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2. Upgrading the Y-axis

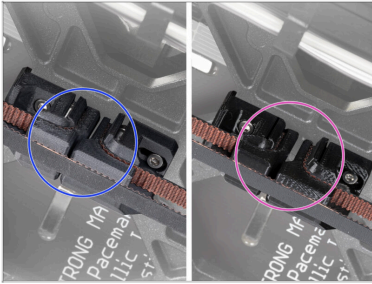


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chapter.



STEP 1 Y-axis parts info



i In this chapter, you will upgrade the old Y-axis belt tension mechanism with new parts printed from PCCF material.

■ The latest MK4 units might already include Y-axis parts upgraded to PCCF. If your printer has these, you can skip this chapter.

■ **To verify, take a closer look from the underside of the Y-carriage and inspect the parts:**

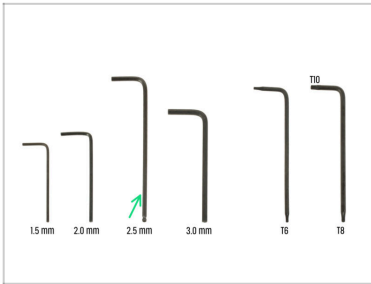
■ **New Y-axis parts:** PCCF has a dull, slightly grayish texture

■ **Old Y-axis parts:** PETG is glossy black

! **Ensure you thoroughly check before skipping.**

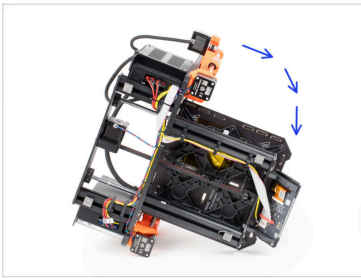
2. Upgrading the Y-axis

STEP 2 Tools necessary for this chapter



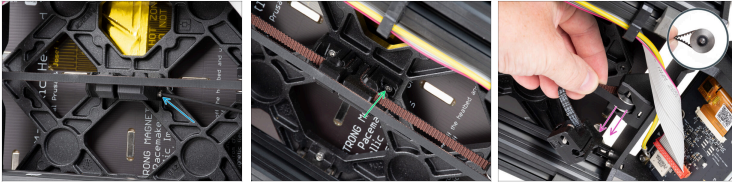
- For this chapter, please prepare:
- 2.5mm Allen key

STEP 3 Preparing the printer



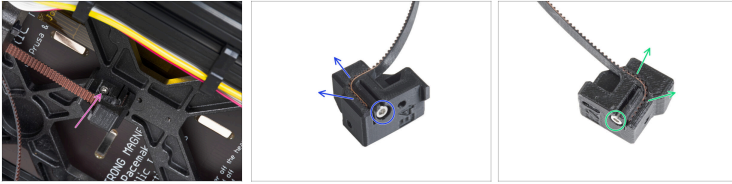
- Lean the printer onto the right side (the one with the PSU) to gain access to the bottom.
- Take a look at the Y-axis from the underside and locate the Y-belt-tensioner.

STEP 4 Removing the Y-belt-tensioner



- From the front side of the Y-belt-tensioner, completely remove the M3x40 screw.
 - ⓘ Tip: The loose screw can be pulled out with pliers.
- Release and remove the M3x10 screw mounting the Y-belt-tensioner to the Y-carriage.
- Remove the belt with the GT2-20 pulley from the Y-belt idler, and then take it out of the printer.
- ⚠ **Be careful not to lose the pin from the pulley. You will need it again later on.**

STEP 5 Removing the Y-belt-holder



-  Release and remove the M3x10 screw mounting the Y-belt-holder to the Y-carriage and remove it from the printer.
-  Release and remove the M3x10 screw from the Y-belt-holder and remove the belt from the part.
-  Release and remove the M3x10 screw from the Y-belt-tensioner and remove the belt from the part.
-  Some early units may have the Y-belt tensioner and Y-belt idler without the M3x10 screws for securing the belt.
-  **Keep the Y belt for the upgrade.**
-  You will no longer need the Y-belt-holder and Y-belt-tensioner.

