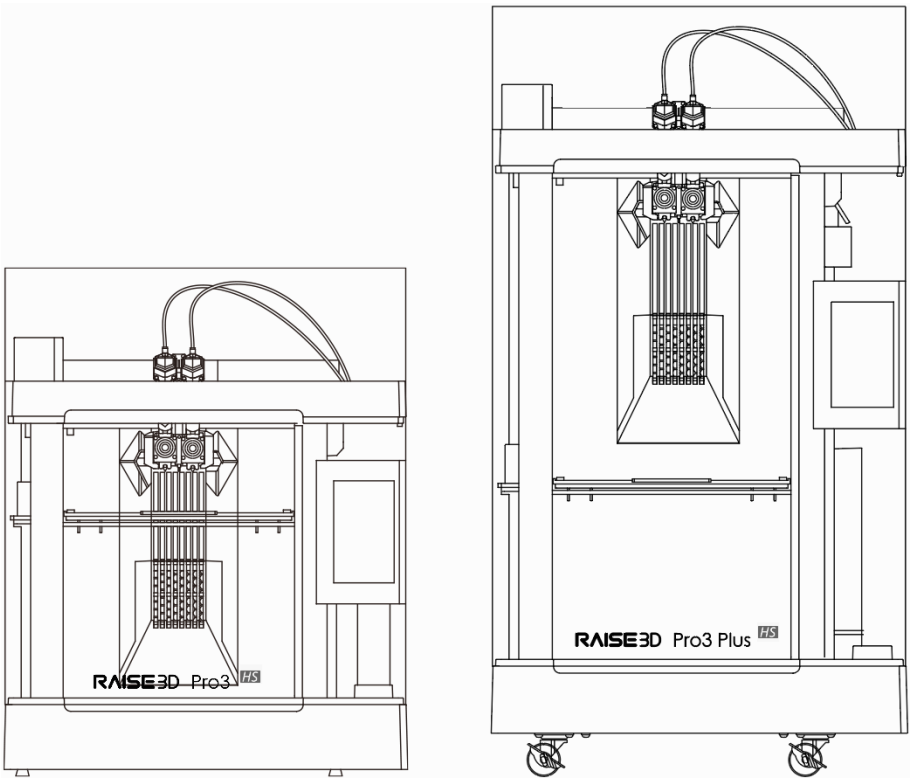
Pro3 HS Series Printer

User Manual

* Please review this entire manual before operating the printer.

WARNING

This is a class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.



RAISE3D

www.raise3d.com

29.001-EN.3.0.20240412

The contents of this User Manual may be updated overtime. For the latest version, scan the QR code or visit the link below.

https://support.raise3d.com/

CONTENTS

Liability Statement

The information in this manual is subject to change without notice. Shanghai Fusion Tech Co. Ltd. (also referred to as "Raise3D" here) is not responsible for errors in this manual. Raise3D does not take any responsibility for incidental or secondary losses caused by the supply, performance or use of this manual. Raise3D does not make any guarantees for this manual, including but not limited to implied guarantees for marketability and suitability for specific purposes. The system owner/material purchaser is responsible for determining whether the Raise3D material is safe, legal, and technically suitable for the intended application, and at the same time determining the appropriate disposal (or recycling) method in compliance with local environmental regulations. Unless Raise3D's standard sales conditions are stipulated, Raise3D will not be liable for any losses caused by the use of the products described in this manual. The system owner/material purchaser is responsible for determining whether the materials used meet the requirements of Raise3D, otherwise Raise3D will not be responsible for any losses caused by the use of the products described in this manual.

Copyright Statement

Trademark Property Statement

Raise3D and ideaMaker are registered trademarks of Shanghai Fusion Tech Co. Ltd.

WINDOWS is registered trademark of Microsoft Corporation.

macOS is a registered trademark of Apple Inc.

All other product names and trademarks are the property of their respective owners, and Raise3D is not responsible for the selection, performance or use of these non-Raise3D products. Product specifications are subject to change without notice.

Safety Precautions

Please read the safety information to ensure that you use the appliance safely.

General Information

You can find general information about this instruction manual here.

- Read this instruction manual carefully. Only this will ensure you use the appliance safely and efficiently.
- This manual is intended for the installer and the user of the appliance.
- Follow the safety instructions and warnings.
- Keep the instruction manual and the product information safe for future reference or for the next owner.
- Check the appliance after unpacking it. Do not connect the appliance if it has been damaged in transit.
- If you have any questions, please contact our local service center or distributors.
- Any failure and losses caused by ignoring the following mentioned items, and cautions mentioned in the operation and installation instruction are not covered by our warranty and any liability.

Intended Use

Read the information on intended use to ensure that you use the appliance correctly and safely.

Only use this appliance:

- According to this installation and instruction manual;
- In a well-ventilated and dry environment;
- The environmental conditions used are:
  - Operating Ambient Temperature: 15-30°C, 10-90% RH non-condensing
  - Storage Temperature: -25°C to +55°C, 10-90% RH non-condensing

Restriction on User Group

- Keep children, pets and vulnerable persons away from the appliance.
- This equipment is not suitable for use in locations where children are likely to be present.
- This equipment is only allowed to be used by skilled person. This appliance may be used by people who have reduced physical, sensory or mental abilities or inadequate experience and/or knowledge, provided that they are supervised or have been instructed on how to use the appliance safely and have understood the resulting dangers.

Safe Installation

Take note of the safety instructions when installing the appliance.

⚠ WARNING - Risk of electric shock!

- Improper installation is dangerous.

- Connect and operate the appliance only in accordance with the specifications on the rating plate.
- Connect the appliance to a power supply with alternating current only via a properly installed socket with earthing.
- The protective conductor system of the domestic electrical installation must be properly installed. The installation must have a sufficiently large cross section.
- Please ensure that the power supply system (current, voltage and cables) can meet the normal load requirements of the electrical appliances.
- Never equip the appliance with an external switching device, e.g. a timer or remote control.
- When installing the appliance, check that the power cable is not trapped or damaged.
- Select the fuse according to the fuse safety identification requirements.
- The power plug and the socket must match and the grounding blade must work properly, and the body must be properly grounded.

- If the insulation of the power cord is damaged, this is dangerous.
  - Never let the power cord come into contact with hot appliance parts or heat sources.
  - Never let the power cord come into contact with sharp points or edges.
  - Never kink, crush or modify the power cord.
- When the machine is plugged in, touch the machine shell and find that there is electrostatic inductance. This indicates that the machine in the home is not well grounded. Please unplug the machine and repair the power connection immediately to ensure a good grounding.
- Do not connect the power supply with wet hands.

- If you have any questions, please consult a professional electrician.

⚠ WARNING - Risk of fire!

- It is dangerous to use an extended power cord and non-approved adapters.
  - Do not use extension cables or multiple socket strips.
  - If the power cord is too short, contact Customer Service.
  - Only use adapters approved by the manufacturer.
- If the insulation of the power cord is damaged, it is very dangerous.

⚠ WARNING - Risk of injury!

- The high weight of the appliance may result in injury when lifted.
  - Do not lift the appliance on your own.

⚠ WARNING - Risk of suffocation!

- Children may put packaging material over their heads or wrap themselves up in it and suffocate.
  - Keep packaging material away from children.
  - Do not let children play with packaging material.

⚠ WARNING - Risk of injury!

- The appliance may vibrate when in use.

- Place the appliance on a clean, even, solid surface.

- If tubes and power cords have been laid incorrectly, this can cause a tripping hazard.
  - Lay tubes and power cords in such a way that there is no risk of tripping.
- If the appliance is moved by holding onto protruding components, such as the appliance door, the parts may break off.
  - Do not move the device by holding onto protruding parts.

⚠ WARNING - Risk of cutting!

- Touching sharp edges on the appliance may lead to cuts.
  - Do not touch the sharp edges on the appliance.
  - Wear protective gloves when installing and transporting the appliance.

Safe Use

Follow these safety instructions when using the appliance.

⚠ WARNING - Risk of electric shock!

- If the appliance or the power cord is damaged, this is dangerous.
  - Never operate a damaged appliance.
  - Never pull on the power cord to unplug the appliance. Always unplug the appliance at the mains.
  - If the appliance or the power cord is damaged, immediately unplug the power cord.
  - Call Customer Service, please refer to the Chapter of Experiencing Difficulties/Contact Information.
  - Repairs to the appliance should only be carried out by trained specialist staff.
- An ingress of moisture can cause an electric shock.
  - Never expose the appliance to intense heat or humidity.
  - Do not use steam cleaners or sprays to clean the appliance.

⚠ WARNING - Risk of harm to health!

- Children can lock themselves in the appliance, thereby putting their lives at risk.
  - Do not install the appliance behind a door as this may obstruct the appliance door or prevent it from opening.
  - With redundant appliances, unplug the power cord and cut through the cord.

⚠ WARNING - Risk of suffocation!

- Children may breathe in or swallow small parts, causing them to suffocate.
  - Keep small parts away from children.
  - Do not let children play with small parts.

⚠ CAUTION - Risk of injury!

- The covering plate may break if you stand on or climb onto the appliance.
  - Do not stand on or climb onto the appliance.
- The appliance may tip over if you sit on or lean against the open door.
  - Do not sit on or lean against the appliance door.
  - Do not place any objects on the appliance door.
- Reaching into the chamber while the three-axis system is still moving may cause hand injuries.
  - Wait for the three-axis system to come to a complete stop before reaching inside.
- The spatula provided in the accessory box has sharp parts. If the spatula is used improperly, the user may be injured.

  - Do not touch the edge of the spatula.
  - Keep children away from the spatula.
- Some parts in the printer are sharp and may cause injury.
- When removing the printing model, please refer to the Chapter of Remove the Printed Model.

⚠ **CAUTION - Risk of burns!**

- When operating or printing at high temperatures, the shell of the appliance becomes hot.
  - Do not touch the build plate when the printer is heating up.
  - Please wear the heat-insulating gloves provided in the accessory box for operation.
  - Please keep children away from the heated build plate.
- The temperature of the extruder is very high when it is printing.
  - Please do not touch the extruder when it is heating.
  - Please wear the heat-insulating gloves provided in the accessory box for operation.
  - Please keep children away from the heated extruder.

Safe Maintenance

Take note of the safety instructions when performing maintenance work on the appliance.

⚠ **WARNING - Risk of electric shock!**

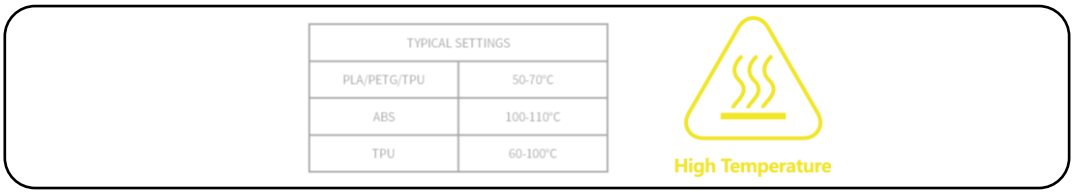
- Improper repairs are dangerous.
  - Repairs to the appliance should only be carried out by trained specialist staff.
  - Only use the manufacturer's original spare parts and original accessories when repairing the appliance.
  - If the power cord of this appliance is damaged, it must be replaced by the manufacturer, the manufacturer's Customer Service or a similarly qualified person in order to prevent any risk.
- An ingress of moisture can cause an electric shock.
  - Do not use steam cleaners or sprays to clean the appliance.

⚠ **WARNING - Risk of injury!**

- The use of non-original spare parts and non-original accessories is dangerous.
  - Only use the manufacturer's original spare parts and original accessories.

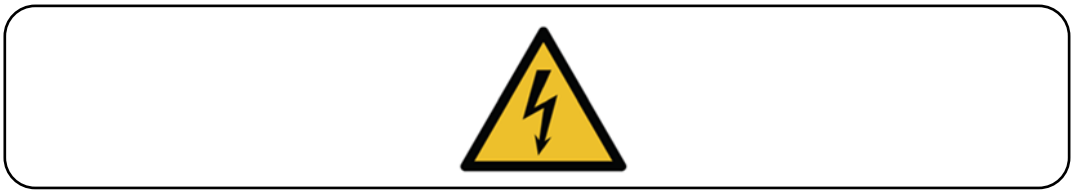
Safety Signs

Hot Surface: The hot surface sign indicates the presence of devices with high temperatures. Always be extremely careful when working around heated components. Wait half an hour after switching off the printer before handling parts to prevent burns.

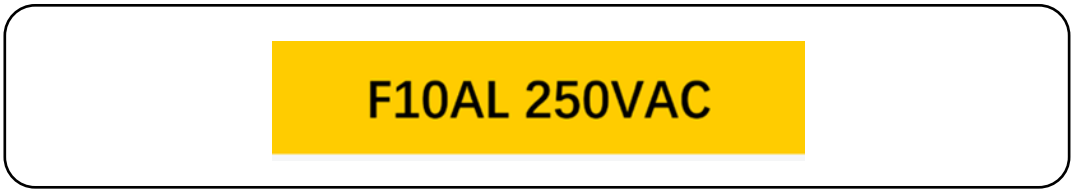


Moving Parts: Do not put fingers, clothing or hair into gears and other hazardous parts to avoid electric shock, injury, fire, or damage to the device.

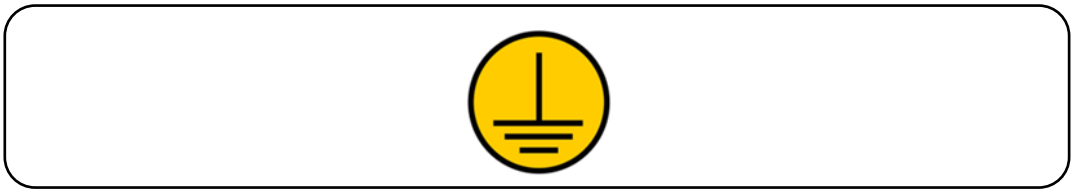
High Voltage: The high voltage sign indicates the presence of high voltages. Always stay away from exposed circuitry. It is recommended that all conductors be removed.



Replacement fuse identification and rating markings: Identification of a suitable replacement fuse shall be marked adjacent to the fuse holder.



Protective Earthing Conductor Terminal: Marked near the protective earthing conductor terminal.



A. Declarations and Safety Statements

FCC Statement

Please take attention that changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.
This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

EU Conformity Statement

CE

This product and-if applicable-the supplied accessories too are marked with "CE" and comply therefore with the applicable harmonized European standards listed under the RE Directive 2014/53/EU, the EMC Directive 2014/30/EU, LVD Directive 2014/35/EU, the RoHS Directive 2011/65/EU.

2012/19/EU (WEEE directive): Products marked with this symbol cannot be disposed of as unsorted municipal waste in the European Union. For proper recycling, return this product to your local supplier upon the purchase of equivalent new equipment, or dispose of it at designated collection points. For more information see: http:// ***www.recyclethis.info***.

2006/66/EC (battery directive): This product contains a battery that cannot be disposed of as unsorted municipal waste in the European Union. See the product documentation for specific battery information. The battery is marked with this symbol, which may include lettering to indicate cadmium (Cd), lead (Pb), or mercury (Hg). For proper recycling, return the battery to your supplier or to a designated collection point. For more information see: ***www.recyclethis.info.***

UKCA Conformity Statement

UK CA

This product is marked with "UKCA" and in conformity with the relevant UK statutory requirement: Radio Equipment Regulations 2017. Full text of the UK declaration of conformity is available at https://www.raise3d.com.

UK sales partner company name:3DGBIRE Ltd
UK sales partner company address: 3DGBIRE, Unit 44/45 Chorley North Industrial Estate, Drumhead Road, Chorley, Lancashire, PR67BX

Electromagnetic Compatibility - EMC

Simplified EU Declaration of Conformity

Raise3D declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU. Full text of the EU declaration of conformity is available at https://www.raise3d.com.

RF Exposure Information

This device has been tested and meets applicable limits for Radio Frequency (RF) exposure.

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a clearance of at least 20 cm from all persons and must be co-located or operating in conjunction with any other antenna or transmitter.

CE&UKCA Mark Warning

The device is restricted to indoor use only when operating in the 5150 to 5250 MHz frequency range.

