1X Series
USER MANUAL

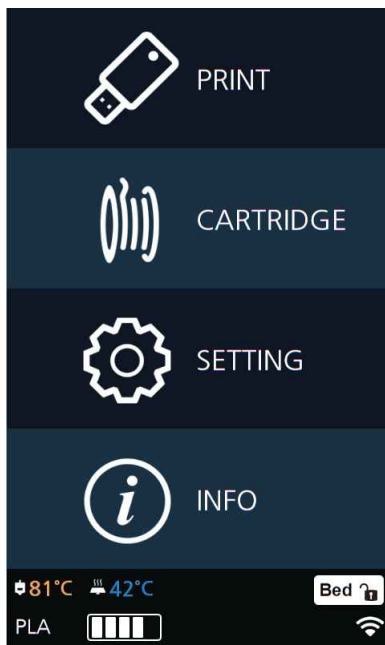# Printing

3

1.   Printing

User can print printables via USB flash drive, USB cable, or over the network.

The following on the printer means it is ready to start print.

1.1   Printing from USB Flash Drive

1 Connecting USB flash drive to the printer.
In order to print using an USB flash drive, insert the flash drive into the USB port.
When the USB flash drive is connected while in the home screen, a list of files in the USB appears.
When **[PRINT]** is selected without the USB flash drive connected, a message requesting for USB connection will pop up and once USB flash drive is connected a list of the USB files will emerge.
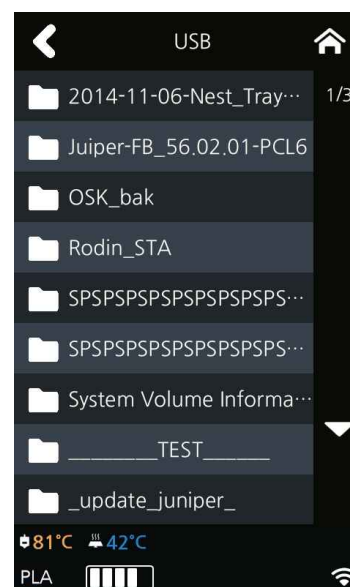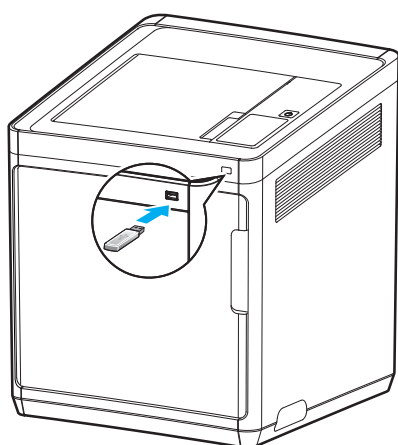
2 Printing Files

Select a file to print in the USB list.
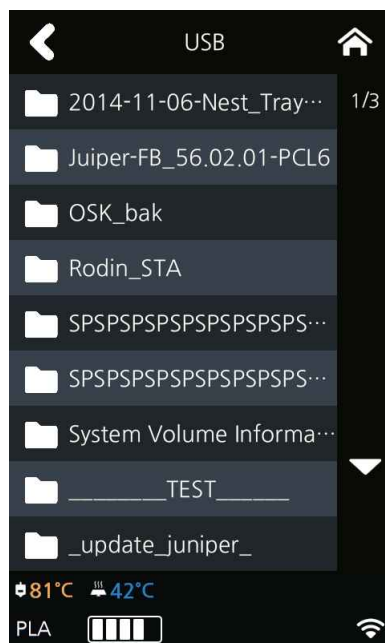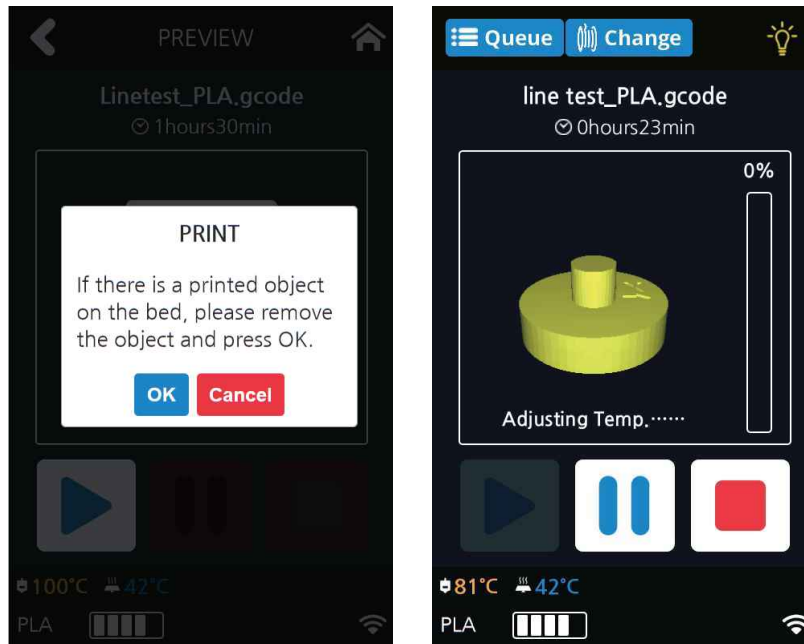

3 Print Preview

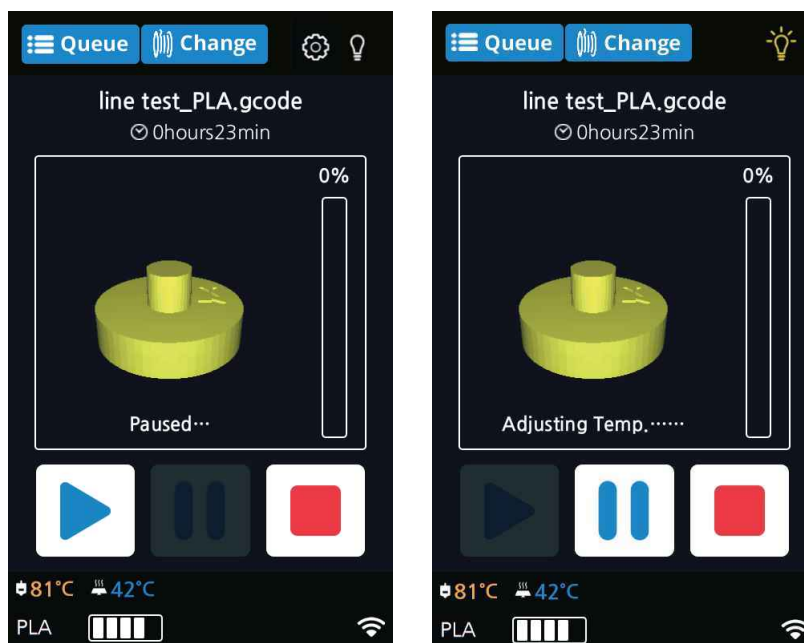Once selected, a preview of the model appears on the screen.

4 Printing

Once [▶] is pressed the nozzle starts to be heated. When the specified temperature is reached, the printing starts.
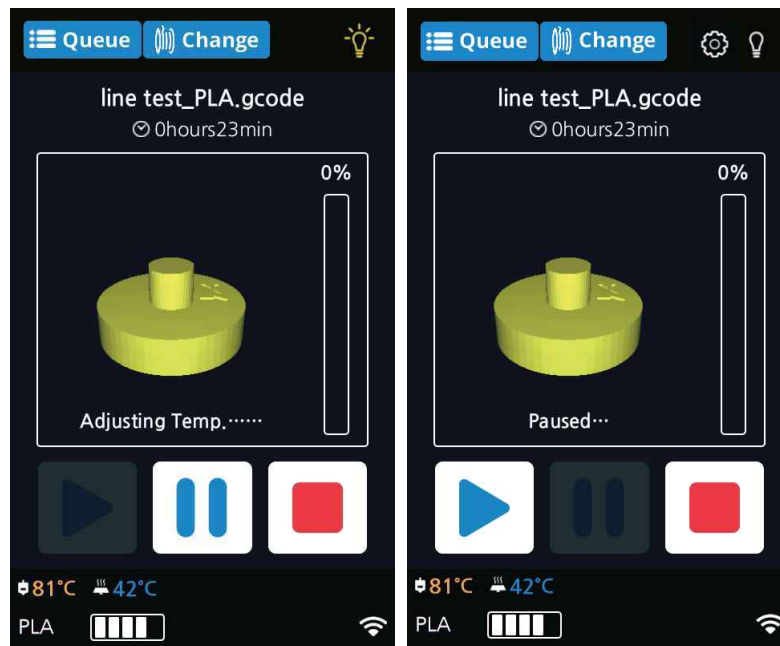

5 Pausing Print

Pressing [❚❚] during a print will pause the progress.

Press [▶] again and nozzle is heated again, and the printer will continue printing.
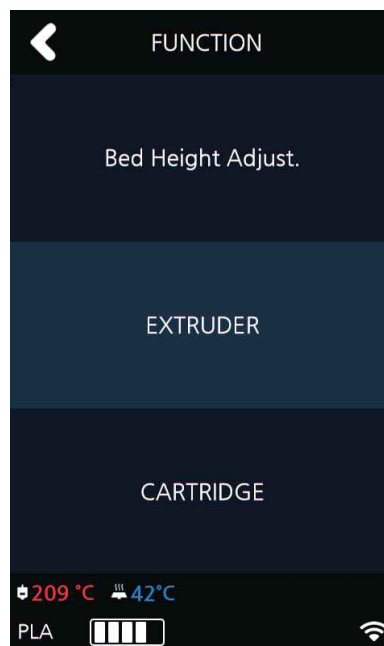
6 Additional Functions of Pausing

Press the [❚❚] button during printing to pause it, and then press the **[Setting]** icon to run additional functions.

These additional functions include **[Bed Height Adjustment]**, **[Extruder]**, and **[Cartridge-Load, Unload, and Unlock]**. These additional functions are used for any mechanical problem or if the user needs them.

◼ Bed Height Adjustment

① This menu is used to adjust the height of the bed during printing for a high-quality outcome.

② **[Save]** the adjusted bed height and return to the printing screen to print the adjusted bed height.

③ Press the **[Reset]** button to return the bed to its previous position.

Bed Height Adjust.

Move the bed to the desired height from the current position and press the Save and Finish button. The height of the bed adjusted in this menu is reflected when the output is resumed.

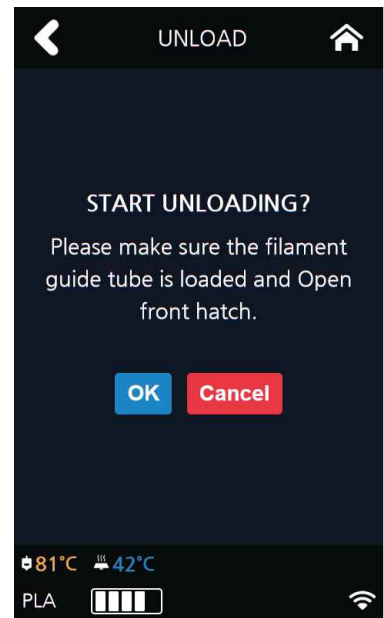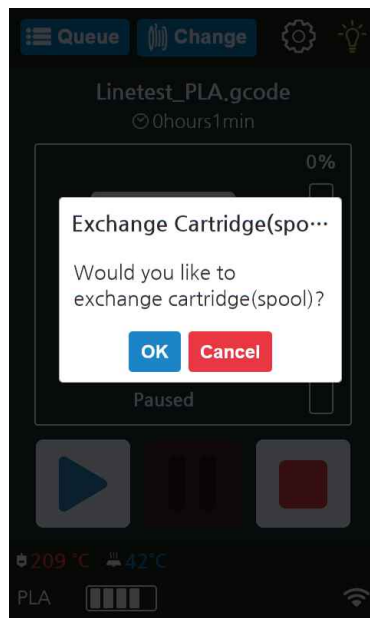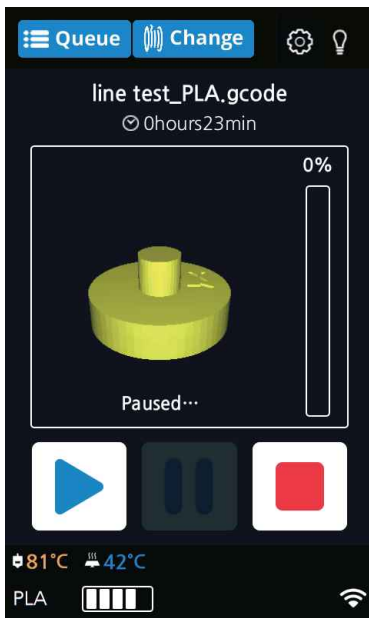| 0.05 | 0.1 | 0.2 | 0.5 |

Reset   Save

🔥209 °C   ♨42°C
PLA
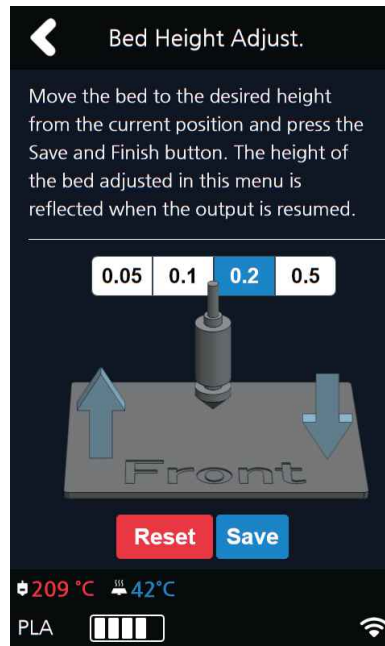
◼ Extruder

It functions just like the extruder operation in your printer's settings.

◼ Cartridge

The cartridge can be loaded, unloaded, or unlocked during printing.