STEP 6 New Y-belt mounting: parts preparation



For the following steps, please prepare:

-  New Y-belt-tensioner (1x) *with an oval hole*
-  New Y-belt-holder (1x) *with a hexagonal hole*
-  Y belt (1x) *you removed earlier*
-  M3nN nut (1x) *new one*
-  M3x40 screw (1x) *you removed earlier*
-  M3x10 screw (4x) *you removed earlier*
-  GT2-20 pulley (1x) *you removed earlier*
-  Pin H8 2.9x20 (1x) *you removed earlier*

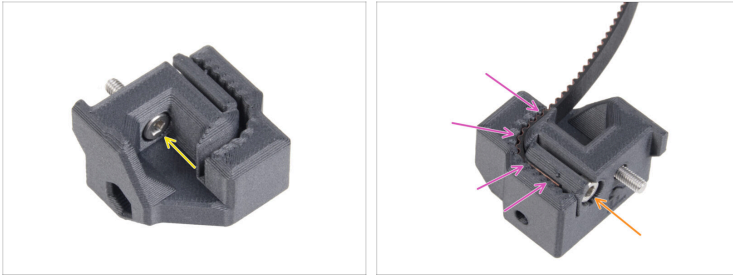
STEP 7 Assembling the Y-belt-holder



- Insert the M3nN nut into the Y-belt-holder using the screw pulling technique. **Ensure it is positioned as far as possible within the part.**

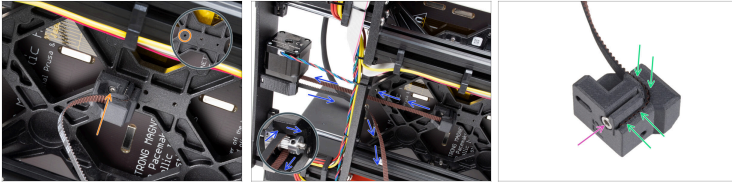
- i** Use the screw pulling technique. Attach the M3nN nut on the tip of the M3x40 screw (a few turns are enough). **Do not tighten the screw**, pull the nut all the way into the Y-belt-holder. Don't forget to remove the M3x40 screw from the part and keep it aside for later use.

STEP 8 Assembling the Y belt



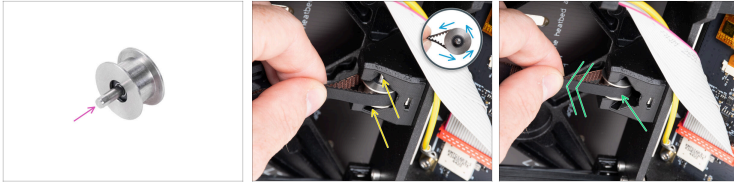
- ✦ Insert the M3x10 screw through the hole in the Y-belt-holder.
- ✦ Take one of the Y belt ends and push it into the Y-belt-holder. Note the orientation of the belt (teeth).
- ✦ Secure it by inserting and tightening one M3x10 screw.

STEP 9 Attaching the Y belt holder



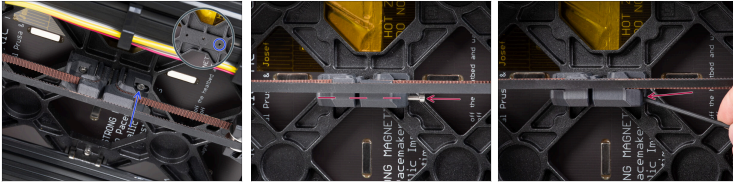
- ✚ Using the M3x10 screw, fix the Y-belt-holder to the Y-carriage. Use the left (rear) hole in the center part.
 - ❗ Tip: pre-screw the screw into the Y-belt-holder before attaching it to the Y-carriage.
- ✚ Guide the Y-axis belt around the Y-axis motor pulley. Make sure the belt is inside the frame, not under!
- ✚ Take the free end of the Y belt guiding from the pulley and push it into the groove in the Y-belt-tensioner.
- ✚ Secure it with the M3x10 screw.

