

# OPERATING GUIDE

PLEASE READ THIS ENTIRE GUIDE BEFORE BEGINNING

# WOW!

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## Important safety notice

**Always with the basic defensive measures when using the printer to reduce the risk of injury such as fire and electric shock, including the following measures:**

- Read all instructions before using the printer.
- Do not submerge or expose printer components to water or cleaning solutions.
- To prevent electric shock,do not put the device,power adapter,or plug into water or other liquids.
- Do not place or store the unit where it can be easily dropped or easily pulled into the tub or basin.
- The printer shouldn't be used outdoors,for indoor use only.
- When removing the plug from the electrical outlet,do not pull on the power adapter.
- When pulling out the plug,grasp the plug,not the power cord.
- Do not use non-vendor original accessories or accessories,they may cause fire,electric shoc,injury.
- Do not operate the device if the device power adapter or plug fails or is damaged.
- Do not directly touch liquid resin and the printed model of residual liquid resin on surface. Some people may be allergic to the resin and have different degrees of allergic reactions. At this time,wash with soapy water and seek medical advice promptly.
  - This SLA 3D printer,its photosensitive resin material,printed resin model and packaging materials are not toys. Please keep away from children and pets to avoid suffocation,fire,serious allergies,etc. caused by ingestion.
- Do not use this product for any other purpose.This product is only suitable for SLA 3D printing,and all equipment parts are only used for UV light curing 3D printing. This device may not be used to create models that violate local laws and any illegal modifications. Unintended use of this product may result in violation of local laws.

## Important safety notice

**Precautions for using the printer:**

- Do not eat the resin used for printing and the printed model.
- Keep the resin out of reach of children and pets.
- Try to avoid contact between the resin and the skin. Wear gloves when operating.
- Shake the resin evenly before use.
- The resin should be stored in a cool,backlit place.
- When the resin is accidentally splashed on the eyes or skin,it should be washed with soapy water in time. If you feel unwell,please consult a doctor promptly.
- The printer should be placed in a place where there is no direct sunlight.
- The UV cover should be covered when printing.
- Avoid looking directly at the UV lamp,and if need please wear goggles.
- Do not spill resin on the working panel.
- Children under the age of 18 should be operated under the supervision of an adult.
- Use printers in strict compliance with local laws and regulations.
- Do not disassemble the printer while it is powered on to avoid danger,and disassembling the printer without permission will void the warranty.

**Please keep your instruction manual in a safe place**

## Disclaimer and warning

©This is a desktop-grade SLA light-cured 3D printer that delivers high-quality,SLA 3D printer experience when the power supply is working properly and components are not damaged.

©Read the entire user manual and become familiar with the features of the product before proceeding. Failure to operate this product properly may result in serious injury to yourself or others,or damage to the product or property damage. This product is a little complex and requires a period of familiarity before it can be used safely and requires some expertise to operate. Without a strong sense of safety,improper practices can result in product damage and property damage,and can even cause serious harm to others. This product is not suitable for children. Do not use parts that are not provided or recommended by WOW,and must be installed and used in strict accordance with wow guidelines. This guidance document contains instructions for safety, operation,and maintenance. Be sure to visit the SparkMaker website (<https://www.sparkmaker3d.com/>) to download the user manual and read all instructions and warnings in the documentation before use.

## Disclaimer and warning

©Please read this document carefully before using the product to understand your legal rights,responsibilities and safety instructions; otherwise it may cause property damage,safety accidents and personal safety hazards. By using this product,you are deemed to have understood,endorsed and accepted all the terms and contents of this document. The user is committed to being responsible for his or her actions and all consequences arising therefrom. The user undertakes to use the product only for legitimate purposes and agrees to all terms and content of this document and any relevant policies or guidelines that may be customized by WOW Innovations (Shenzhen) Technology Co., Ltd.

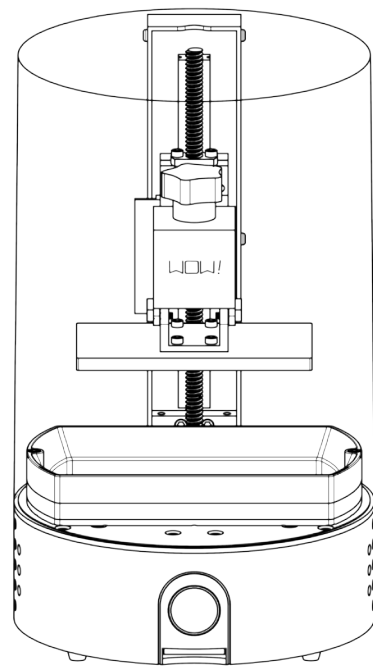
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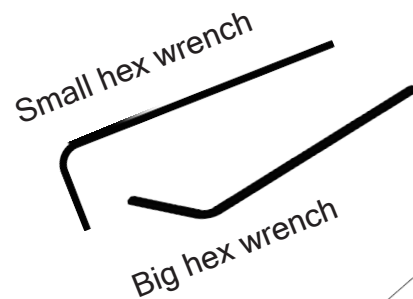
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## ONTENTS

SparkMaker



SparkMaker 3D printer

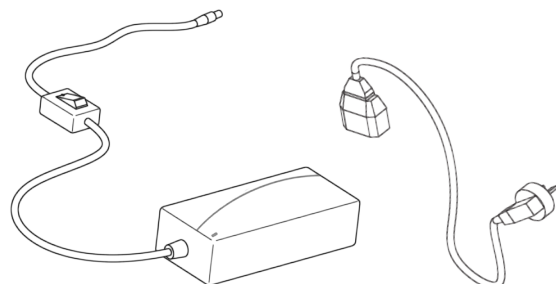


Small hex wrench

Big hex wrench



Operation guide



Power adapter

Power cable

**Please take the time to familiarize yourself with the items in the package. You should receive the illustrated component.**

To make your products safer to use, WOW provides users with detailed operating instructions.

Users are advised to check the documentation and components according to the component list. If you find any missing or item is not perfect, please contact WOW or the merchant who sold the product. Please read this document carefully, watch the instructional video, use the quick start guide to understand the use method, before printing.

The user manual must be read carefully. Please be sure that you are familiar with the functions of the various components of this product before using this product.

And learn the basics about 3D printing. If you have any questions about using this product, please contact a WOW or WOW authorized dealer.

## Check after unpacking

Open the package to confirm that the components are integrity, then check the printer's functions to ensure that it works properly.

- ❶ **Test power function:** Connect the power supply. After the printer is powered on, confirm that if the indicator of the knob is working properly and the indicator of the knob will display the Light blue light if it working properly.
- ❷ **Test knob function and Z-axis motion:** Rotate the knob to confirm whether it can control the printing platform move up and down, and whether the knob rotates smoothly.
- ❸ **Test photoelectric switch:** Remove the printing platform and continue to rotate the knob clockwise to control the lifting cantilever to descend until the trigger piece on the lifting cantilever is inserted into the photoelectric switch groove to trigger it to confirm whether the lifting cantilever stops.
- ❹ **Test print function:** Remove the printing platform, download the print file "**print.wow**" (for SparkMaker version) or "**print.fhd**" (for SparkMaker FHD version) from SparkMaker official website ([www.sparkmaker3d.com](http://www.sparkmaker3d.com)) and save it to the SD card. Insert the SD card with the print file into the printer card slot and the indicator of the knob will become the green breathing light, then press the knob to start printing. At this time, the indicator light changes from green to red and flashes, the lifting cantilever will drop to the position of the trigger photoelectric switch, then the light board will emit ultraviolet light, the fan will start to work, the screen will display the bottom layer pattern, and wait for a bottom exposure time. After that, the light board is extinguished, the lifting cantilever will rise a certain distance, and then decline again, then the light board emit ultraviolet light, and the screen displays the next pattern... Continue this process until the end of printing.
- ❺ **Test tank:** Check if the FEP membrane at the bottom of the tank has obvious scratches or broken holes. Pour some water into the tank to check if it will leak.

## Product working principle

### SparkMaker SLA 3D printer

Designing a 3D solid model through 3D software, slice the model with SparkStudio, the generated data will be used to accurately control the switch of the light board and the movement of the lifting platform through the main board. The light beam emitted by the light board passes through the controllable liquid crystal screen and is irradiated onto the surface of the liquid photosensitive resin according to the designed path. Curing a layer of resin in a specific area of the surface. When this layer is processed, a section of the model is generated. The lifting platform is raised by a certain distance, the solid layer is covered with another layer of liquid resin, and then the second layer is scanned, and the second solidified layer is firmly bonded to the previous solidified layer, so that the layers are superposed to form a three-dimensional model. After the model is taken out of the resin, clean the resin on the surface of the model with alcohol, and the final curing, and then polished, painted or colored to get the desired product.

## Specification of the SparkMaker

SparkMaker

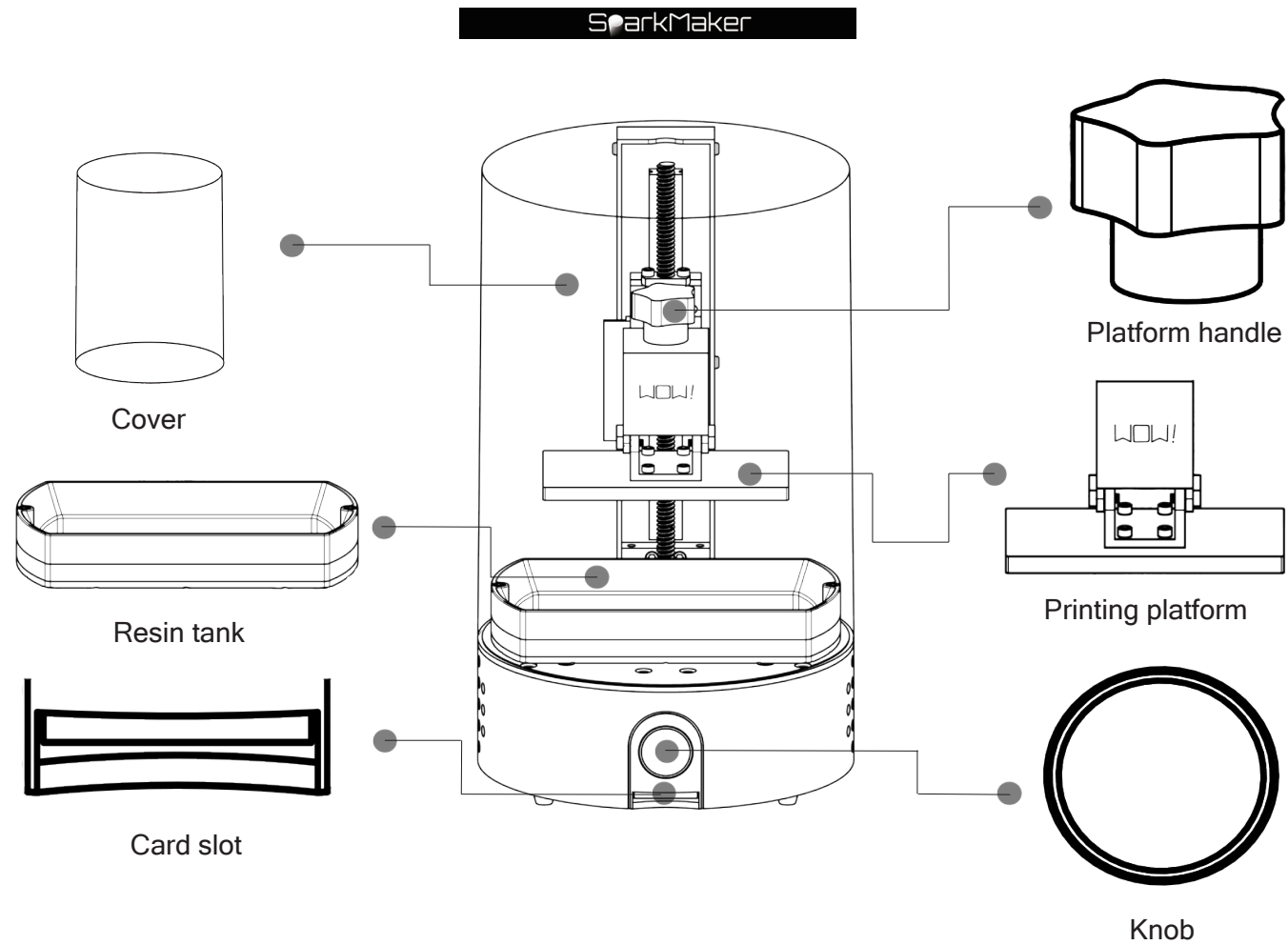
Molding size	98mm*55mm*125mm
XY-axis direction accuracy	100μm
Z-axis direction accuracy	25-100μm
Print material	Photosensitive resin
Single layer printing time	8-15 S
Printing method	SD card offline printing
Print file format	*.wow
Printer control	Knob
Curing ultraviolet light	400-410nm 24W UV LED
Operating software	SparkStudio
Stepper motor drive	128 microsteps
Physical dimension	Φ170mm*284mm
Total weight	2.2KG
Input power	DC 24V 2A 48W

## Specification of the SparkMaker FHD

Molding size	110mm*61.8mm*125mm
XY-axis direction accuracy	100μm
Z-axis direction accuracy	25-100μm
Print material	Photosensitive resin
Single layer printing time	3-12 S
Printing method	SD card offline printing
Print file format	*.fhd
Printer control	Knob&APP
Curing ultraviolet light	400-405nm 84W UV LED
Operating software	SparkStudio
Stepper motor drive	128 microsteps
Physical dimension	Φ170mm*288mm
Total weight	2.2KG
Input power	DC 24V 4A 96W

SparkMaker





Type	Feature	Color	Hardness	Elongation	Description
LCD-T	Tough	Clear	60D	115%	ABS Alike
LCD-W	Water Washable	Clear	60A	150%	Water Washable
LCD-C	Casting	Clear	80A	24%	Casting
LCD-E	Elastic	Clear	26A	300%	Rubber Alike
LCD-N	Nylon Alike	Black	75D	115%	Nylon Alike
LCD-H	High HDT	Clear	90D	3%	>300°C HDT
LCD-G	Super Clear	Clear	70D	5%	Super Clear
LCD-Q	easy dyeing	light yellow	80D	5%	colorful paste
LCD-MG	Rigid&Tough	gray	80D	5%	Rigid&Tough
LCD-BG	Hard	Gray	75D	3%	Rigid
LCD-BW		White			
LCD-BF		Flesh			

## Precautions for resin use:

- ① Theoretically, resins with a curing band of 400-410 nm can be used in SparkMaker, but if other third-party resins are used, the printed parameters must be adjusted by yourself.
- ② SparkMaker's resin can also be used on other SLA 3D printer use PTFE film or FEP film as tank bottom, and the curing band is on 355-420nm SLA 3D printer, but the actual printing parameters need to be adjusted by users.
- ③ Damage to parts caused by the use of third-party resins will invalidate the warranty.
- ④ The color paste addition ratio should be less than 1%, and the resin exposure time should be increased appropriately after adding the color paste.
- ⑤ The resin after adding the color paste should be evenly mixed to prevent the color paste from precipitating.
- ⑥ Do not mix a variety of different types of resins, and it will cause the resin properties and printing parameters change greatly, making it difficult to print.
- ⑦ The photosensitive resin will react with some plastics such as ABS, PC, etc. Do not drop the resin on such plastics.
- ⑧ Use of third-party color paste or other dyes may result in printing failure or damage to the printer.
- ⑨ Should choose the right resin according to different needs.
- ⑩ For models with small features and high precision requirements, deep color and high hardness photosensitive resins should be used.
- ⑪ If photosensitive resin with low hardness, high toughness and softness, which may have different degrees of deformation during printing.

### Color principle:

CMYK is the four-color printing mode used for color printing. Based on the principle of trichromatic mixing with black ink, a total of four colors are mixed and superimposed to form a "full-color printing".

### The four standard colors are:

C=Cyan M=Magenta Y=Yellow K=key

Here K refers to the Key, it can also represent Black, because printing is more often used in black. In addition, we also added a white color paste.

**C+M=Purple**

**M+Y=Orange**

**C+Y=Green**

**Method of operation:** Pour the resin into a cup first, then add a drop of color paste to the cup, stir evenly, finally pour the resin of the mixed color paste into the trough and print.

### Notice:

Adding a white color paste will make the color soft.

Adding black paste will make the color dignified.

Users can adjust different doses and ratios to call up richer colors.

The color paste addition ratio should be less than 1%, and the resin exposure time should be appropriately increased after adding the color paste.

The resin after adding the color paste should be stirred evenly to prevent the color paste from being precipitated.

## Important Definition

**Cover:** Protective cover to prevent external light and dust from affecting the resin in the tank.

**Notice:**

- ❶ Do not drop the resin on the cover. If it is accidentally dropped on it please clean it in time.
- ❷ Do not put heavy objects on the cover to avoid crushing the cover.

**Tank:** The container for storing resin during printing.

**FEP film:** Located at the bottom of the tank for release demolding during printing,UV light can pass through it to cure resin.

**Notice:**

- ❶ The FEP film at the bottom of the tank is easily damaged. Do not scratch it with a sharp object.
- ❷ After removing the tank,use a paper towel pad on the bottom of the tank to avoid damage to the FEP film.
- ❸ Please clean the resin that has accidentally dropped on the outer wall of the tank and the screw hole to avoid damage to the LCD screen.
- ❹ When installing the tank,please make sure that the FEP film is close to the LCD screen to avoid affecting print.
- ❺ Less than **240ml** resin should be poured into the tank. Do not pour in too much resin,it will result in resin overflow damage to the LCD screen.

**Printing platform:** Parts for leveling and fixing aluminum plate.

**Plate:** Aluminum alloy plate for sticking the model on the printing platform.

**Notice:**

- ❶ Make sure the print platform is fully inserted under the platform handle.
- ❷ Make sure the print platform is correctly leveled before printing to avoid damage to the LCD screen.
- ❸ When leveling,please cross lock four screws while pressing down the aluminum plate.
- ❹ Do not scratch too deep under the aluminum plate,but slight scratches do not affect printing.

**Platform handle:** Fix the platform on the Z axis to prevent it from moving.

**Notice:**

❶ Tighten the platform handle before printing to prevent it from sliding during printing.

❷ Please clean the resin residue on the handle of the platform in time.

**Knob: Knob operation and indicator light:**

1. **Control motor:** In the uninsert SD card state,the indicator light is light blue.When the knob rotates clockwise,the platform descends; when it rotates counterclockwise,the platform rises.

2. **Printing:** Insert the SD card,the indicator light will become green breathing light,press the knob to start printing,the indicator light turns into red and flashing,and the printer enters the printing state.

3. **Stop:** In printing mode,long press the knob,the indicator will turn blue and eventually turn green,which is to terminate printing.

4. **Pause:**In printing mode,press the knob and the indicator will turn blue.After the current print layer is cured,the print platform will lift **30mm** and the printer will pause printing.

5. **Continue:** After the printing platform lifted by **30mm** and pause printing,press the knob,the printing platform will descend and continue printing,and the indicator light will turn red and flashing.

6. If there is no print file in the SD card or the SD card is not recognized,after pressing the knob,it will change from green to red and quickly turn to green again.

**Notice:**

❶ Do not drop the resin on the knob.If it drops accidentally,please clean it in time.

❷ Do not over-tighten the two screws above the knob.

**SD card:**The carrier for storing print files.

**SD card sort:**Used to read SD card data.

**Notice:**

❶ When inserting,the metal contact point of the SD card is facing up,please do not insert the opposite.

❷ Multiple of print files can be stored in the SD card,but when you use the knob to control the printer to print,the printer can only recognize the print file named "**print.wow**"(for SparkMaker version)or "**print.fhd**" (for SparkMaker FHD version)and print it. Users can name the files that do not print as other names,and name the file to be printed as"**print.wow**"(for SparkMaker version)or "**print.fhd**"(for SparkMaker FHD version),if you want to change the print file,you can directly modify the file name. If you use APP to control printing,on the APP,you can directly select the file you want to print .

③ Please use **SDHC (Secure Digital High Capacity)** with a maximum capacity lower than **32GB**.

**Adapter:** Used to convert **110V-240V AC to 24V DC** to provide power to the printer.

**DC socket:** Located at the right rear of the printer, is the power socket to connect the printer and the adapter.

**Notice:**

- ① Do not use a non-original power adapter to avoid danger.
- ② Please plug in the print DC socket before powering on the adapter. Do not plug in the DC socket after the adapter is powered.

**Light board:** Provide UV light to cure the liquid resin in the tank.

**Notice:**

- ① Do not look directly at the UV light emitting from the light board. Wear goggles if do it.
- ② Please ensure that the fan works normally when the light board is working to avoid damage to the machine caused by excessive temperature.

**Shading tape:** Used to block the unrequired UV light around the LCD screen.

**LCD screen:** Used to display the section pattern of the printed model and cooperate with the UV light to cure the resin.

**Notice:**

- ① The LCD screen is extremely fragile, please be careful.
- ② If the tank leaks out and causes the resin to flow out and cured on the LCD screen, please carefully remove the cured resin residue before the next printing.
- ③ Make sure that there are no resin residues on the LCD screen to block UV light.
- ④ If the print failed, please clean the residual resin in the tank and aluminum plate in time to avoid crushing the LCD screen when printing next time.
- ⑤ Make sure the printing platform is properly leveled when printing, so as to avoid damage to the LCD screen.
- ⑥ Please ensure that the FEP film is close to the LCD screen to avoid affecting the print quality.
- ⑦ Make sure that the black tape completely block the unrequired UV light around the LCD screen.

**Screw motor:** Used to drive the lifting cantilever move up and down.

**Copper nut:** For working with screw motors.

**Guide rail:** For linear motion guidance.

**lifting cantilever:** Motor and guide rail control its up and down during printing.

**Notice:**

- ① Do not block the rotation of the screw motor.
- ② Do not over-tighten the mounting screws of the copper nut.
- ③ Do not drop resin and other debris on the guide rail and the screw that interfere with its work.
- ④ Please add grease to the screw, copper nut and guide rail in time to avoid excessive abrasion.
- ⑤ Do not drop the resin on the baffle. If it is accidentally dropped, please clean it in time.

**Photosensitive resin:** Liquid light curing resin for printer use.

**Notice:**

- ① Do not touch the skin directly with the resin. Wear gloves when handling. If skin contact occurs, wash it with soapy water. If you feel unwell, please consult a doctor.
- ② The resin remaining after printing, if it would not be used for a long time, please keep it in cool and dark place.
- ③ Shake the resin evenly before use.
- ④ Do not eat the printed model and the resin used for printing.
- ⑤ Keep the resin out of reach of children and pets.
- ⑥ Do not drop the resin on any parts other than the tank and aluminum plate. If it is dropped, please clean it in time.
- ⑦ Use of third-party color paste or other dyes may result in printing failure or damage to the printer.

**Working panel:** Panel for mounting components such as LCD screens and tank.

**Hexagonal wrench:** Big hex wrench and small hex wrench for hex screws.

**Trigger piece:** Used to trigger photoelectric switch.

**Photoelectric switch:** Used to determine if the platform has reached the lowest point.

**Notice:**

- ① Do not block the photoelectric switch, otherwise the photoelectric switch will not be triggered.

② When leveling, please ensure that the trigger piece is inserted into the photoelectric switch groove.

③ Do not drop the resin on the working panel and photoelectric switch.

**Fan:** Cooling the control system and the light board.

**Notice:**

① Make sure that the cooling fan is working properly and avoid system failure due to excessive temperature.

② Please make sure not to block the air outlet and air inlet.

**LCD screen FPC cable:** Connecting the mainboard to the LCD screen.

**Alcohol:** A cleaning agent used to clean printed models.

**Note:**

1. Please use alcohol with a concentration higher than **95%**.

2. Do not soak the model in alcohol for too long.

3. Please use alcohol carefully to avoid safety risks.

**UV curing lamp:** used to solidify the newly printed model so that it is completely solidified.

**Note:**

1. Please use a curing lamp with a band of **395-420nm** and a power of more than **10W**.

2. When curing the model with curing lamp, the model can be placed in glycerin to prevent the deformation of the model due to temperature and other factors in the curing process.

3. Too long post-curing time will lead to shrinkage and yellowing of the model, and too short post-curing time will lead to the incomplete curing model of the model is soft.

## Check before printing

① Keep the power connection stable.

② Knob rotates smoothly and presses smoothly.

③ Z-axis movement is smooth and unobstructed.

④ There is no resin residue on the aluminum plate of the printing platform.

⑤ The handle on the print platform has been tightened.

⑥ The print platform has been correctly leveled.

⑦ The tank is installed correctly, and the FEP film at the bottom of the tank is close to the LCD screen.

⑧ No resin residue in the tank and on the FEP film.

⑨ No residual resin on the outer wall of the tank, the bottom of the tank, the LCD screen and the working panel.

⑩ The resin poured into the tank is less than **240ml**. If the model is large, the resin can be added during the printing process.

⑪ Printed model files have no fault and are not damaged.

⑫ Ensure the model's the position of the long-span cantilever, the lowest point of the layer and the position that needs to be strengthened, add with the right size of support and the right amount of support, and the right bottom valve.