7 Exchanging Cartridge during print

Press **[Change]** to switch the currently using cartridge into a different cartridge.

Queue **Change**

line test_PLA.gcode
🕐0hours23min

0%

Paused…

🔥81°C   ♨42°C
PLA

Queue **Change**

Linetest_PLA.gcode
🕐0hours1min

0%

Exchange Cartridge(spo…

Would you like to exchange cartridge(spool)?

OK   Cancel

Paused

🔥209 °C   ♨42°C
PLA

UNLOAD

START UNLOADING?

Please make sure the filament guide tube is loaded and Open front hatch.

OK   Cancel

🔥81°C   ♨42°C
PLA

8 Print Cancelation

During print pressing **[■]** button a message pops up and asks for confirmation on the print canceling.

When confirmed, the rest printing job is canceled.

Another message requesting the removable of left print will popup press **[OK]** and screen will return to home screen.
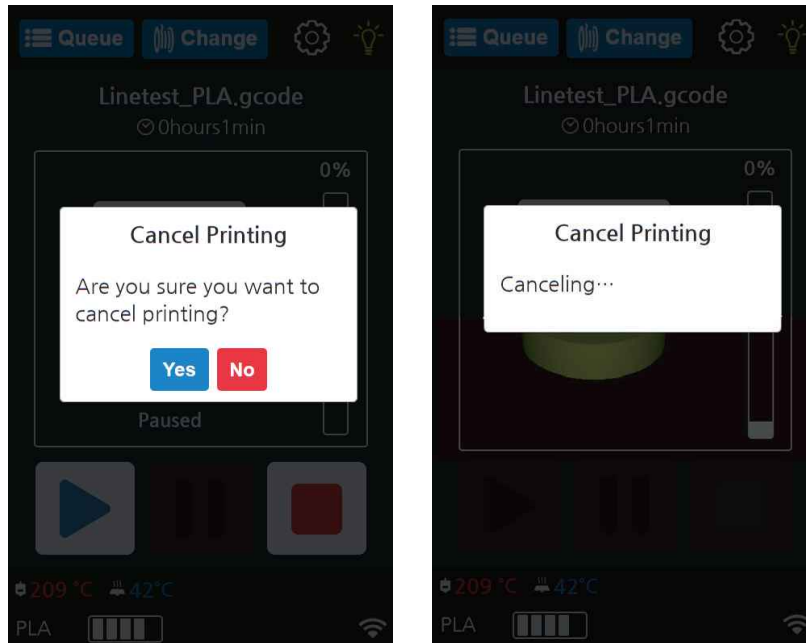
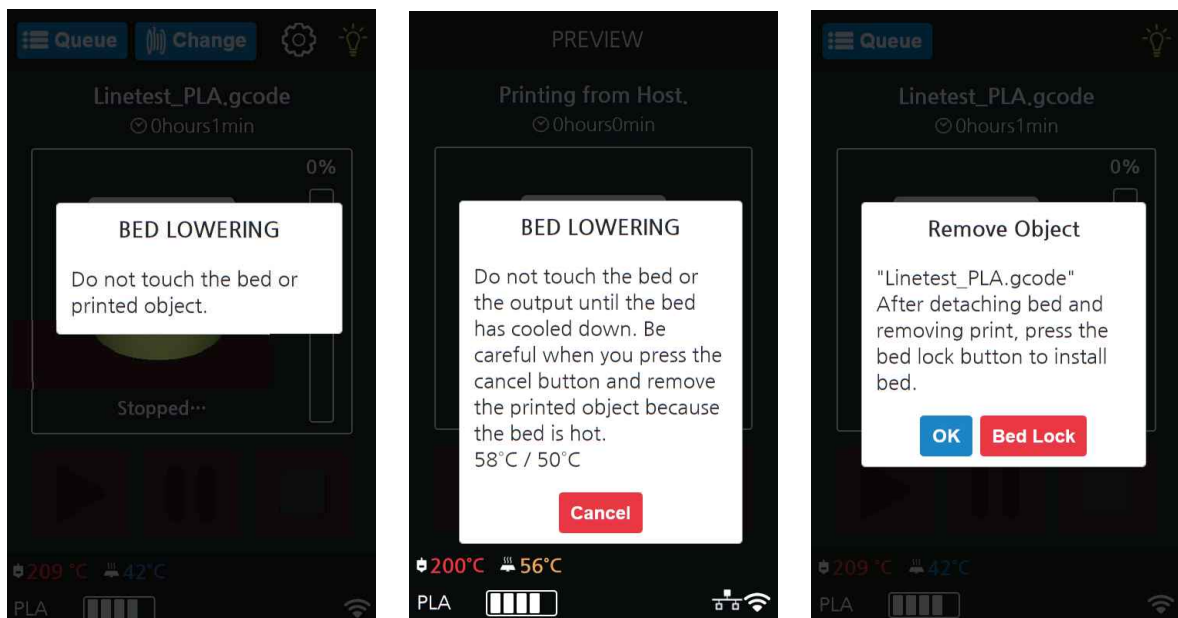**9** Printing Completion

After printing has completed, follow the instructions and remove the printed product. Press the **[OK]** to return to home screen.

🔎 **Reference**

– Methods of removing printables refer to P. 4-2 "1. Printed Output Check".

1.2 Printing Via PC

1 Prepare PC connected to the same network where the printer is connected to.

2 Run 3DWOX Slicer program.

3 Press the **"Print"** button.

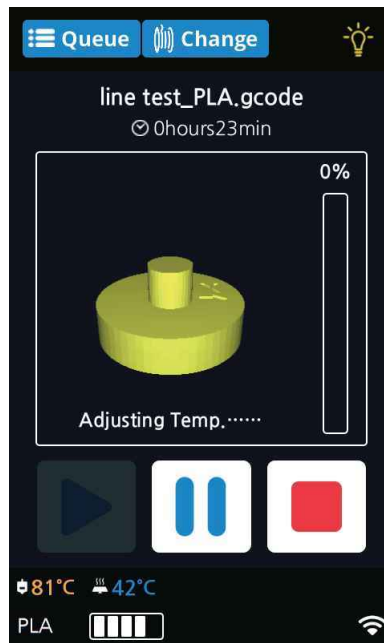**4** Following Steps (Same as steps 3~9 of printing via USB)

> ✐ **Note**
>
> – Pause, print cancelation, please refer to P.3-2 Printing from USB Flash Drive section.

1.3 Print Job Management

You can manage print jobs in queue.
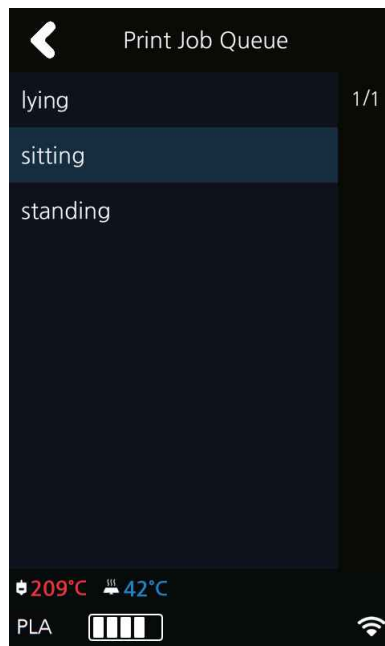
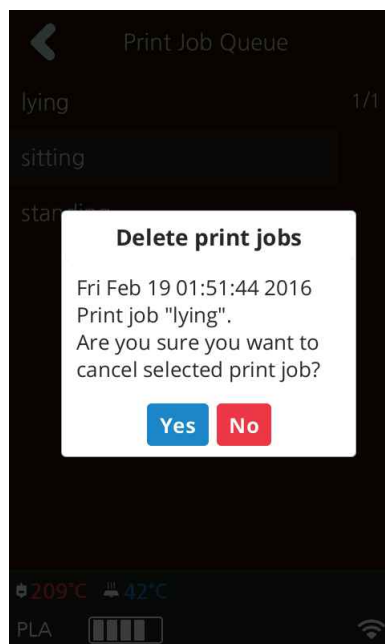**1** Press the **[Queue]** button on the upper left hand corner while printing.

2 The print jobs in queue are listed.

3 You may click the list to look at the information of the print job and delete it if necessary.

1.4 Changing Filaments

To prevent clogging of the nozzle when switching from the used filament to different material filament, you must perform Nozzle Cleaning.

1X Series
USER MANUAL

Printed Output Check

4

1. Printed Output Check

1.1 Detaching Printed Output

To safely detach the printed model, first let the bed cool down. Bed top plates must be detached as well.

> ⚠ **Caution** **Hot Surface**
>
> – **Without sufficient cooling the bed can be very hot. Please be cautious coming into contact .**
> **It may cause burns.**

1 Cooling the Bed

After the printer has finished printing, check the LCD screen and built-in speaker. Wait until temperature goes below 50ºC or 122ºF. Do not touch the bed or the bed handle until you are told you can touch the bed.

2 Detaching Bed

Press **[Bed Lock]** on the screen to fix the bed in place. The Flexible Bed is detached if you hold the bed handle and lift it.
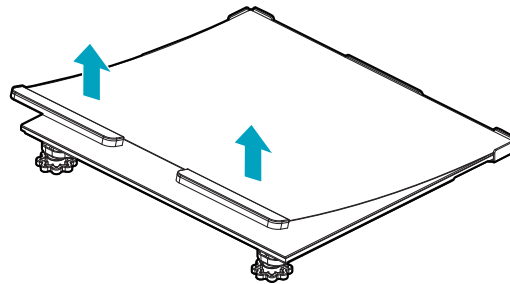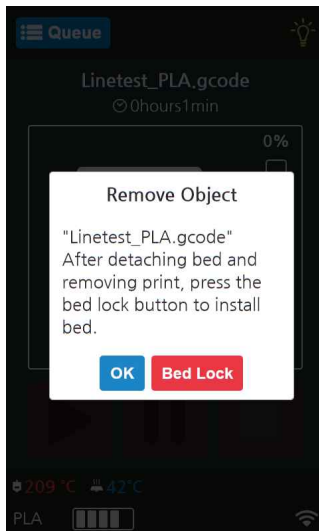
You can easily detach a large output if you insert a plastic hera in a direction of lower left corner of the bed as shown in the picture.
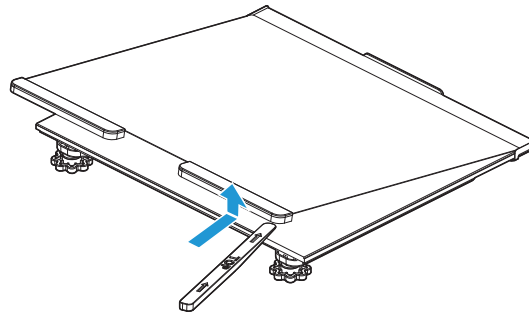

3 Detaching the printed output

> ⚠ **Caution** **Risk of Injuries**
>
> – **The scrapper is very sharp. Handle with care.**
> **Please be cautious of inuries when removing printed objects with the scrapper.**
> – **When you have printed the large object, be careful when removing the bed so that the object**
> **does not touch the interior of the printer.**

Detach the object from the Flexible Bed. The object can be easily detached by bending the Flexible Bed up and down. Using the scrapper provided with the printer will be useful.
Be careful not to apply too much pressure while using the scrapper could damage the bed sheet and the bed. Depending on the filament material the printed output may easily break or damage, please be cautious.
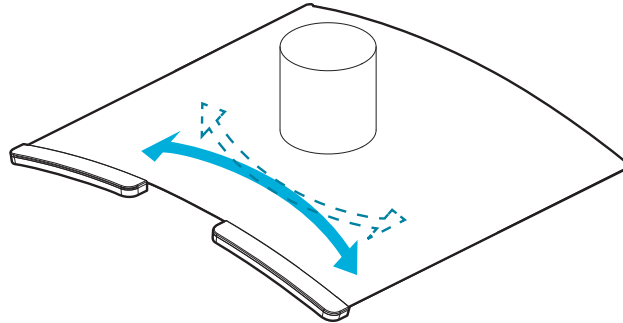
4 Flexible Bed Installation
After a period of time bed locking will automatically released, if bed is unlocked, press the lock button again to fix the bed into position before installation.

(1) Push the Flexible Bed all the way in as shown in the picture.
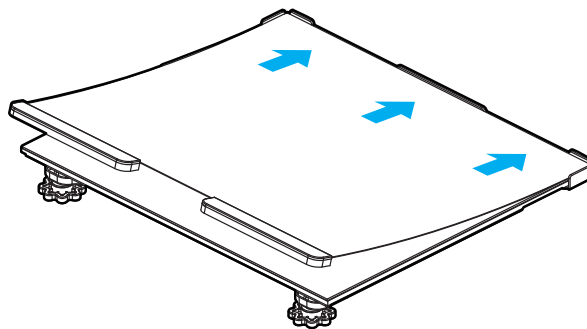
(2) Place Flexible Bed fix to position.
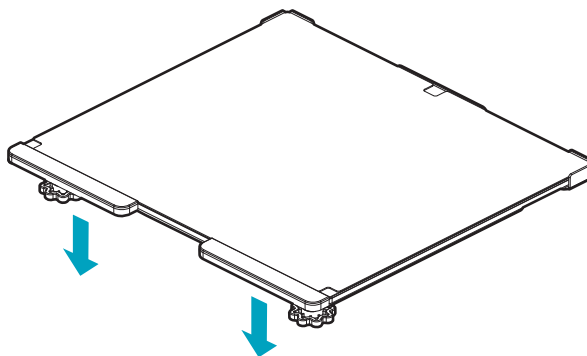
(3) If the flexible bed is placed at an angle, it may be difficult to level the bed. Place it down to match the base.