STEP 10 Assembling the Y belt tensioner



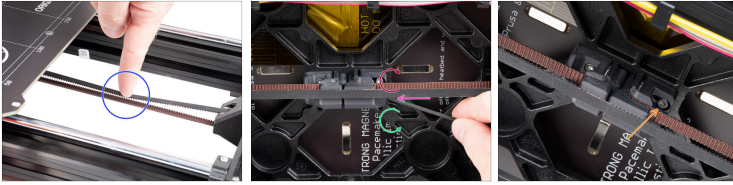
- ✎ Push the pin into the pulley and center it.
- ✎ Take the belt and guide it around the GT2-20 pulley.
- ✎ Insert the belt with the pulley into the Y-belt-idler on the rear of the front plate.
- ✎ Push the pulley all the way inside the printed part and lightly pull on the belt to lock the pulley in place.

STEP 11 Attaching the Y belt tensioner



- ✦ Insert the M3x10 screw into the Y-belt-tensioner and try if the screw reaches the threaded hole in the Y-carriage when tensioning the belt.
- ❗ If the screw does not reach the hole, it is necessary to remove the Y-belt-holder (the one already installed) and reposition the belt by one tooth in both printed parts - one tooth in each printed part will be vacant. You must unscrew the M3x10 screw that securing the belt in the part.
- ✦ Attach the Y-belt-tensioner to the right (front) hole in the Y-carriage and secure it with the M3x10 screw. **Do not overtighten the screw.** We will adjust the exact position later on.
- ✦ Insert the M3x40 screw into the Y-belt-tensioner and tighten it until the screw reaches the nut in the second part.

STEP 12 Tensioning the Y belt



- Move the Y-carriage all the way to the back. Using a finger on your left hand, push the belt down. A medium force should be needed to squish the belt until both the parts touch. Don't try to overstretch the belt as you might damage the printer.
- You can change the belt tension by adjusting the long M3x40 screw on the bottom of the Y-carriage.
- **Tighten the screw** to bring the parts closer together and **increase the tension**.
- **Release the screw** to move the parts apart to **decrease the tension**.
- After you set the correct belt tension, tighten up the M3x10 screw on the bottom to fix the Y-belt-tensioner in place.

STEP 13 Belt tension check



- i** This step is recommended, but optional. If you don't have a phone at your disposal, continue to the next step. You can do this check later on.
- ◆** To verify or fine-tune the X or Y-axis belt tension on your printer, visit prusa.io/belt-tuner and open up the webpage on your mobile device. Or using your phone, scan the QR code in the picture.
- ◆** Watch the instructional video on prusa.io/belt-tuner-video and fine-tune your Y belt tension, if required.
- i** The belt tuner app was tested on multiple phones and should work across all most common phone manufacturers. However, in some rare cases it might not work as expected. Please state your brand and model in the comments below the step.

STEP 14 What's left...



At the end of each chapter, we'll show you which parts you have left. You will no longer need these parts:

- Old Y-belt-holder (1x)
- Old Y-belt-tensioner (1x)

STEP 15 Haribo time!



Carefully and quietly open the bag with the Haribo sweets. High level of noise might attract nearby predators!

- Arrange the bears in a similar pattern as in the picture.
- **Your package might contain fewer bears.** In such a case, run immediately to the nearest candy store! **The exact dosage is absolutely critical!!!**
- Eat one gummy bear. **I said just one!**

2. Upgrading the Y-axis

STEP 16 Done



- ◆ You've successfully upgrade your Y-axis belt mounting system.
- ◆ Let's move to the next chapter 3. **Upgrading the xLCD**

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