

Belt Tension Flexure Device Instructions

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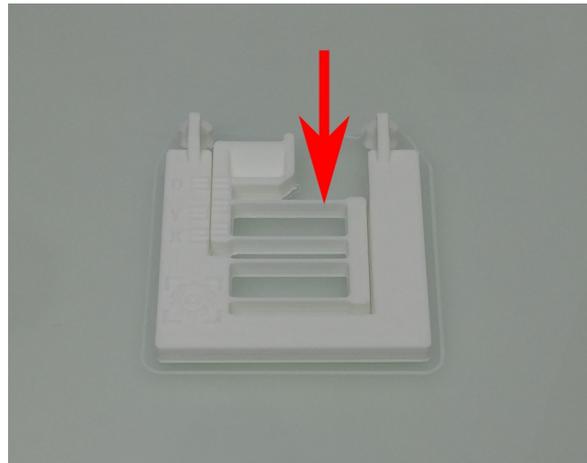


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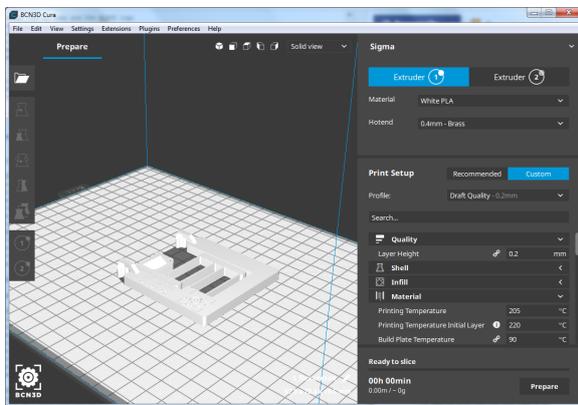
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1 Printing

1. For Sigma/Sigmax R19 and newer:
 - (a) Load the default SD card into the printer.
 - (b) Begin Print of "tensioner.gcode"
2. For older printers, or if you deleted the default SD card files:
 - (a) Download the .STL file for your specific hotend. The default hotend for Sigma is 0.4mm and for Sigmax is 0.6mm.
 - (b) Import the .stl corresponding to your hotend into BCN3D Cura. Leave it at the default orientation.

