

DIY KIT MK3 Engraving Quality Optimization Guide

This guide explains how to improve engraving quality by checking the X-axis alignment and the eccentric nuts on the DIY KIT MK3.

Introduction

For most gantry-style laser engravers, engraving distortion is typically caused by one or more of the following:

- The X-axis gantry is not parallel to the front and rear frames.
- The belts are either too loose or too tight.
- The eccentric nuts are improperly adjusted.

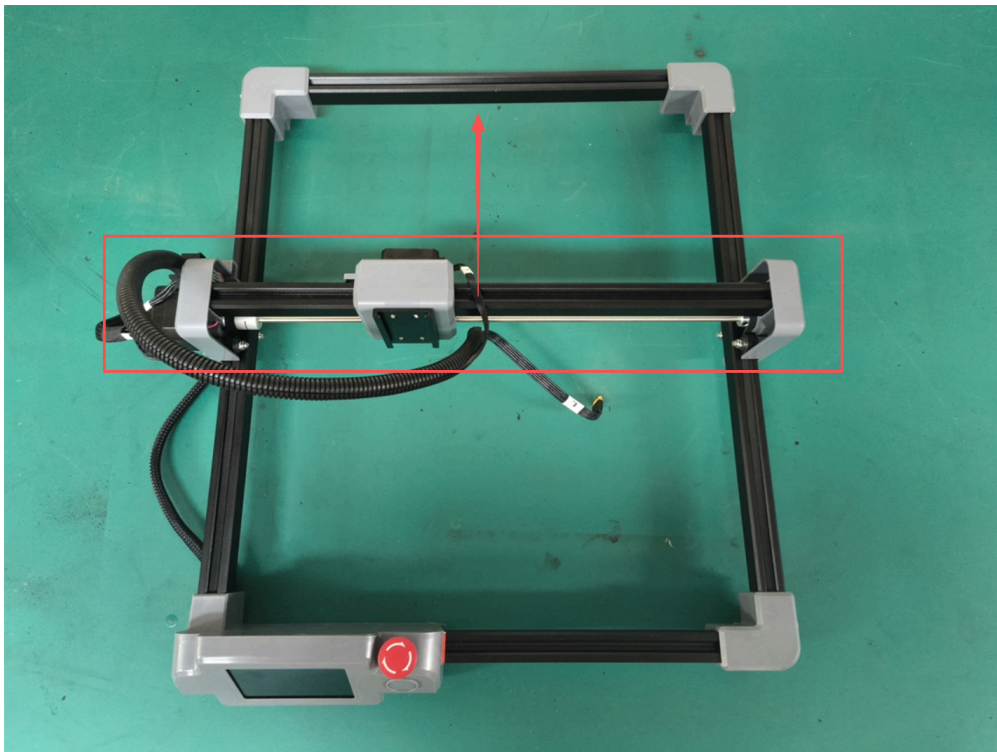
For the **DIY KIT MK3**, the belts are factory-installed, pre-tensioned, and cannot be adjusted. Therefore, you only need to inspect:

- Whether the **X-axis gantry is parallel** to the front and rear frames.
- Whether the **X/Y-axis eccentric nuts** are properly tightened.

