

**Fusion3**

# **EDGE 3D Printer**

## **MAINTENANCE: ADJUSTING XY DRIVE BELTS**

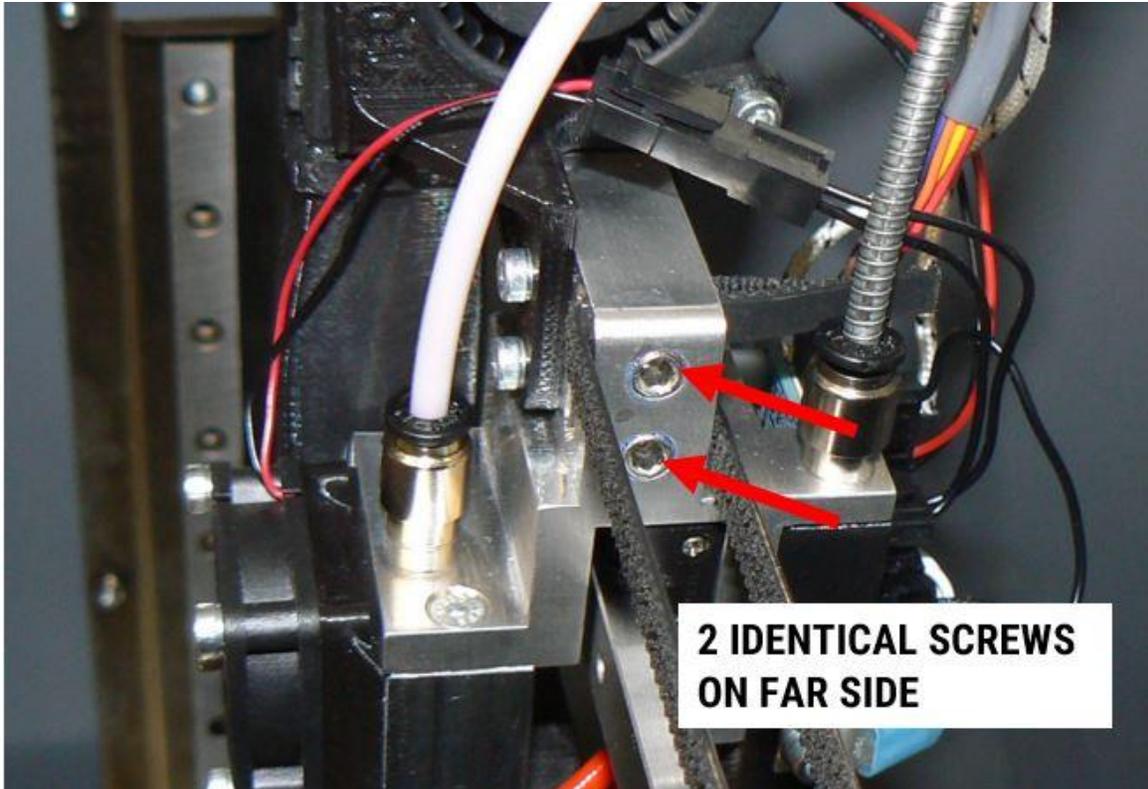
**Revision 8/23/2022**

# ADJUSTING THE XY DRIVE BELTS ON EDGE

How to adjust the XY drive belts for tension and gantry square.

## INTRODUCTION

The XY system on EDGE is driven by 2 belts that are above the linear rails. These belts are open lengths, and all 4 ends are captured on the print head assembly.