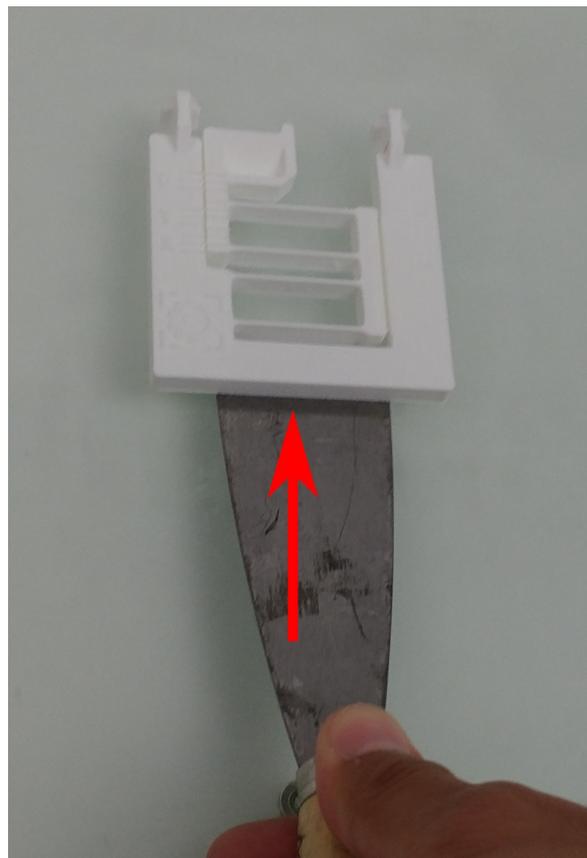


The geometry of the thin segments is crucial to correct operation

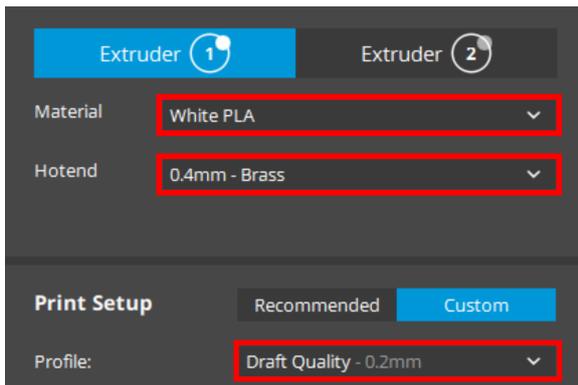


The .STL imported into CURA

2. Carefully remove the piece, taking extra care to not damage the thin parts specified by arrows



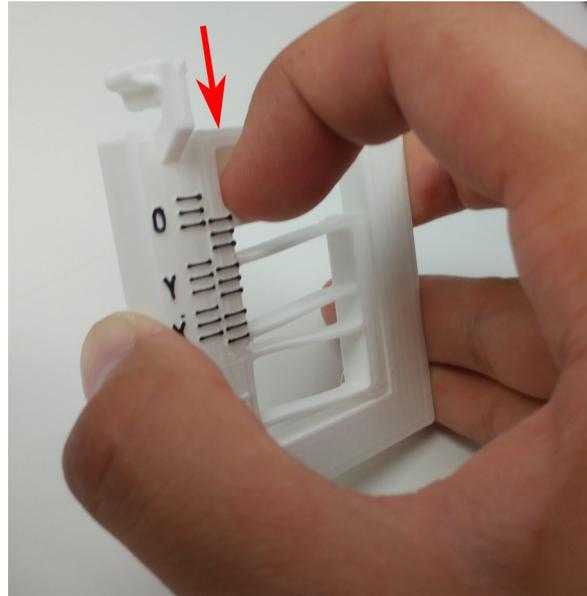
- (c) Make sure you're using the PLA Draft Quality profile, and the hotend size of your printer.



- (d) Save the file to an SD Card, and insert into the printer
- (e) Begin the print

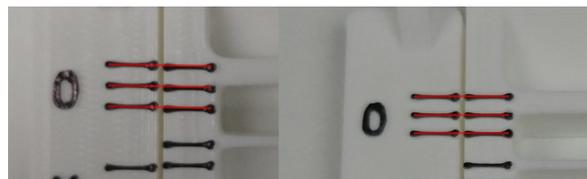
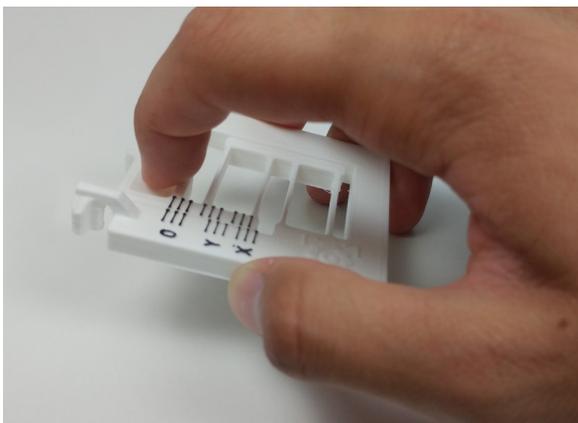
2 Post-processing

1. Wait for the hotbed to cool down before removal to prevent deformation.
3. Using a felt-tipped marker, color the top of the scale lines for easier reading