1. Check the X-Axis Gantry Alignment

Step 1

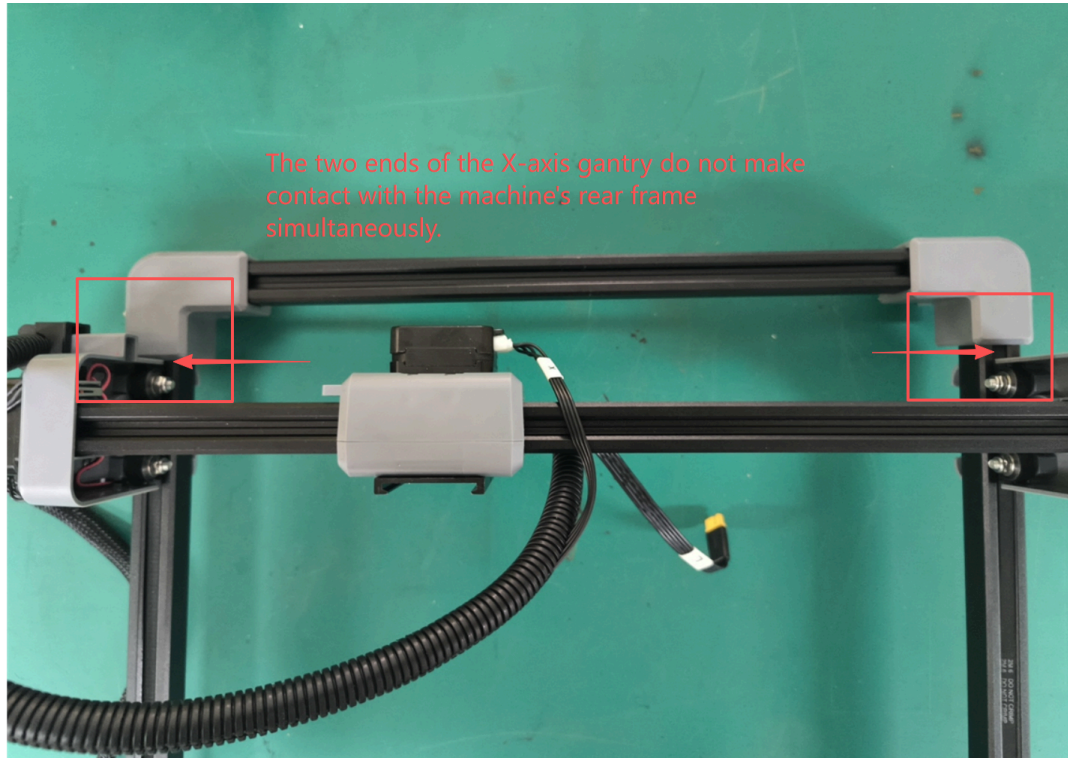
Carefully push the X-axis gantry toward the rear of the machine until it reaches its travel limit.



Step 2

Check whether **both ends of the X-axis gantry contact the Rear Frame at the same time**.

- **Yes** – The gantry is properly aligned(as shown in the following picture). Continue to **Section 2** to inspect the eccentric nuts.

