

Industrial Grade Jewelry Wax Pattern 3D Printer

PL6300 User Guide



Note: Please read this User Guide carefully before using the product. Please use this product correctly based on a thorough understanding of the content. Please keep this Guide properly for future reference.



Copyright Notice

This manual and its contents are intended solely to provide comprehensive guidance for the safe operation and proper use of this product. The intellectual property rights are owned by **Shenzhen Plempire 3D Technology Co.,Ltd.**(Hereinafter referred to as “**Plempire**”).Without the prior written authorization of **Plempire**, no part of this manual may be reproduced, distributed,modified,or provided to any third party in any form.

User Guide Scope Description

This user guide is primarily designed for the **PL6300** 3D printer. Please note that some accessories or features mentioned in this document are optional or available as upgrades, and may not be included in your specific product package. Always refer to the instructions that correspond to your exact model and configuration.

Version and Update

After firmware or software upgrades, the **Device info** page in the **PL6300App Tools** menu will update the relevant software and hardware information. To click **Tools —Device Info** to view detailed information. In the event of any discrepancy between this manual and the firmware release notes,the firmware release notes shall prevail.

Image and Parameter

The images shown in this manual are for illustrative reference only. The actual effect and features may vary due to different software or firmware versions.

Preface

Dear Customer,

Thank you for selecting the **Plempire** PL6300 Wax Pattern 3D Printer.

This manual contains complete guidance covering printer installation, setup, operation and regular maintenance for all 3D printing functions. To operate the machine safely, properly and efficiently, please read and fully comprehend this manual prior to use.

This **PL6300** User Guide elaborates on **3D** printing principles, installation, parameter setup, operation procedures and routine maintenance. The user guide consists of 9 Chapters and 3 Appendices:

- Chapter 1: Product Introduction
- Chapters 2 & 3: Preparation before printing & Printing Operations
- Chapter 4: Post-processing
- Chapter 5: Print Quality
- Chapter 6: Fault Codes & Troubleshooting
- Chapter 7: Regular Maintenance
- Chapter 8: Packaging and Shipping
- Chapter 9: Warranty and Service
- Appendix A: PL3D Print Software
- Appendix B: Printer Power On / Off Flowchart
- Appendix C: Standard Accessories

Please note that every printer undergoes rigorous quality testing prior to shipment. A small quantity of residual wax inside the PrintHead or slight scratches on the build plate are normal . These will not impair printer safety, nor will they affect the final printing quality.



Read Before Use

■ Safety Symbols and Definitions



Wear Gloves:

Please wear nitrile protective gloves when using Isopropanol (IPA) to clean the maintenance parts. Please wear heat-resistant gloves when touching printers' hot parts to avoid burns.



Wear Glasses:

In the case of possible material splashing during maintenance or repair, please wear protective glasses with side shields to protect the eyes.

■ Operation and Maintenance

- ✧ For reliable operation of the printer's internal precision mechanisms, perform routine maintenance regularly.
- ✧ Read all the instructions for the 3D printer. The printer is only operated by personnel who have received professional training.
- ✧ Cleaning solvents, including isopropanol and anhydrous ethanol, must be stored separately from the printer. Keep these chemicals away from direct sunlight and heat sources, and store them inside a dedicated solvent storage cabinet.
- ✧ The printer supports automatic switching between the main and auxiliary bottles. When one bottle runs empty, remove it promptly and install a new material bottle. Please do not refill empty used bottles with any other liquid materials, as this may cause printing malfunctions.
- ✧ Genuine **Plempire** official printing materials deliver the best possible printing performance for this equipment. Extensive testing has been carried out on these official materials to confirm their compatibility, safety, and stable operation, ensuring reliable and superior print quality.
- ✧ Should any abnormalities occur during operation, check the alarm information displayed in the upper-right corner of the touchscreen home page. In case of a fault, please refer to **Chapter 6** to confirm that routine maintenance has been completed. Then consult the **SOP** technical documents provided by the **Plempire** or contact the Plempire team for technical support.

Precautions

■ Printer Installation Environment

- 1. Environmental Requirements:** The printer must be installed in a clean, well-ventilated workshop. Do not place the equipment in areas prone to vibration or instability, as this can significantly compromise print accuracy. Keep the printer away from water, oil, and other liquids. Do not operate the printer during thunderstorms or typhoons.
- 2. Temperature & Humidity Standards:** Ambient temperature: Maintain between 18° C and 23° C. Relative humidity: Keep within 30% to 70%.
- 3. Space Requirements:** Printer dimensions: 1310 × 770 × 1670 mm (L × W × H). Advised minimum installation space: 3.3 m (length) × 2.7 m (width), totaling at least 8.9 m² of floor area.

■ Printer Power Distribution Specifications

- 1. Power Supply Specifications:** AC 220V, 50Hz. The connection must include Live (L), Neutral (N), and Protective Earth (PE) wires. The incoming power cable conductor cross-sectional area must be $\geq 6 \text{ mm}^2$.
- 2. Power Distribution Configuration:** Each unit must be equipped with a dedicated circuit breaker rated at $\geq 30\text{A}$, and use a 25A three-pin plug.
- 3. Supporting Equipment:** Install a 10 kVA voltage stabilizer to improve power supply stability.

■ Safety Precautions for Equipment Operation

- 1. Operator Requirements:** Do not operate the equipment under the influence of alcohol or medication. Do not touch the build plate while printing is in progress.
- 2. Component Contact Warning:** Avoid areas marked with electric shock and pinch hazard labels to prevent burns and mechanical cuts.
- 3. Emergency Handling for Molten Material Contact:** Rinse skin contaminated with molten wax with cold water immediately. If molten wax enters the eyes, flush continuously with clean water for 10 minutes and seek medical attention promptly.



Material disposal and storage

- ✧ **PL6300 Printer uses eco-friendly wax material as the printing raw material.** This wax is specially designed for jewelry wax mold casting and forming, and must not be applied to food processing, medical devices, or any other medical-related scenarios.
- ✧ Each material bottle features a product label on its side showing the production date, expiry date, batch number, manufacturer, and other relevant details. A unique material identification label is fitted to the bottle top. The printer scans this label to automatically identify the material model and check the remaining material volume inside the bottle.
- ✧ Printing materials should ideally be stored in a constant temperature environment of 18~25 °C with relative humidity ranging from 55~65%. Store the materials in a sealed, dust-proof, and dry location. Do not expose printing materials to direct strong light for an extended period, and keep them away from open flames and heat sources.

Support material label



Support material ID label



Part material label



Part material ID label



Disposal Responsibilities

- ✧ **Waste Wax Material and Scrap Wax:** Innovation 3D assumes no responsibility or obligation for the disposal of waste wax materials or scrap wax. All liability and responsibility for the compliant disposal of such materials shall be borne solely by the user. Finished wax patterns may be disposed of in accordance with the standard disposal guidelines for household wax products available on the market.
- ✧ **Waste Isopropyl Alcohol Solution:** For the disposal of waste isopropyl alcohol solution, please refer to the relevant specifications provided in the Material Safety Data Sheet (MSDS) supplied by its manufacturer.

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Use Guide



Click on the table of contents or hyperlinks within the text for quick navigation.



Search for keywords in this **PDF**.

Quick operation steps

1. Read the instructions in **Read before use**.
2. Start first print.
3. Start the print job from **PL3D PRINT** software.
4. Post-Processing (remove support material)
5. This section outlines common print quality issues and their troubleshooting procedures, along with other typical faults and recommended remedies.

Additional information

To learn more about our products, services, and related links, please visit our corporate **WeChat** Official Account, **Plempire Wiki** (**Plempire** knowledge base).





Symbol Guide



NOTE

Supplements and interprets the main content.



TIPS

This section provides operational optimization suggestions, efficiency methods, and practical operational skills to help users operate the printer with higher efficiency.



CAUTION

Adhere to operational precautions to safeguard print quality and printer performance. Improper operation may lead to unexpected faults; therefore, please always follow the standard operating procedures.



DANGER

Potential hazards exist. Failure to follow these instructions may result in printer damage or personal injury to operators. Always comply with the relevant guidelines.

Technical Support

If you experience any issues during equipment operation, please first refer to this user manual. You may also access equipment maintenance guidelines, fault diagnosis procedures and troubleshooting solutions via our official **WeChat** service account or by visiting the company website:

www.plempire.cn.

Chapter 1 Introduction

1.1 Product Overview

1.1.1 Printing principle

3D printing, also known as additive manufacturing, relies on the core principle of layer-by-layer material accumulation. The process begins with slicing, where specialized software divides a 3D digital model into horizontal layers and generates an instruction file detailing parameters like print paths and speeds. The printer then reads this file to build the object layer by layer using techniques such as Fused Deposition Modeling (FDM) or stereolithography. Finally, post-processing steps, including support removal, secondary curing, polishing, and coloring, are typically required to produce a finished part that meets specific application standards.

1.1.2 Product Overview

The **PL6300** is a **3-PrintHead** wax patterns 3D printer powered by Multiple Jets Printing (**MJP**) technology. It features high-precision piezoelectric nozzles, delivering a maximum resolution of **2900 × 2900 × 1700 DPI** and a layer height accuracy of up to 15 μm. The printer uses eco-friendly wax and boasts a large build volume of **290 × 207 × 138 mm (L × W × H)**. With a simple setup of two support wax and two structural wax bottles, it enables rapid, large-scale mold production. Thanks to its rapid prototyping capabilities and ability to create highly complex geometries with precision, 3D printing has become the mainstream tool for jewelry design and manufacturing.



1.2 Production Process

➤ Print wax pattern

3D Modeling



Edit and transfer jobs



Printing



Print completed



➤ Post-processing

Wax patterns removal



Support white wax removal



Air-dry Wax Patterns



Planting Wax tree



Casting and surface finishing



1.3 Technical Parameters

■ Product Parameters

Build volume (XYZ)	290×207×138 mm
Resolution (XYZ)	2900 × 2900 × 1700 dpi, layer thickness: 15 um
Accuracy	0.04 mm / 20 mm
File Format	STL, SLC, OBJ
Material Package	Support 3.6 kg/bottle, Build 3 kg/bottle
Machine size	1310×770×1670 mm
Machine package size	1650×1000×1850 mm
Weight	Gross weight 673 kg; Net weight 486 kg
Voltage and current	220-240 VAC, 50/60 Hz, 23A
Input / Output	220–240 VAC, 50 Hz, 10 A, Grounded socket
Max. Power / Working Power	3.5 kW / 2.1 kW
Stabilizer & UPS Rated Capacity	≥ 10 kVA
Connection method	10/100/1000 BASE-T Ethernet network interface
Operating system	Windows 10 (64-bit) / Windows 11

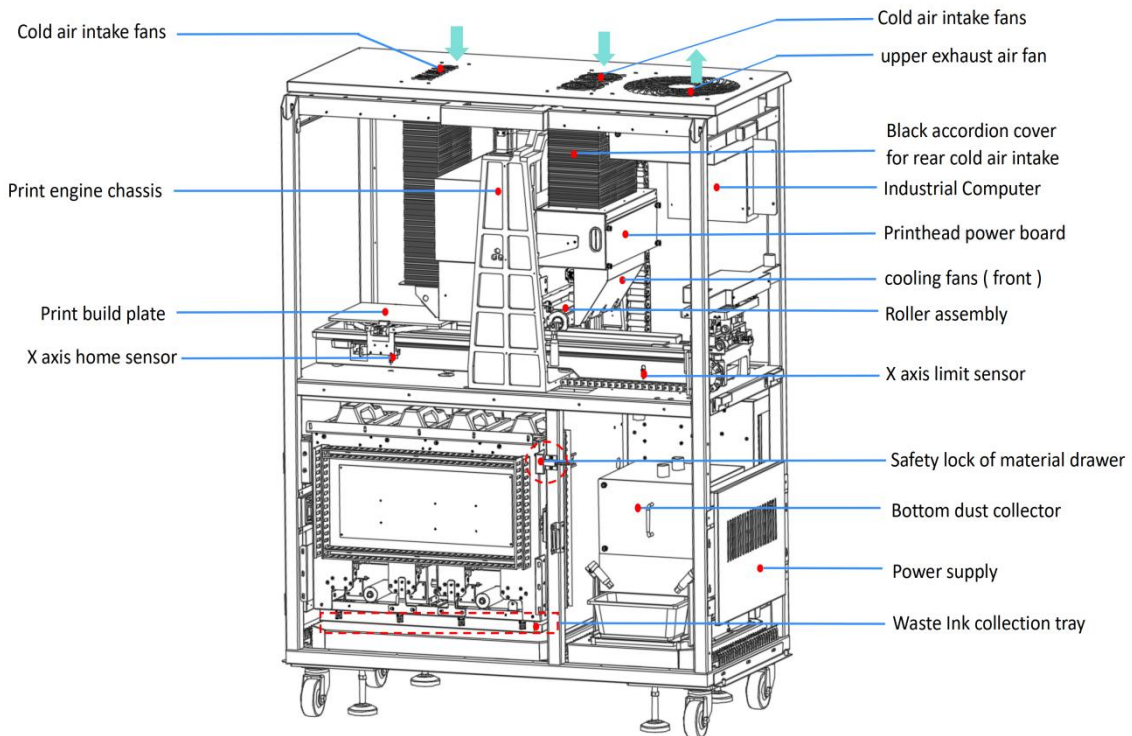
■ Material Parameter

Feature	Condition	YHK-130	YHK-630
Description	—	Contact-free soluble support wax	High-resolution durable casting wax
Type	—	Wax support material	Wax build material
Component / Color	—	100% wax / white color	100% wax / red color
Weight	—	3.6 kg	3.0 kg
Density 95°C (Liquid)	Amb. Temp.	0.85 g/ml	0.811 g/ml
Melting point	Amb. Temp.	55°C	68°C
Softening point	—	N/A	63°C
Volume contraction	—	N/A	1.18%
Linear contraction	—	N/A	0.52%
Needle Penetration Hardness	—	N/A	7.2
Ash Content	—	N/A	0.019%