⑬ The slice parameters such as the layer thickness, exposure time, and lifting speed of the print file are set correctly.

⑭ The slice file is completely saved in the SD card, the bottom surface of the model is completely attached to the lowest point of the printer, and there is no fault on the print model file

⑮ If you use the knob to control the printer to print, you need to name the print file as "**print.wow**" (for SparkMaker version) or "**print.fhd**" (for SparkMaker FHD version), and save it to the SD card.

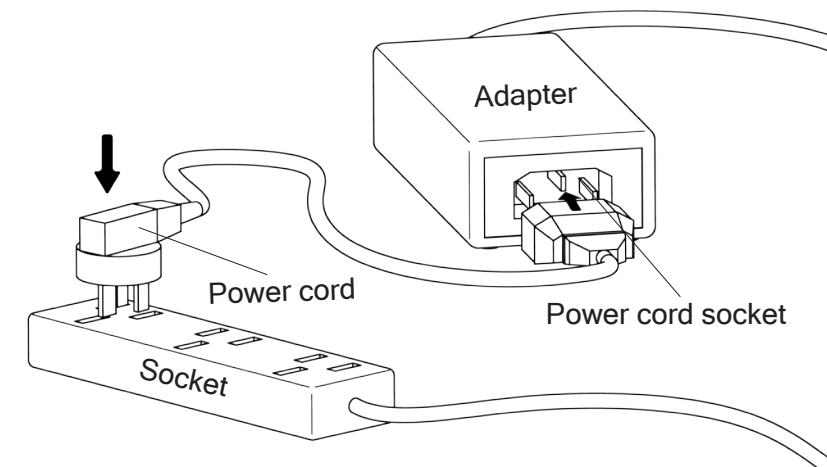
⑯ The SD card is a **C10 high-speed** card with a capacity lower than **32GB**. The file system format is **FAT32**. The SD card is completely unlocked by hardware. The metal contacts are intact and free of stains.

⑰ When the card slot is inserted, the SD card metal contact point is inserted face up into the machine card slot and is in fully contact with it.

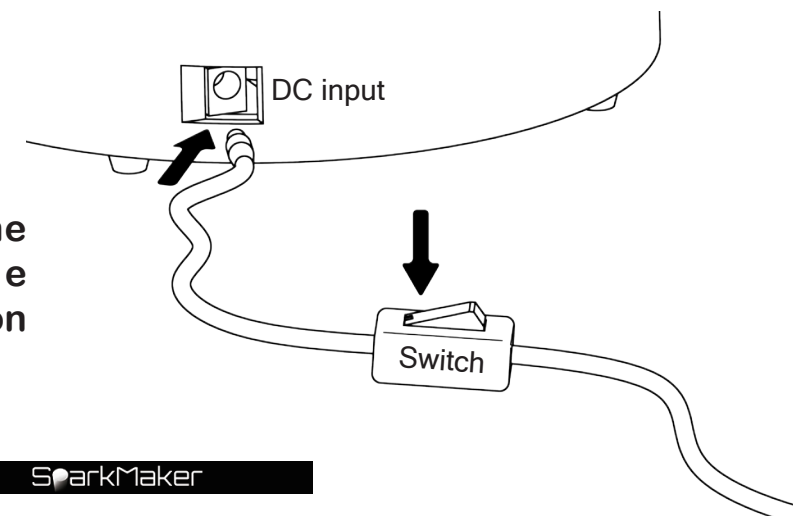
# Quick start guide

## Power cord connection

Plug the power cord socket into the adapter interface first, and plug the power cord into the socket.

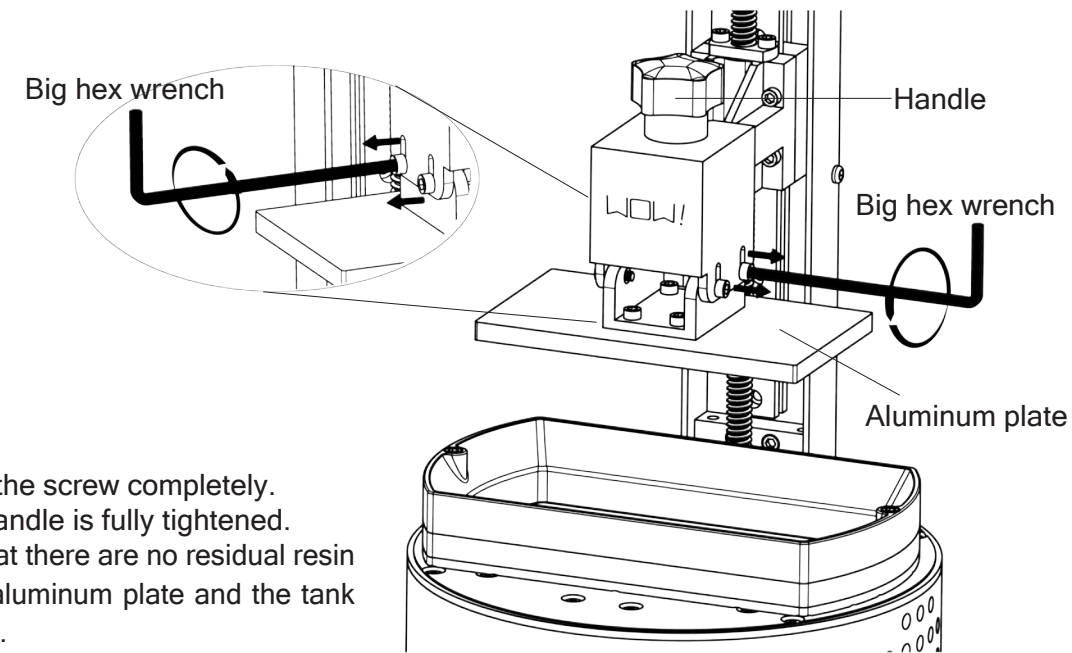


Plug the adapter plug into the DC input on the back of the printer, then press the switch on the cable to start the printer.



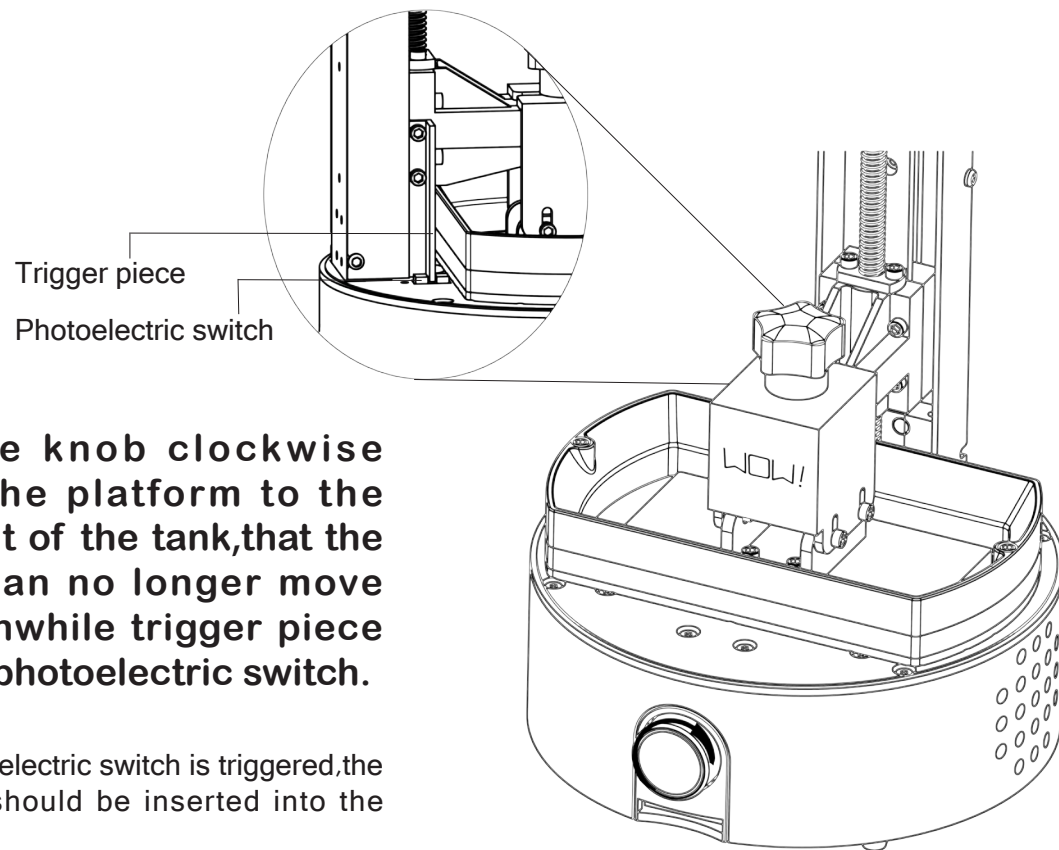
## Leveling the printing platform

Use the big hex wrench to loosen the four screws on both sides of the platform counterclockwise so that the aluminum plate can move up and down freely.



\* **Notice:**

- ① Do not unscrew the screw completely.
- ② Make sure the handle is fully tightened.
- ③ Please ensure that there are no residual resin or obstacle on the aluminum plate and the tank to affect the leveling.
- ④ Make sure the tank is installed correctly.

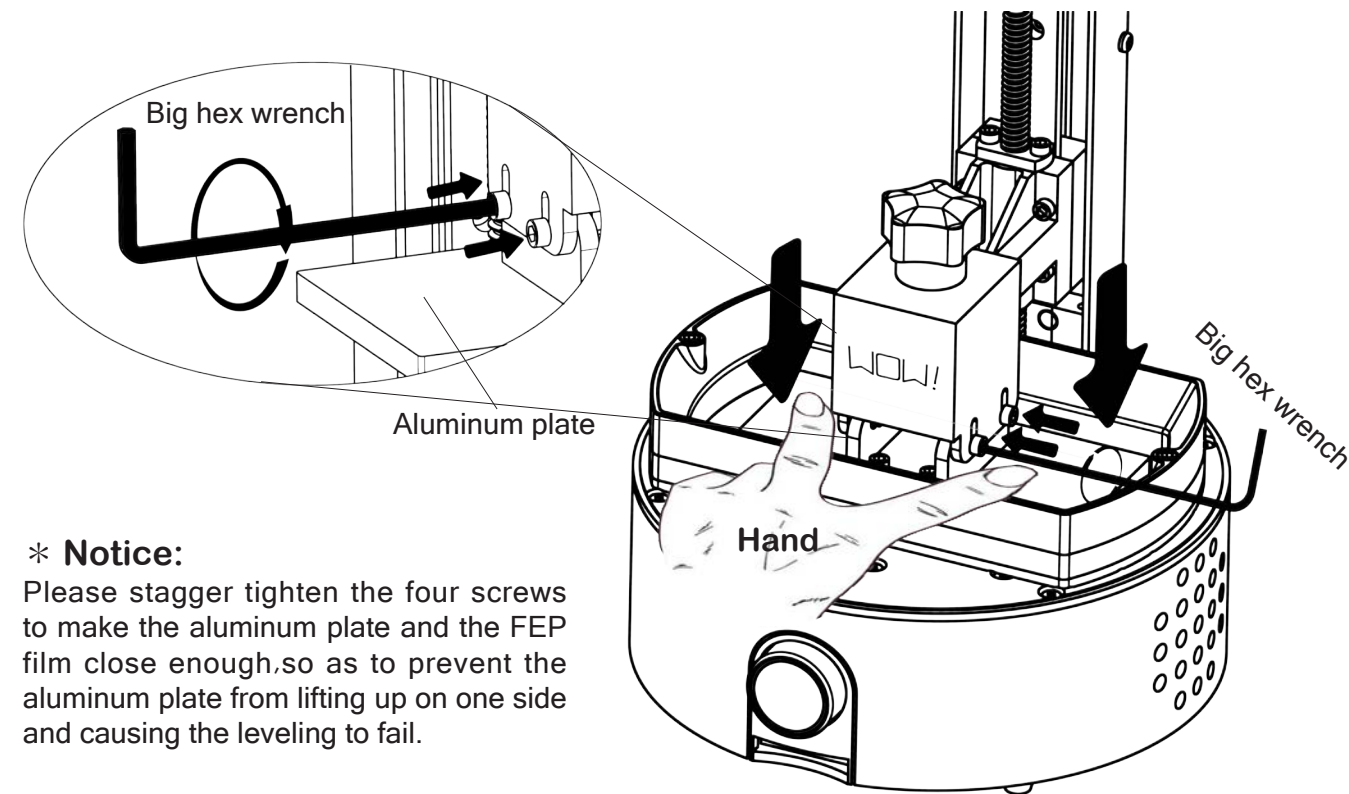


Rotate the knob clockwise to lower the platform to the lowest point of the tank, that the platform can no longer move down meanwhile trigger piece trigger the photoelectric switch.

**\* Notice:**

When the photoelectric switch is triggered, the trigger piece should be inserted into the middle notch.

Use two fingers to press down on each side of the aluminum plate, and press it close to the FEP film, meanwhile use the big hex wrench to tighten the four screws clockwise to fix the aluminum plate.



**\* Notice:**

Please stagger tighten the four screws to make the aluminum plate and the FEP film close enough, so as to prevent the aluminum plate from lifting up on one side and causing the leveling to fail.

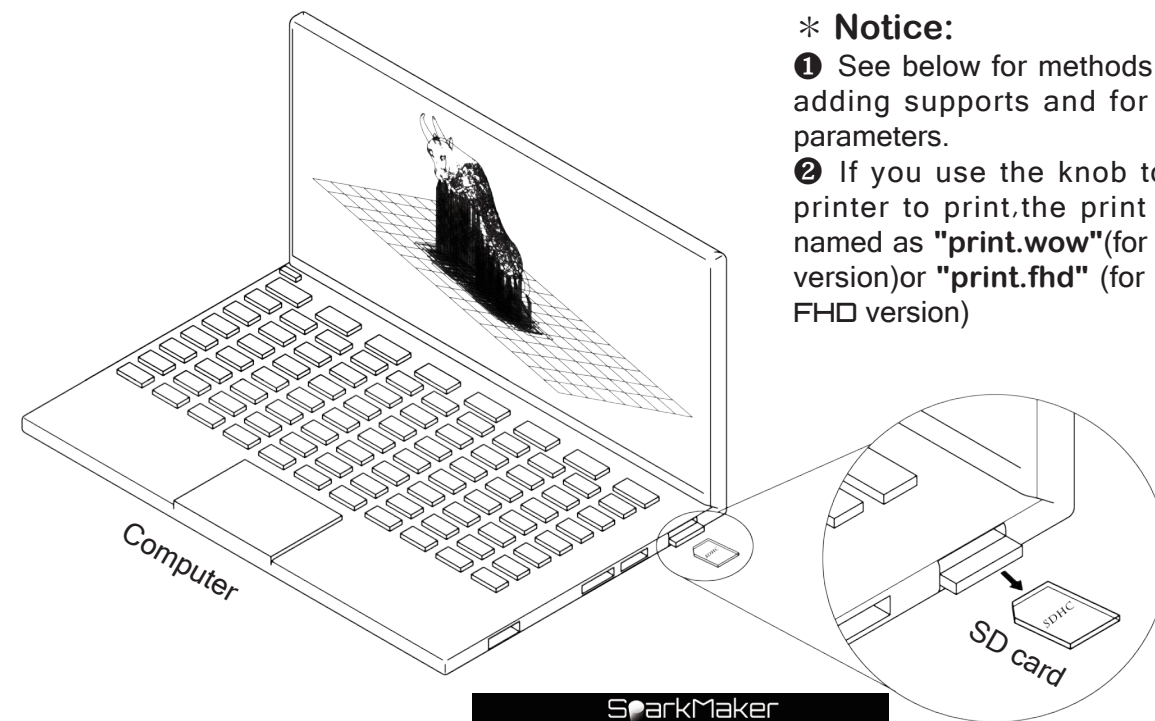


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# S t a r t   p r i n t i n g

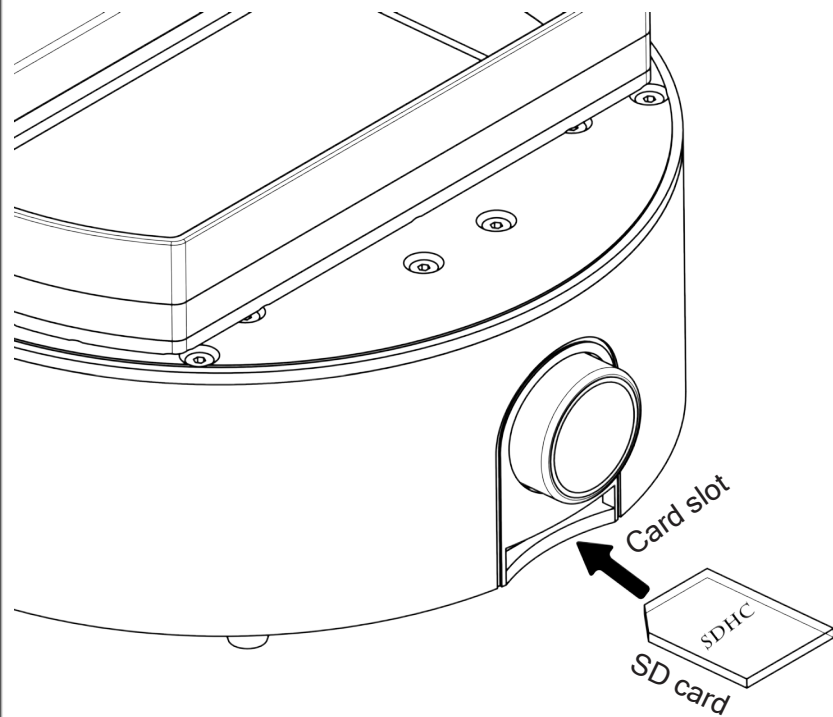
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Insert the SD card into the computer, open the SparkStudio software, import the \*.stl file of the model into the SparkStudio software, adjust the appropriate angle, add the appropriate support, set the correct print parameters, save the slice file \*.wow (for SparkMaker version) or \*.fhd (for SparkMaker FHD version) in the SD card after slicing, and then remove the SD card from PC.



\* **Notice:**

- ① See below for methods and rules for adding supports and for setting print parameters.
- ② If you use the knob to control the printer to print, the print file must be named as "print.wow" (for SparkMaker version) or "print.fhd" (for SparkMaker FHD version)



Insert the SD card into the card slot under the printer.

**\* Notice:**

When inserting, the metal contact point of the SD card is facing up, please do not insert the opposite to avoid damage to the card slot.

Open resin bottle and pour the appropriate resin (less than 240ml) into the tank according to the size of the model.



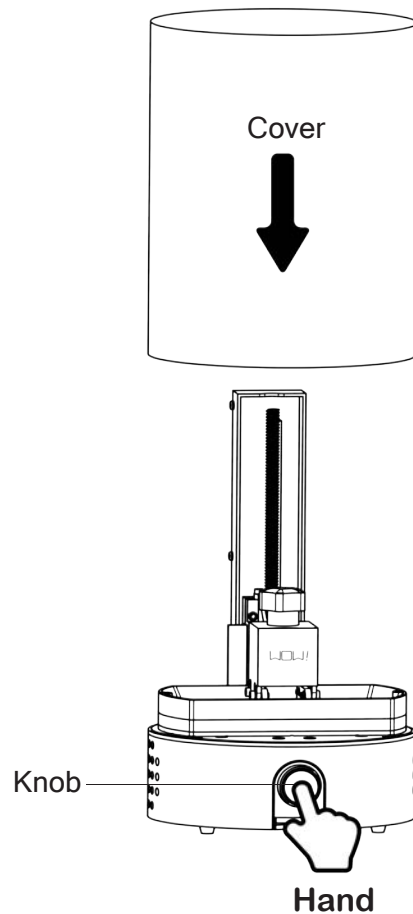
**\* Notice:**

- ❶ Please do not pour in excess resin to prevent resin from overflowing, resulting in damage to the LCD screen.
- ❷ Please do not drop the resin on the screw hole of the tank, the outer wall of the tank and the working panel, resulting in damage to the LCD screen. If it accidentally flows in, please clean it in time.
- ❸ Resin remaining in the resin bottle should be sealed in a dark shade away from children and pets.
- ❹ If not used for a long time, please pour the resin into the storage container. Do not place the resin in the tank for more than two weeks.
- ❺ Please ensure that there are no residual resin or obstacle on the aluminum plate and the tank to avoid damage to the LCD screen.

(As shown)Cover the printer with the cover,press the knob,the indicator will turn red and flashing,and the printer will start printing.

\* **Notice:**

- ① Do not place the printer in a location exposed to strong light,including but not limited to windows,under the table lamp,and outdoors.
- ② Avoid looking directly at the UV lamp. If you need to see it,please wear goggles.

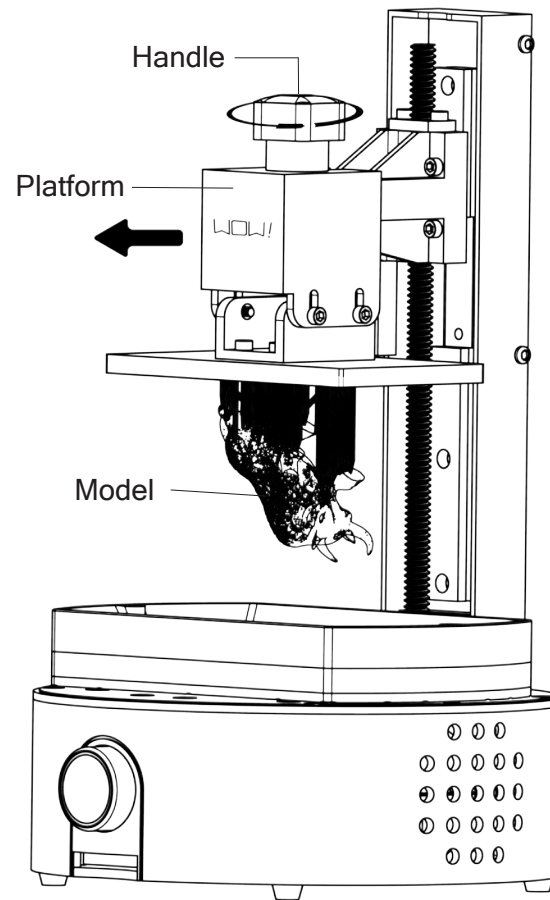
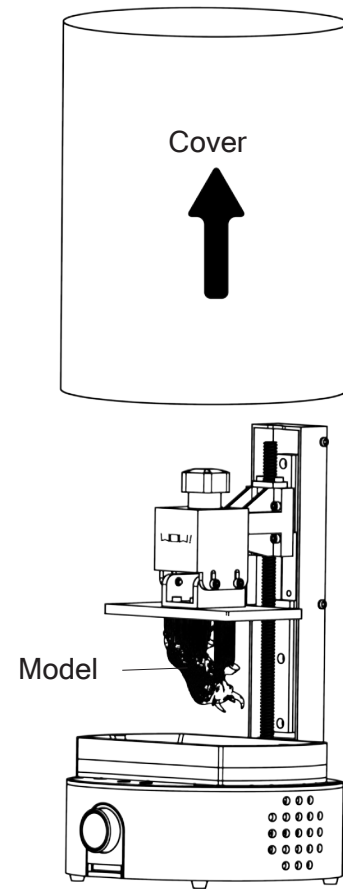


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E n d o f p r i n t i n g

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The knob indicator changes from a flashing red light to a green breathing light, it means the end of printing. Remove the cover from the printer



After loosening the platform handle counterclockwise, pull the platform forward and remove it.

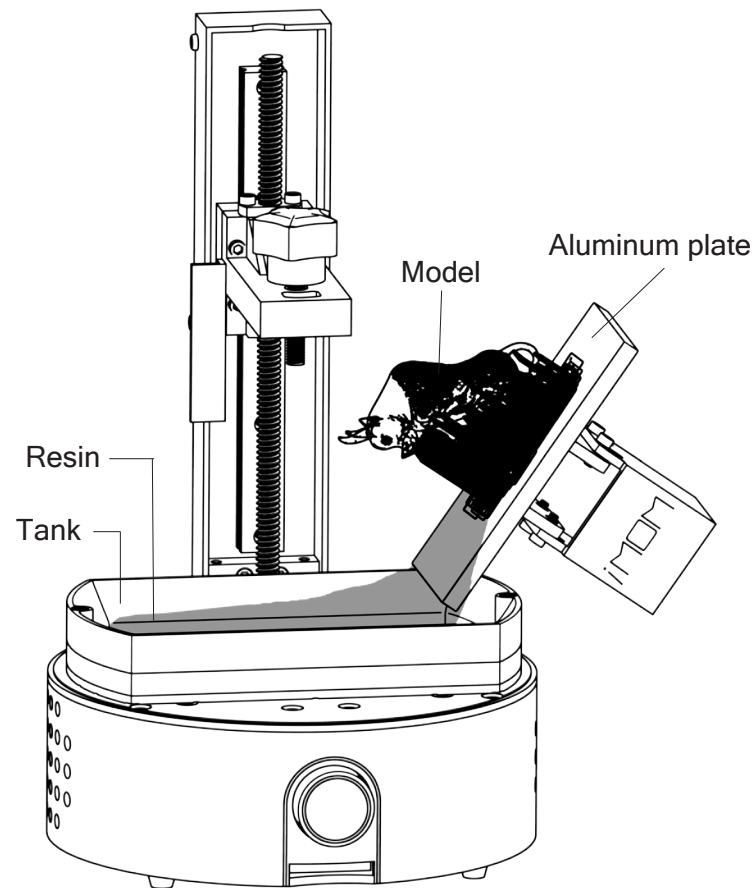
\* **Notice:**

- ① Do not completely unscrew the handle.
- ② Do not touch the printed model directly to avoid resin contact with the skin.
- ③ When removing the platform, do not drop the resin on the outer wall of the tank, the mounting screw holes, the working panel, the outer casing and the cover, and the installation clearance.
- ④ Be careful to avoid model damage when removing the platform.