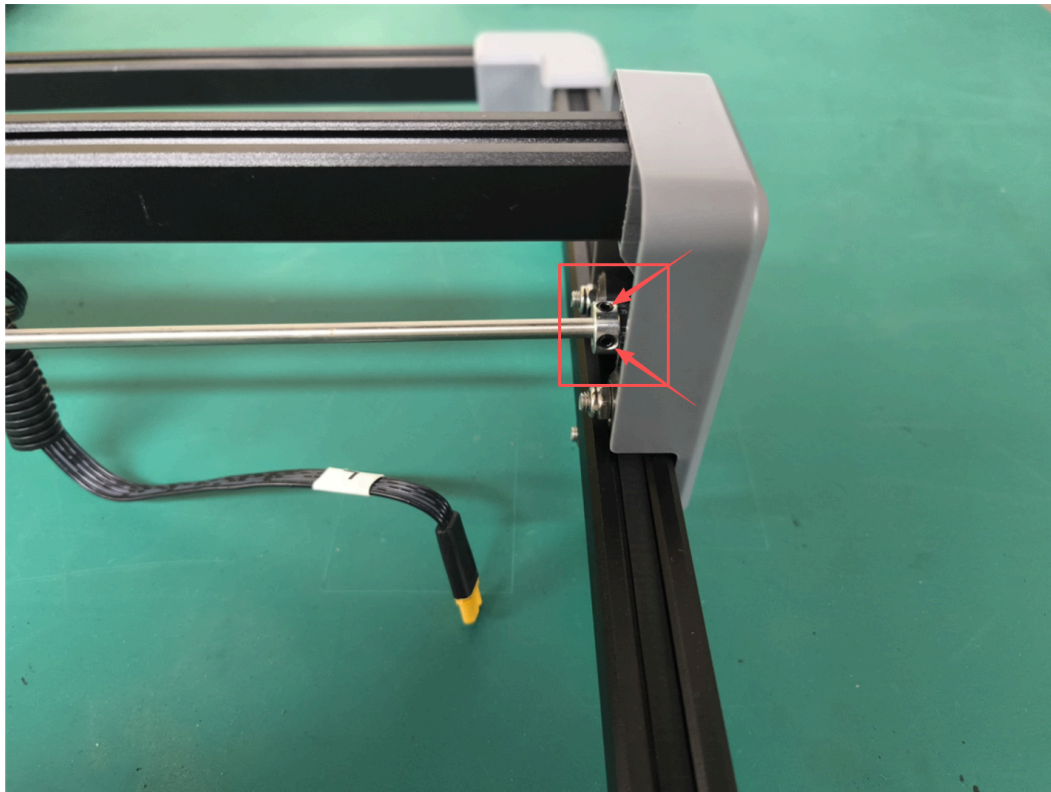


- **No** – The gantry is not parallel and must be adjusted.

Step 3 – Adjust the Gantry Alignment

A. Loosen the Synchronous Pulley

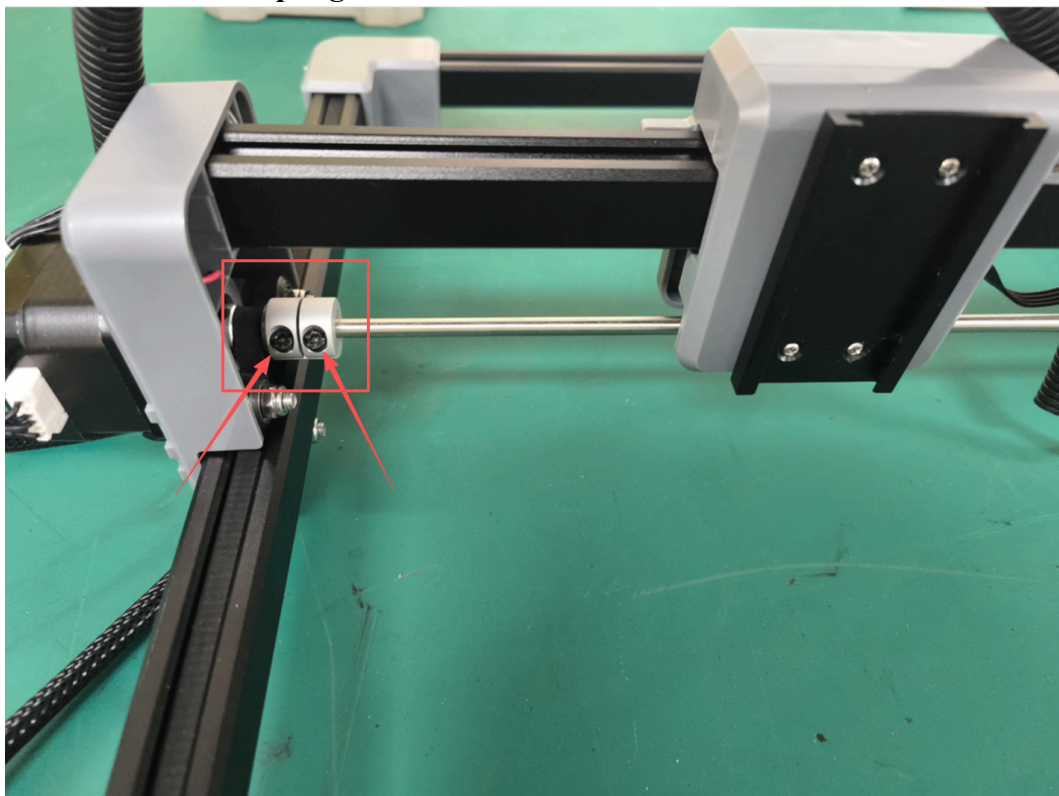
Loosen the **two screws** on the synchronous pulley located on the **right side of the X-axis**.



Note: Only loosen the screws. Do **not** remove them completely.