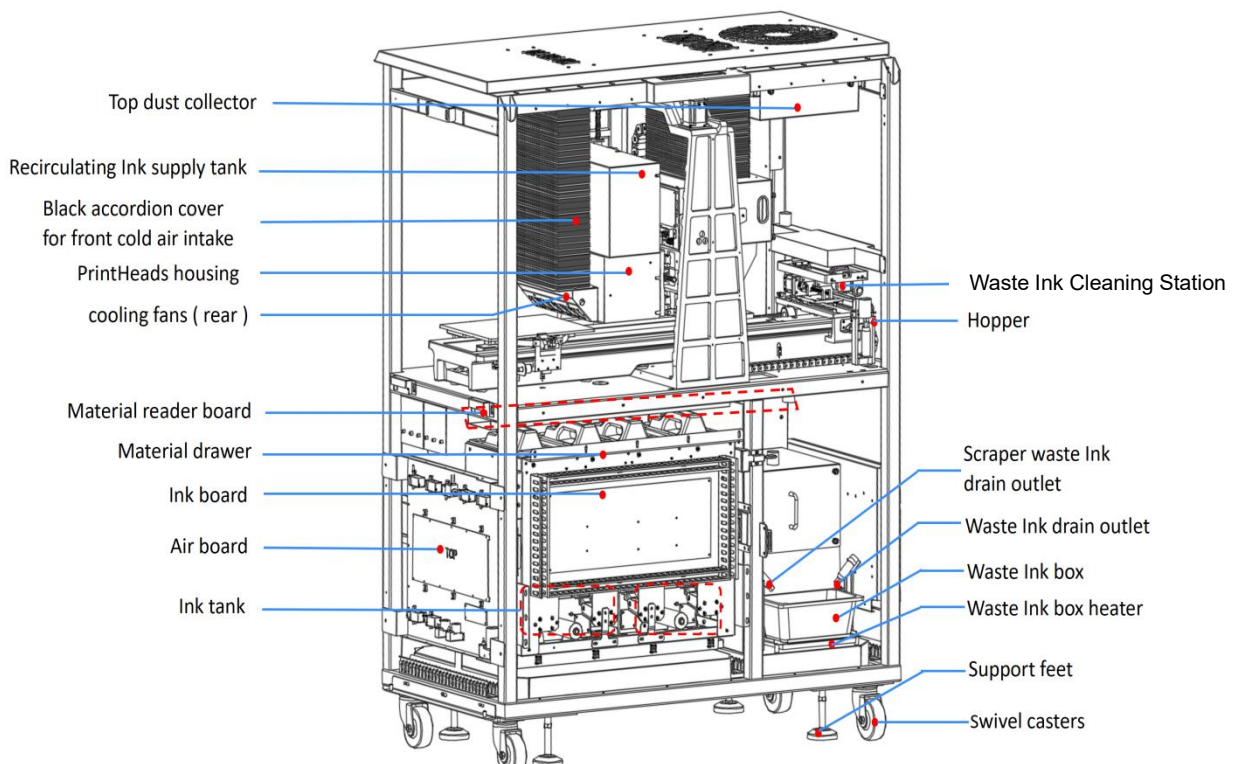


1.4 Structure & Appearance

■ Right side internal view



■ Left side internal view



■ Front external view



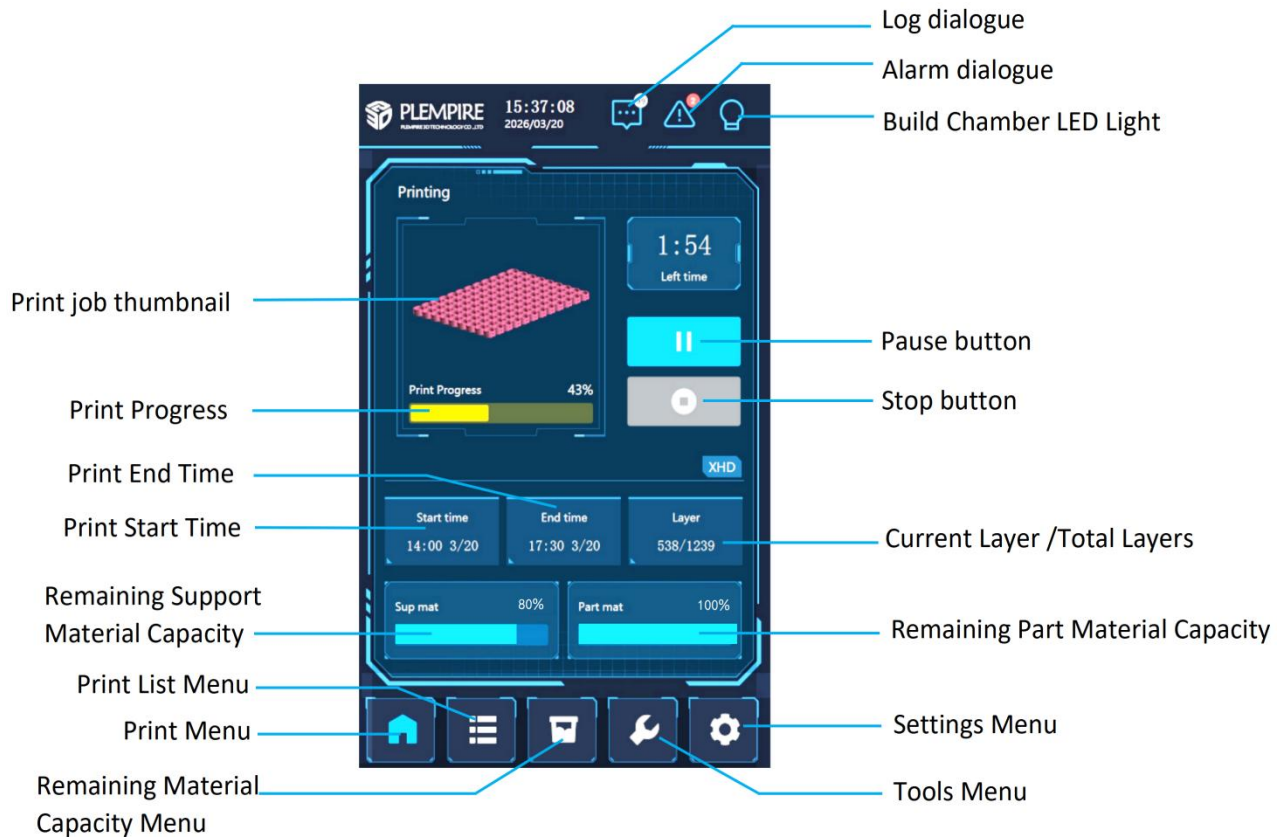
■ Rear external view





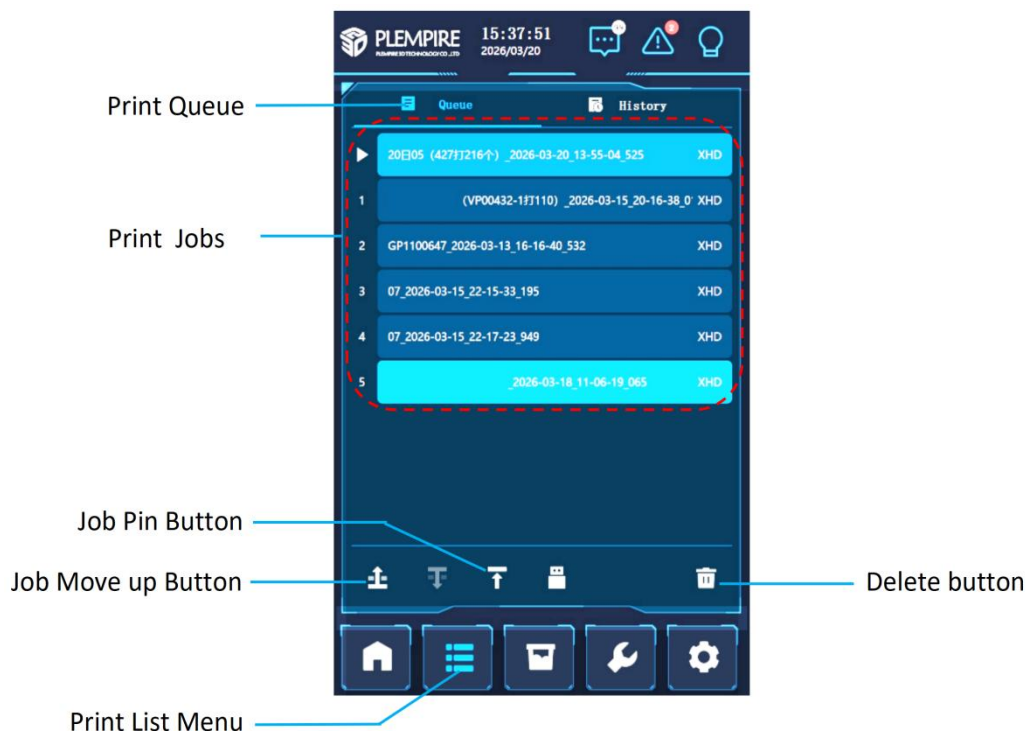
1.5 Touchscreen

> Print

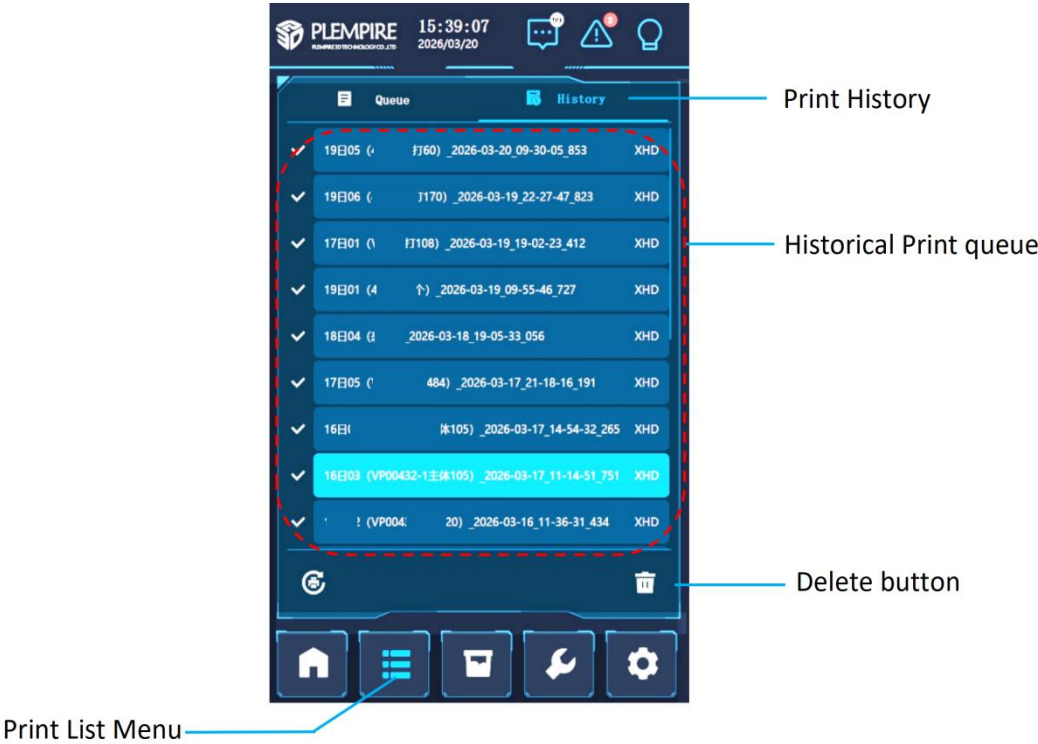


> Print

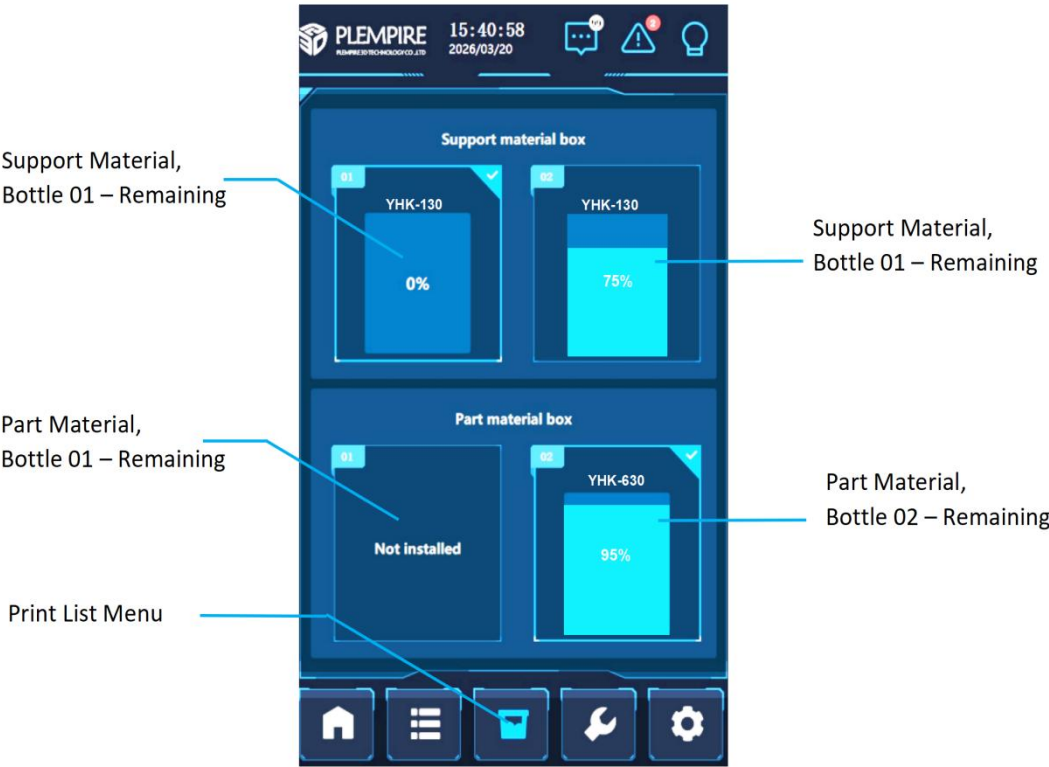
>> Print Queue



> Jobs
>> Print History

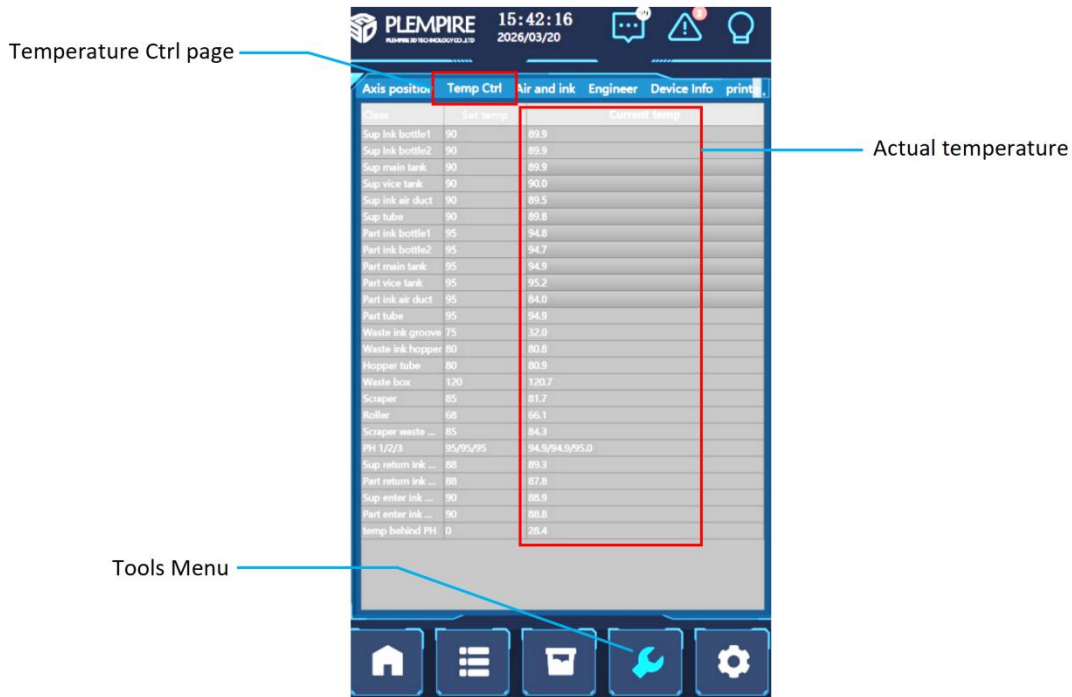


> Material



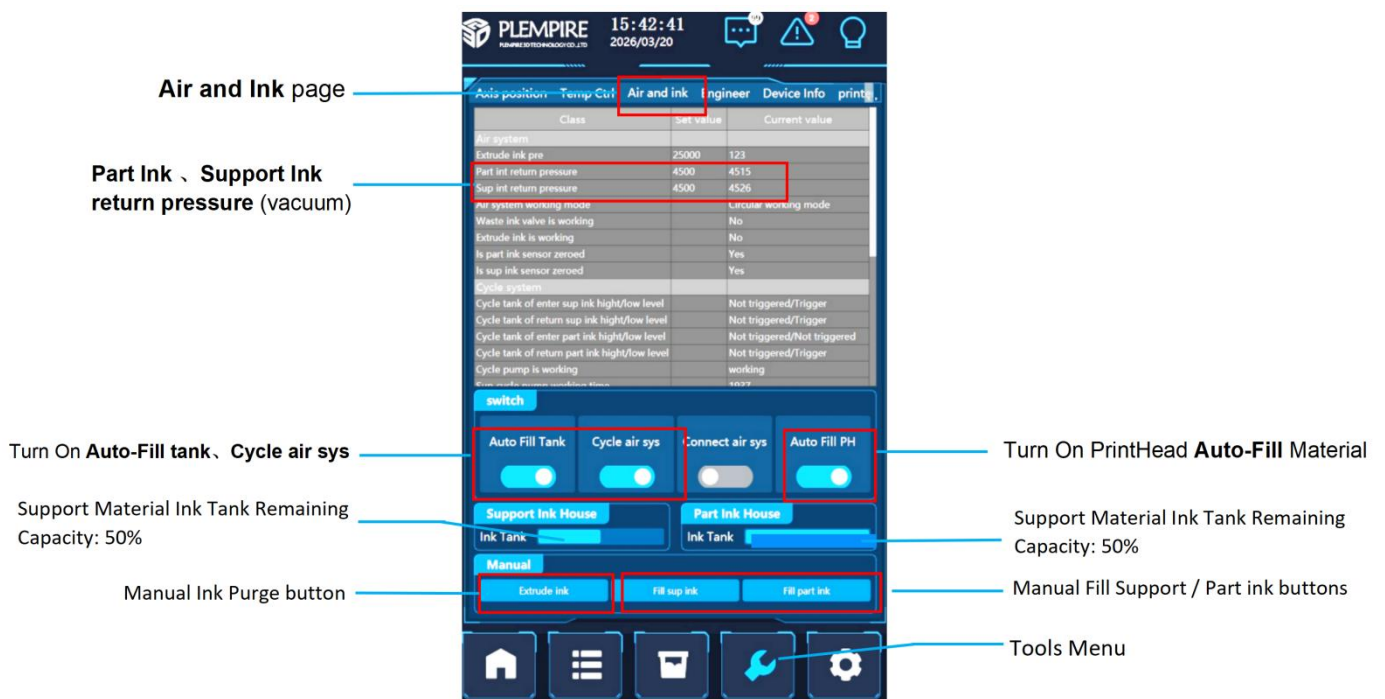


> Tools
» Temp Ctrl



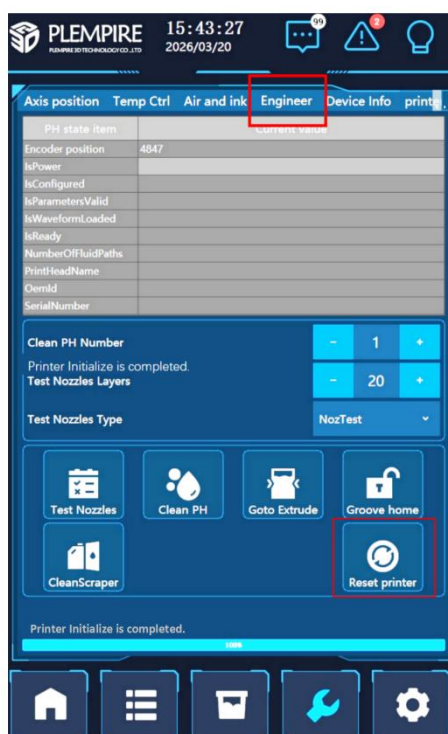
i Tips: This page displays current temperatures of the printer's heating components.

> Tools
» Air and Ink



> **Tools**

>> **Engineer**



Reset printer: Procedure for printer motion reset.

This process resets the printer's motion mechanism. Run **Reset printer** during first startup, after restarting the power supply, or when an alarm reminds you to initialize the printer. Go to the Settings menu, access the **Engineer** page, and click the **Reset printer** button.



Test Nozzles:

It verifies that the nozzles on the **Printheads** function correctly by printing test lines.

When the printer is ready and the printing material is completely melted (after heating the material for more than 4 hours), click the Reset printer button to print the Test Nozzles task.



Clean PH: The printer executes the automatic PrintHead maintenance process.

The X-axis platform positions the **Waste Ink Station** directly below the **Printheads**. The printheads lower until the three rubber wipers on the **Waste Ink Station** touch the printhead nozzle plates. The three **Printheads** perform a small ink purge. The **Waste Ink Station** tray travels along the Y-axis, and the rubber wipers wipe residual ink off the **Printheads** surfaces.

i TIPS:

When a user clicks any button, the printer executes the corresponding function. No other buttons are operable until the progress bar at the bottom of the **Engineer** page reaches 100%, signifying completion of the ongoing operation.



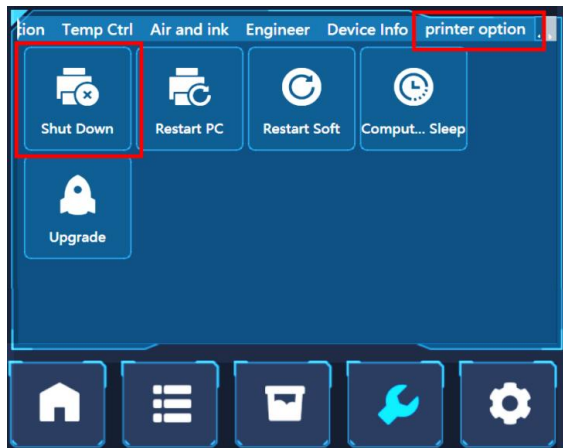
Clean PH Number: Set automatic **Printheads** cleaning cycles. Valid range: 1 – 4.

Test Nozzles Layers: Set the print layers of Test Nozzles print.

Test Nozzles Type: **Default** setting is Nozzle Test

> Settings

>> printer option

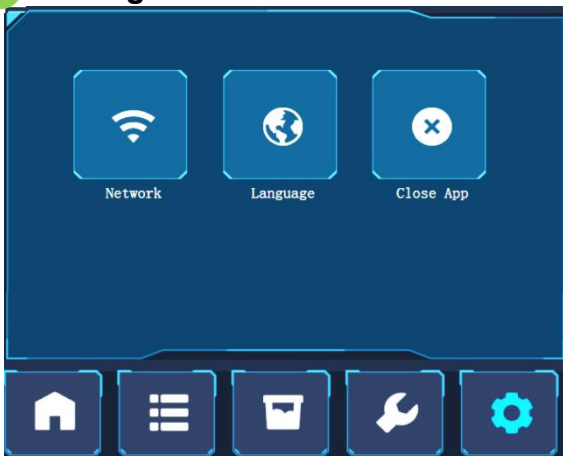


Shut down printer procedure:

Settings → printer option → Printer Shutdown

CAUTION: Click the **Shut Down** button to power off the computer and touchscreen. This operation does not deactivate the printer's heating and thermal hold functions. To stop material heating, turn off the printer's main power supply.

> Settings



■ Language

Chinese and English Languages Available.

■ Close App

Close **App**, close **PL6300App** program.



■ Network

1. Use an Ethernet cable to link the printer to yo computer .
2. Click **Settings** Menu, Click **Network**.
3. Click **Auto**, click **Refresh**, printer connect network automatically.

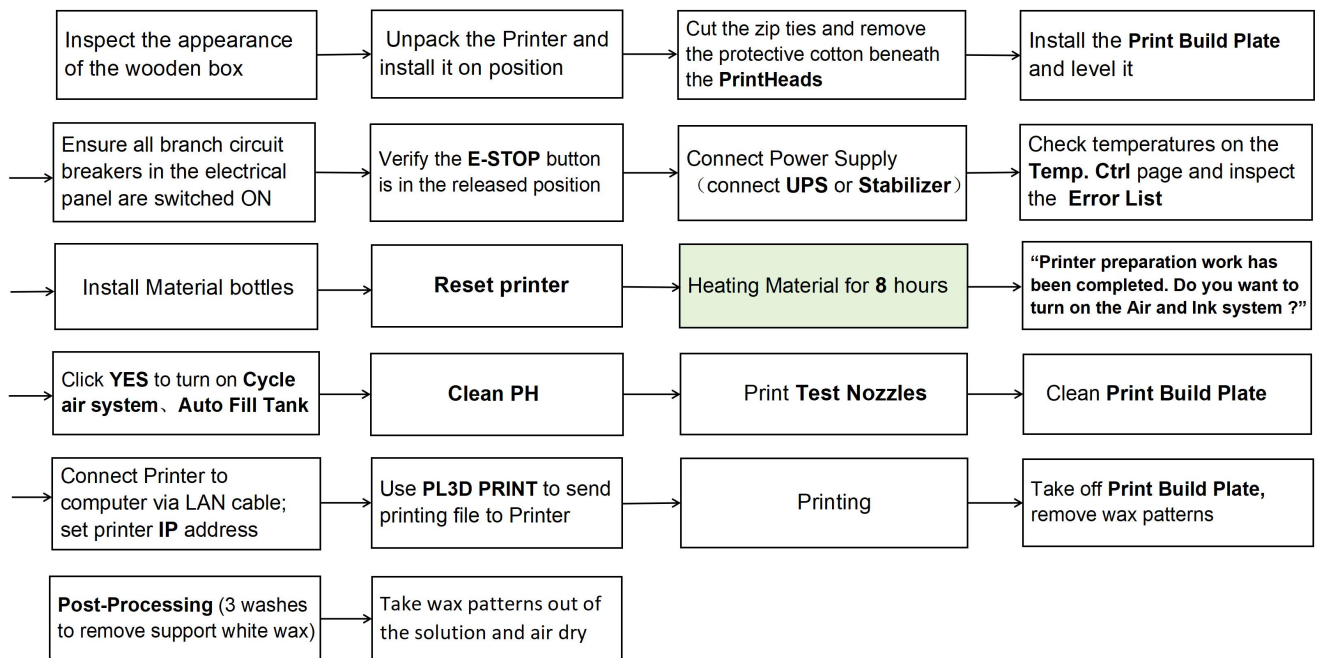
Chapter 2 First Print

2.1 Initial Power-On Printer

2.1.1 First Power-On Overview

■ First-time Printer Setup steps

PL6300 Printer Initial Use Procedure



2.1.2 Precautions Before Power-On

■ Precautions for Initial Startup

- ① Keep workshop ambient temperature at **18–23°C** and relative humidity at **30%–70%**.
- ② For proper ventilation, maintenance access, keep 1m clearance around the printer's sides and rear, with 1m open space at the front.



- ③ Place the printer on a stable, level, vibration-free surface to prevent shaking that impairs printing accuracy and causes equipment faults.



2.2 First Installation

2.2.1 Unpacking

Step 1 : Unpack the wooden crate and check the included accessories.

- ① Pry open the latches with a tool.
- ② Remove securing straps & outer packaging, take out the accessory box.



Step 2 : Move the printer.

- ① Join the inclined wooden plate to the pallet base.
- ② Raise up 4 support feet.



- ③ Slide the printer off the pallet slowly by pushing it from both sides.
- ④ Open the left door handle and remove the printer's left door.

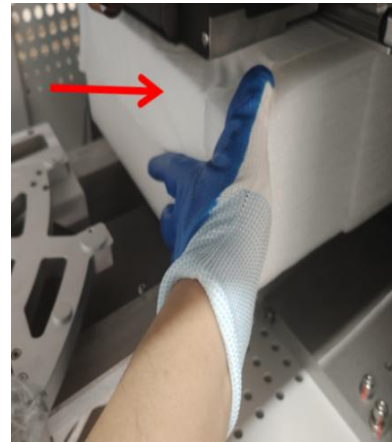


Step 3 : Remove zip ties and protective foam inside the printing chamber.

① Cut the zip ties on the X-axis platform.



② Gently press it down and pull out the protective cotton under the **PrintHeads**.

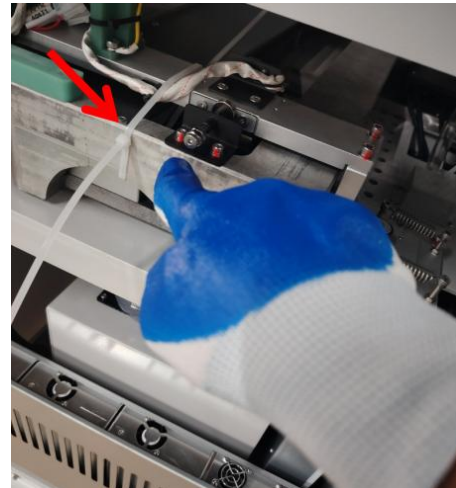
**iTIPS:**

Alternative method:
Power on Printer, open
Utility Manager
program. Tap the up
arrow  on the Z-
axis page to raise the
Z-axis and remove the
protective cotton.

③ Open the left door handle and remove the printer's left door.



④ Cut the zip ties on the **Waste Ink Station**.



⑤ Open the waste ink chamber's door.



⑥ Cut the zip ties on the **Waste Ink box**.





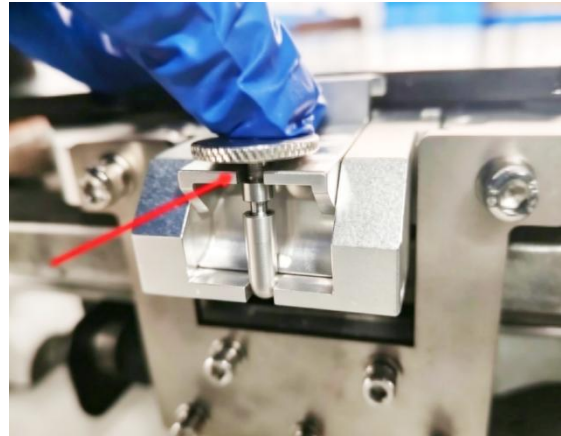
2.2.2 Install Print Build Plate

- ① Clean the print **build plate** surface and put it on the X-axis platform.
- ② Press down the fixing plate, lock the print build plate. See the figure below.
- ③ Snap the knob top onto the base plate fixing plate. See the figure below.
- ④ Rotate the nut counterclockwise to tighten the fixing print build plate. Double-check if the print build plate is securely fixed. See the figure below.

- Press down fixing plate



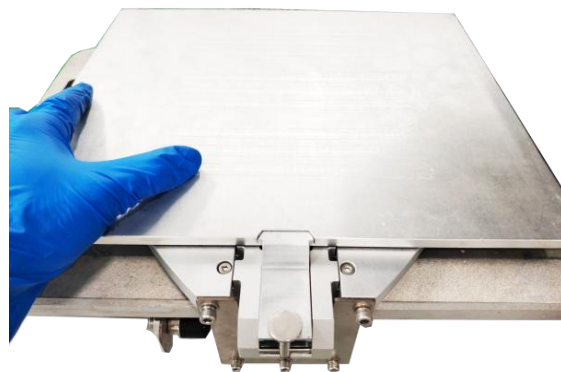
- Rotate the nut and insert it into the fixing plate



- Rotate the nut counterclockwise to fix it.



- Check the secure fixation of the build plate.



CAUTION:

1. Ensure both sides of the print bed are clean, put on nitrile gloves, and wipe the surface of the print bed with isopropyl alcohol or alcohol.
2. Ensure the print build plate is completely free of metal parts, unidentified objects, and solid wax, or other debris. Foreign matter can collide with and severely damage the PrintHeads or Roller during printing, causing critical damage.
3. Never press hard on the print build plate when cleaning or installing the build plate.

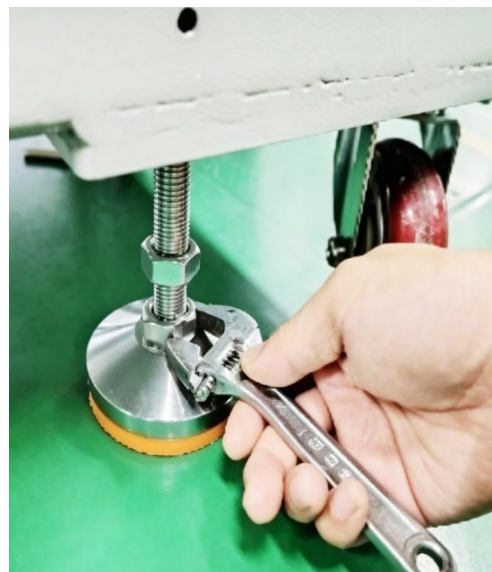
2.2.3 Adjust Level

This procedure aims to adjust the printing level and the printer's horizontal position on the ground.

- ① Place the level flat on the build plate X-dir. ② Lock the four feet to raise the casters off the ground.



- ③ Place the level flat on the build plate Y-dir. ④ Adjust the feet to ensure level flatness in the X/Y-dir.



TIPS:

Level the printer by adjusting the printer's four feet until they are firmly placed on the floor. A stable base prevents vibration and maintains consistent print quality during the printing process.



2.2.4 Connect Power

⚠ CAUTIONS:

1. The voltage difference between the power supply neutral conductor (**N**) and protective earth conductor (**PE**) must be strictly limited to 5 V maximum to maintain the printing system within its safe and qualified operating range. Under ideal operating conditions, the voltage between neutral and ground shall not exceed 2 V.
2. Set the multimeter to the AC voltage range (**AC** or **V**) and select the 220 V AC range. (Digital multi-meters support auto-ranging); simply switch to **AC** voltage mode; connect the red probe to the neutral terminal and the black probe to the ground terminal.
3. Power plug standards vary by country and region. To ensure proper connection, please specify your target region when placing your order.

- Verify all three branch circuit breakers of the electric control panel are switched on. See the figure below.