	BE	EE	HR	IT	CY	LV	LT
	BG	IE	LU	HU	MT	NL	AT
	CZ	EL	PL	PT	RO	SI	SK
	DK	ES	FI	SE	DE	FR	LI
	NO	IS	CH	TR	UK(NI)	UK	

CE&UKCA output power table:

Function	Frequency	Frequency
Wi-Fi	2412-2472 MHz	18 dBm(b)/ 18 dBm(g)/ 13dBm(HT)
	5150-5250 MHz	19 dBm(a)/ 18.5 dBm(HT20)/ 17.5 dBm(HT40)
	5725-5850 MHz	14 dBm(a)/ 14 dBm(HT20)/ 14 dBm(HT40)

FCC Output power table:

Function	Frequency	Frequency
Wi-Fi	2412-2462 MHz	18.31 dBm(b)/ 15.62 dBm(g)/ 14.9dBm(HT)
	5150-5250 MHz	15.36 dBm(a)/ 14.79 dBm(HT20)/ 14.41 dBm(HT40)
	5725-5850 MHz	15.48 dBm(a)/ 14.49 dBm(HT20)/ 14.06dBm(HT40)

1. Installation

To facilitate operation and maintenance, maintain a proper distance of 50 cm on the side of the printer, 80 cm on the front, 20 cm on the back, and 60 cm on the top during installation. No flammable materials are allowed around the installation location.

Note: During low-temperature transportation, the printer may encounter frost or icing hazards. The printer can be stored at room temperature for 4-6 hours before operating.

2. Filament and Electrical Precautions

It is strongly recommended to use Raise3D official filaments and/or default settings for better performance. The Raise3D printer is designed to be highly compatible with Raise3D official filaments. Be extremely careful when printing with unverified filaments and settings to prevent abnormal printing results or damaging the printer.

Warning: The printer belongs to EN55032 Class A. In a residential environment, the printer may cause radio interference.

3. Odor

The printer emits a thermoplastic smell when in operation.

Note: Place the printer in a well-ventilated and dry environment.

Oil in the air accumulating inside the printer may damage plastic parts. Air in a cavity with excessive solid particles (conductive or non-conductive) may cause damage to the printer

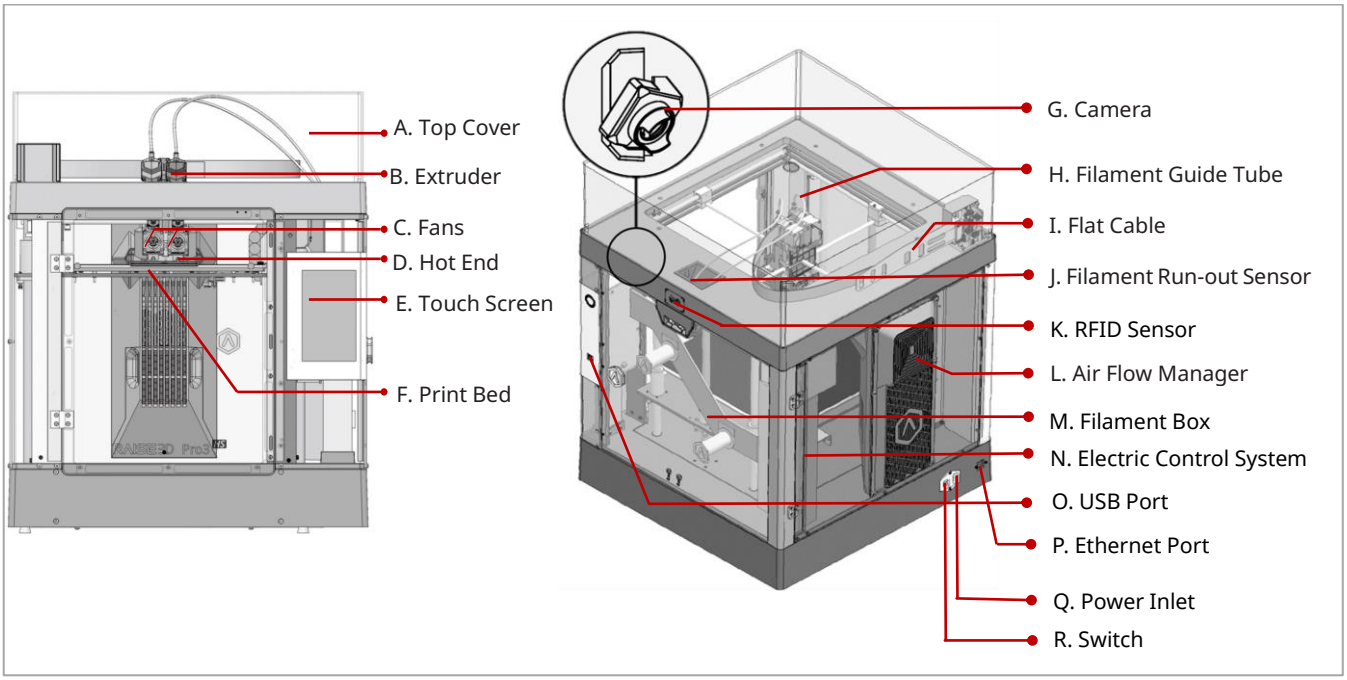
B. Technical Specifications

Printer	Pro3 HS		Pro3 Plus HS	
Build Volume (W×D×H)	Single Extruder Print	Dual Extruder Print	Single Extruder Print	Dual Extruder Print
	300×300×300 mm	255×300×300 mm	300×300×605 mm	255×300×605 mm
Machine Size (W×D×H)	620×626×760 mm		620×626×1105 mm	
Electrical	Power Supply Input		100-240 VAC, 50/60 Hz 230 V @ 3.3 A	
	Power Supply Output		24 V DC, 600 W	
General	Print Technology		FFF	
	Print Head System		Dual-head with electronic lifting system	
	Filament Diameter		1.75 mm	
	XYZ Step Size		0.78125, 0.78125, 0.078125 micron	
	Print Head Travel Speed		30-300 mm/s	
	Build Plate		Flexible Steel Plate with BuildTak	
	Max Build Plate Temperature		120°C	
	Heated Bed Material		Silicone	
	Build Plate Leveling		Mesh-leveling with Flatness Detection	
	Filament Run-out Sensor		Available	
	Supported Materials		PLA/ ABS/ HIPS/ PC/ TPU/ TPE/ PETG/ ASA/ PP/ PVA/ Nylon/ Glass Fiber Infused/ Carbon Fiber Infused	
	Layer Height		0.01–0.25 mm	
	Nozzle Diameter		V3 Brass Nozzle 0.4 mm (Default), 0.2/ 0.6/ 0.8/ 1.0 mm (Available)	
	Max Nozzle Temperature		300°C	
	Connectivity		Wi-Fi, LAN, USB port, Live camera	
	Noise Emission (Acoustic)		< 55 dB (A) when building	
	Operating Ambient Temperature		15-30°C, 10-90% RH non-condensing	
	Storage Temperature		-25°C to +55°C, 10-90% RH non-condensing	
	Filter		HEPA filter with activated charcoal	
	EVE Smart Assistant		Available	
Software	Slicing Software		ideaMaker	
	Supported File Types		STL/ OBJ/ 3MF/ OLTP	
	Supported OS		Windows/ macOS/ Linux	
	Machine Code Type		GCODE	
Printer Controller	User Interface		7-inch Touch Screen	
	Network		Wi-Fi, Ethernet	
	Power Loss Recovery		Available	
	Screen Resolution		1024×600	
	Motion Controller		Atmel ARM Cortex-M4 120MHz FPU	

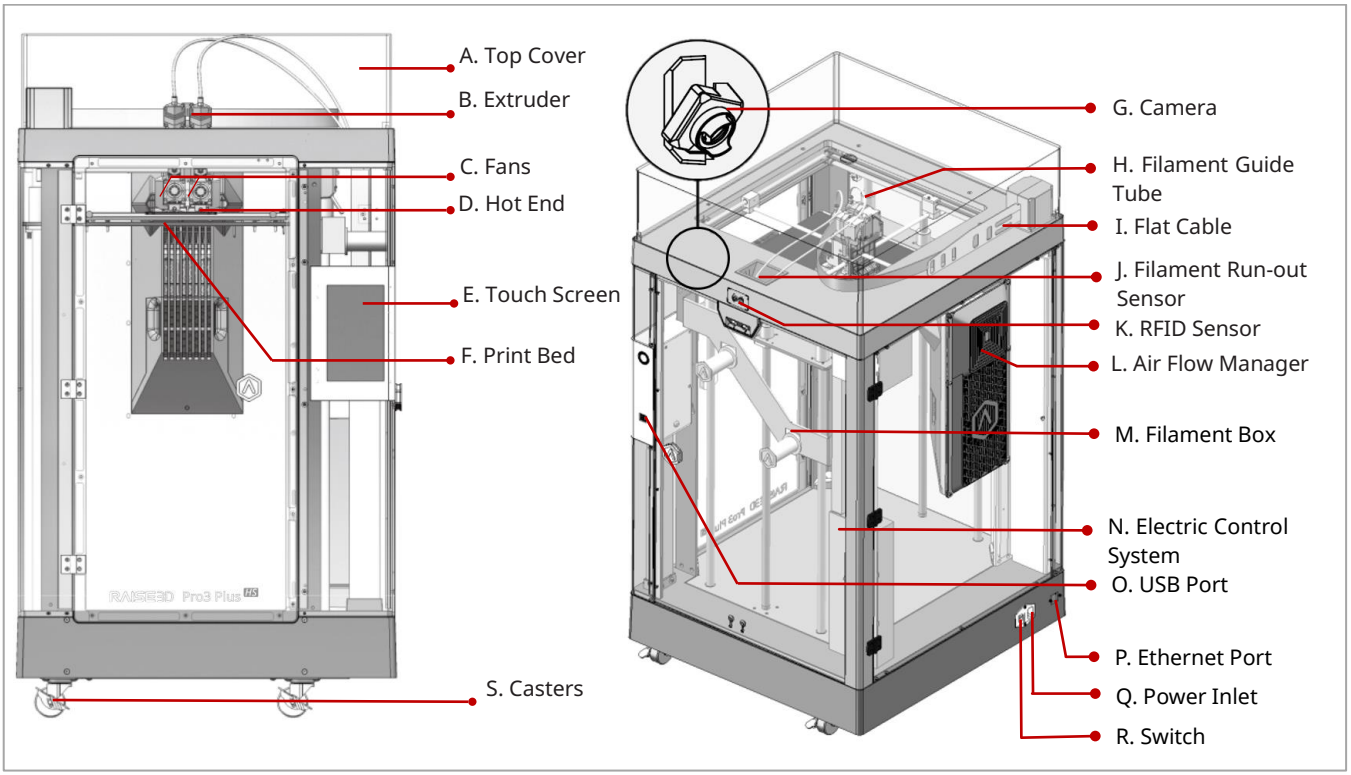
	Logic Controller	NXP ARM Cortex-A9 Quad 1GHz
	Memory	1 GB
	Onboard Flash	16 GB
	OS	Embedded Linux
	Ports	USB 2.0×2, Ethernet×1

C. Main Parts

Pro3 HS



Pro3 Plus HS



A. Top Cover
The upper cover of the printer.

B. Extruder
The part extruding filament to the hot end. Brand-new unitized extruders, which are more convenient for assembly and dismounting are featured on this printer. The printer's dual extrusion structure can adapt to a variety of filaments.

C. Fans
The part used to cool the heat down.

D. Hot End
The part that melts filaments. With a quick-release design, even beginners can quickly remove the hot end within one minute, making it more convenient to repair the hot end after removing it.

E. Touch Screen
The part that you can control the printer and check the printer status.

F. Build Plate
A plate for printing the model.

G. Camera
The part used to observe the operation of the printer.

H. Filament Guide Tube
The part that protects and guides filaments.

I. Flat Cable
The integrated cable that transmits the signal from the motion controller board to the extruder. A new flat cable is adopted to replace the large drag chain of Pro2 series printers, reducing the weight of the extruder and avoiding the sagging of the cross shaft.

J. Filament Run-out Sensor
An automated optical detection system is adopted to detect whether the filaments are sufficient. When the filaments are running out, the printer will automatically stop printing.

K. RFID Sensor
Uses RFID tags and readers for information transmission and identification between the printer and filaments.

L. Air Flow Manager
An air filter manager including a fan and a HEPA filter, which is used to enhance air circulation inside the printer.

M. Filament Box
The place where the filament is discharged, which can accommodate 2 spools of 1kg filaments at the same time.

N. Electric Control System

It stores the motion controller board.

O. USB Interface
2 USB2.0 interfaces.

P. Ethernet Port
RJ45 is connected to the port to connect your printer to a network.

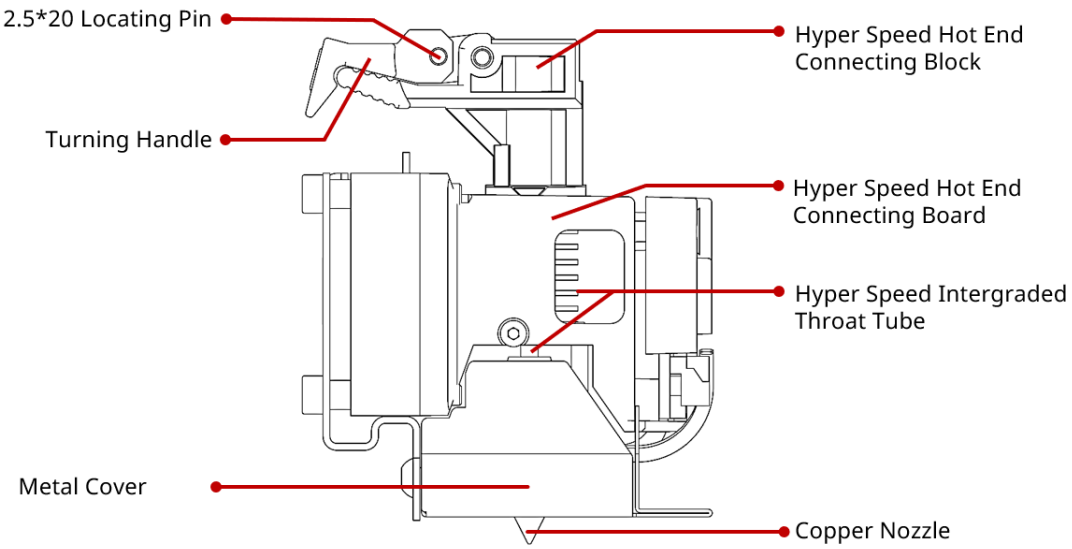
Note: The length of the network cable should not exceed 3 m.

Q. Power Inlet
The place to connect power cable.

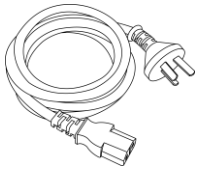
R. Switch
The power switch to turn on/off the printer.

S. Casters
Four swiveling and double-locking casters.

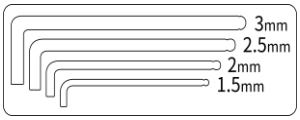
Hyper Speed Hot End



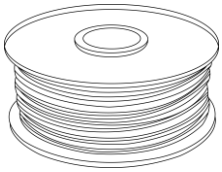
Raise3D Supplies and Accessories



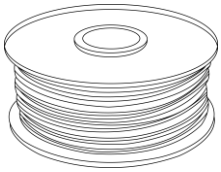
Power Cable



Hex Wrenches

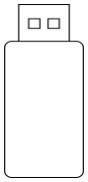


Hyper Speed Filament (×1)



Carbon Fiber Filament (×1)

Filament Guide Tube (×2)



USB Storage

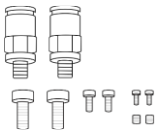
Heat Resistant Gloves

Filament Holder (×2)

Spatula

Nozzle Cleaning Kit

Tweezers



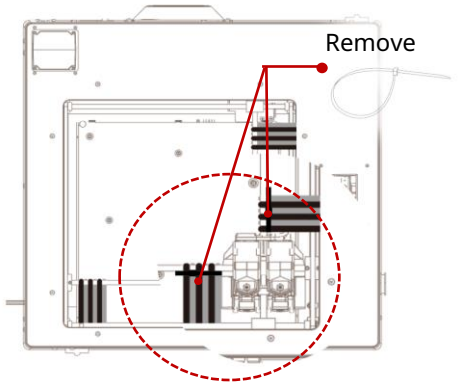
Screws & Other Accessories (Spare)

0.3 mm Feeler Gauge

New Version of Interchangeable Hot End Assembly (SiC Nozzle)

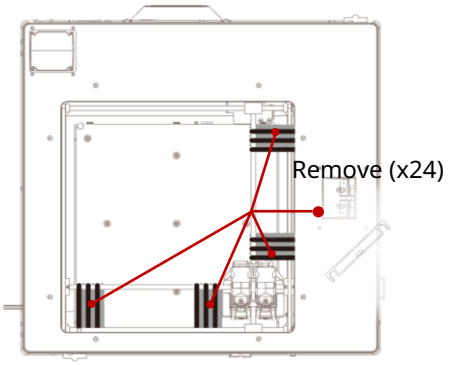
D. Hardware Installation

1.