⚠ **Caution**

– **Any foreign substance left on a surface of the bed can cause a problem in printing.**
  Make sure there is nothing left on the bed before usage.

1.2   Improving Printing Quality

1 Nozzle, Bed temperature

Depending on the material (PLA, ABS etc.), optimum temperature for the nozzle and bed can be different. Environmental factors (temperature, humidity) can affect the quality of the printed product.

There is no absolute value for optimum temperature. Testing various temperatures and finding the optimum temperature are needed.

Temperature options can be changed in the 3DWOX Desktop slicer.

| Material	Appropriate nozzle temperature	Appropriate bed temperature
PLA	180 °C ~ 220 °C	50 °C ~ 60 °C
ABS	210 °C ~ 240 °C	Above 80 °C
FLEXIBLE	235 °C ~ 250 °C	50 °C ~ 60 °C

2 Support

For higher printing quality, minimize the use of supports.

However, shapes that are located in midair needs a support. If it's the case, control the distance so it can easily separate.

2. When Printer Cannot be Turned On

1 Open the Front door shown below and turn the belt counter-clockwis.

2 After the bed is lowered, remove printed output and turn the power on.
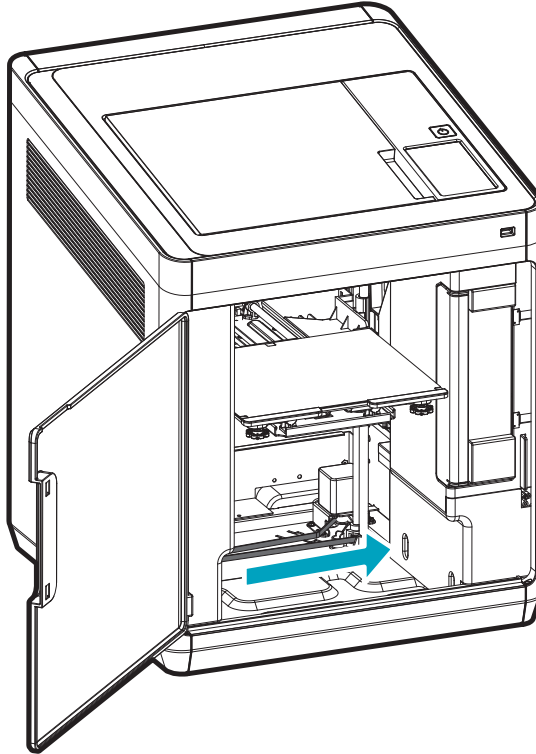
3. If problems persist

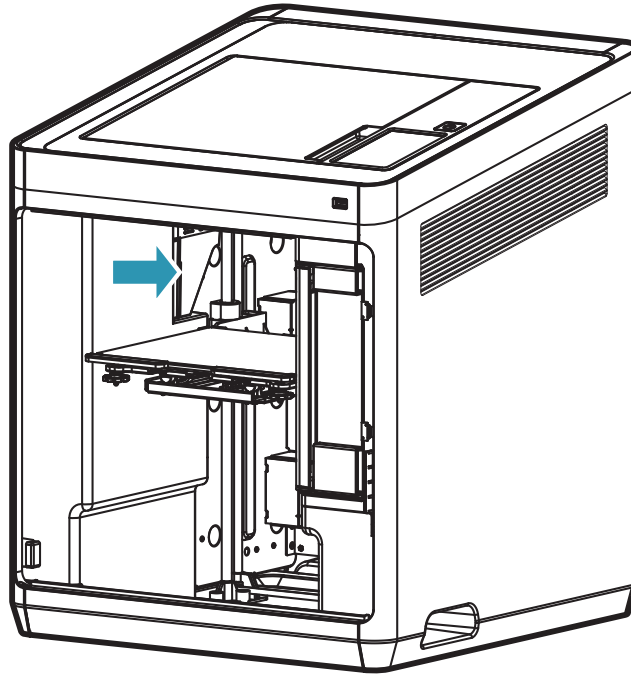1 Please visit http://3dprinter.sindoh.com.

1X Series
USER MANUAL

Maintenance

5

1. Machine Cleaning

1.1 Cleaning Case Maintenance

1 On the LCD, if a message requesting for the cleaning of the cleaning case pops up, detach the cleaning case and clean all the filament residue inside the case.

– If in need for further cleaning, on the menu, under settings, select cleaning case. The cleaning case can be detached.

1.2 Printer Interior Cleaning

Over time, there will be a build up of filament residue within the printer.
If the residue goes into conveyor belt or fan wings, it can cause printer malfunction.
Please clean the inside of the printer regularly or right after a print job.

1.3 Periodical Inspection

Oil/Grease Inspection

During manufacturing grease/oil is applied to the gears.
After a period of time, grease and oil can dry and cause printer noises during operation.
At least once a month inspect the condition of grease and oil.
Especially, If printer begins to make noises during operation, immediately check if oil and grease are applied properly. If necessary contact service center for inspection.

1.4 Flexible bed and Nozzle Cleaning

If there are filament residue or foreign matter on the exposed surface of the metal on the bed or on the end of the nozzle tip, Bed leveling may not work properly and the output quality may be affected due to foreign matter.
Regularly clean the metal exposed surface of the bed and the tip of nozzle.

1.5 Cleaning the inside of the Nozzle

The leftover in the nozzle interferes with filaments transfer. This interference can cause problems with printing and filament loading.

The leftover makes the printing filament uneven or clogs the nozzle.

Once melted, the filament can have different properties from the original.

If the leftover in the nozzle is repeatedly heated / cooled, the properties will be changed.

The changed leftover is harder to pull out, and easily stacked in the nozzle.

Therefore, it is recommended to clean the nozzle regularly if you want to use nozzle for a long time.

Nozzle cleaning is recommended when replacing it to another material of filament. This is because each material has different properties.
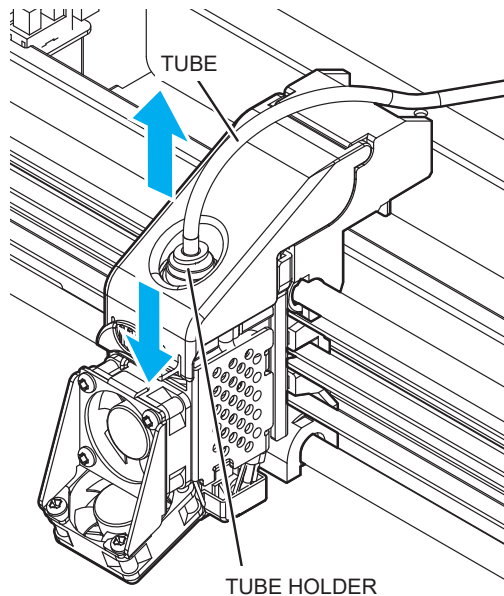
Especially, be sure to clean the nozzle before and after using flexible material.

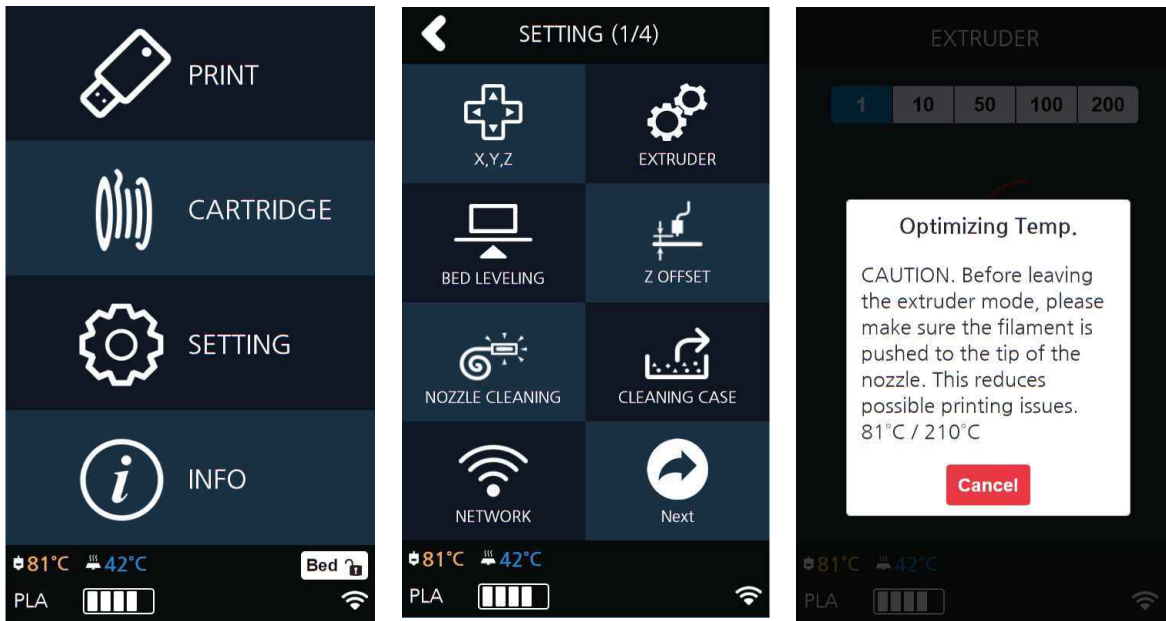Please clean the nozzle as the following instruction.
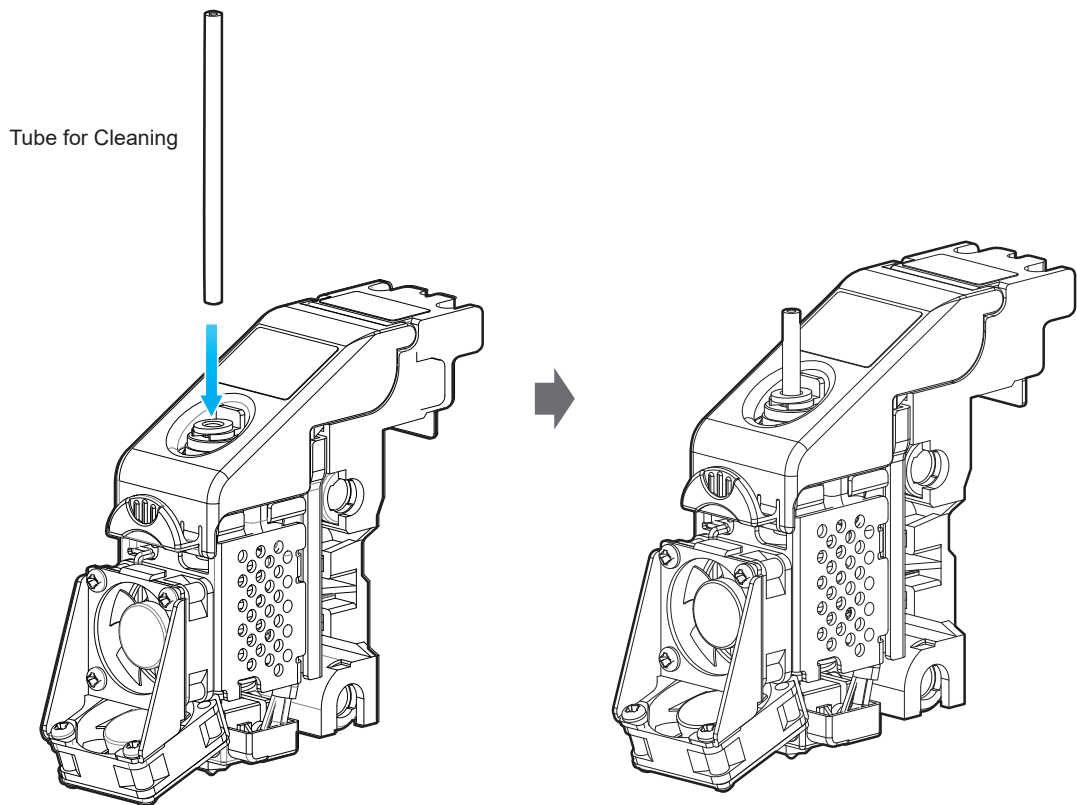
1 Remove the snap ring from the nozzle.

SNAP-RING
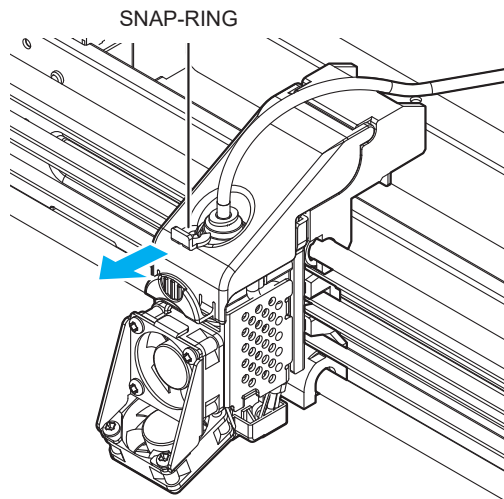
2 Remove the tube from the nozzle.