3 Measuring Tensions

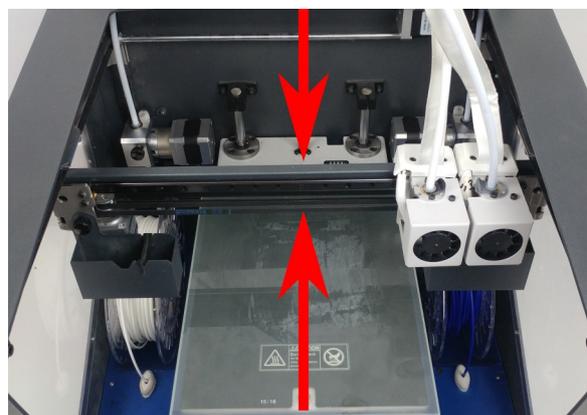
1. To hold the device, put your index finger in the hole, and grip the sides with the rest of your fingers.



On the left is not aligned, and the right, after around 10 minutes, has aligned. Never keep the device on the belt for more than 5 minutes as a time. This viscoelastic creep reduces the accuracy of the device.

3.1 X axis

3. Move the X-carriage to the middle of the printer.

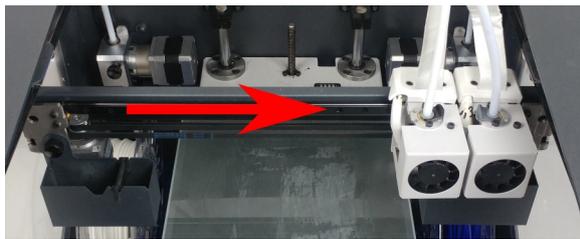


2. Confirm that the movement of the tool is smooth, and that the device returns to the 0 position. If not, it is because of viscoelastic creep. Let the device sit until it returns to the 0 point. Do not pull it back into position, as this will change the device's home position.

4. Move both hotends to either side.

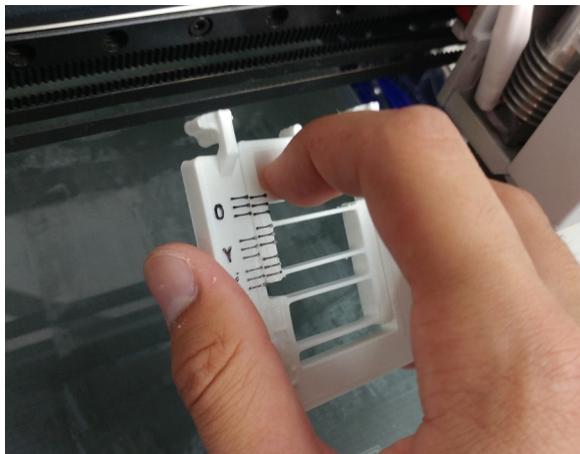


Both hotends to the left is to measure the top belt.



Both hotends to the right is to measure the bottom belt.

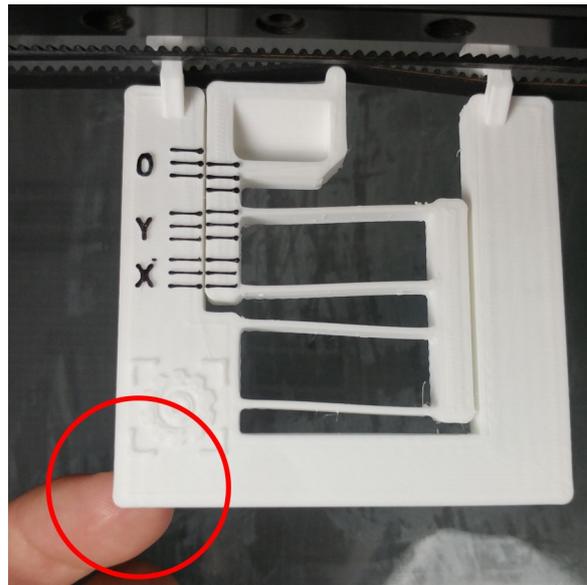
- 5. Pull the tip back and move the device onto the X belt. You may need to use your other hand to guide the belt into the tool.