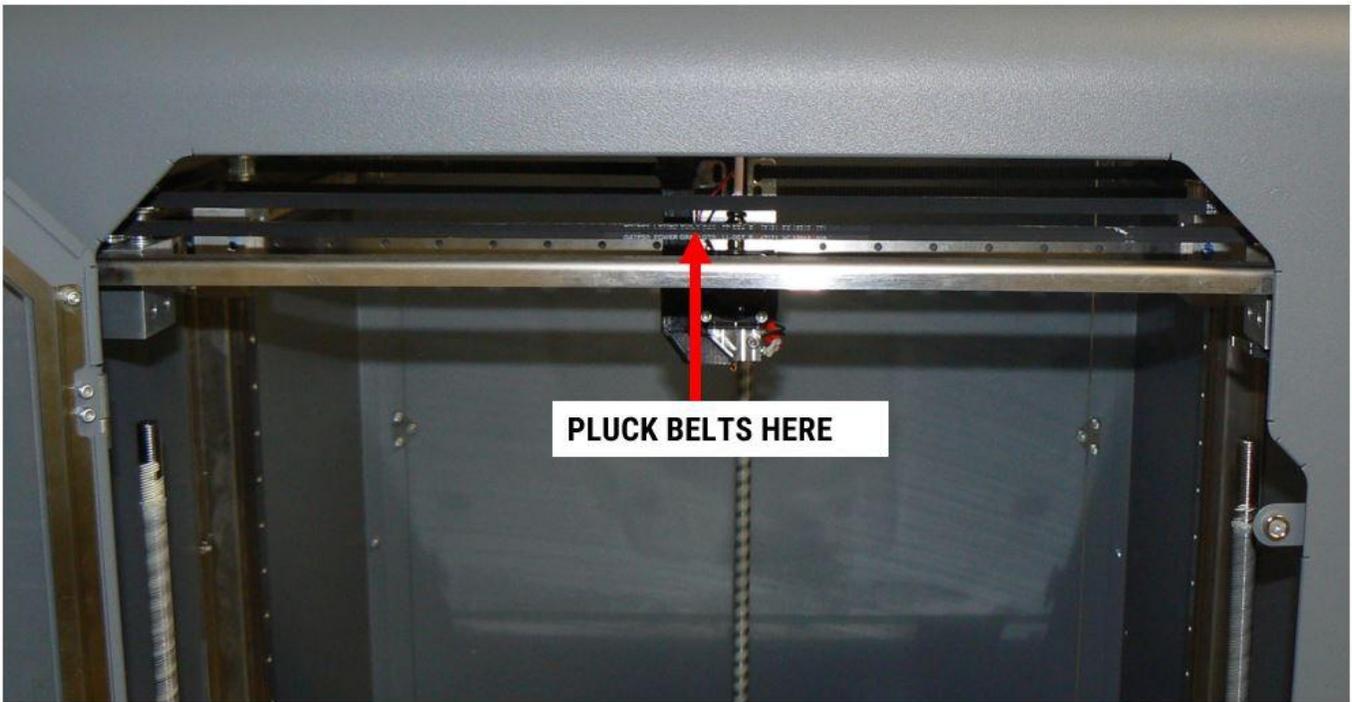


The belts can be adjusted for overall tension and to bring the gantry into square (with limitations).

Adjusting belt tension should be a very rare occurrence. If you find yourself doing this frequently, please contact Fusion3 Support for assistance debugging and fixing the issue.

## BELT TENSION

The belts should be tight enough that when plucked in the front center spans, they are tight enough to just barely "thrum" like a guitar string.