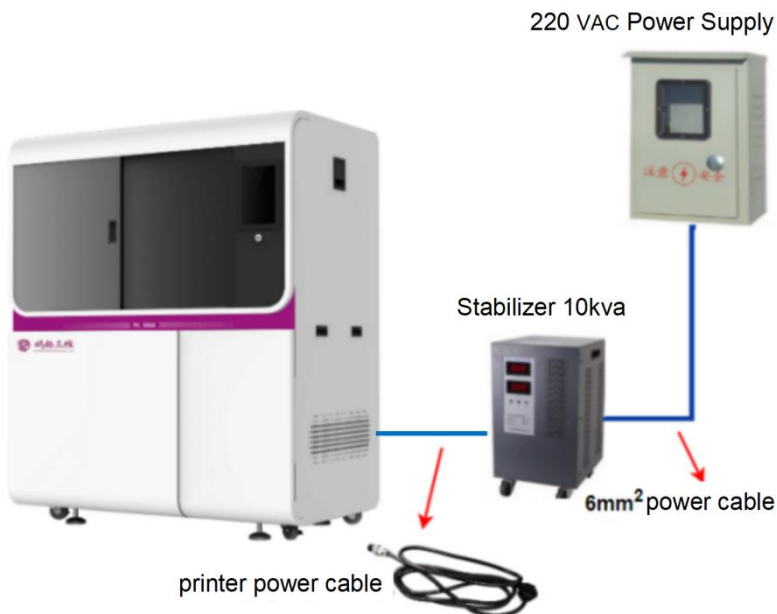


- The printer power port is located on the rear electric control panel. The main power switch, power socket, and network port are next to each other, as shown in the figure below.



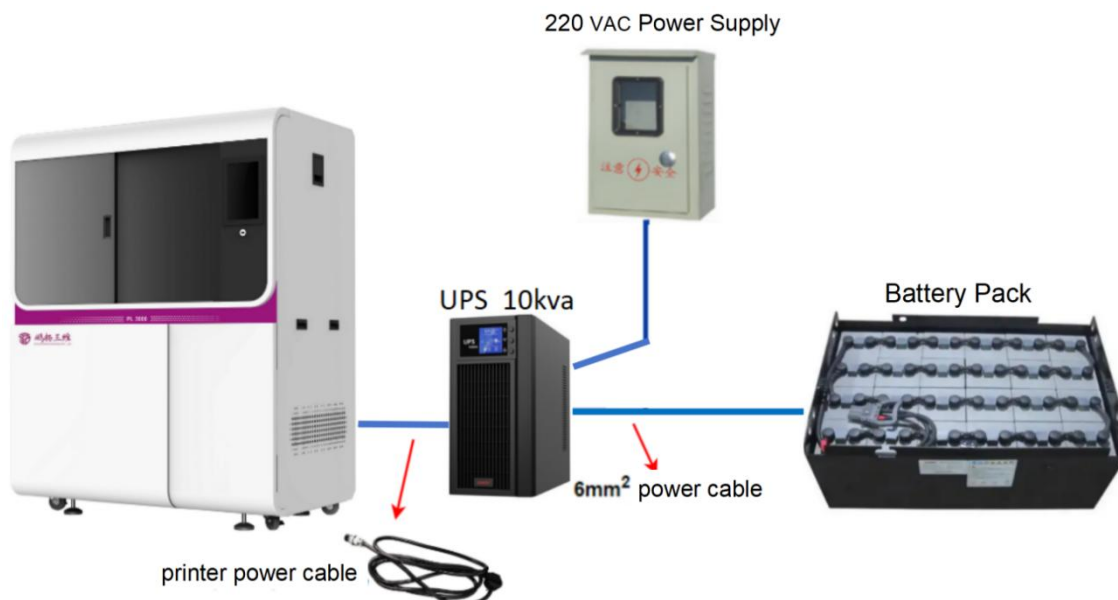
■ External Power Supply Connection Method 1

Connect the 10kVA **Voltage Stabilizer** to the external 220 VAC power supply, as shown in the figure below.



■ External Power Supply Connection Method 2

Connect the 10kVA **UPS and battery pack** to the external 220VAC power supply, as shown in the figure below.



TIPS:

In the event of an unexpected external power outage, the UPS enables seamless millisecond-level switching to battery power mode to provide a continuous power supply for the printer. It can not only effectively prevent data loss and any damage, but also reserve sufficient time to safely remove the finished wax patterns formed on the print build plate.



2.3 Preparation Before printing

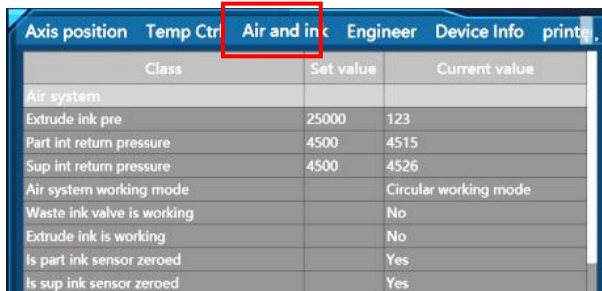
2.3.1 Power-On Inspection

- **Temp ctrl:** After startup, go to **Tools > Temp. Ctrl**, check the current and set temperatures, and confirm they are close.



Class	Set temp	Current temp
Sup Ink bottle1	90	89.9
Sup Ink bottle2	90	89.9
Sup main tank	90	89.9
Sup vice tank	90	90.0
Sup ink air duct	90	89.5
Sup tube	90	89.8
Part ink bottle1	95	94.8
Part ink bottle2	95	94.7
Part main tank	95	94.9
Part vice tank	95	95.2

- **Air and Ink:** On the **Air and Ink** page, confirm that the current values of component and wax ink return pressure are close to their default settings.



Class	Set value	Current value
Air system		
Extrude ink pre	25000	123
Part int return pressure	4500	4515
Sup int return pressure	4500	4526
Air system working mode		Circular working mode
Waste ink valve is working		No
Extrude ink is working		No
Is part ink sensor zeroed		Yes
Is sup ink sensor zeroed		Yes

TIPS:

PL6300: Default ink return pressure for part and support wax is not always fixed at 4500. Where factory default >4500, actual pressure in circular working mode shall match the factory default (e.g., default 5500 → actual pressure approx. 5500).

- **E-STOP button:** Verify the E-STOP button. If pressed, twist the red button to release it.



⚠ CAUTION: The printer cannot start or initialize (Reset printer) if the red emergency stop button is pressed. Confirm the emergency stop button is released to its raised position prior to operation to prevent accidental actuation.

2.3.2 Install Material

Support Wax



Build Wax



■ Steps for Material Installation

- ① Take the material bottle out of the packaging and remove its outer plastic wrapping.
- ② Release the safety **lock** on the right side of the material drawer, then open the material drawer.
- ③ Place two white wax bottles on the left and two red wax bottles on the right. See the figure below.
- ④ Close the Material drawer.

◆ Open Material drawer



◆ Place material bottles in the bottle tanks



i TIPS:

Place the material bottle in the bottle tank with cap facing inward. After 15 minutes, push the bottle downward into the material chamber.

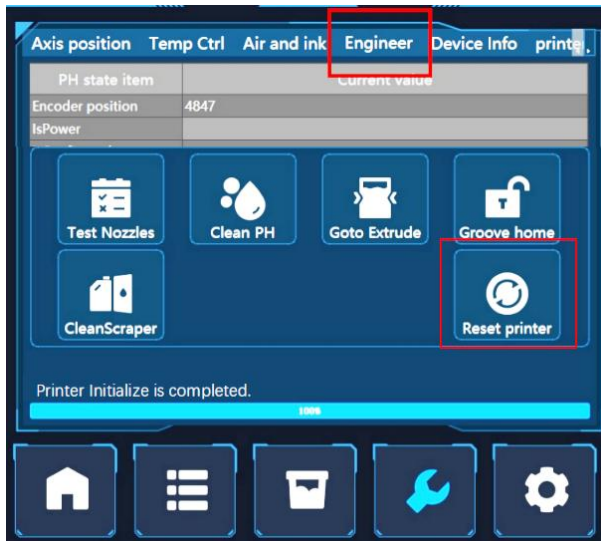
Only original manufacturer printing materials are permitted. The use of non-original consumables may cause damage to the **PrintHeads** or Ink circuit system.

The identification and product labels on material bottles must be kept intact. Do not tear, scratch or damage the labels.



2.4 Reset Printer

1. Click the **Tools** menu, choose the Engineer page, and click the Reset printer button



⚠ CAUTION:

For initial startup, click **Reset printer** to initialize the printer. When **ErrorCode9001: Device needs to be initialized** is shown in the error list, click **Reset printer** on the **Engineer** page.

2. Watch for alert messages on the touch screen: A prompt asks whether to initialize the machine. Click **Yes**. Next, the inspection warning message will appear on the screen (see figures below). When inspection is finished, click **Yes** to run the **Reset Printer** procedure.



- When device initialization is fully completed, the message "Complete Init Machine" appears at the bottom of the page.

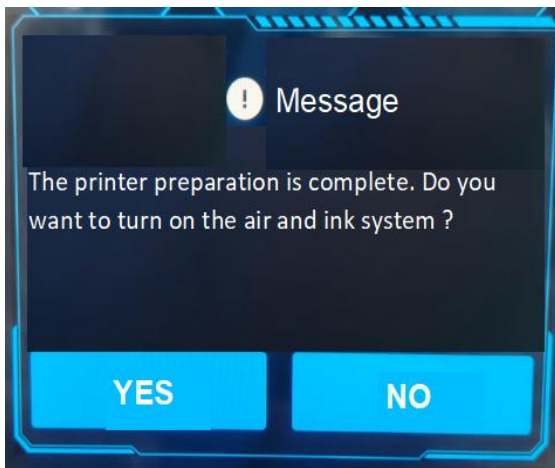


2.5 Turn On Air and Ink System

For initial printer use, the printing materials shall be heated continuously for **8** hours.

- After printing material heating completes, the touchscreen shows this message :

The printer preparation is complete, Do you want to turn on the air and ink system?



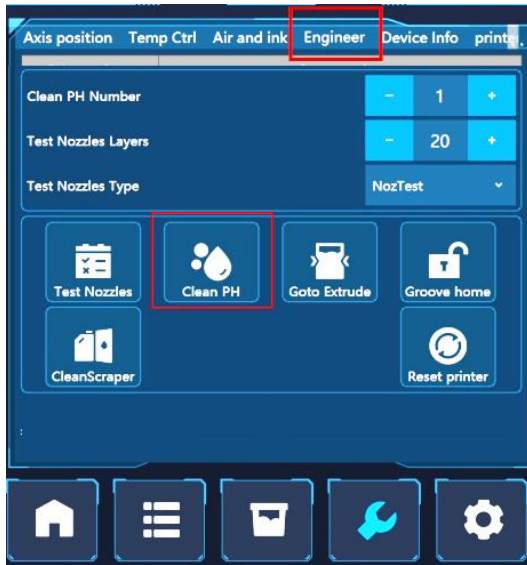
- Click 「**Yes**」. The printer will automatically turn on the **Auto Fill Tank**, **Auto Fill PH** and **Cycle Air Sys**. The figure is shown below.





2.6 Printhead Cleaning

1. Click the Settings menu and select the Engineer page, then click **Clean PH**.



2. Before every print job, the printer runs the **Clean PH** automatically to avoid nozzle clogging and maintain normal nozzle performance. Shown below is the **PrintHeads** cleaning process.

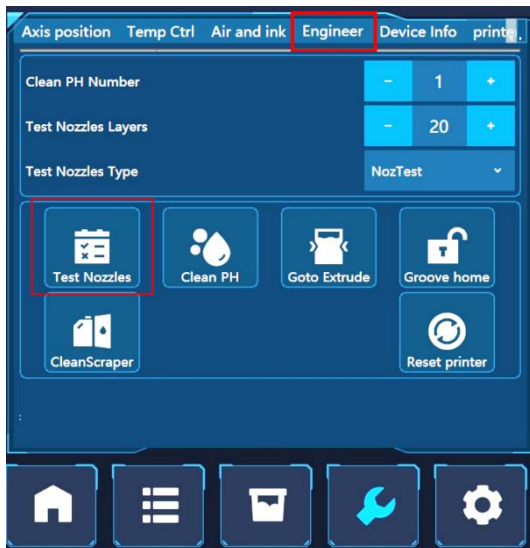


i TIPS:

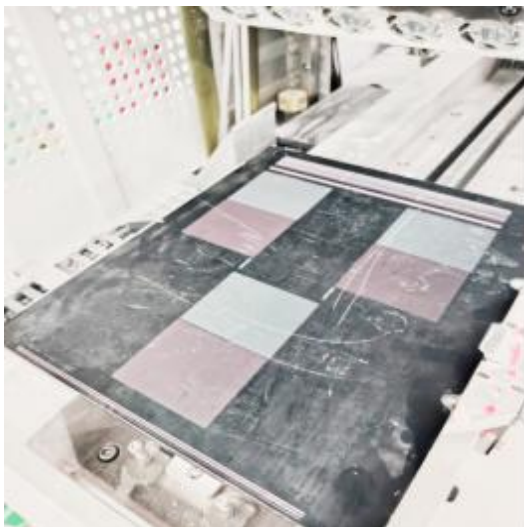
PrintHeads cleaning cycles can be set between **1** and **4**. Click the **Clean PH**, the printer will automatically execute **PrintHeads** cleaning for the selected number of cycles. When cleaning finishes, the prompt "**Clean PH is Completed**" appears at the bottom of the engineer page.

2.8 Nozzle Test Print

1. Click **Test Nozzles**, and the printer automatically runs the **Test Nozzle** print.



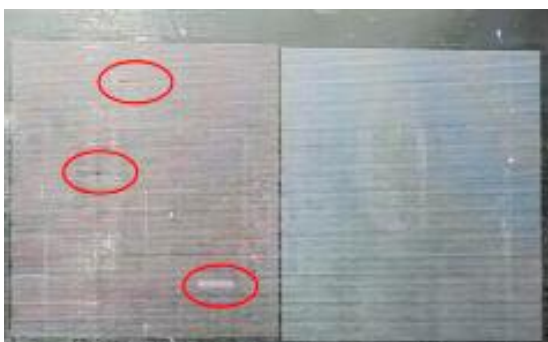
2. The **Test Nozzle** print is completed. See the figure below.



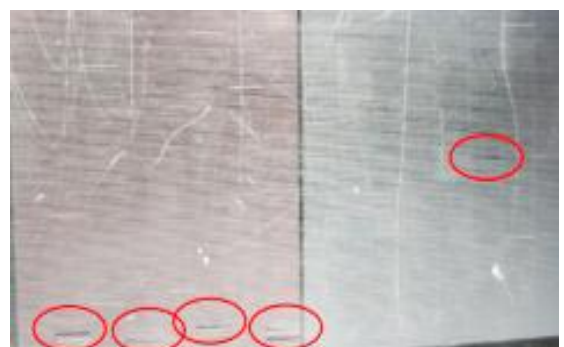
i TIPS:

Run a **Test Nozzle** print to check each nozzle's wax ejection and confirm the three **PrintHeads'** alignment in the X and Y directions.

- ✧ A few missing printed lines, as shown below, will not affect normal printing.



- ✧ More consecutive missing lines are shown in the figure below, requiring PrintHead maintenance.





Chapter 3 Print Operations

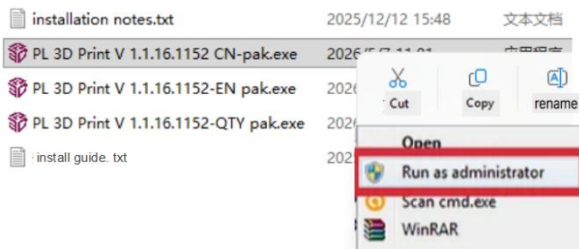
3.1 Send Print Jobs from PL3D Print

3.1.1 Install PL3D Print software

1. Get the latest **PL3D Print** zip file from Plempire after-sales or account managers. Copy it to your local **D** or **E** drive and unzip the file software package:



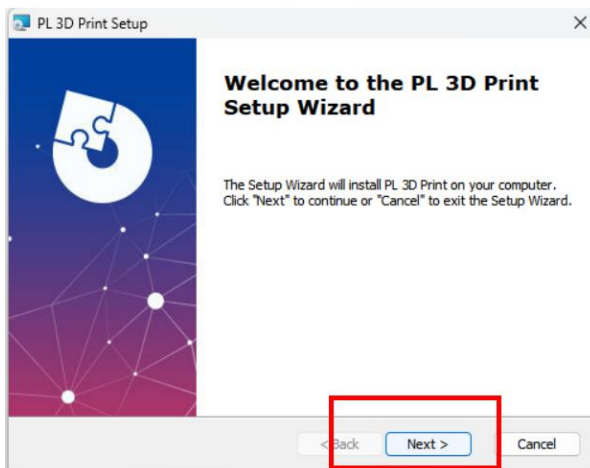
2. Run the installer as **administrator** to complete the software installation.



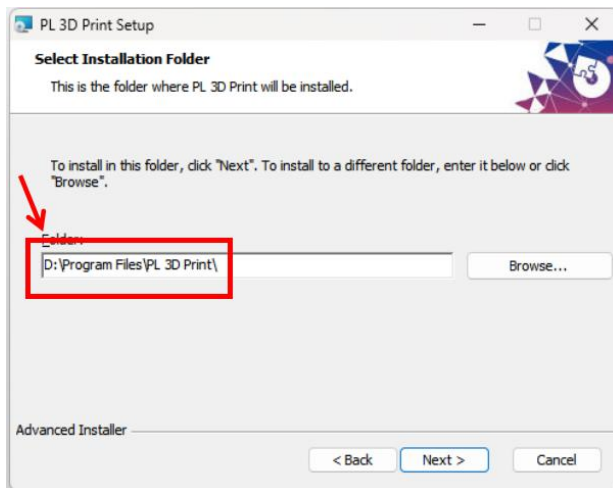
3. Select **English** and click **Next**.



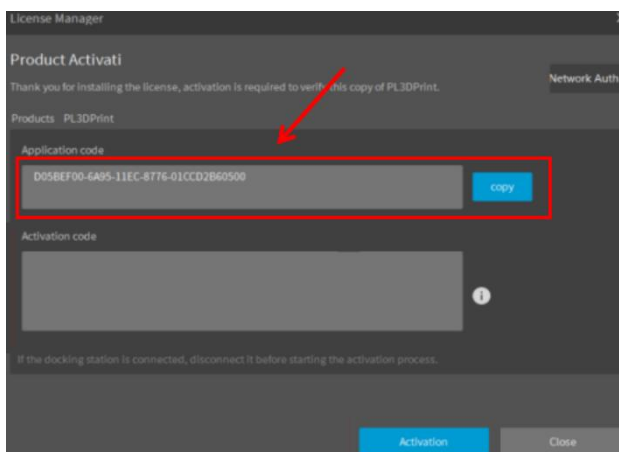
4. Click **Next** to continue the software installation.



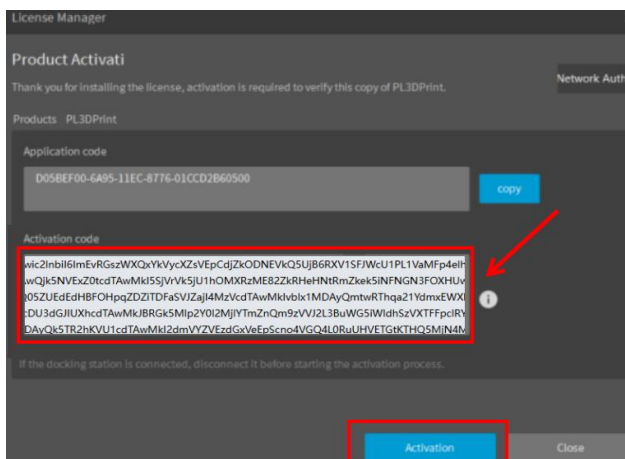
5. Install **PL3D Print** to Drive **D** or **E** only. Do not install the program on Drive C to prevent runtime errors.



6. After software installation is completed, an activation request code pop-up window will appear. Copy the code and send it to the after-sales staff or account managers of Plempire to obtain the activation code for **PL3D Print** software.

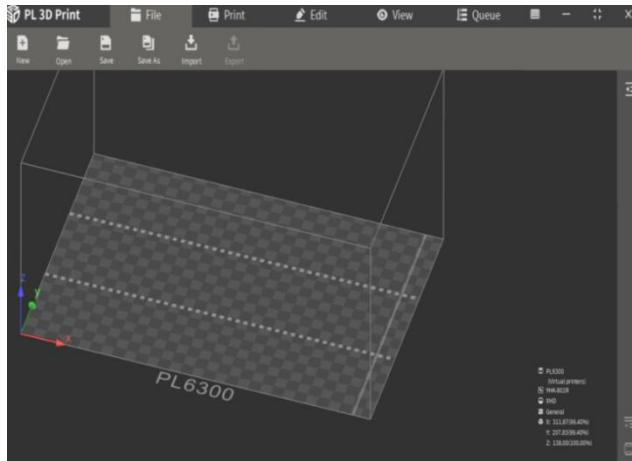


7. Paste the activation code into the input box, click the **Activate** button, restart the software, and start using **PL3D Print**.





8. After activation, double-click **PL3D Print** on the desktop to launch the software, as shown below.



i TIPS:

No re-entry of the activation code is required when reinstalling **PL3D Print** on the printer. Please refer to **Appendix B: PL3D Print Software** for detailed software operation guidelines.

3.1.2 Connect 3D Printer

- Connect the printer to the workshop local area network via an **Ethernet** cable or **Wi-Fi**, as illustrated in the figure below.



i TIPS :

Ensure that the printer and the user's computer are within the same LAN segment. Each device must be assigned a unique IP address, otherwise, IP conflicts will arise.

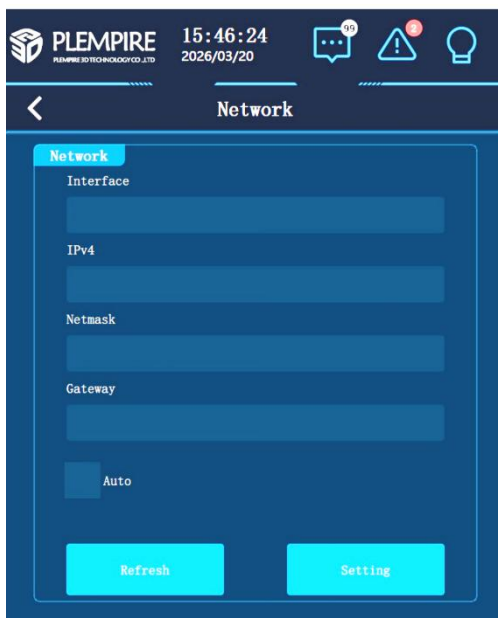
■ Auto Network Connect

- ① Click the Settings menu, click **Network**.
- ② Click **Auto**, then click **Refresh**. The printer automatically connects to the workshop LAN and configures the network settings.



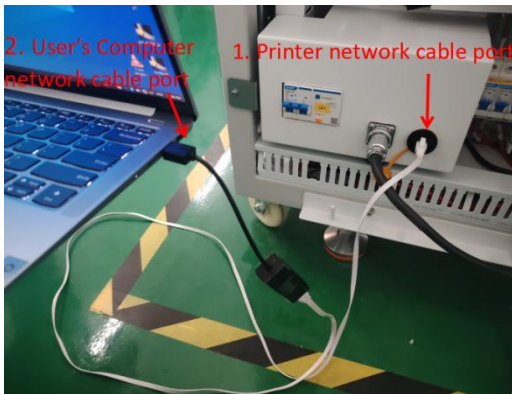
■ Manual Network Connection

- ① Click the Settings menu, click **Network**.
- ② Input **IPv4** address, **Netmask**, **Gateway**, click **Setting** to configure the network.





- ③ Physical picture of network connection. See the figure below.