TUBE

TUBE HOLDER

3 Press **[Setting] - [Extruder]** to enter Extruder mode.

| PRINT	SETTING (1/4)	EXTRUDER

4 After positioning the nozzle in the center, insert the enclosed Tube for Cleaning into the nozzle.
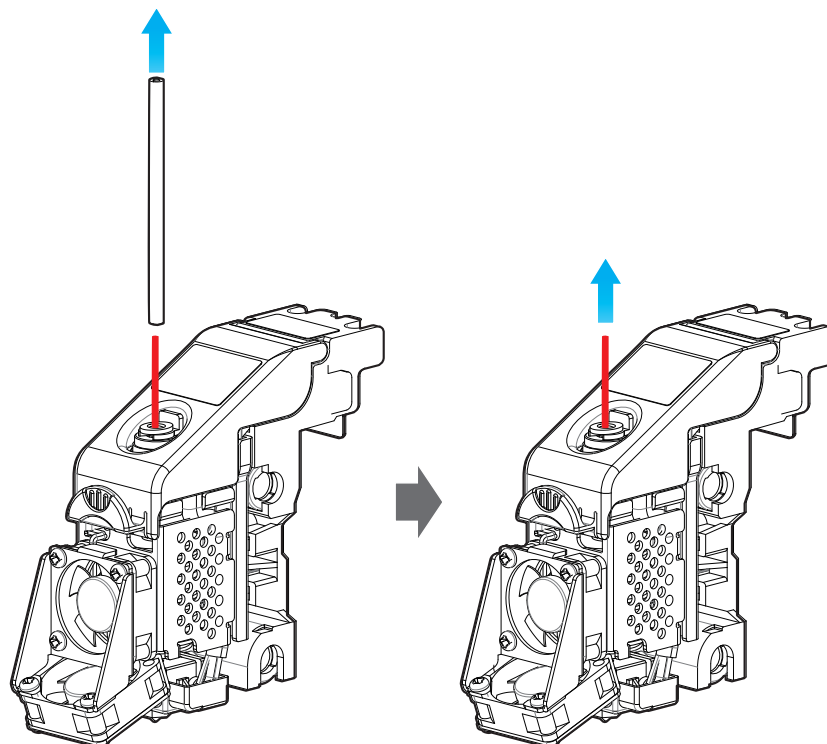
Tube for Cleaning

5 After reaching the target temperature of the extruder mode and the UI screen appears as below, insert the **PLA filament** into the tube and let it out through the nozzle.

📝 **Note**

– White PLA filament is recommended for nozzle cleaning. It is easy to see that contaminant come out from the nozzle. The properties of the material are slightly different for each filament color.
Using non-white PLA filaments can cause filaments to break when pulling out the filaments.
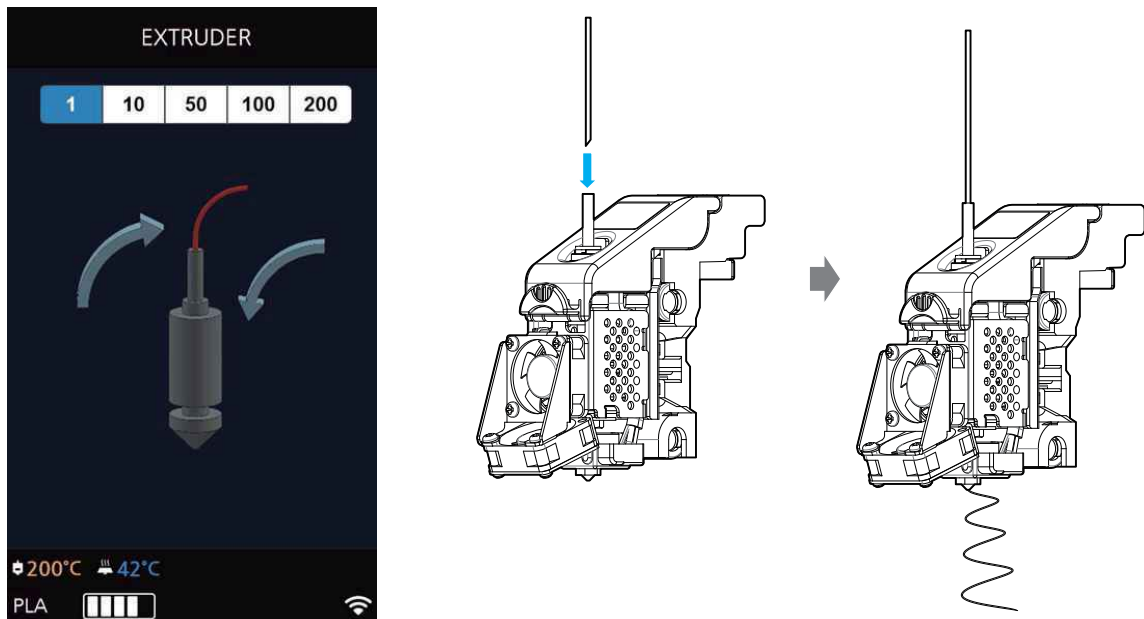
6 Remove the tube and pull out the PLA filament.

7 Push the tube again
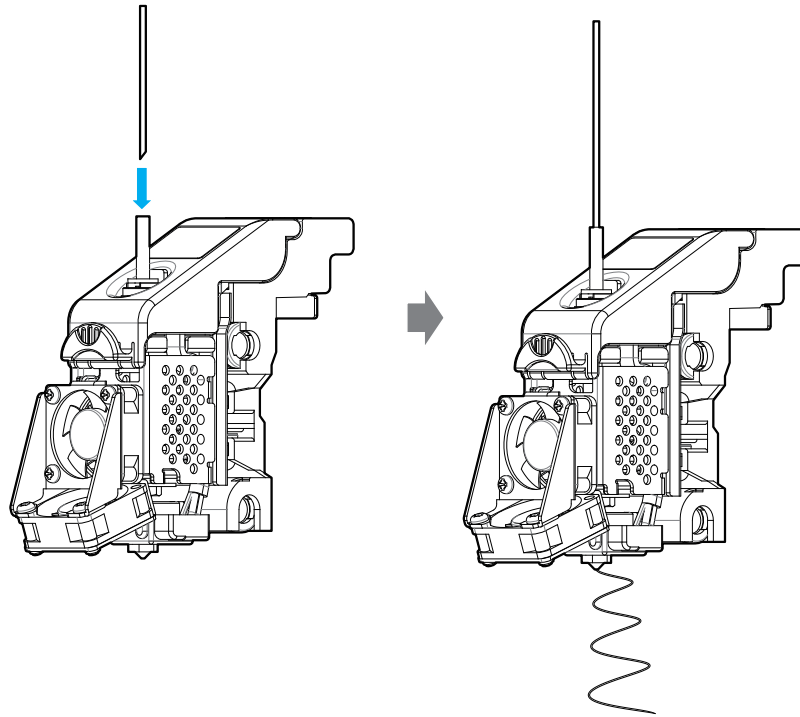
Tube for Cleaning
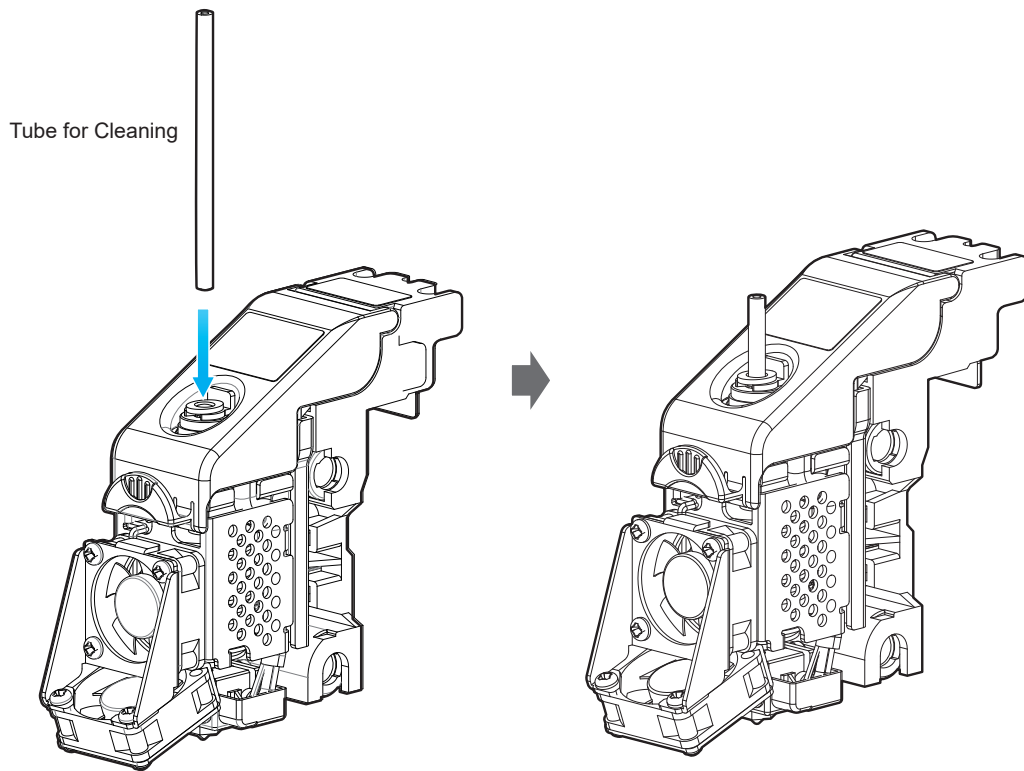
8 When entering the extruder mode and reaching the target temperature, push the nozzle cleaning tool into the tube to allow internal contaminants to get away.

EXTRUDER

| 1 | 10 | 50 | 100 | 200 |

200°C 42°C

PLA
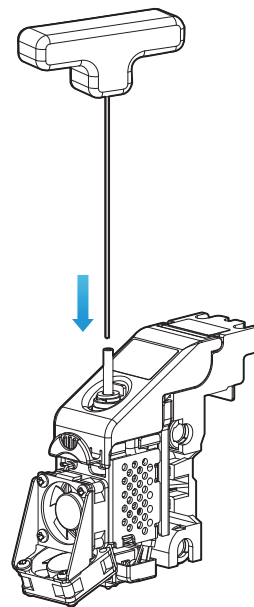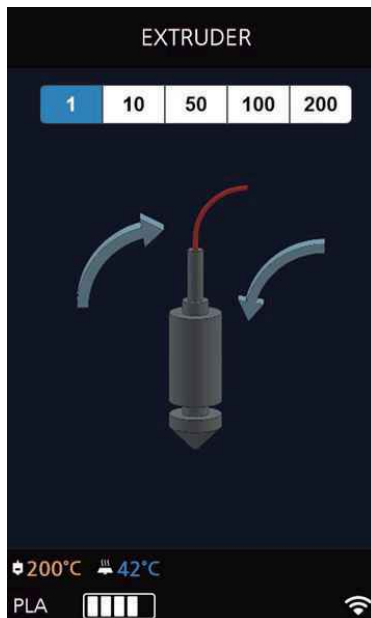
9 After removing the nozzle cleaner, push the PLA filament into the tube and let it out through the nozzle.

10 Press the home button in the UI to lower the temperature of the nozzle. Slowly push the PLA filament until the nozzle temperature is 180 °C.

11 If the nozzle temperature is between 80 ~ 90 ° C, remove the tube and pull out the PLA filament.
(If the PLA filament is disconnected inside, retry extruder mode and repeat the each procedure from step 5.)
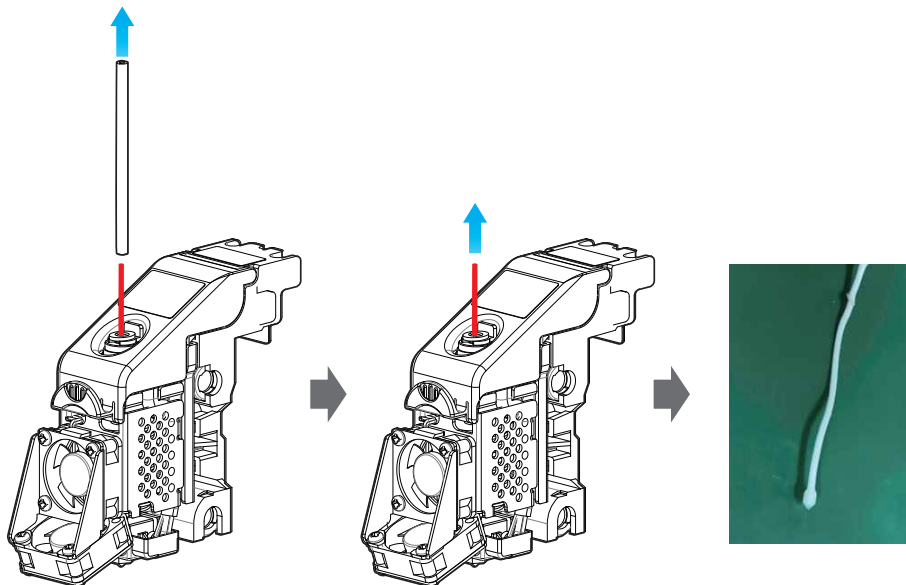
12 Repeat from step 3 until the filaments are free of contaminants as shown below.

If cleaned filament comes out with no contaminants as shown in the figure on the left below, the nozzle cleaning is complete.
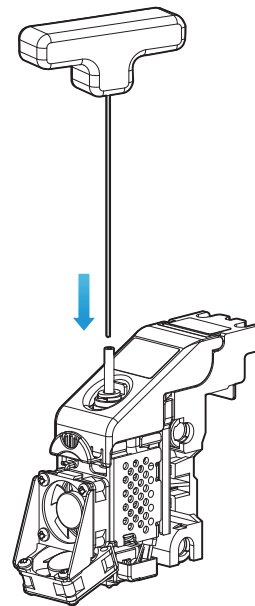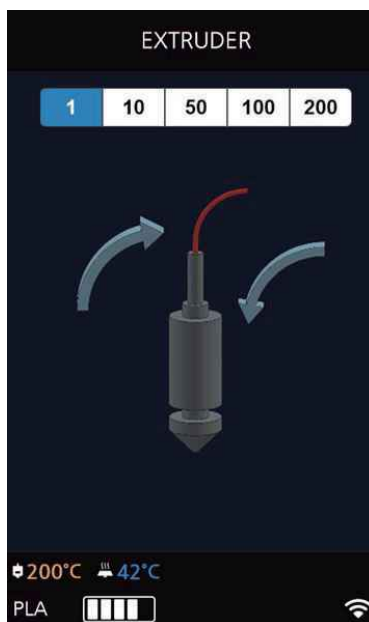

Cleaned Filament

Contaminated Filament

USING NOZZLE CLEAN TOOL

If the filament does not come out of the nozzle well in step 5, proceed as follows.