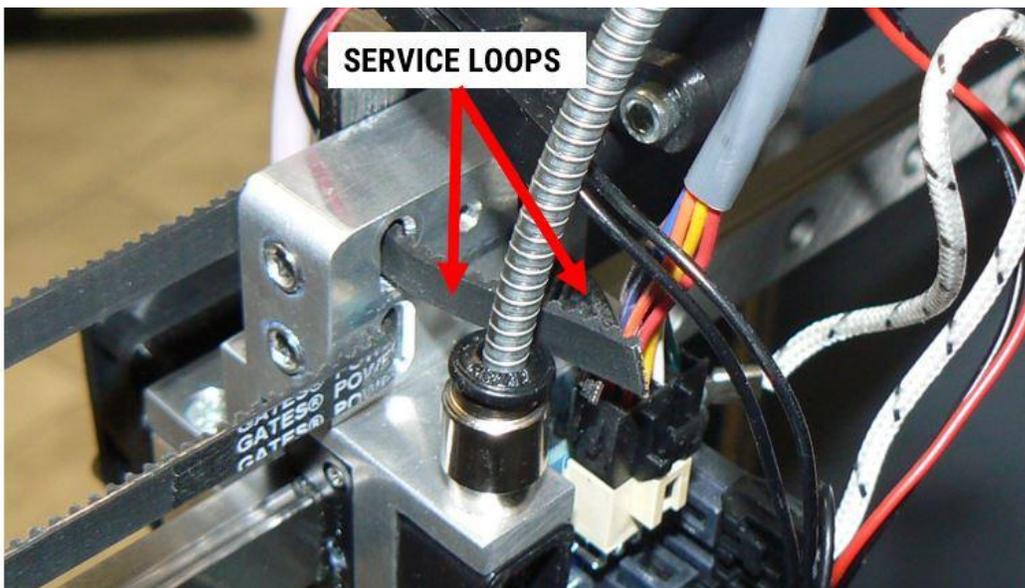


The objective is to get the belts tight enough that they don't skip on the motor pulleys. Since the belts are toothed, this does **not** require a lot of tension.

**WARNING: Overtensioning the belts can lead to accelerated wear on the motion system and poor print quality.**

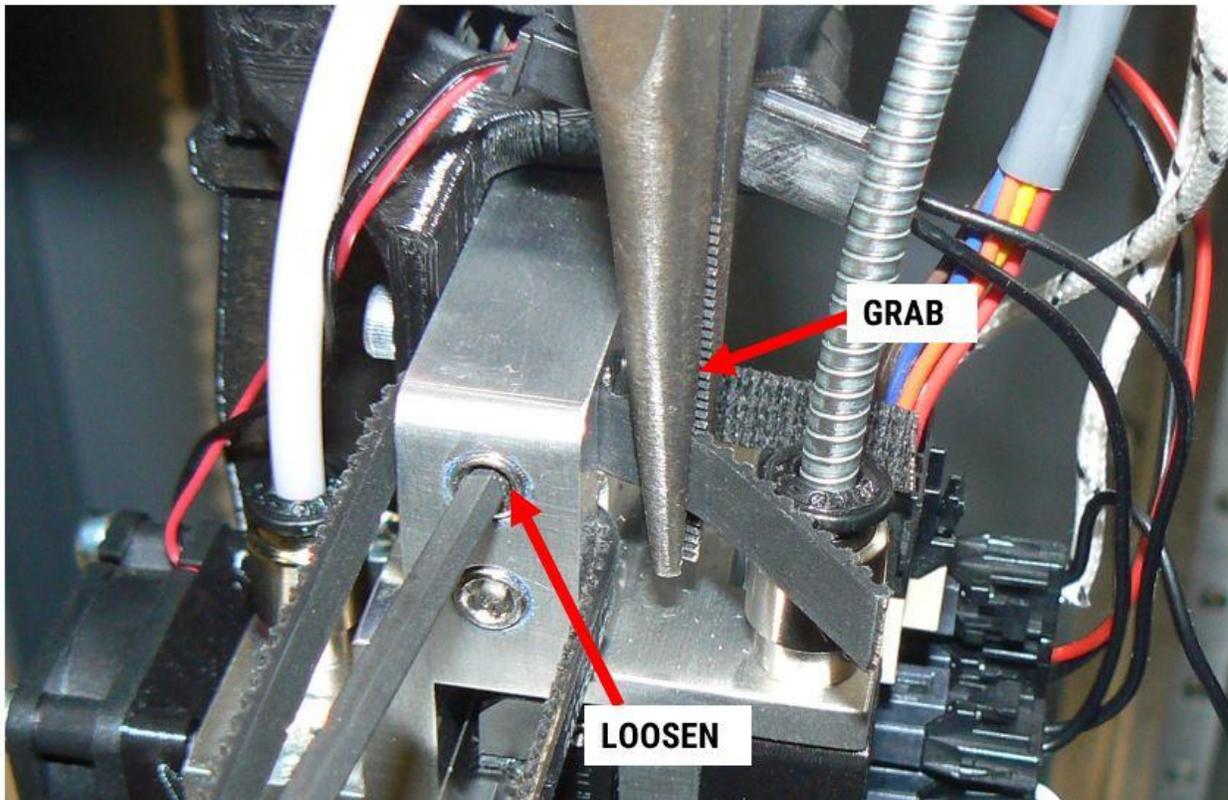
### To Adjust Belt Tension:

1. The belt ends that exit on the back of the print head assembly will have a 1-2" service loop that is used to adjust tension. Grab this service loop with needle nose pliers or similar.