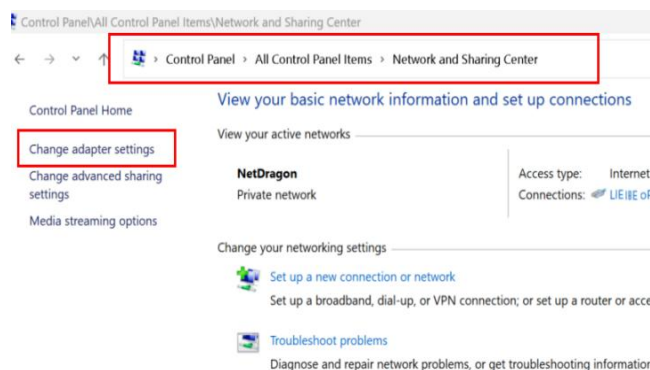
TIPS:

Steps to refresh a DHCP-assigned **IP** after changing the network:

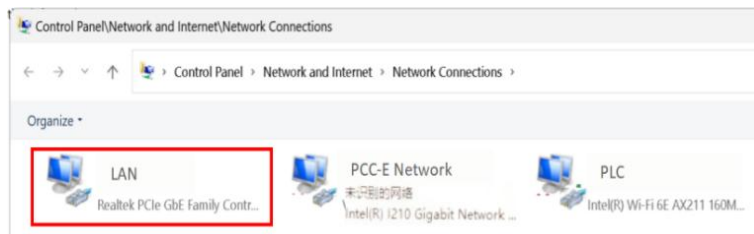
- ① Unplug the network cable and clear existing **IP** settings.
- ② Plug in the **LAN** cable, click Refresh, and click **Auto** to activate automatic mode.
- ③ Check the updated **IPv4** address on the **Network** page.

■ **Network connection fault diagnosis**

1. Go to **Control Panel, Network and Sharing Center**, click **Change adapter settings**.



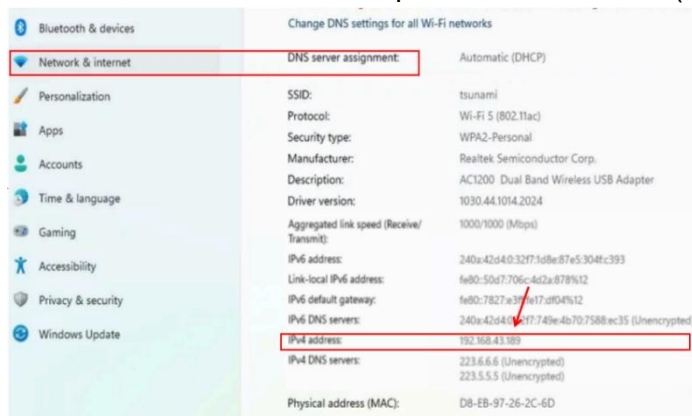
2. Check the printer's **network connection** and verify the displayed network name is **LAN**.



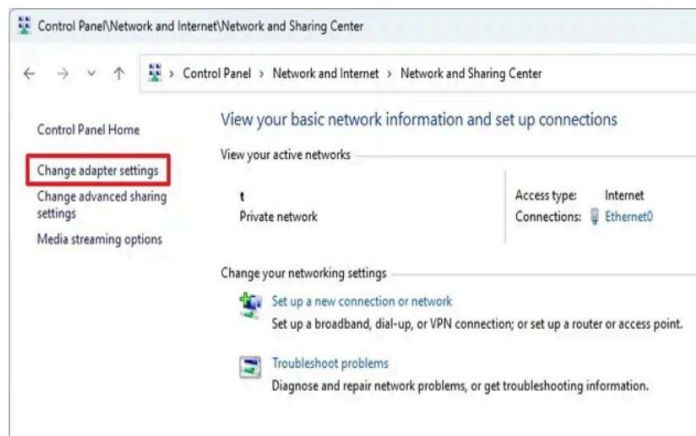
CAUTION:

Please don't modify the name and network of the PLC and **PCC-E** network. Otherwise, the printer may fail to work properly.

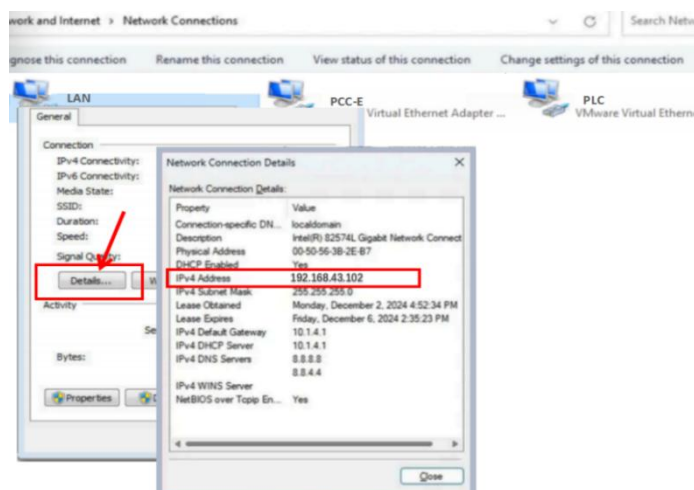
3. After connecting the computer and printer via **Ethernet** cable, confirm both devices are on the same **LAN**. Verification steps: On the computer, open **Settings** > **Network & Internet** > **Ethernet**, then check the computer's **IPv4** address (see figure below).



4. Access the **Control Panel** of the printer host computer, then click **Network and Sharing Center**, and click **Change adapter settings** as shown in the figure below.



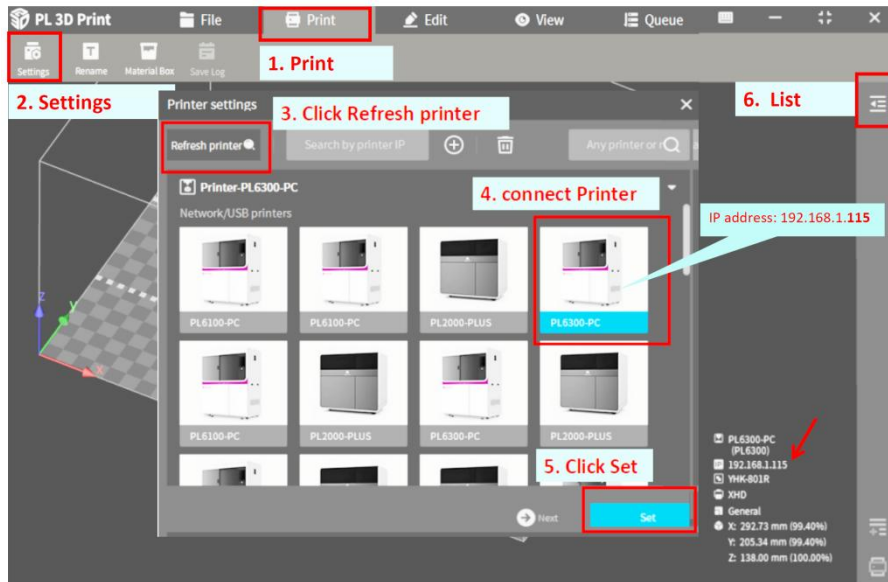
5. Go to the printer's external network (LAN), click the **Details** in the **General** page prompted, and check the IPv4 address as shown in the figure below. For instance, once a user's computer IP address was 192.168.43.189 and the printer's IP address was 192.168.43.102, this indicates that both devices are on the same local network and can connect normally.



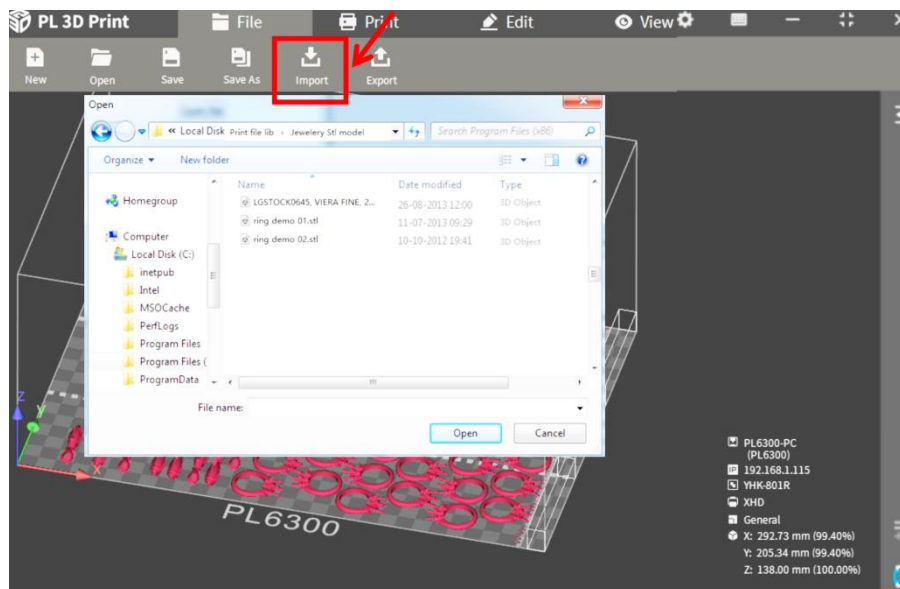


3.1.3 Transfer Print Jobs

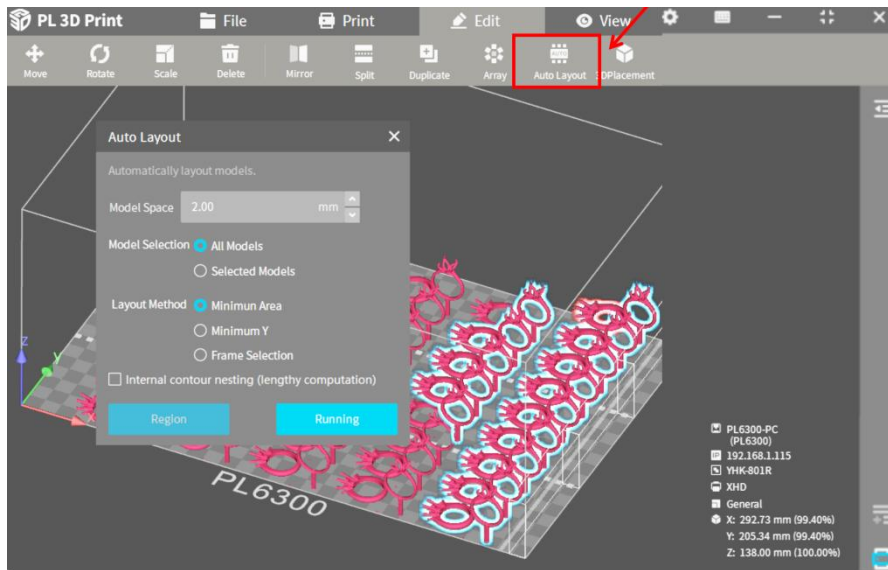
1. Open **PL3D Print** software, connect printer.
 - ① Click **Print** → **Settings** → **Refresh printer**
 - ② Click the displayed **PL6300-PC** icon (the PL6300 printer you intend to connect) and verify its IP address, then click **Set**.



- ③ Click **File** → **Import**, choose your target STL file, then click **Open**.



- Click the **Edit** menu to adjust the position and layout of the models. Click **Auto Layout** to set the automatic model layout.



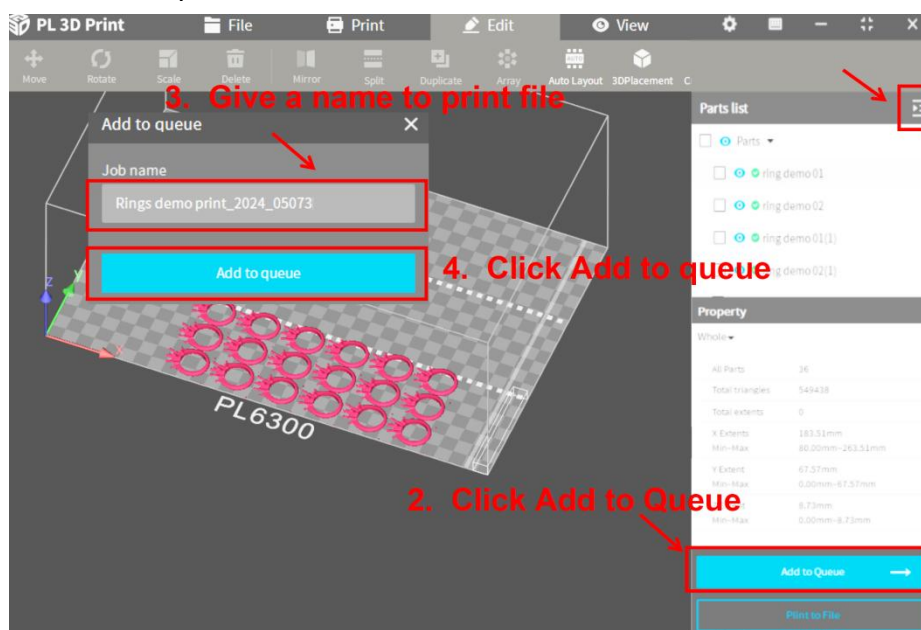
⚠ CAUTIONS:

Models require a minimum 1mm gap in both the X-Y plane and Z direction. The Auto-Layout Arrange function sets a default X-Y clearance of 2mm. If sufficient space is available, increase the space between models appropriately to avoid wax pattern adhesion and facilitate subsequent cleaning processes.

- Transfer print file.

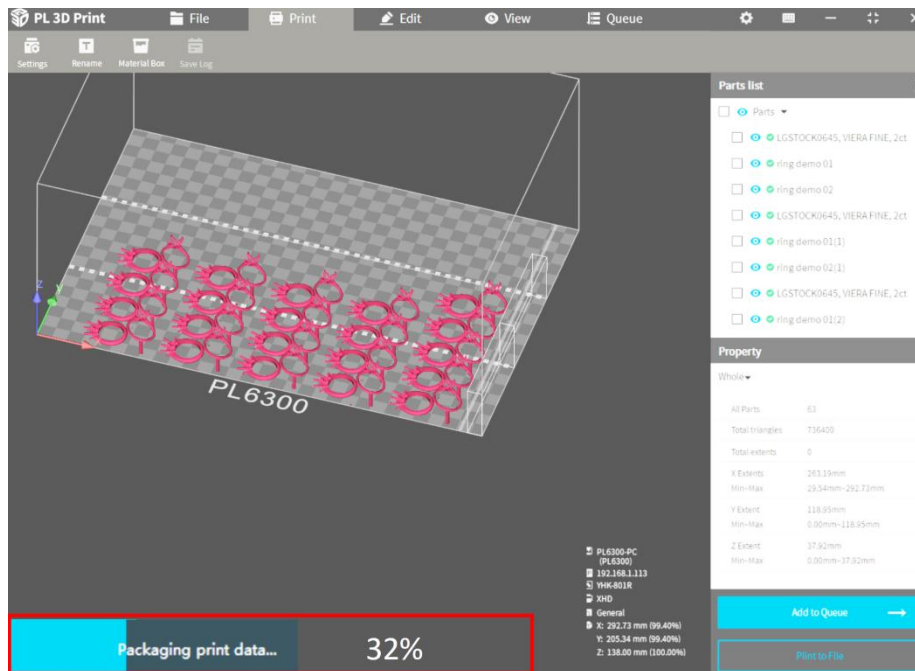
- Click **Part List**  >> **Add to Queue**.

- Name the print file. Then click the **Add to Queue** button as shown in the figure below .





- ③ Transfer the print job to the printer.



⚠ CAUTION:

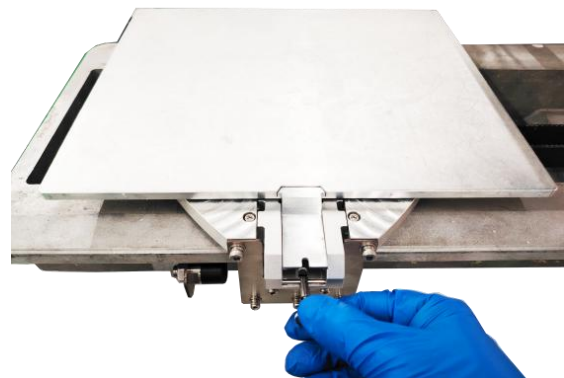
Before transferring the print file, verify file integrity and confirm that all model layout dimensions and spacing meet standards. Transfer time varies for different STL files (or OBJ/SLC) files. Please wait until the transfer process is completed.

3.2 Start Printing Job

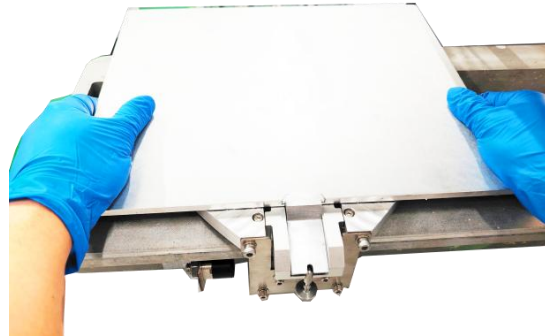
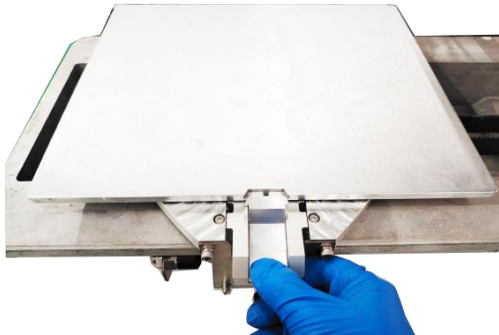
3.2.1 Clean Print Build Plate

■ Take off the Print Build Plate

- ① Verify the printer is on standby. Turn the fix knob on the **X axis platform** clockwise.
- ② Loosen the fixing knob on the **X axis platform**.
 - ① Rotate the knob clockwise
 - ② Loosen the fixing knob

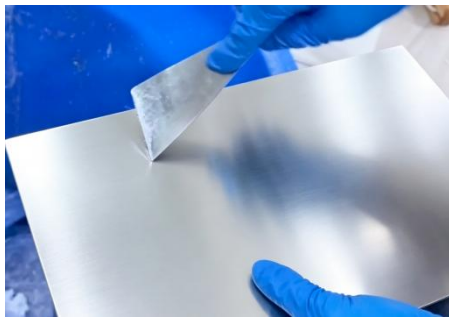


- ③ Push down the build plate retaining clip.
- ④ Hold the build plate clip with your right hand, gently pull the build plate outward to take it out.
- ③ Push down the clip
- ④ Take out the build plate



- ⑤ Use a scraper to remove the leftover wax on the build plate.
- ⑥ Spray alcohol or IPA on the build plate, wipe it with a lint-free cloth, then reinstall the build plate on the **X axis platform**.

- ⑤ Use a scraper to clean the build plate

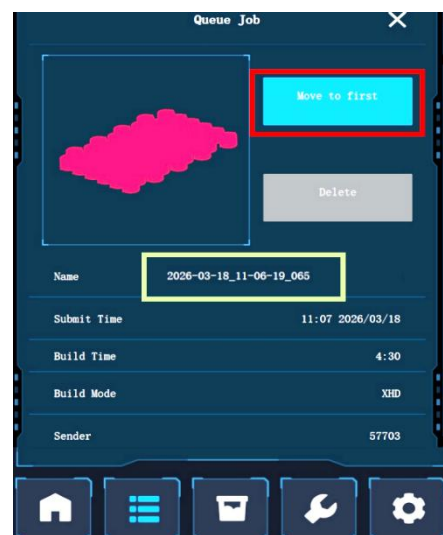
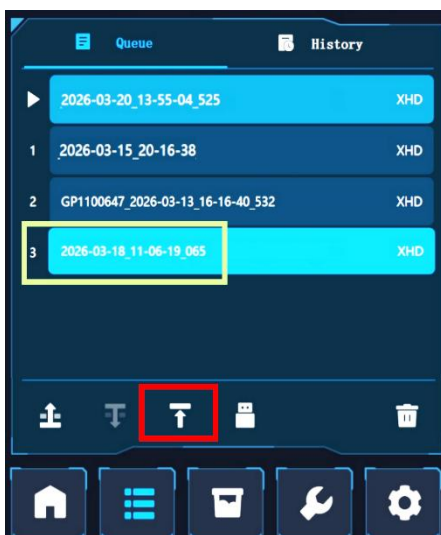


- ⑥ Use IPA to clean the build plate



3.2.2 Queue Print

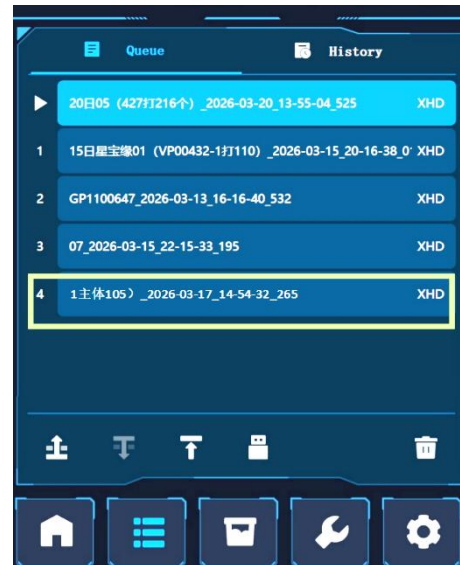
- Click the Print menu to tap the **Queue** list. Select the target print job and click **TOP**  to move the selected print job to top position in the **Queue**. The printer will print the top job by default.
- In the print job popup, click **Delete** to clear the selected print job. Close it to exit the page





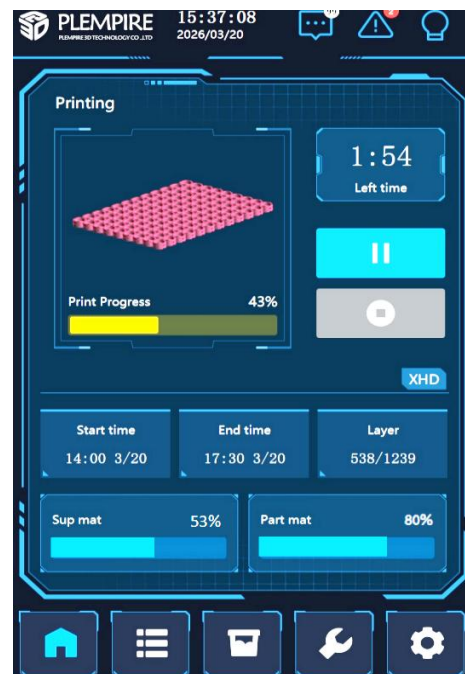
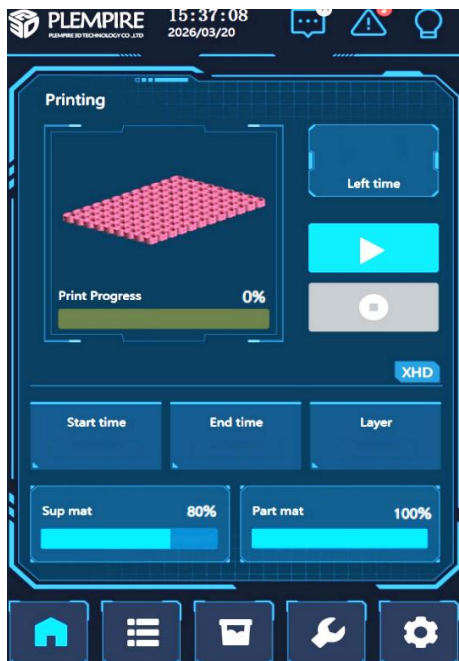
3.2.3 History Print

- Click the **Print** menu and tap the **History** list. Select the historical job to be reprinted and click **Add to Queue**. The selected historical job will be automatically added to the **Queue**.



3.2.4 Start Print

- Select a file in the **Queue** list and tap it; then the **Print** menu will simultaneously display a thumbnail preview of the print file. Click the **Start** button  to start printing.
- Click the **Pause**  button to temporarily pause the printing.

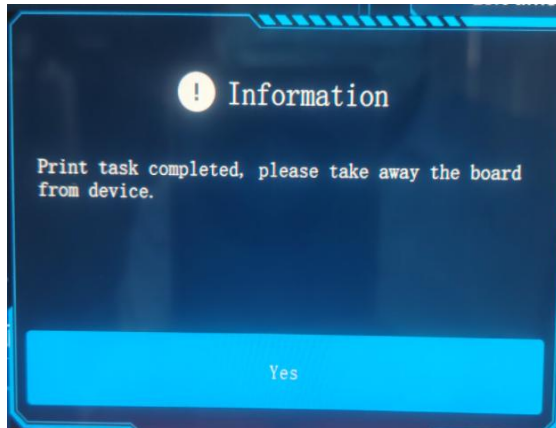


CAUTION:

Click the **Pause**  button to suspend printing. Avoid too prolonged pauses, as they will degrade print quality.