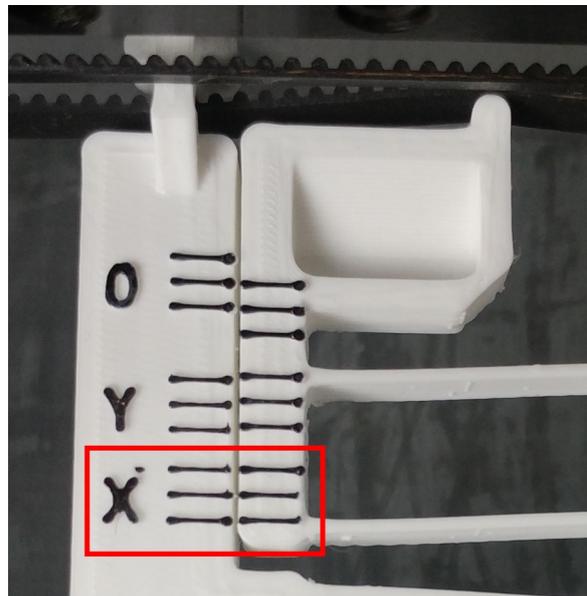
- 6. Once on the belt, release the tool.



- 7. Support the bottom of the tool so the belt doesn't twist. Once held correctly, it can measure the tension in the belt.



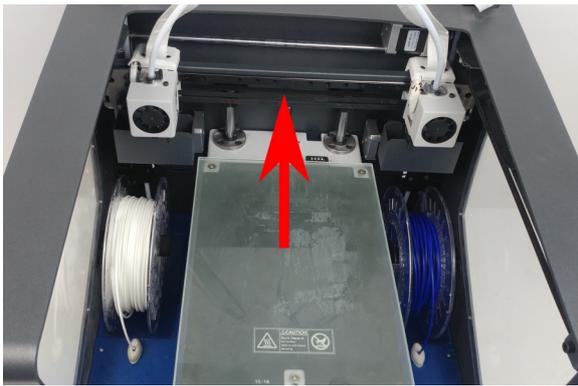
- 8. Check the alignment of the 3 lines next to the "X" - when they're aligned, the belt has the correct tension. If not, follow the instructions in section



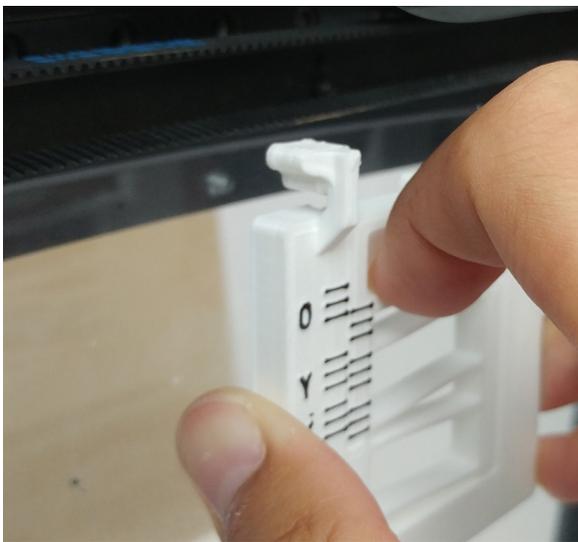
4.

3.2 Y axis

- 9. Move the X-carridge to the back of the Sigma



10. Pull the tip back and move the device onto the belt. You might need to use your other hand to guide the belt into the tool.

