Yaskawa Auto Tuning

Watch Yaskawa tutorial: https://www.youtube.com/watch?v=_9TW9wodQ8M)

Prerequisites

- Have a tuning cable
- Download and install SigmaWin+
    - https://www.yaskawa.com/products/motion/sigma-5-servo-products/software-tools/sigmawinplus/-
      /content/_6c2e204d-20bc-475d-84a3-8f471d3ccaf7_DownloadSoftware
- Copy over USB folder (M:\Production\Products\Drives-Servo\Yaskawa\Software\SigmaWinPlus570a)
    - Check device manager in the usb section or unrecognized device section to find the yaskawa drive. update
      the driver manually, looking in the USB folder copied over.
- Open SigmaWin+ and connect to drive
    - If drive is not showing, go to device manager and find the yaskawa drive and update drivers (found on
   server: production, product, servo, yaskawa, software)

Basic Auto-Tuning

Tuning Setup

1. Search and connect to the drive
2. Turn on hardware enable, but drive enable must be off
    1. Set "Turn Off Enable Signals upon Disable" to "Drive Enable" in Interface Config or Configure-
       >Plugins->MachMotion

| Enable				
Drive Enable	(nothing selected)		I... 1
Drive Enable Delay	500	Milliseconds	500
Hardware Enable	(nothing selected)		I... 0
Turn Off Enable Signals Upon Disable	Drive Enable		D...e

    2. Or if necessary, pull the control cable out from the drive.

3. Select Tuning --> Tuning to begin the tuning process
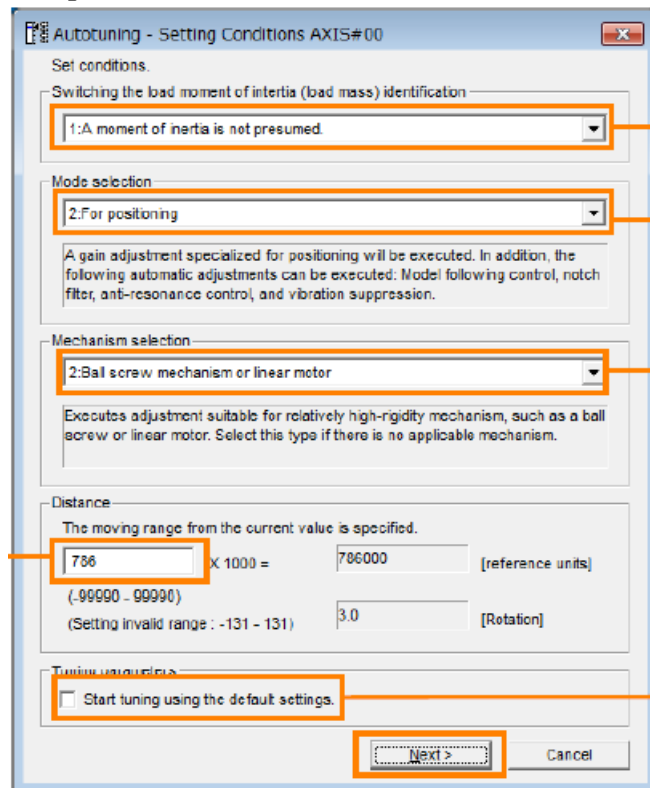4. Click the Execute Button.
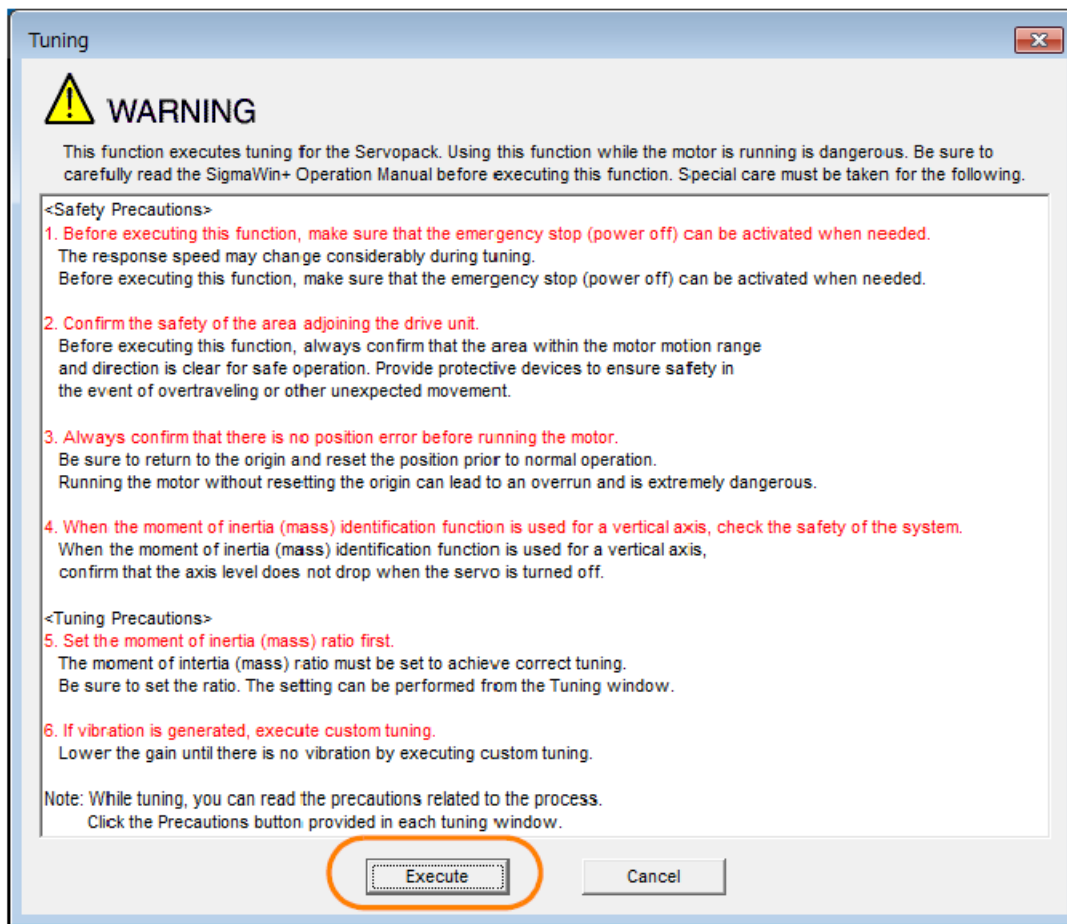
5. Click the Execute Button to calculate inertia. NOTE: If worse than 500% (5:1 ratio), your motor will likely not work. Call MachMotion for engineering.
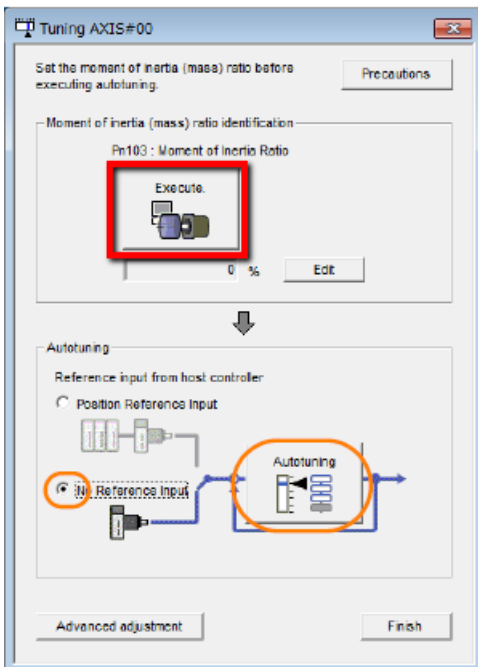
6. Select the No Reference Input Option in the Autotuning Area and then click the Autotuning Button.
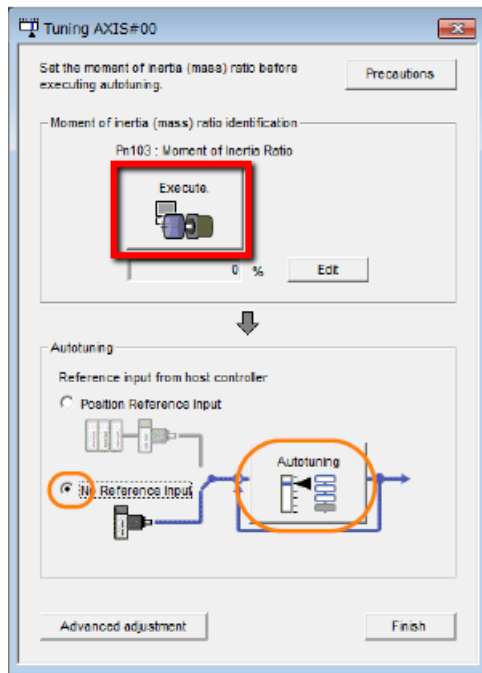
7. Configure Conditions