3.2.5 Print Complete

- The print job is complete, and the touchscreen shows: **Print task completed, please take the board away from the device.**



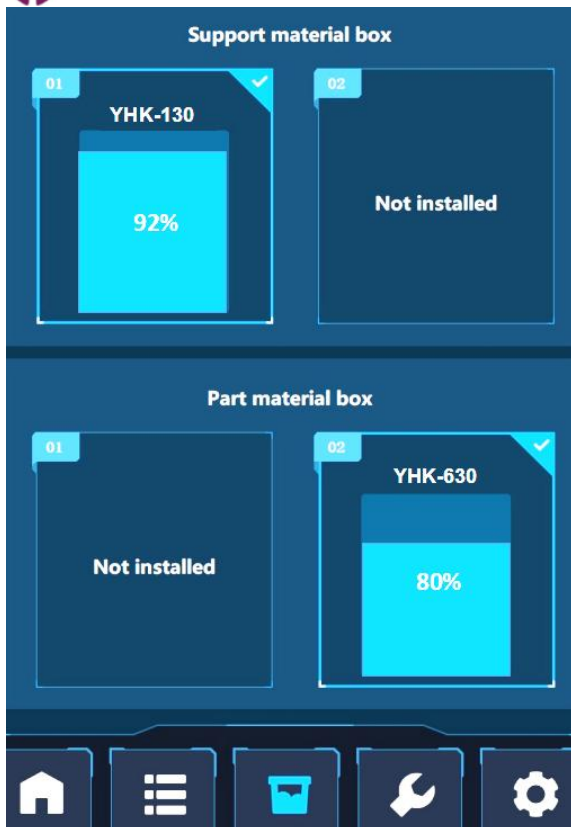
- Print job is complete. The X-axis platform moves back to X axis home position. Take out the print build plate with molded wax patterns and proceed to the next post-processing procedure.



3.3 Replenish Material

3.3.1 Insufficient material

- If the **Material** menu shows a missing / low material alarm, pull out the material drawer and Check the remaining volume in the material bottle. Replace empty bottles promptly. See **section 2.3.2 Install Material** for bottle installation steps.

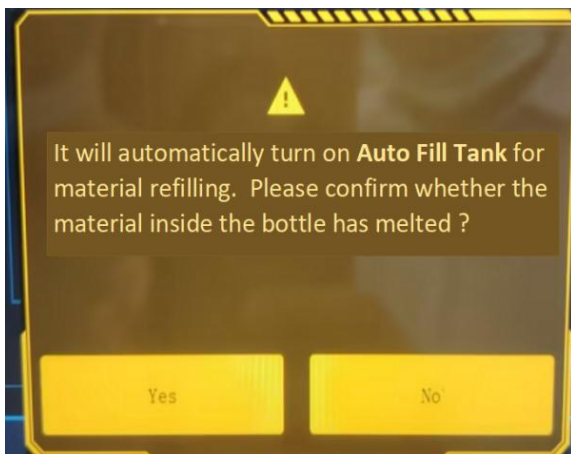


i TIPS:

If the bottle has enough material but the screen shows no material installed, reinstall the bottles and fully close the material drawer. Check the ID label on the top of the bottles, swap the main (primary) bottle and vice (secondary) bottle to retry.

3.3.2 Loading Material

- Replenish material timely according to printing consumption. After completing new bottles' heating, the popup alerts information: **It will turn on Auto Fill Tank for material refilling. Please confirm whether the material inside the bottle has melted ?**
- Pull out the material drawer, verify the material is full melting, and tap **Yes** for material auto-filling.



! CAUTION:

Pour residual wax into a melted new support bottle. Empty bottles are non-reusable and shall be disposed of at designated industrial waste recycling facilities.

3.4 Remove Printed Models

- Take out the **build print plate** with molded wax patterns, separate the wax patterns, then carry out **Post-** procedures.



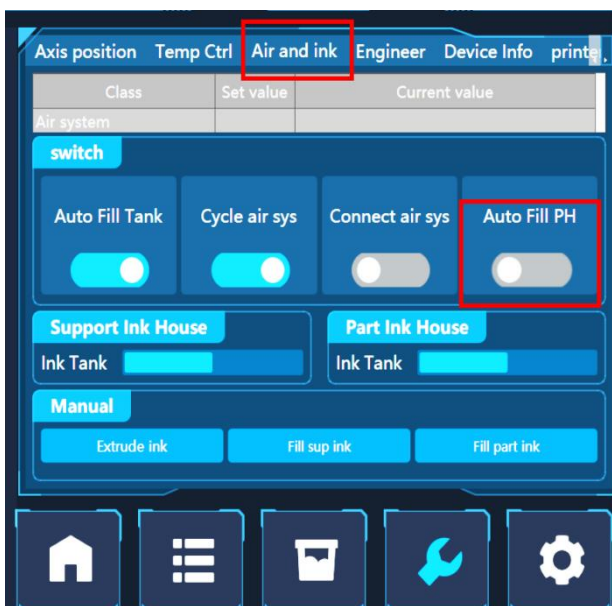
CAUTION:

Don't touch the print build plate while the printer is running. After the print job terminates, wait until the print engine rises to the **Z-axis** home position and the touchscreen shows the prompt “ **Print task completed. Please take away the board from the device.**”

3.5 Printer Power Off

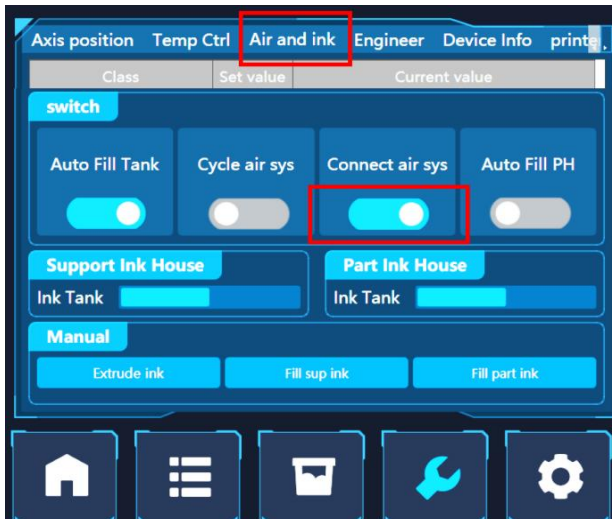
3.5.1 Precautions Before Power-off

- Verify the **Print Engine(PrintHeads)** is raised to **the Z-axis** home position.
- Click the Settings menu, select the **Air and Ink** page, and disable **Auto Fill PH**.

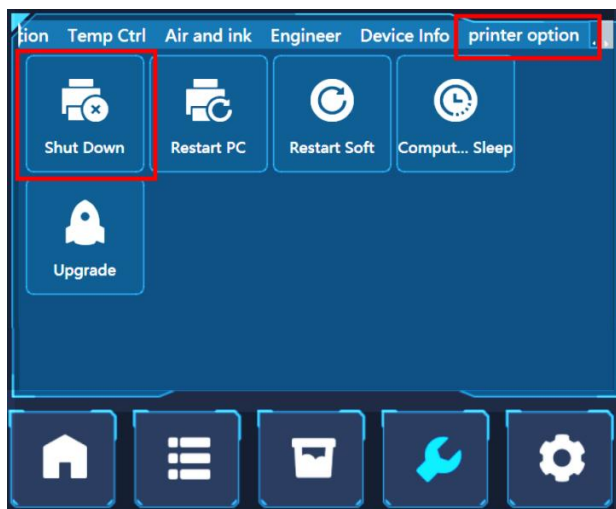




3. Turn on the **Connect air sys** button and turn off the **Cycle air sys**.



4. Select the **Printer option** and tap **Shut Down**.

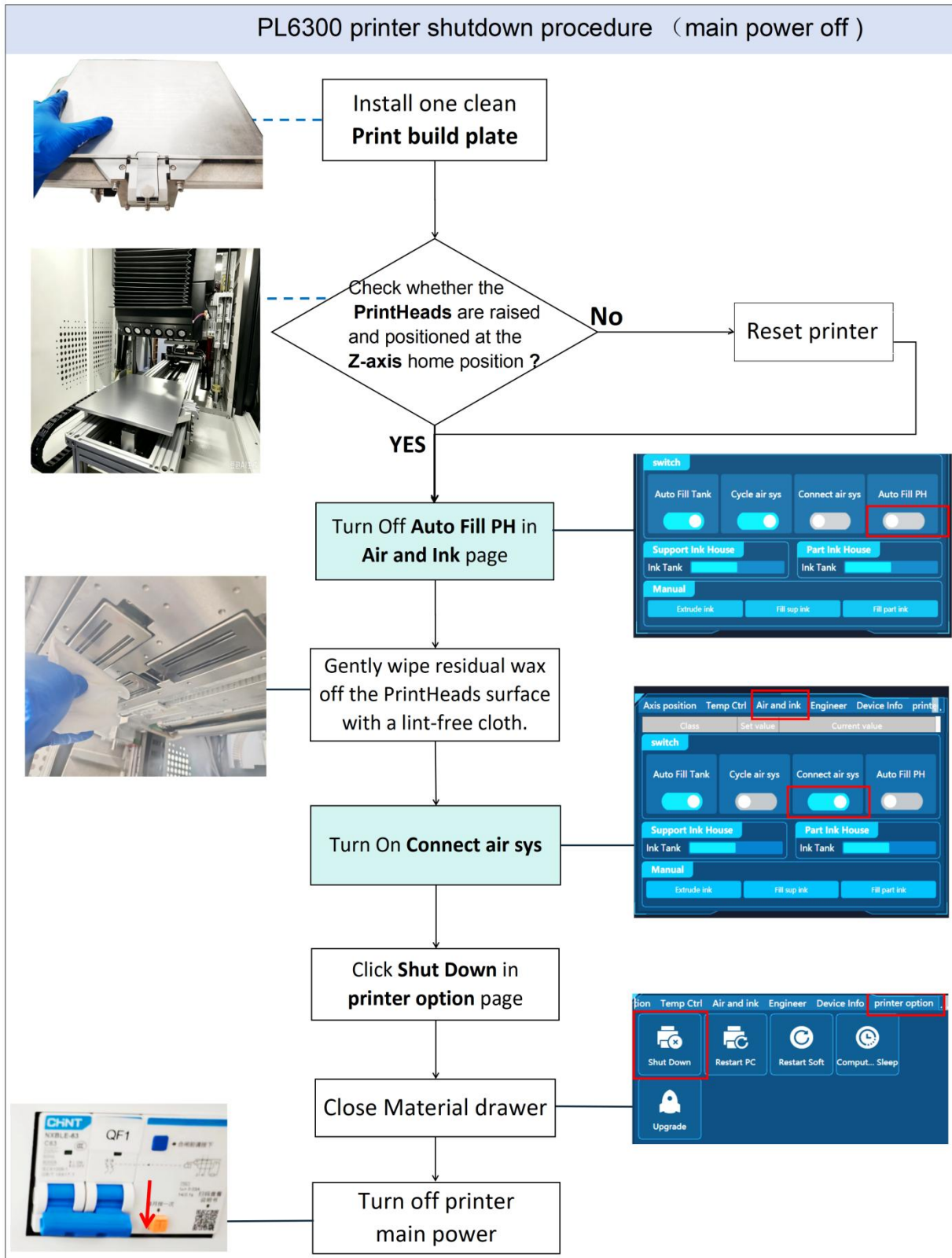


5. Then turn off the printer's external main power.



6. ax dust in the printing chamber and the waste chamber filter.

3.5.2 Shutdown Procedures





Chapter 4 Post-processing

4.1 Preparation

4.1.1 Tools

▪ Equipment and Tools

Electromagnetic stirrer, stainless steel pot, mesh sieve, measuring cup, rectangular tray, colander, plastic tweezers, small handmade hook.

1# Electromagnetic stirrer



2# Stainless steel basin



3# Stainless mesh sieve



4# Measuring cup



5# Stainless steel filter sieve



6# Ultrasonic cleaner



7# Rectangular tray



8# Plastic tweezers



9# Small soft brush



10# Small handmade hook



11# Butyl rubber gloves



12# Safety goggles & mask



4.1.2 Solvent

- PPG400 (Polypropylene glycol)



- Anhydrous Alcohol



- Ισοπροπυλ. Alcohol (IPA)



➤ Solution Ratio / Temp. Setting / Speed / Cleaning Time

Wax-Pattern Cleaning	Solution	PPG400	Anhydrous Alcohol	Isopropyl Alcohol	Temperature	Stir-Bar speed	Functions of Cleaning
First Time	Ratio	1	1	2	38°C~40°C	600-800	Remove dissolvable support wax from the wax-pattern
Second Time	Ratio	1	8	/	38°C~40°C	600-800	Remove residual dissolvable support wax from the wax-pattern
Third Time	Ratio	1	8	/	38°C~40°C	600-800	Remove fine support-wax powder from the wax-pattern surface

i TIPS:

The first cleaning removes support wax, and the second cleaning removes residual support wax on the model. Adopt different solution ratios for simple-structured and large-sized complex wax-patterns. For example, the mixing ratio of PPG400 to absolute ethanol is 1:9 or 1:10. The third cleaning removes tiny white-wax residues on the model surface.

Cleaning time: The cleaning duration for wax-patterns varies according to workpiece specifications. Please monitor the cleaning status. Longer cleaning time is required for wax-patterns with complex structures or larger dimensions.

4.2 Remove Wax Patterns

▪ Ice Removal

Prepare an ice block with dimensions similar to an A4 sheet, as shown in Fig. 4-1. Put the print build plate on the ice block and freeze the support structure of wax patterns, as shown in fig.4-2. After a while, take off all those removable wax patterns on the print build plate.



fig. 4-1 ice block



fig. 4-2 build plate on ice block

▪ Heating Removal

Prepare the electronic hot plate device, as shown in Fig. 4-3. Place the finished printing print build plate on the hot plate and heat all wax patterns' base supports for a few minutes, as shown in Fig. 4-4. Take off all those wax patterns from the print build plate after a while.



fig. 4-3 electronic hot plate device



fig. 4-4 print build plate on hot plate

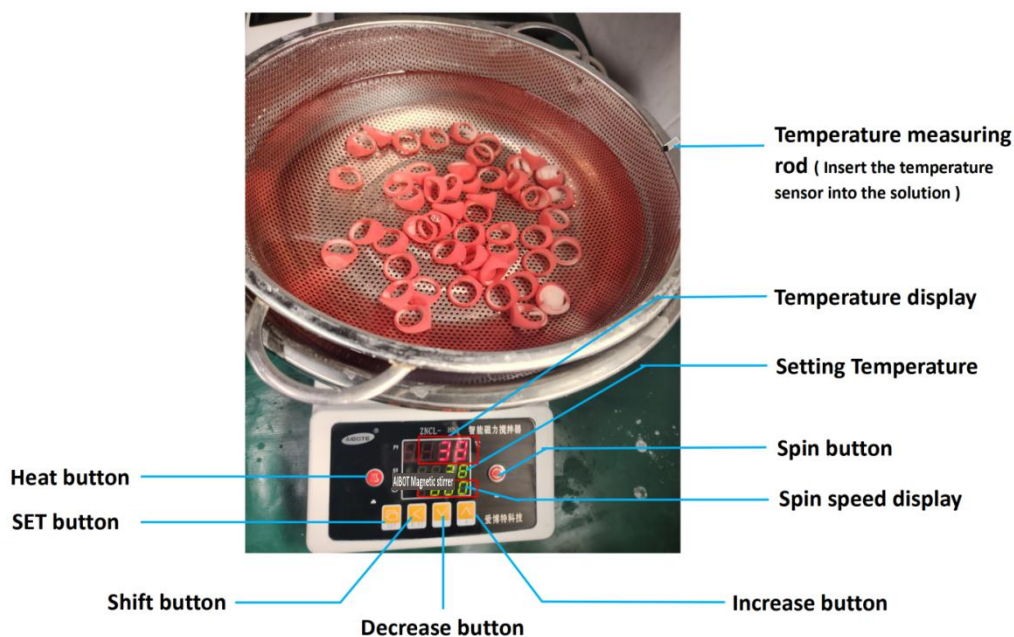


CAUTION:

When using heating-assisted demolding, do not leave the build-plate on the electric heating plate for a prolonged time to prevent the wax-pattern from being damaged by sustained high-temperature.

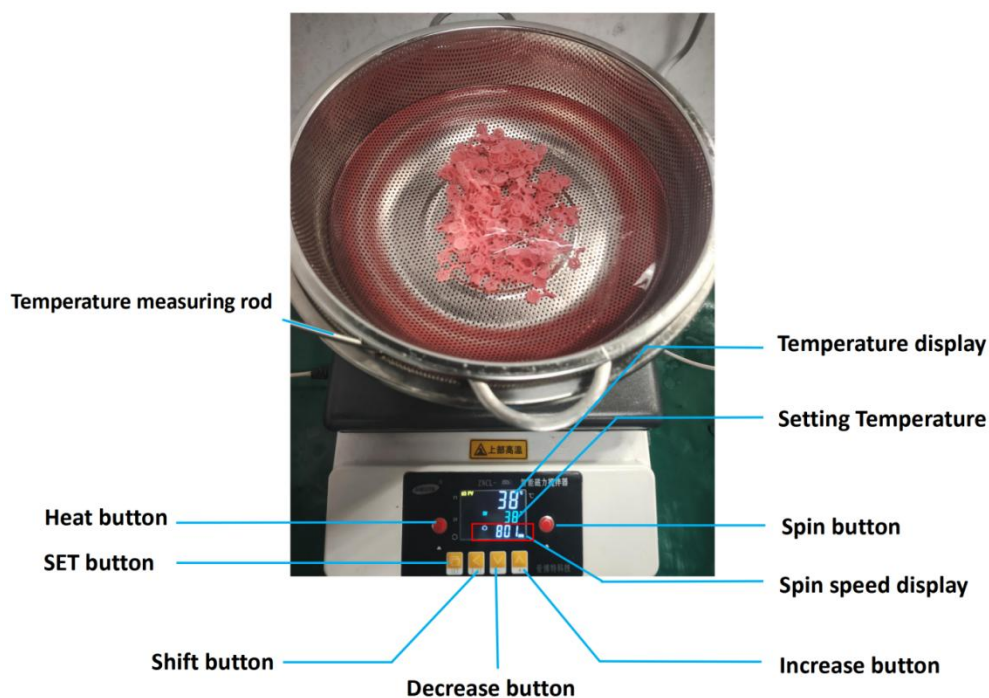
4.3 Wax Washing Procedures

4.3.1 First Wax Washing



- First-Time Solutions Ratio is **PPG400 : Anhydrous Alcohol : Isopropyl Alcohol = 1:1:2.**
- Magnetic stirrer heating button and set the heating temperature **at 38 °C.**

4.3.2 Second time wash



- Second-Time Solutions Ratio is **PPG400 : Anhydrous Alcohol = 1 : 8.**
- Magnetic stirrer heating button and set the heating temperature **at 38 °C.**

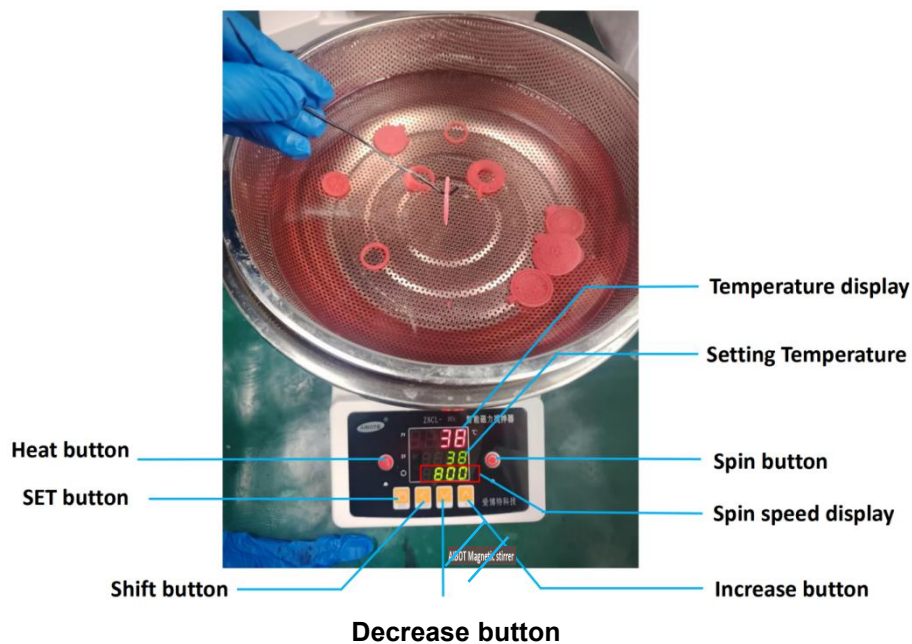


! CAUTION:

Place wax patterns individually; do not stack them. Inspect the parts during the initial cleaning phase. Lower the stirring speed if excessive fluid movement causes the wax patterns to vibrate.

4.3.3 Third Wax Washing

- Third-Time Solutions Ratio is **PPG400 : Anhydrous Alcohol = 1 : 8**
(same ratio as 2nd time wash)
- Magnetic stirrer heating button and set the heating temperature **at 38 °C**.



i TIPS:

The third-round cleaning supplements the second-round process. The prepared solution composition and cleaning procedures are exactly the same as those for the second-time cleaning. Replace the solution in a timely manner when substantial solid white wax appears and the solution darkens, which means excessive wax has dissolved into the liquid. It is recommended that 1 liter of solution dissolves about 150 g of white wax.

4.4 Collect Finished Wax Patterns



i TIPS: Use plastic hooks or hand-fabricated miniature hooks to take wax-patterns out from the cleaning solution gently and set them on the wax-patterns collection tray.



i TIPS: If numerous workpieces or small-sized wax patterns hinder single-piece picking, slowly lift the wax-pattern-loaded filter screen out of the cleaning solution in one piece. As wax patterns remain soft at this stage, let them sit for 30 minutes to dry and harden prior to individual removal.



i TIPS: Spread the cleaned wax-patterns evenly on dust-free paper of the tray. Either let them air-dry for over 30 minutes or employ a fan for forced-air drying. Afterwards carry out overall packaging before transferring to the next working procedure.



i TIPS:

- ① If residual white wax remains on the model surface, dip a soft-bristle brush in a small amount of absolute ethanol and gently brush off leftover wax.
- ② If surface whitening occurs on finished wax-patterns after cleaning, it is generally caused by excessively long cleaning duration or an over-high proportion of absolute ethanol in the solution. Reduce the mixing ratio or dosage of absolute ethanol accordingly.

Chapter 5 Print Quality

5.1 Quality Inspection

1. Surface has missing lines (streaks)?

Clean the **PrintHeads**. Perform **PrintHeads** maintenance. Clean Roller surface.

2. Cracks on the model surface?

Check the ambient temperature. Ensure the top fan is turned on and the front and rear fans of the **PrintHeads** are functioning properly to prevent the model from undergoing severe cold contraction deformation.

3. Surface scratches on the model?

Inspect if the roller surface is clean. Clean the roller surface and perform a wax coating test.

Clean the bottom of the **PrintHeads**. Remove wax dust from the front, rear, left, and right sides of the roller bottom and PrintHead carrier

4. White wax is present on the model surface after cleaning?

Inspect the roller surface for cleanliness, verify the scraper is correctly aligned and tightly fitted against the roller surface.

5. The cleaned models are connected together?

During the model layout process, if the gaps or spacing are sufficient, moderately increase the distance between models as needed ; verify the integrity of the STL file.

6. Model printing warping?

Monitor the workshop ambient temperature; the recommended operating temperature is kept within 18° C to 23° C (64° F to 73.4° F).

Check whether the primary efficient filter and the intake air filter are clogged. If clogged, clean or replace them immediately; ensure that the PL6300 printer is not placed near a window or exposed to direct sunlight; ensure there is at least a 0.5-meter clearance behind and on both sides of the printer.

7. The support material cannot adhere to the printing platform?

Please clean the print build plate and ensure it is dry before use.



Before using the print build plate, please clean the dust inside the printer's print chamber.