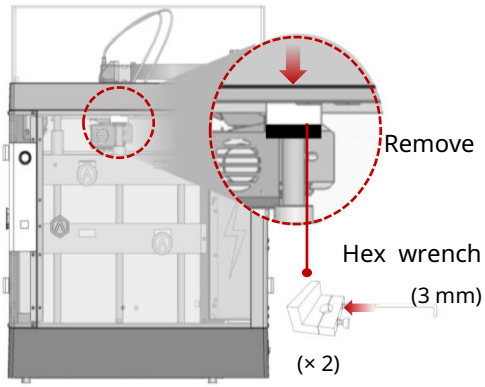
Remove, but do not cut, the four shipping zip ties for fixing the Z axes. Keep the shipping zip ties safe for further installation and subsequent transportation.

2.



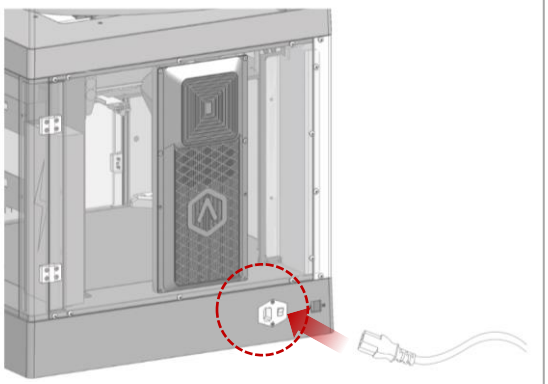
Before powering on the printer, make sure to peel off all the yellow stickers and remove the 24 security spacers. If the spacers are not removed, the spacers will damage the printer once the printer begins operating. Keep the security spacers carefully for further installation and subsequent transportation.

3.



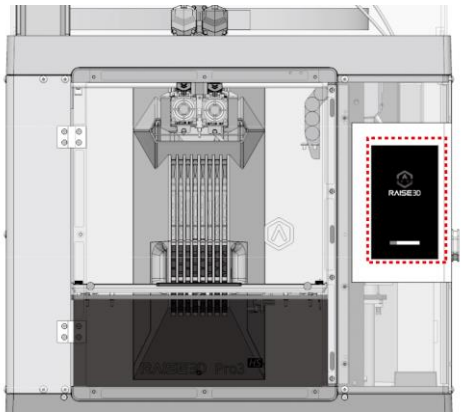
Remove the 4 screws on the screw clamps. The clamps are located on the top of the screw rods on the left and right sides of the printer. Keep the screw clamps and screws safe for further installation and subsequent transportation.

4.



The printer contains 1 power cord that conforms to your current country (region) and connect it to the power outlet. Turn on the switch of the printer.

5.

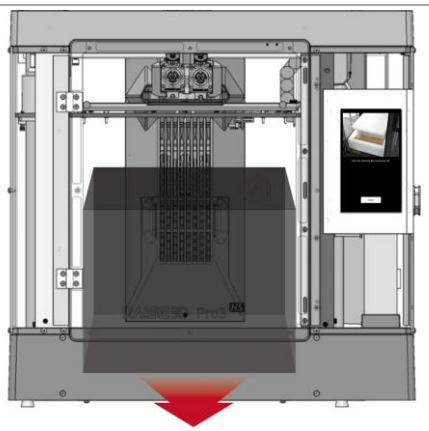


After the printer is powered on, the printer will enter the boot process. It takes about 60 seconds for the printer to enter the Start-up Wizard.

6.

As shown in the left figure, the printer has entered the Start-up Wizard. You can refer to the prompts on the screen for further operations, such as selecting the language for the printer.

7.

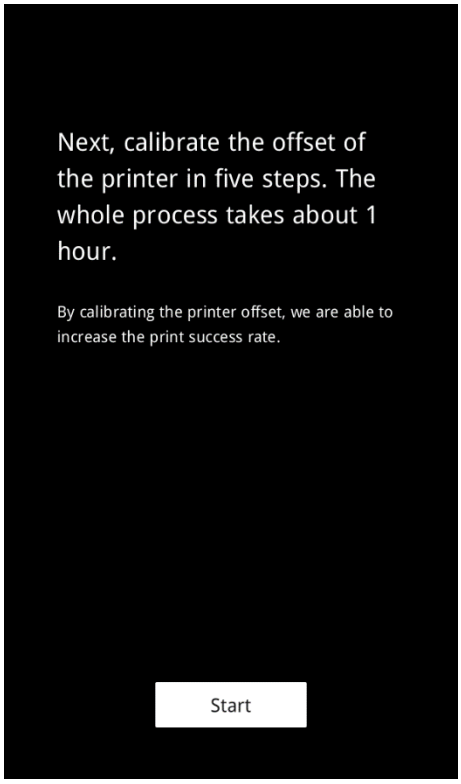


After confirming that all the safety spacers and screws are removed according to the screen prompts, click “Next”. Open the front door, and take out the accessory box and filament box from the printer. Open these boxes and compare all accessories with the following list.

8. After taking out the accessory box, keep following the Start-up Wizard to complete the basic settings such as printer’s name, network, and RaiseCloud. After completing these basic settings, the printer will carry out the offset calibration (See chapter E for details). The whole process takes about 1 hour.

E. Run the Offset Calibration

1. Offset calibration is to ensure that your printer will print successfully. There are 5 steps in the whole offset value calibration in the Start-up Wizard, and the whole process takes about 1 hour.



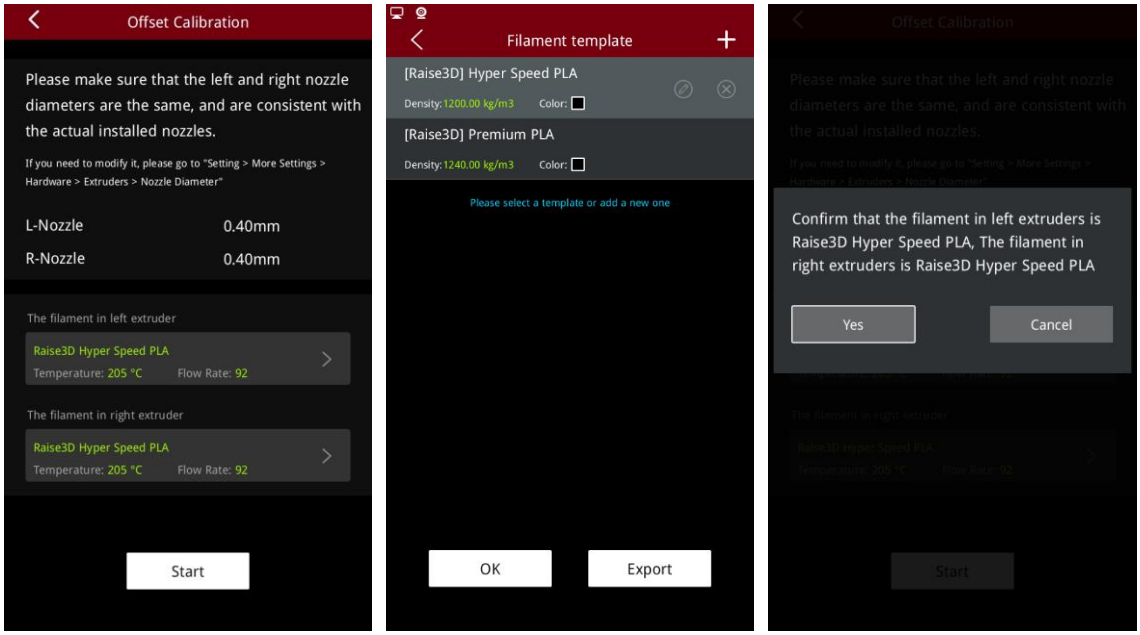
2. Please select your left and right nozzle diameters, ensuring that both nozzle diameters are the same. Next, select the appropriate filament template, for example, Raise3D Hyper Speed PLA, Raise3D Premium PLA, and so on, or you can add a new filament template. Assign filaments to different nozzles according to your needs. Raise3D Hyper Speed PLA filament is used for calibration in this tutorial.

Note:

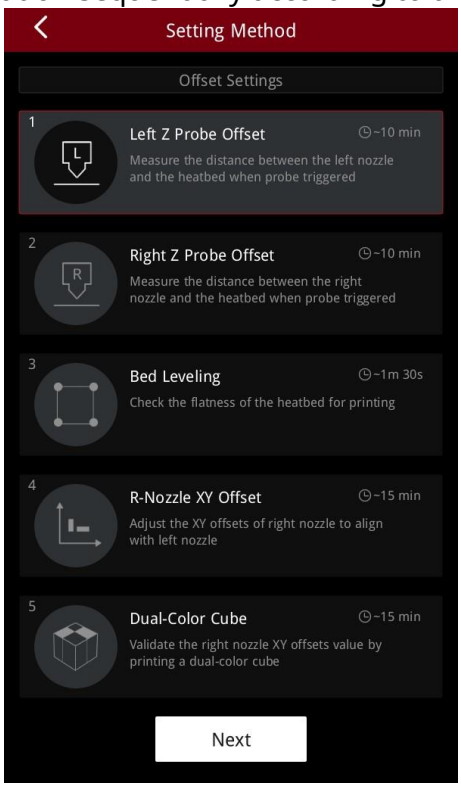
1) It is recommended to use the same type of filaments for Offset Calibration. It is also recommended that Raise3D Hyper Speed filaments be used.

2) When running the "R-Nozzle XY Offset" and "Dual Color Cube" in the Offset Calibration, PLA filament must be used.

3. The following picture shows that both the left and right nozzles use Raise3D Hyper Speed PLA filaments.



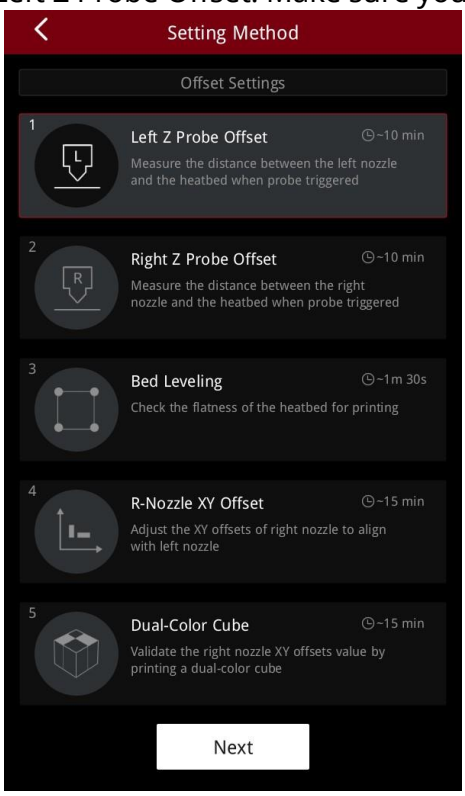
4. Run the 5-step Offset Calibration sequentially according to the prompts on the screen.

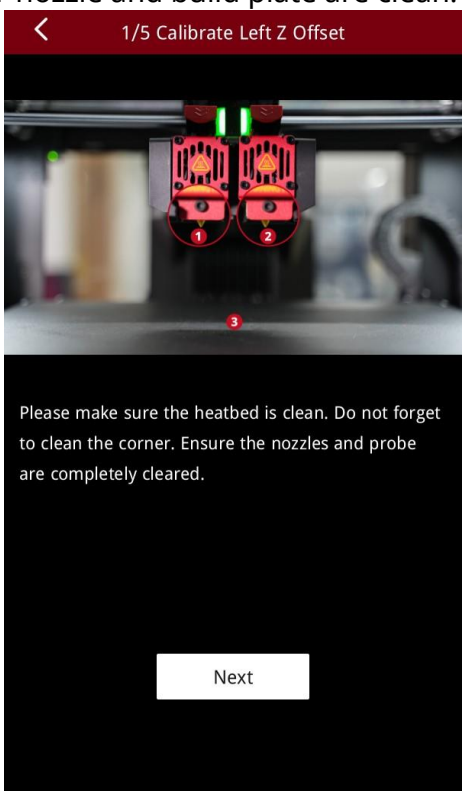


Important: The Pro3 HS series printer come with a roll of Raise3D Hyper Speed PLA that supports the offset calibration for a single nozzle. Therefore, you can complete the first step of "Calibrate Left Z Offset" in the Start-up Wizard, and then click "Skip" for the subsequent calibration steps. The full 5-step Offset Calibration can be re-run by clicking Settings > Maintenance > Offset Calibration.

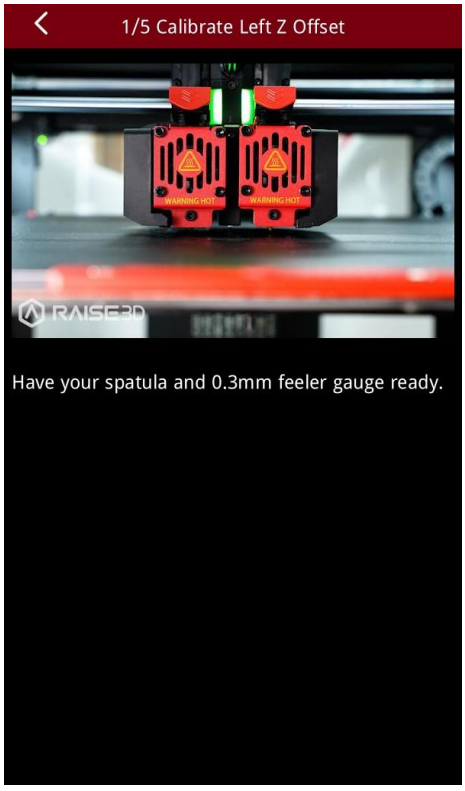
E.1 Run the Left Z Probe Offset

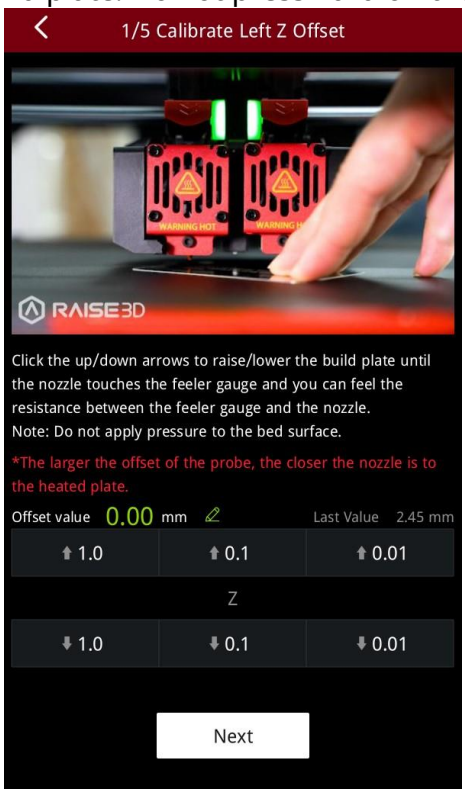
1. Enter the Left Z Probe Offset. Make sure your nozzle and build plate are clean.





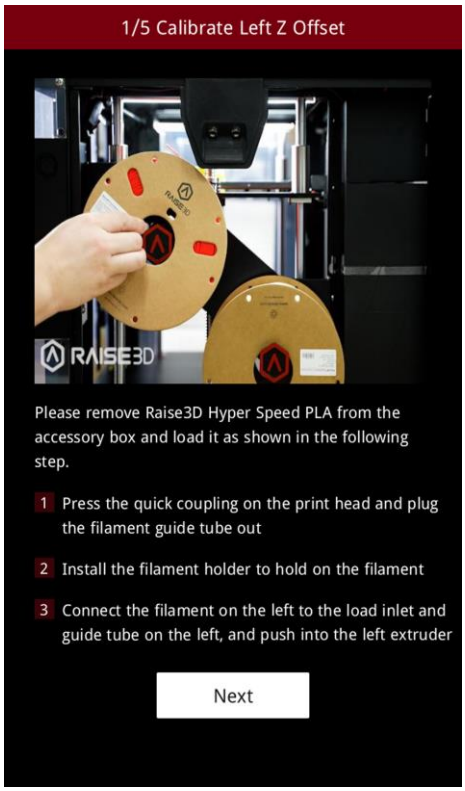
2. With a 0.3 mm feeler gauge, adjust the distance between the nozzle and the build plate as indicated by the prompts on the screen. Make sure the you can feel some resistance as the feeler gauge moves between the nozzle and build plate. Do not press hard on the build plate.

