Notes on Assembly for V3 changes

The SharpCNC CNC design has gone through different changes. SharpCNC V1 originally had the leadscrews placed in tension. All SharpCNC kits now sold are V3, with the major differences being the use of longer leadscrews in the X and Y Axis. These longer leadscrews enable the machine to be assembled so that the leadscrews are in tension.

SharpCNC V2 also requires the plate orientation to be ***remain the same*** to hold the leadscrews in tension.

If your machine is 1500x1500 you absolutely MUST use the V3 tension method for best results.

V1 of the SharpCNC can still be assembled if the user wishes by following the SharpCNC manual. This guide will show the differences between SharpCNC V1 and SharpCNC V3, and how to assemble the leadscrews in tension. **Use this guide along with the SharpCNC V1 manual** if you wish to assemble the SharpCNC V3 with leadscrews in tension.

Read through this guide completely and understand the concepts. To assemble the SharpCNC V2 follow the SharpCNC V1 manual except for the steps outlined in this guide.

See the video in the same folder as this document for a close up of how to apply the changes!

New Parts to V3 design

Thrust bearings used for tensioning



Tensioning Tool



Bolt / spacing changes

Your kit instructions will show 16 x 50mm low profile bolts.

To accommodate the additional spacing needed for the tension system, you will instead have 4 x 50mm and 12 x 55mm. Please use the 50mm bolts for the Z axis motor mount bolts. Use the 55mm ones for X and Y axes.

For X and Y motor mount spacing

Add an extra 6mm spacer per motor bolt, there should be extras in your kit for this. Count them out first to make sure you have enough!

You will also have additional locking collars and shims!

Tensioning the ACME Screws:

NOTE: Do this step after the machine is assembled, the electronic system is complete and the machine can jog using the software. You need the stepper motors to be energised in order to tension the Leadscrew.

Jog the machine so that the gantry is closest to the end of the axis where the Nema23 Stepper Motor is fixed. For best results have the gantry approximately 50mm away from the Y-End Plate.

Loosen the 8mm Lock Collar so that it can freely move. Thread the Leadscrew Tensioning Tool onto the end of the Leadscrew so that it is against the 8mm Lock Collar.

Turn the Leadscrew Tensioning Tool clockwise. As you turn this tool you will feel the Leadscrew begin to tension.

Initially turn the Leadscrew Tensioning Tool until the Nema23 Stepper Motor clicks over, when the Nema23 Stepper Motor clicks over it relieves the tension placed. Just before the Nema23 Stepper Motor clicks over is the correct tension for the Leadscrew.

Again turn the Leadscrew Tensioning Tool so that the Leadscrew is at the correct tension, while holding the tensioning knob at this point, tighten the 8mm Lock Collar so that the tension is held in place by the 8mm Lock Collar.

Remove the Leadscrew Tensioning Tool and repeat for all axis that are to be placed under tension.

You can now move on to assembling your frame!

The **frame assembly.pdf** document is password protected.

The password to access the document is:

cnc3dau