8. The model surface has wax dust, dust, or wax drips, and there are scratches on the model surface?

Clean the bottom of the print head, the areas around the print head and roller, and the dust on the bottom of the Y-axis crossbeam.

Remove the dust from the internal construction chamber of the printer.

5.2 Wax Model Layout

1. Total printing time depends on the maximum Z-axis height of placed parts. Reduce model placement height during layout arrangement to shorten printing duration.
2. Place parts uniformly along the Y-axis so that all three **PrintHeads** can cover the models, which increases the contact area between workpieces and the roller.
3. For layout on the XY-plane, maintain a minimum gap of 0.5 mm between models; the recommended Z-axis clearance is at least 1 mm. Expand the spacing if sufficient space is available.
4. If vertical-printing mode is adopted, verify the model posture within slicing software to ensure true vertical alignment.
5. According to nozzle- arrangement rules, models can be placed with a horizontal offset of **45°** inside software depending on part structures.
6. Surface quality decreases in the order: **XY**- plane > **XZ**- plane > **ZY**- plane. Orient high-quality required surfaces following this rule and adjust the coordinates of curved surfaces when necessary. Since X- direction jetting serves as a core printing process, global model placement shall start along the **X-axis** preferentially.
7. When importing models into **PL3D Print**, files shall have consistent formats. Loading files of different formats simultaneously for printing may impair printing quality.
8. Before importing model files into **PL3D Print**, verify key indicators, including geometric integrity, consistent facet normals, and model closure via **Rhino**, **ZBrush** (abbreviated as **ZB**), or other **3D**- modeling software.

5.3 Shrink Compensation

During printing, environmental conditions and inherent material properties cause the wax material to shrink by a certain percentage, which brings slight discrepancies between the actual printed-part dimensions and digital-file sizes. Furthermore, material loss also occurs during the investment-casting procedure. Consequently, proper dimensional compensation for the model before printing is critically essential.

✧ Method One

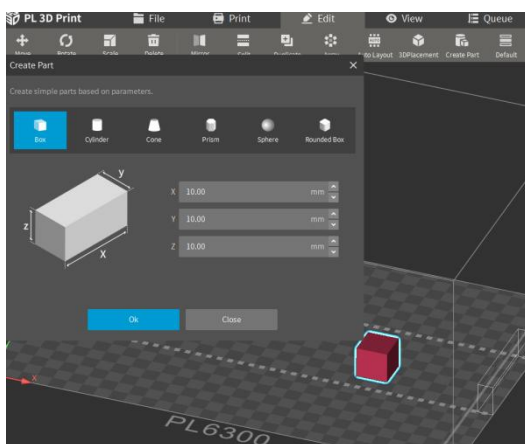
Employ **Rhino** or alternative 3D modeling software to obtain and log the precise X-, Y, and Z-axis dimensions of models, defined as X_{CAD} , Y_{CAD} , and Z_{CAD} . Once the support-wax removal and wax-washing process finishes, measure and document the X-, Y, and Z-axis dimensions of printed specimens and mark them as X_{PART} , Y_{PART} , Z_{PART} .

✧ Method Two

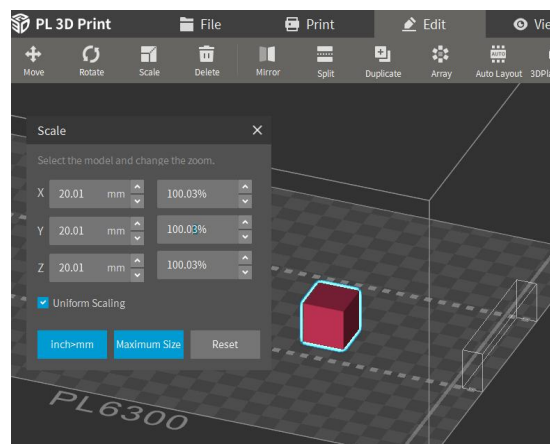
Create cubic or rectangular specimens via **PL3D Print** software, then record their theoretical CAD dimensions as X_{CAD} , Y_{CAD} , Z_{CAD} . After completing support-wax stripping and wax-cleaning operations, measure the actual dimensions of printed parts and record the values as X_{PART} , Y_{PART} , Z_{PART} .

Calculation of Shrinkage Scaling Factors:

- Create cubic



- Set scale factor





Chapter 6 Fault Codes & Troubleshooting

Error Code	Description	Troubleshooting steps / Action
8004	Insufficient PrintHeads support material	Inspect if material bottles are installed inside the material tank, and check for melted material inside the material bottles.
8005	Insufficient PrintHeads parts material	- See if it's clean inside the vacuum pipes on the recirculating tank, Shut down the printer, remove blocked material inside the vacuum pipes. - Inspect ink tube temp. Increase ink tube temp. In several degrees, - Inspect room temp., make room temp. setting 18-23°C.
7006	Temperature does not reach set value	- Check if the heating components of the printer are working properly. - Check if the temp. settings of each heating component are normal.
7007	Air pressure does not reach set value	- Check if the air board and are working properly - Inspect the vacuum pipe to the recirculating tank for clogging and breakage.
7008	Abnormal ink supply of support material	Check if there is sufficient material inside the bottles, replenish with new material
7009	Abnormal ink supply of part material	- Inspect ink level in the Air-Ink system page and vacuum pipes on recirculating tanks, Inspect air pipes on the ink tank (material drawer) - Make sure the Auto Fill Tank and Auto Fill PH buttons are ON
7010	Insufficient support material in the ink bottle	Inspect if the air pipe is materially blocked or not. If necessary, replace
7011	Insufficient part material in the ink bottle	- liquid sensors and clean vacuum pipe - Inspect the temp. of the up/down material tube. If necessary, increase the material tube temp. setting properly, or replace the temp. sensor - if the sensor was working improperly. - Inspect if the vacuum tube that goes to the recirculating tank is blocked or not. Clean it in a timely manner if there is any blockage.
9000	PLC is busy, buffering...	Make sure the PLC IP setting is 192.168.30.100 (always fixed)
9001	Device needs to be initialized	Click the Reset Printer button on the Engineer page, initializing the printer
9002	Z abnormal alarm	Check alarms on motor drivers, Reset alarm in Utility Manager
9003 、 9004	Z'L abnormal alarm, Z'R abnormal alarm	Clean the sensors on the X axis and Z axis. Make sure all moving parts are not over the limit sensor position
9005	X abnormal alarm	Check for obstructions and jamming issues, and verify sound mechanical connections of moving parts.
9006	Y abnormal alarm	
9007	Roller abnormal alarm	
9008	Z trigger positive limit	

9009	Z trigger negative limit	Click the Reset printer button on the Engineer page, initializing the printer
9010	Y trigger positive limit	
9011	Z asynchronous abnormal alarm	
9012	Z'L abnormal motor communication	Check alarms on motor drivers, Reset alarm in Utility Manager Software, power off printer and restart printer
9013	Z'R abnormal motor communication	
9014	X abnormal motor communication	
9015	Y abnormal motor communication	
9016	Roller abnormal motor communication	
9017	The material warehouse has been withdrawn	- Check the alarms and re-push material warehouse inside printer - Clean the material drawer's sensor that is fixed inside the bottom of the printer body
9018	Platform sensor abnormality	Replace the new build plate, clean the platform sensor, and the X platform



Chapter 7 Regular Maintenance

This chapter presents essential maintenance guidelines for the PL6300 printer. Please read these guidelines carefully and perform regular maintenance on the **PL6300** printer. Performing routine maintenance improves printing quality and protects the printer's mechanical parts.

7.1 Maintenance List

⚠ CAUTION: Before equipment maintenance, confirm the printer is in standby mode or cut off the power directly. Standby, as mentioned herein, means the idle state without any print jobs. Install a clean print substrate before performing routine maintenance operations. Specific maintenance items are as follows:

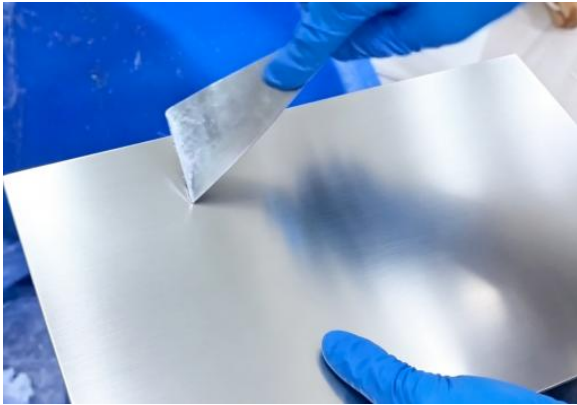
#	Maintain Items	As Needed	Daily	Weekly	Monthly	6 Months
1	Build print plate		✓			
2	Wipers (Waste Ink Cleaning station)	✓		✓		
3	X axis platform surface		✓			
4	Front and rear cooling fans		✓			
5	Sensors (10 pcs)		✓			
6	Waste Ink Box		✓			
7	Waste Ink Collection Tray	✓	✓			
8	Material Tank Silicone air tube					
9	Print engine bottom	✓		✓		
10	X axis platform			✓		
11	Top dust collector	✓		✓	✓	
12	PrintHeads (PHs)	✓		✓		
13	X/Y axis linear encoder	✓			✓	
14	Top cover air intake fans			✓		
15	Primary efficient filter			✓		
16	Industrial computer (IPC)			✓		
17	Dust removal fans			✓	✓	
18	Material drawer	✓		✓		
19	Touchscreen			✓		
20	Roller belt	✓				✓
21	X axis guide rail	✓				✓
22	Y-axis guide rail and Y-axis motor screw	✓				✓
23	Z-axis guide rail and Z-axis motor screw	✓				✓
24	Waste Ink Cleaning Station	✓				✓

7.2 Maintenance Items

7.2.1 Daily Maintenance

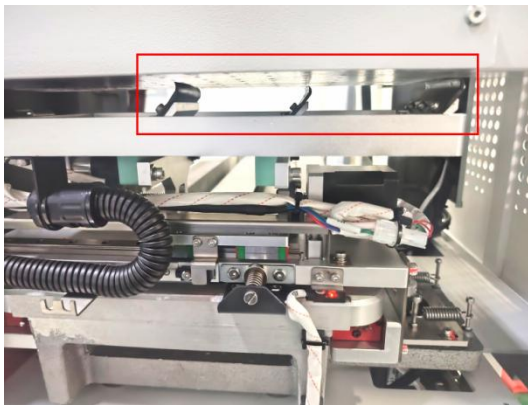
1. Build print plate

During operation, tilt the scraper at an angle $\leq 45^\circ$. Gently remove residual wax from the build-plate surface to prevent scratching it throughout the process. Spray an appropriate amount of isopropyl alcohol onto the plate, then wipe its surface with dust-free paper or a dust-free cloth.



2. Wipers

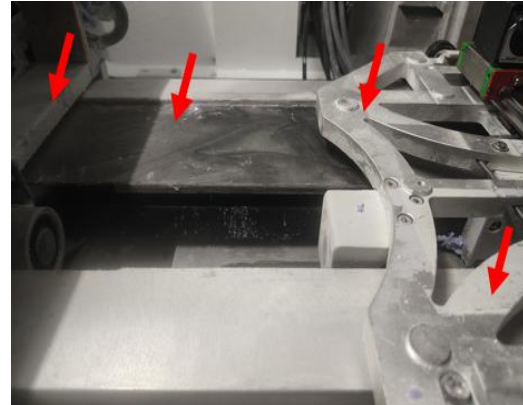
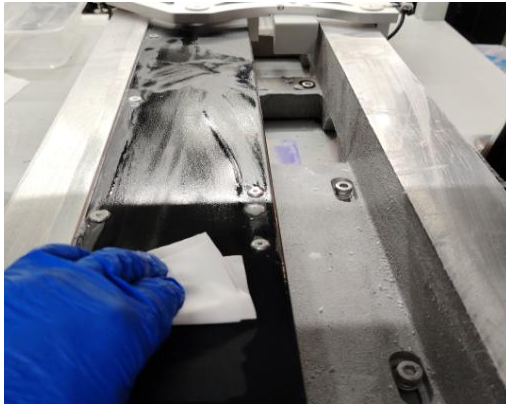
Moisten dust-free wipes with IPA or absolute ethanol to clean the three rubber wiper blades in the cleaning station.





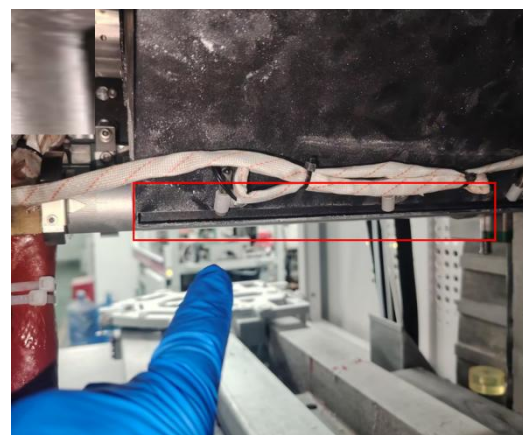
3. X axis platform surface

Ensure the printer is in standby (no printing state) or powered-off state, then open the printing-chamber door. Remove wax dust on the X-axis platform with a vacuum cleaner, then wipe the platform using a lint-free cloth slightly moistened with alcohol or isopropanol.



4. Front and rear cooling fans

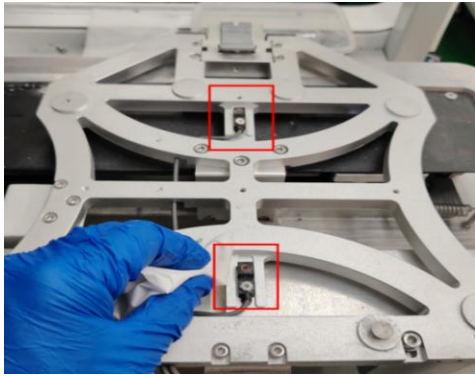
When the printer is in standby (no printing state) or powered-off state, clean the front and rear cooling fans inside the printing chamber with a vacuum cleaner.



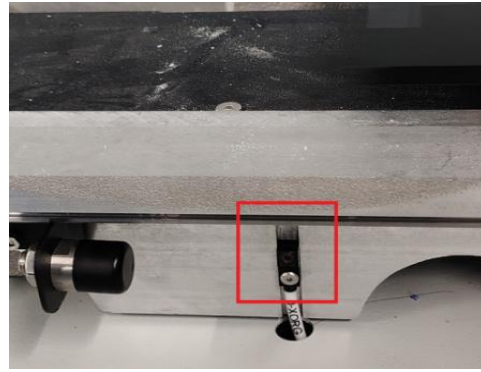
5. Sensors (10 pcs)

- When the printer is in standby (no printing state) or powered-off state, wipe exposed sensors with a lint-free cloth dipped in a small amount of isopropanol or alcohol.
- Since the Z-axis origin sensor and limit sensors are installed inside the print-head bracket and inaccessible for direct wiping, blow away accumulated wax dust with an air-gun.

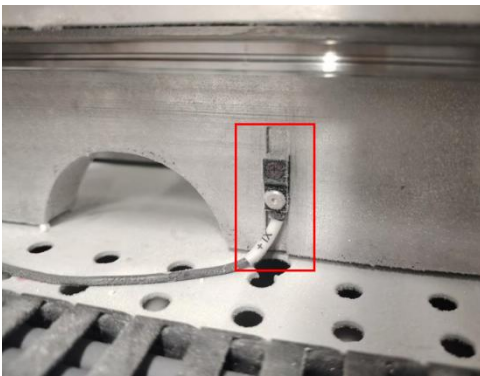
① Sensors on print platform



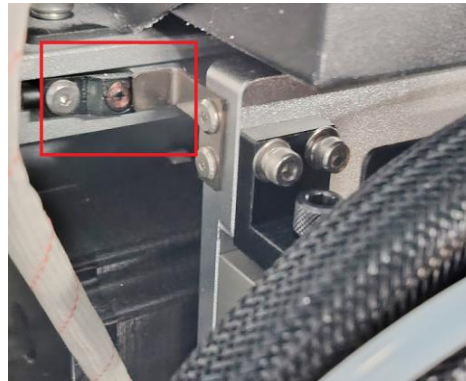
② X axis home sensor



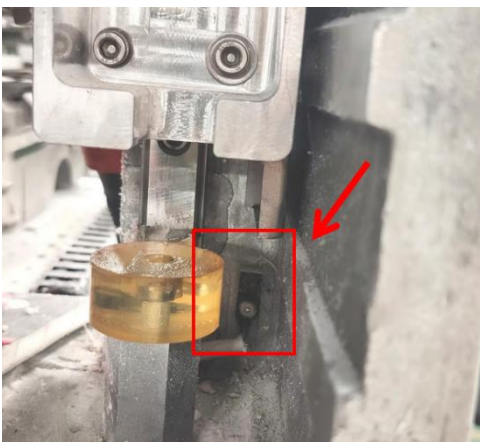
③ X axis limit sensor



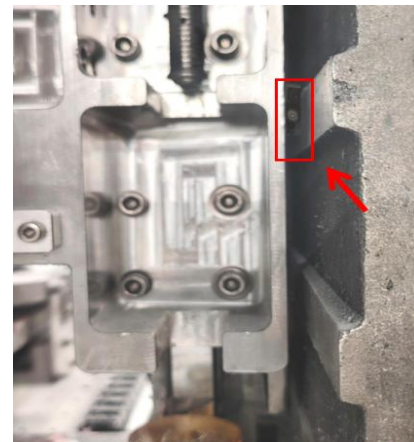
④ Y-axis home sensor



⑤ Z-axis limit sensor



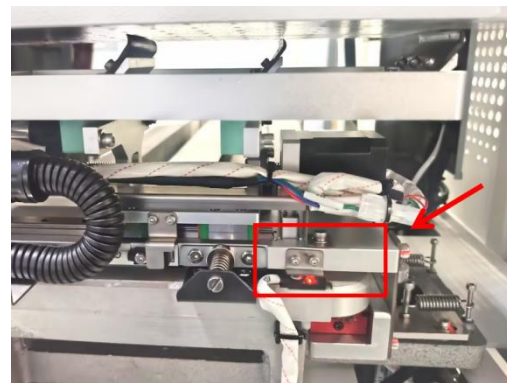
⑥ Z-axis home sensor



⑦ Sensor on Waste Ink Station



⑧ Limit sensors on Waste Ink station





⑨ Home sensors on Waste Ink station



6. Waste Ink Box

Open the waste ink chamber's door on the printer's right-hand side. Wear heat-resistant gloves to avoid scalds from high-temperature components and take out the waste ink box steadily. Periodically empty waste wax into a dedicated collecting bucket and reinstall it after cleaning.



7. Waste Ink Collection tray

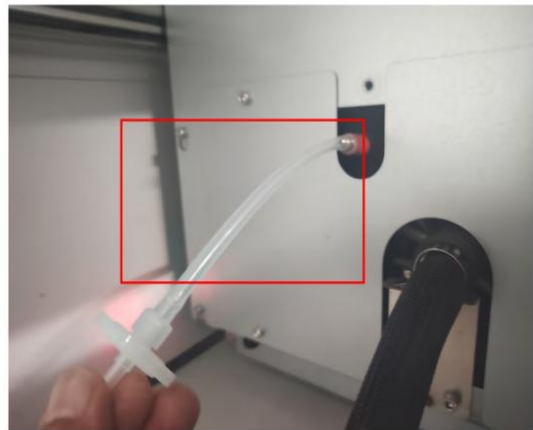
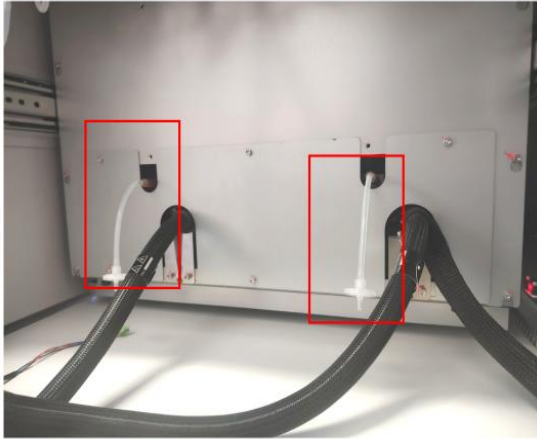
- ① Open the waste Ink chamber's door on the printer's right side, unlock the material-drawer safety lock, and pull out the material drawer.
- ② Withdraw the waste-wax tray under the right part of the material drawer. Remove leftover wax timely and fit the tray back after cleaning.



7.2.2 Weekly Maintenance

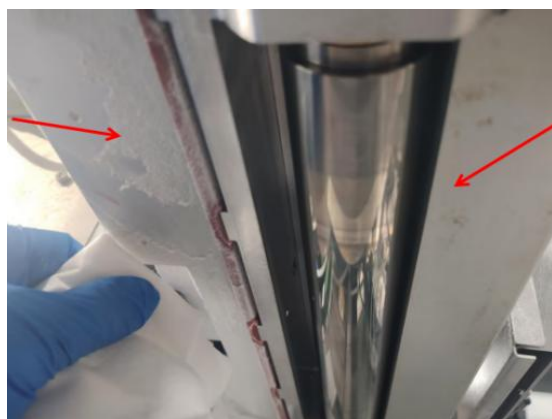
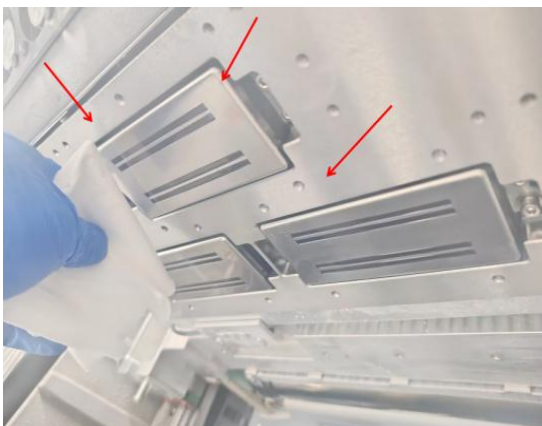
8. Material Tank Silicone air tube

Inspect the air pipe behind the material compartment regularly (see attached figure for details). In case of blockage, shut down the printer and cut off its power supply, clear clogged materials, and reinstall the air pipe afterwards.



9. Print engine bottom

- After the print head moves to the Z-axis home position, wipe wax dust from the bottom of the print head, areas around nozzle surfaces, and the front, rear, and bottom of the rollers with a lint-free cloth slightly dampened with **Isopropanol**. Refer to the red arrows in the figure below for cleaning areas.
- When cleaning the bottom of the print-head, use a mirror to observe accumulated wax dust and clear it timely.



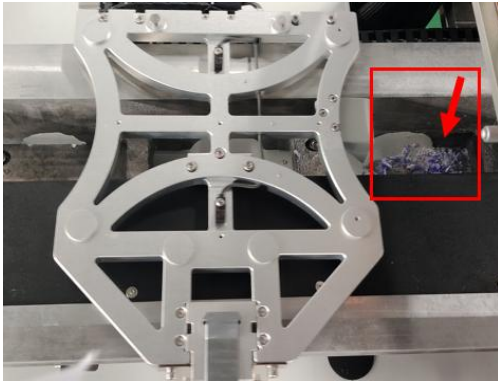


10. X axis platform

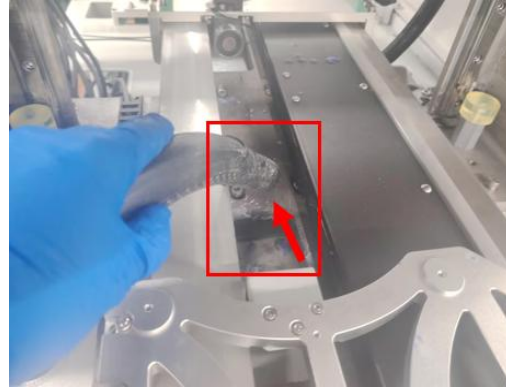
- Before printing, check for accumulated waste-wax and wax dust underneath the **X-axis platform**.

Clear such residues timely by following the steps below.

- ① Remove waste wax on the base with a scraper and hot-air blower.