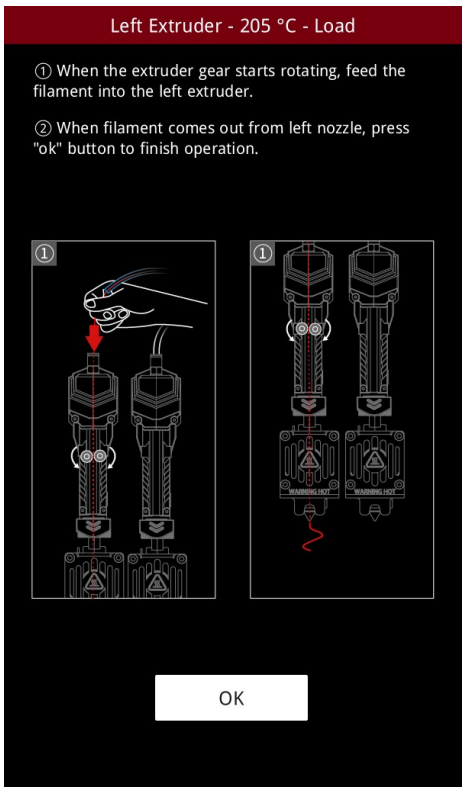




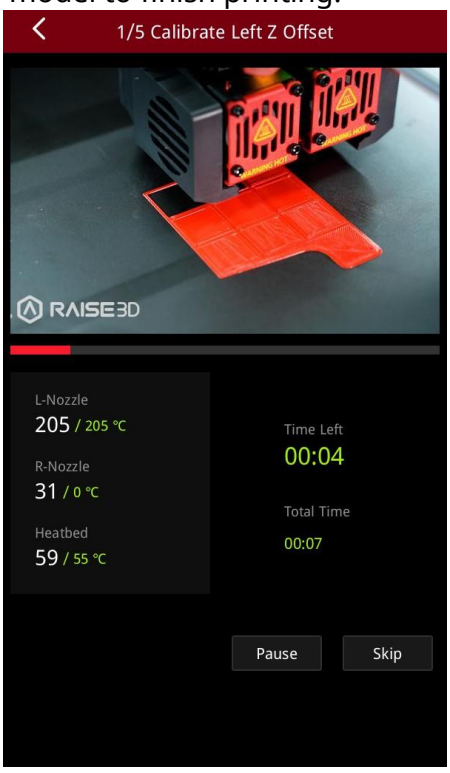
3. After adjusting the distance between the nozzle and the build plate, follow the prompt on the screen to load Hyper Speed PLA filament.

Note: Two spools of Raise3D Hyper Speed PLA filament are used for calibration in this tutorial.



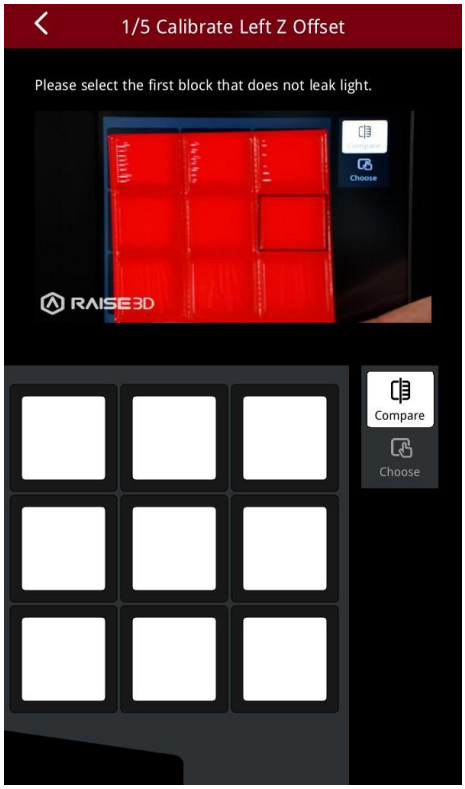


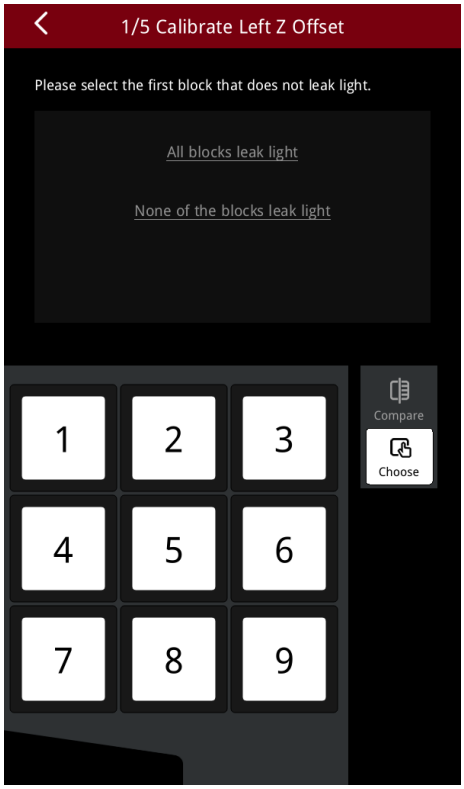
4. After the filaments are successfully installed, the printer will start printing a 9-square calibration model. Wait for the model to finish printing.



5. After the model is printed, compare the model with the on-screen example. Hold the model up against a light and select the first block that doesn't leak light. The printer will automatically adjust the offset value of the left nozzle.

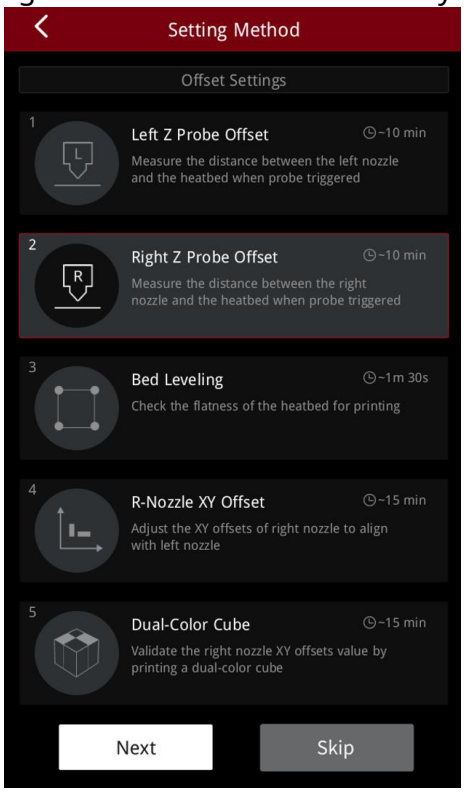
Note: If all the blocks do not leak light, it means that there may be deviations when measuring the distance between the build plate with a feeler gauge. It is recommended to select "None of the block leak lights" and recalibrate the distance between the build plate and the left nozzle.

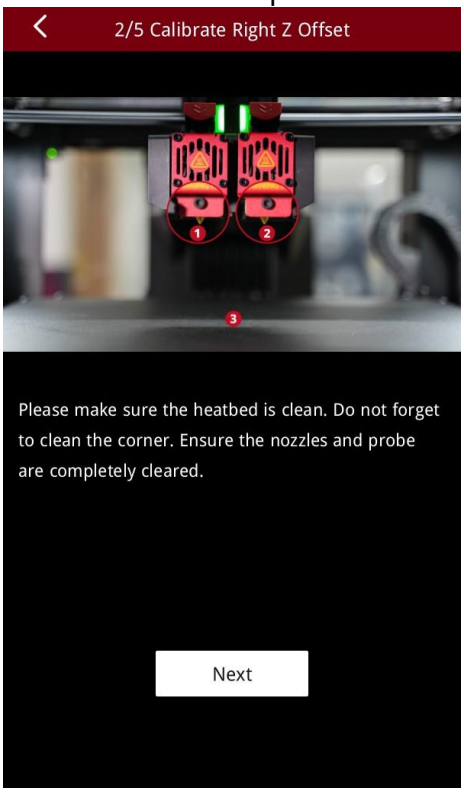




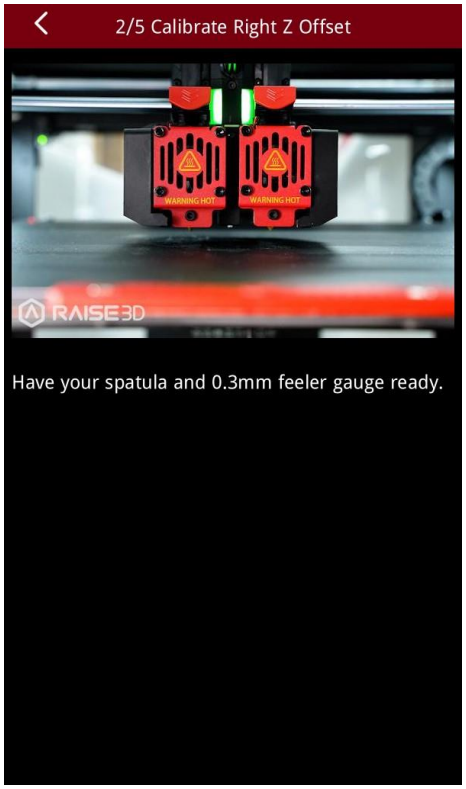
E.2 Run the Right Z Probe Offset

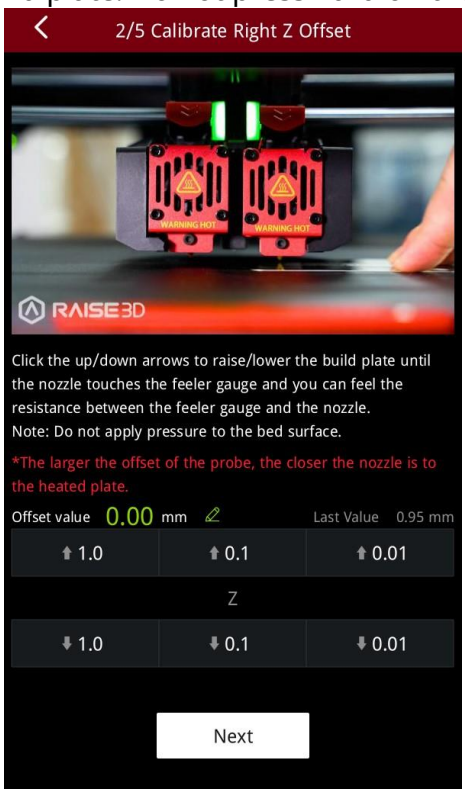
1. Enter the Right Z Probe Offset. Make sure your nozzle and build plate are clean.





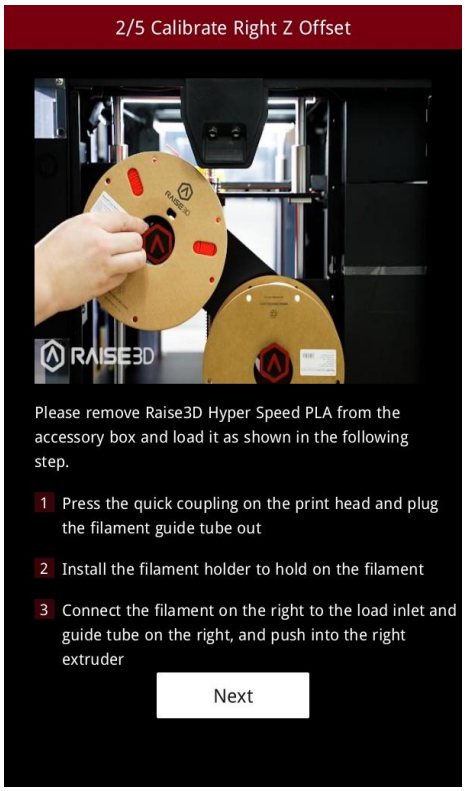
2. With a 0.3 mm feeler gauge, adjust the distance between the nozzle and the build plate according to the prompts on the screen. Make sure the you can feel some resistance as the feeler gauge moves between the nozzle and build plate. Do not press hard on the build plate.

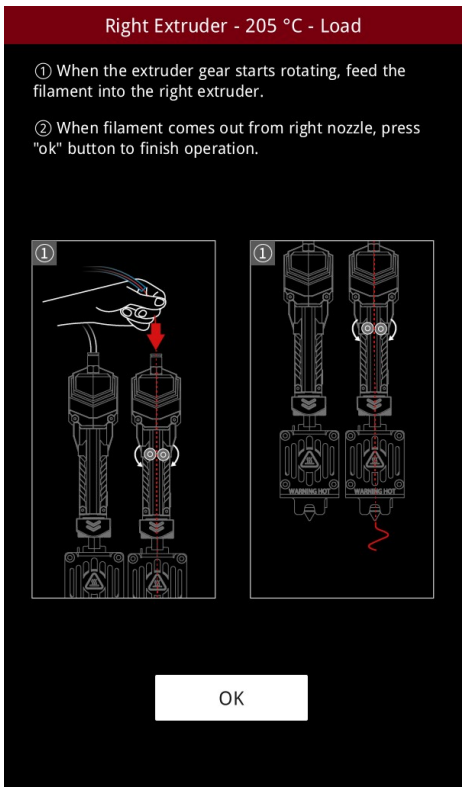




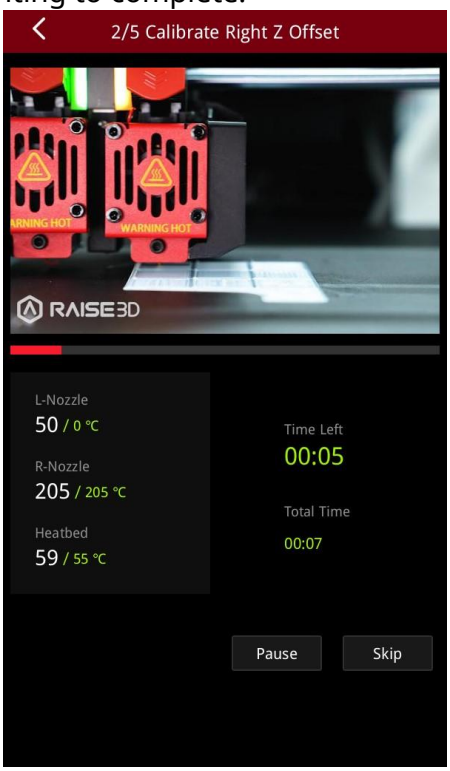
3. After adjusting the distance between the nozzle and the build plate, follow the prompt on the screen to load filament.

Note: Two spools of Raise3D Hyper Speed PLA filament are used for calibration in this tutorial.



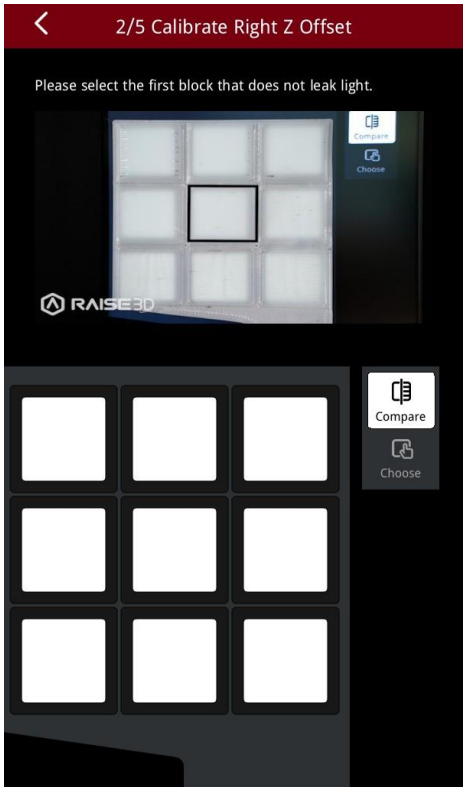


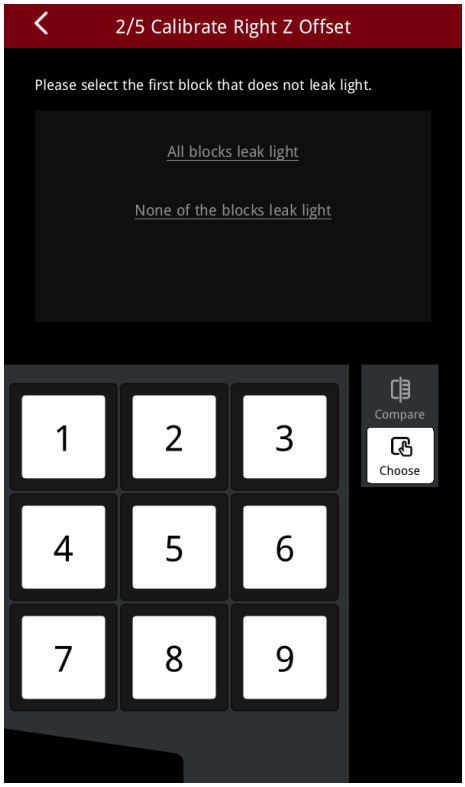
4. After the filaments are successfully installed, the printer will start printing a 9-square calibration model. Wait for printing to complete.