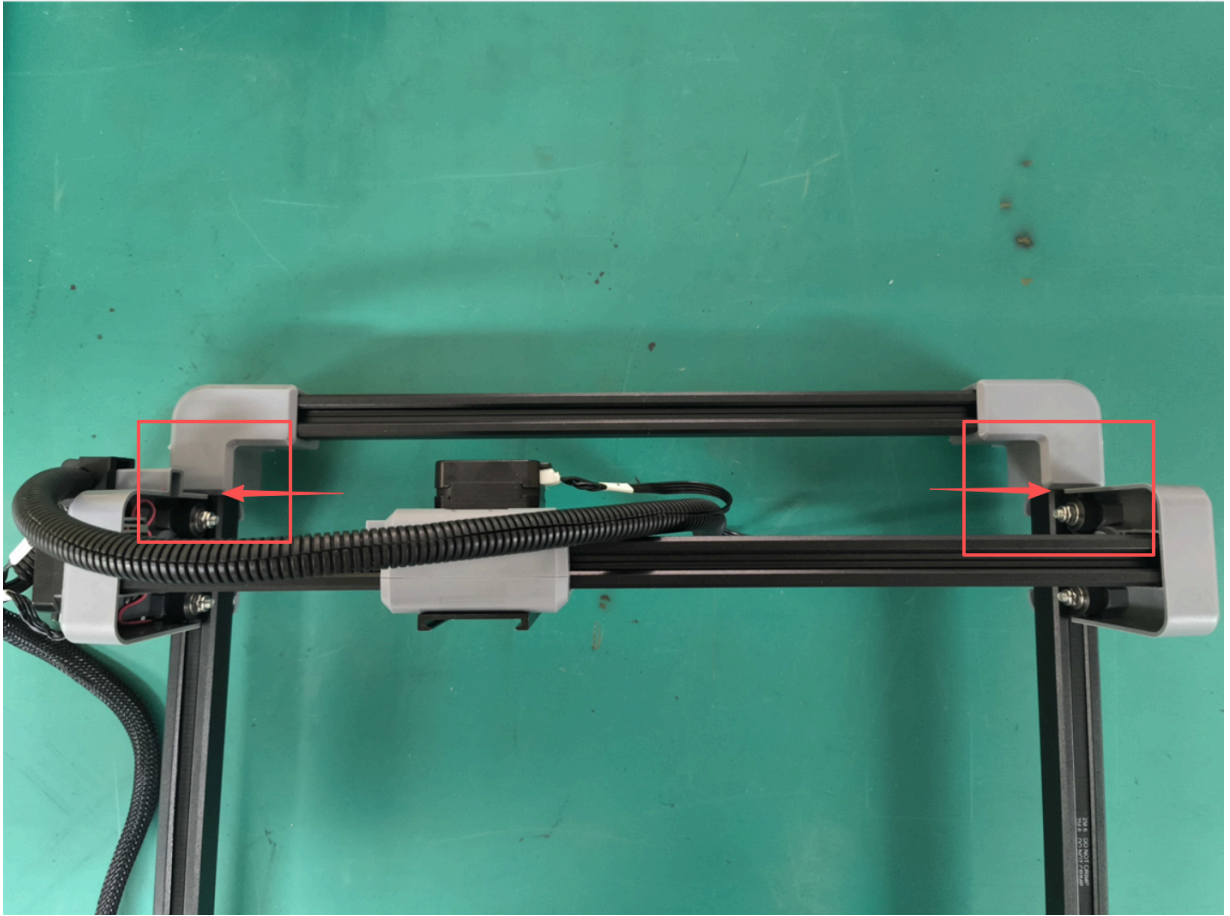
B. Remove the Coupling

Loosen the **two** screws on the coupling located on the **left side of the X-axis**.
Remove both the **coupling** and the **drive shaft**.