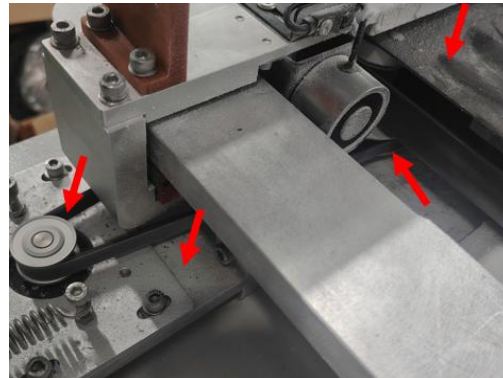
- ② Clean wax dust with a vacuum cleaner.



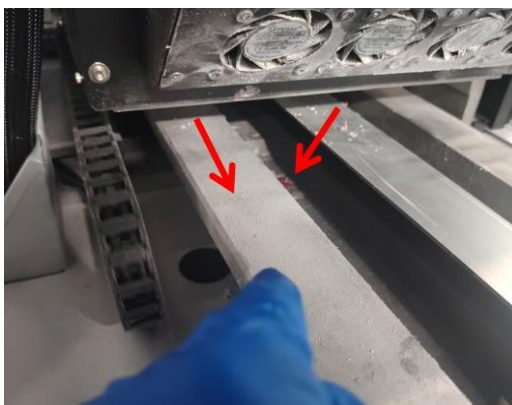
- ③ Use a vacuum cleaner to remove dust and wax debris around the pulley.



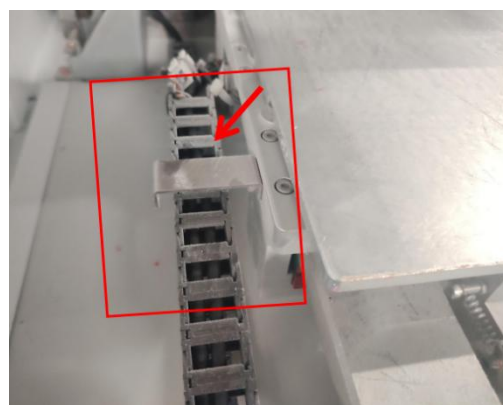
- ④ Use a vacuum cleaner to clear wax dust around timing pulleys and belts.



- ⑤ Clean wax dust on X axis platform



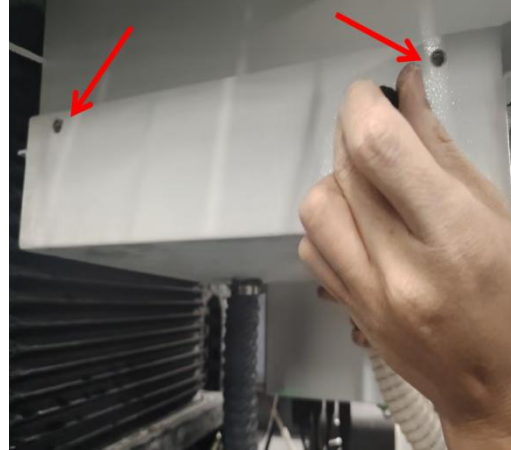
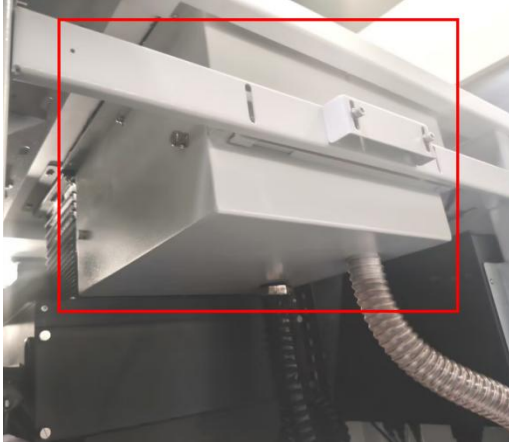
- ⑥ Regularly clear dust from the X-axis cable drag chain.



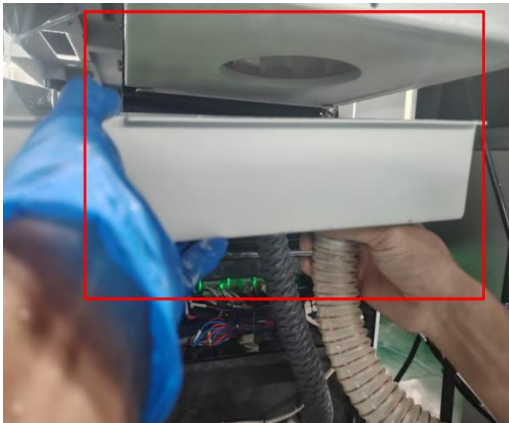
11. Top dust collector

Clean the upper dust-removal compartment when the printer is in standby (no printing state) or powered-off state.

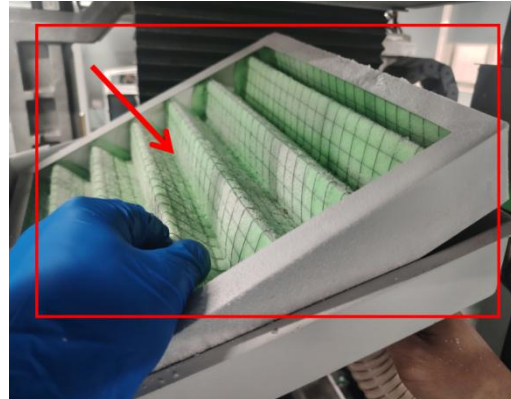
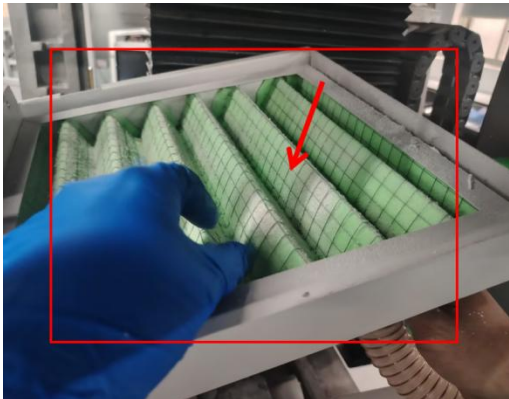
- ① Open the printer's right-side door,see the upper dust-removal box below.
- ② Loosen the screws of the dust compartment lower cover.



- ③ Remove the cover of the dust-removal box.
- ④ Vacuum dust from the dust-removal fan.

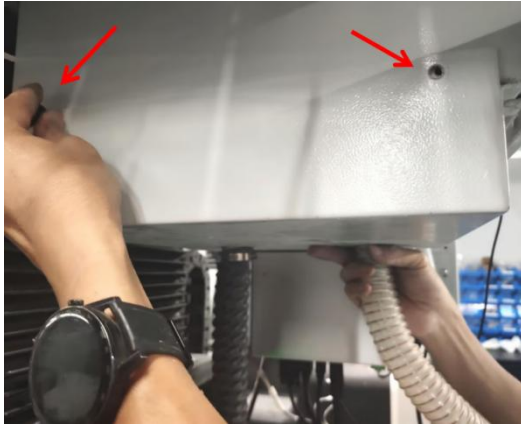


- ⑤ The filter sits in the upper dust compartment's lower cover.
- ⑥ Vacuum-clean the filter or rinse and dry it.





⑦ Refit the filter, reinstall the lower cover.



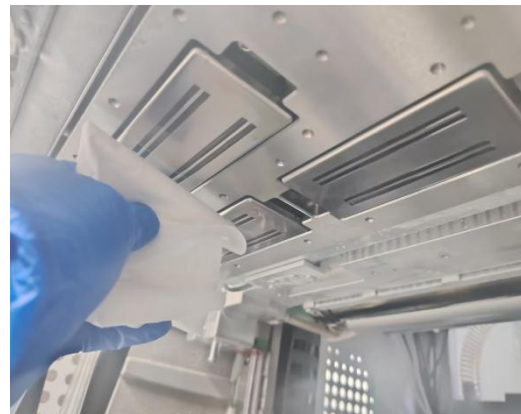
⑧ Close the printer's right-side door.



12. PrintHeads (PHs)

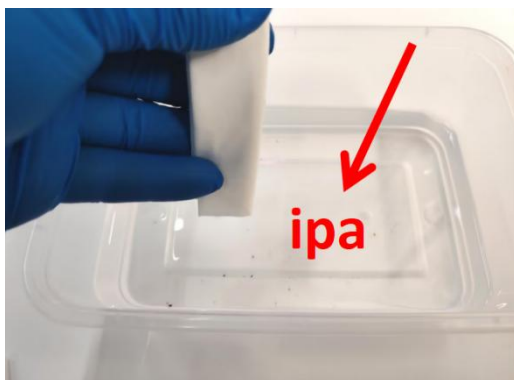
Wipe the PrintHead surface with a lint-free cloth dampened with a little **isopropyl alcohol**.

① Spray isopropyl alcohol onto a lint-free cloth. ② Wipe the printhead orifice surface gently.

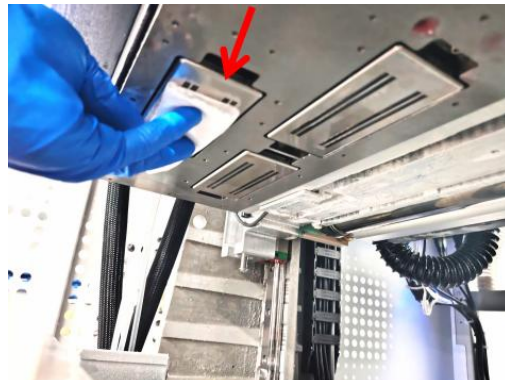


If many missing lines appear during **Test Nozzle** testing print, apply the IPA padding method. See detailed steps below.

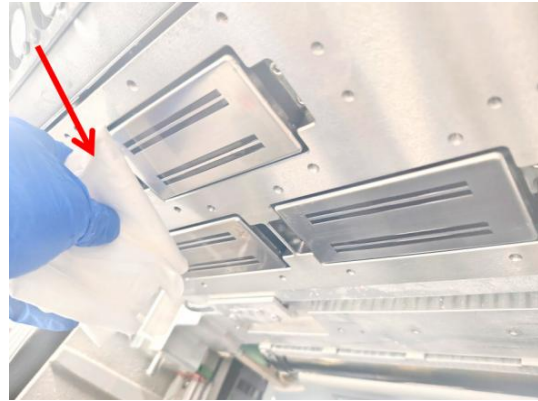
③ Soak the lint-free cloth in IPA and squeeze out excess liquid.



④ Lay a lint-free cloth flat by hand against the surface for around 10 seconds.



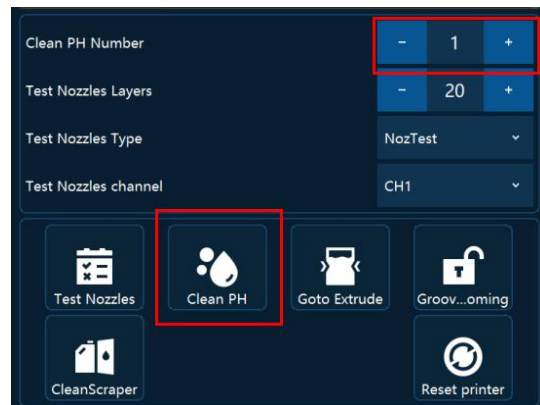
- ⑤ Lint-free cloth flat padding on **PrintHeads 2** minutes each time; repeat **3x**. ⑥ Lightly wipe PrintHead nozzle holes with a lint-free cloth slightly wetted by **IPA**.



- ⑦ Remove excess wax drips.



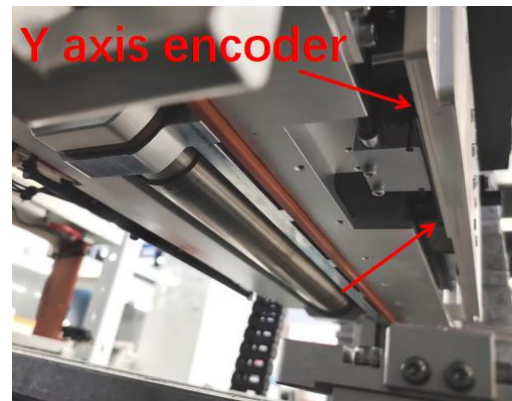
- ⑧ Click **Clean PH** on the **Engineer** page.



7.2.3 Monthly Maintenance

13. X/Y axis linear encoder

Dampen lint-free paper/cloth with industrial anhydrous alcohol to clean the **X-axis linear encoder** (magnetic scale). Softly blow the clearance of the **Y-axis encoder** and reader via air gun. (See figure below.) (Note: new version printer is not equipped with Y linear encoder)





14. Top cover air intake fans

Before cleaning, ensure the printer is either in standby mode or powered down; the fan will cease running. Clean wax dust off the fan using a vacuum cleaner or a soft-bristled brush.



15. Primary efficient filter

① Open the waste chamber's door.



② Loosen 4 screws on the dust filter box.



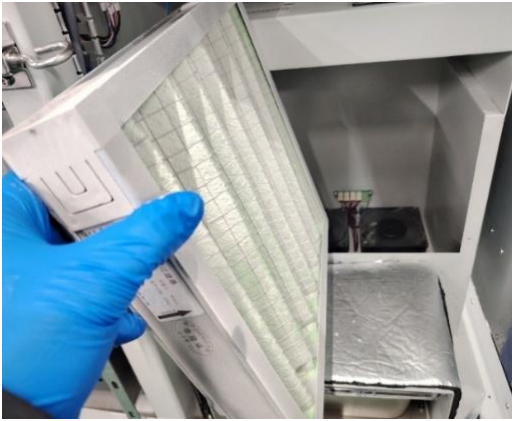
③ Open the dust box cover.



④ Remove primary filter.



- ⑤ Clean dust using a vacuum or air gun.



- ⑥ Replace primary filter as needed.



16. Industrial computer (IPC)

Clean wax dust at **IPC** vents using a vacuum and soft brush.



17. Dust removal fans

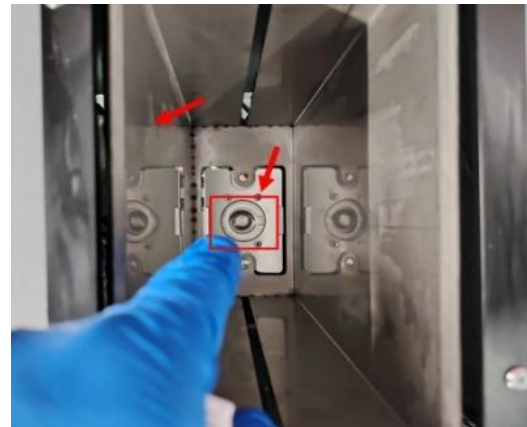
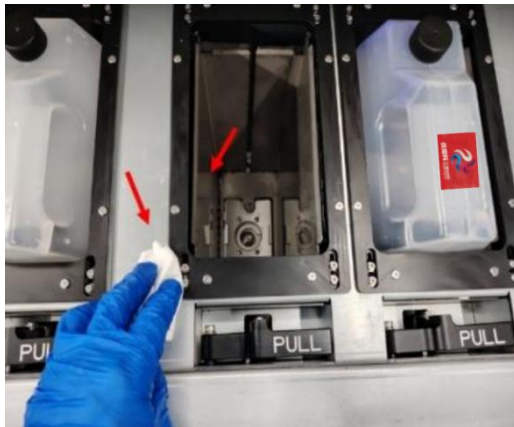
Open the waste wax filter box cover. When the bottom exhaust fan stops, clean the fan wax dust with a vacuum or soft brush (see figure below).





18. Material drawer

The material drawer is high-temperature. Wear heat-resistant protective gloves before cleaning. Dip a lint-free paper or cloth in an appropriate amount of isopropyl **alcohol** to wipe the material clamp and its surface; clear residual wax dust inside the material chamber.



19. Touchscreen

Use a vacuum and soft brush to remove wax dust from the touchscreen. Avoid touching cables and plugs during cleaning.

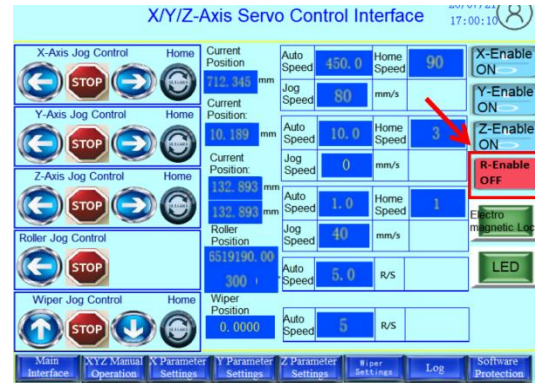


7.2.4 Six-month Maintenance

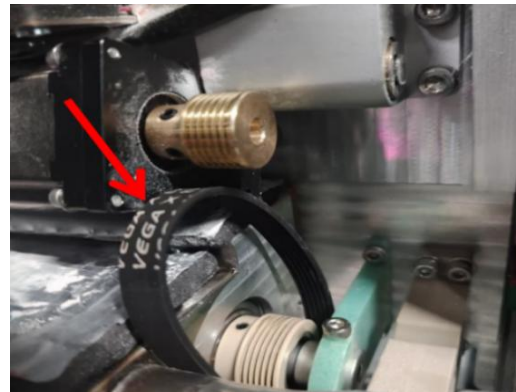
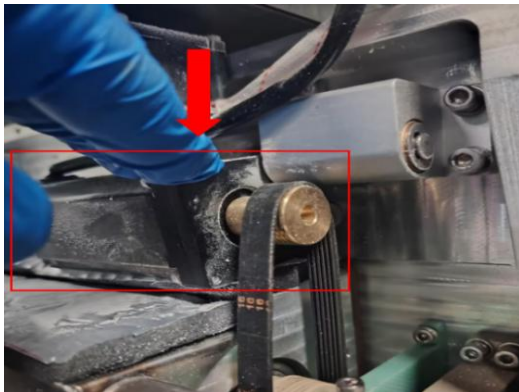
20. Roller belt

Promptly replace any severely worn or damaged roller belt. Replacement steps below.

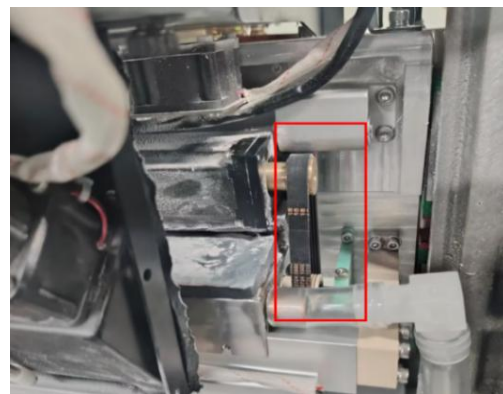
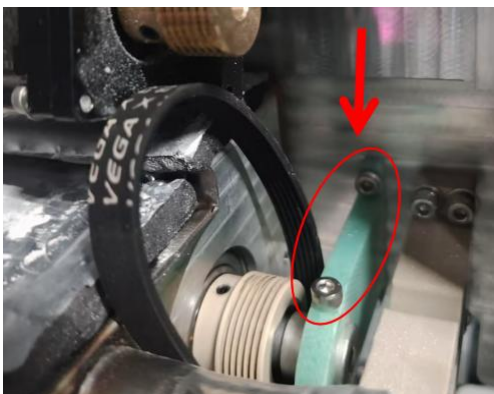
- ① Ensure the printer is in standby (no printing state) or powered-off state, open **Utility Manager**, switch to **X/Y/Z Manual Control**, and click the Roller **Enable ON** button; the button status will switch to red with Roller **Enable OFF** displayed.



- ② Push down the roller motor. Take off the roller belt gently from the motor pulley.

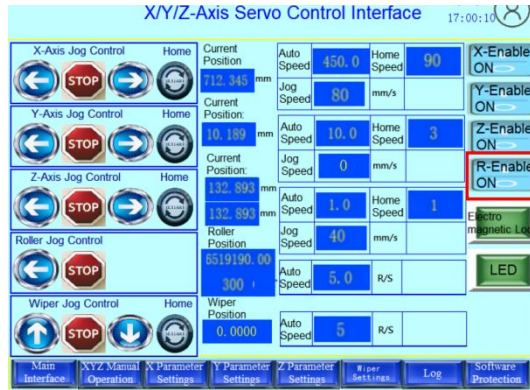


- ③ Remove 3 locking screws of the roller heater bar fixing block, take off the green block, and detach the old roller belt. Install a new roller motor belt, verify correct positioning, then reinstall the green fixing block to secure the heater bar.





- ④ In the **Utility Manager** program, click the red Roller **Enable OFF** button; the button will switch to blue and display Roller **Enable ON**, as shown in the figure below.

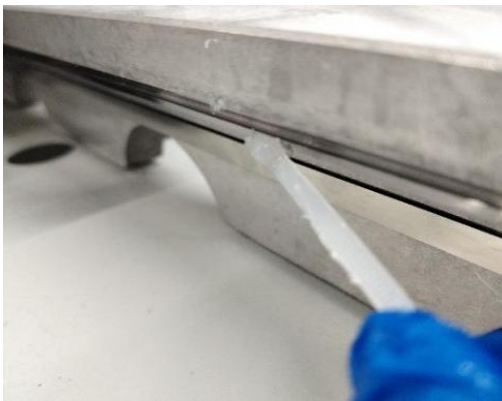


TIPS:

If the printer is powered off, there is no need to access the Utility Manager page. You may proceed directly with Steps ② and ③.

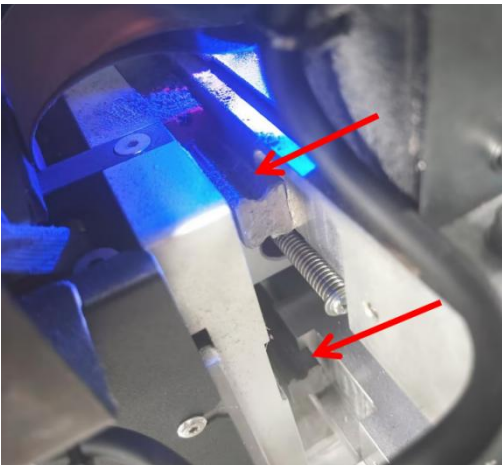
21. X-axis linear guide

Lubrication Procedure for X-axis Linear Guides: Take special guide grease and apply a thin, even coating to both the left and right X-axis linear guides.



22. Y-axis linear guides and Y-axis motor lead screw

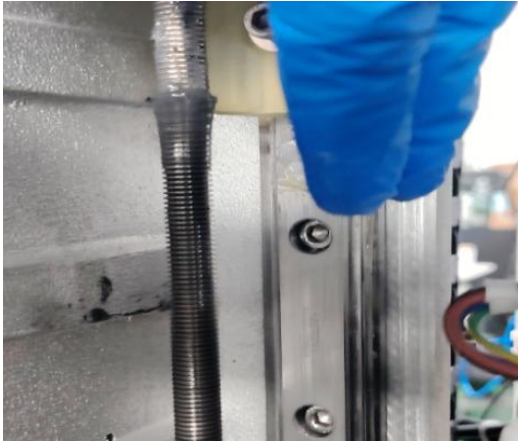
Take a small amount of special guide grease and apply it evenly to the surfaces of the Y-axis linear guides and the Y-axis motor lead screw, as shown in the figure below.



23. Z-axis linear guides and Z-axis motor lead screw

Lubrication procedures for the Z-axis linear guides and Z-axis motor lead screw are as follows:

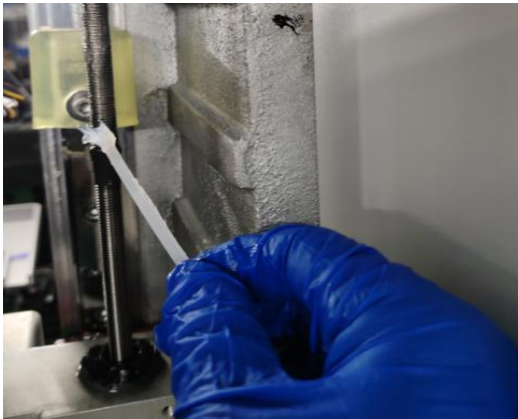
Apply a thin layer of dedicated guide grease to the left linear guide.



Apply a small amount of grease evenly to the right Z-axis linear guide.



Apply a little guide grease to the **Z-left** motor lead screw.

