Bambu

X1E

Quick Maintenance & Troubleshooting Guide

Technology Education Concepts

32 Commercial Street
Concord,NH 03301

Telephone (800) 338-2238 & (603) 224-8324

Techsupport@tecedu.com

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Circumstantial

Check Extruder Assembly for filament dust and debris after use the printer.

Clean Hotend regularly. Especially when transitioning from one type of filament to another. Specifically different types of filament with different temperature settings.

Filament Cutter. Should be checked regularly. Including after a few rolls of filament. (PLA,PETG, ABS,PC) **If the blade is dull, replace it.** Replace blade after 1-2 rolls if using abrasive filament.(PA+CF,PA+GF)

Hotend Silcone Sock. Replace if wear signs are present or if it does not remain attached securely.

Chamber Camera. Clean every week if using ABS.

Monthly

Check X-axis Carbon Rods for any dust or build up.
If ABS or ASA are used, **clean Rods every 5 rolls.**

Check Y-axis and Z-axis Linear Rods and Bearings for any dust and particle buildup.
If using ABS or ASA, **clean every 5 rolls.**

Bambu Micro Lidar. Clean monthly.

Part Cooling Fans. Check fan blades monthly for debris or dust buildup.

Nozzle Wiper. Needs to be checked before starting any print.

Quarterly

Check Z-axis lead screws every 3 months.

Y-axis and Z-axis rods should be **anti-rust every six months.**

Check **Idler Pulley.** Only apply lubrication if squeaking noises are present.

Extruder Assembly

The X1E Extruder assembly can get filament dust and debris inside after using the printer or a long time. Some filaments generate more dust than others, so your mileage might vary.

When to do it?

You should clean the dust inside the extruder when you can see small amounts of dust on the yellow gear.

How to do it?

The fastest way to clean it and ensure the extruder is free from debris or filament dust is to use a can of compressed air and blow air over the yellow gear. You can also remove the hotend and blow some compressed air underneath the extruder. This should clean most of the filament dust inside.
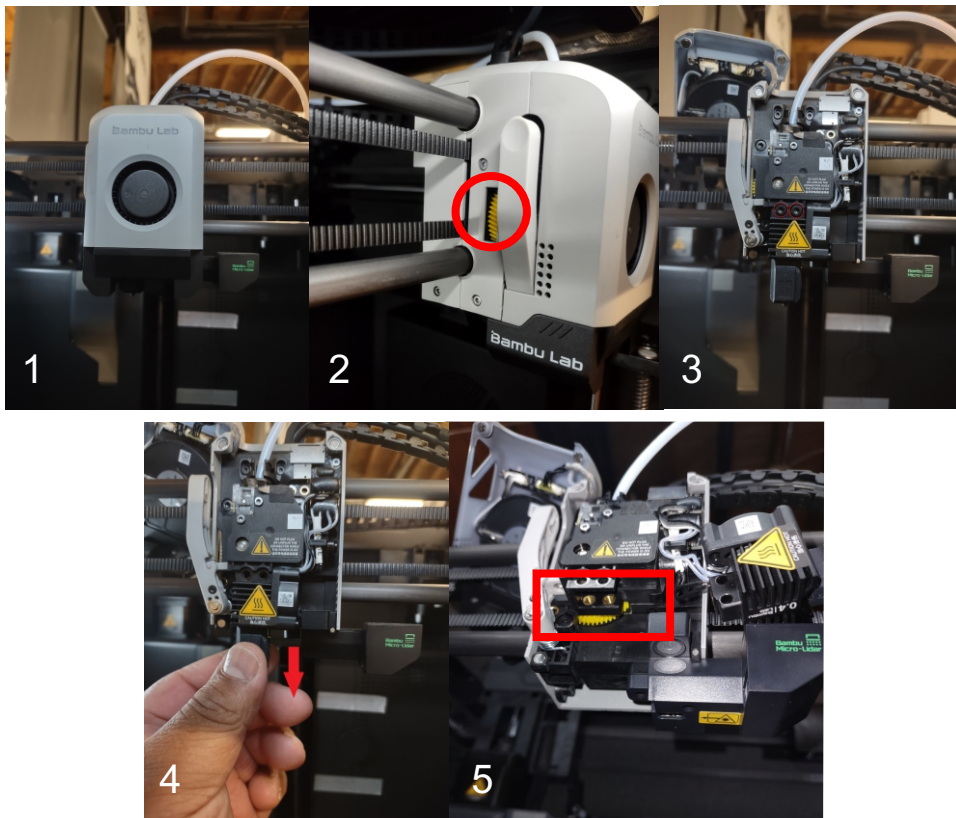
Steps on removing hotend in print head

1: Remove the magnetic front cover of the print head. It is attached by cables so be careful. You can rest it on the Carbon Rod. Make sure the weight of the cover doesn't put stress on the cables.
2: Remove the 2 screws shown in the 3rd image.
3: Grab the rubber sock attached to the hotend. Pull down once the 2 screws are removed. Shown in the 4th image.
4: Blow air where the yellow gear is located, highlighted in image 5.

Things to keep in mind on removing hotend:

Make sure to put the two screws back highlighted in image 3. (**Page 2**)

Make sure the cover is put on securely or you will receive an error on the control panel of the printer.
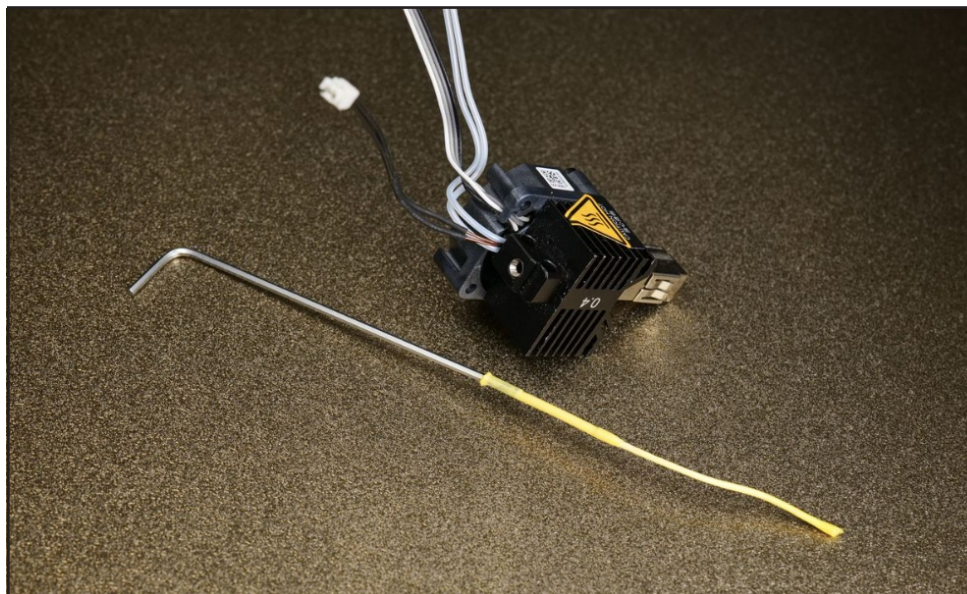

Hot end Cleaning

It is very important to clean the hot end regularly, and ensure the inside of the hot end is clean. Besides that, it is important to confirm that the hot end is straight, and does not have any bends in it caused by a print failure.
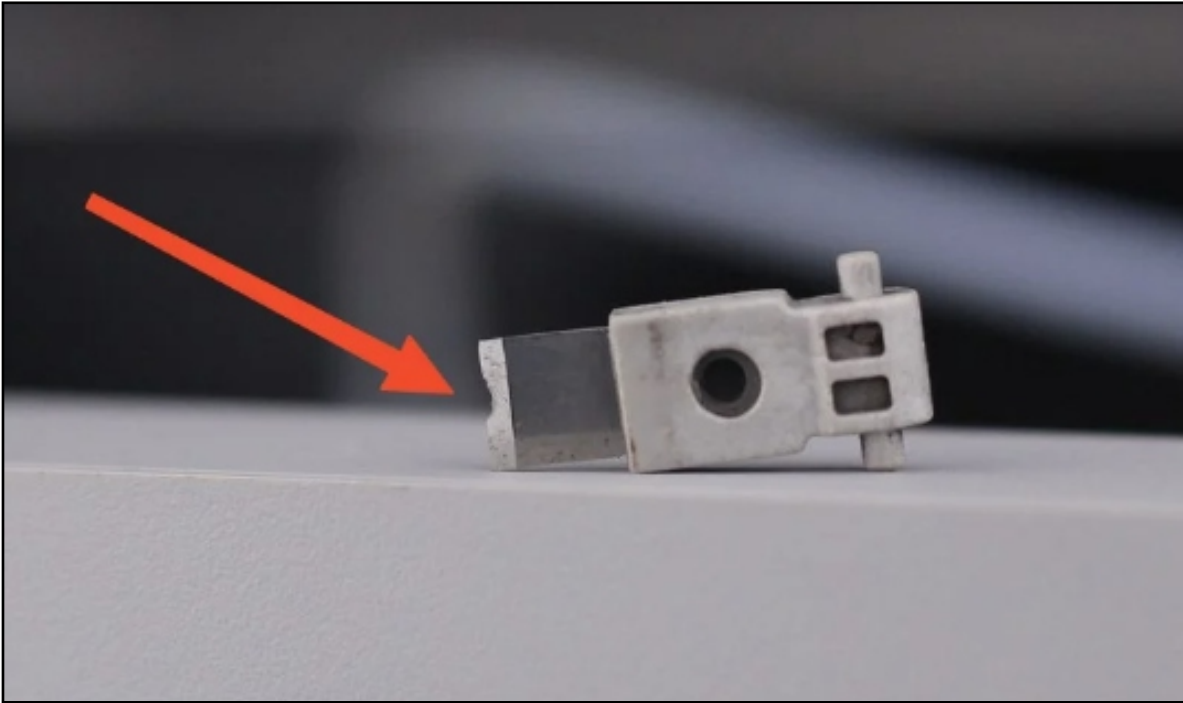
When to do it?

The hot end should be cleaned from time to time, especially when transitioning from one type of filament to another.

Filament Cutter

The filament cutter used in the X1 extruder cuts the filament regularly, during filament swaps. The blade of the cutter can get dull after a few rolls of filament are printed so it should be checked regularly to ensure that the blade is still sharp.

When to do it?

For regular filaments like PLA/PETG/ABS/PC, the blade should be checked every 3-5 rolls. If the blade is dull, replace it.

For abrasive filaments like PA+CF/PA+GF, the cutter blade can get dull much quicker, so we recommend checking it after printing 1-2 rolls of abrasive materials. If the blade is dull, replace it.

Update: We have found that after about 5.000-7.000 filament cuts, the filament blade can get dull but the blade might not get deformed as shown in the image above.
If you encounter issues with the AMS filament retractions, we recommend replacing the blade for the best results. If the blade is sharp, the filament will be cut cleanly and should not cause problems during operation.

How to do it?

After printing for a longer period of time, the Filament Cutter needs to be replaced.
Here's how to do it.

Tools Needed:

H1.5 Allen key and new Filament Cutter

### 1: Remove the print head cover

2: Unscrew the lever

Carefully loosen the screw from the lever, as shown in the image below. This will allow the lever to open up further and will grant you access to the Filament Cutter.