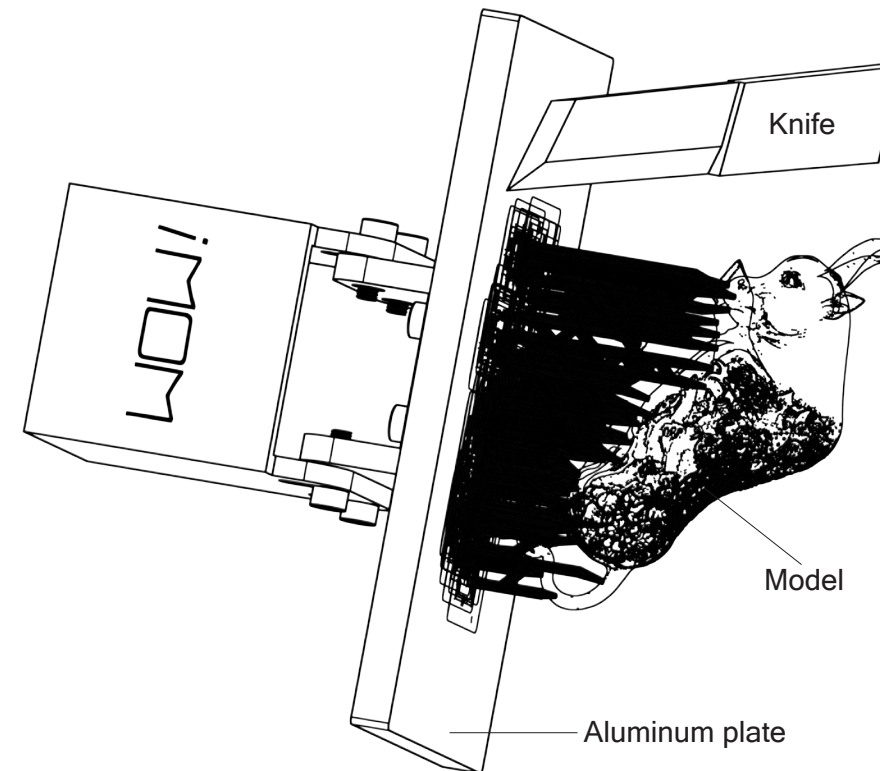
Tilt the platform so that the resin remaining on the aluminum plate and the model flows back into the tank along a corner of the aluminum plate.

**\* Notice:**

When tilting the platform, do not drop the resin on the outer wall of the tank, the mounting screw holes, the working panel, the outer casing and the cover, and the installation clearance.

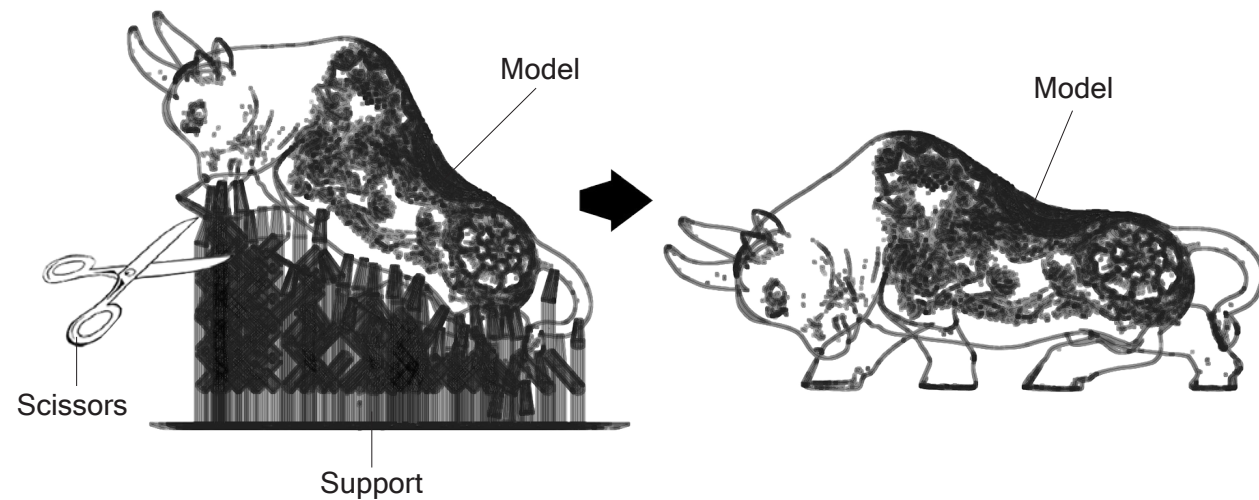


Use a knife or shovel to separate the model from the aluminum plate along the bottom of the model.



**\* Notice:**

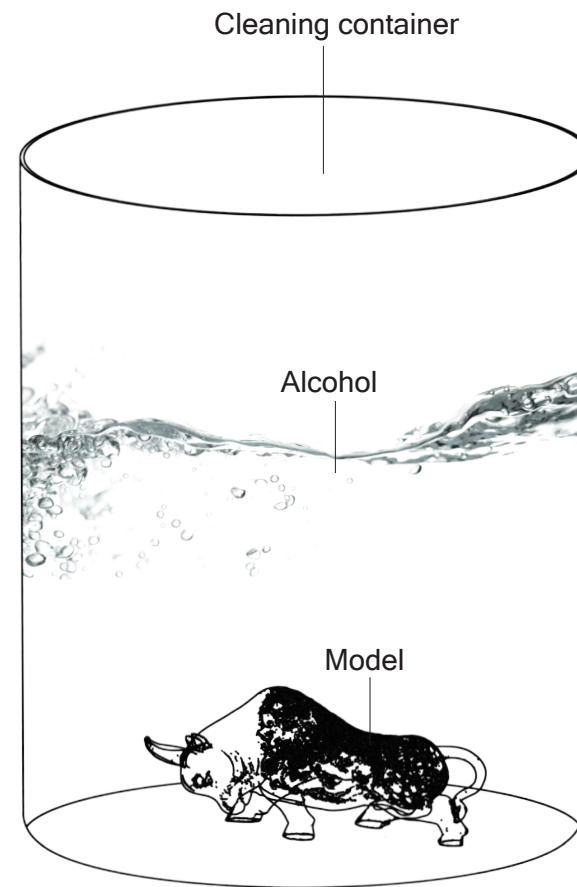
- ① Please use tools and shovel carefully to avoid accidental injury.
- ② Please lift up or cut from the bottom of the model. Do not leave too deep scratches on the bottom of the platform and avoid damage to the model.
- ③ Please clean the resin residue stick to the platform.



Carefully cut off the support on the model with tools such as scissors or cutting pliers.

\* **Notice:**

- ① Please use tools such as scissors carefully to avoid accidental injury and damage to the model.
- ② The support can be softened by the use of an electric blowing hot wind to soften the support, making it easier to dismantle.



Place the trimmed model in a cleaning container, pour the appropriate amount of alcohol that concentration above 95%, clean it with a soft brush or ultrasonic vibration for about 60 seconds, clean the uncured resin on the model surface, then take out the model, and blow dry the model with cold air.

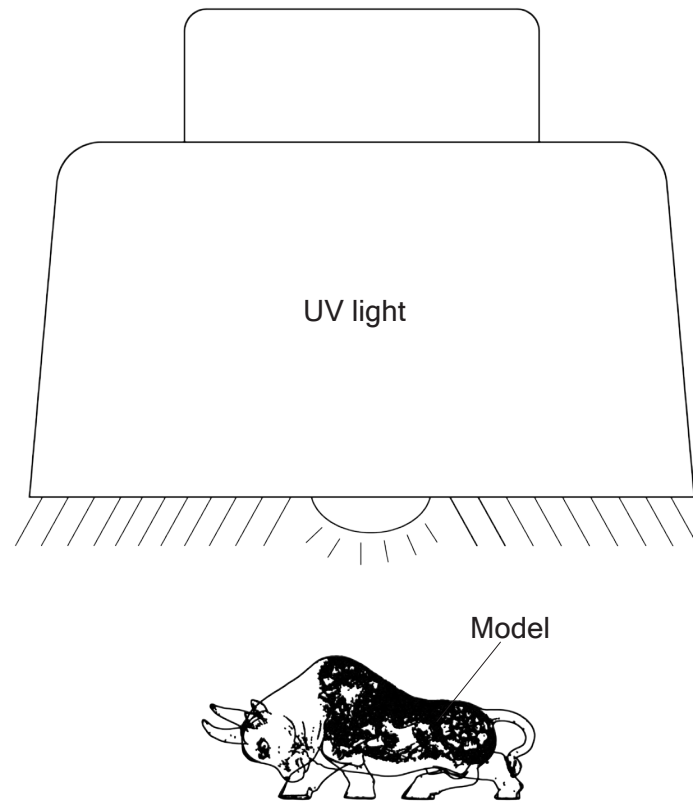
\* **Notice:**

- ① You can use a hair dryer to speed up the evaporation of the model surface alcohol.
- ② Do not wash for too long, avoid model damage and peeling.
- ③ Please carefully use and store alcohol to avoid safety issues.

Place the air-dried model on a UV light or sunlight for about 10 minutes.

\* Notice:

- ① In order to prevent the model from being deformed by heat during illumination, the air-dried model can be completely placed in water or glycerol.
- ② The illumination time can be adjusted according to the intensity of the light, so that the model can be completely cured.
- ③ Excessive curing time will cause the model to shrink and yellow. Insufficient curing time will result in incomplete curing of the model, and it will cause the model to be too soft.

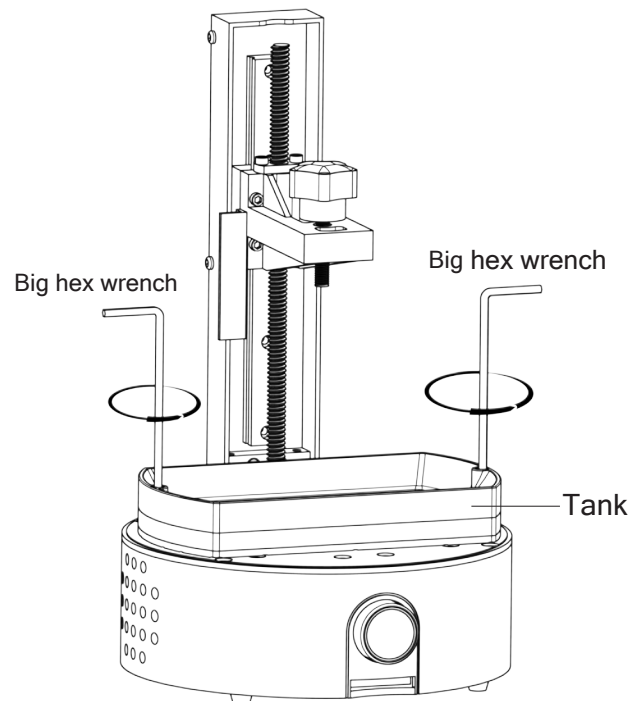


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## Adjustment of the printer

Recycled resin and tank cleaning

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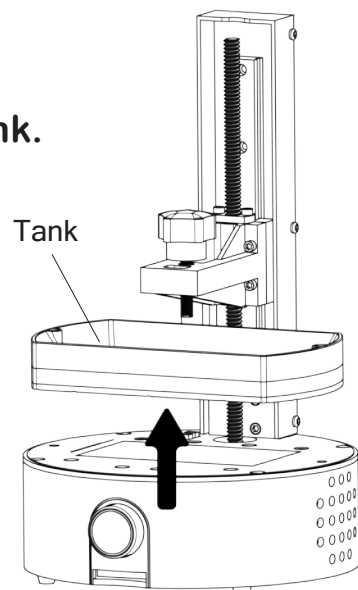


Use the big hex wrench to unscrew the screws on both sides of the tank counterclockwise.

**\* Notice:**

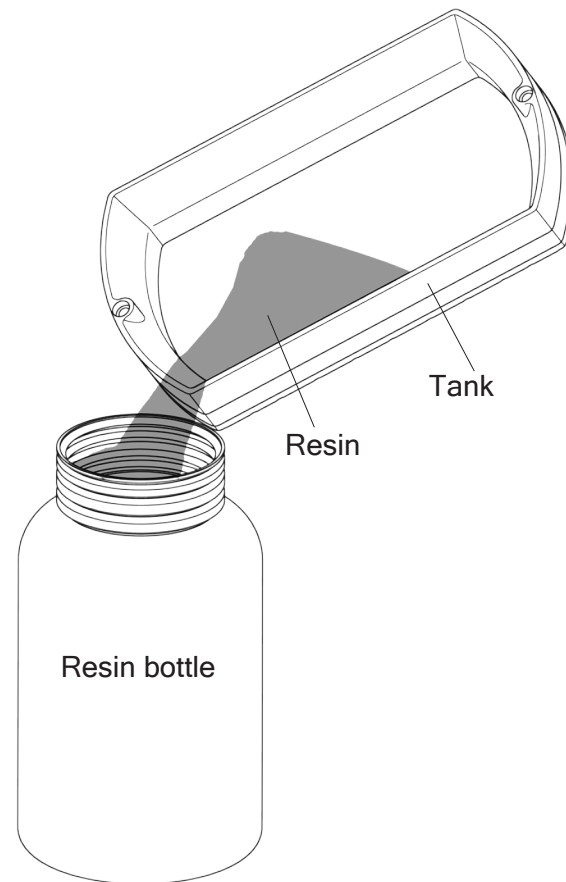
Please remove the printing platform first.

**Remove the tank.**



**\* Notice:**

- ① Please remove the printing platform first.
- ② When removing the tank, do not drop the resin on the outer wall of the tank, the mounting screw holes, the working panel, the outer casing and the cover, and the installation interspace.
- ③ Do not scratch the FEP film at the bottom of the tank when removing the tank.
- ④ Please place the removed tank properly on a clean and soft surface to avoid damage.



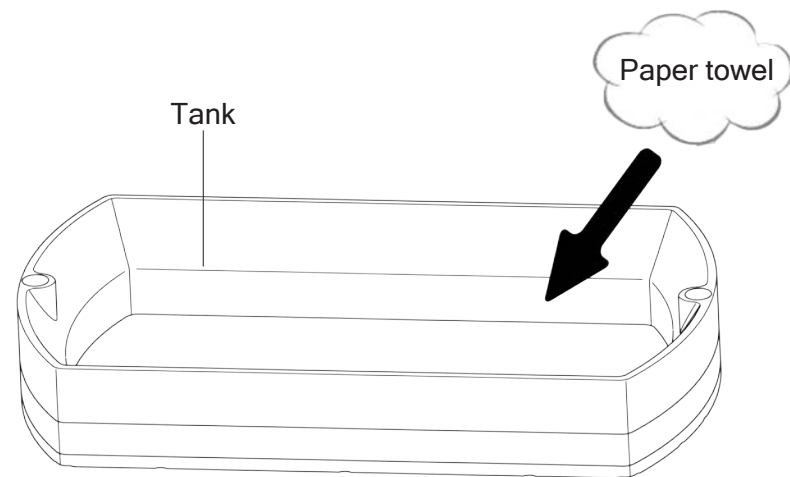
Pour the remaining resin in the tank into the prepared resin storage container along a corner of the tank.

**\* Notice:**

- ① Please seal the poured resin in a dark place.
- ② Please clean the resin on the outer wall of the tank in time to avoid damage to the LCD screen.



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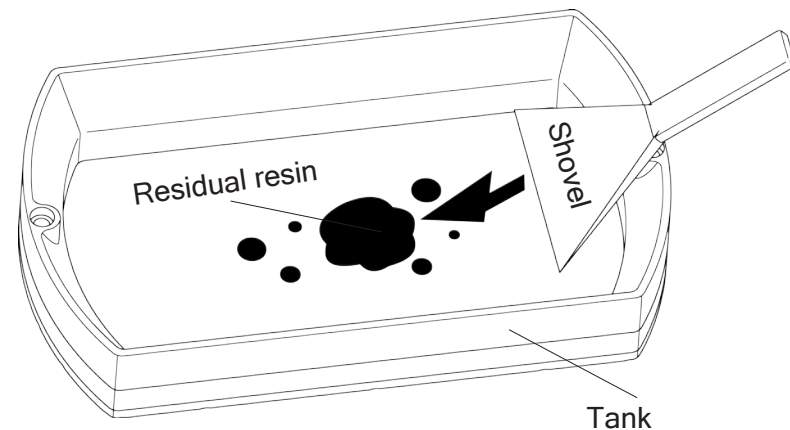


After pouring the resin in the tank, carefully wipe the resin remaining in the tank and the outer wall of the tank with a paper towel.

Use a plastic shovel to remove the residual resin stuck on the FEP film at the bottom of the tank.

\* **Notice:**

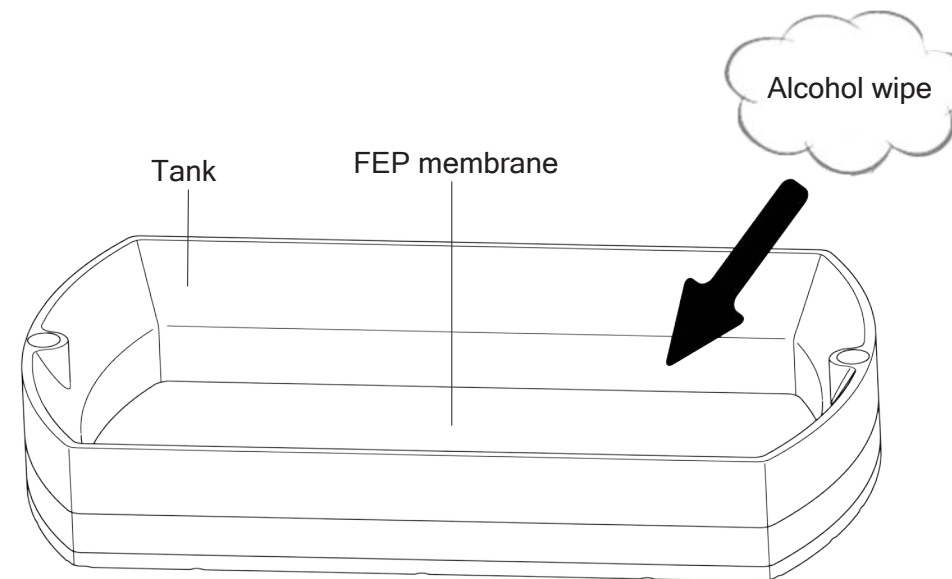
Please be careful to prevent the bottom of the tank from being scratched.



Finally, carefully wipe the inside of the tank, the outer wall of the tank and the upper and lower sides of the FEP membrane with alcohol wipes.

\* **Notice:**

The standard of thorough cleaning is that the FEP film is completely free of residue and no resin, and there is no resin residue inside and outside the tank.



SparkMaker

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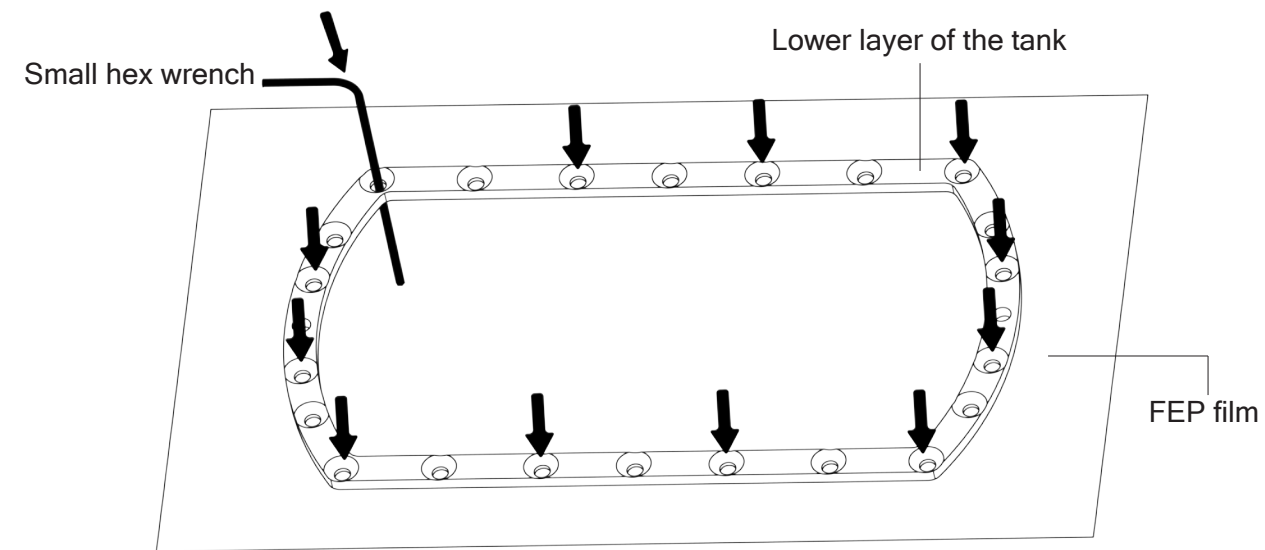
## Replace the FEP film

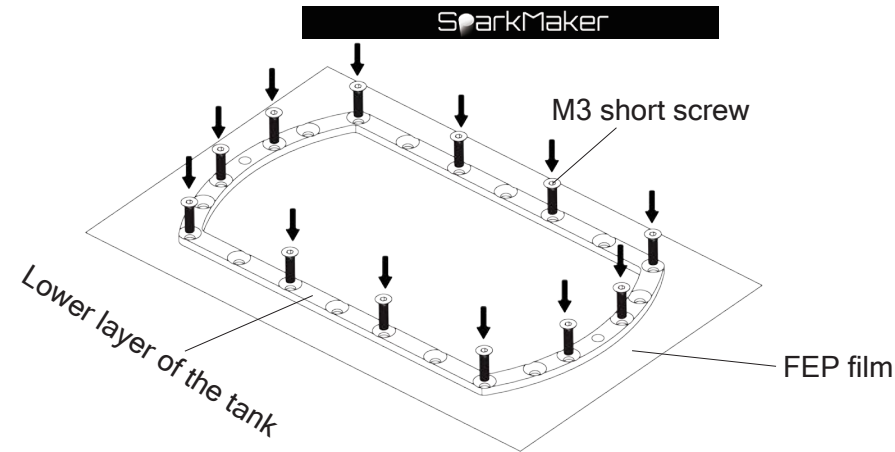
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Lay the FEP film under the tank and poke 12 holes in the position shown with a small hex wrench.

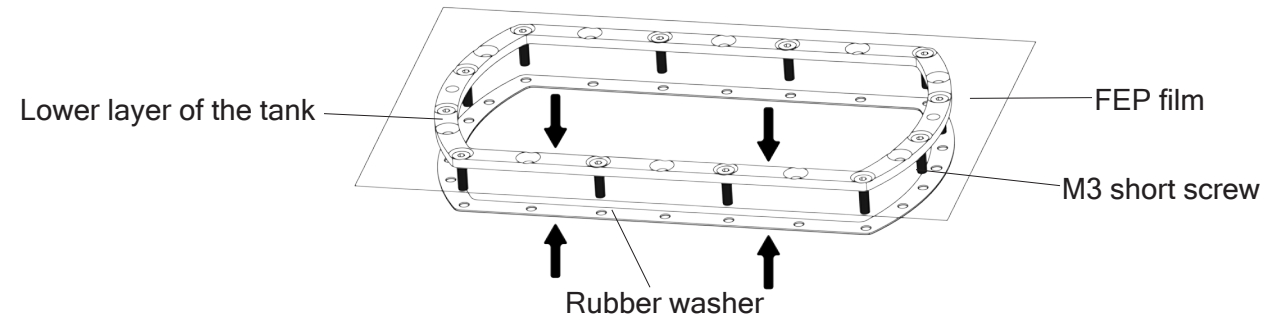
\* **Notice:**

- ① Make sure that the position of each hole that is poked matches the position of the hole in the lower layer of the tank.
- ② Do not damage the FEP film.
- ③ Clean all tank parts before replacing the new FEP film.