Once you have completed the steps below, proceed to step 5 again.

A. Using Nozzle Cleaner

1 When the UI shown below is displayed, insert the nozzle cleaner into the nozzle tube.

2 Slowly turn left and right while pushing the nozzle cleaner inside the nozzle so that the inside of the nozzle can come out.
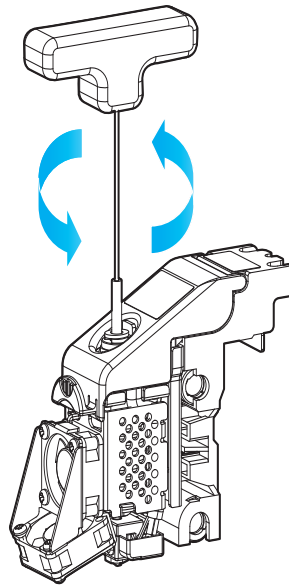
> ⚠ **Caution**
>
>   – **When you pull out the filament, if you can not pull it out well, please heat the nozzle after removing it.**

B. Using Nozzle Spring Pin

If the filament does not come out of the nozzle even though the nozzle cleaner is used, use the nozzle spring pin to drill the nozzle inlet.
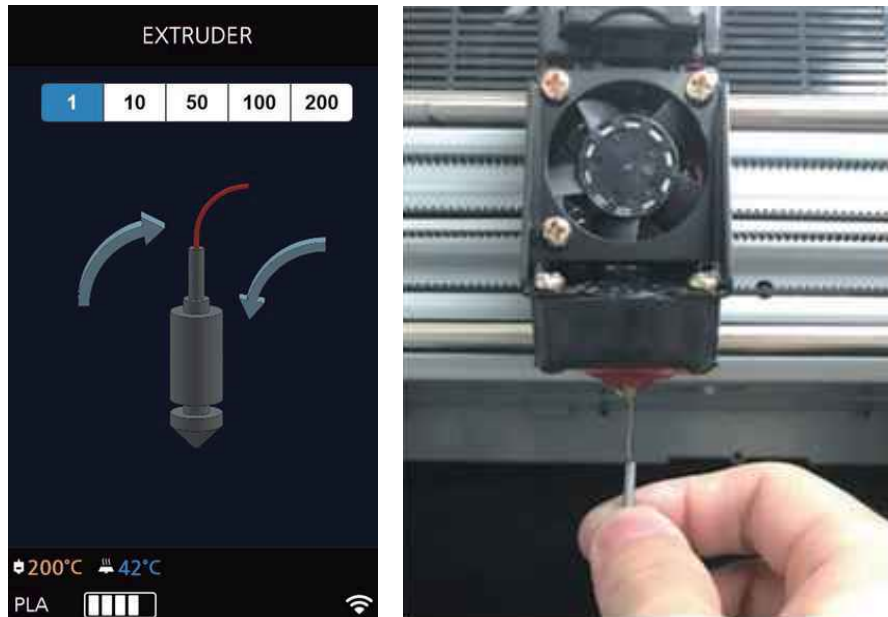
When the temperature of the nozzle is raised and the UI as shown below is displayed, insert the nozzle spring pin at the nozzle inlet side and turn it to the left and right to drill it.
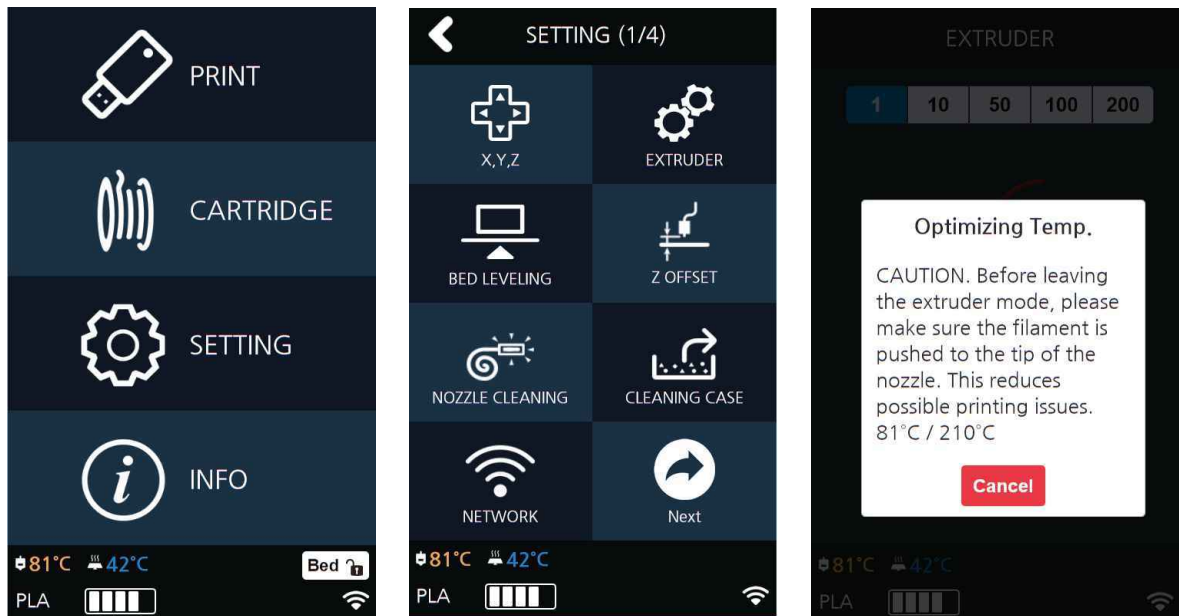

> ⚠ **Caution**
>
> – **Be careful. It may cause burns.**
> – **The tip of the nozzle may be hot. Please wear it with heat-resistant gloves.**

1.6   NOZZLE TIP CLEANING

1 Press **[Setting]-[Extruder]** to enter the Extruder mode.

2 After reaching the target temperature in the Extruder mode, the UI screen appears as shown below. Please move the nozzles to the center.
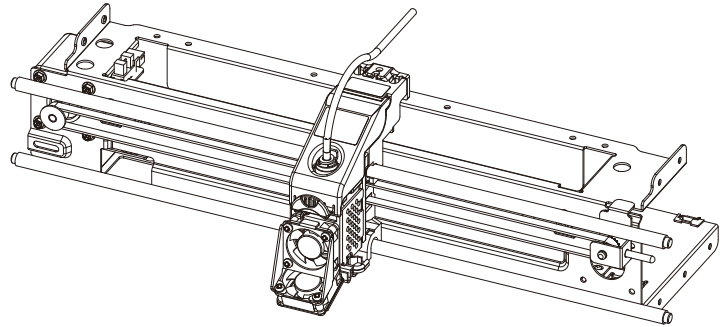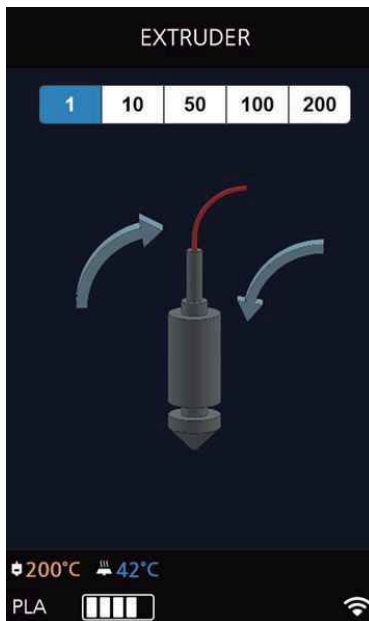
3 Wipe the tip of the nozzle with cotton or leather cloth in the direction shown below.
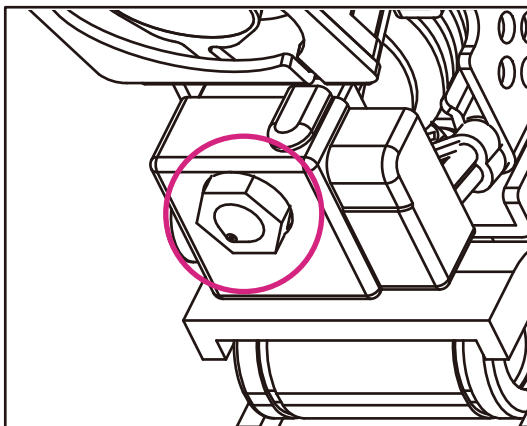
⚠ **Caution**

– **To prevent burns, wipe the nozzle tip by folding the cloth several times.**
– **Be careful not to damage the silicone adhesive between the nozzle and the silicon cap.**

2. Error Message and Solutions

| Message	Description	What To Do
Booting **Please wait until booting is complete.**	Message means on the first boot user must wait until the booting is finished.	Once the boot up process is over and machine is ready, this message disappears automatically.
EC 301, 302, 303, 304, 305, 306, 307, 308, 318, 351, 353, 355	There is a problem with the nozzle temperature sensor or heater	If the problem persists after rebooting the printer, request for A/S.
EC 314 **Please Reboot Machine.**	There is a problem with the current flow leveling.	Check the tip of the nozzle for any debris or foreign substance, and the bed surface for any foreign substance, and remove any substance that you may find. Reboot the device and level it or request for A/S.
EC321 **Please Reboot Machine.**	There is a problem with the output cooling fan.	Check if any foreign substance hinders the operation of the fan, and remove any foreign substance that you may find. If the problem persists after rebooting the printer, request for A/S.
EC322 **Please Reboot Machine.**	There is a problem with the output cooling fan.	Check if any foreign substance hinders the operation of the fan, and remove any foreign substance that you may find. If the problem persists after rebooting the printer, request for A/S.
EC 351, 353, 354, 355, and 356	There is a problem with the bed temperature sensor or heater.	If the problem persists after rebooting the printer, request for A/S.
EC 357, 358	There is a problem in the power supply of the bed heater or the CTL board of the heater.	If the problem persists after rebooting the printer, request for A/S.
EC 391, 392, 393, 394	Cooling Fan Errors	Contact us for A/S if the errors still occur after rebooting the printer.
EC 407, 408, 409	G-Code File Error	If you press [OK] button, the alert pop-up will be closed.
EC 502, 503, 504, 505, and 506	The X, Y, or Z axis motor has a problem; that is why it cannot move to the home position.	Check the bed and the nozzle for any foreign substance.
Notification 401, 402	Filament is not transferred properly.	Follow the directions listed in the "3.5 Solution for EC 401" section.
Filament End **Not enough filament.** **Notification 405, 406**	Message appears when there is not enough filament in cartridge.	Following the instructions on the LCD, first clean any filament debris, then install and load a new cartridge.
Notification 411, 412, 413 and 414	The filament was not loaded properly.	Remove the cartridge according to the UI instructions, and then remove the filament.
Notification 422, 423, 424, 425	The filament was not unloaded properly.	Remove the cartridge according to the UI instructions, and then remove the filament.

Message	Description	What To Do
Filament Break **Filament break has been detected. Please remove.**	There remain some filament but it's cut in the middle.	Following the instructions on the LCD, first clean any filament debris, then install and load a new cartridge.
Cartridge is already unloaded.	Filament is unloaded already and the unload button was pushed again.	Automatically return to normal state.
Notification 431	The printer does not recognize the cartridge's smart chip.	Check if the cartridge has a smart chip, and re-install it.
Notification 432	The printer recognizes the filament but not the cartridge.	Press the [OK] button to unload it, and then re-install it.
Notification 433	Message will appear if there are more than 5% difference between the cartridge quantity and recorded usage levels.	Replace Cartridge.
Notification 434, 435	The filament has already been consumed.	Replace the smart chip. (Check if the smart chip was replaced with the filament.)
Notification 438, 439, 473	Cartridge Smartchip Error	Smartchip Replacement Required. (Check if the smartchip was replaced as replacing the filament.)
Cartridge is already loaded. **Notification 441**	Filament is loaded already and the load button was pushed again.	Automatically return to normal state.
Notification 443	This error occurs if a cartridge not inserted when printing starts.	Start printing after loading the cartridge.
Notification 447	This error occurs if a newly loaded filament material differs from the previous printing filament material.	Insert the same filament material type with the one previously used into the cartridge.
Notification 461 and 462	The printer does not recognize the extruder's sensor of pressurization controller.	'Refer to the "Cautions for Using the Device" section to check the state of the extruder located at the back of the device.
Notification 471	Loading was not confirmed after booting.	Pressing [OK] displays EXTRUDER screen. Feed the filament to the end of Nozzle.
Notification 481	Unloading was not successful.	Press the [OK] button to restart unloading.
Notification 472, 473, 476, 482, 483, 484, 488	Remove the remaining filament because of a problem during loading/unloading.	Follow the UI instructions in removing the remaining filament. (Refer to P.5–5.)
Notification 487	Remove the remaining filament because of a problem during loading.	Remove any filament located outside of the cartridge. (Refer to the label on the cartridge.)

3. Problems and Solutions

3.1 If filament does not come out of the nozzle

Follow the on-screen instructions and start the auto recovery process. After the recovery process if problem persists follow the below steps.