When unscrewing the filament cutter retention screw, you should keep the Filament Cutter pressed. This ensures you can remove the screw completely, to avoid damaging the plastic section of the extruder.
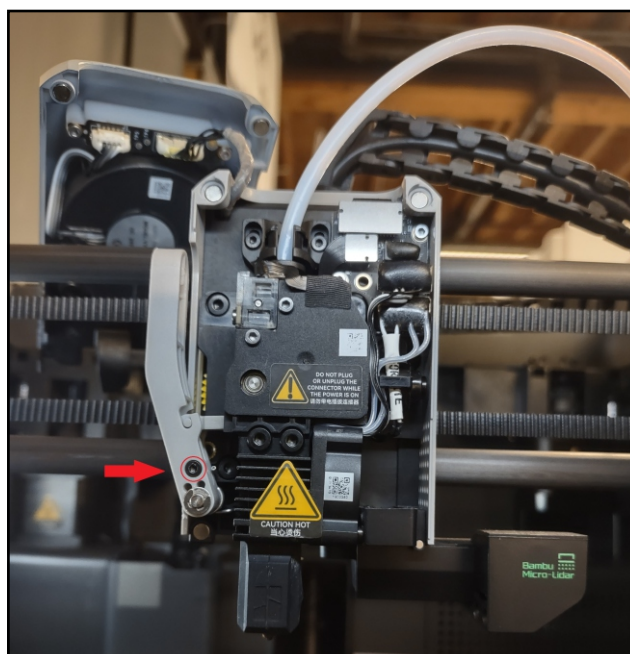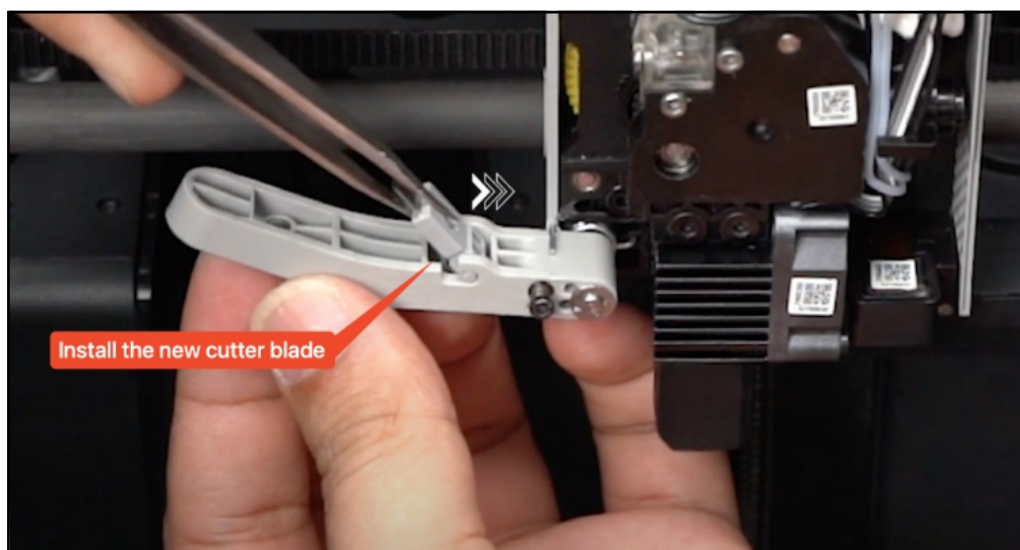
3: Remove old Filament Cutter

With the lever loosened, we are able to access the Filament Cutter and remove it.

Remove the old blade
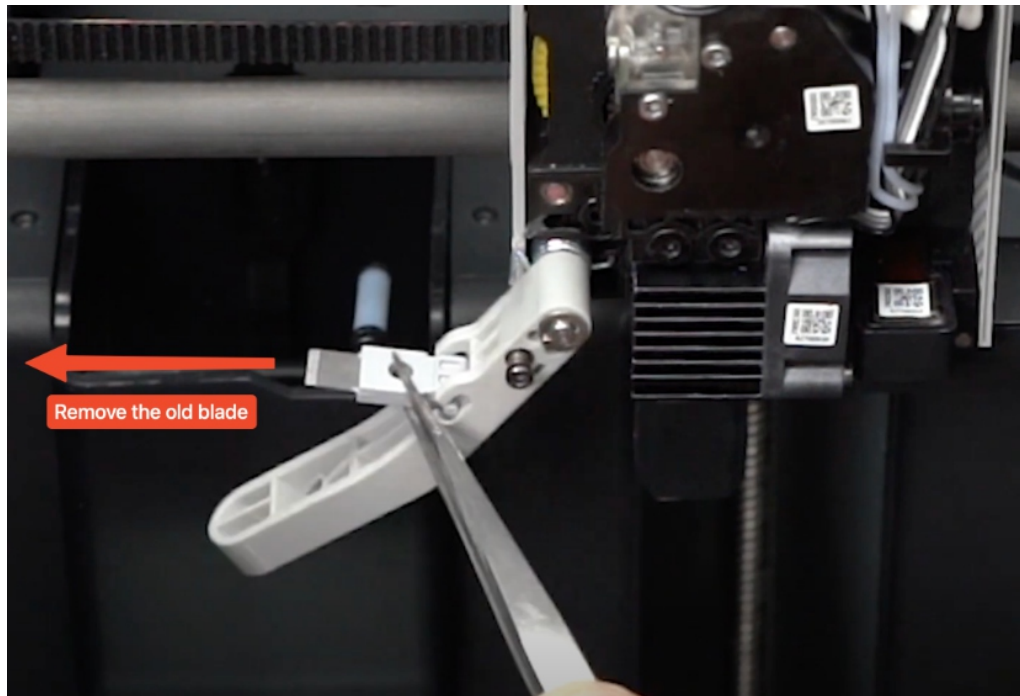
4: Install the new Filament Cutter

Installing a new Filament Cutter is easy, and it's done by aligning the small blade tabs in the lever, then inserting it into the extruder.

Install the new cutter blade

5: Attach the front cover

With the Filament Cutter replaced, simply ensure that the wiring is correctly managed, and put the Front cover of the print head back on the extruder. Make sure it is secure or you will receive an error message on the control panel of the printer.

With the Filament Cutter replaced, simply ensure that the wiring is correctly managed, and put the Front cover of the print head back on the extruder. Make sure it is secure or you will receive an error message on the control panel of the printer.
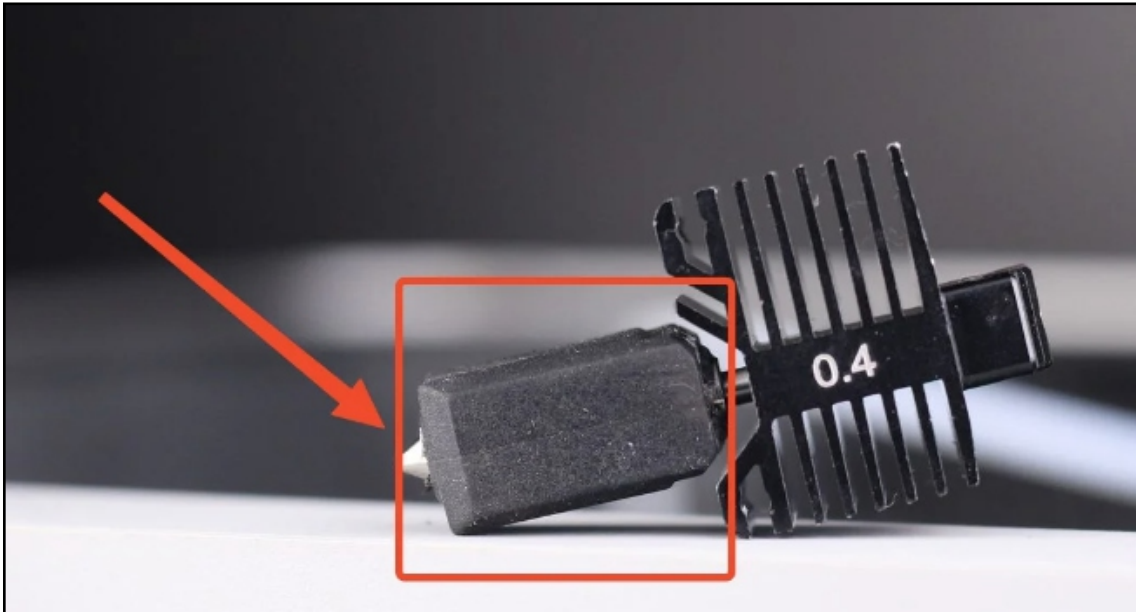
Replacing the Filament cutter (Video)

https://youtu.be/Yn2-a5r7QRU
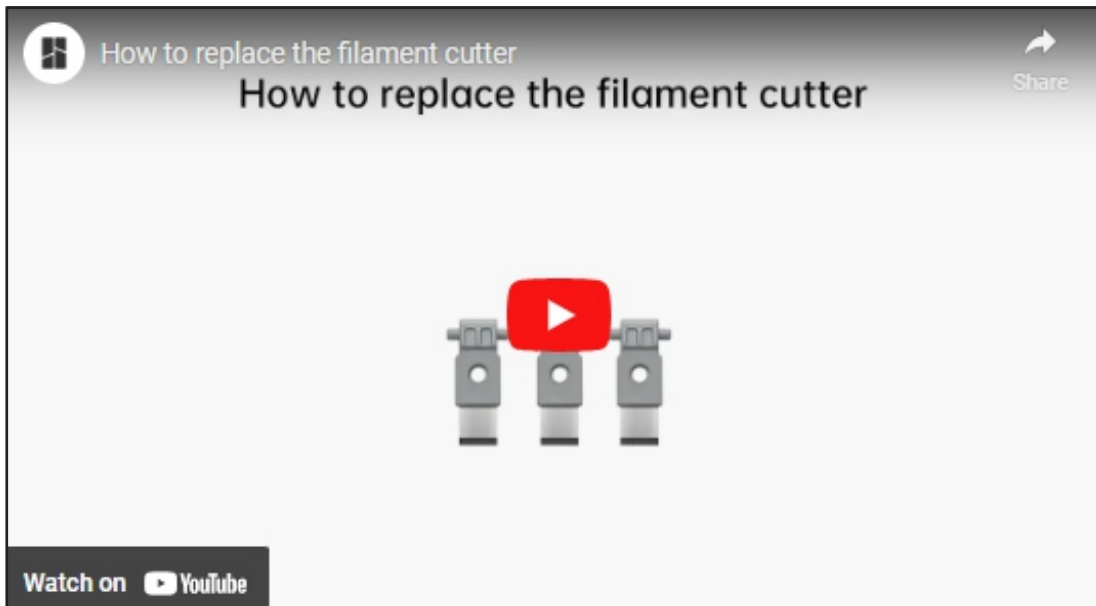
Hotend Silicone Sock

The silicone sock around the hotend helps maintain a consistent temperature while also protecting the hotend from plastic buildup during printing.

When to do it?

The silicone sock should be replaced if wear signs are present on it, or if the silicone sock doesn't remain attached securely to the hotend.

How to do it?

Simply remove the old silicone sock from the hotend, and install a new one.

Chamber Camera

The chamber camera lens should be cleaned regularly, to ensure a clear view.

When to do it?

We recommend cleaning the camera lens when the video is blurred or visibly dirty.
If printing ABS, we recommend cleaning it every week.

How to do it?

Using a microfiber cloth and some isopropyl alcohol, gently rub the chamber camera.
A q-tip can also be used as it allows the user to reach the camera easier.

X-axis Carbon Rods

While the Carbon rods used on the X-axis don't require lubrication or maintenance, it's still recommended to clean them out periodically for dust and buildup.

Note: *Please do not use grease on the carbon rod, as it will cause abnormal resistance and difficulty in cleaning.*
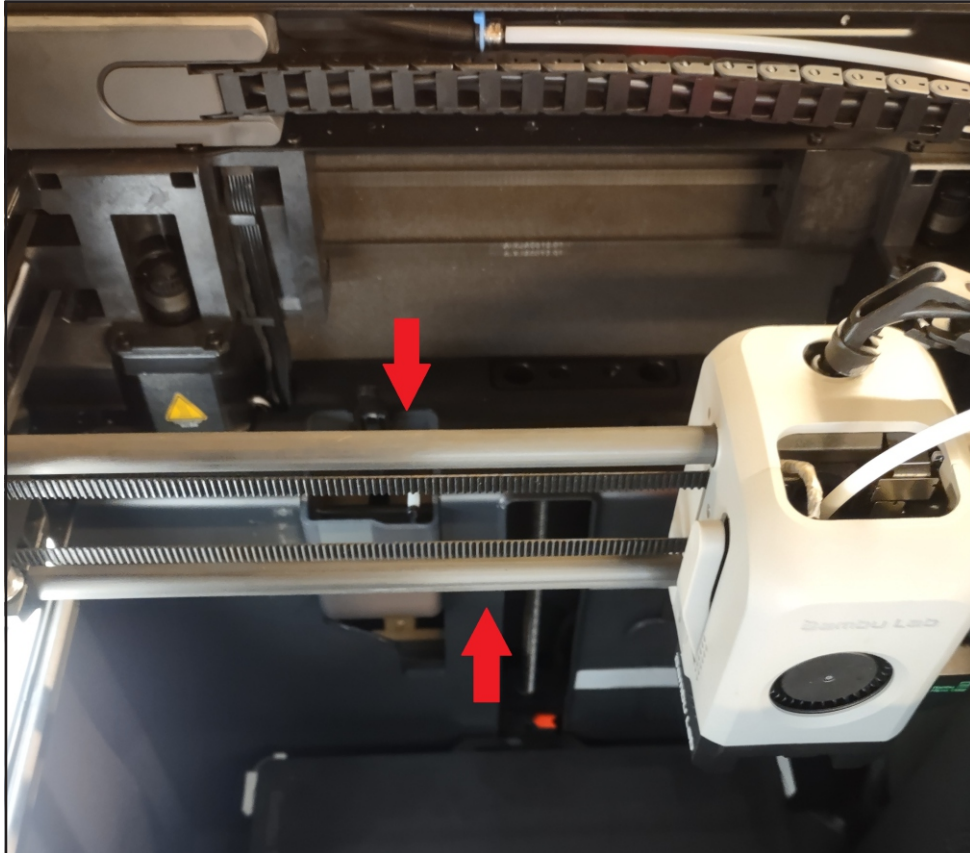
When to do it?