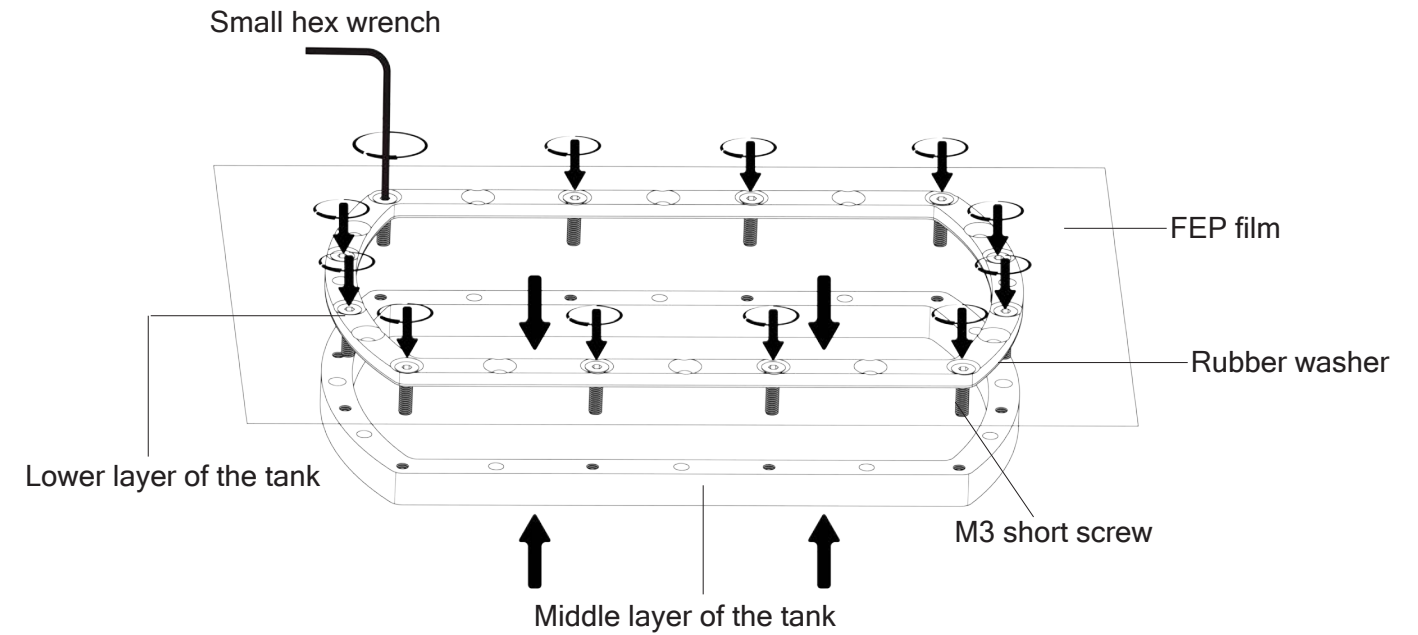




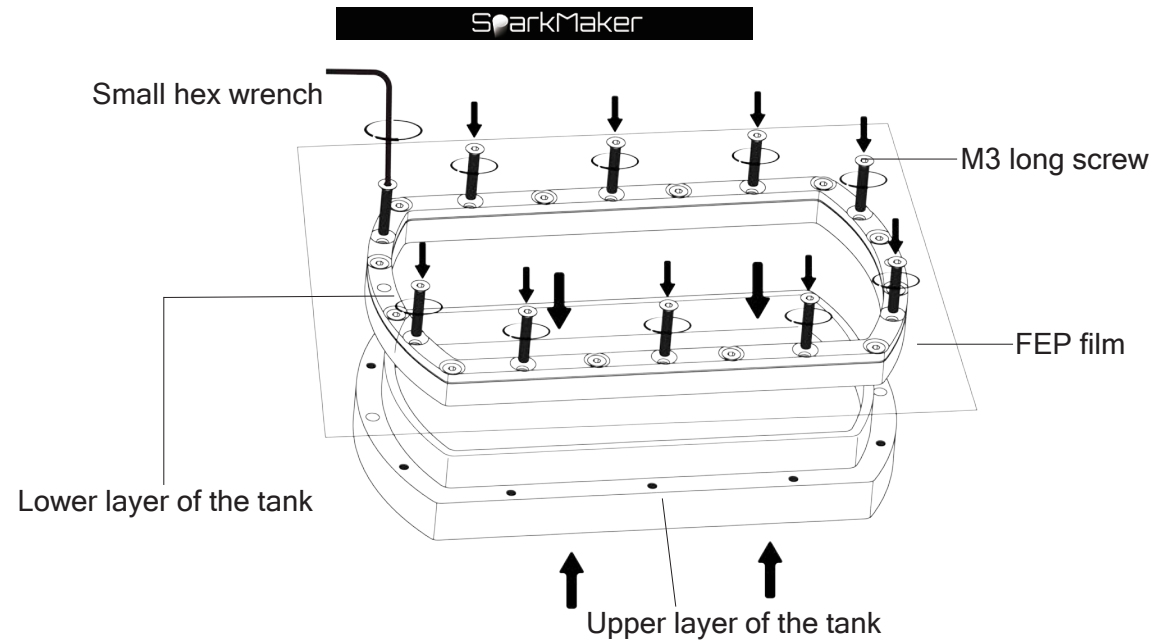
Insert 12 M3 short screws into the position where the hole was previously poked.



Align the lower layer of the tank with the rubber washer according to the screw holes position.



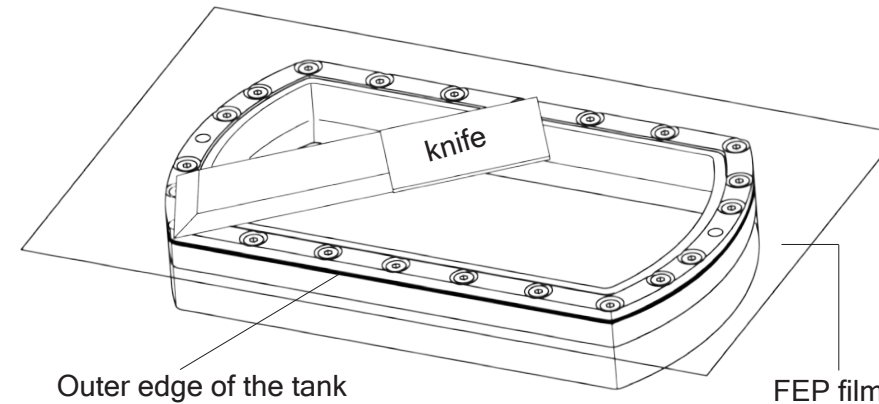
Align the lower layer of the tank and the middle layer of the tank according to the screw holes. Use a small hex wrench to tighten the screws clockwise to clamp the FEP film and rubber washer.



Insert 10 M3 long screws into the remaining holes, use a small hex wrench to tighten the screws clockwise, so that the lower layer of the tank is tightly attached to the upper layer of the tank, and the rubber washer is pressed to tighten the FEP film.

**\* Notice:**

- ① Do not overtighten the individual screws so that the other screws cannot be tightened. The screws should be tightened evenly.
- ② Make sure that the lower and top layer of the tank are tightly pressed so that the FEP film is higher than the lower plane of the tank, and all the screw heads do not protrude to hinder the tank installation.



Use a knife along the outer edge of the tank to remove the excess FEP film and rubber washer neatly.

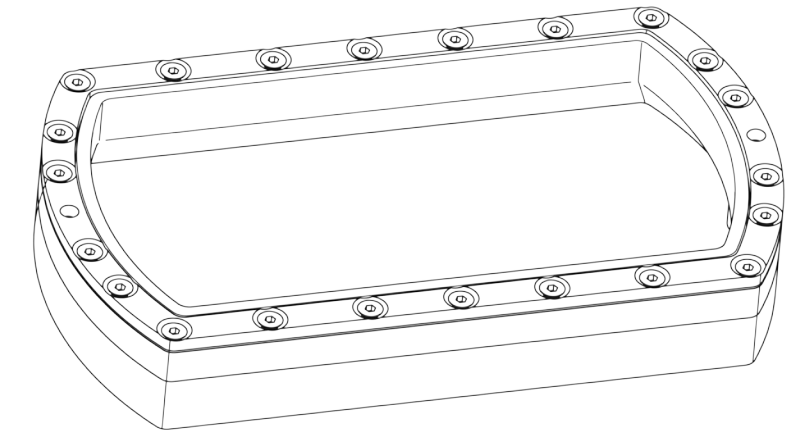
**\* Notice:**

- ① Please use the knife carefully to avoid accidental injury.
- ② Do not damage the FEP film in the tank.
- ③ Do not scratch the tank.

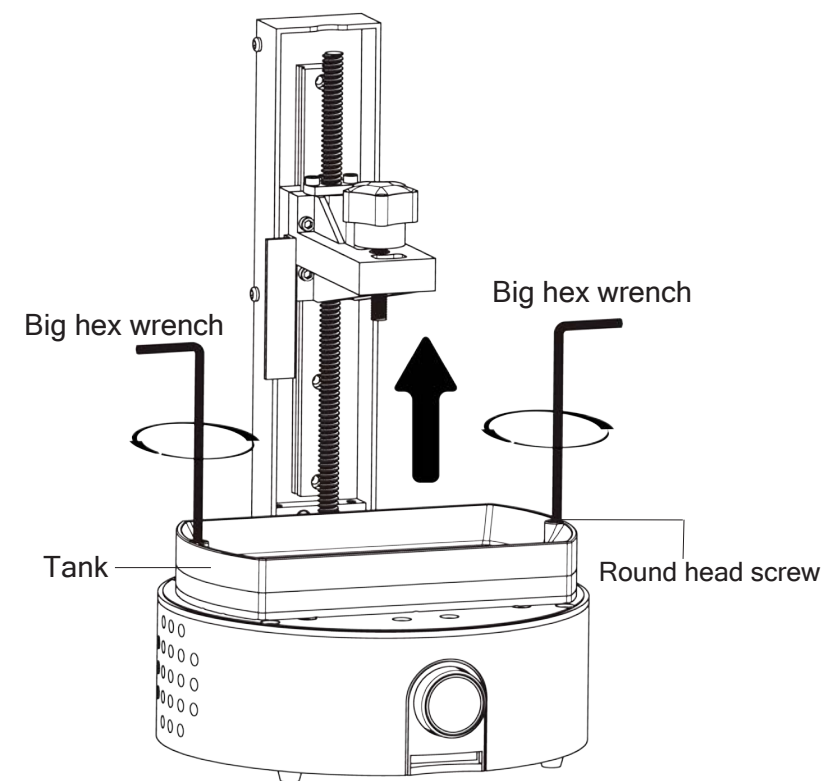
**Get a new tank.**

**\* Notice:**

Before installing and using, clean the tank with alcohol wipes to ensure that there is no obstruction on the FEP film and no resin residue on the tank.



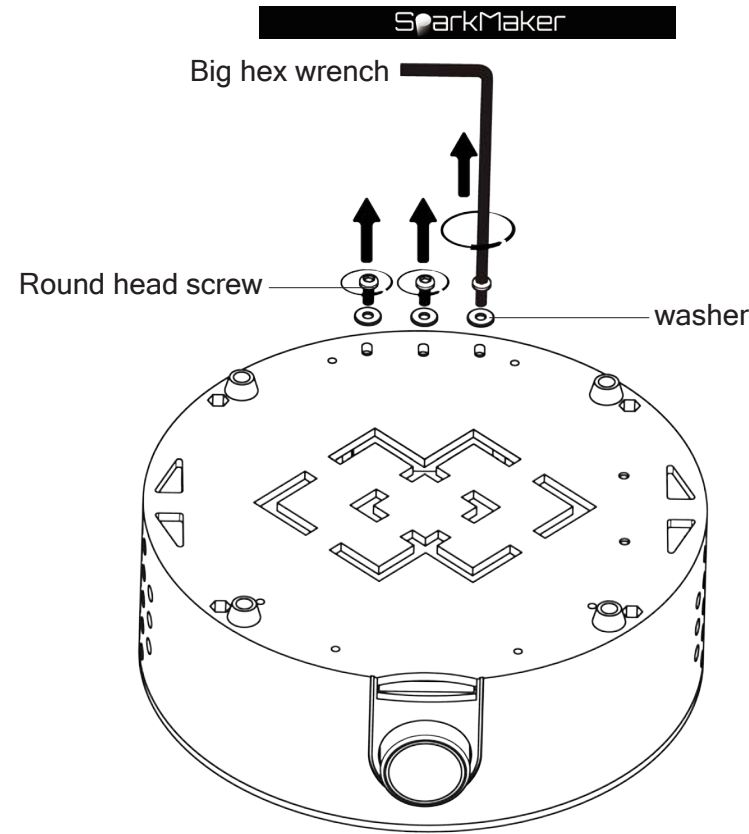
## Replace the LCD screen



Use the big hex wrench to unscrew the screw on both sides of the tank counterclockwise and remove the tank upward.

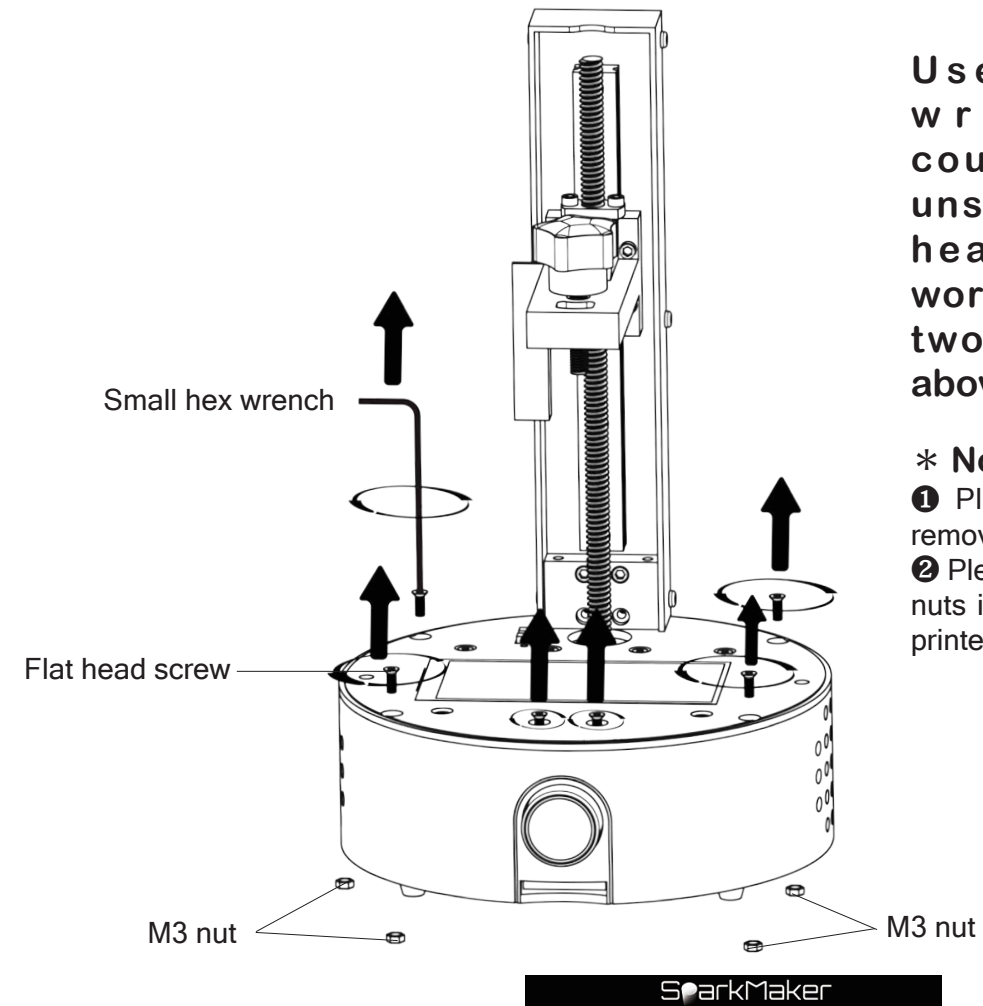
**\* Notice:**

- ① Please remove the printing platform first.
- ② When removing the tank, do not drop the resin on the outer wall of the tank, the mounting screw holes, the working panel, the outer casing and the cover, and the installation interspace.
- ③ Do not scratch the FEP film at the bottom of the tank when removing the tank.
- ④ Please place the removed tank properly on a clean and soft surface to avoid damage.



Use the big hex wrench to unscrew the three round head screws and three washers on the bottom of the printer counterclockwise.

\* **Notice:** Please take good care of the removed parts.

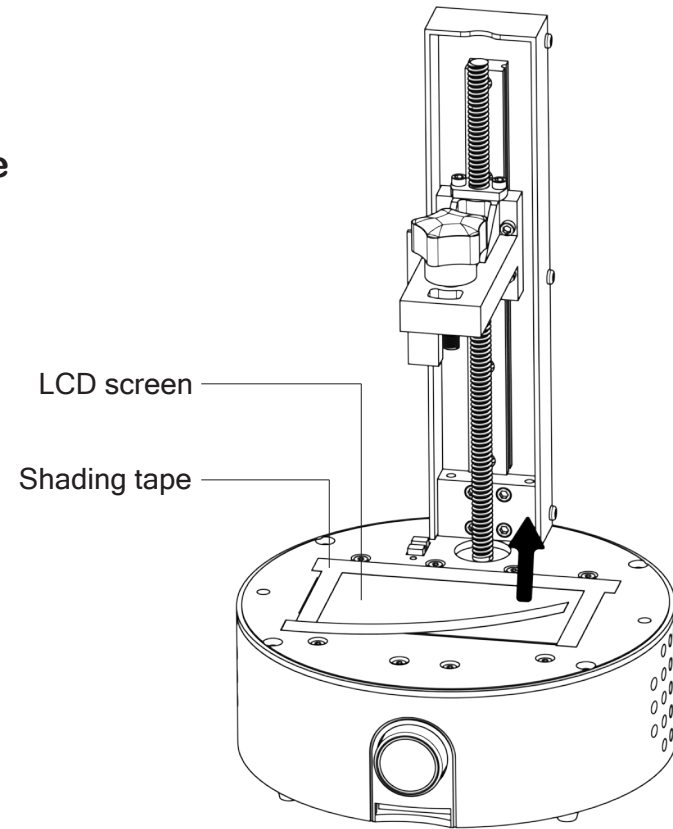


Use the small hex wrench to turn counterclockwise to unscrew the four flat head screws on the working panel and the two flat head screws above the knob.

\* **Notice:**

- ① Please take good care of the removed parts.
- ② Please take care of the four M3 nuts installed in the bottom of the printer.

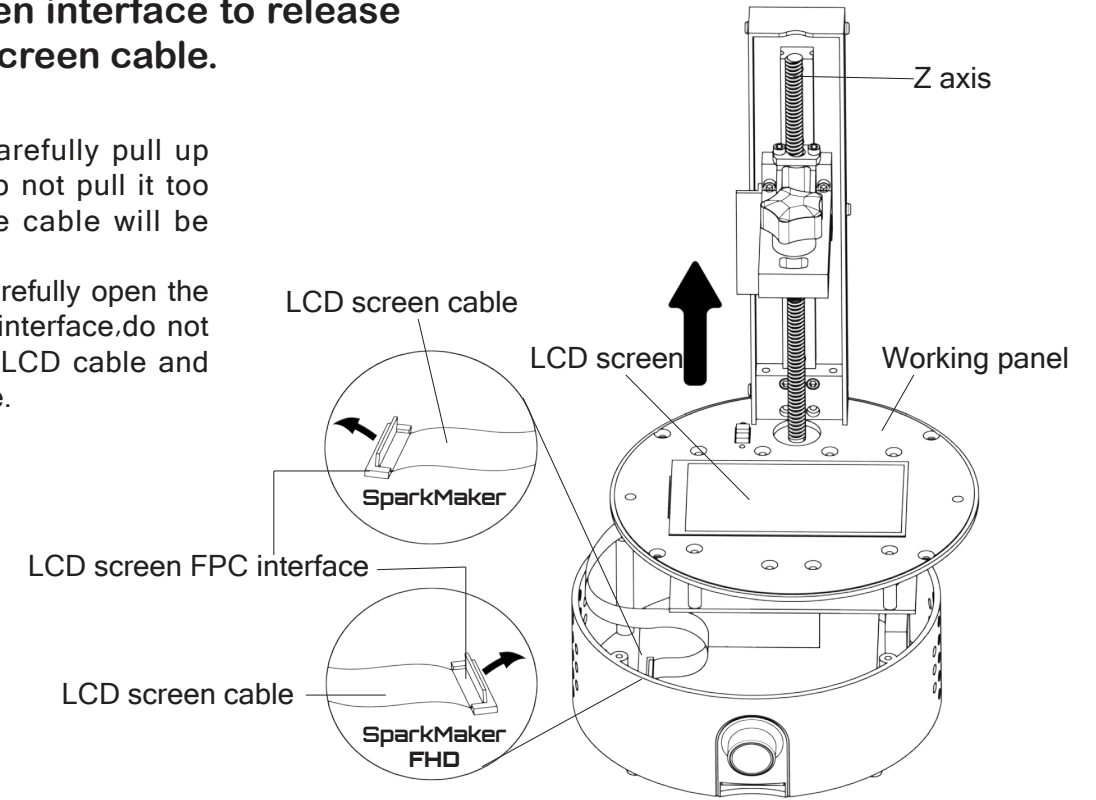
Remove the shading tape around the LCD screen.



Slowly pull up the Z axis and the working panel, and open the LCD screen interface to release the LCD screen cable.

\* Notice:

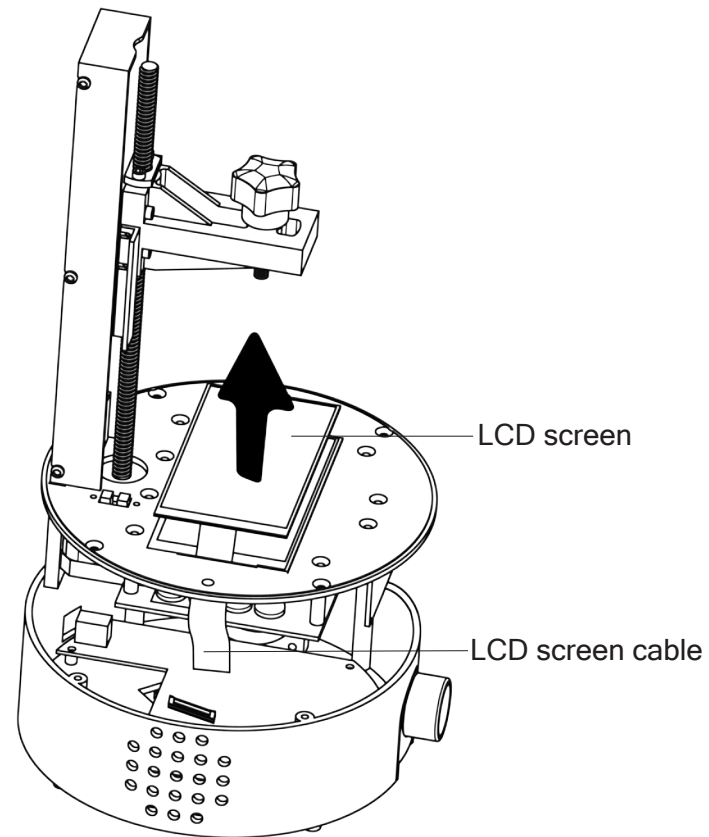
- ① Please carefully pull up the Z axis, do not pull it too high and the cable will be damaged.
- ② Please carefully open the LCD screen interface, do not damage the LCD cable and LCD interface.



Take out the LCD screen and pull out the LCD cable from the gap on the left side of the working panel.

**\* Notice:**

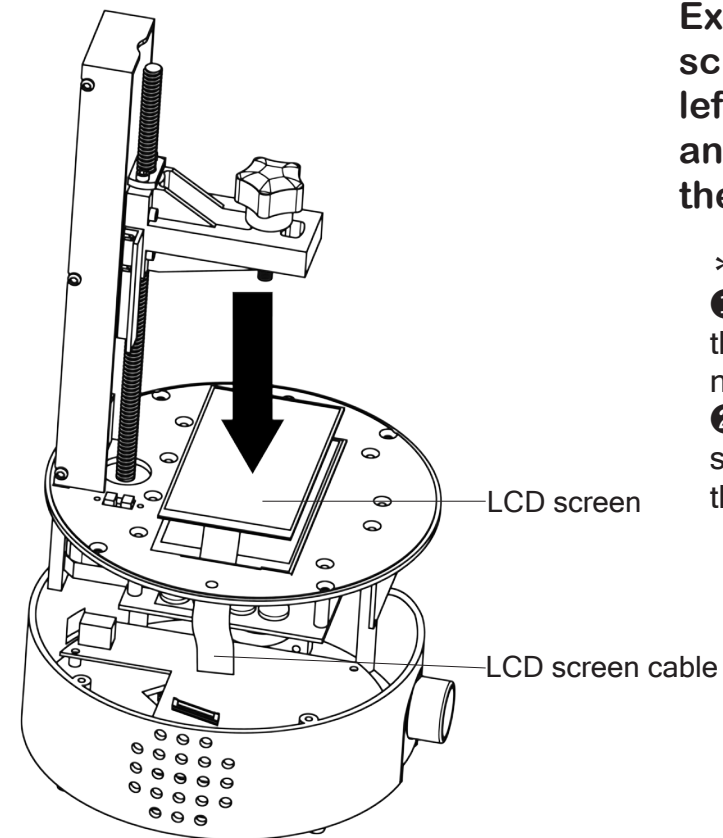
- ❶ Do not damage or stain the tempered glass behind the LCD screen.
- ❷ Do not remove the tempered glass behind the LCD screen.