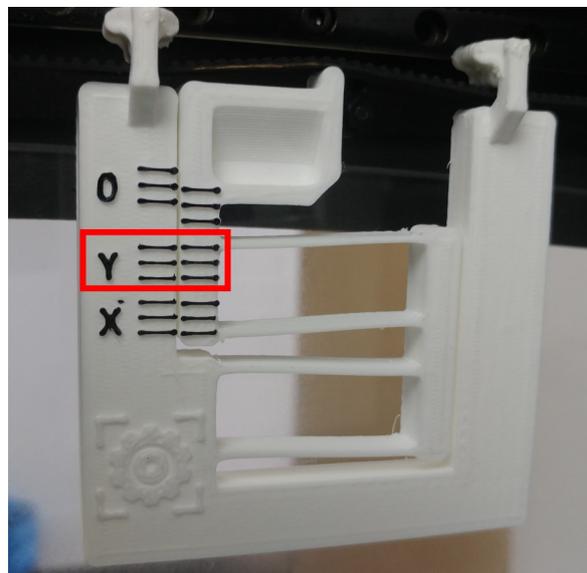


11. Once the device is in the belt, it it go.

13. Check the alignment of the 3 lines next to the "Y" - when they're aligned, the belt has the correct tension. If not, go to section 4.



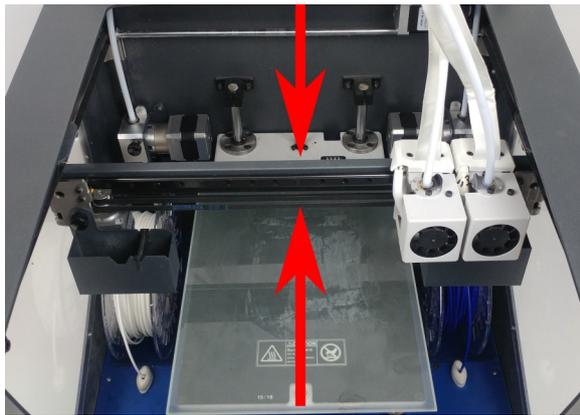
12. Let the device hang from the belt, without twisting. You can use a hand to stabilize it, but for reading you shouldn't touch it.



4 Changing belt tension

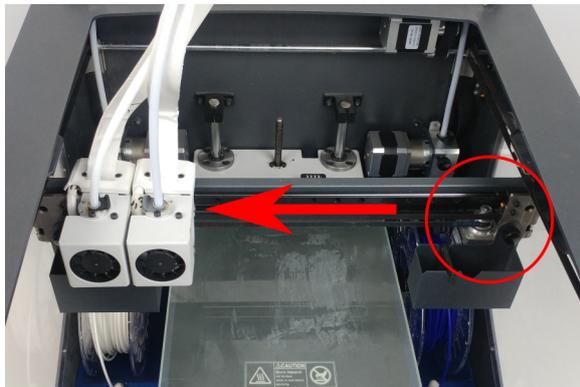
4.1 X axis

1. Move the X carriage to the middle of the Sigma



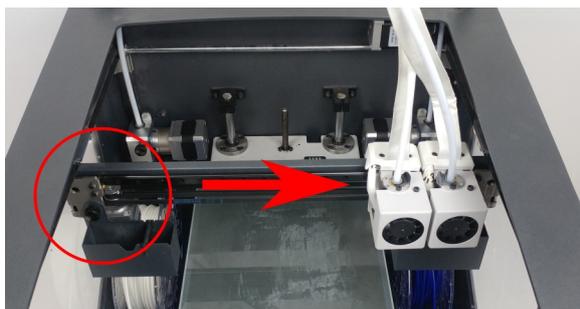
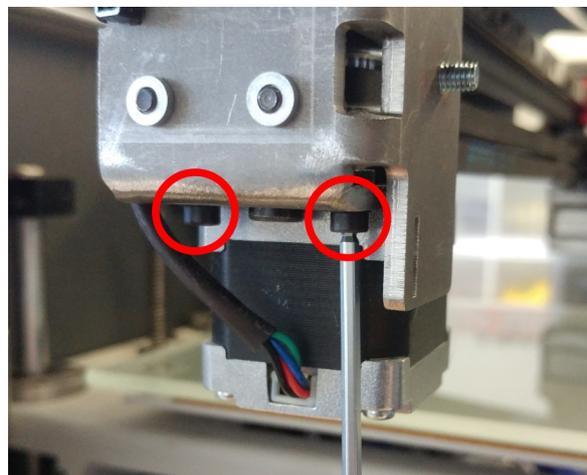
2. Move the printheads to the opposite side of the idler you're adjusting

(a) To adjust the top belt, move the hotends left to expose the right idler.