The x-axis carbon rods should be checked once a month for any dust and particle buildup. If volatile filaments such as ABS or ASA are used, it is recommended to clean the rods every 5 rolls.

How to do it?

Loosen the 4 screws in the image below
**Do not** remove the 4 screw. A few turns should be enough.

By loosening these screws, you allow the belt and print head to move a little more freely.

Make sure to re-tighten the screws when the process has been completed.

DO NOT Over tighten.

The X-axis Carbon Rods can be cleaned with **Isopropyl alcohol or alcohol and a dust-free cloth**. Spray a bit of isopropyl alcohol on the fabric and gently rub the carbon rods to clean any debris.
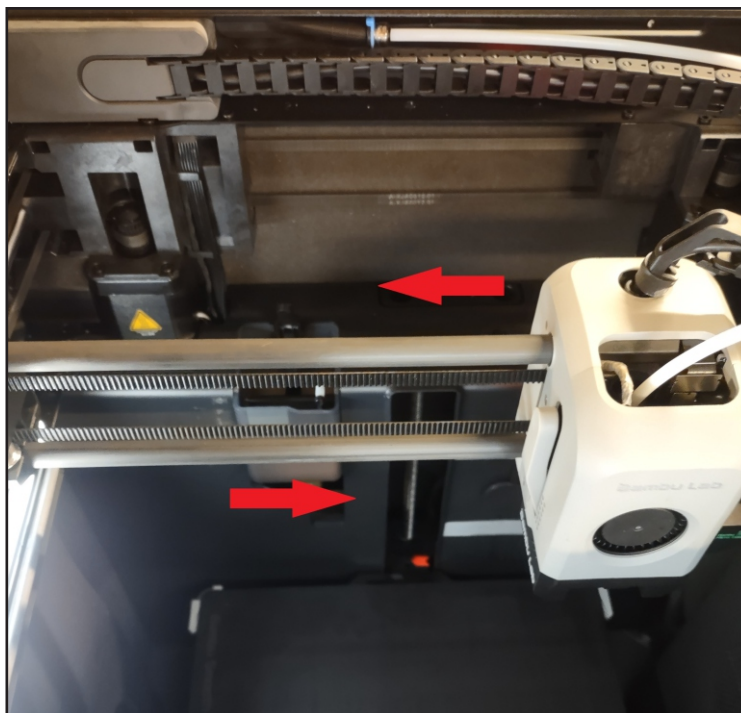
Once the Isopropyl alcohol has been applied to the X-axis Carbon Rods, wipe with a clean towel or cloth. Then slide the print head to the left or right side and repeat the process.

Use the link below for a video on how to clean the X-axis Carbon Rods.
https://youtu.be/0T43m4FB854

Y-axis and Z-axis Linear Rods and Bearings

To ensure smooth movement, the X1E uses LMU8 bearings and 8mm linear rods to ensure smooth movement. The bearings are greased from the factor, in order to prevent rust and prolong the service life, regular cleaning, and anti-rust maintenance are recommended for linear rods.

When to do it?

Y-axis and Z-axis **linear rods should be checked once a month** for any dust and particle buildup. If **volatile filaments such as ABS\ASA are used, it is recommended to clean every 5 rolls (5 kg).**

Y-axis and Z-axis rods should be anti-rust every six months.

How to do it?

Y-axis and Z-axis linear rods can be cleaned with isopropyl alcohol and a dust-free cloth. Spray a bit of isopropyl alcohol on the cloth and gently rub the rods to clean any debris.

The anti-rust maintenance of the Y-axis and Z-axis linear rods can also be done by spraying some anti-rust oil on a dust-free cloth, and then wiping the rods.

If the bearing has abnormal ball noise due to insufficient internal lubrication, you can also try to apply some grease on the bearing and slide the bearing several times to make the grease soak into the bearing to reduce the abnormal noise. This operation may be difficult to implement, but the abnormal sound will not affect the printing performance in theory, so it can be ignored.

You can refer to using Super Lube 52004 Synthetic Lightweight Oil for better performance.

Bambu Micro Lidar

The Micro Lidar uses a small camera and a laser to calibrate. The camera and laser need to be kept clean for smooth operation.
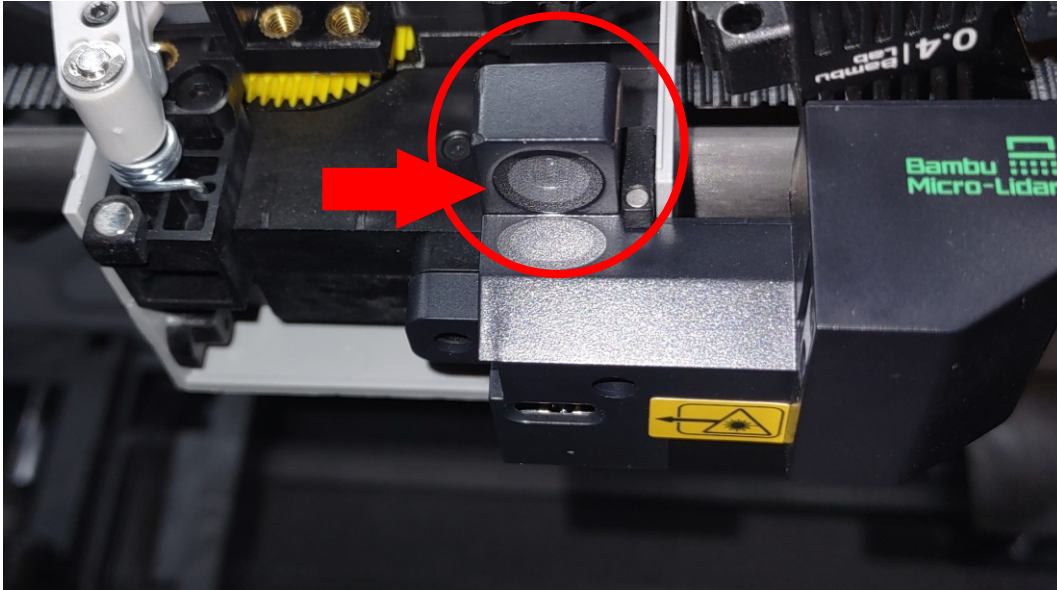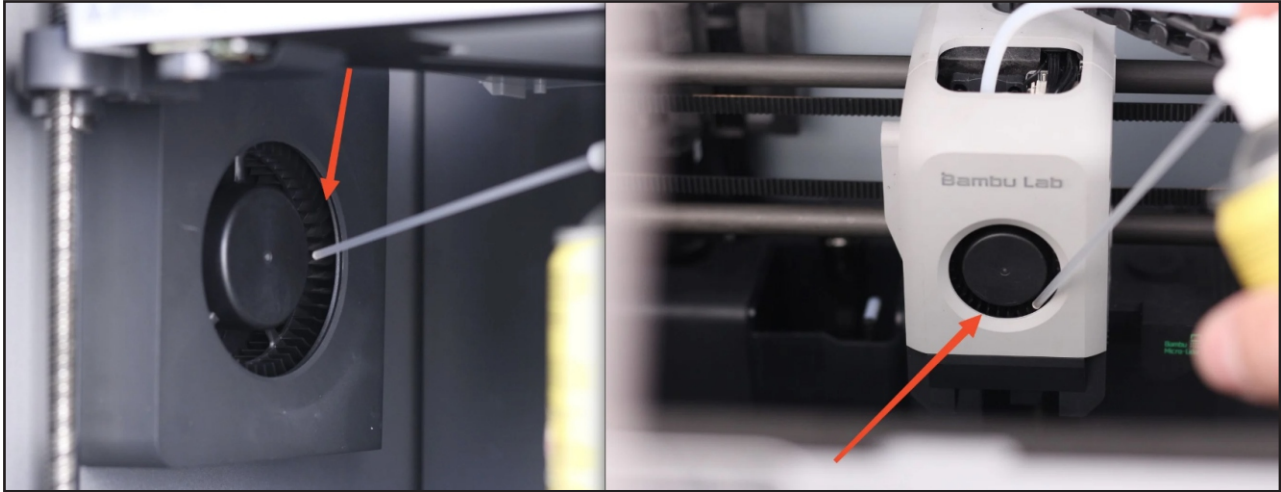

When to do it?

The Micro Lidar must be cleaned when an error message pops up or the light is abnormal. If regularly printing with ABS, the camera must be cleaned every 3-5 days, as ABS particles can build up on the camera lens. Otherwise, monthly.

How to do it?

Using a microfiber cloth and some isopropyl alcohol, gently rub the camera of the Micro Lidar. A q-tip can also be used as it allows the user to reach the camera easier.

Part cooling fans

There are three fans that should be regularly checked for any dust and debris build-up. The hotend fan, front cover fan and the auxiliary fan. They should be regularly checked for debris or dust buildup to ensure a smooth operation and long life.
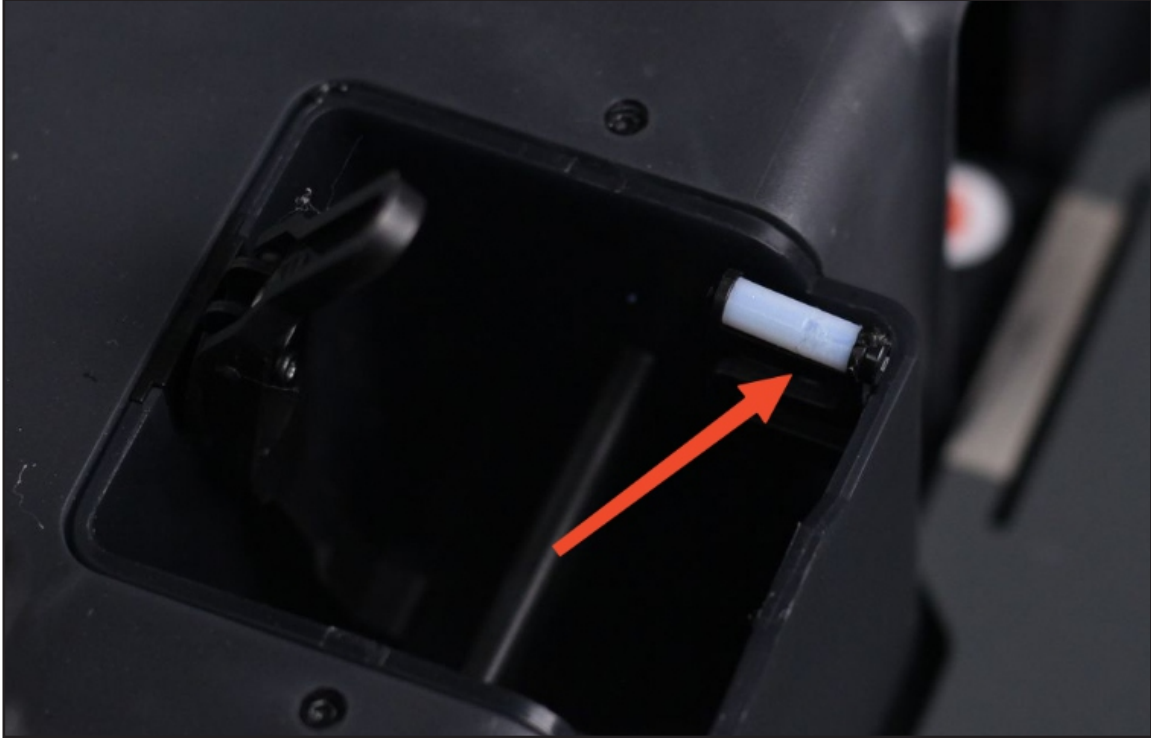

When to do it?

We recommend checking the fans every week to clean any debris or dust that might have built up around the blades.

How to do it?

With the printer off, we recommend using a can of compressed air. While keeping the fan blades in place, use the compressed air to blow air over the blades and clean any dust or debris.

Nozzle Wiper

The nozzle wiper is an important part of the X1 that needs to be checked from time to time, to ensure it is undamaged, and the cleaning process works well.

When to do it?