Extend the cable of the new LCD screen into the interior along the left side gap of the working panel and install the new LCD screen in the correct position.

**\* Notice:**

- ❶ Before installing, please remove the protective film on both sides of the new LCD.
- ❷ Do not damage or stain the LCD screen and the tempered glass behind the LCD screen during installation.

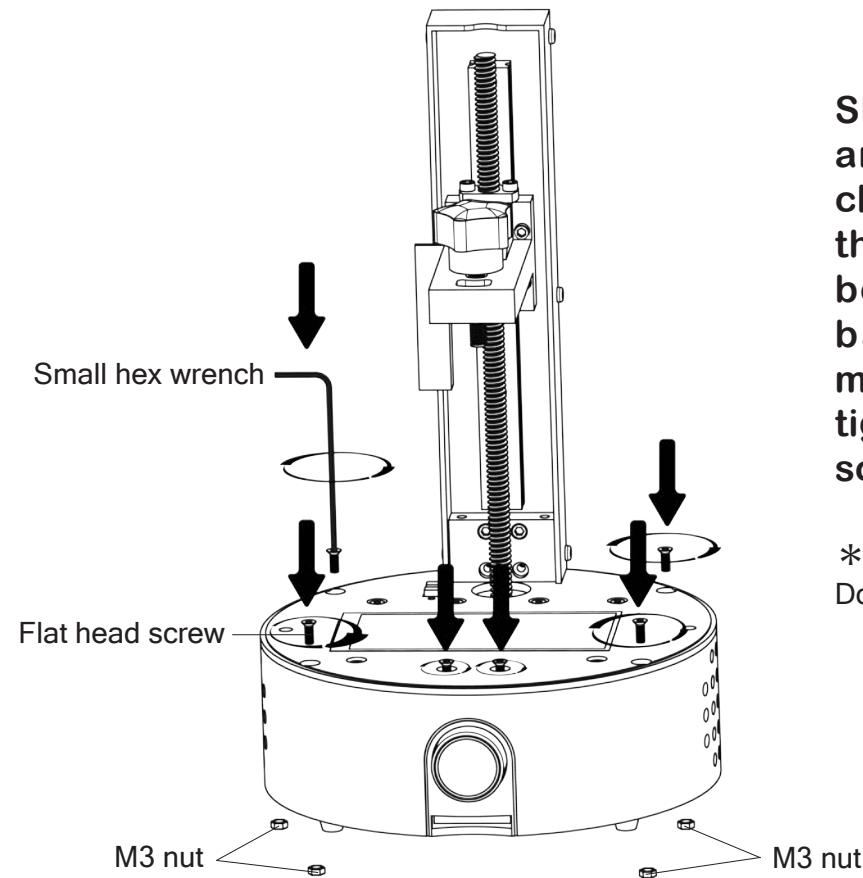
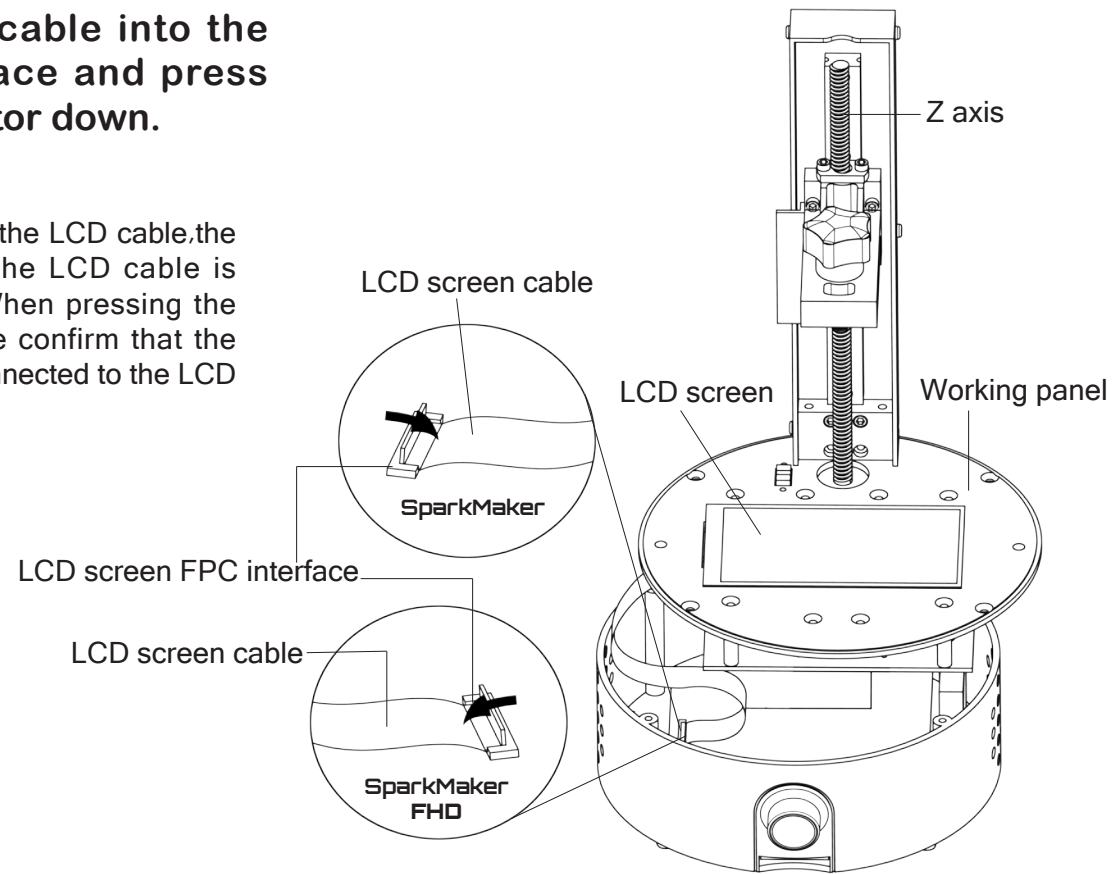




Insert the cable into the LCD interface and press the connector down.

**\* Notice:**

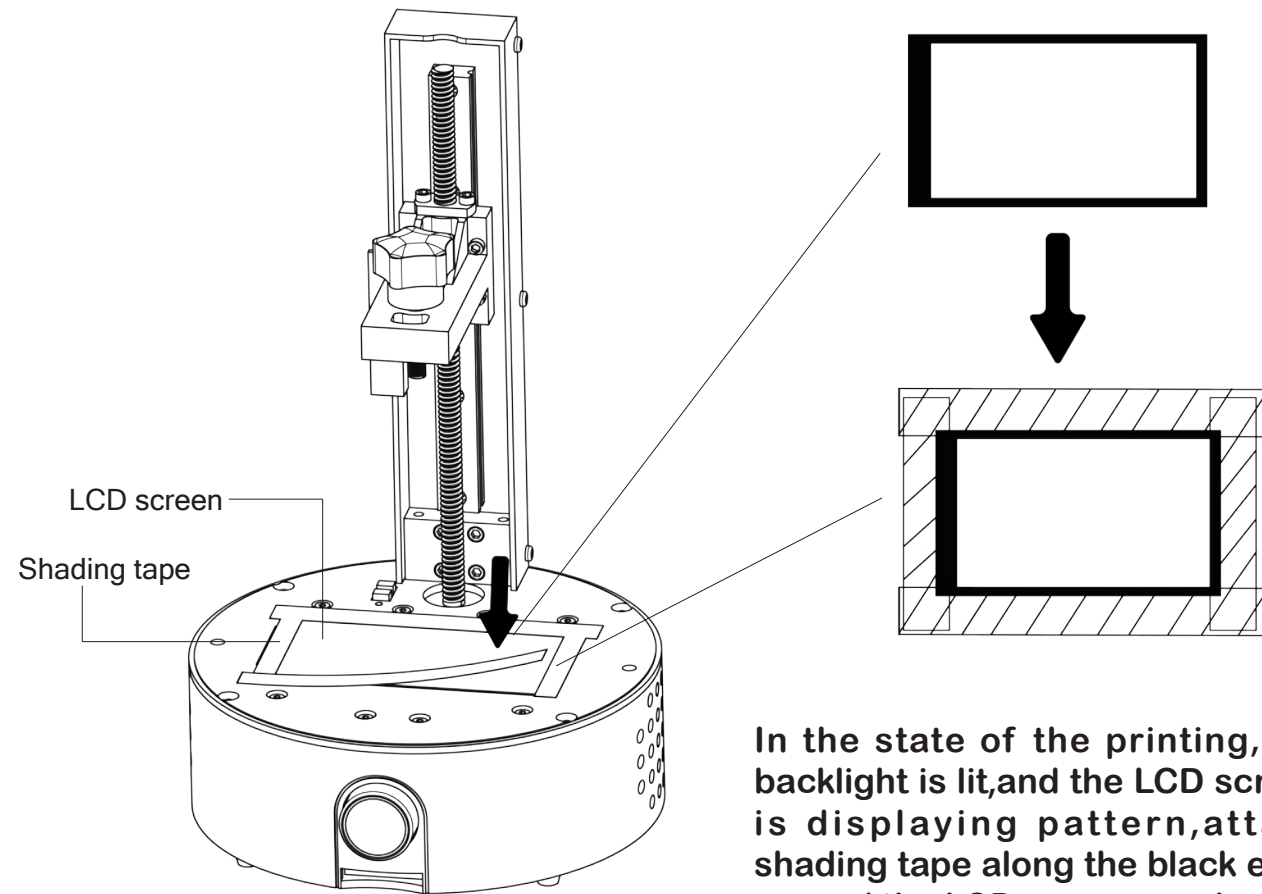
When installing the LCD cable, the metal face of the LCD cable is facing down. When pressing the interface, please confirm that the cable is fully connected to the LCD interface.



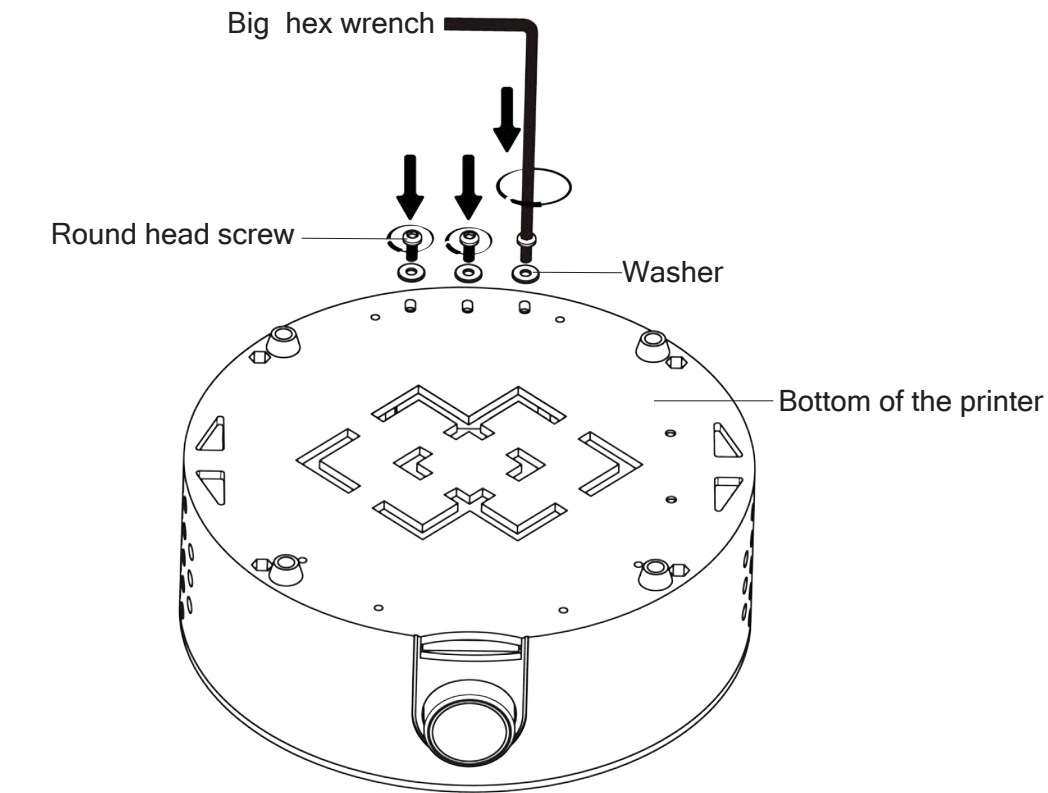
Slowly lower the Z-axis and working panel and close the housing. Plug the four M3 nuts on the bottom of the housing back into the bottom mounting holes, and then tighten the six flat head screws shown.

**\* Notice:**

Do not damage the LCD screen.



In the state of the printing, the backlight is lit, and the LCD screen is displaying pattern, attach shading tape along the black edge around the LCD screen as shown.

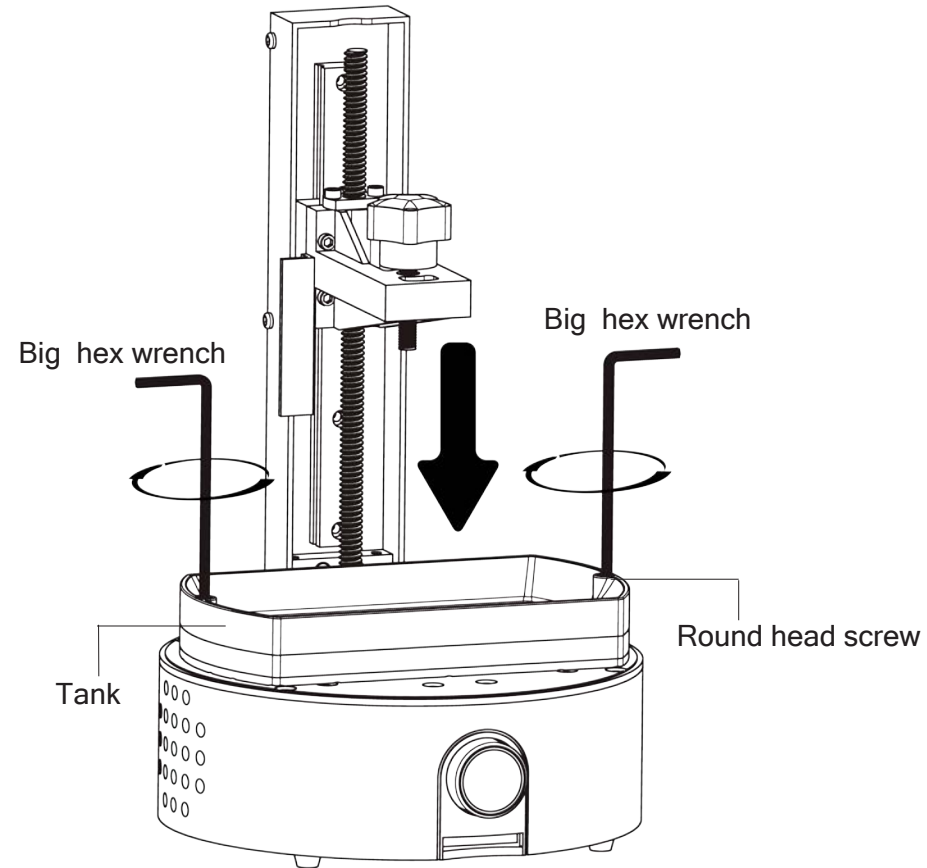


Tighten the three round head screws and three washers on the bottom of the printer clockwise with the big hex wrench.

Use the big hex wrench to tighten the two round head screws on both sides of the tank clockwise.

\* Notice:

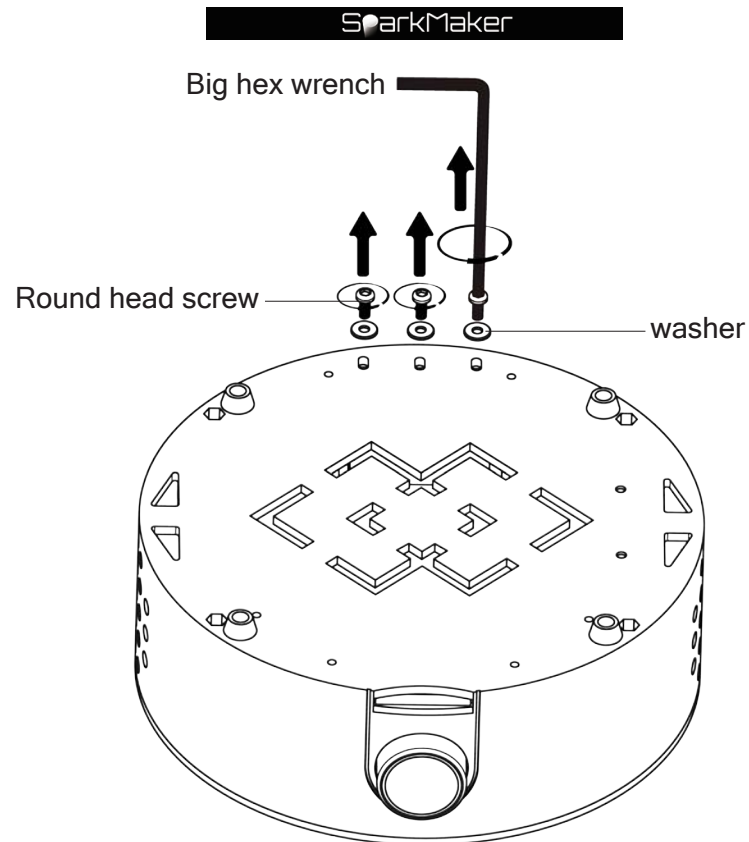
- 1 Please ensure that there is no obstruction on the LCD screen and in the FEP film in the tank.
- 2 Make sure that the tank is installed in a suitable position. The FEP film is in close contact with the LCD screen.



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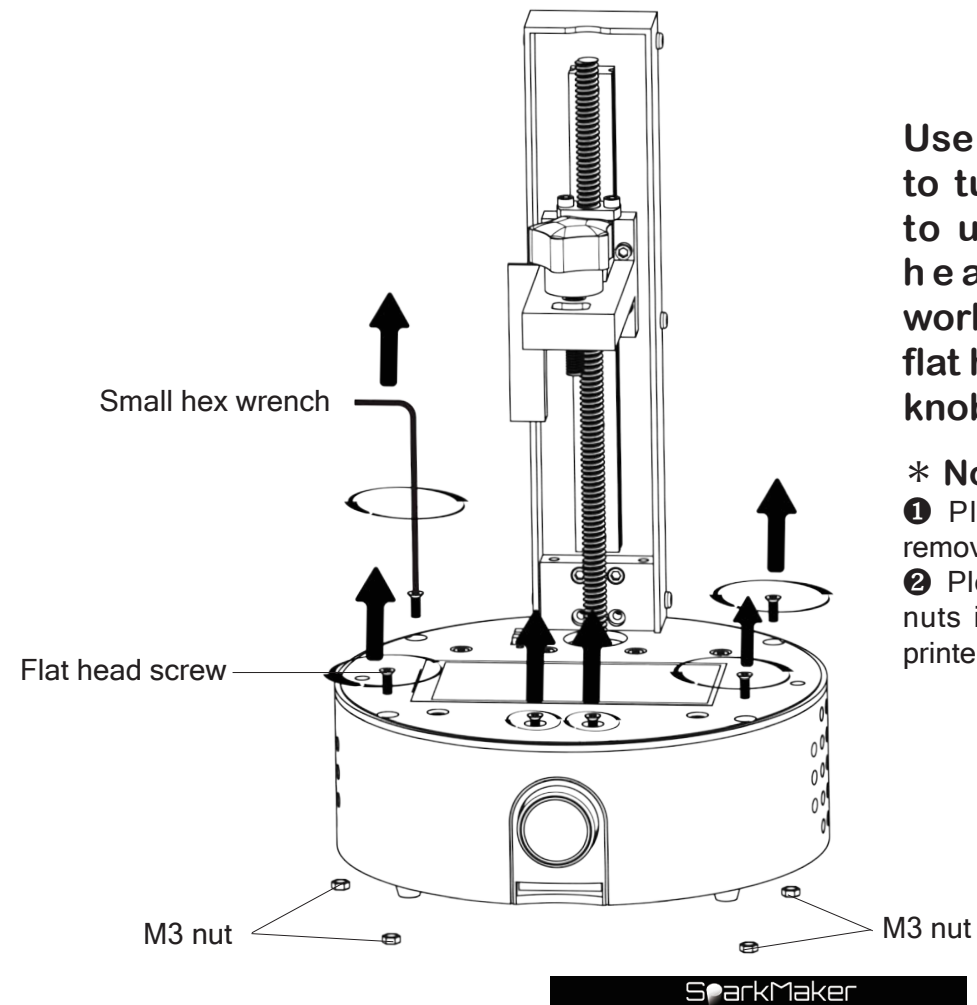
## Replace the light board

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Use the big hex wrench to unscrew the three round head screws and three washers on the bottom of the printer counterclockwise.

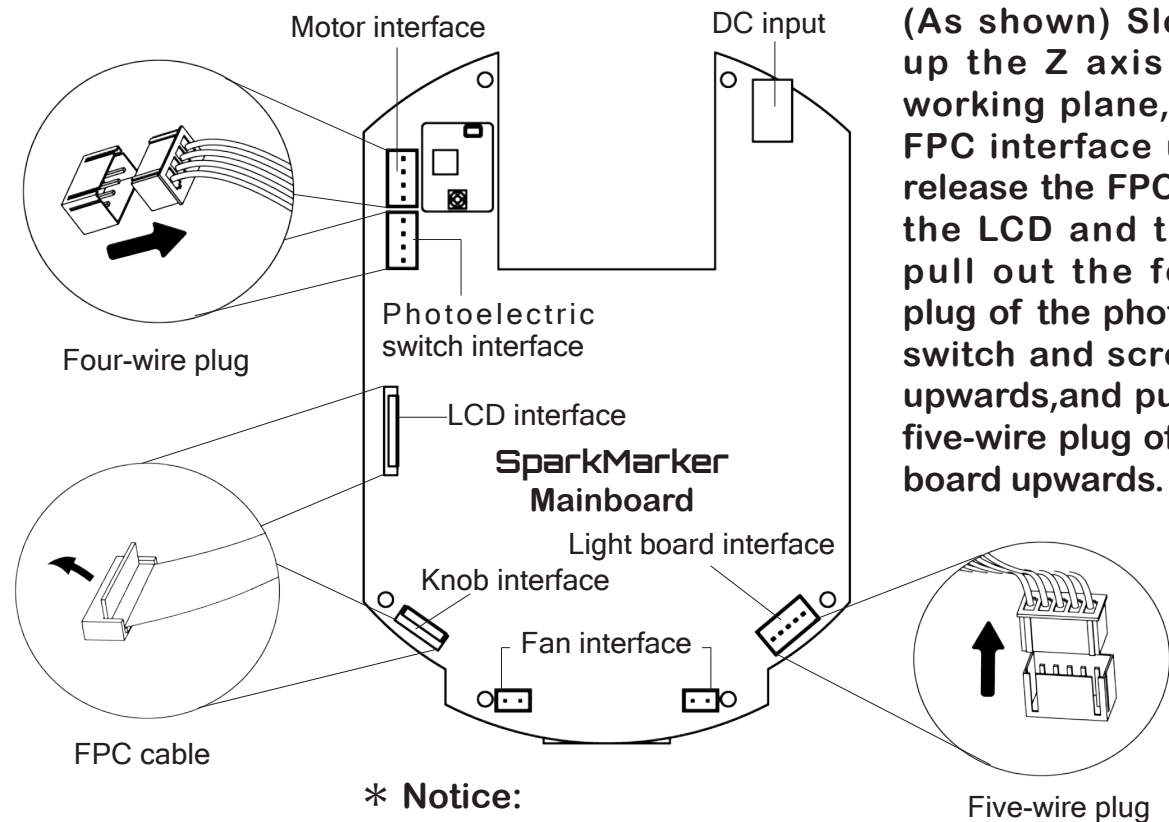
\* **Notice:** Please take good care of the removed parts.



Use the small hex wrench to turn counterclockwise to unscrew the four flat head screws on the working panel and the two flat head screws above the knob.