2. Apply tension to the service loop so that when you loosen the belt set screw the belt doesn't jump and bring the gantry out of square.

3. Loosen the corresponding set screw.



4. Add or relieve tension on the belt as needed using the pliers for fine-grain control. Make adjustments iteratively - adjust less than you think it needs, check tension and square (see below), and make further adjustments as needed.
5. Once you're finished, make sure you tighten the set screw fully.

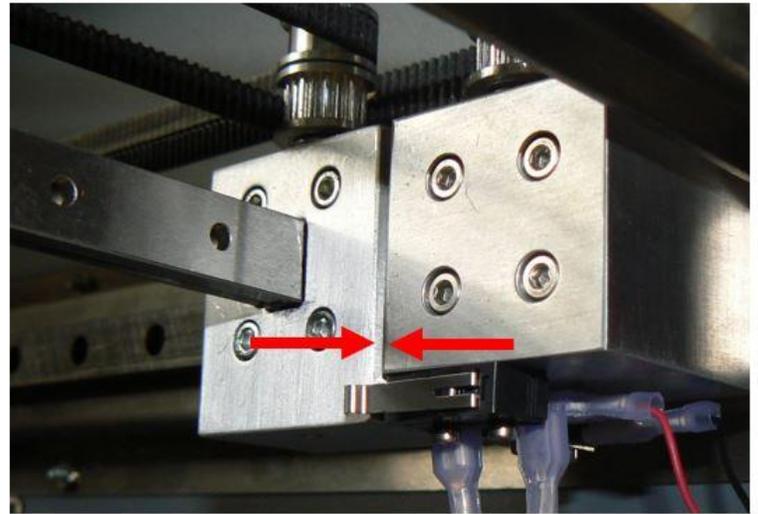
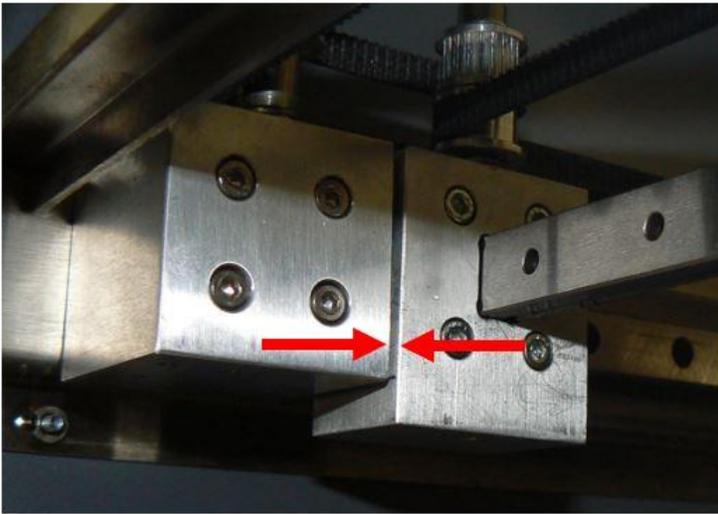
## GANTRY SQUARE

The square of the X axis relative to the Y axis is determined by the relative tension in the two belts. Typically, if belt tension must be adjusted, you will also need to check and adjust the gantry square at the same time. If one is off, the other probably is as well.

**NOTE:** There are limits to how much squaring can be achieved with belt tension alone. If you find you need dramatically different belt tensions (one belt is nearly slack and the other hums like a guitar string, for ex), please contact Fusion3 Support for more help.

### To Check Gantry Square:

1. Run the X axis to the front of the machine until it contacts the endstop. Visually check the gap between the X rail end blocks and the stationary idler blocks.



**GAP IS SAME  
ON BOTH SIDES**

2. Give one belt a gentle tug to determine if more tension on that belt makes the square better or worse. If better, add tension to that belt first. If worse, check the other belt.

### **To Adjust Gantry Square:**

Adjusting the square is the same procedure as adjusting belt tension. After every tension adjustment, recheck your square in addition to rechecking the belt tension.

Sometimes you will need to reduce tension on a belt instead of only adding tension, in order to bring the gantry into square. This can be helpful if your starting belt tension is already very high and you don't want to add more. As long as the belts don't skip on the motors, this is ok.