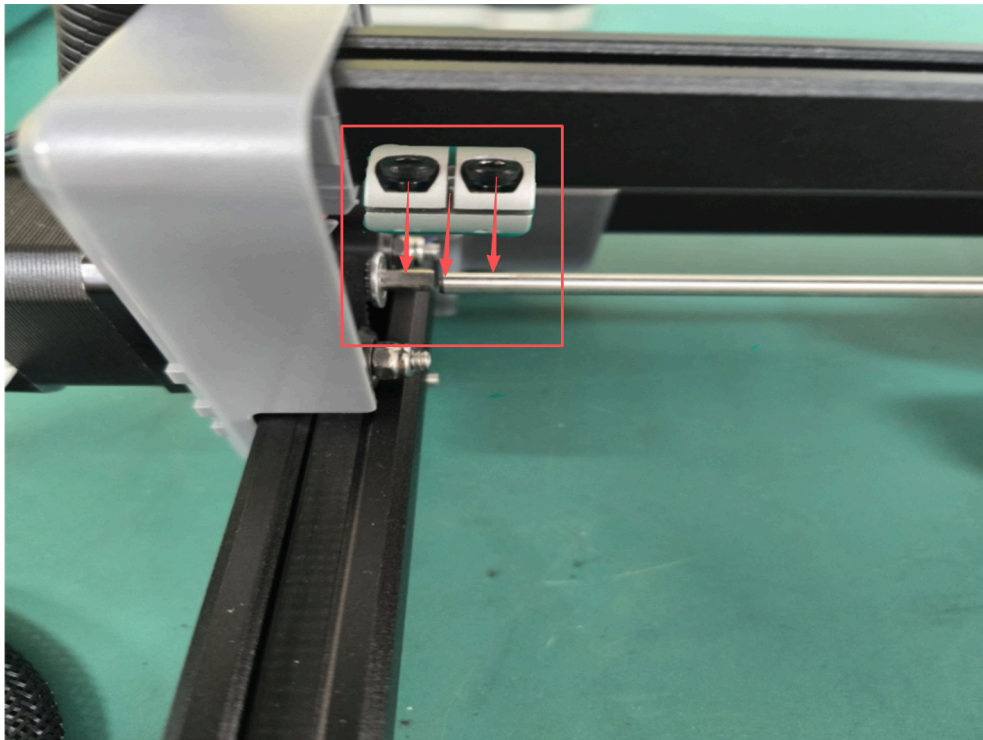
C. Reposition the Gantry

Push the X-axis gantry back to the rear limit until **both ends are in contact with the rear frame simultaneously**.



D. Reinstall the Coupling

Reinstall the coupling and drive shaft.



Important:

While reinstalling, make sure both ends of the X-axis gantry remain firmly against the rear frame. This ensures the gantry stays perfectly parallel to the front and rear frames.

E. Align the Coupling Correctly

When reinstalling the coupling, align the slot in the center of the coupling with the gaps between the two metal shafts.

Tighten the screws so that each screw securely clamps one shaft.

2. Check the X/Y-Axis Eccentric Nuts

Although the eccentric nuts are factory-adjusted, they may become loose after shipping or extended use.