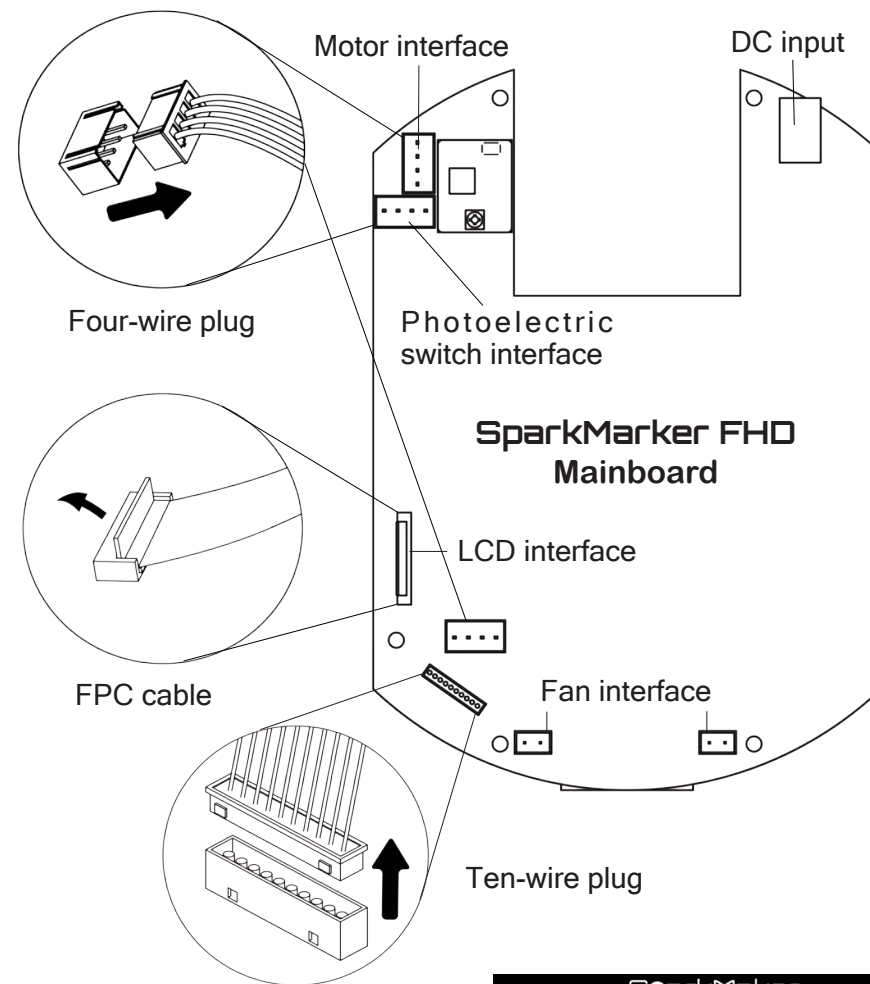
\* **Notice:**

- ① Please take good care of the removed parts.
- ② Please take care of the four M3 nuts installed in the bottom of the printer.



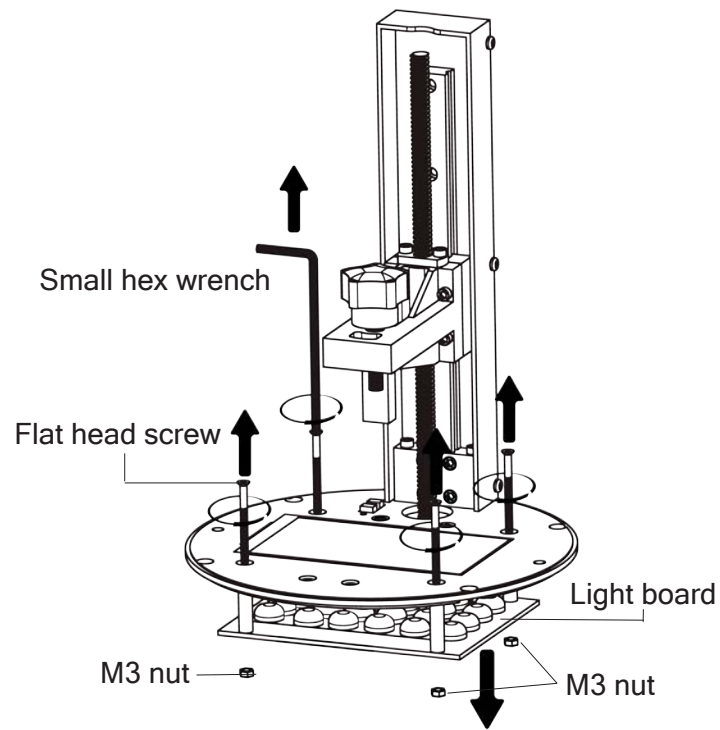
(As shown) Slowly pull up the Z axis and the working plane, open the FPC interface upwards, release the FPC cable of the LCD and the knob, pull out the four-wire plug of the photoelectric switch and screw motor upwards, and pull out the five-wire plug of the light board upwards.

**\* Notice:**  
Please carefully open the FPC interface and carefully pull out the plug, do not tear the cable.

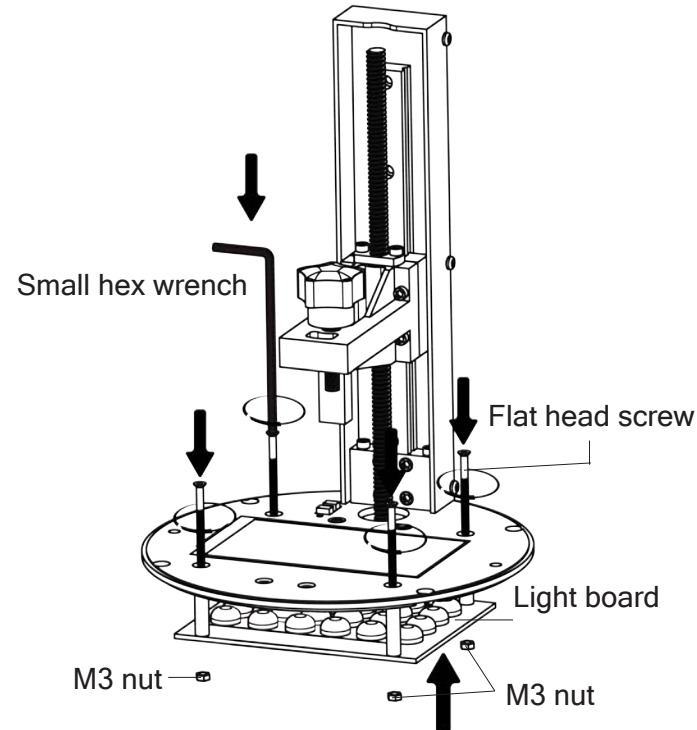


(As shown) Slowly pull up the Z axis and the working plane, open the FPC interface to loosen the LCD screen cable, pull out the four-wire plug of the photoelectric switch, stepper motor and light board upwards, and pull out ten-wire plug of the knob upwards.

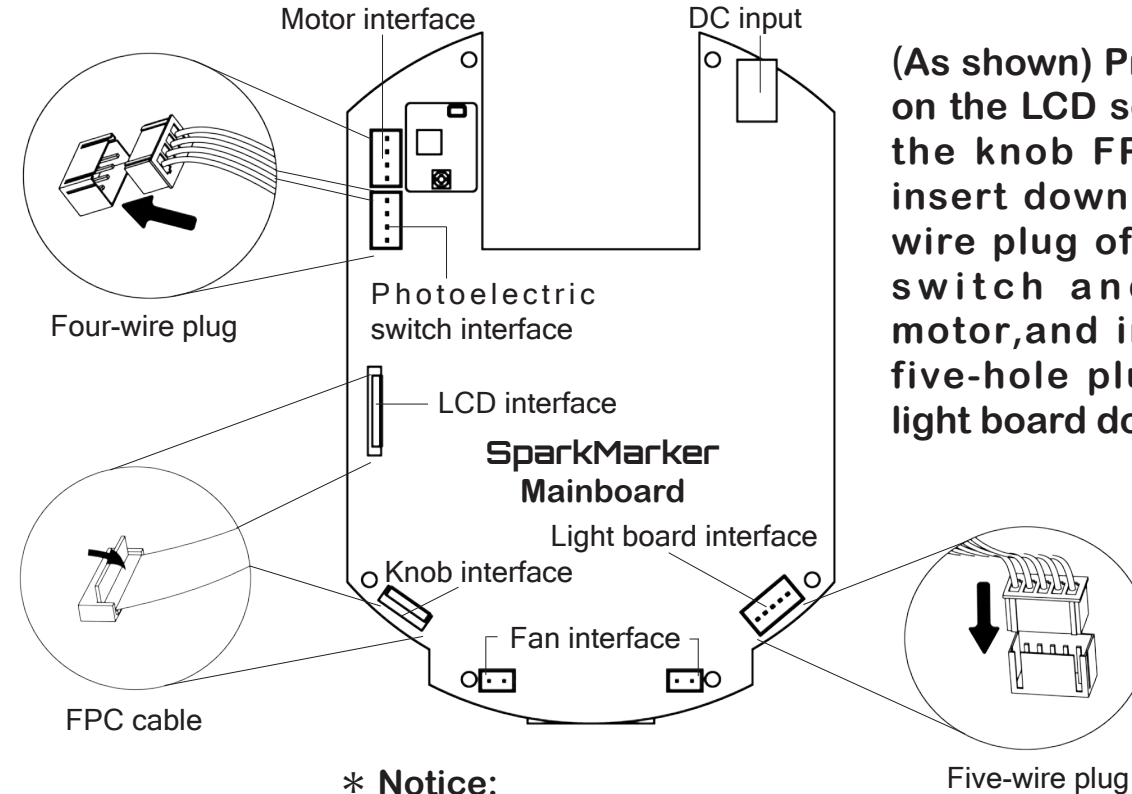
**\* Notice:**  
Please carefully open the FPC interface and carefully pull out the plug, do not tear the cable.



Use the small hex wrench to turn counterclockwise to unscrew the flat head screws of the four fixed light board around the LCD screen and remove the light board from below.

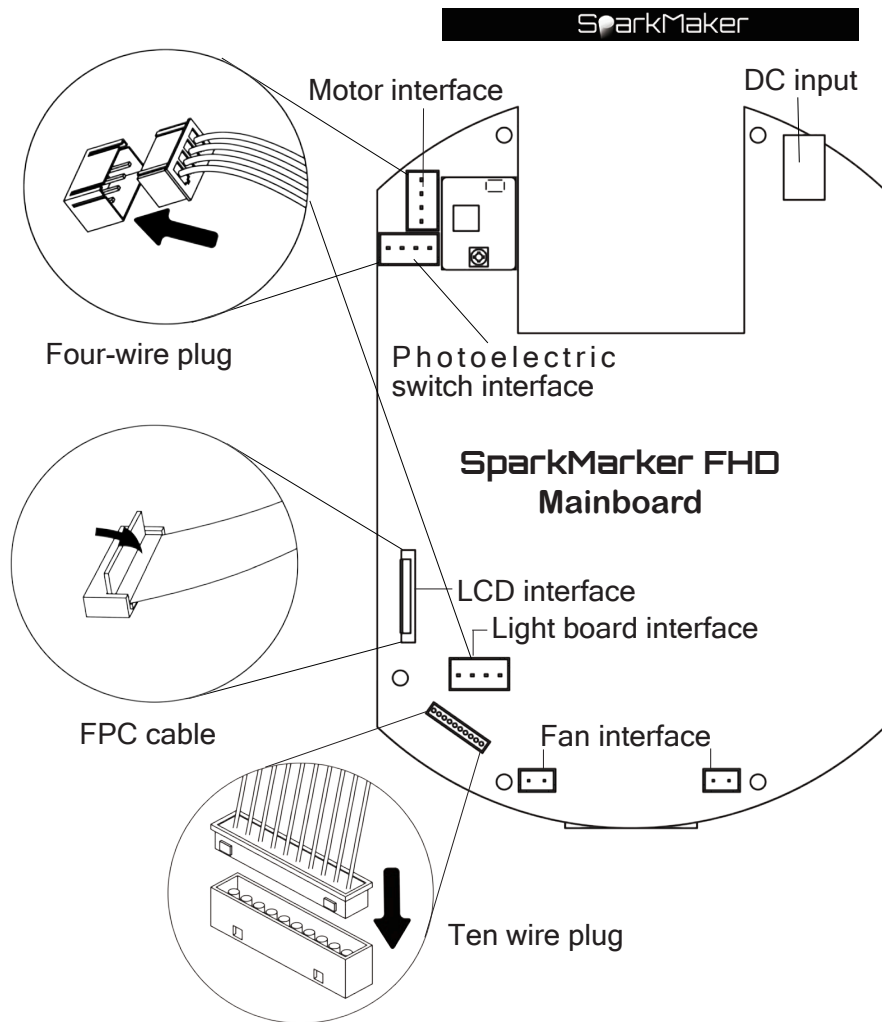


Installation of the new light board, use the small hex wrench to turn clockwise, and use the M3 nut at the lower end of the light board to screw the four flat head screws around the LCD screen.



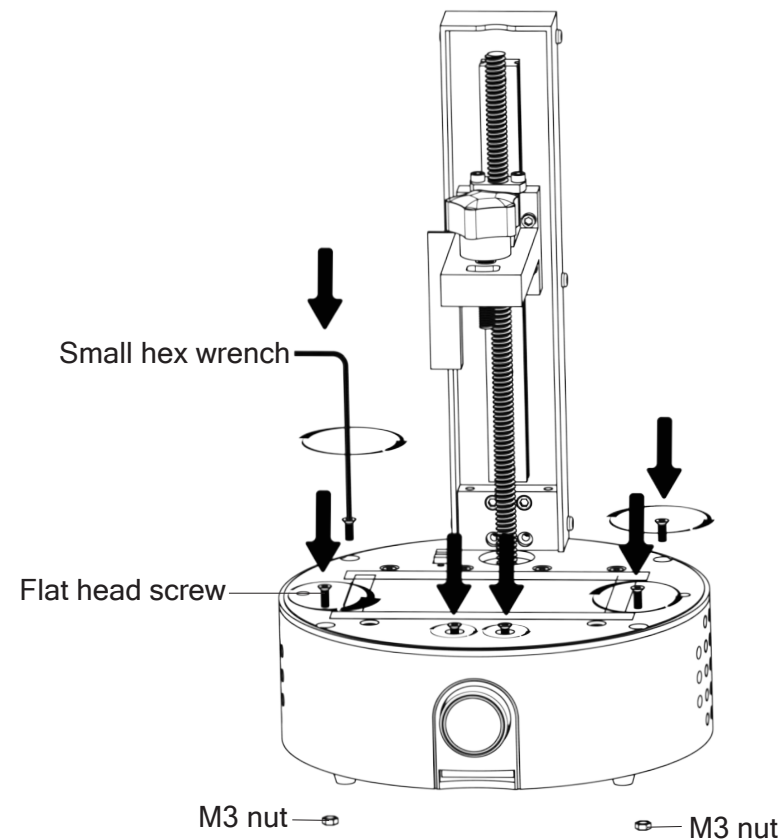
(As shown) Press down on the LCD screen and the knob FPC cable, insert down the four-wire plug of the limit switch and screw motor, and insert the five-hole plug of the light board down.

**\* Notice:**  
Please carefully open the FPC interface and carefully pull out the plug, do not tear the cable.



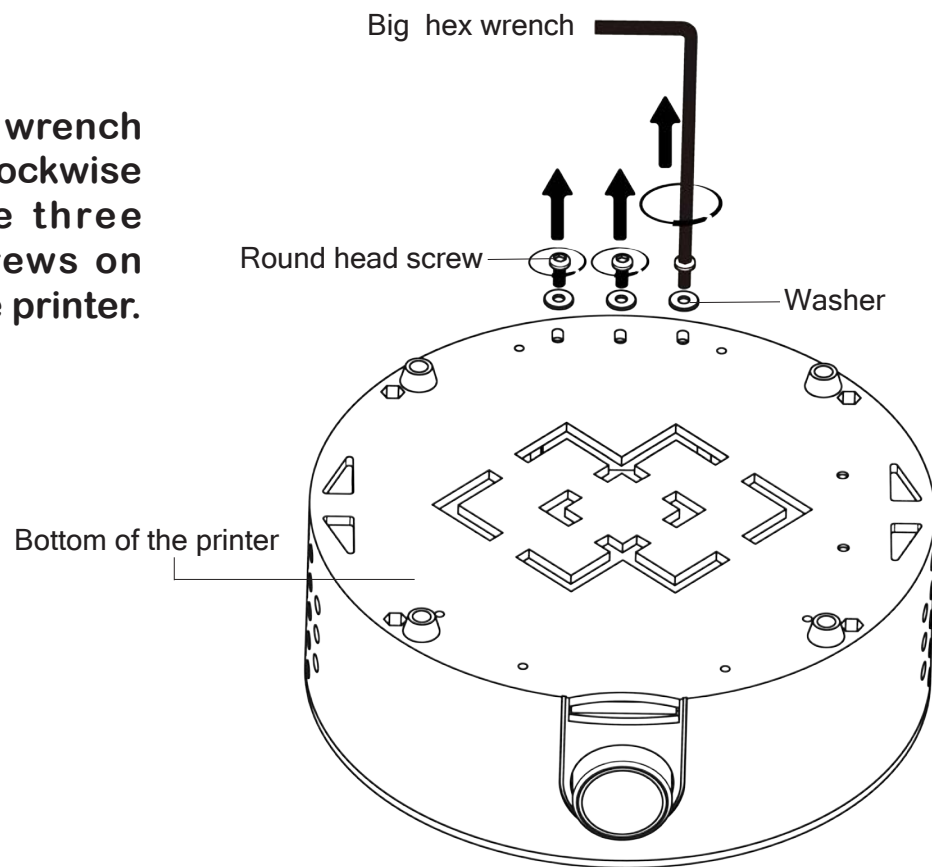
(As shown) Press down on the FPC connector, connect the LCD cable, and insert the four-wire plug of the photoelectric switch, stepper motor and light board downwards, and insert the ten-wire plug of the knob downward.

**\* Notice:**  
Please carefully open the FPC interface and carefully pull out the plug, do not tear the cable.



Slowly lower the Z-axis and working panel and close the housing. Plug the four M3 nuts on the bottom of the housing back into the bottom mounting holes, and then tighten the six flat head screws shown.

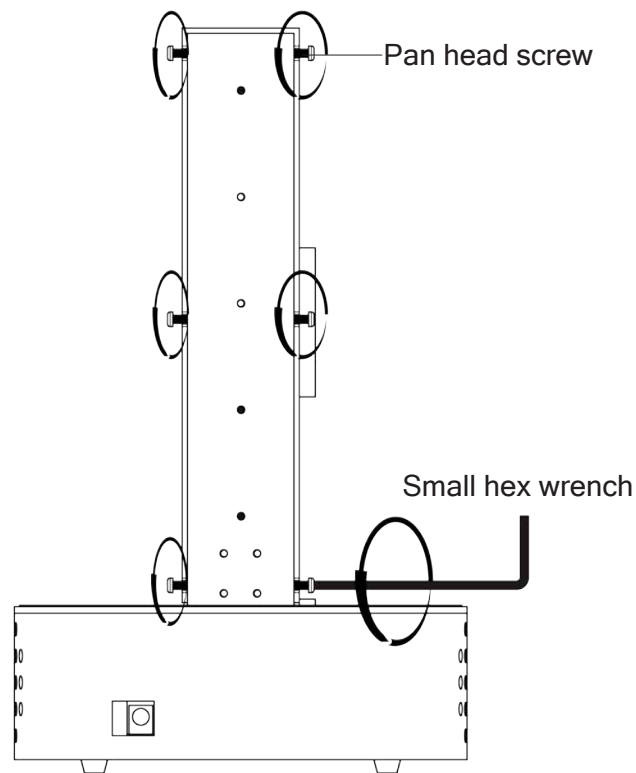
Use the big hex wrench to turn counterclockwise to unscrew the three round head screws on the bottom of the printer.



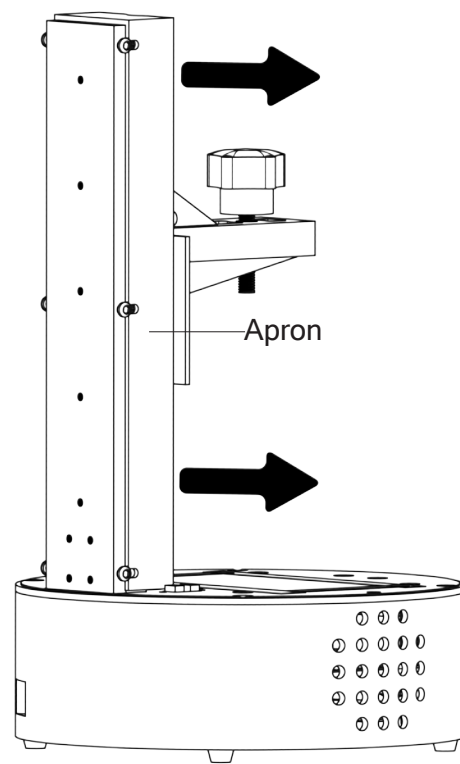
## Adjustment of Z axis



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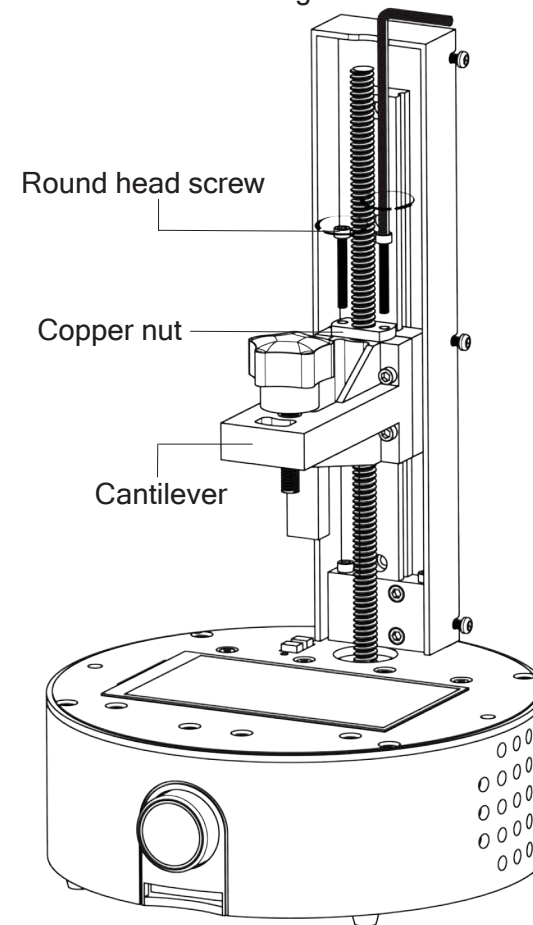
Use a small hex wrench to loosen the 6 pan head screws on both sides of the Z-axis counterclockwise.



Remove the apron along the front of the printer.

\* **Notice:** Please carefully remove the apron.

Big hex wrench



Use the big hex wrench to turn counterclockwise to unscrew the two round head screws that secure the copper nut.

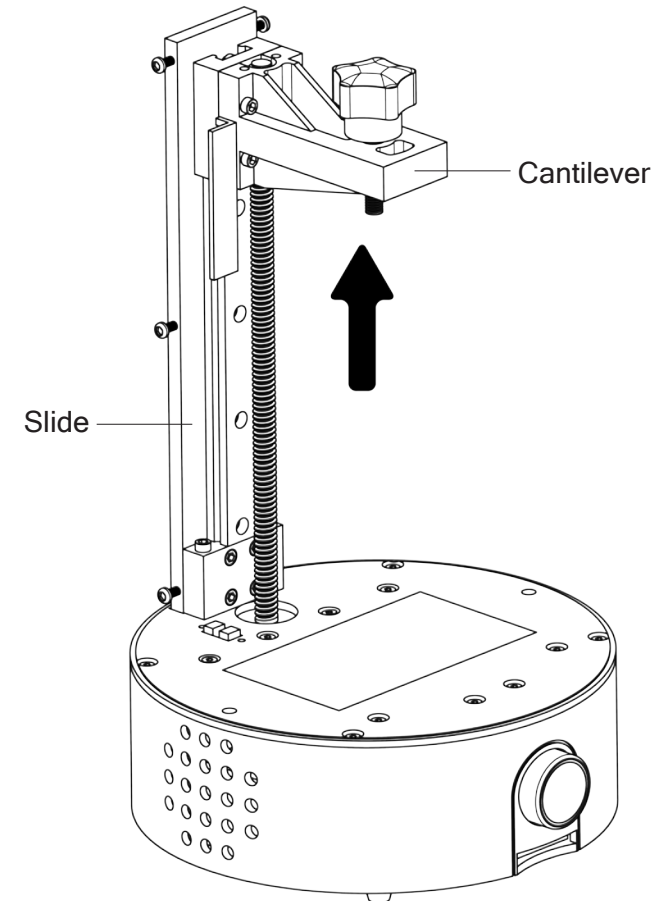
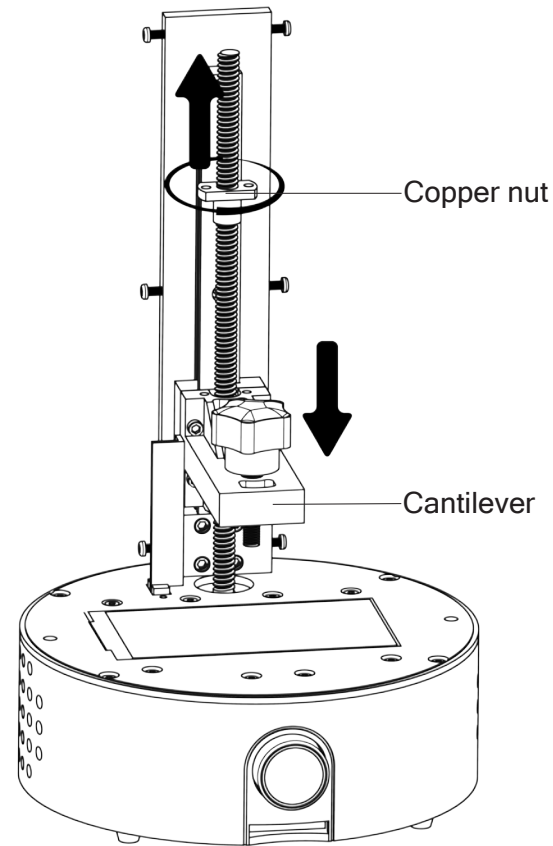
\* **Notice:**  
Please take good care of the removed parts.