The nozzle wiper needs to be checked before starting any print, to ensure it is free of any filament debris and the PTFE side is not damaged. The wiper should also stay in a horizontal position for proper operation.
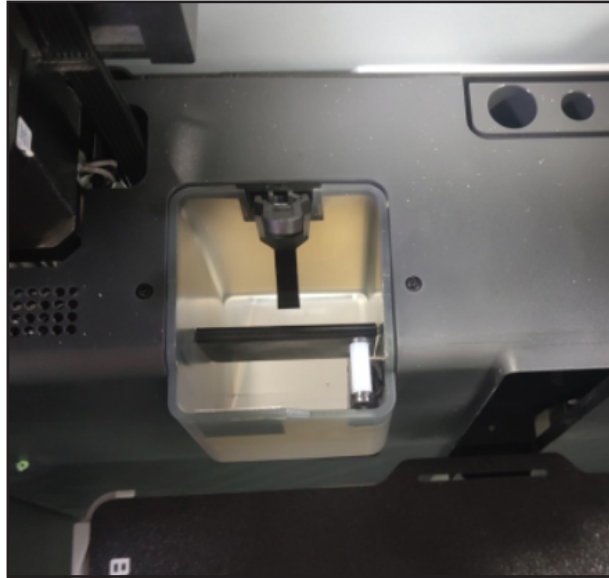
How to do it?

If the nozzle wiper is damaged, we recommend replacing it with a spare.

Tools and matererials needed:
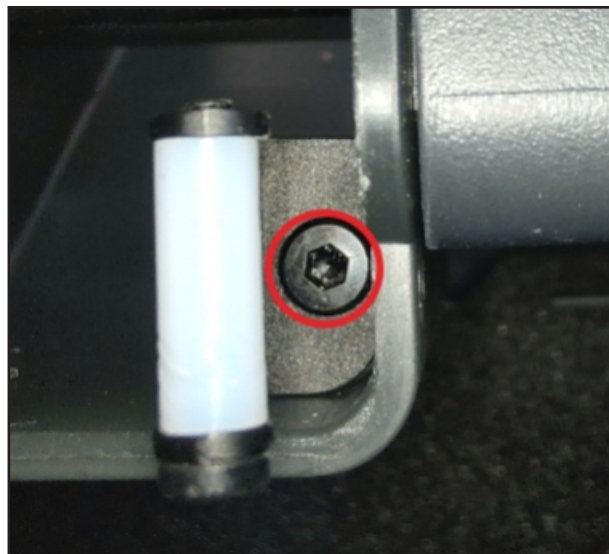
Nozzle wiper
H2.0 Allen key

**1: Power off the machine.
Remove the top glass cover**

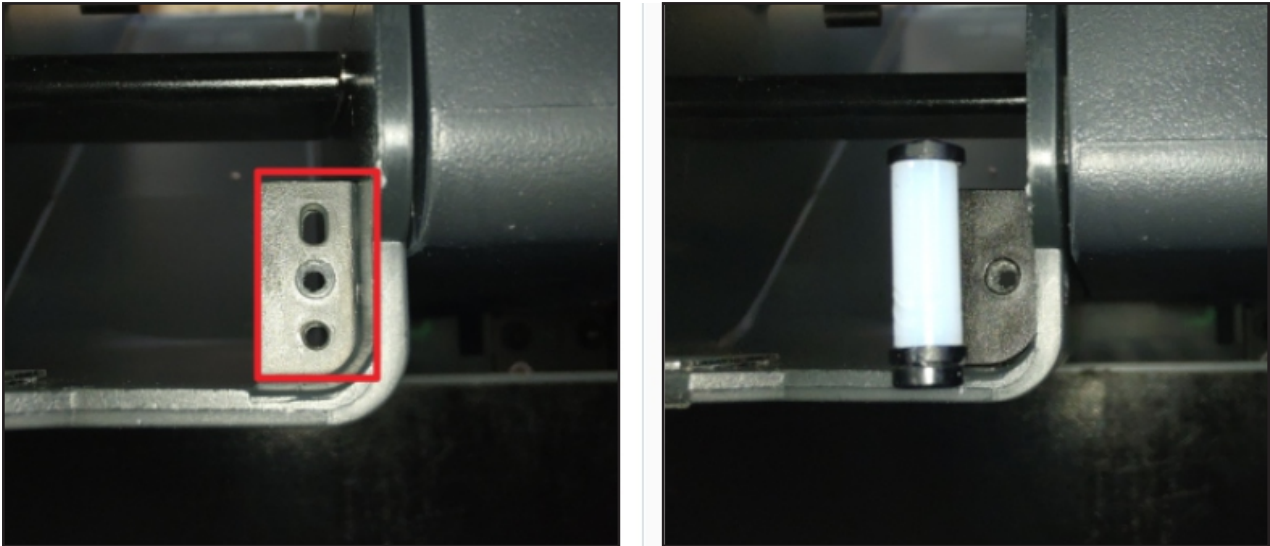Move the tool head out of the chip chute for better access to the Nozzle Wiper.

2: Remove the old Nozzle Wiper

Remove 1 screw and remove the Nozzle Wiper.
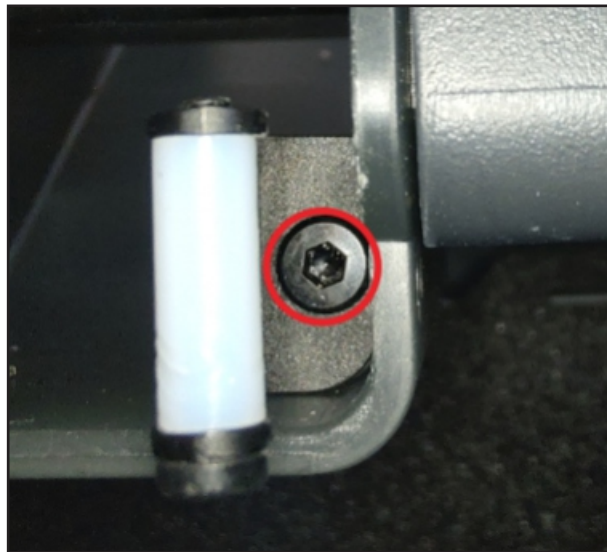
3: Install the new Nozzle Wiper

Install the new Nozzle Wiper in its place.

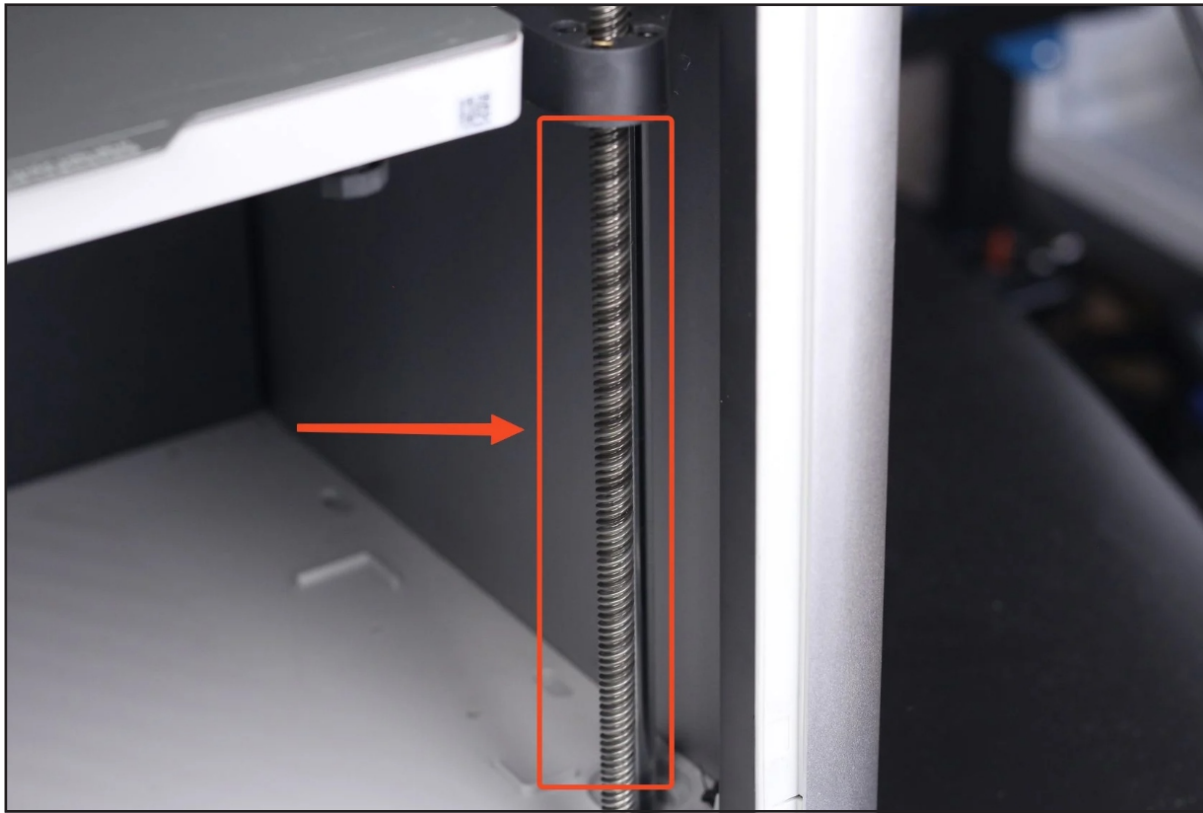

4: Fixed the Nozzle Wiper

Screw in 1 screw and put back the glass cover.

Check that the Nozzle Wiper and screws are seated properly.

Z-axis Lead Screws

Three Z-axis lead screws require regular greasing. They are used for moving the heated bed on the Z axis, and proper greasing will ensure smooth operation.

When to do it?

The z-axis lead screws should be checked and greased every three months.

How to do it?

Before greasing the z-axis lead screws, the first step before would be to clean them of any dust or plastic particles.

The next step is to use lubricating grease and apply a thin coat over the lead screws. With the bed home, apply a thin coat of lubricating grease, then move the bed to a lower position.

Apply another thin coat of grease on the z-axis lead screws and home the printer again.

You can repeat the movement process a few times to ensure the grease is evenly spread over the z-axis lead screws. When complete, clean out any excess grease that builds up close to the leadscrew nuts.

Step by step process :

1. Clear the dust or plastic particles from the Z-axis lead screws;

2. Press the heated bed "Home" button, and the heated bed rises to the top;

3. Apply a thin layer of lubricating grease on the three Z-axis leadscrews;

4. Press the Z-axis down button, driving the heated bed to drop to the bottom;

5. Apply another thin layer of lubricating grease on the three Z-axis leadscrews;

6. Press the heated bed "Home" button, driving the heated bed to rise to the top;

7. Repeat the heated bed up and down movement process several times to ensure the lubricating grease is evenly distributed on the Z-axis leadscrews;

8. Clear any excess lubricating grease accumulated near the leadscrew nuts;

9. Complete the lubrication of the Z-axis lead screws.

You can control the heated bed's homing, rising, or lowering from the printer side or through the Bambu Studio interface or the control panel on the printer.


Control Panel on the X1E

*You can use the orange or green circle highlighted buttons to move the bed up and down.
The green circle highlighted buttons have a more precise movement versus the orange highlighted buttons.*

You can use the BX-300/F series grease in the link, but other lubrication alternatives can be used.

A popular lubricant is Super Lube 92003 Silicone Lubricating Grease with PTFE or Lucas Oil 10533 White Lithium Grease which should work similarly.

Idler Pulley

There are multiple idler pulleys installed on the printer. These idlers have sealed bearings inside which don't require greasing, but we still recommend adding a bit of lubricating oil between the idler flange and the plastic holder to avoid any squeaking noises.
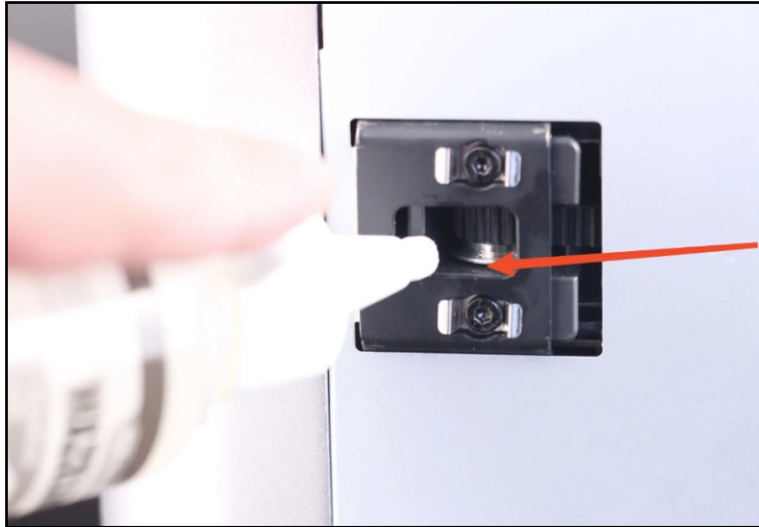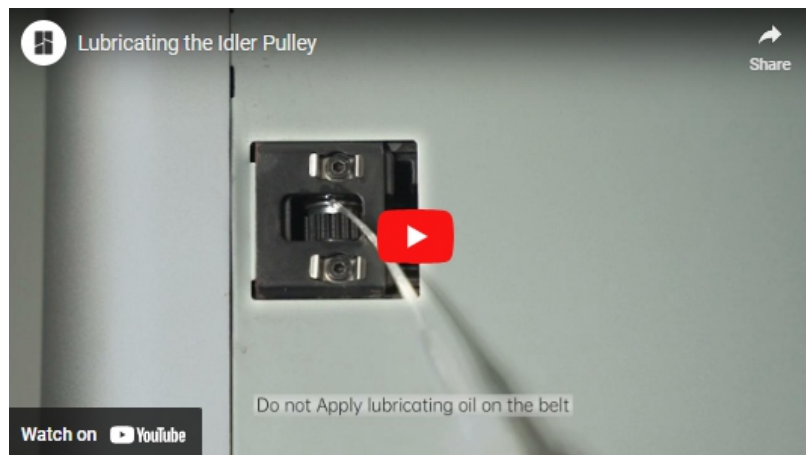

When to do it?