5. After the model is printed, compare the model with the on-screen example. Hold the model up against a light and select the first block that doesn't leak light. The printer will automatically adjust the offset value of the left nozzle.

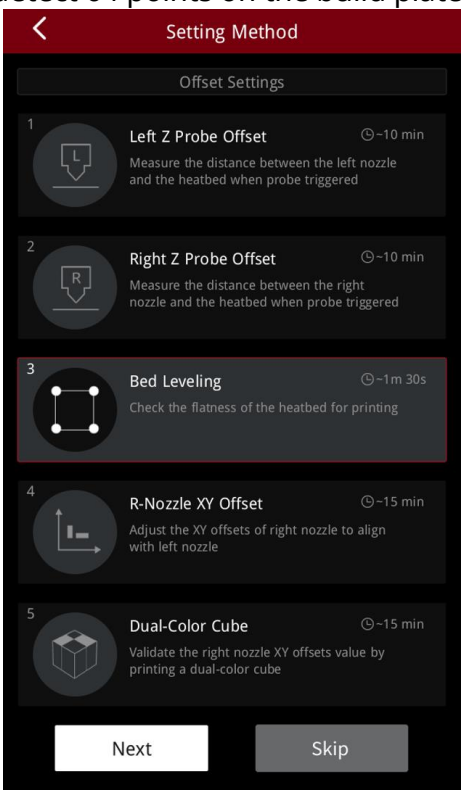
Note: If all the blocks do not leak light, it means that there may be deviations when measuring the distance between the build plate with a feeler gauge. It is recommended to select "None of the block leak lights" and recalibrate the distance between the build plate and the right nozzle.

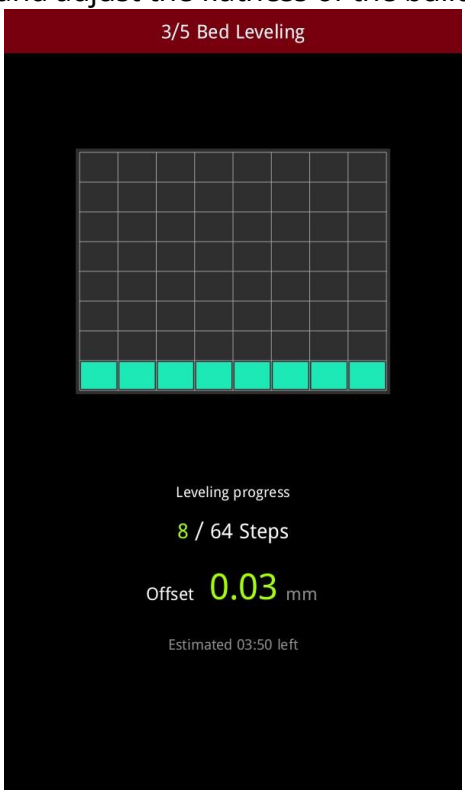




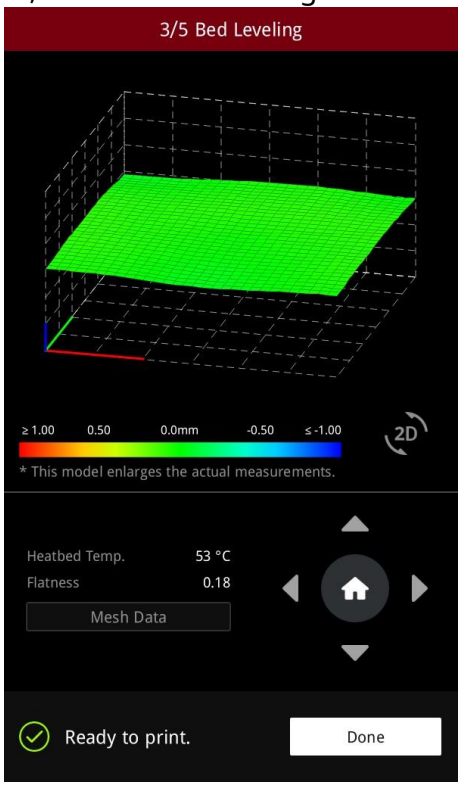
E.3 Bed Leveling

1. The purpose of this step is to calibrate the flatness of the build plate. The printer will automatically detect 64 points on the build plate and adjust the flatness of the build plate.



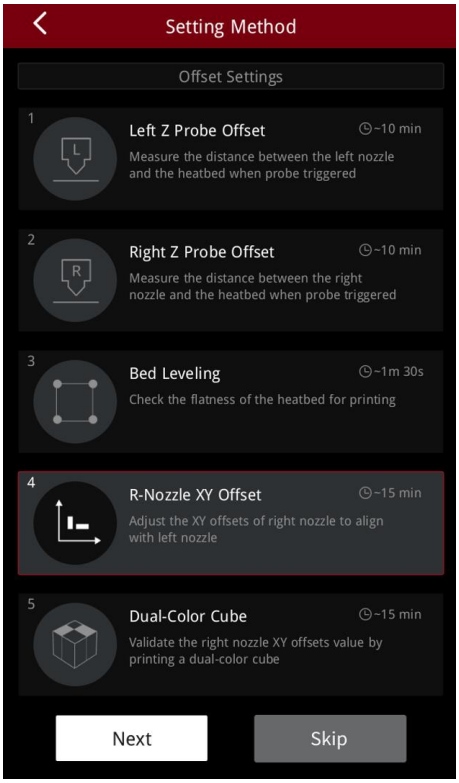


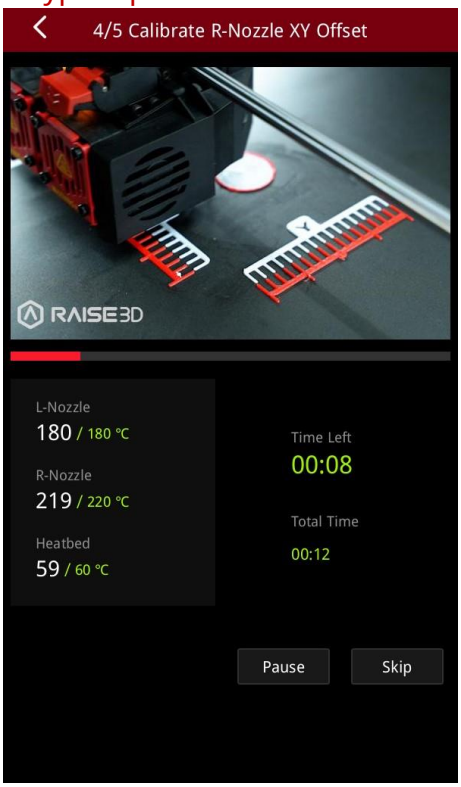
2. After the build plate is leveled, a visualized leveling result is displayed.



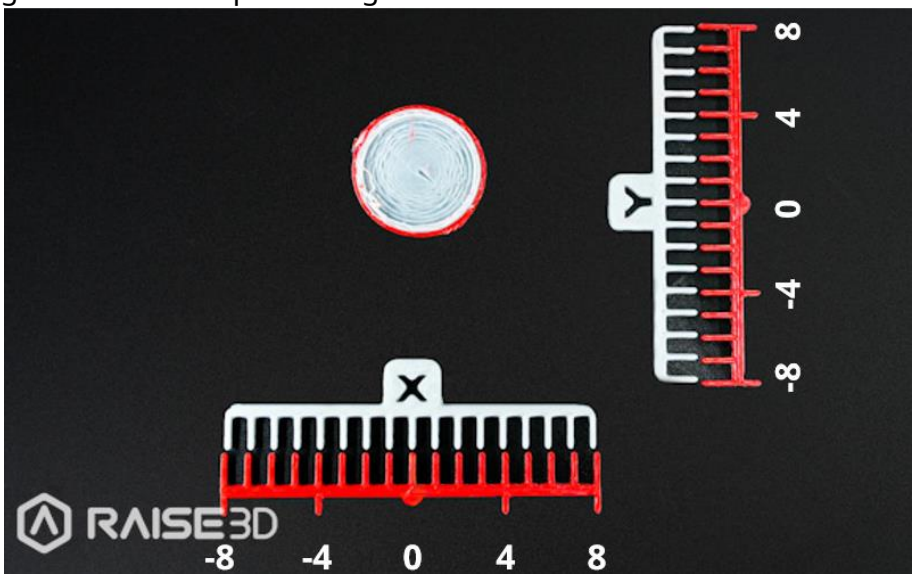
E.4 R-Nozzle XY Offset

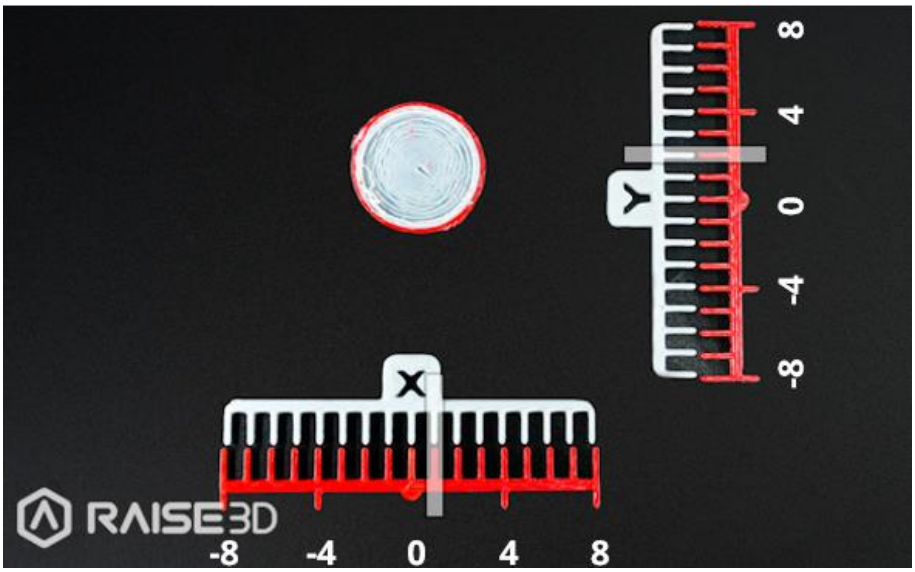
1. The purpose of this step is to calibrate the XY offset of the right nozzle so that it aligns with the left nozzle. The printer will heat up automatically and print two test models.
Note: This calibration can only be performed if both the left extruder and the right extruder are loaded with PLA filaments, otherwise this step cannot be performed. In this tutorial, the left and right extruders are loaded with Raise3D Hyper Speed PLA filaments.



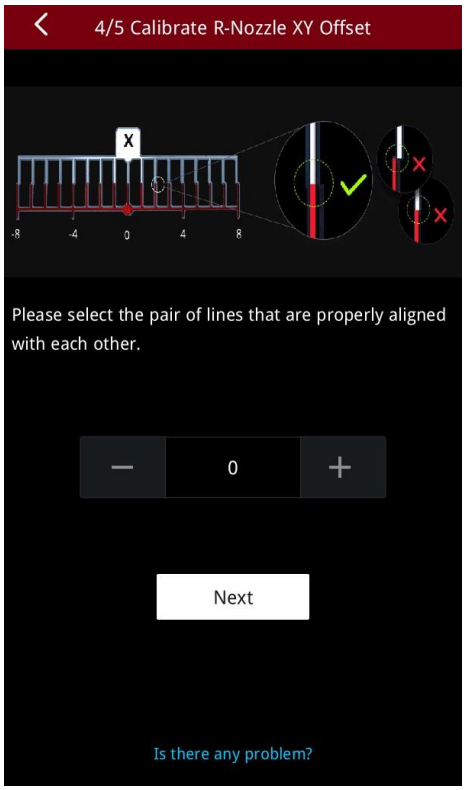


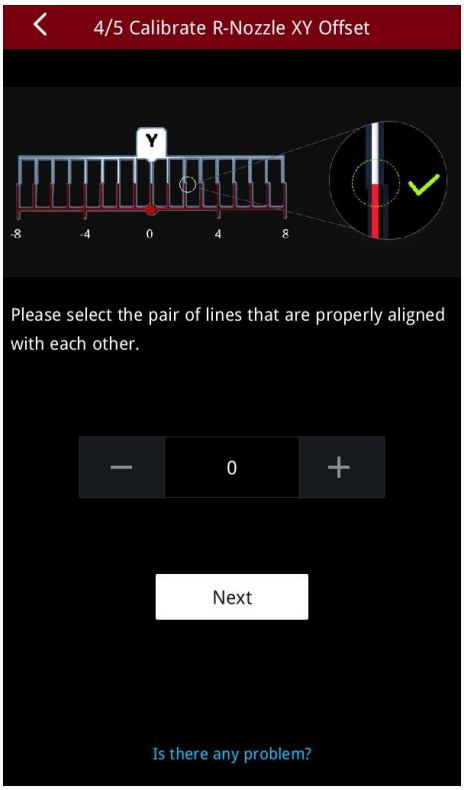
2. After printing, according to the instructions on the screen, select a pair of lines that are completely aligned on the X model and the Y model respectively. As exampled in the figure below, the corresponding number to the pair of aligned lines on the X model is 1, and the corresponding number to the pair of aligned lines on the Y model is 2.





3. Input the serial number on the screen. The printer will automatically calibrate the XY Offset of the right nozzle.

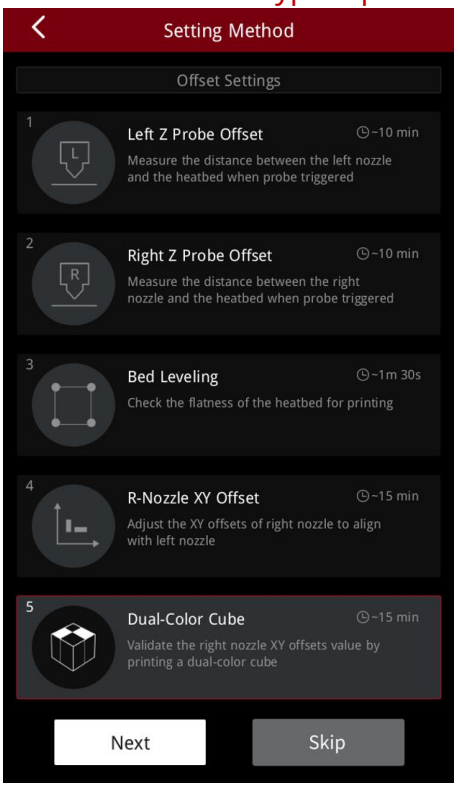




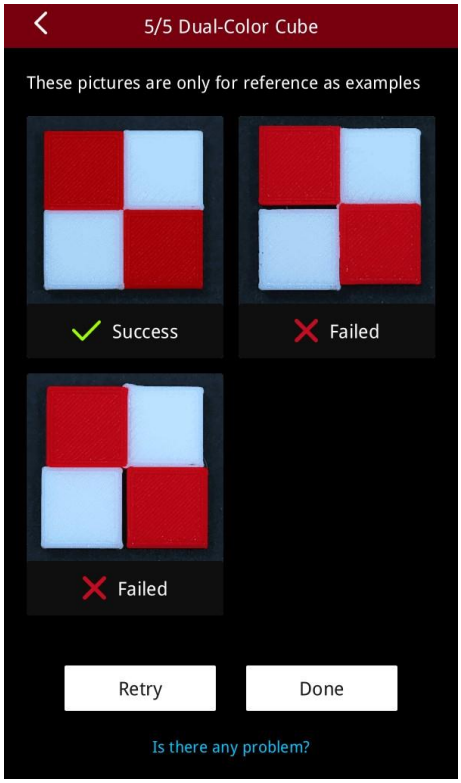
E.5 Dual-Color Cube

1. This step aims to validate the XY offset value of the right nozzle by printing dual-color cubes.

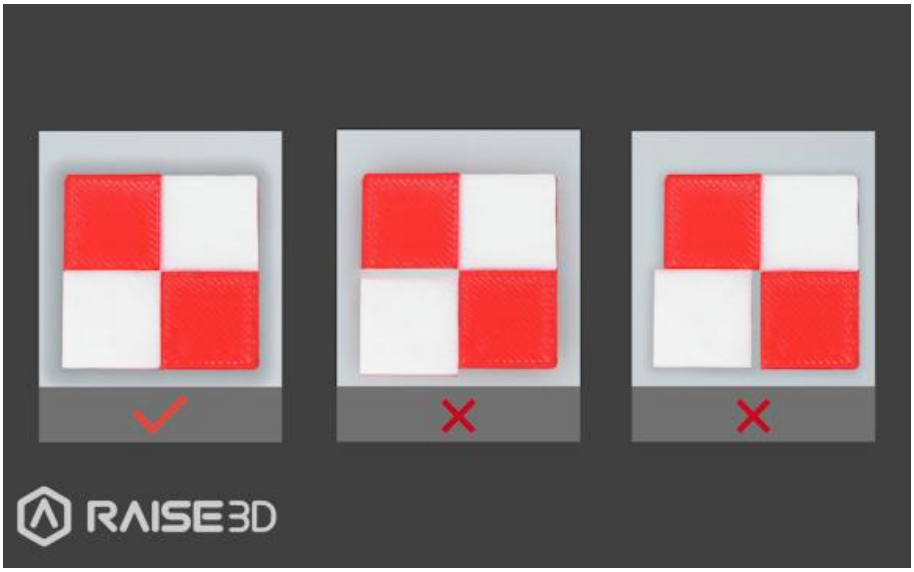
Note: This calibration can only be performed if both the left extruder and the right extruder are loaded with PLA filaments, otherwise this step cannot be performed. In this tutorial, the left and right extruders are loaded with Raise3D Hyper Speed PLA filaments.