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At this time, the cantilever will fall along the guide rail and then rotate counterclockwise by hand to screw out the copper nut from above.

**\* Notice:**

Pay attention to the balls in the slider when moving the slider to prevent it from falling.



Move the cantilever along the guide rail to the top, and the cantilever is parallel to the working panel.

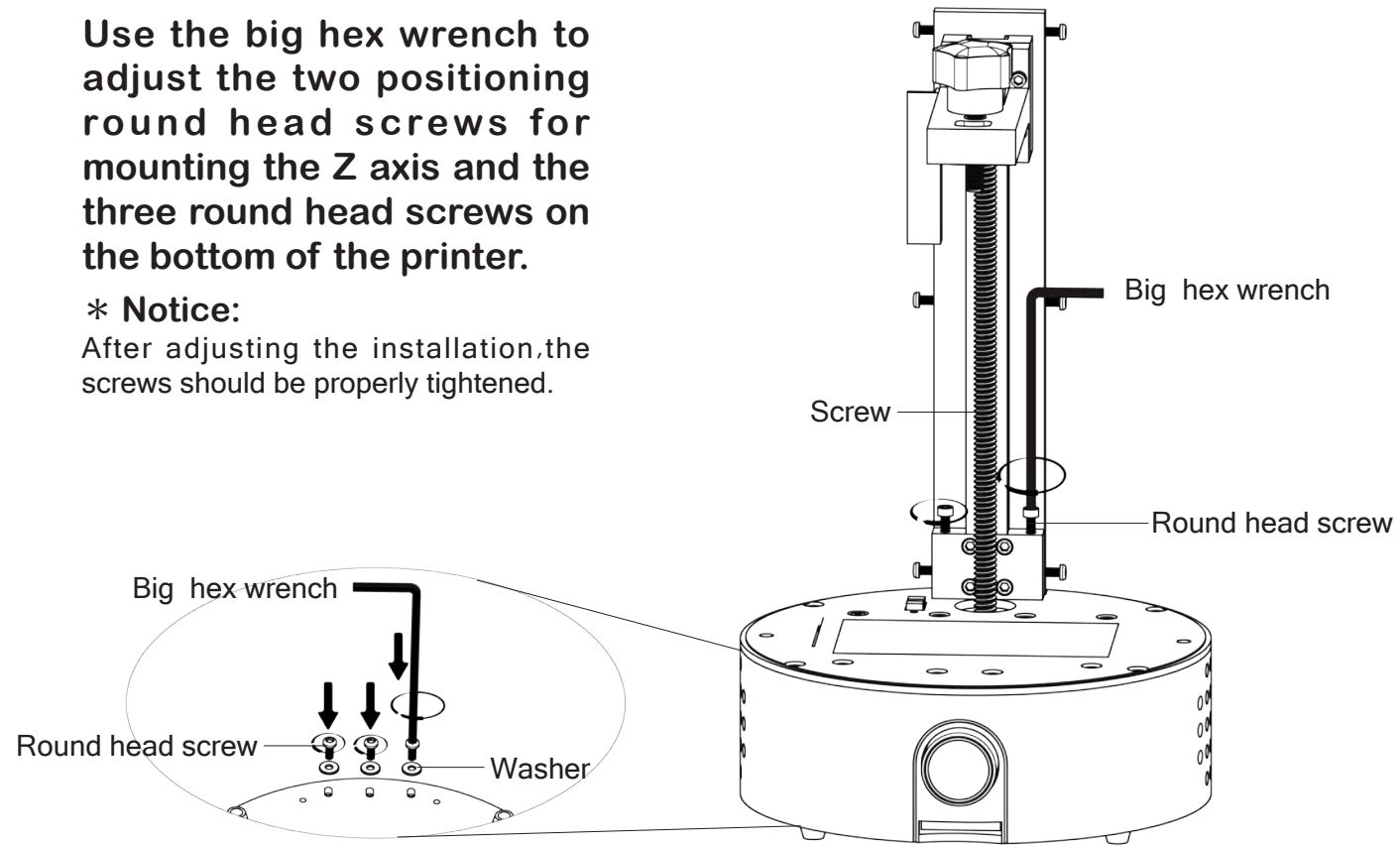
**\* Notice:**

When moving the slider, please be careful not to pull the cantilever out of the guide rail to prevent the balls in the slider from falling out.

Use the big hex wrench to adjust the two positioning round head screws for mounting the Z axis and the three round head screws on the bottom of the printer.

**\* Notice:**

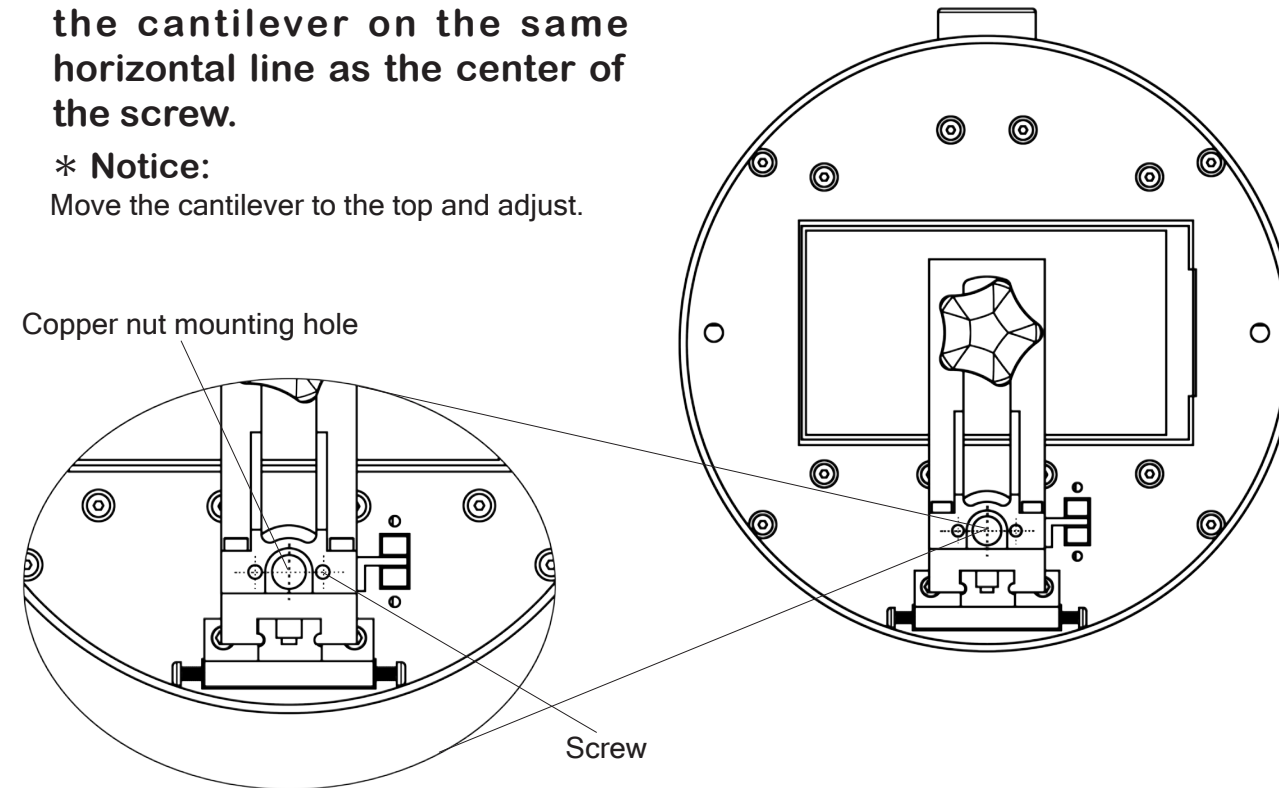
After adjusting the installation, the screws should be properly tightened.



Keep the two copper nut mounting holes at the top of the cantilever on the same horizontal line as the center of the screw.

**\* Notice:**

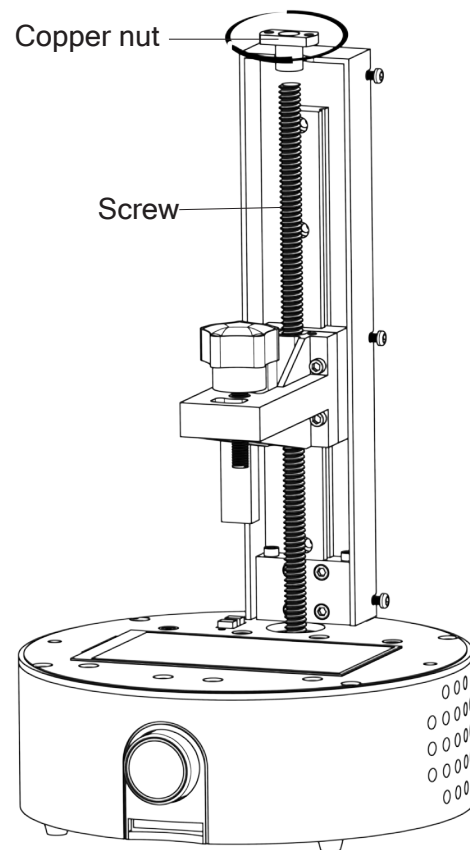
Move the cantilever to the top and adjust.



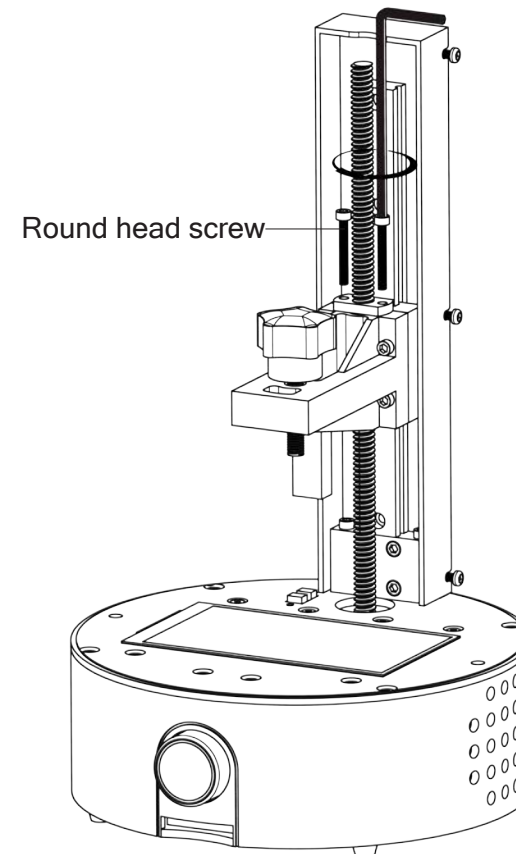
Screw the copper nut clockwise from the top of the screw into the screw.

**\* Notice:**

Do not reverse the position of the copper nut.



Big hex wrench

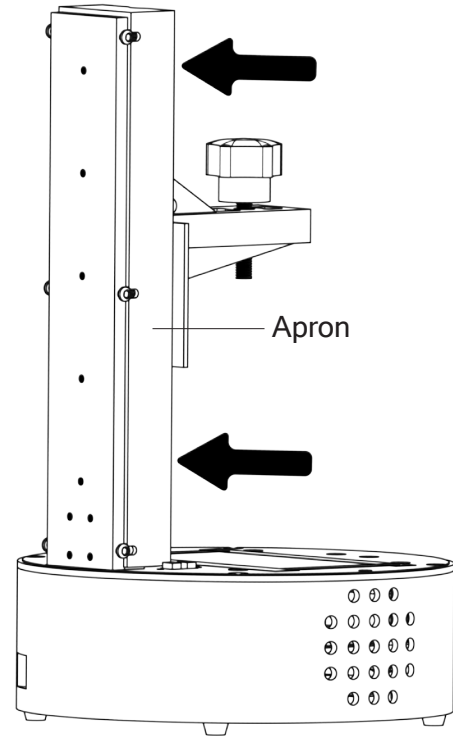


Rotate the two round head fixing screws of the copper nut clockwise with the big hex wrench.

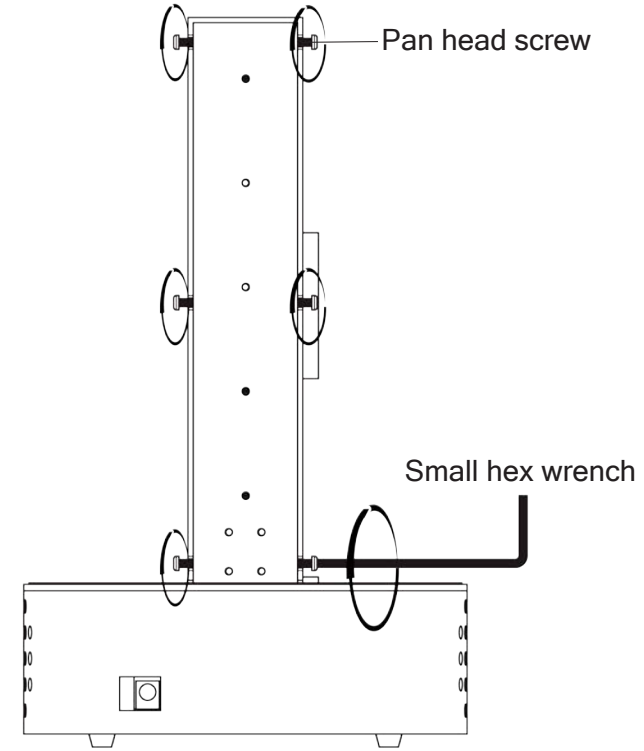
**\* Notice:**

Do not tighten the two fixing screws of the copper nut too much, otherwise it will not be able to move normally.

Put the apron back on the Z axis.



Tighten the 6 screws on both sides of the Z-axis with the small hex wrench.

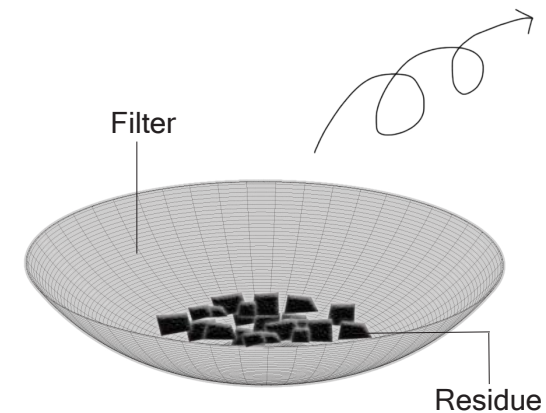
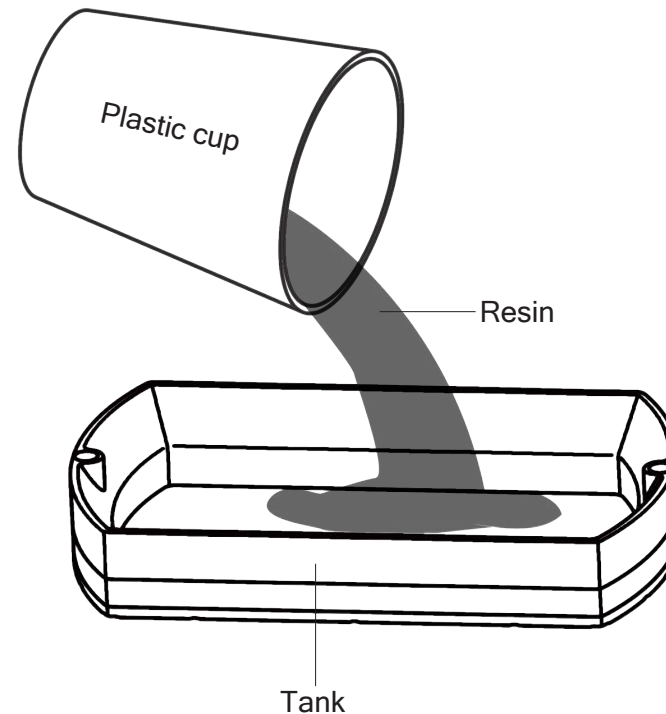
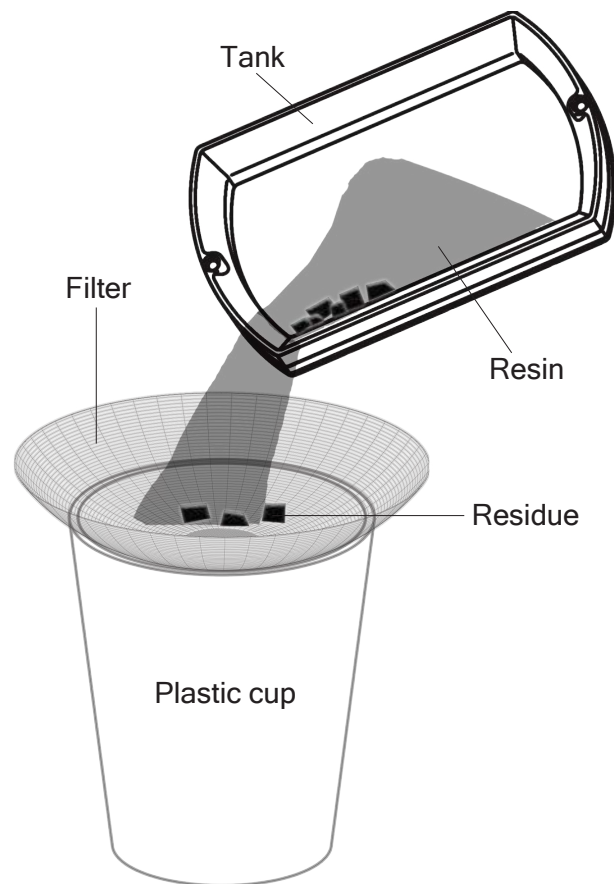


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F i l t r a t i o n   r e s i d u e

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Remove the tank and slowly pour the resin along the corner of the tank through the filter into the plastic cup prepared in advance.



After all the residue has been filtered off, the residue is thrown away and the resin in the plastic cup is poured back into the tank to use.

**\* Notice:**

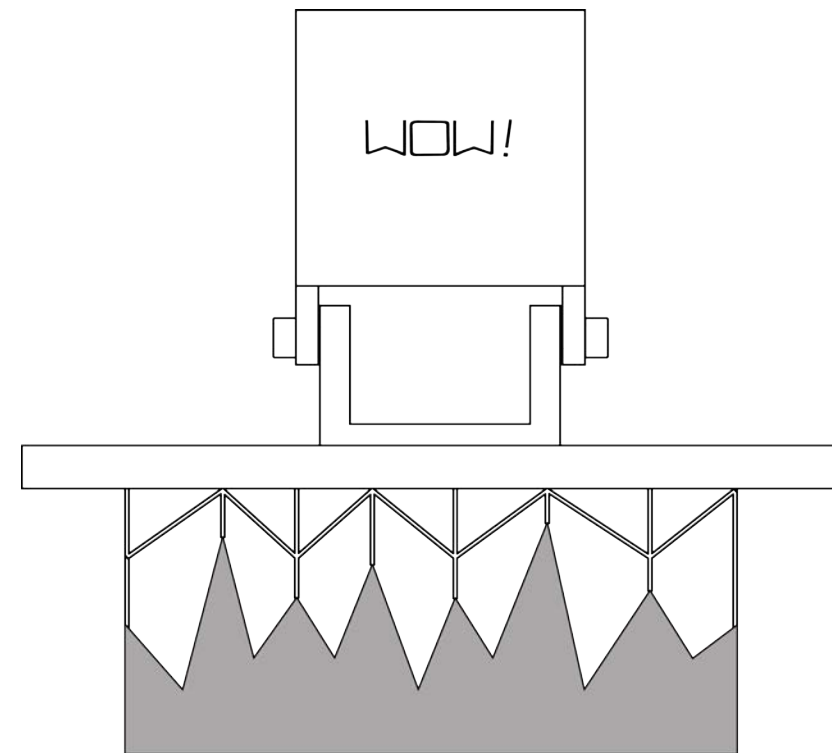
Please clean the resin on the outer wall of the tank in time to avoid damage to the LCD screen.

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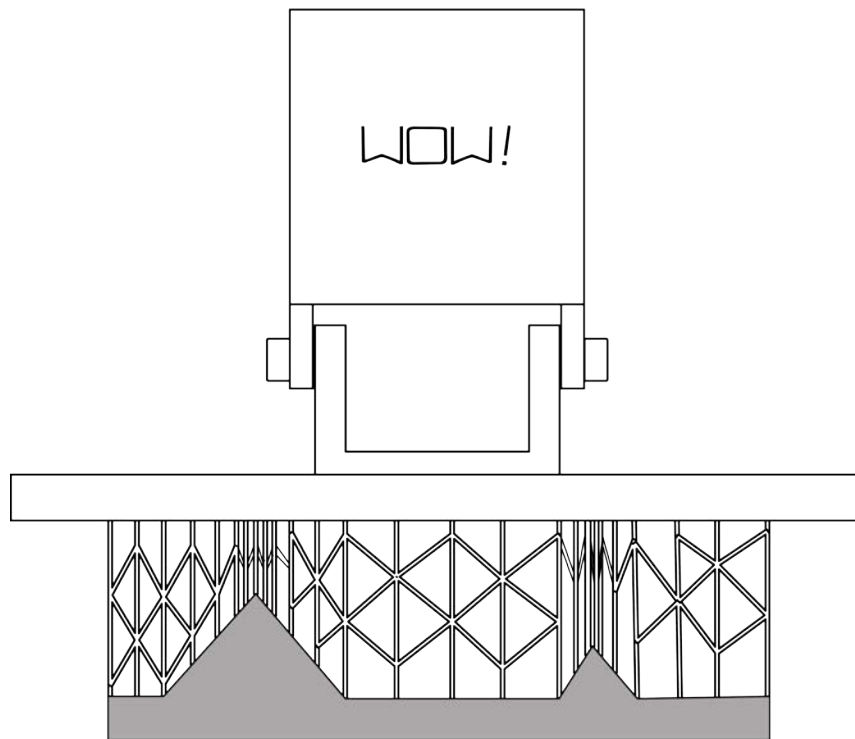
A d d s u p p o r t

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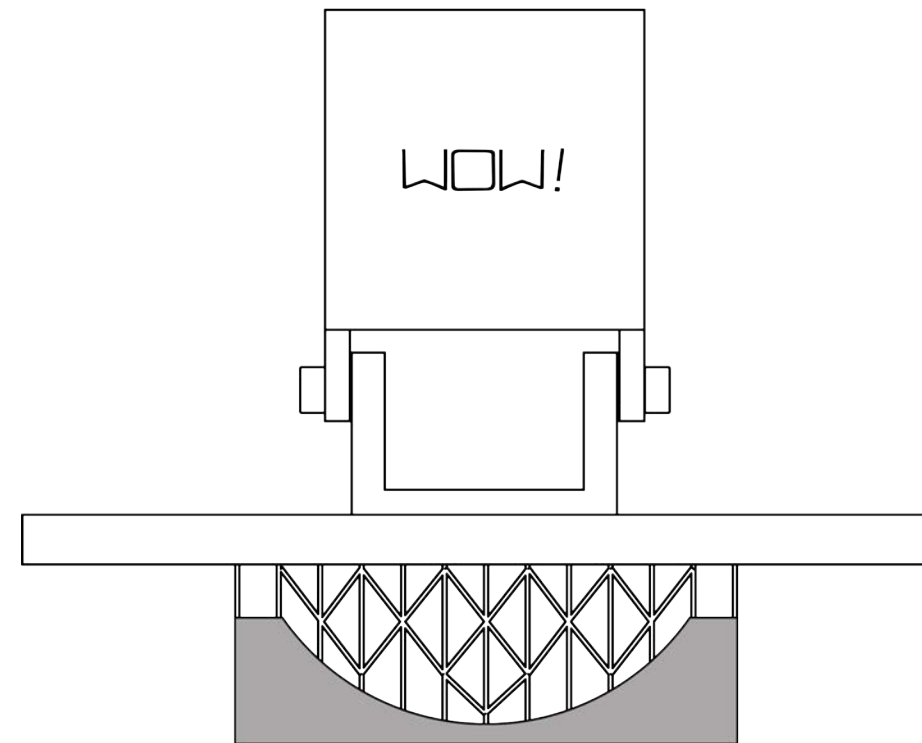
For such a model with the lowest point feature, support must be added at its lowest point, otherwise the model will fail to print.