1 Initiate cartridge unlock. Remove the cartridge from the printer. Use the extruder jog mode to remove the filament. Cut the removed filament, (Use below image as reference) re-install the cartridge and run LOAD.
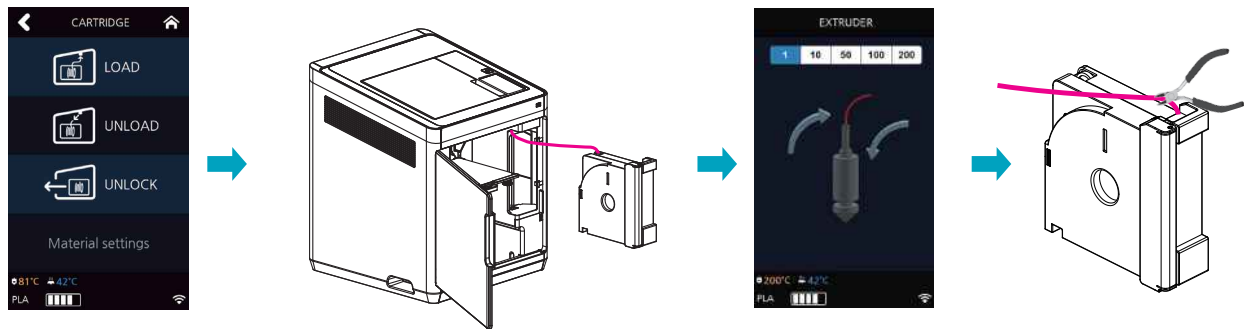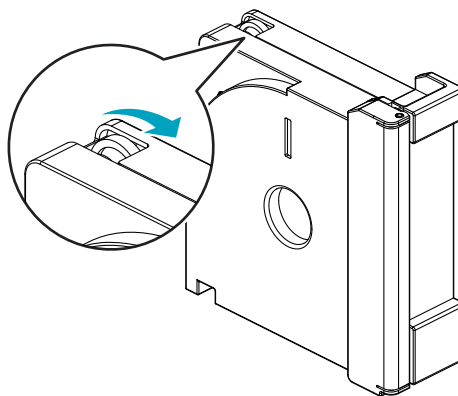

✎ **Note** **Cutting Filament Tip**

– Cut the filament in the way the cut end is sharp as shown below. It makes the filament run through easier.
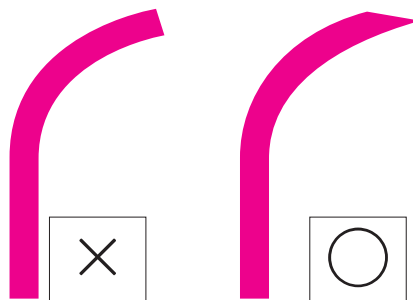
– After unloading, turn the cartridge gears for the filament to come out, cut the dented part (approx 50~60cm) this makes the LOAD easier.

3.2 In Cases where Filament is Cut Between the Extruder and Nozzle

1 Remove the Snap-Ring on the fitting in the nozzle and pull out the tube.

→ Use Extruder mode and move the filament towards the nozzle to push out the cut filament.

→ After removing all cut pieces of filament, insert the tube into the nozzle and attach the snap ring.

* Push the tube in until the tube under the black indicator cannot be seen.
After attaching the Snap-Ring, gently push the tube in (Approx 1.5mm)

→ Use Extruder mode to transfer the filament towards the nozzle and check that filament is coming out of the end of the nozzle to make sure it is working properly.
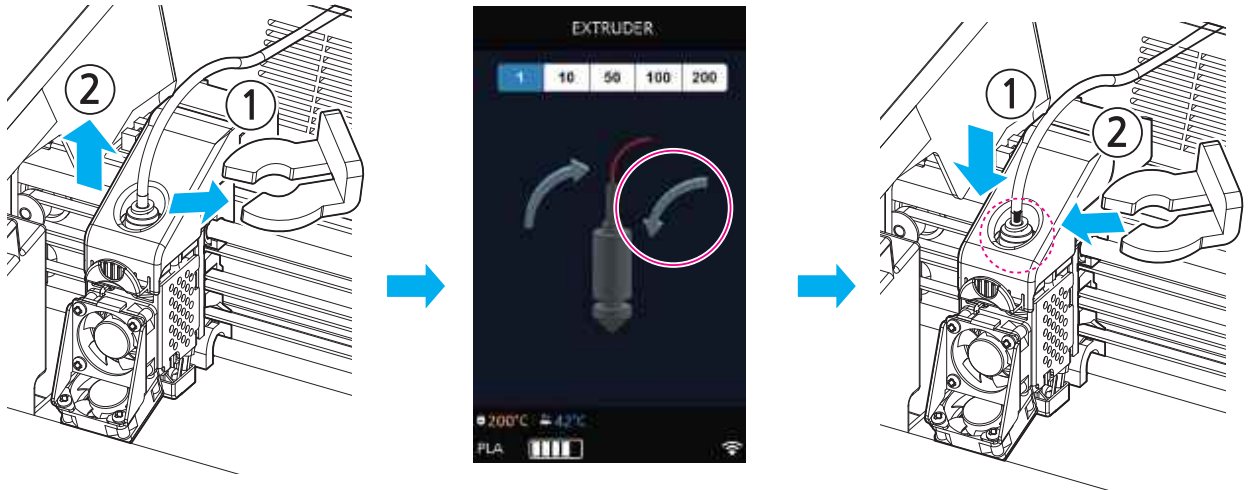
3.3 When Filament End is Visible Outside the Cartridge After Unloading

1 Pull out the filament approximately 50~60cm, and cut the filament. (Reference to P. 5-12 Cutting Filament Tip)

2 Like the image below turn the gears and the filament will retrieve back to cartridge. Insert until filament is invisible, reinstall the cartridge into the printer and activate LOAD.
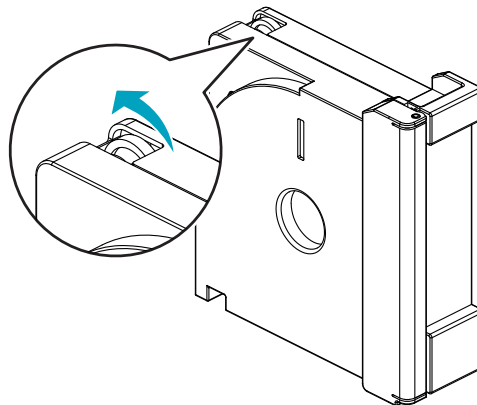
3.4   If the bed leveling does not operate normally

1 Make sure the bed is not tilted at an angle. According to the bed installation method (Chapter 4. Printed Output 2 Check) adjust to match the base.

2 Check the filament residue or foreign matter on the metal exposed surface of the bed and remove it.
- Clean the area 4 or 5 times with 800 grit sandpaper or so.

3 Check the filament residue or foreign matter on the Nozzle tip and remove with a cleaning tool.
- After lowering the bed, enther the extrude mode and wipe it with cotion or leather cloth.
- Since the tip of the nozzle is very hot, fold the cloth and use it to avoid getting burns.
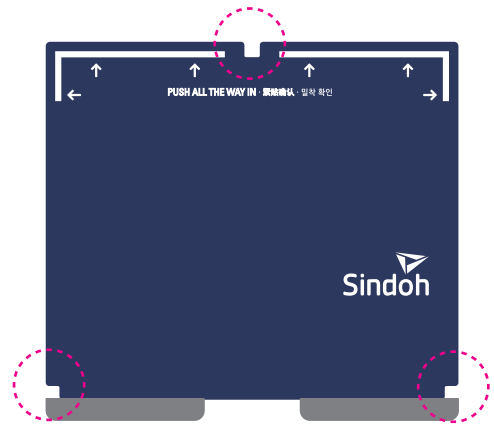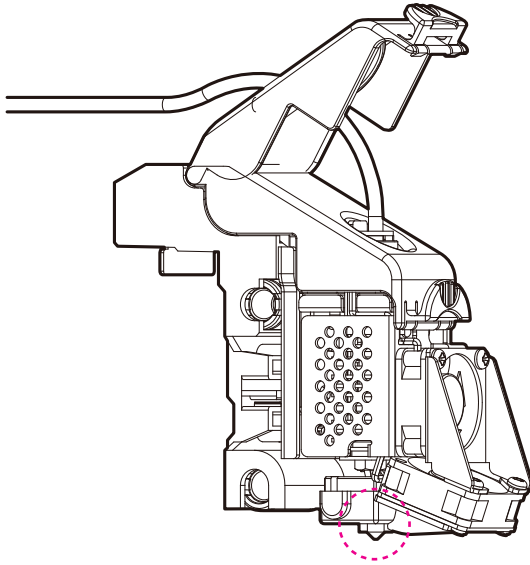
3.5   Solution for Notification 401

The Notification 401 error code occurs if the filament was not correctly transferred.
There are many possible reasons why the filament was not properly transferred. To solve this issue, follow the instructions below.

1 Press the **[OK]** button to move the printing screen. Then, press the [Function] button located on the top of the screen.
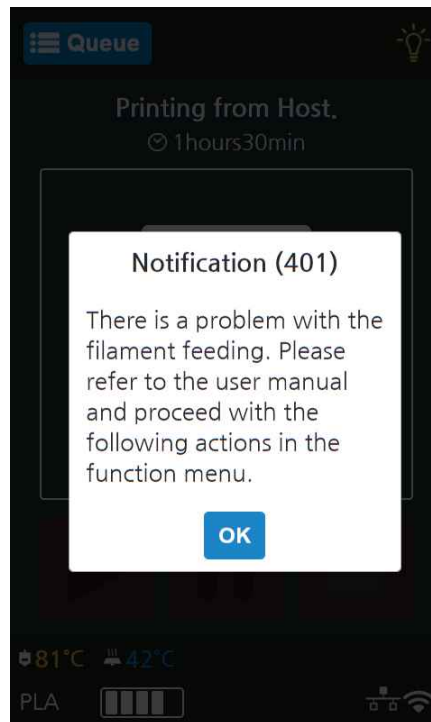

2 Select the cartridge and unloads it.
→ Remove the cartridge from the printer. → Open the cartridge and check if the filament is tangled.
→ If the filament is tangled, untangle it and re-insert the cartridge. Cut the end of the filament.
→ Re-insert the cartridge into the printer. → Load it.
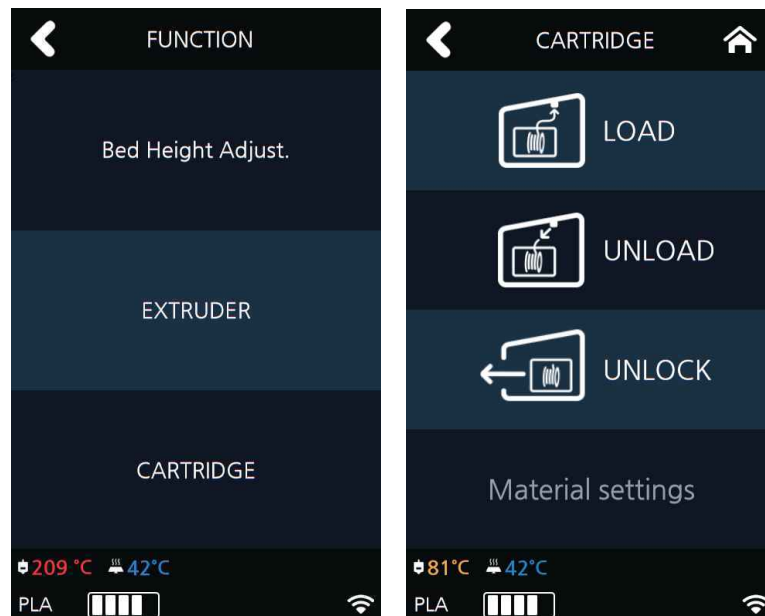
3 Select the [Extruder] menu.

→ Wait until the nozzle's temperature reaches your target temperature. → Operate the extruder to insert the filament by 50 mm. → Check if the filament was inserted and injected through the nozzle.

(If the filament was not injected, repeat step 2 for two to three times. If this does not work, please contact our customer service hotline, and submit a video or image of this issue to a customer service representative.)
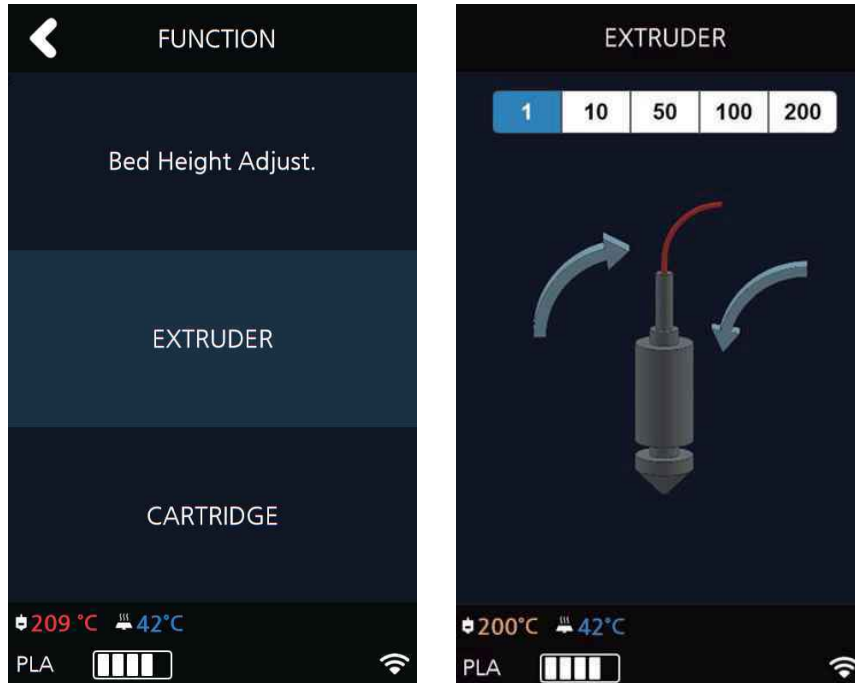
4 A persistent Notification 401 error code may be caused by an insufficient space between the nozzle and the bed, which causes the filament not to be correctly transferred.

In such a case, select the **[Bed Height Adjustment]** menu to change the height of the bed, and create an ample space between the nozzle and the bed.