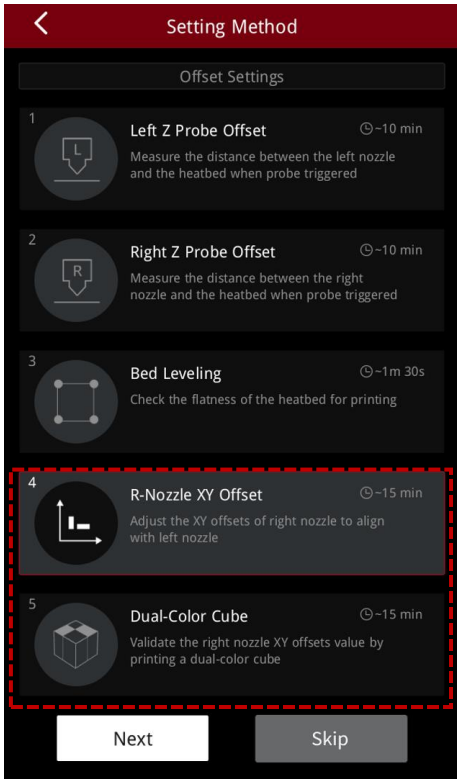
2. After printing, please compare the printed dual-color cube with the sample graphic on the screen, and check whether there is an obvious gap between the color blocks.



3. If there is no gap between the color blocks, it means that the XYZ direction offset value of the right nozzle is within a reasonable range. Please click "Done" to complete the 5-step Offset Calibration.

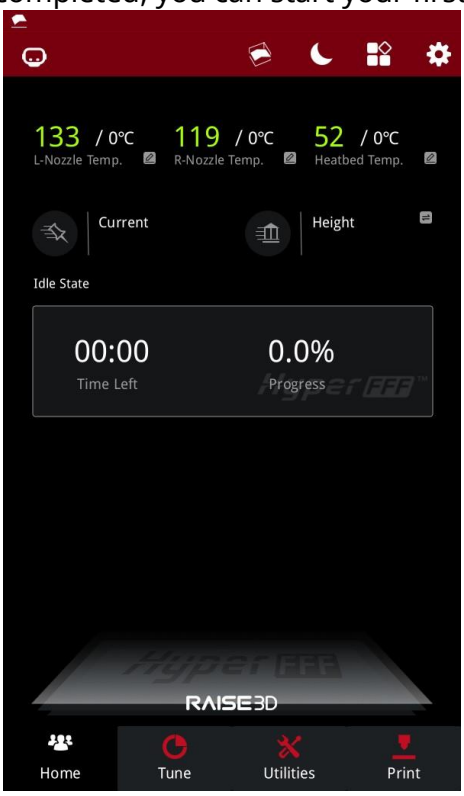


4. If there is a gap between the color blocks, please click "Retry" and re-run the 4th and 5th steps of the 5-step Offset Calibration to recalibrate the XY offset value of the right nozzle.


Setting Method
Offset Settings
1
Left Z Probe Offset
~10 min
Measure the distance between the left nozzle and the heatbed when probe triggered
2
Right Z Probe Offset
~10 min
Measure the distance between the right nozzle and the heatbed when probe triggered
3
Bed Leveling
~1m 30s
Check the flatness of the heatbed for printing
4
R-Nozzle XY Offset
~15 min
Adjust the XY offsets of right nozzle to align with left nozzle
5
Dual-Color Cube
~15 min
Validate the right nozzle XY offsets value by printing a dual-color cube
Next
Skip

E.6 Calibration Finished

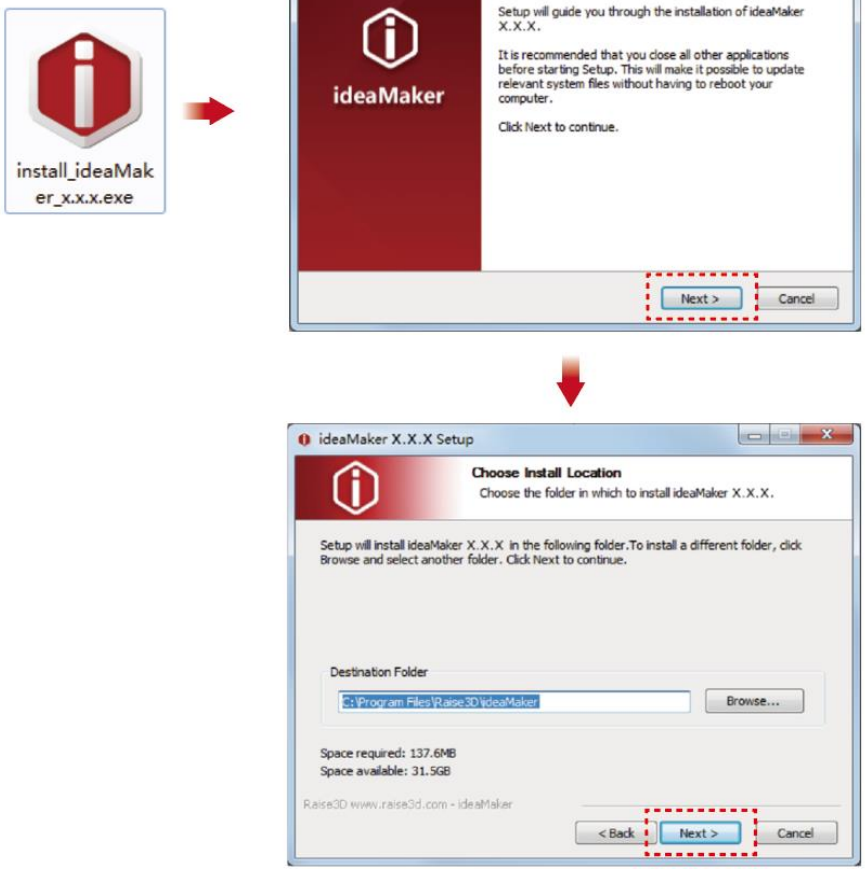
After the 5-step calibration is completed, you can start your first high-speed print!



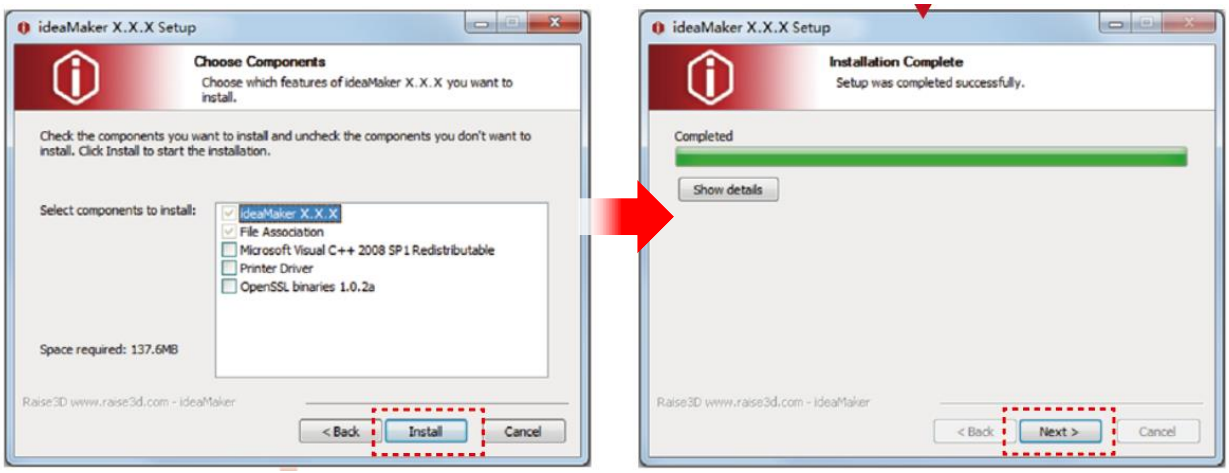
F. ideaMaker Installation

WINDOWS

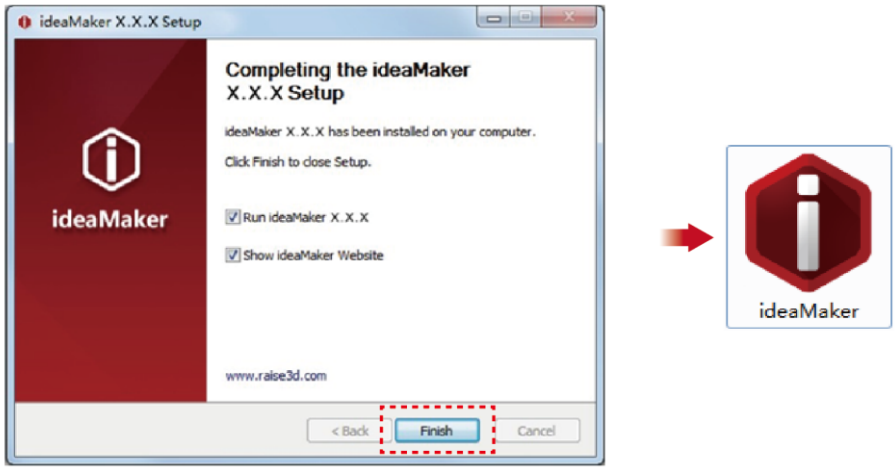
1. Download the latest version from: https://www.raise3d.com/download/.
2. Open the installer and select the installation language. Select the appropriate ideaMaker install location and click “Next”.



3. Follow the instructions provided by the guide and click “Install”. After the installation is complete, click “Next” to go to the next step.



4. Click “Finish” and ideaMaker is installed.



MAC OS X

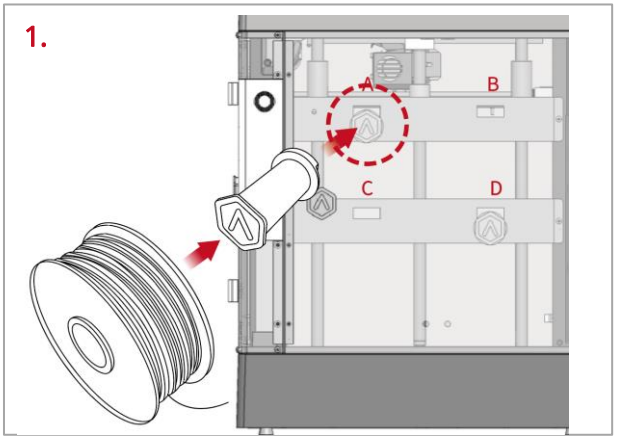
1. Download the latest version from: https://www.raise3d.com/download/.
2. Drag the ideaMaker icon (left) into the Application folder on the right side.


install_ideaMaker_
X.X.X.XXXX.dmg
ideaMaker X.X.X.XXXX.
Raise3D® ideaMaker®
ideaMaker
Applications
Drag and drop ideaMaker icon inside the folder Applications.
A window will pop-up, click Replace to update the old version of the software.
www.raise3d.com
ideaMaker

G. Dual Extruder Printing

G.1 Load Filament

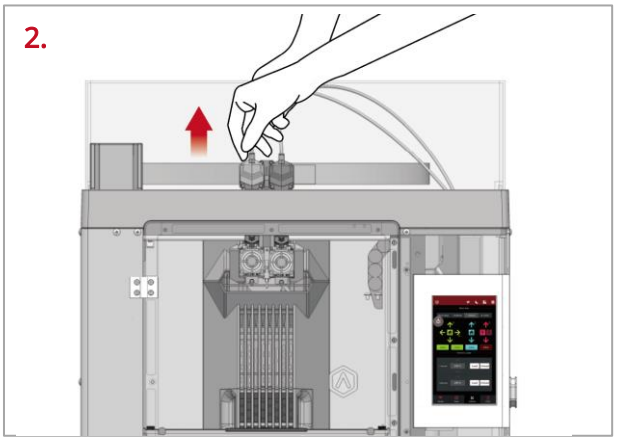
1.



Open the side door of the printer and place the filament holder on the installation point. Place a spool of Raise3D Hyper Speed PLA printing filament on the holder.

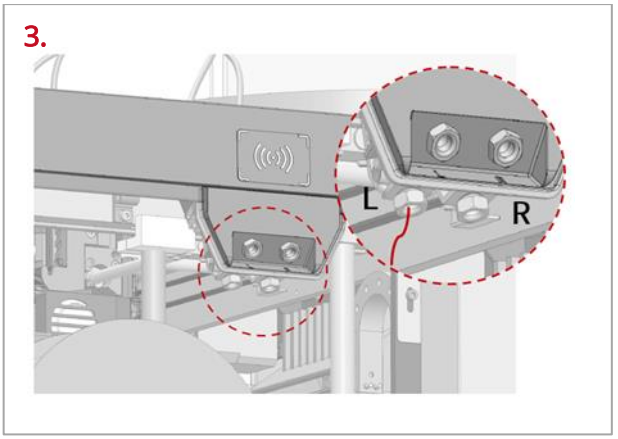
Note: If the filament is installed at points B and D, it is recommended to place the filament in a clockwise direction. If the filament spool installed at points A and C, it is recommended to place the filament spool in a counterclockwise direction.

2.



Press and hold the quick connector on the extruder and pull out the filament guide tube.

3.

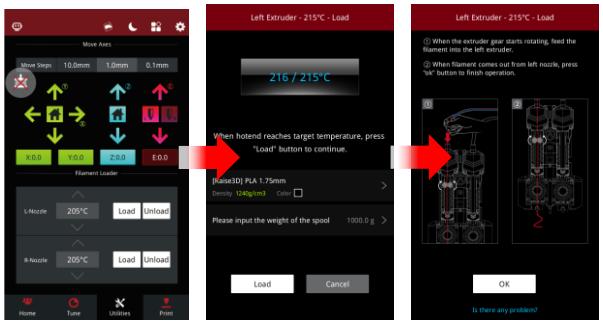


Pass the tip of the filament into the left/right inlet and through the guide tube.

Note: Here we take the left extruder as an example, because the operation of the left extruder is the same as that of the right extruder. The left and right inlets are as shown in the figure, please do not mix them up.

You can also feed the filament from an external filament box through the external left/right inlets located on the right side.

4.

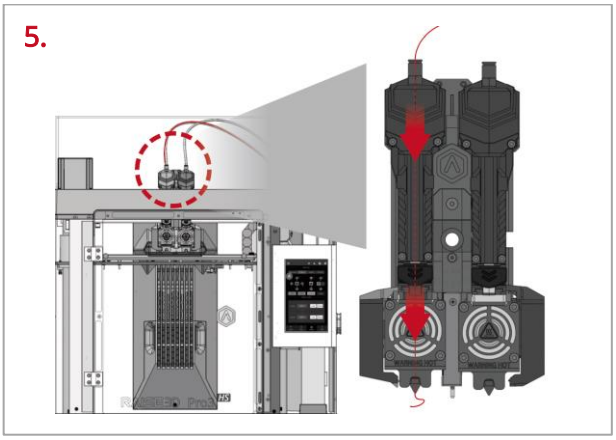


After loading filament onto the left extruder, select “Utilities” at the bottom of the screen, and set the left nozzle temperature to the appropriate printing temperature for the filament you are using.

For example, the default loading temperature of Raise3D Hyper Speed PLA is 220°C. Here, the left nozzle temperature is set to that default value.

Note: Generally, the recommended loading and unloading temperature of the filament should be 5-10°C higher than the printing temperature.

5.