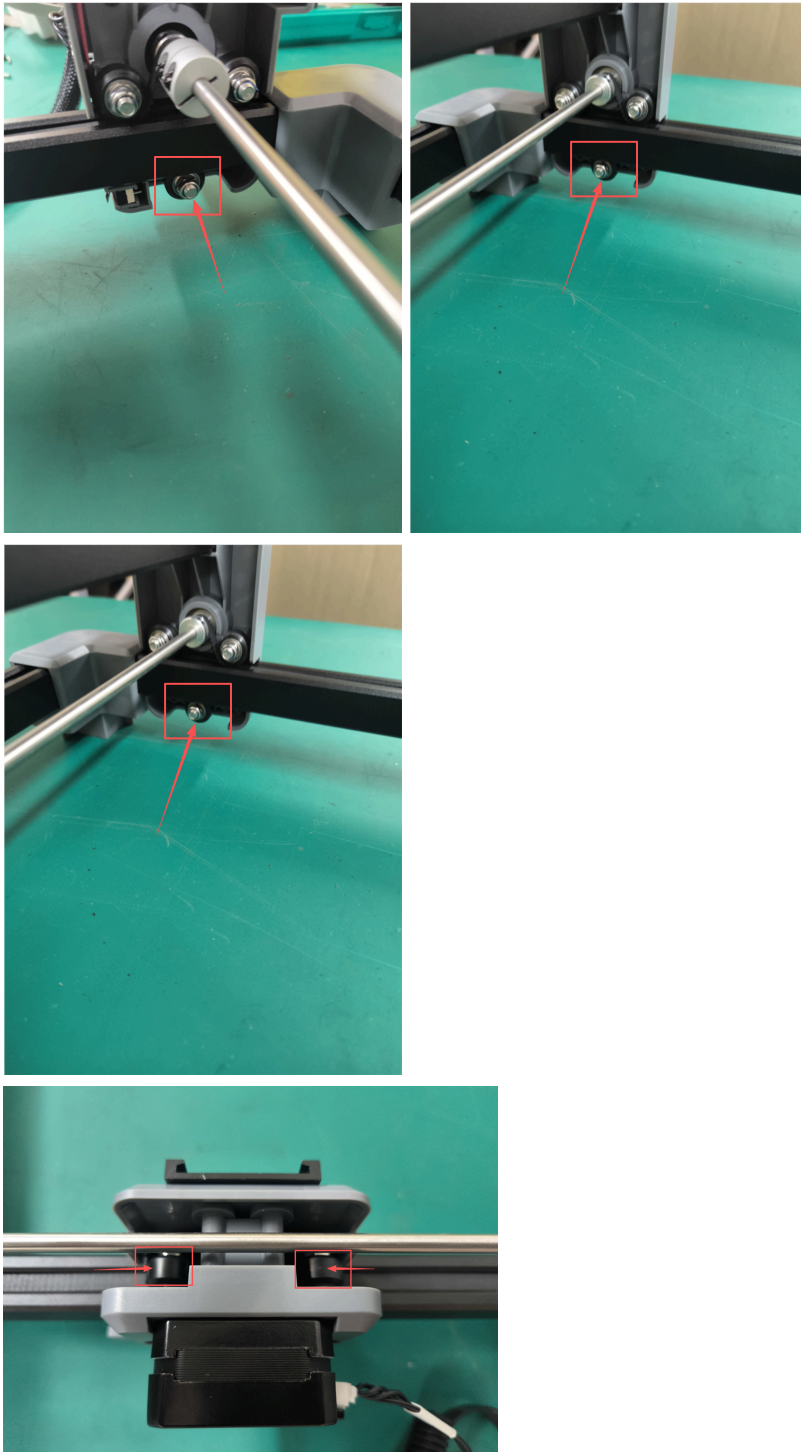
We recommend checking them:

- During initial machine assembly.
- After prolonged use.
- Whenever engraving accuracy decreases.

Proper adjustment helps maintain stable motion and consistent engraving quality.

How to Check the Eccentric Nut Tension

Use one finger to gently rotate the guide wheel beneath the X- or Y-axis.



Evaluate the wheel using the following criteria:

Too Loose

- The wheel rotates very easily.
- Rotating the wheel **does not** move the X-axis assembly.

Action: Tighten the eccentric nut.

Too Tight

- The wheel is difficult to rotate, even when applying additional force.

Action: Loosen the eccentric nut.