※ You can also cancel printing and re-execute **"Setting" – "Bed Leveling"** to set the correct space between the nozzle and the bed.
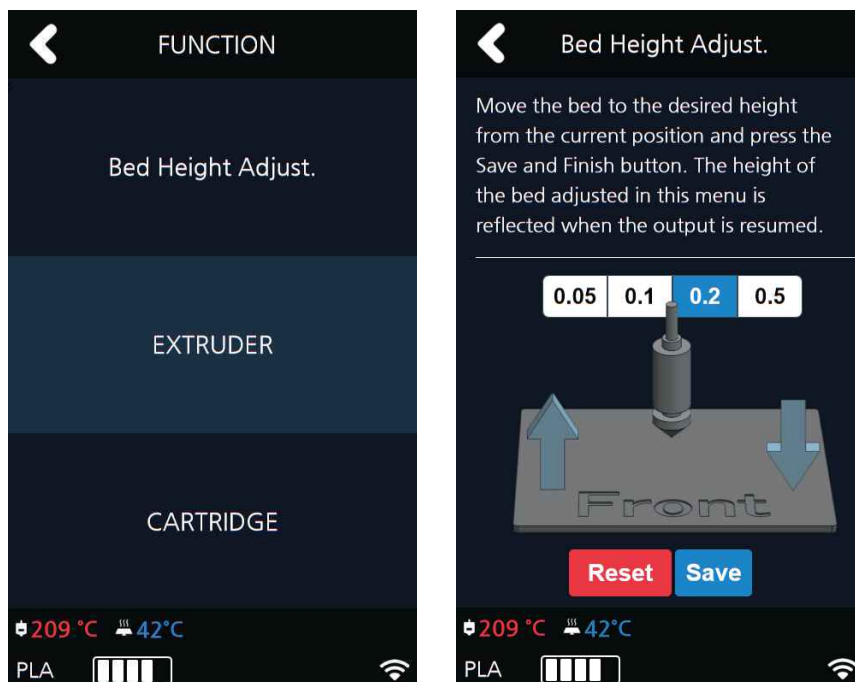
5 Press the **[▶]** button to continue printing.

4. Replenishing Consumables

4.1 Bed Replacement

Removing Flexible Bed

🔍 **Reference**

– Please refer to P. 4-2 "1.1 Detaching Printed Output".

Installing Flexible Bed

🔍 **Reference**

– Please refer to P. 4-2 "1.1 Detaching Printed Output".

✎ **Note**

– Small Scratches on the bed made during normal usage will not affect the print quality but if the bed sheet is ripped off or contaminated, the printed output may not adhere on the bed properly and should consider exchanging the bed to a new one.
– Bed sheet is a consumable.

4.2 Filter Replacement

⚠ **Caution**

– **Turn the machine power off before starting the replacement.**

✎ **Note**

– It is recommended to exchange filter and nozzle together.
– Depending on environment, replacement interval may differ. If you smell odor from the filter, please replace the filter.

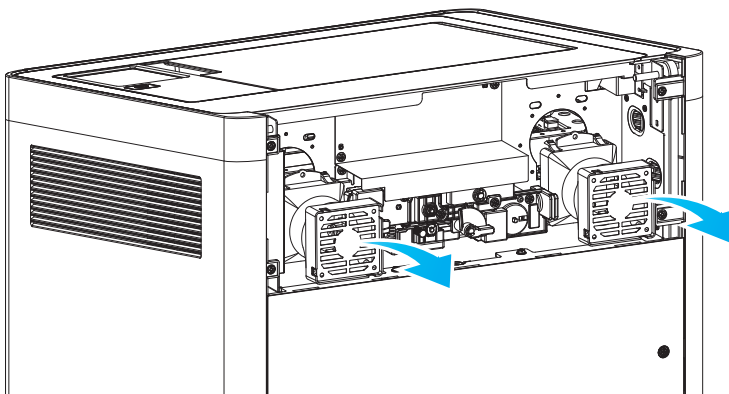**1** Remove the cover by pulling it up.
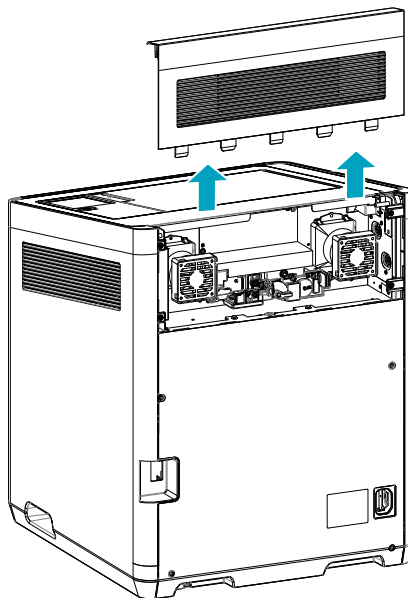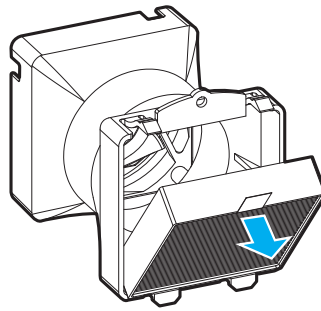
2 Press the hook to remove the duct.
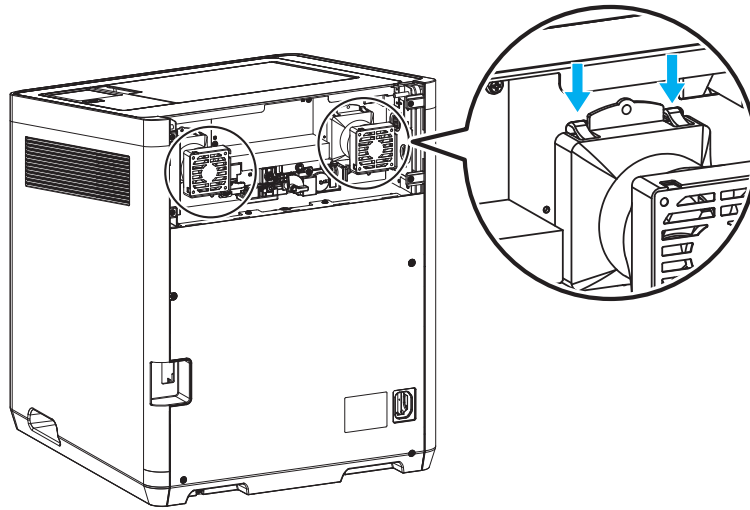
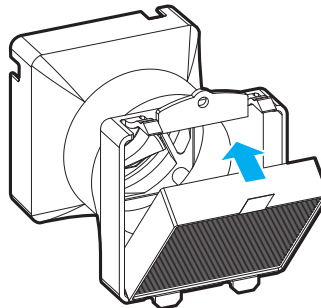**3** Rotate and lower the duct to the indicated direction.
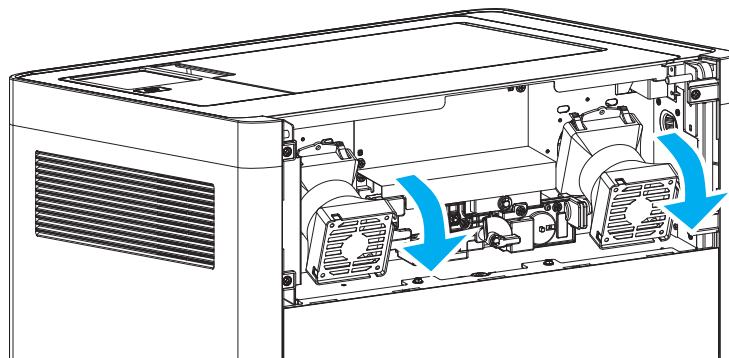
4 Release the hook, and remove the duct from the device.

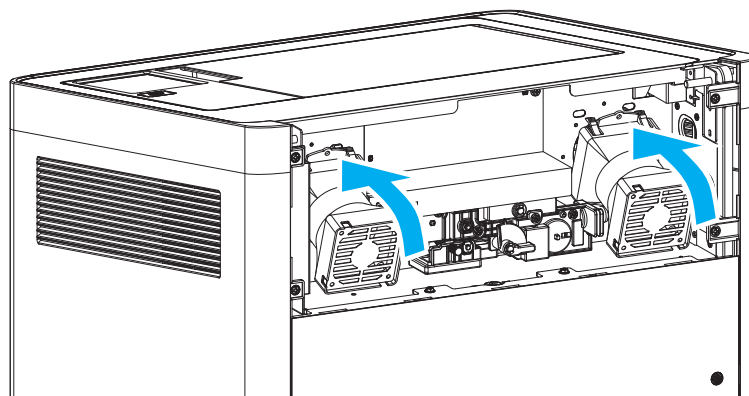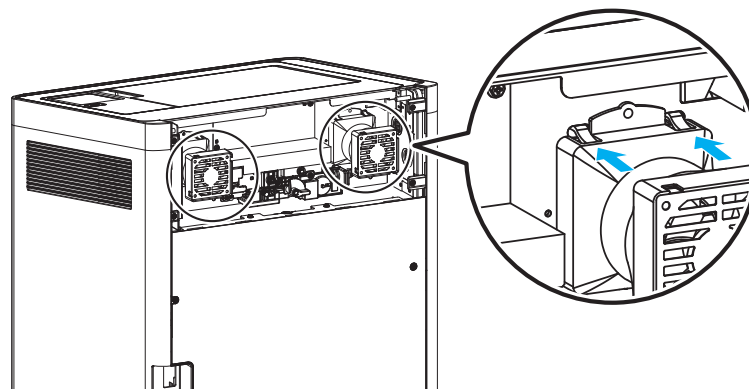**5** Remove the consumed filter from the duct.

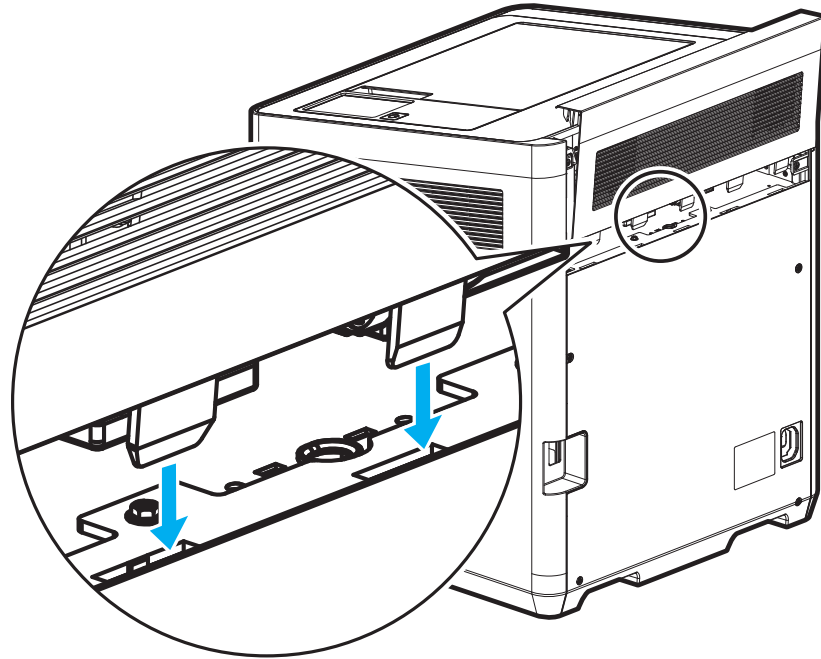**6** Install a new filter on the duct as shown in the image.

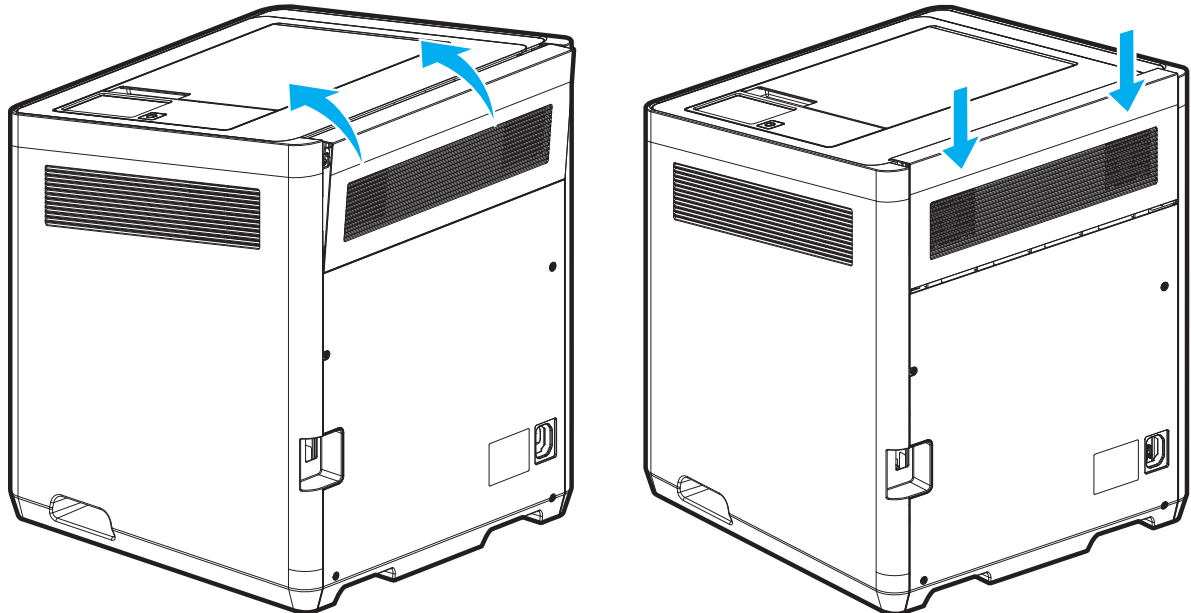**7** Connect the hook of the duct as shown in the image.