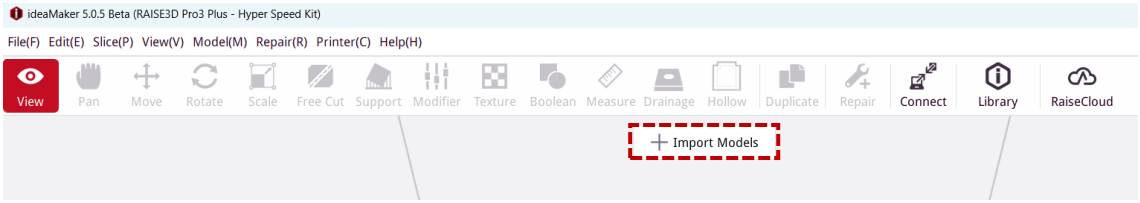
Click “Load”, and the printer will start heating. When the printer reaches the target temperature, click “Load” button to load the filament.

Important: These instructions are based on the properties of Raise3D Hyper Speed PLA filament. The Pro3 HS series printers come with one roll of Raise3D Hyper Speed PLA (Red) and one roll of Raise3D Hyper Core ABS CF15 (Black). We recommend using Raise3D Hyper Speed PLA for testing and initial setup.

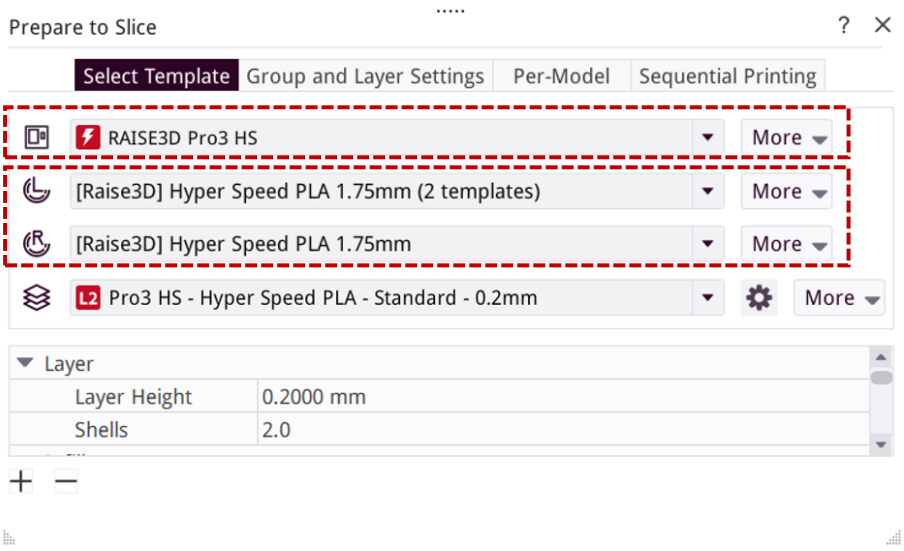
The extruder gear will start to rotate. Gently push the filament into the extruder by hand. When the filament is extruded out from the nozzle, click “OK” to complete the loading. Insert the guide tube back into the quick connector.

G.2 Slice Model

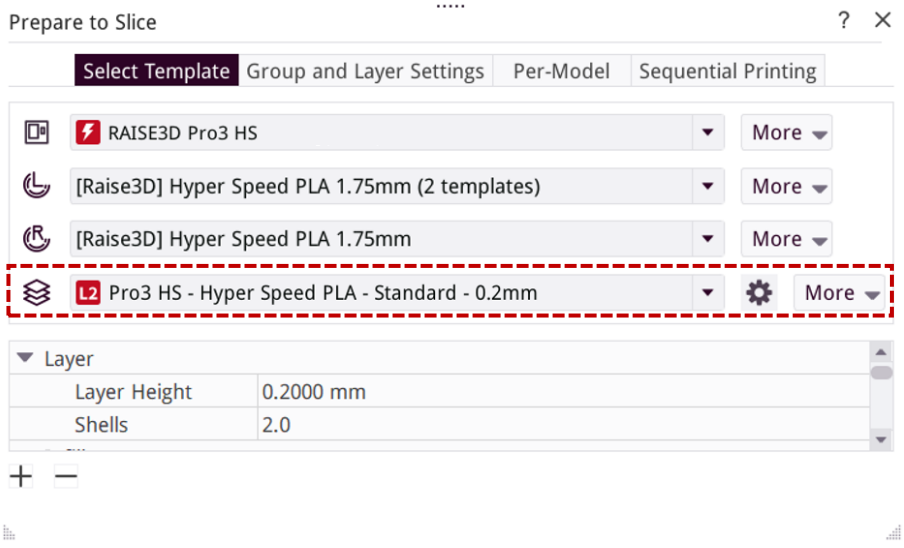
1. After downloading and installing ideaMaker onto your computer, import a model into ideaMaker.



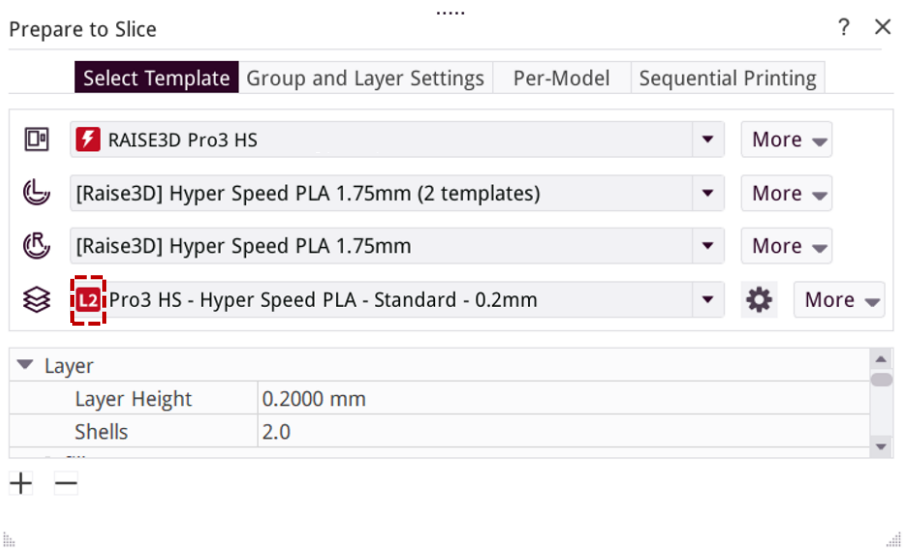
2. Select the appropriate Raise3D Pro3 HS or Pro3 Plus HS printer. Select extruder filament templates.



3. Select a desired slicing template for the filament.



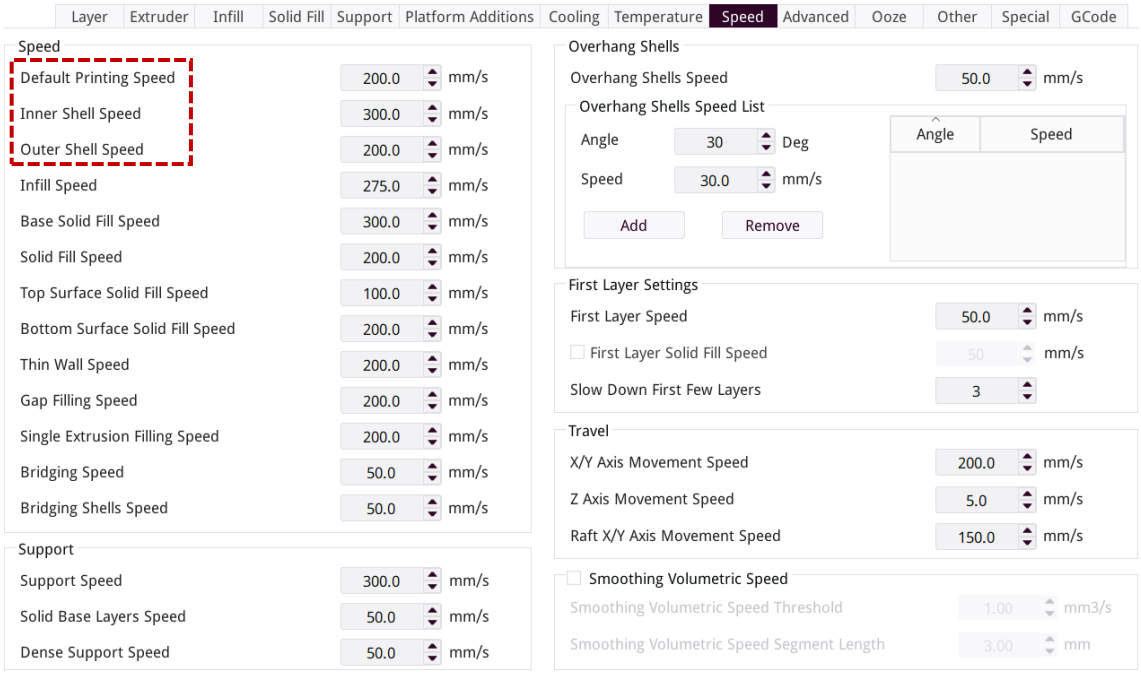
1) The templates will be marked L1/L2 according to their values of velocity, acceleration, and volumetric flow rate within their settings.



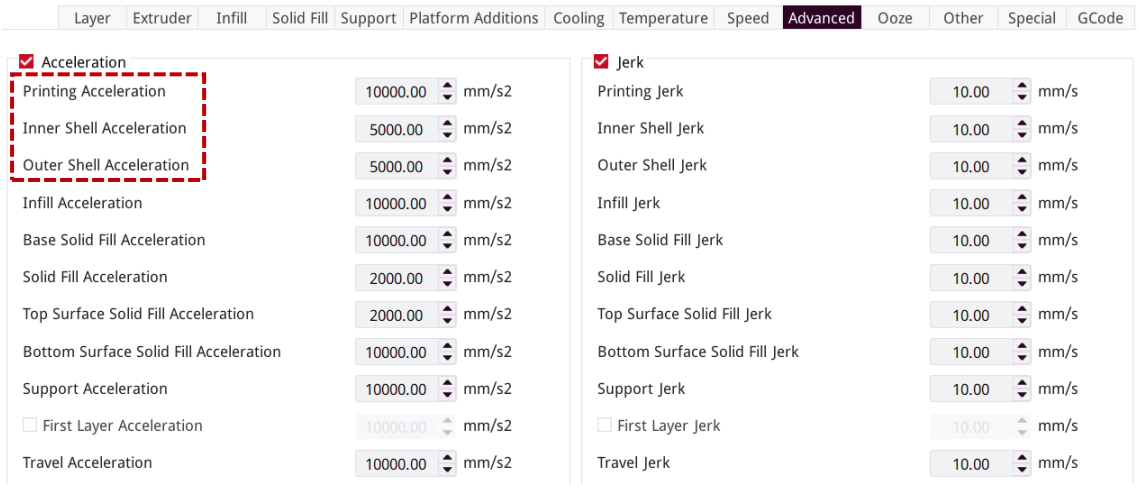
2) ideaMaker will judge all parameters related to speed, acceleration and flow rate in the current template settings. As long as one parameter value reaches L1 or L2, after the template is saved, it will add L1 or L2 labels to the template (L0 will not be displayed).

Parameter	Nozzle	Speed Range			
Acceleration (mm/s^2)	0.6 mm	x <= 1500	1500 < x <= 500	5000 < x <= 10000	x > 10000
	0.4 mm				
Speed (mm/s)	0.6 mm	x <= 100	100 < x <= 150	150 < x <= 350	x > 350
	0.4 mm				
Volumetric Flow Rate (mm^3/s)	0.6 mm	x <= 10	10 < x <= 25	25 < x <= 40	x > 40
	0.4 mm		10 < x <= 15	15 < x <= 30	x > 30
Label Display		**L0 (no display)**	**L1**	**L2**	**L0 (no display)**

The speed judgment includes Default Printing Speed, Inner Shell Speed and Outer Shell Speed. Click the "Edit" icon to enter the advanced settings of the template. The speed judgment items are shown in the red box below.

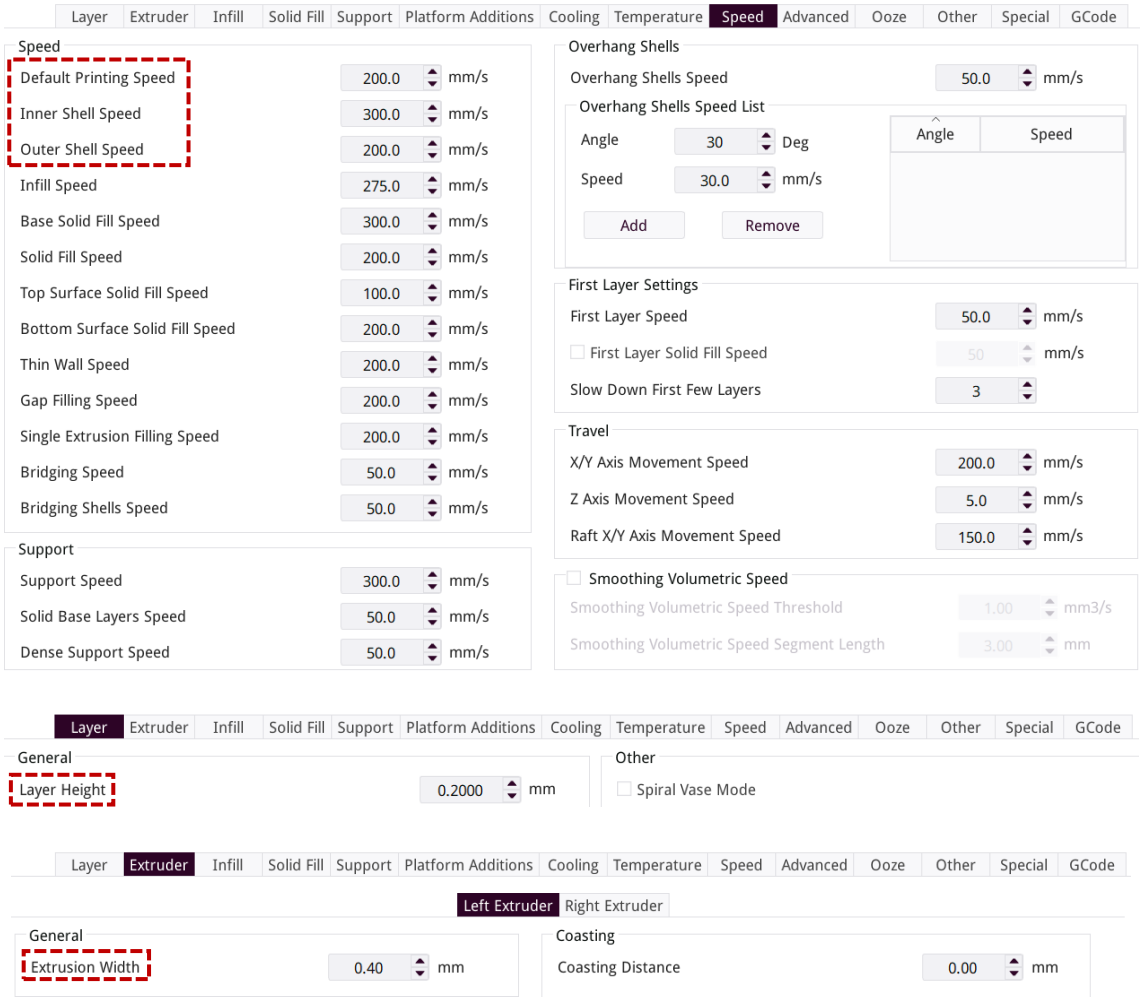


Acceleration judgment includes Printing Acceleration, Inner Shell Acceleration and Outer Shell Acceleration, as shown in the red box below.