1. Choose "**0: A moment of inertia is presumed**" (We already calculated the inertia above)
2. Choose "**2: Position**"
3. Choose appropriate mechanism. Default use Belt Mechanism even for ball screw unless you need very rigid tuning.
4. Edit distance if necessary (3 revs is default)
5. Select "Start tuning using the default settings" (can be done without this option, but this is the typical way to do your first tune).

8. Select "Next"
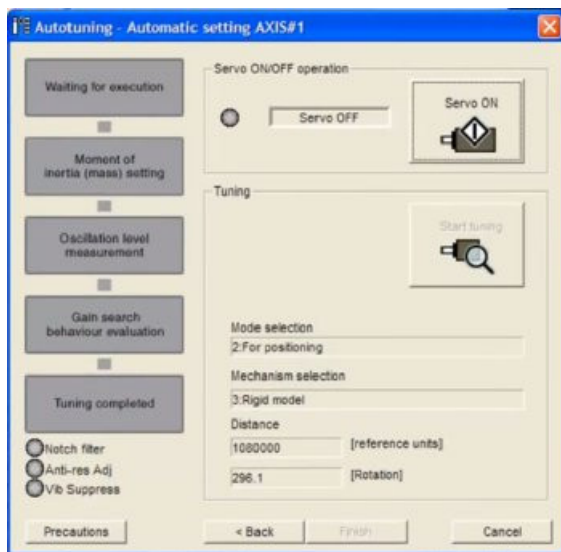
Tuning Process

1. Turn the "Servo ON"
2. Select "Start Tuning"
3. Software will run the motor through it's pre-programmed moves
4. Click "Finish"
5. The drive is tuned
6. Click "Finish" again to exit tuning mode

Final Parameter Setup

1. Turn off model following by setting Pn140 digit 0 to 0.
2. Set feed forward gain Pn109 to 0%.
3. Check the following parameters on X and Y drives.
    1. Pn100 (Speed Loop Gain)
    2. Pn101 (Speed loop integral time constant
    3. Pn102 (Position Loop Gain)

4. Pick the lowest value for each parameter.
5. Then make both drives match each parameter.

Advanced Tuning

If additional tuning is required, you can run through the same procedure above but modify selections on Mode Selection and Mechanical Selection.

You may have to play with Pn100-Pn102. But MachMotion strongly recommends keeping the parameters matching in both drives.

You can also go through Chapter 8 (Tuning) of the attached manual ("Sigma-7 Manual Analog-Pulse.pdf").