8 Fasten the duct to the device by pressing the hook.

9 Insert the extruder cover into the groove as shown below.

10 Assemble the extruder cover to the body as shown below.

4.3 Cartridge Replacement

Replace cartridge when a cartridge is used up or a different color/material is needed.

1 Initiate Cartridge Unload.

> 🔍 **Reference**
>
> – For details on cartridge unload, please refer to P. 2-5 "UNLOAD"

2 Please switch the cartridge first and then load.

> 🔍 **Reference**
>
> – For details on cartridge load, please refer to P. 2-3 "LOAD"

> ✎ **Note**
>
> – When replaced with a different color, the previously used color may be seen in the beginning of printing.
> If the color is the only difference from the previous filament, it doesn't affect the printing quality.
> Difference in material, however, may affect the printing quality.
> To fix problem, after changing cartridge, please run nozzle cleaning (Refer to P. 2-19 "NOZZLE CLEANING")
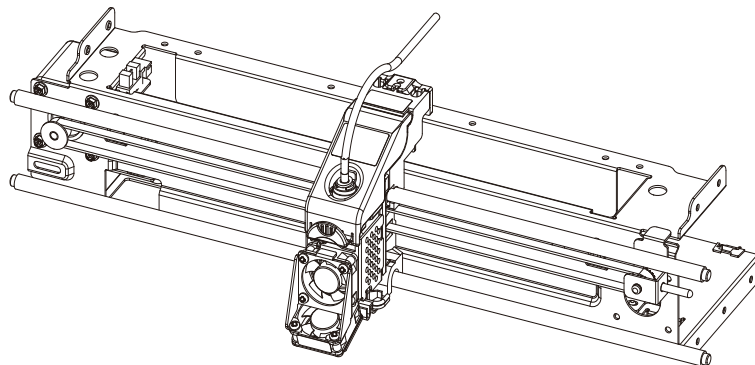> before printing.

4.4 Nozzle Replacement

Methods of Detaching Nozzle

In the UI, press **[Cartridge] – [LOAD]**, and check if the nozzle is below 30°C on the liquid crystal
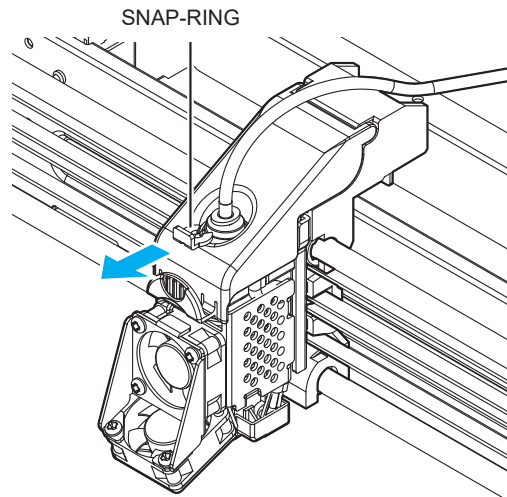display (LCD).Turn off the power, and remove the power cord from the body before starting work.

> ⚠ **Caution**
>
> – **If the temperature of the nozzle is above 30°C, it may cause burns to a part of your body during replacement.**
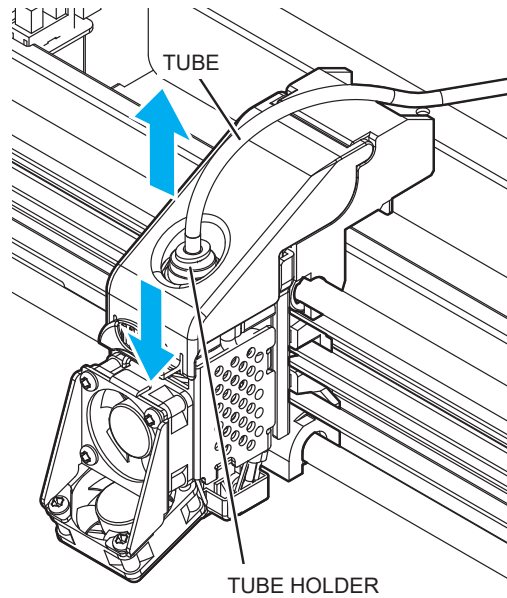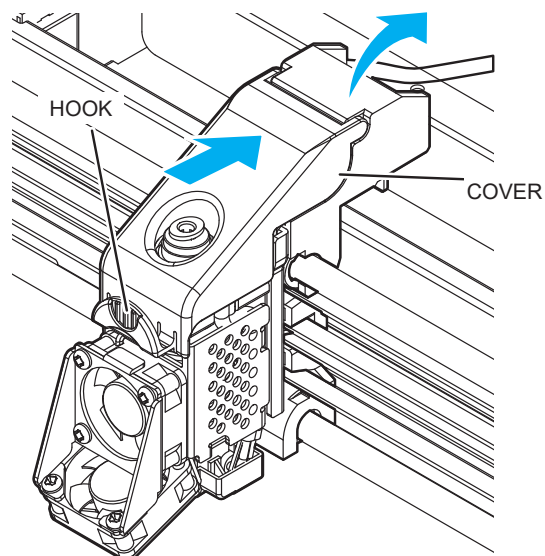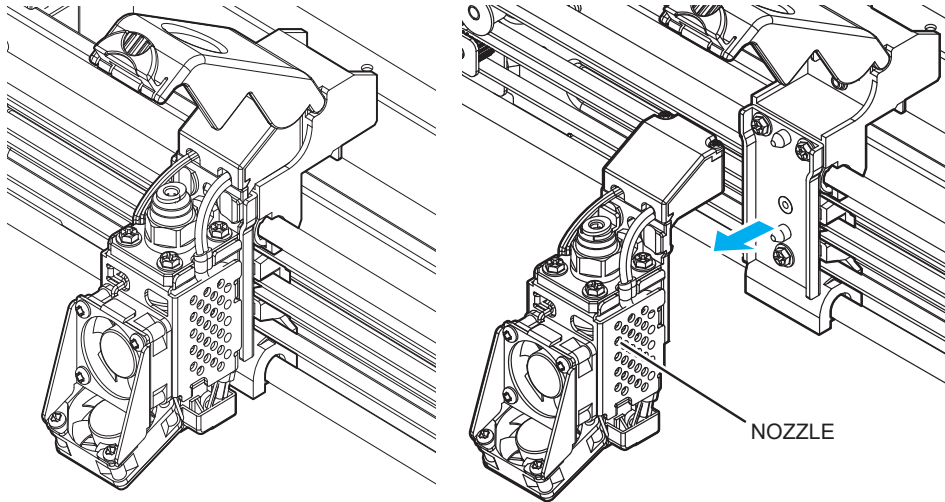
1 Remove Snap-Ring.

SNAP-RING

2 Press the tube holder and pull the tube to remove.

TUBE

TUBE HOLDER

3 Push the top of the front handle, and lift it up to open the cover.

HOOK

COVER

4 Pull the nozzle component to detach.

NOZZLE

Assembling the Nozzle

Initiate process ONLY after power of machine is turned OFF, and after all power cables are disconnected.
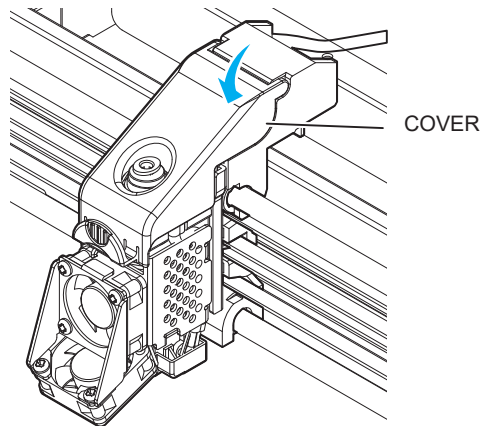
1 With the cover lifted up attach the nozzle.
The magnet of the nozzle attaches to the surface, but check if it is fully attached by shaking it. Also, inspectthe spring pin and see if it is connected properly.

📝 **Note**

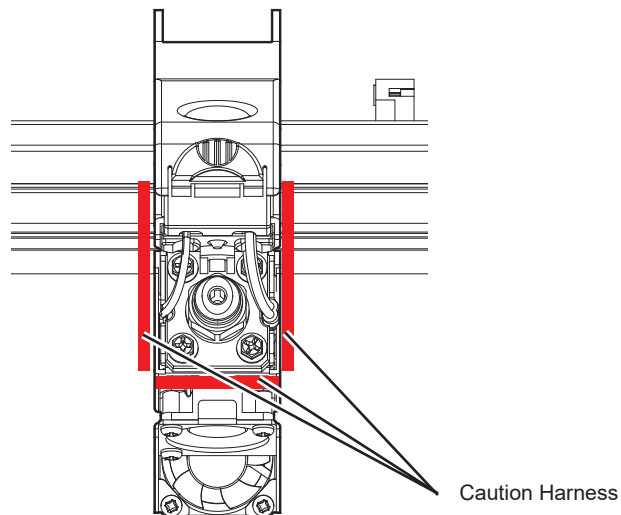– If the spring pin is not connected properly, the nozzle may malfunction.

NOZZLE
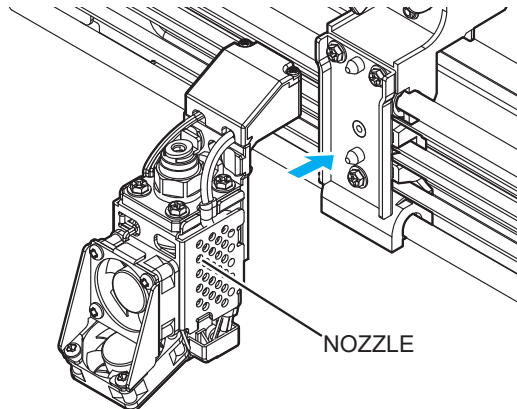
2 Push the cover down and make sure to hear the clicking sound.
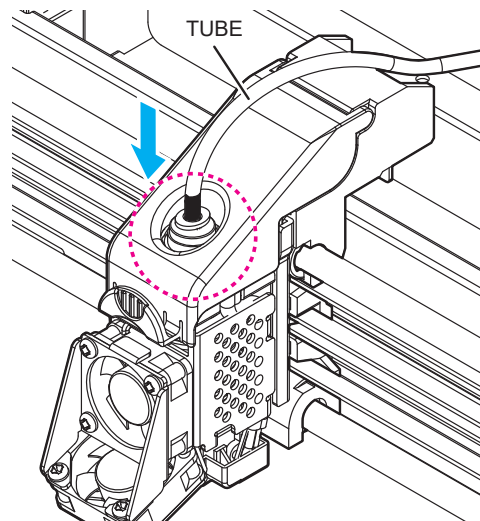
COVER

> ⚠ **Caution**
>
> – **Please be careful not to position the harness near the left, right and center section of the cover. The harness can get caught in between covers when closing.**
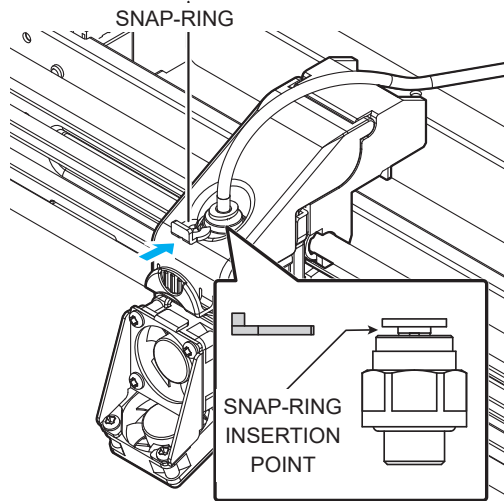
Caution Harness

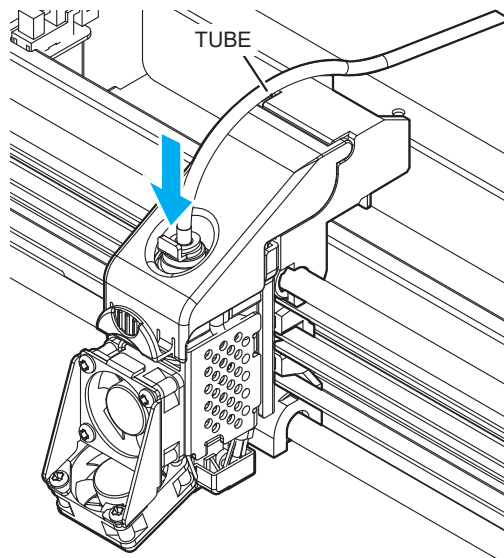**3** Insert Tube.

> ✎ **Note**
>
> – Push the tube in about 50mm until the tube under the black indicator cannot be seen.

TUBE

4 Slightly lifting the tube and insert the Snap-Ring.

Insert the Snap-Ring in between the Fitting and Holder.

SNAP-RING

SNAP-RING
INSERTION
POINT

5 Finally, push tube in all the way through.

– Approximately 1.5mm can be additionally inserted.

TUBE

6 Use the **[Cartridge] – [LOAD]** command to finish the cartridge loading process.

1X Series
USER MANUAL

Appendix

6

1. Type of Consumables (Material, Color)

PLA

Color: White, Black, Gray, Red, Yellow, Green, Blue, Pink, Purple

ABS

Color: White, Black, Gray, Red, Yellow, Green, Blue

Flexible

Color: White, Black, Yellow, Green, Red, Orange

Notice to Users

Type	Notice
• **Class A equipment (commercial telecast equipment)**	This equipment is a Class A EMC (electromagnetic compatible) equipment, and should not be used in household locations.
• **Class B equipment (domestic telecast equipment)**	This equipment is a Class B EMC (electromagnetic compatible) equipment, for household purposes, available to be used in any location.

※ This Product is a Class A equipment.

Sindoh
www.sindoh.com