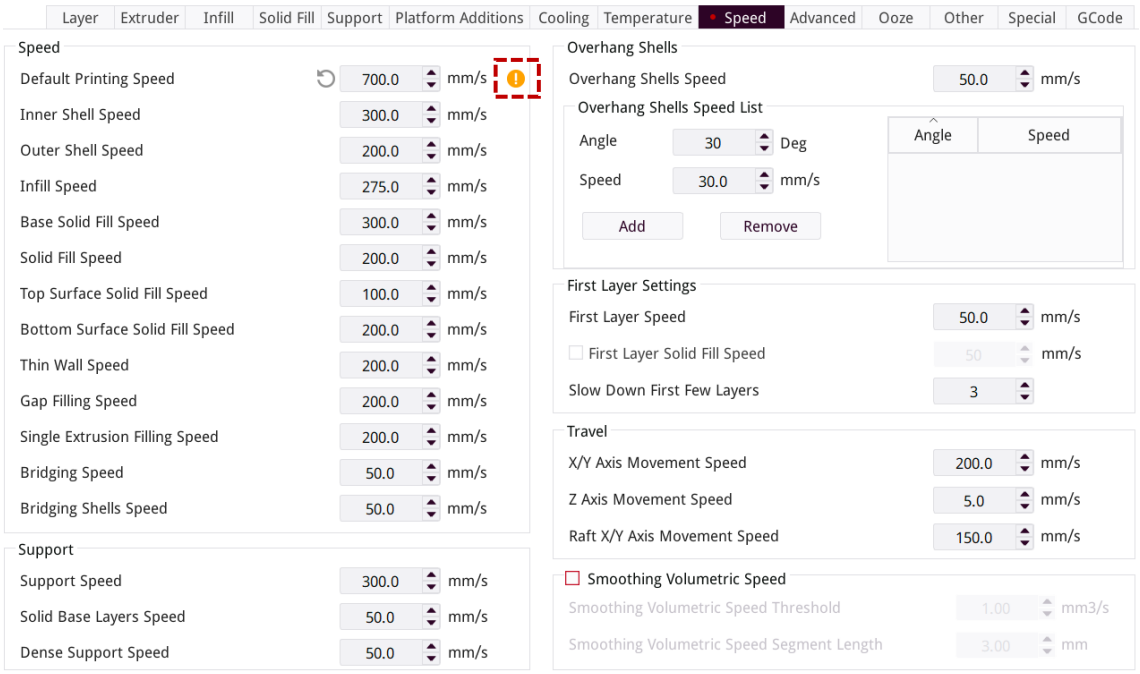


Volumetric flow rate calculation formula: **Volumetric Speed = Layer Height * Extrusion Width * Speed**

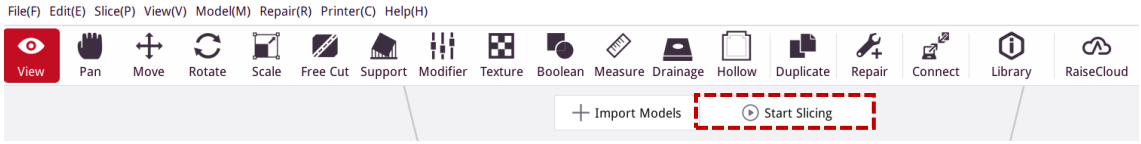
The volumetric flow rate is determined by the Layer Height, Extrusion Width, and Speed. Volumetric flow rate judgment includes Default Printing Speed, Inner Shell Speed and Outer Shell Speed, as shown in the red box below.



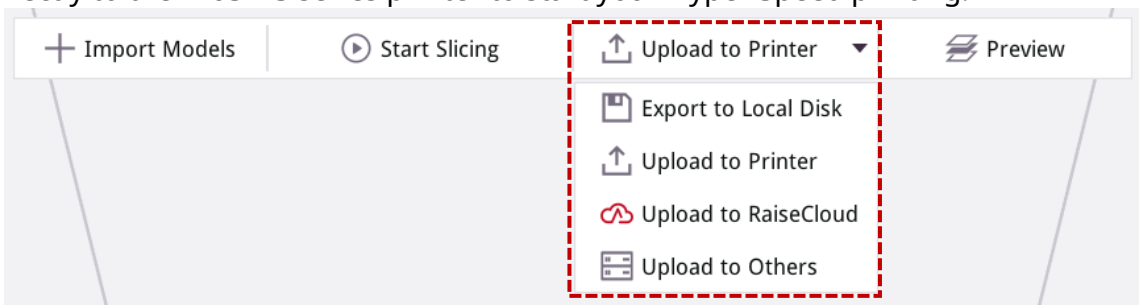
3) In ideaMaker, Raise3D filaments have threshold limits for speed, acceleration, and volumetric flow rate in Standard Mode and Hyper Speed Modes respectively, and if each speed exceeds the threshold, ideaMaker will display an alert.
When the speed, acceleration, and volumetric flow rate exceed the threshold, a yellow exclamation mark reminder is given, and an explanation is given when the mouse hovers over it.



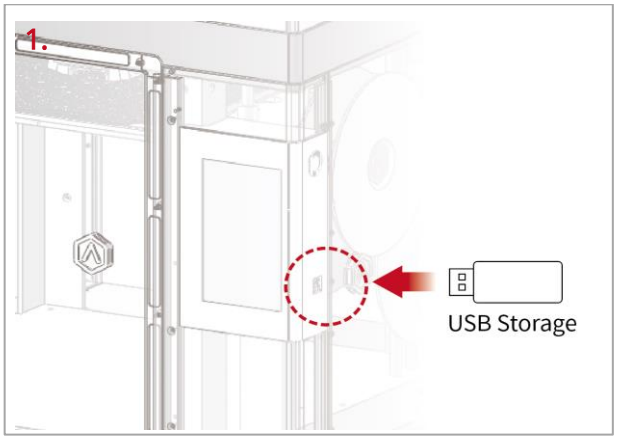
4. After reviewing the parameters, click **"Start Slicing"** to slice the model.



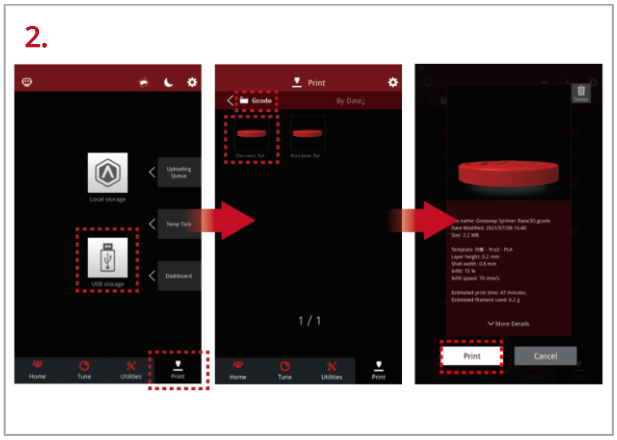
5. After slicing, you can save the file locally and import it to the printer, or you can upload it directly to the Pro3 HS series printer to start your Hyper Speed printing.



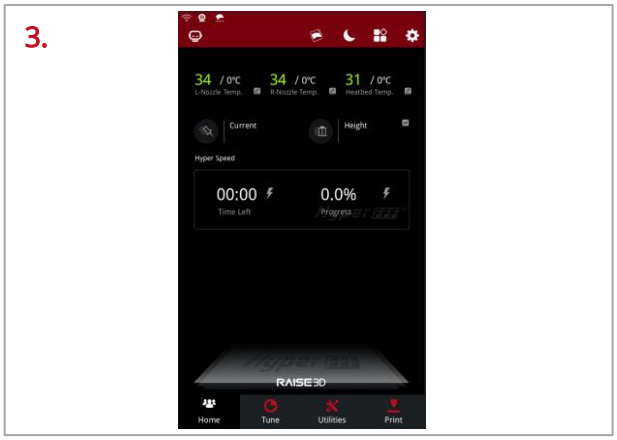
G.3 Start Printing



Insert the USB device that contains your sliced model files (.gcode or .data) into the USB port on the side of the touchscreen



Select “Print” on the touchscreen and choose “USB Storage” to open the file storage path. Select your sliced model file to check the printing parameters and settings. Select “Print” to start printing the model.

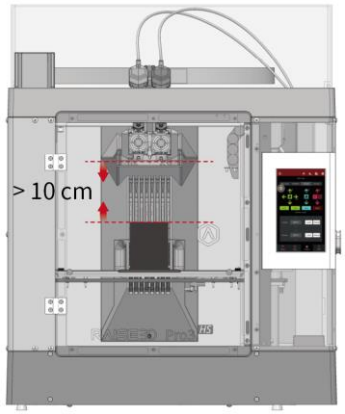


During the printing process, you can check the printing status from the “Home” interface on the touch screen, including the remaining printing time and other parameters.

Note: The touch screen will display an image of your model during printing. This image will only be shown when the file is sliced by ideaMaker and the .data file is exported to the USB flash drive.

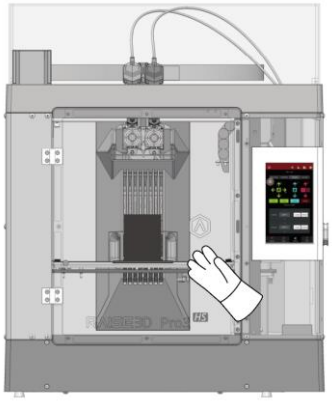
H. Remove the Printed Model

1.



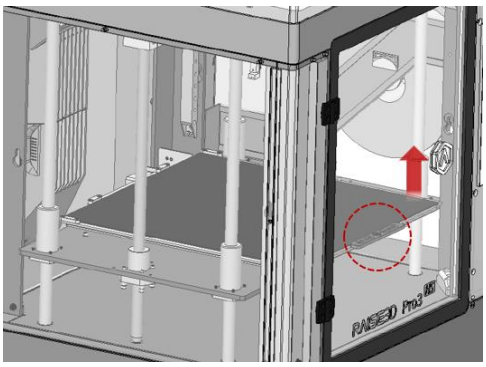
Make sure the printer is idle, and there is at least a 10 cm gap between the printed model's top and the nozzle. This is to prevent the nozzle from scratching the model or damaging the model when it is taken out.

2.



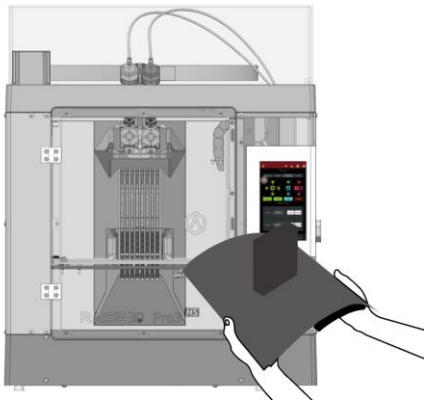
Wait for the build plate and nozzles to cool down to room temperature before removing any models. If you want to remove the model before they have sufficiently cooled down, please wear the heat-resistant gloves from the attached accessory box.

3.



Hold the red protective handle (as shown in the red circle) to gently lift the printing surface, and then take out the printing surface from the printer.

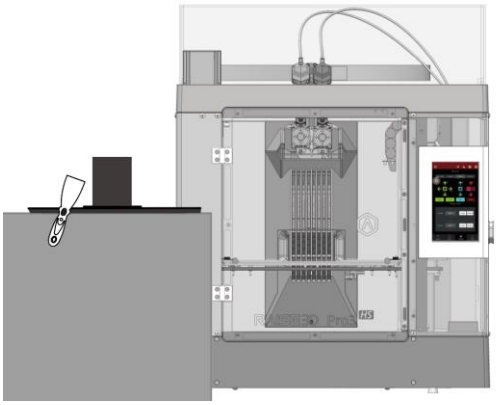
4.



Bend the printing surface repeatedly along the longer span of the model until the model is detached from the printing surface.

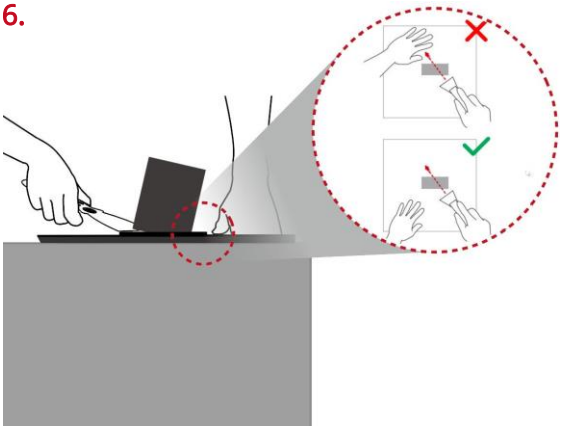
Note: Do not directly touch the edge of the printing surface to avoid injury. Do not over-bend the printing surface to avoid damaging the plate or causing the plate to bounce off from hands. It is better to bend the plate along the prints' longer span.

5.



If the model is not entirely loose or if you feel the model is hard to remove after bending the printing surface several times, use the spatula from the attached accessory box to remove it.

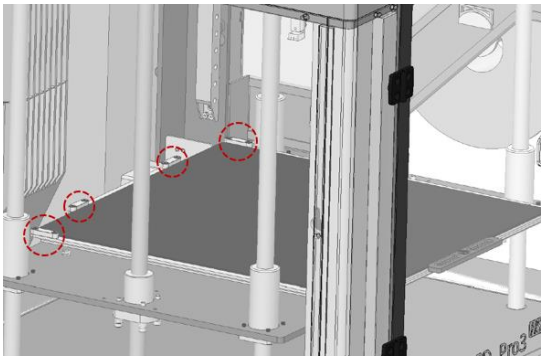
6.



Use one hand to hold the printing surface and use the other hand to scrape off the model with the spatula.

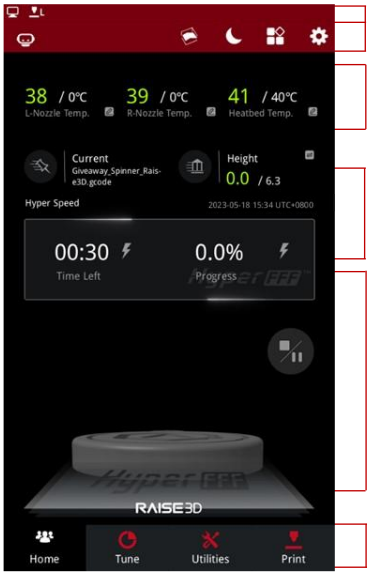
Note: We recommend placing the spatula above the plate and inserting it into the gap between the model and the plate. If the model is printed with the Raft, it is better to scrape the prints along the infill direction of the Raft. Do not put your hands in front of the spatula to prevent injury.

7.



After the model is removed, the printing surface needs to be reinstalled onto the build plate. Gently put the printing surface to its original position by holding the red protective handle. Place the printing surface against the four side strips (as shown in the red circles), and then attach the entire printing surface to the build plate.

I. User Interface



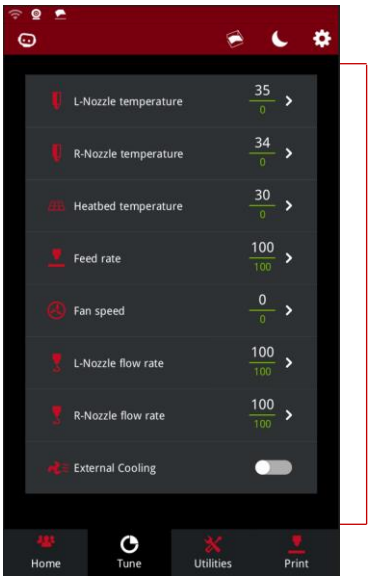
- Status Bar
- EVE, Menu title, Settings button
- Hot end and heated bed temperatures

- Current model name, total print time, current printing status and height

- Visual display of current model
- Pause/Resume button
- Stop button

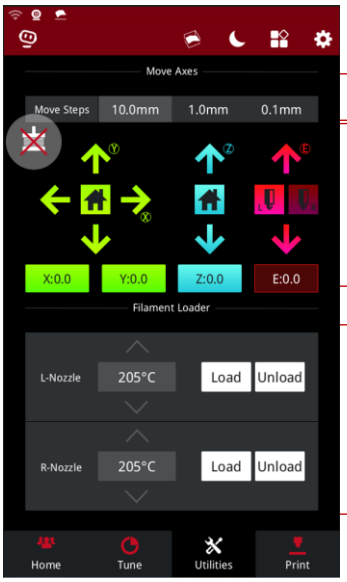
- Taskbar

Home



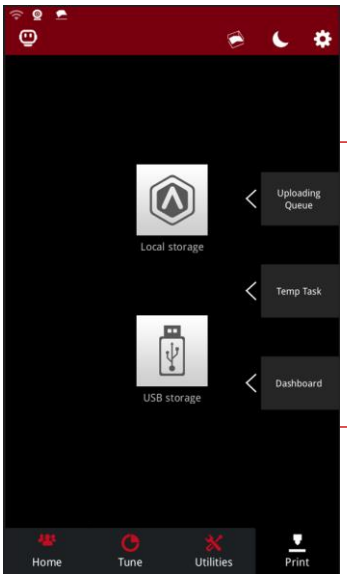
- Printing parameters and adjustments

Tune



Utilities

- Moving step distance setting
- Disable Motor button
- X/Y/Z axes move/home
- Load and unload function for the L&R extruders



Print

- Choose where to load the print job from
- Check uploading list, recovery task list, printing statistics

Experiencing Difficulties/ Contact Information

If you run into any issues during this guided setup, please contact our expert technicians by creating a ticket online at https://help.raise3d.com/support/tickets/new.

US Office: Raise 3D Technologies Inc.
13310 Pike Road, Stafford, USA
Tel: +1 888 963 9028

EU Office: Raise3D B.V.
Stationsplein 45 Unit A4.004, Rotterdam, Netherlands

Manufacturer: Shanghai Fusion Tech Co., Ltd.
Floor 13 A5, 1600 North Guoquan Road, Yangpu District, Shanghai, P.R. China
Tel: +86 400 6367 888 (For the Mainland of China only)
www.raise3d.com