When squeaking noises are present during printing, or during the XY axis movement.

How to do it?

A small amount of lubricating oil should be applied on top and on the bottom of the idler, in the location between the idler flange and the plastic holder, if needed. Avoid adding lubrication oil to the idlers if no squeaking noises are present, to avoid any dust buildup.

You can refer to using Super Lube 52004 Synthetic Lightweight Oil for better performance.

Lubricating the Idler Pulley (Video)

https://youtu.be/6KkFw_b8OAw

INTRODUCTION TO TROUBLESHOOTING

How to do it?
Simple Clog / Partial Clog

A simple clog or partial clog is considered when the tip of the hotend is clogged with particulates inside the filament (carbon fiber, sparkling filament, etc). These particulates could be larger than the nozzle hole and will block it from being extruded.

Most of the time, these particulates could either clog the hotend completely, where there is no filament being extruded anymore, or a partial clog generated by debris on the filament which manifests itself by filament not flowing straight from the hotend and curling when extruding manually from the hotend.

When such a clog occurs the model is not printing as expected, with inconsistent extrusion leading to bad print quality. It can also manifest itself with a badly calibrated K value for Flow Dynamics due to the inconsistent nozzle pressure and flow.
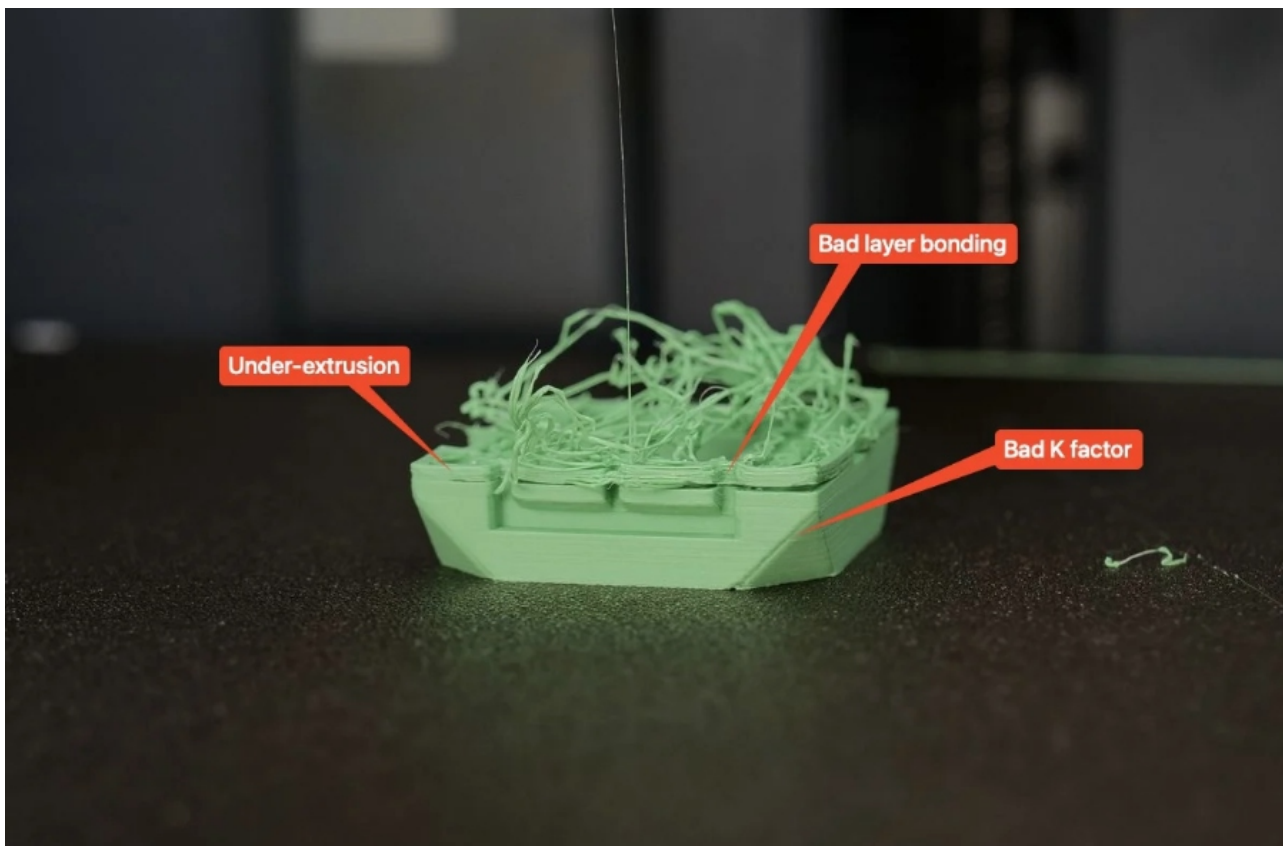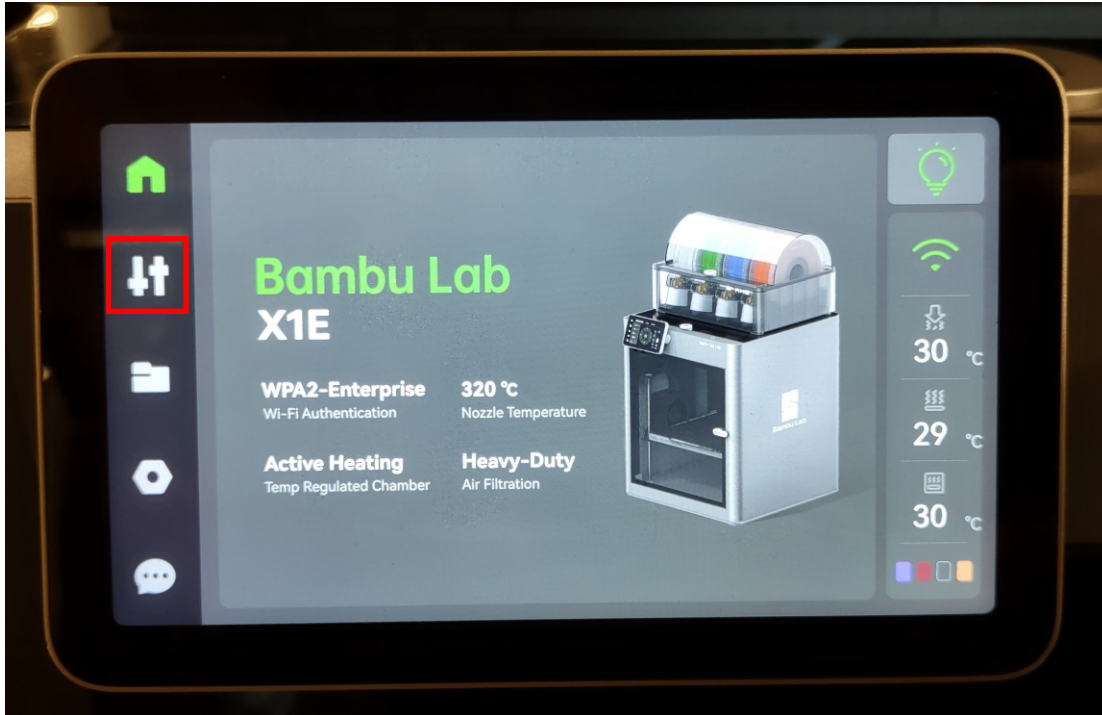

The easiest procedure to follow in this case is to try and dislodge the small piece blocking the hotend using the included pin you received with the printer.

Steps to unclog the hotend

1: Set the hotend temperature to 250C

Select Highlighted settings button on home screen.

Select **Temperature / Axis** and select **hotend temperature** highlighted below.

Enter **250C** value followed by the **OK** button to confirm temperature.

This is the temperature that works best for PLA/PETG/TPU/ABS, or other filaments that can be printed at this temperature. For filaments that require a higher temperature to be printed, you can use a higher temperature.

2: Move the heatbed to a lower position

While the hotend reaches the set temperature, use the on-screen menu options to lower the heatbed to a position that allows you to easily work on the print head. To do this, navigate to Temperature/Axis → Tap the -10 button multiple times until the heatbed reaches the middle section of the printer.

3: Insert the pin through the nozzle tip (Skip this step for 0.2mm nozzles)

With the hotend at temperature, insert the pin inside the nozzle tip, and move the pin through the nozzle a few times, to dislodge any debris that could be present in the hotend. Ensure that you don't push the pin too far in the hotend, as you might push the molten filament higher, leading to a harder-to-remove clog.
The red line in the image below shows how far you should push the pin.

CAUTION: *It is recommended to use heat-protective gloves for this operation. You can also use pliers as seen in the image below.The molten filament can drip on your fingers causing burns.*
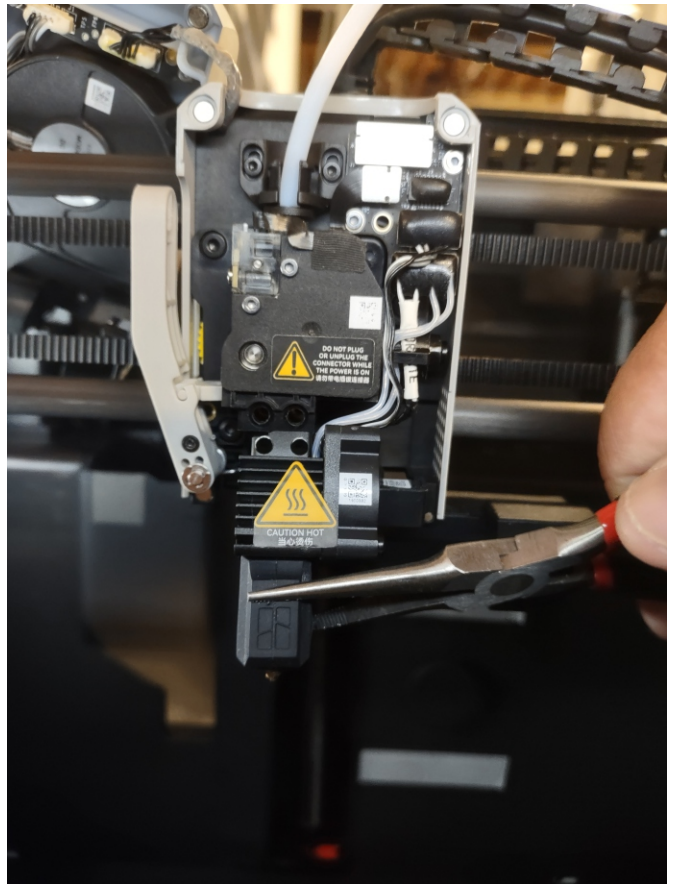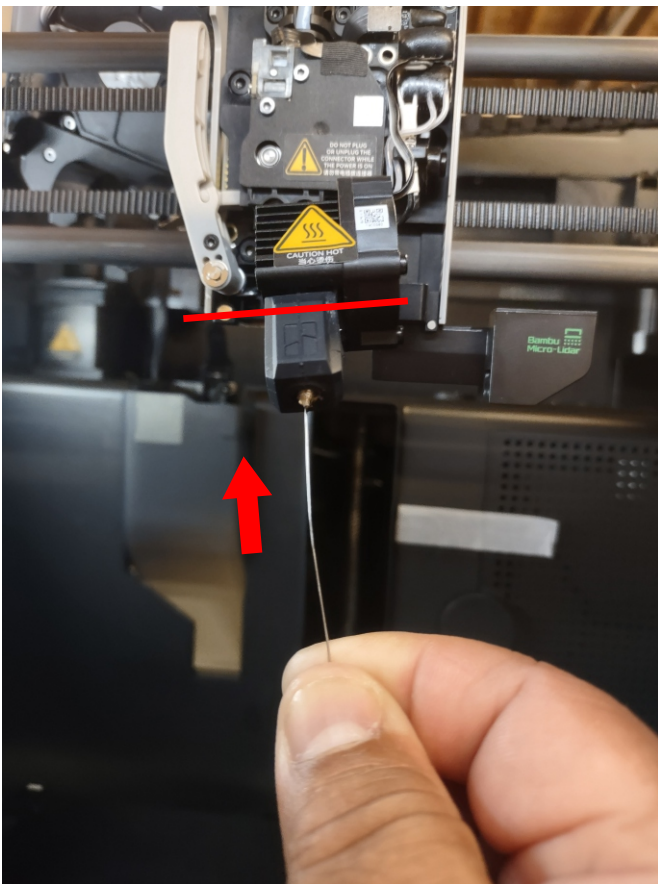
4: Confirm the nozzle is flowing correctly

After moving the pin through the nozzle tip a few times, remove the pin and extrude some filament using the on-screen buttons. The filament should flow in a straight line and should not curl during extrusion, as shown in the image below.