Properly Adjusted

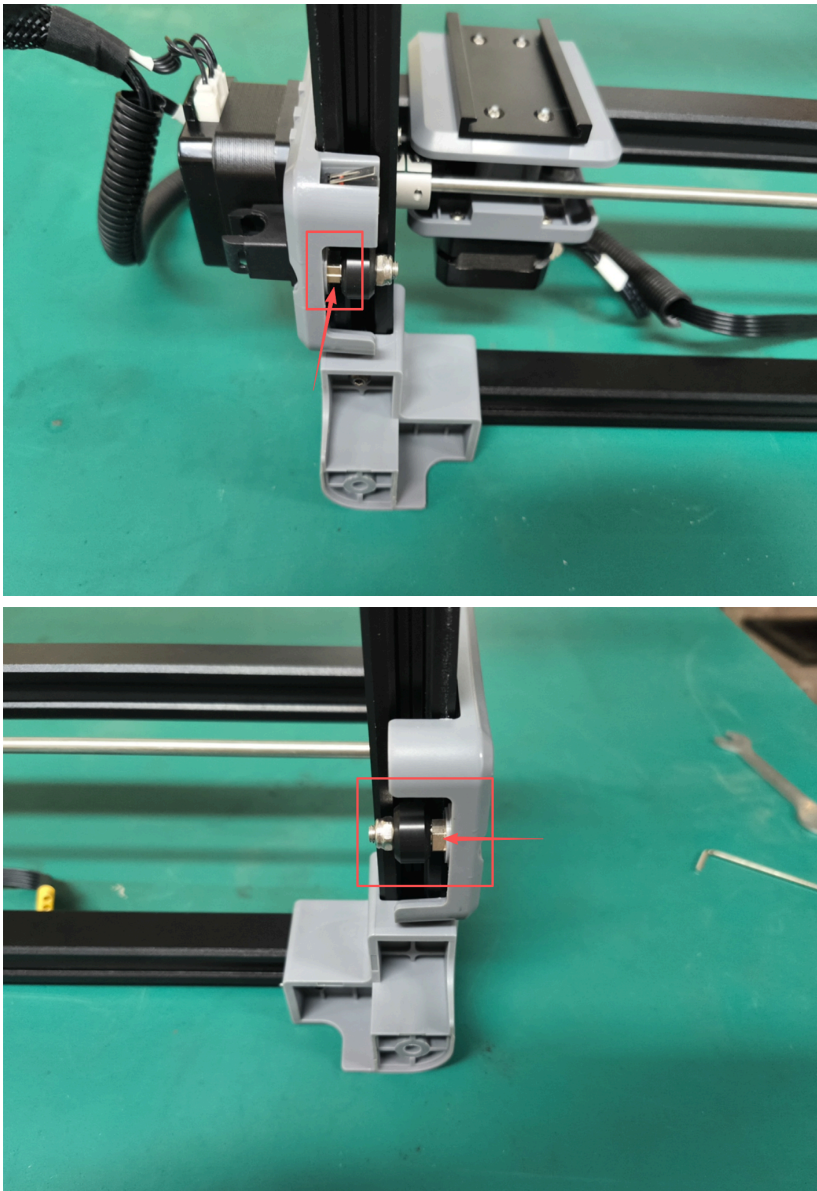
The tension is correct when:

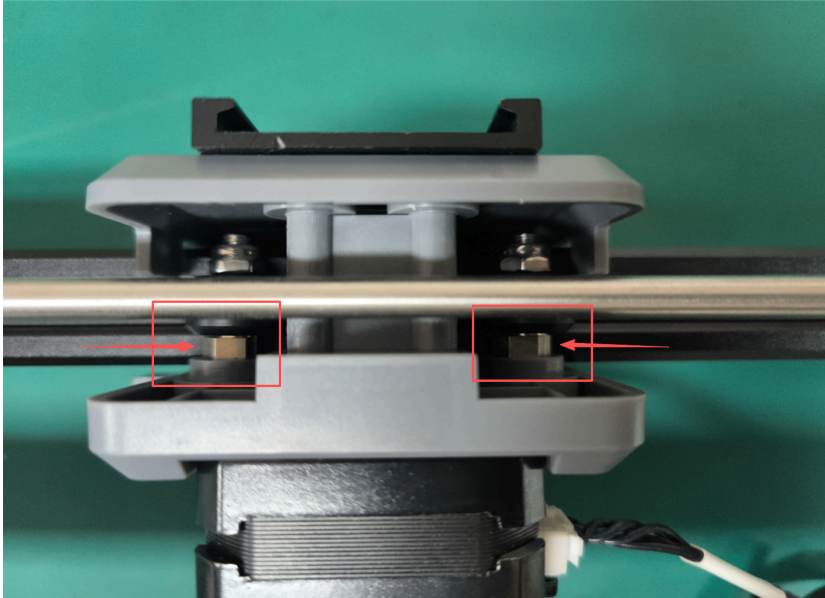
- The wheel can be rotated with **moderate finger pressure**.
- Rotating the wheel also causes the X- or Y-axis assembly to move smoothly.

This indicates the eccentric nut is correctly adjusted.

Adjusting the Eccentric Nuts

The X-axis and Y-axis eccentric nuts are located in the positions shown in the reference illustrations.





Use the supplied **hex wrench** to rotate the eccentric nut for adjustment. While adjusting, periodically test the guide wheel by hand until the tension reaches the proper level.

Maintenance Tips

To maintain optimal engraving quality, we recommend:

- Checking the X-axis alignment after transportation or relocation.
- Inspecting the eccentric nuts periodically during regular use.
- Performing these checks whenever engraving distortion or reduced accuracy is observed.