "Commanded Distance" selection.
3. Enter the units you want to move the machine (inches in the US)
4. Set the feedrate of the of the commanded move.
5. Click "Enable" and "Move."
6. After the move, put the measurement of the dial indicator in the "How far..." field in the drop down.
7. Hit "Submit."
8. Hit "Accept."
9. Repeat for each axis.

User Input

How far did the axis move (actual travel)? units

Axis will be set to steps per unit

Please input the distance traveled.

Once you hit accept, it will automatically save the "Steps Per Unit" value in the control configuration.

Automatic Calibration

Automatic calibration is easier. But you'll need to know some info before you dive in. Specifically, what motors you have, the teeth count on your machine gears and the pitch of your ballscrew. Once you have this information, input it into the calibration window. Once the data is put in, you can hit "Calculate" to figure out your steps per unit. You can also set your motor acceleration and velocity. Hit "Accept" to save the motor configuration. Repeat for other axes.

Drive

Teco (17-bit)

RPM Encoder Resolution Drive Ratio

Machine Configuration

Pulley Gear Box

Pulley Ratio

Load Teeth Motor Teeth

Gear Box Ratio

Numerator Denominator

Ballscrew Ballscrew Pitch units/pitch Metric

Pinion Diameter Pinion Diameter units

Rack Pitch Pinion Teeth teeth

Rack Pitch teeth/units

Axis

Axis Select Current Steps Per

Output

Steps Per Steps/Unit Acceleration Units/(Sec^2) Velocity Units/Minute

Values Calculated.