If the filament flows in a straight line, the hotend should be successfully unclogged.

Filament should flow in a straight line
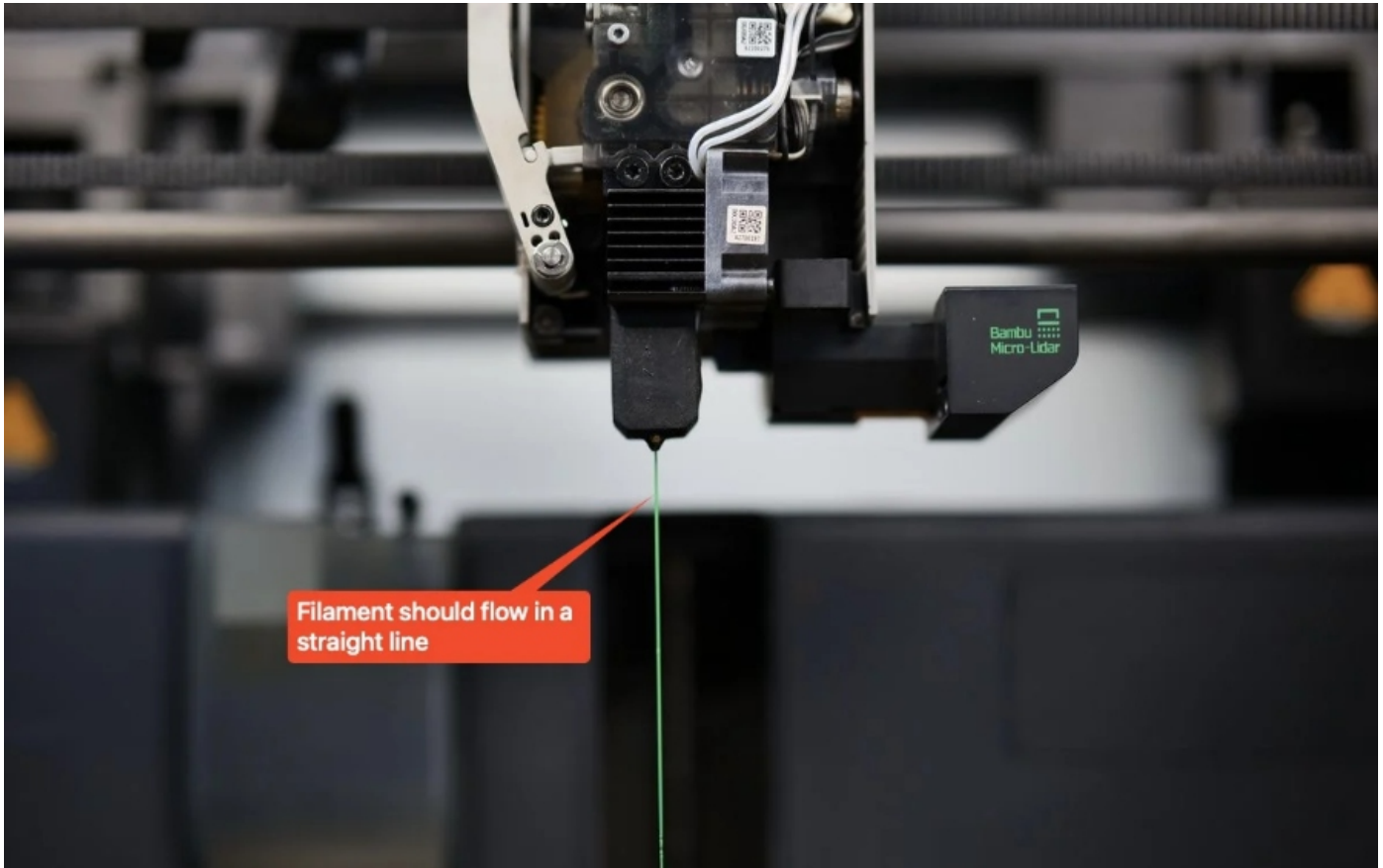
Hot hex wrench unclogging method

A common clog that occurs on X1E series is the filament getting stuck inside the hotend due to heat creep issues.

When this happens, the filament swells inside the hotend and cannot be easily removed. In the pictures below, you can see an example of filament getting stuck inside the hotend.
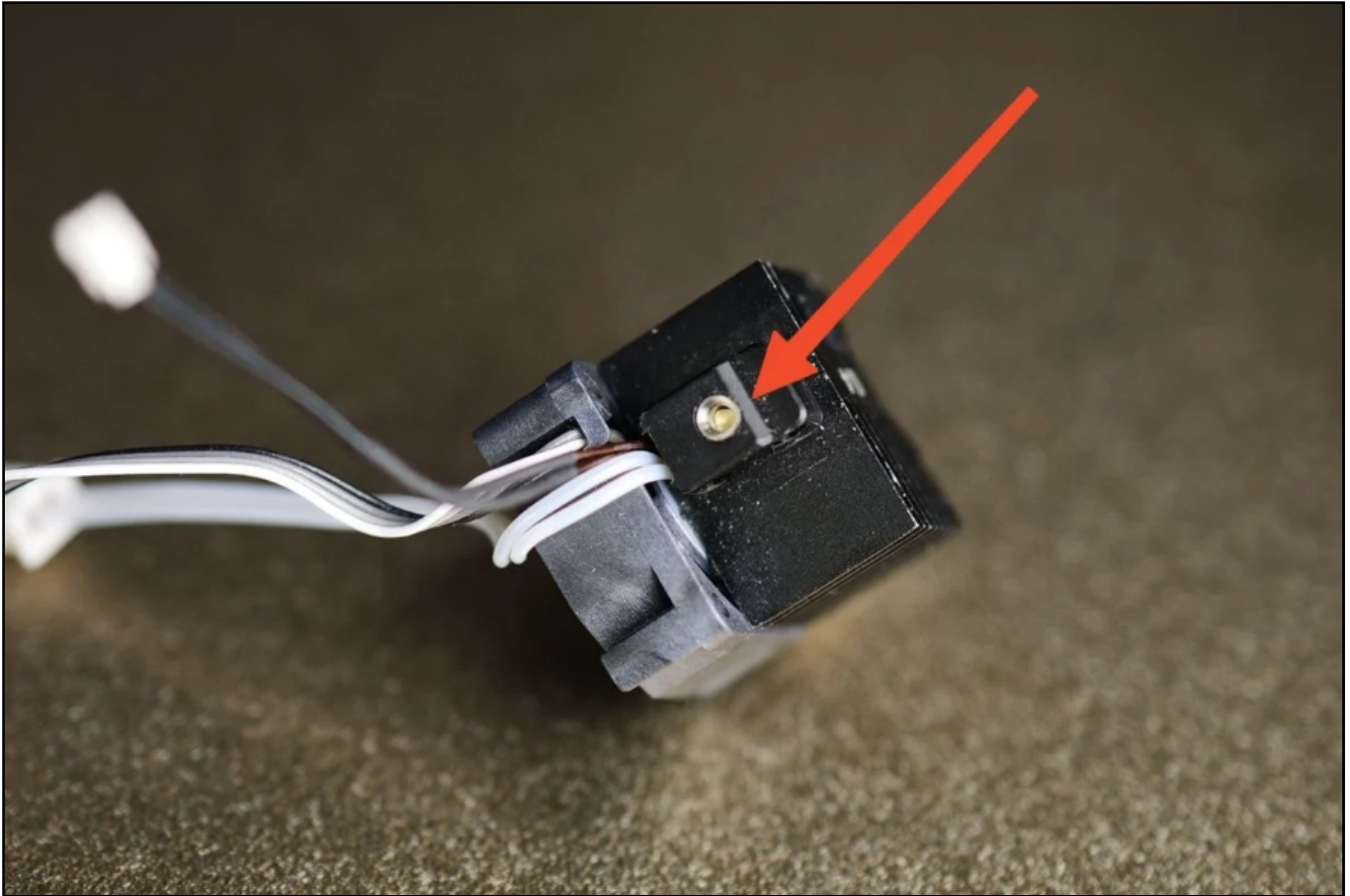

Fortunately, there is a relatively easy method to clean the filament inside the hotend with a hex wrench and a lighter.

Parts Required:

1.5mm hex wrench
Lighter

1: Remove the hotend from the print head

The first step in unclogging the hotend is to **power off the machine from the back**. Then remove the hotend from the print head. Carefully remove the three wires from the extruder connection board, by pulling on the black connectors. These are highlighted in red in the image below. Avoid pulling on the wires, as there is a high chance to damage the wires and/or the connection board.
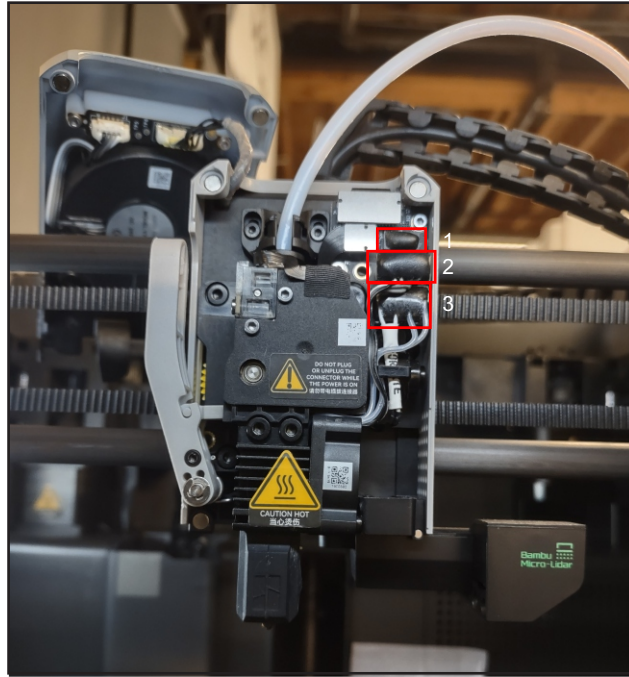
After the wires are disconnected, you can remove the two hotend screws holding it in place to completely remove it from the print head.
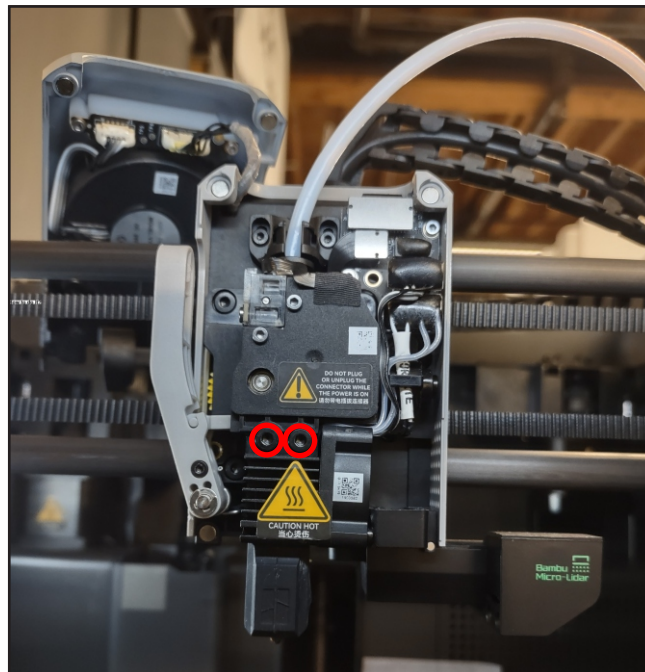
*You can either disconnect the 3 wires first or remove the two screws first. Either option is acceptable. Just make sure the **Power is off**. If not it could cause damage.*