4. Loosen the bolts beneath the X reinforcement using a 2.5mm allen key. Only loosen them enough for the idler assembly to move a little bit. If not, tightening the idler post-adjustment will change the tension in the belt.

(b) To adjust the bottom belt, move the hotends right to expose the left idler

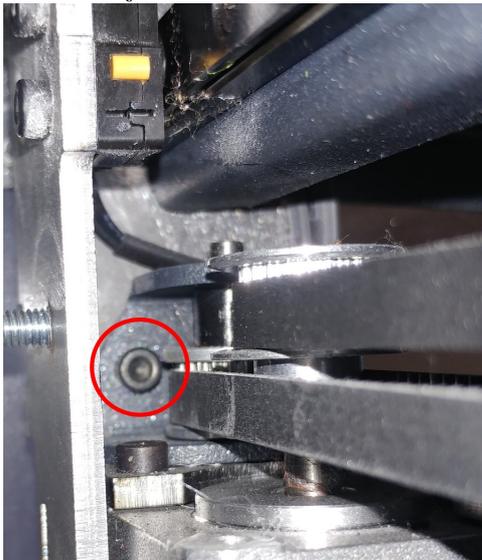


3. Remove the wiper tray for easier access

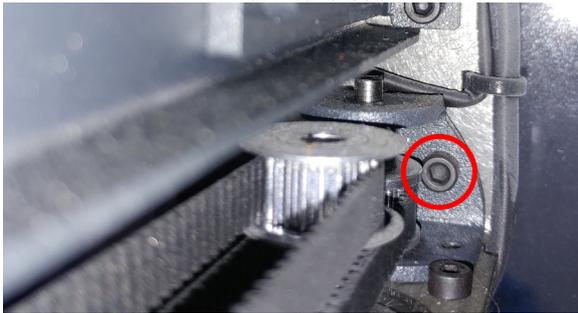
5. Place the tension tool on the belt being adjusted.

6. Locate the adjustment screws on the sides of the idler

The adjustment screw in the front



... And in the back.



4.2 Y axis

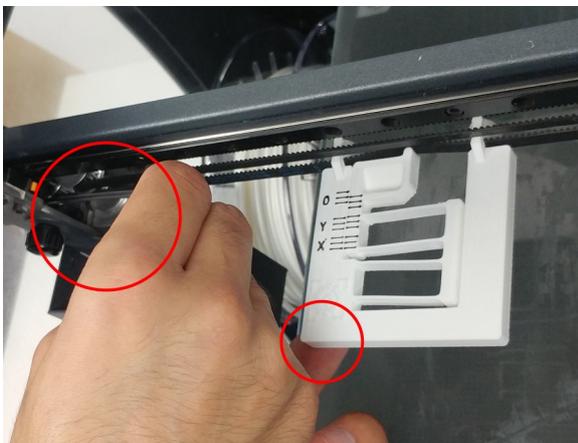
1. Move the X carriage to the back of the Sigma



2. Loosen the holding bolts on the left idler pulley holder using a 2.5mm allen key



7. Adjust the screws on the side of the idler. Loosening them will decrease belt tension, tightening will increase. You still need to support the tool, as seen below.



3. Put the tensioning tool on the Y belt
4. Adjust the bolts until the belt has the correct tension



8. Tighten the bolts beneath the X reinforcement. Make sure the tension stays correct as you tighten.

5. Tighten the idler holding bolts. Make sure that the tension stays correct as you tighten
6. Repeat steps 1-5 for the right belt. It is important that the two Y belts have the same tension.