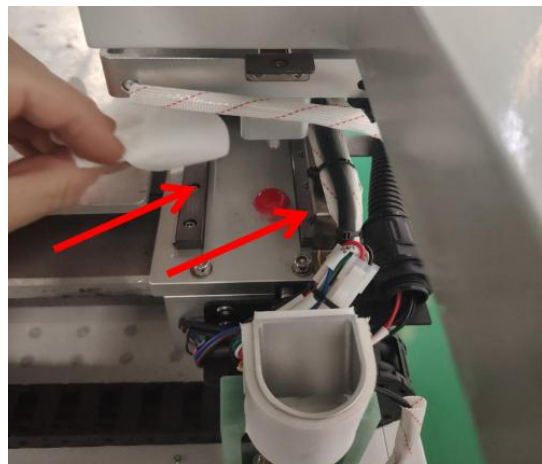
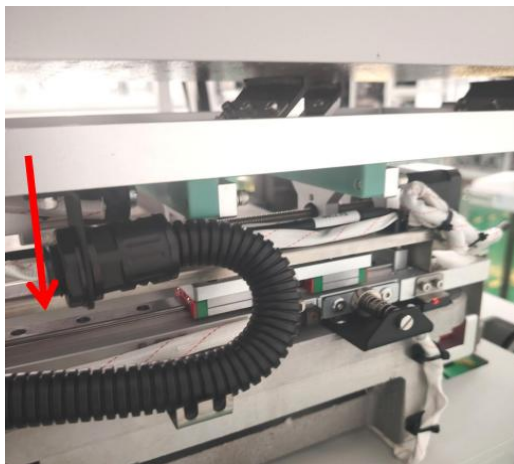


Apply a little guide grease to the **Z-right** motor lead screw.



24. Waste Ink Cleaning Station

Take a small amount of dedicated guide grease and apply it evenly to the surfaces of the linear guides and the motor lead screw of the **Waste Ink Cleaning Station**, as shown below.





Chapter 8 Packaging & Transportation

8.1 Overview

This chapter defines the standardized packaging requirements, material specifications, pre-packaging preparation, labeling rules, and packaging inspection standards for the PL6300 printer. It applies to all industrial 3D printer models for cross-border transportation, international logistics, overseas delivery, and foreign customer handover. Standard export packaging effectively protects printers from vibration, extrusion, moisture, dust, and corrosion during long-distance ocean, air, and land transportation, and complies with international logistics and export customs inspection norms.

8.2 Printer Pre-Packaging Preparation

Finish all 3D printer shutdown and reset steps before packing and transit:

- ① Take out material bottles inside bottle tanks in the material drawer.
- ② Place a clean square protective pad beneath the **PrintHeads**. Click the Z-axis down button in **Utility Manager** to lower the print engine. Halt Z-axis descent as soon as the **PrintHeads** lightly press against the protective pad.
- ③ Shutdown Printer. Disconnect power cords, LAN cable. Please strictly follow the shutdown procedures in session **3.5.2 Shutdown Procedure**.
- ④ Use zip-ties to fix the **X platform** and **Waste Ink Cleaning Station, Waste Material Box**.
- ⑤ Check the printer's appearance, screen, and check the waste dust chamber to confirm no loose parts. Record the printer model, serial number, and appearance status for subsequent arrival verification.

8.3 Standard Packaging Requirements

All 3D printers are packaged with customized professional shockproof and anti-collision materials. The outer package adopts eco-friendly, sturdy wooden crates that comply with international shipping standards for reinforced protection and secure fastening. Large-format industrial 3D printers are packed in wooden crates reinforced with steel strapping to improve structural stability during transportation.

The standard shipping labels shall be affixed to the exterior of the carton, featuring warning symbols such as **FRAGILE, THIS SIDE UP (KEEP UPRIGHT)**, **KEEP DRY**, and **NO STACKING**. All labels must be clearly printed and securely attached without fading or peeling off. Below are pictures of the printer packaging.

Internal Packaging Photos



External Packaging Photos



WARNING SYMBOLS

FRAGILE	Remind handlers the internal precision equipment is fragile; handle gently, no impact or heavy pressure.
KEEP UPRIGHT [↑THIS SIDE UP]	This label means keep the package upright as the arrow indicates; no inversion or flat laying.
KEEP DRY	Keep package dry to protect electrical components from moisture damage.
FRONTAGE	Marks machine front with delicate screen and print head; protect from impacts.
DO NOT TILT	Prohibit tilting; keep the crate vertical during transport and handling.



8.4 Transportation Requirements

8.4.1 Storage Placement

Only place wooden crates in a single layer. Do not stack any goods on top.

8.4.2 Storage & Transport Environment

Avoid direct sunlight, low temperature, and outdoor storage. High temperature deteriorates consumables, while low temperature causes pipeline clogging. Use extra waterproof film for transportation in rainy seasons or coastal areas.

8.4.3 Logistics Selection

Choose full-truck dedicated delivery instead of LTL with multiple transfers. Avoid bumpy rural roads and prioritize highway transit to reduce repeated loading and unloading.

8.4.4 Loading & Unloading Operations

Lift the wooden packing crate only by its load-bearing base at the bottom. Handle gently with a lifting drop distance under 10 cm; no throwing, dragging, or tipping. When using a forklift, fully insert forks under the base to prevent printer deformation from unilateral stress.

Chapter 9 Warranty & Service

Plempire is committed to delivering high-quality products and premium after-sales services to ensure customers enjoy a satisfying and seamless printing experience. Below are our product warranty policy and after-sales service guidelines.

9.1 Warranty Policy

9.1.1 Warranty Period

- ✧ **Plempire** PL6300 printers come with a standard 1-year warranty starting from the date of equipment acceptance. Within the warranty period, customers are entitled to free repair or complimentary replacement of covered spare parts for quality defects that are not caused by human error or improper operation.
- ✧ The actual warranty coverage varies by printer model and purchase contract. Extended factory warranty may be offered under specific purchase agreements, and optional extended warranty service is also available for customers.

9.1.2 Covered Parts & Free Services

Free repair or spare part replacement is available under warranty. Free accessories exclude replacements resulting from accidental damage or improper operation. Details are subject to the contract. Main standard replaceable parts and free services under warranty (for reference only) are as follows:

■ Standard warranty replaceable parts

- ✧ **Mechanical Motion Parts** : Motor belts, limit sensors.
- ✧ **Electrical Control Components** : Solenoid valves, cooling fans, original signal cables.
- ✧ **Core Printing Modules** : Air Filter, Liquid Level Sensors, etc.
- ✧ **Auxiliary Components** : Exhaust fan, silicone vacuum pipe.

■ Free service

- ✧ Free official software upgrades
- ✧ remote troubleshooting and technical consultation

9.1.3 Exclusions (Not Covered Under Warranty)

- Printing consumables are wearing parts and are generally not covered by the printer warranty. The standard printing consumables are listed as follows:

Timing belts, wipers, sliders, air filters, sealing rubber rings, printing materials, print build plate, etc.



- Any damage or malfunction caused by the following conditions shall also be excluded from warranty coverage.
 - ① Damage caused by improper operation, unauthorized disassembly, or modification.
 - ② Failures from harsh working environments: dust corrosion, water ingress, unstable voltage.
 - ③ Damage from transportation, natural disasters, fire, lightning strikes.
 - ④ Damage to the printer caused by accidental breakage or war shall not be covered by the warranty.
 - ⑤ Any accidents arising from equipment maintenance, calibration, or relocation conducted by unauthorized third parties, as well as severe deterioration of print quality caused thereby, shall be excluded from warranty coverage.

9.2 After-sales service policy

9.2.1 How to Apply for Warranty Service

- To apply for warranty service, please prepare the printer **serial number**, a detailed fault description, and the purchase voucher. The serial number is printed on the back of the machine. Our customer service team will troubleshoot the equipment based on your purchase information and guide you through follow-up procedures.
- If you encounter any problems, please contact **Plempire** via our customer service hotline, send emails to **sales@plempire.net**, or scan the corporate **WeChat** QR code on our official website **www.plempire.cn**.



9.2.2 Printer Installation and Operation Training

❖ Self-Installation by Users

Follow the steps below for self-installation:

① Printer Unpacking Inspection

After receipt, check the wooden crate for dents and water seepage. Unpack and count all accessories against the packing list. Contact after-sales service immediately for registration if any parts are damaged or missing.

② Site Placement Requirements

Place the printer on a flat, dust-free, shaded, and well-ventilated indoor surface with sufficient space for heat dissipation and operation. Ensure ambient temperature and humidity meet operating standards. Keep the unit away from heat sources and strong magnetic fields, and confirm the surface load capacity matches the printer weight.

③ Step-by-Step Installation

Complete build plate leveling, wiring, and material loading sequentially, following the illustrated instructions in the user manual. Proceed to the next procedure only after verifying each step is completed correctly.

④ Initial Power-On & Test Print

After full installation, power on, load materials, and run **Reset printer**. Let the printing materials melt for 5 hours. Tap **"Yes"** on the touchscreen prompt **"Printer is ready. Please turn on the Air & Ink system? "** to continue. Complete the Test **Nozzle** print to verify printing quality, then transfer the print files. The self-installation is finished once the test print output meets standard quality.

❖ On-site Installation by Engineers

Booking Procedure for On-site Service

If users require professional on-site installation, they may submit an application via the customer service hotline, corporate WeChat, or email, providing the printer model, delivery address, and preferred appointment time. Our after-sales staff will verify purchase information and assign a corresponding technical engineer.

Standardized On-site Installation

Upon arrival, the engineer will assist users with unpacking inspection, equipment handling and placement, full machine assembly, electrical wiring, horizontal calibration, software and driver installation, as well as test printing. All professional installation and commissioning work will be completed in a single visit.



❖ On-site Operation & Maintenance Training by Engineers

① Basic Printer Operation Training

We demonstrate core operations: power on/off printer, touchscreen and PL6300 program interface, navigation, file transfer, task selection, **Test Nozzle** print, print start/pause/stop, part demolding, post-processing, and support removal in solvent.

② Routine Maintenance Training

Cover inspection, cleaning, and replacement cycles of consumables (timing belts, scrapers, rollers, sealing O-rings, dust filters, etc.)); standard cleaning steps for **PrintHeads**, build print plate, PrintHeads and rollers; guidance on periodic calibration, lubrication, and dust cleaning; rules for material storage, refilling, and recovery.

③ Basic Troubleshooting Training

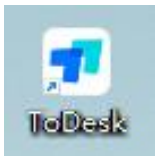
Explain quick fixes for typical printing issues: streaks (missing lines), layer marks, warping, material leakage, and layer separation. Trainees will learn to check alarms, read error codes, and reset minor faults.

9.2.3 Technical Support & On-site Maintenance

■ Technical Support

During the warranty period of the PL6300 3D printer, **Plempire** technical staff will provide scheduled online technical support via remote access through instant messaging tools, including **WeChat**, WhatsApp, and **Line**, etc. Users shall connect the printer to the Internet, launch **ToDesk** on the printer touchscreen, and send the ToDesk remote access code to our technicians.

ToDesk icon on touchscreen



■ On-site Maintenance

On-site service by technicians will be arranged according to actual on-site faults. The specific service scope will be determined by **Plempire** technicians based on the printer's real condition to guarantee uninterrupted equipment operation.

❖ Equipment Troubleshooting

Inspect hardware and software faults on site, repair and replace damaged parts, including new print heads and electrical control components.

✧ **Whole Machine Commissioning & Calibration**

Calibrate printing accuracy, maintain **PrintHeads**, clean the Waste Ink capping station, and restore the printer to standard operating status.

✧ **Periodic Maintenance**

Standard maintenance includes full machine dust removal, guide rail lubrication, timing belt inspection, print head maintenance, and material system cleaning.

✧ **Operation Training & Guidance**

Provide on-site training for operators on printer operation, daily maintenance, and simple fault troubleshooting.

9.2.4 Warranty Freight Terms

When our after-sales engineers confirm warranty parts need returning to the factory for repair, shipping costs shall be shared by both parties as stipulated below:

- ① For spare parts excluded from warranty coverage that require factory repair upon our after-sales verification, the end customer shall cover all inbound and outbound shipping costs.
- ② Within the valid warranty period, if component replacement is required as a result of accidents or improper manual operation, the user shall be responsible for both outgoing and return freight charges.

Appendix A PL3D PRINT Software

■ PL3D Print Software Setup

- Install **PL3D Print** to Drive **D** or **E** only on the user's computer (see fig. A-1).
- Enter the activation code in the input field after finishing software installation (see fig. A-2).

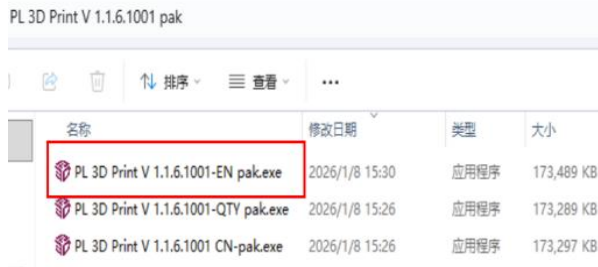


fig. A-1 install PL3D Print

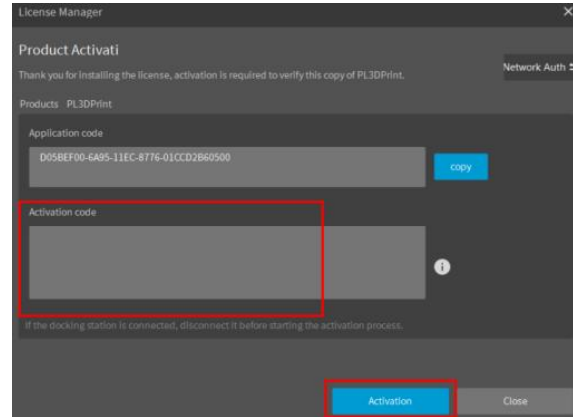


fig. A-2 Input Activation Code

■ PL3D Print software using

- Double-click the **PL3D Print** desktop icon to launch the software (fig. A-3).
Click **Print > Settings > Refresh**, select your printer, then click **Set** to connect (fig. A-4, fig. A-5)

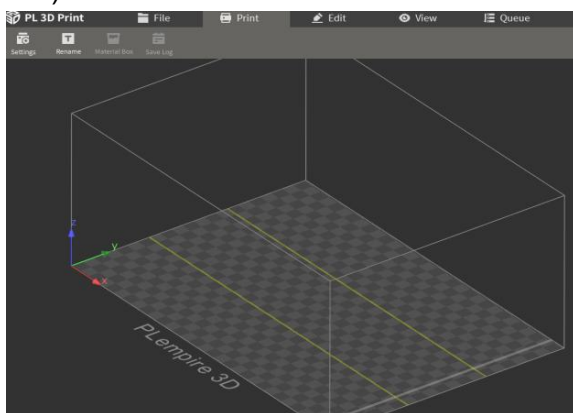


fig. A-3 run PL3D Print program

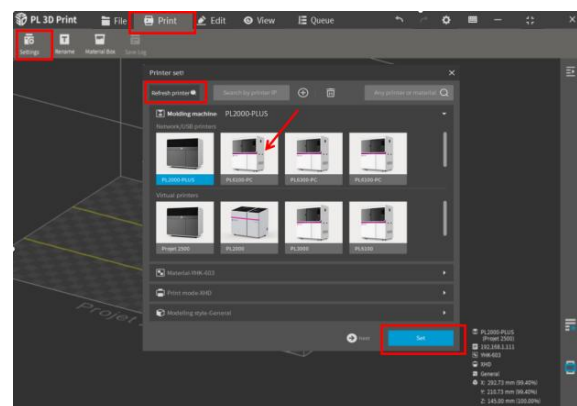


fig. A-4 Connect Printer

- Import the **.stl** file via **File > Import**, click **Add to Queue**, enter a filename, click **Add to Queue** again to send it to the printer, and it appears in the **Print Queue** waiting list (figs. A-5, A-6).

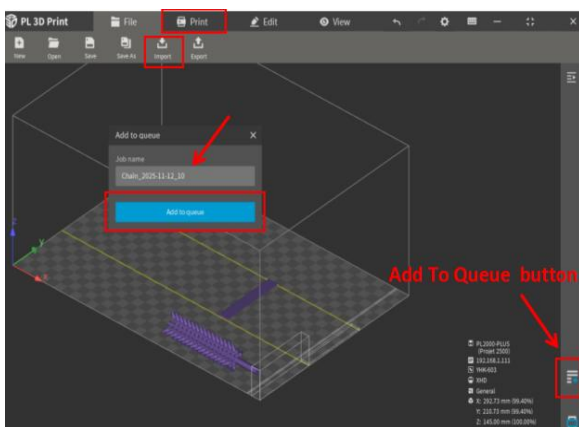


fig. A-5 Add to Queue

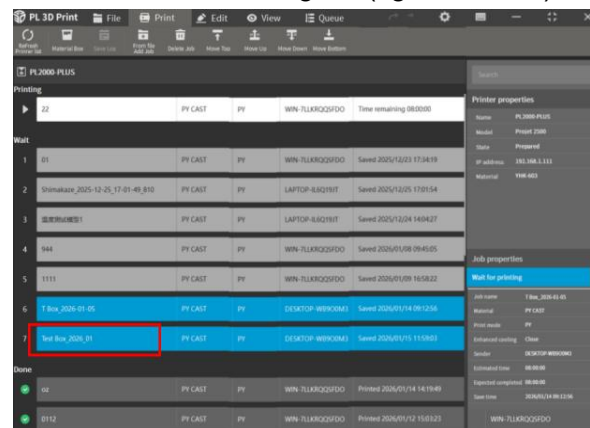
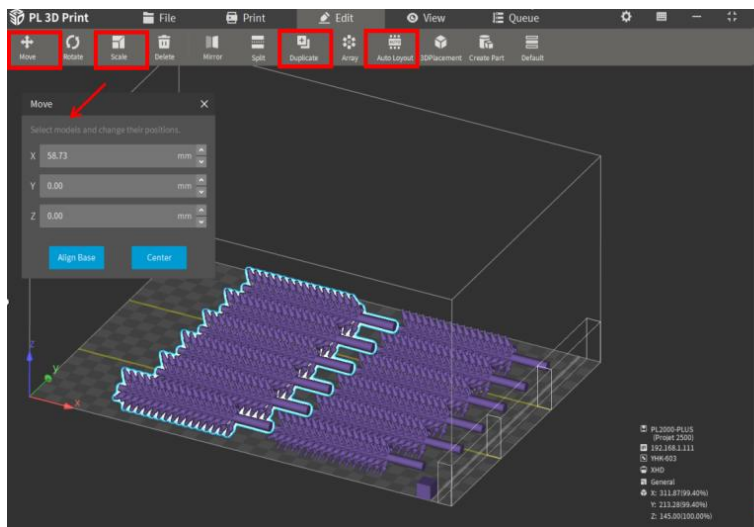


fig. A-6 sent file Auto-Save to Print Queue

■ Print file Edit

Click **Edit** to modify and arrange models via built-in tools. Common functions include Move, Rotate, Scale, Mirror, Split, Duplicate, Auto Layout, 3D Placement, Create Part, etc.



Move : Manual move models or change coordination to move auto.



Rotate: Change model placement angles.



Scale: Magnify or scale down model size.



Mirror: Create symmetrical shapes along the axis of symmetry.



Split: Separate the models into groups.



Duplicate: Copy model quantities.



Auto Layout: Automatically place the model on the XY plane.



3D placement: Auto-place models on stacking.

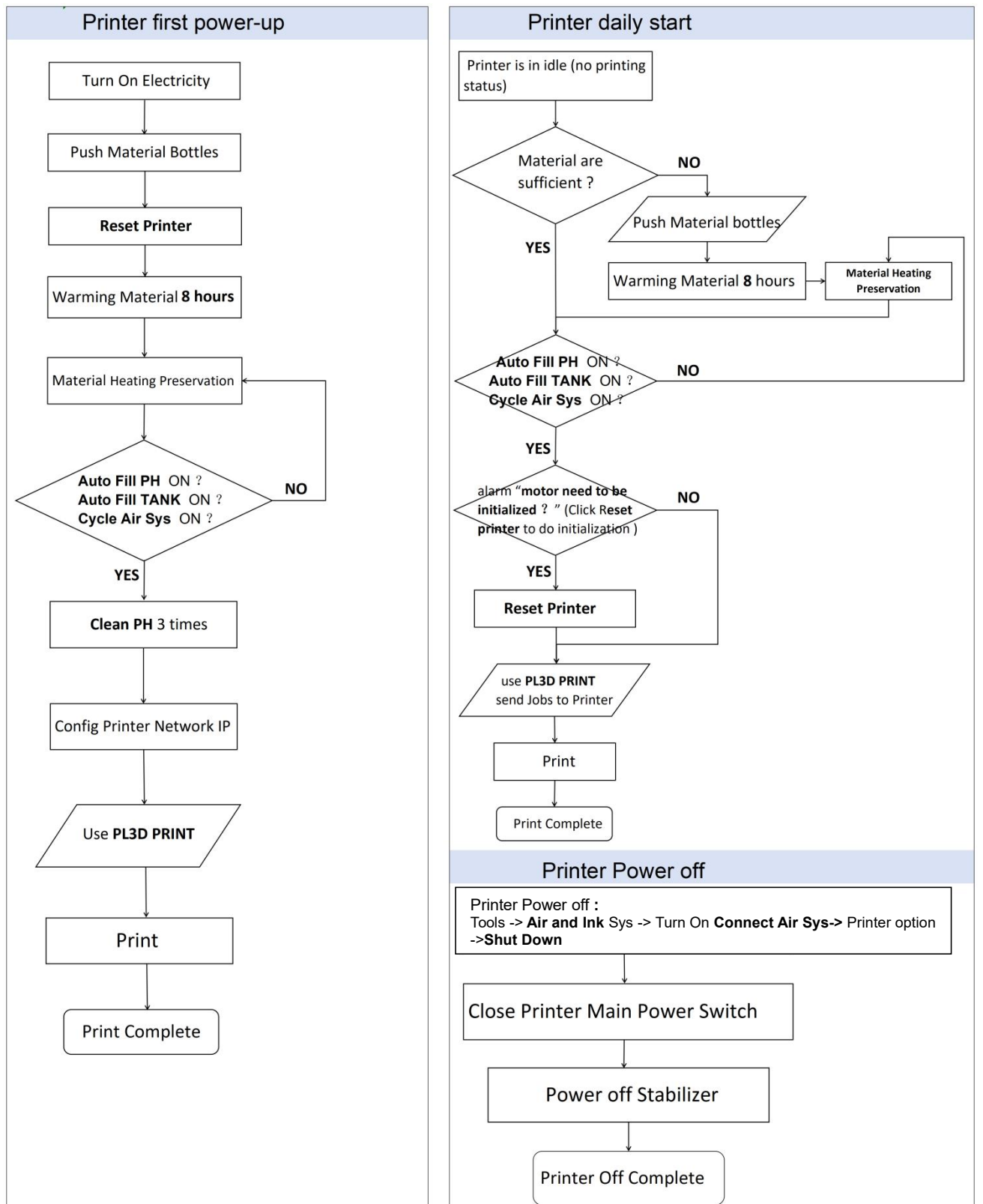


Create part: Create geometric cube.



NOTE: Contact the Plempire team to obtain the activation code for **PL3D PRINT** software.

Appendix B Printer Startup & Shutdown Steps



Appendix C Standard Accessories

No.	Item code(*)	PL6300 Printer Parts Name	Date: April,2026	Qty
1	07.PL3000.220-j07-v3_0	build plate		2.00
2	06.11.B.0019	small		1.00
3	06.11.L.0001	rubber wiper		1.00
4	06.11.H.0007	Roller belt		1.00
5	06.05.0010	U disk 32G		1.00
6	06.07.A.0065	fuse (glass fuse on PH power board)		1.00
7	09.0006	allen key		1.00
8	09.0024	probe hooker		1.00
9	09.0034	T allen key (use for unscrew heads)		1.00
10	09.01.0010	scraper (remove wax on plate)		1.00
11	09.02.0001	dust free tissue		1.00
12	06.07.L.0001	heater for scraper slot		1.00
13	06.07.F.0004	heater for roller		1.00
14	06.07.F.0015	sealing O ring (Ink Tank)		4.00
15	06.06.M.C008	air pipe connector		1.00
16	06.07.E.0021	filter (air pipe) diameter 25mm / TPT2545		1.00
17	06.11.E.0007	silicone air pipe		5.00



Precision — Efficiency — Service

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