After the wires are disconnected, you can remove the two hotend screws holding it in place to completely remove it from the print head.
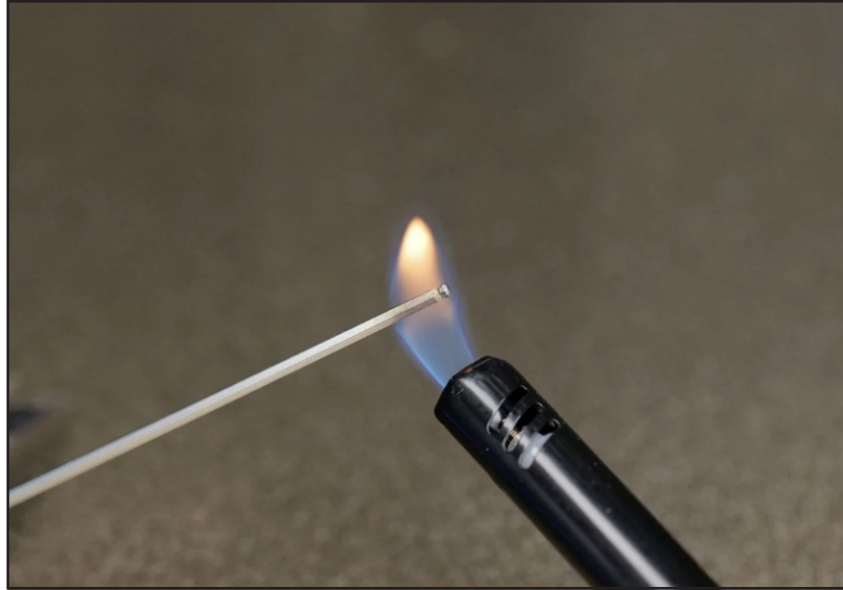
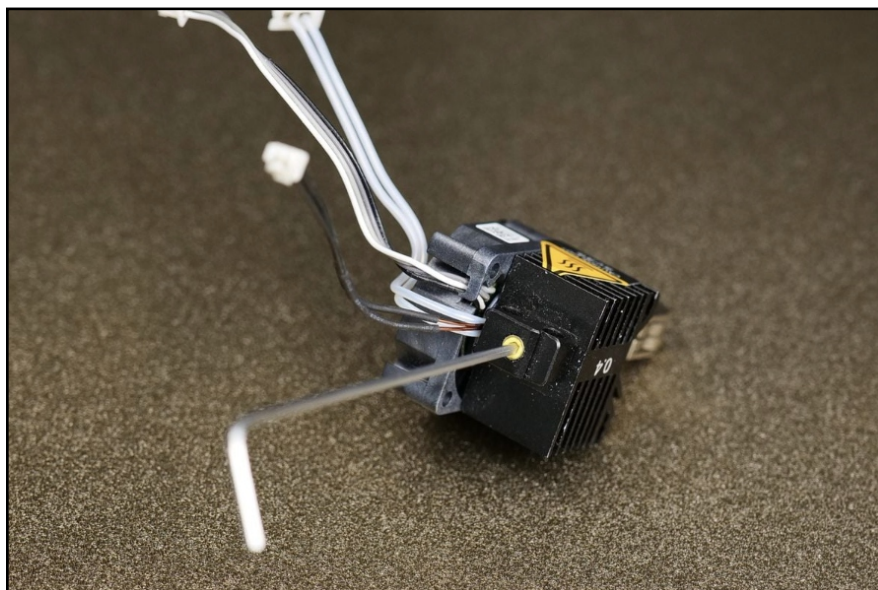## 2: Heat the hex wrench and push it inside the hotend

CAUTION: *We recommend using heat-protective gloves for this operation. You can also use pliers as noted in a previous process.*

Now that the hotend is completely removed from the printer, we can proceed with unclogging it.

Take the 1.5mm hex wrench and use the lighter to heat it for 10-15 seconds. When the tip of the hex wrench starts to change color, it is ready.

While the tip of the wrench is hot, quickly push it in the hotend, through the top end of the heatsink. The hot wrench will go inside the filament, as shown in the image below. Then, wait for about 30 seconds for the hex wrench to get cold.

# 3: Heat the tip of the hotend and pull filament clog

The hex wrench is now stuck inside the hotend, with filament around it. To remove the wrench with the filament clogging the hotend, you will need to heat the tip of the hotend.

First, remove the silicone sock of the hotend, then apply heat using the lighter to the tip of the nozzle for about 20 seconds (when using a regular lighter).

CAUTION: *Avoid heating the nozzle for a longer period or using a high power butane torch. A regular gas lighter is recommended. The hot side of the nozzle needs to only be hot enough so you can remove the hex tool with the filament. Overheating the nozzle can lead to the filament dripping or popping from the tip. Carefully follow the instructions and don't point the nozzle tip towards you when doing this procedure.*

After heating the tip of the nozzle for 20 seconds, you can pull slowly on the wrench. You will notice that the filament comes out from the hotend in a single piece, clearing the clog.
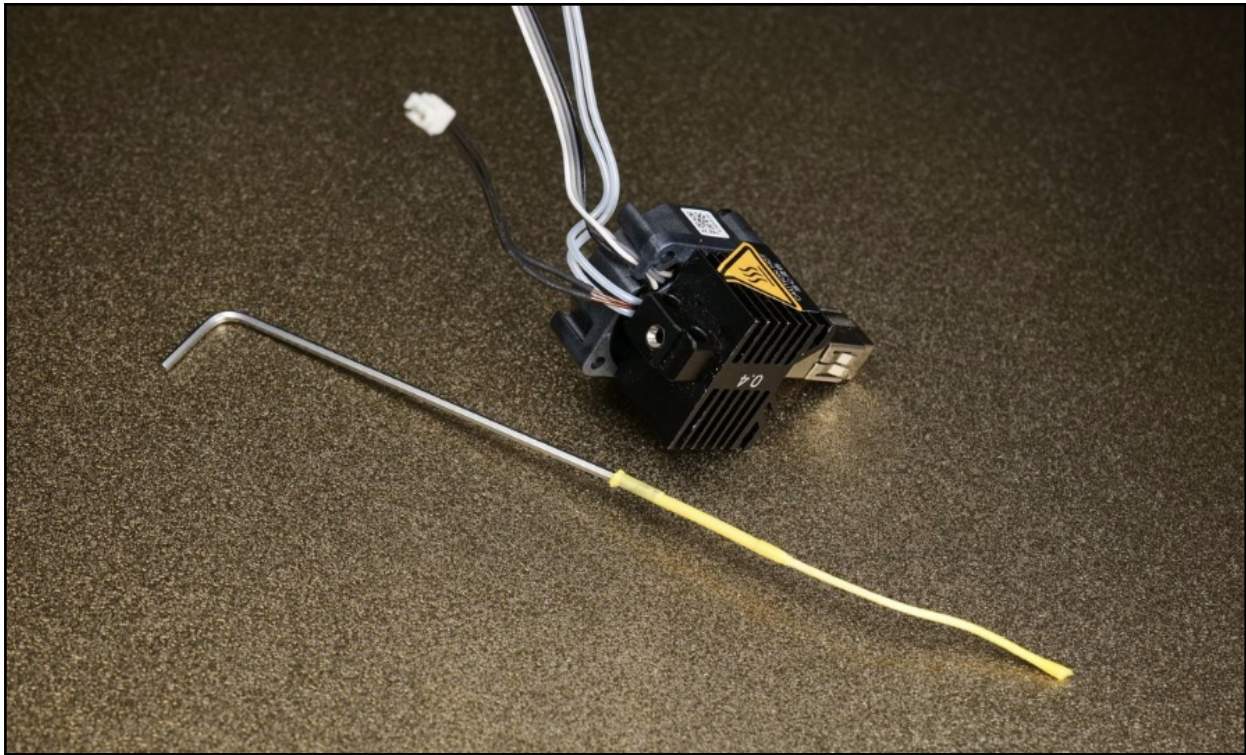
You can now follow step 1 in reverse, to re-install the hotend back to the print head. Don't forget to carefully arrange the hotend wires around the extruder. If they are not correctly arranged, they could push against the front cover causing failures during printing.

Once the process is completed, you can now power the printer back on.

Alternative Cleaning Method (Video)

https://youtu.be/VNtRFKEslrU

Cold Pull Method

After every cleaning procedure shown in this article, we strongly recommend performing a cold pull procedure. A cold pull will ensure the inside of the hotend is clean, and will minimize the chances for any printing issues caused by the hotend.

1: Remove the print head cover and the PTFE tube

With the front cover set to the side, loosen the screws next to the PTFE support. **(do not remove)**
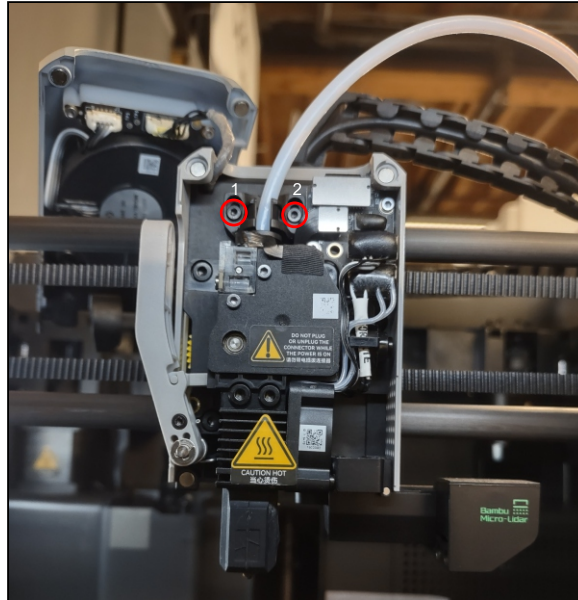
Finally, to remove the PTFE tube you need to push on the PTFE support, then pull on the tube upwards, as shown in the image below:
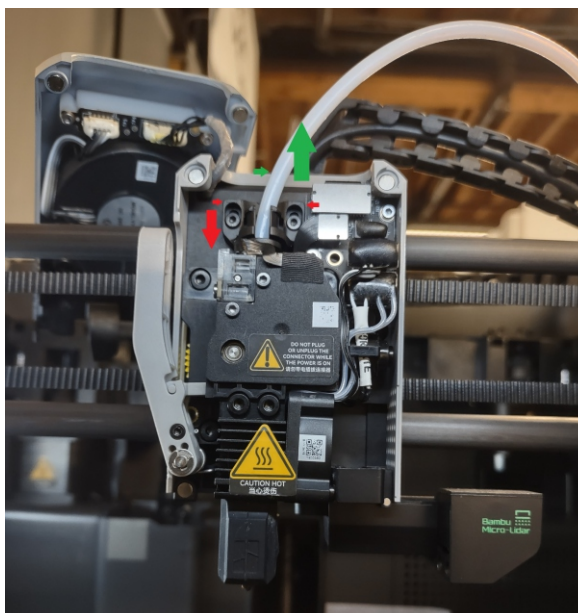
You can now start the cold pull procedure

2: Set the hotend temperature then load the filament

This step depends on the filament used to perform the cold pull procedure. The most common filament used for cold pulls is PLA, which requires the hotend to be set at 220C and we will use this as an example.

Select Settings on the Home Screen

### Select Temperature/Axis and the the hot end temperature.

Enter the 220C value followed by the OK confirmation button

After the hotend reaches 220C, push filament in the top of the extruder as shown in the image below, then use the extrude button on the screen to feed it until you see filament being extruded from the tip of the nozzle.
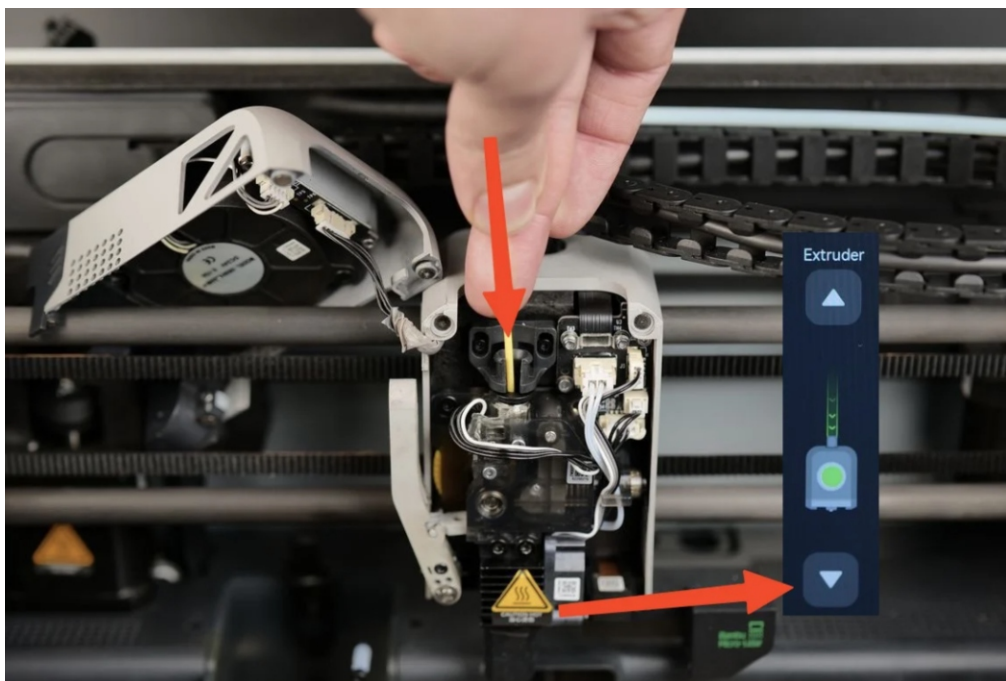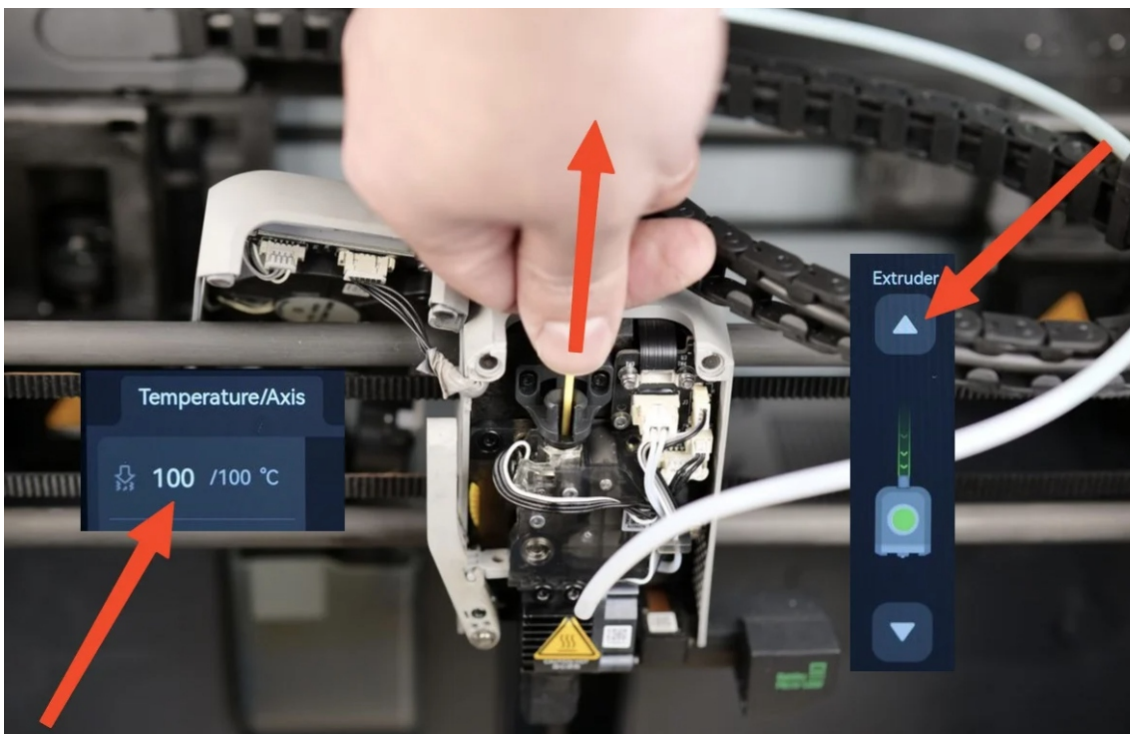
## 3. Set the hotend temperature to 100C and wait
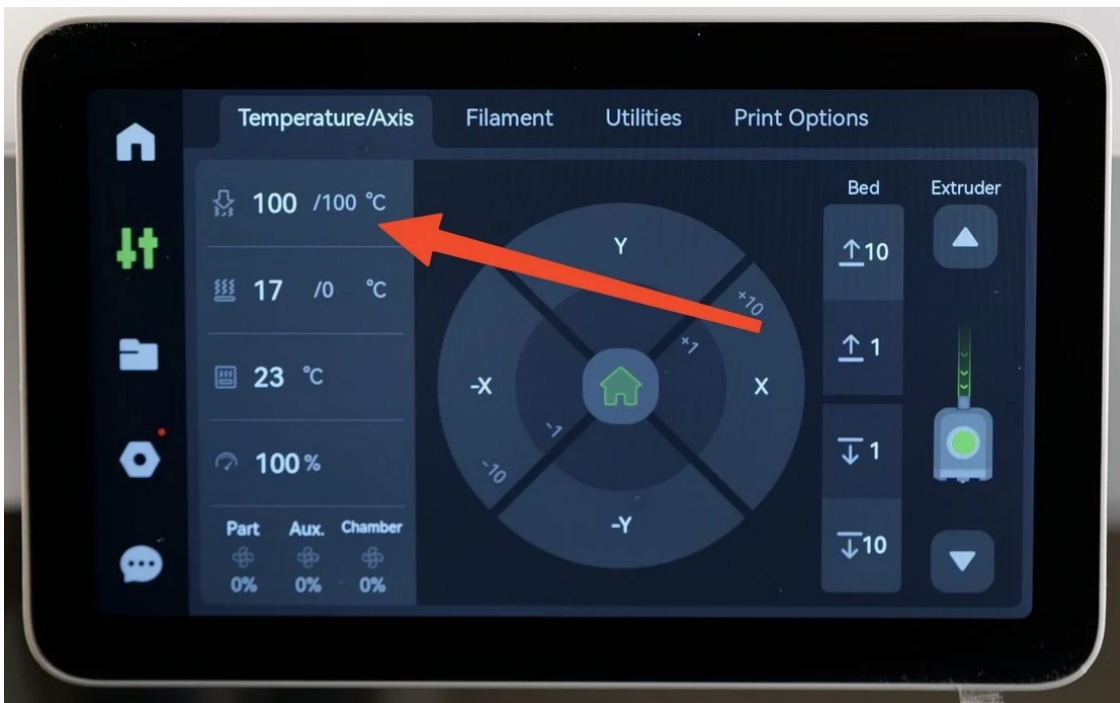
4. Retract the filament

As soon as the hotend reaches 100C, use the retract button on the screen to start pulling the filament. We recommend also pulling on the end of the filament **to help the extruder.** DO NOT pull hard, as you only want **to help the extruder**, **not to pull against the gears and motor.**
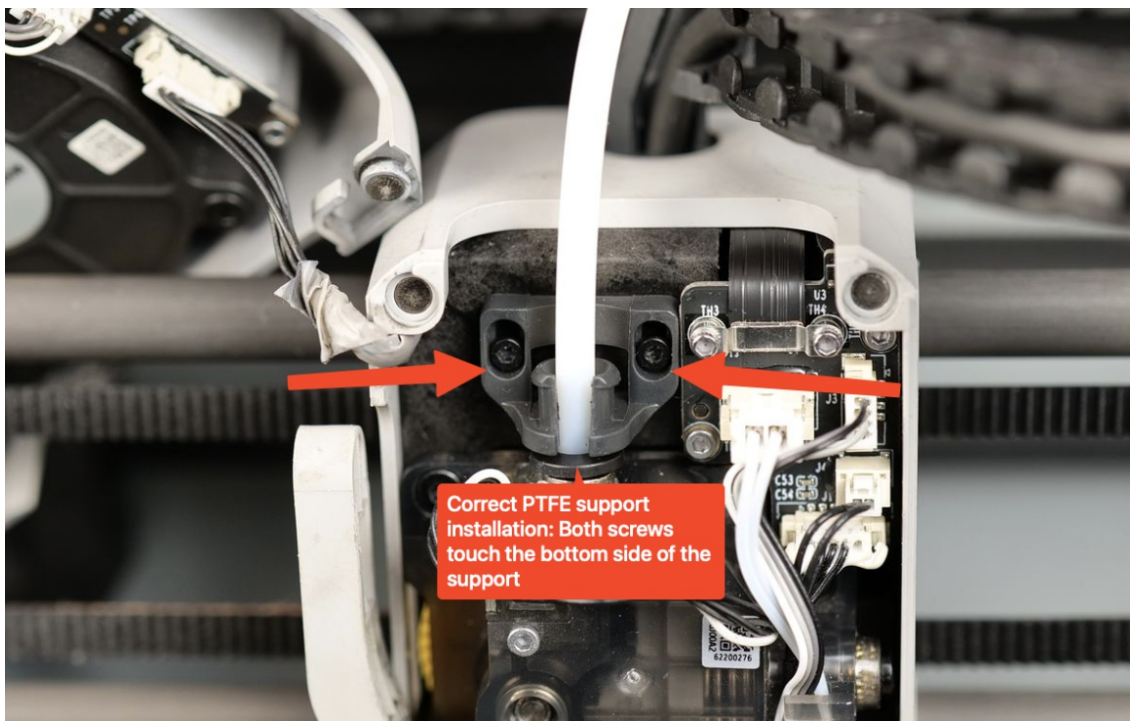

Usually, it is recommended to perform this operation a few times, until the filament you are pulling from the hotend is clean and free from any debris.

5. Re-install the PTFE tube and support
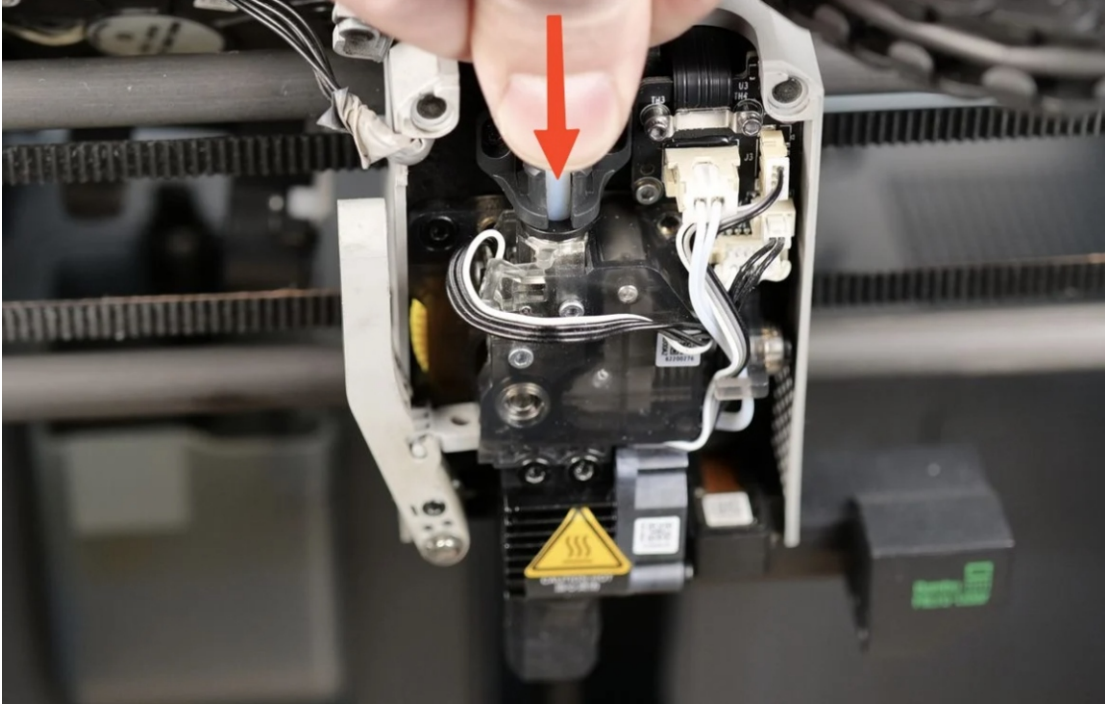
Then, make sure that you raise the PTFE tube support piece as high as possible, before tightening it in place. This step is important, as it ensures the filament path and less filament resistance towards the extruder.

Correct PTFE support installation: Both screws touch the bottom side of the support

Cold Pull Guide (Video)

https://youtu.be/FZd9LfbqSOE