For such a model with the lowest point feature, it should start from the lowest point and add support from dense to sparse.

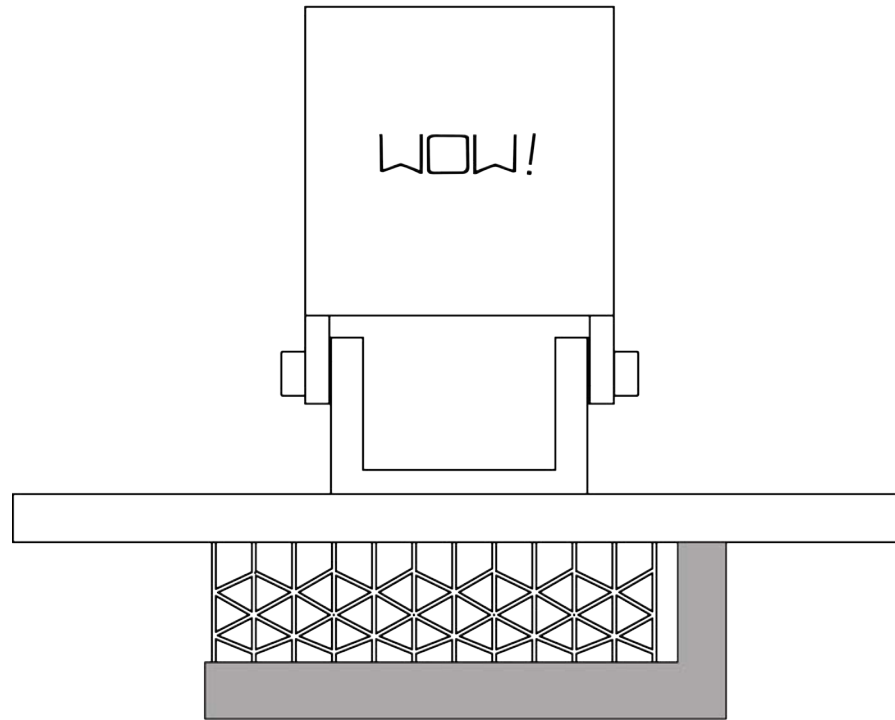


For such a model with large spans feature, some supports should be added in the middle of the bridge appropriately.

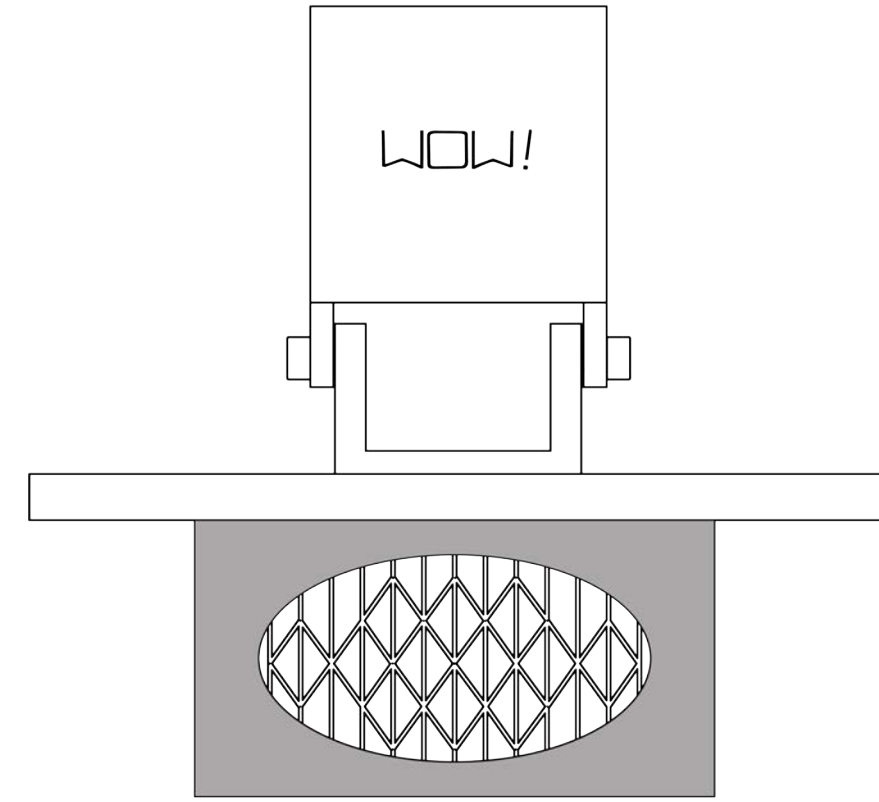




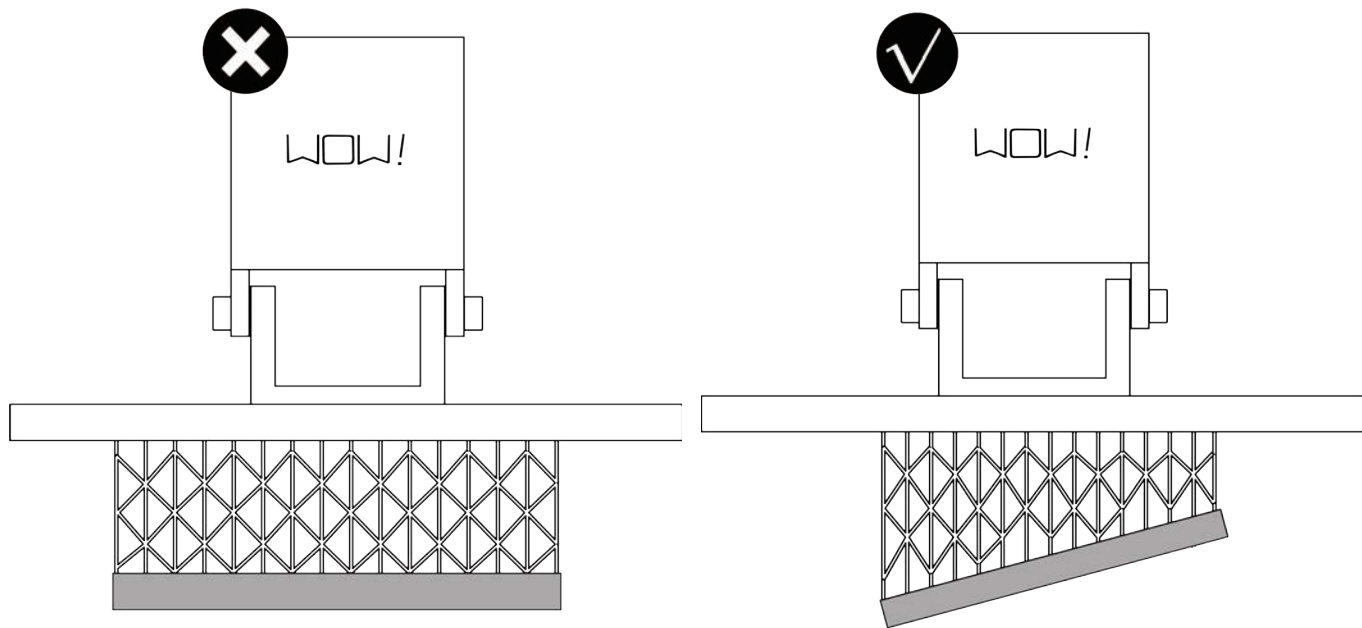
For such a model with cantilever feature, it is necessary to add support evenly in its cantilever position.



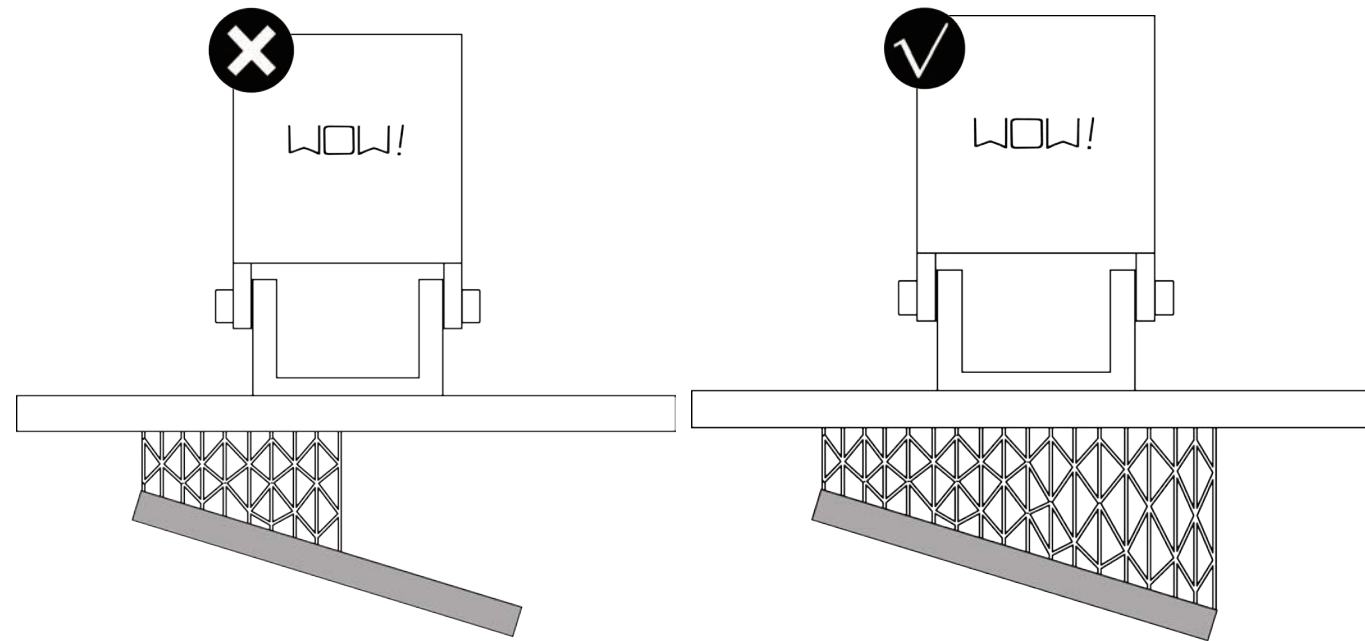
For such a model with large internal hollow and large span feature, it is necessary to add support evenly in the hollow area.



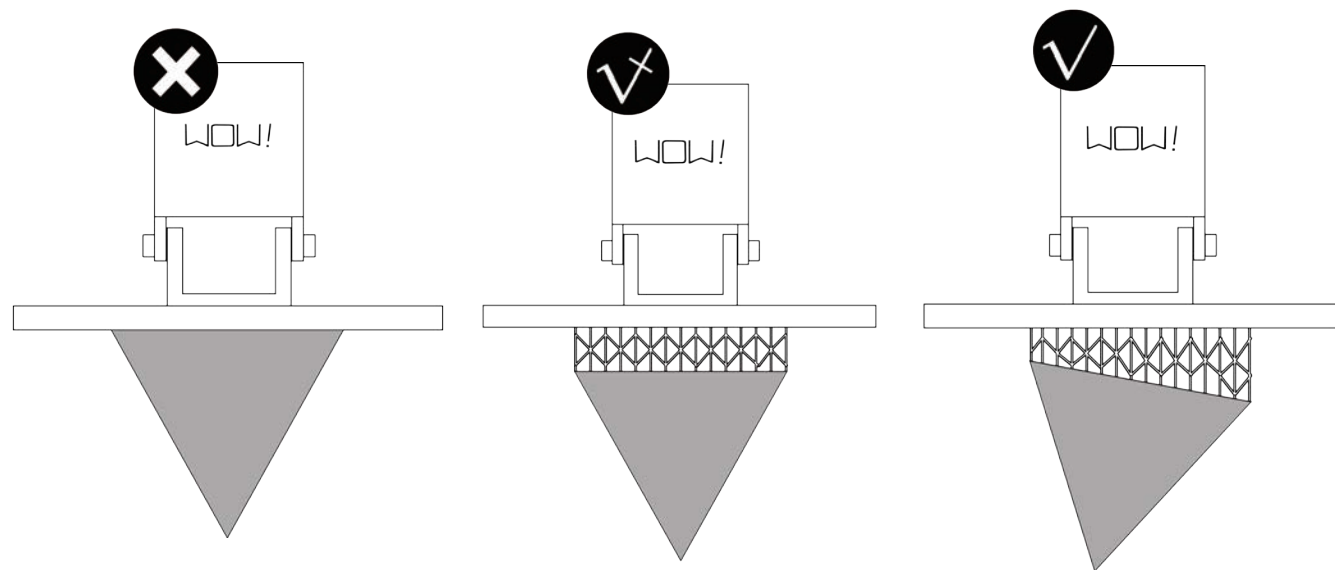
For such a model with large volume, higher height and large span feature, you can tilt an angle and then add support evenly. The printing quality will be better than flat printing, and the printing time will be greatly shortened, and the support will be added more easily.



For such a model with large volume, higher height and large span feature, all areas should be added support evenly.



For such models with large-area bottom feature, in order to avoid the adhesion between the bottom surface making the platform too difficult to remove, and to avoid deformation of the bottom layer due to excessive exposure, the model should be tilted at an appropriate angle and raised a distance before adding support evenly.



F

A

Q

### ©How to get a print model?

- ① Download the print file "print.wow"(for SparkMaker version)or "print.fhd" (for SparkMaker FHD version) file that can be printed directly from the official SparkMaker website ([www.sparkmaker3d.com](http://www.sparkmaker3d.com)).
- ② Download the STL file from the 3D Print Model website or convert the model file to the STL file format.
- ③ Design the model using computer 3D design software and then export the model to a file in STL format.

### ©How to update the firmware?

- ① Download the latest update firmware from the official SparkMaker website ([www.sparkmaker3d.com](http://www.sparkmaker3d.com)).
- ② Unzip the downloaded update firmware **update.wow (for SparkMaker version) or update-FHD.wow (for SparkMaker FHD version)** and save it on the SD card.
- ③ Turn off the power to SparkMaker.
- ④ Insert the SD card into the SparkMaker card slot.
- ⑤ Power on the SparkMaker.
- ⑥ The indicator on the knob will turn purple(if it is SparkMaker FHD version,you need click the knob when knob will turn purple),and then the light started flashing,finally turn green,which means the update is successful.
- ⑦ Use your computer to delete the update firmware from the SD card.
- ⑧ Finish updating the firmware and start printing.

### ©How can I check if there is a problem with the print file?

Open the \*.wow(for SparkMaker version)or \*fhd(for SparkMaker FHD version) slice file with SparkStudio computer software and check if the pattern of each layer of the slice is normal.

### ©Why does the indicator change from green to red and then quickly change back to green when the SD card is inserted and the knob is clicked?

- ① The SD card is not recognized or has been damaged. A new SD card needs to be replaced. The SD card should be a **C10 high-speed** card with a capacity lower than **32GB**. The file system format is **FAT32**. The SD card is completely unlocked by hardware,and the metal contacts are free of stains.
- ② The direction or depth of the SD card insertion is incorrect. It needs to be adjusted to make the metal contacts contact.

- ③ If you use the knob to control the printer,check if the print file named in the SD card is"print.wow"(for SparkMaker version)or "print.fhd" (for SparkMaker FHD version). If other file names are used,they will not be recognized.

- ④ Open the print file with SparkStudio and check if there is a problem with print file.

### ©Why does the platform continue to drop without stopping after clicking the knob to print?

- ① The platform is not leveled,so that it cannot be lowered to the lowest point. The photoelectric switch has not been triggered,and the platform should be leveled first.
- ② There is residue on the platform or in the tank,so that it cannot be lowered to the lowest point. The photoelectric switch has not been triggered. The residue on the platform and in the tank should be cleaned.
- ③ The trigger piece on the platform is not aligned with the lower photoelectric switch. The trigger piece should be inserted into the middle notch of the photoelectric switch.
- ④ The photoelectric switch is damaged or the photoelectric switch is not installed correctly.

### ©Why is the screw movement not smooth?

- ① The Z axis is not corrected. The direction of the lead screw and the guide rail are not parallel,which creates motion resistance and needs to be corrected again.
- ② The screw needs to add some grease.
- ③ The screw is blocked by the cured resin and needs to be cleaned.
- ④ The copper nut mounting screw is too tight,the screw is stuck,and the copper nut mounting screw should be adjusted to make the screw move smoothly.

### ©Why does the model need to add support?

The gravity and release force need to be overcome during the printing process. Therefore,the minimum point and the suspended part of each layer must be supported. In order to ensure that the model is not deformed and not broken,the model needs to add more support to strengthen the support structure to overcome the release force.

### ©What is the printing time of SparkMaker SLA 3D printer?

SparkMaker SLA 3D printer is a face-to-layer printing method. The printing time is only related to the height, the number of printed layers, regardless of the cross-sectional area. In the case of the same layer thickness, the shorter the model, the less time is spent printing; at the same height, the larger the layer thickness is, the less time is spent printing. It should be noted that the larger the layer thickness, the longer the single layer exposure time and the worse the printing quality.

#### ©How much resin is suitable for pouring into the tank?

Less than **240ml** resin should be poured into the tank. Do not pour in too much resin, it will result in resin overflow damage to the LCD screen.

#### ©Why is the resin placed in the tank solidified?

- ① The tank is placed on a balcony or other place with a strong light source to cause the resin to cure.
- ② The UV light emitted from the side of the machine is reflected and applied to the surface of the tank to solidify it.

#### ©When the liquid photosensitive resin in the tank is printed, there are a lot of bubbles, which will affect the printing? How to remove?

- ① The liquid resin can place for a period of time to eliminate air bubbles.
- ② Keep the liquid resin without bubbles and print out the model without bubbles.

#### ©Why are there bubbles inside the printed model?

- ① When printing, bubbles are present in the liquid resin in the tank.
- ② When printing, the falling speed is too fast, and bubbles are generated. The falling speed should be adjusted appropriately.

#### ©What effect does temperature have on printing?

- ① The printing process should be controlled within the indoor temperature range of **24-35**.
- ② Printing in lower temperature requires an increase in exposure time.
- ③ The normal printing temperature is **25 degrees**. For every **10 degrees** reduction, the curing speed is reduced by **30%**. The curing speed is increased by **30%** for every **10 degrees**, but it will eventually reach a stable value. Excessive temperature will cause the FEP film to deform and damaged the liquid crystal.

#### ©Why is there nothing stuck on the aluminum plate of the printing platform after the printing is finished, and the residual resin is stuck on the FEP film at the bottom of the tank?

- ① The printing platform is not leveled and needs to be leveled correctly.
- ② The bottom layer exposure time set is too short and you need to increase exposure time. If a third-party resin is used, the user needs to adjust the printing parameters by himself. It is recommended to adjust the bottom layer exposure parameters to **200 seconds**.
- ③ The set lifting speed is too fast and the model is broken, so it is necessary to reduce the lifting speed.
- ④ The contact surface between the model and the printing platform aluminum plate is too small to cover the entire model. You need to check the position of the model or set the sinking print model.
- ⑤ Check the FEP film on the top and bottom of the tank, and whether there is any obstruction or resin residue on the LCD screen.

#### ©Can I continue printing if printing is suddenly interrupted?

No, SparkMaker 3D printer does not have this feature yet.

#### ©What should I do when the print is interrupted accidentally?

- ① Turn off the power and remove the print platform and tank.
- ② Use a shovel to clean the residual solids on the platform and the tank and start printing again.

#### ©Why is the bottom of the model stuck to the printing platform and the residual resin is stuck on the FEP film, after the printing is finished?

- ① The support of your model is too thin to pull the model.
- ② The support of your model is too little to hold the model.
- ③ The layer exposure time is insufficient, some of the support is broken and it is difficult to pull the model.
- ④ The model you print is too large, the lifting distance is not enough, the model is difficult to release, and the lifting distance should be increased.
- ⑤ Check the FEP film up and down, whether there is any obstruction or resin residue on the LCD screen.

- ⑥ Check if the UV LED on the light board is fully illuminated when printed, and if the brightness is different.
- ⑦ The lifting distance is too large, and the position is misplaced when moving up and down for a long distance.
- ⑧ Open the print file with **SparkStudio** and check for any problems with the sliced graphics.

#### ©Why is a cuboid block that is the size of the screen printed on the printing platform after printing is finished, or not printed anything?

- ① If the LCD screen is damaged or the contact is poor, it will be completely transparent. Check the LCD screen cable and try to connect again. If it cannot be solved, replace the new LCD screen.
- ② Check that the lamp bead on the lamp board is lit normally when printed.
- ③ Open the print file with **SparkStudio** and check for any problems with the sliced graphics.
- ④ The copper nut mounting screw is too tight, the screw is stuck, and the copper nut mounting screw should be adjusted to make the screw move smoothly.

#### ©Why is the LCD screen not working?

- ① The resin drop into the LCD screen and damage the LCD screen.
- ② The residual resin residue on the tank or platform crushes the LCD screen during printing.
- ③ The connection cable inside the LCD screen is loose during transportation.
- ④ Check the FEP film in the tank, and whether there is any obstruction or resin residue on the LCD screen.

#### ©Why does the bottom of the model swell?

In order to make the model stick to the bottom layer of the platform, the bottom exposure time is longer than the normal layer, and the long under layer exposure time will cause the resin around the bottom layer expand, you can lift the model a distance and then add the bottom support.

#### ©The aluminum plate of the printing platform has been scratched by the tool after repeated use, can it be used?

Slight scratches have little effect on the model and it can be used continuously, and the rougher the metal plane, the stronger the adhesion.

#### ©How to improve the printing speed?

- ① Use a resin that cures faster.
- ② Use a larger layer thickness to save printing time.
- ③ Increase the speed of descent and the speed of lifting as appropriate.

#### ©Why is the support broken during the printing process?

- ① The layer exposure time is not enough, the layer exposure time should be increased appropriately.
- ② If the support is too thin, a thicker support should be used.
- ③ The surrounding support is not dense enough, need to add more dense support.
- ④ Check the FEP film up and down, whether there is any obstruction or resin residue on the LCD screen.
- ⑤ The lifting speed is too high and damaged the support, the lifting speed should be reduced appropriately.
- ⑥ The Z-axis motion is not smooth. Correct the Z-axis and add some grease.
- ⑦ If the hardness of the resin is too low, a resin with a higher hardness should be used.

#### ©Why is the cross section of the model deformed?

- ① Because the exposure time is too long or insufficient, the exposure time should be adjusted appropriately.
- ② The resin selected is not in the specified curing band.
- ③ Some points are not adding support and the model part is sunken and deformed.
- ④ The platform handle is not tightened when printing.
- ⑤ The tank is not installed well.
- ⑥ Check the FEP film up and down, whether there is any obstruction or resin residue on the LCD screen.
- ⑦ If the hardness of the resin is too low, a resin with a higher hardness should be used.

#### ©Why is the height of the printed model incorrect?

- ① The platform is not leveled.
- ② Z-axis stuck, the Z-axis should be corrected and grease added.
- ③ The platform handle is not tightened when printing.
- ④ The underlying exposure time is too long and the bottom layer is inflated.
- ⑤ Because the exposure time is too long or insufficient, the exposure time should be adjusted appropriately.

⑥ The resin selected is not in the specified curing band.

#### ©How to deal with a layer of resin residue on the LCD screen?

The resin that is cured on the LCD screen is usually a film, which can be peeled off by hand or gently scraped off with a knife.

#### ©Why are there ladder stripes in the Z axis direction of the print model?

SparkMaker SLA 3D printer is a surface-curing method for layer-by-layer printing. In the case of high layer thickness, there will be a ladder stripes in the Z-axis direction of the model. This is caused by the molding principle itself, and the lower layer thickness can be selected to reduce the ladder stripes.

#### ©Why is there a pixel pattern in the XY direction of the print model?

SparkMaker SLA 3D printers use LCD screens as imaging components, so pixel patterns are inevitable on the model. White or light-colored resins can be used to visually reduce pixel patterns.

#### ©Why are there details or missing features on the print model?

- ① The model features or details are too small, and the printer resolution is difficult to meet the printing.
- ② Check that these details or features lack support or support density and thickness is incorrect.
- ③ Open the slice file in the computer software and check if the image is missing.
- ④ Check if the UV LED on the light board is not lit when printing.
- ⑤ Check for obstructions or residual glue on the LCD screen.
- ⑥ Check the top and bottom of the FEP film of the tank for obstructions or residual resin.
- ⑦ If the hardness of the resin is too low, a resin with a higher hardness should be used.

#### ©Why did the model stop printing before it finished printing?

- ① Check if the print file is saved completely.
- ② Check if there is an unexpected power failure during printing.
- ③ Check if the power socket is stable.
- ④ Check if the SD card is plugged in.
- ⑤ Check if the knob rotates smoothly and whether it is a steady flashing red light during printing.

⑥ Check that the Z-axis motion is smooth.

⑦ Check if the resin in the tank is sufficient.

#### ©Note on the use of the LCD screen

- ① The normal life of the LCD screen is about **800 hours**, and the LCD screen warranty period is **2 months**.
- ② The resin or other liquid on the LCD screen will damage the LCD screen.
- ③ Excessive pressure will break the LCD screen.

#### ©Note on the use of FEP film

- ① Carefully protect the FEP film from scratches.
- ② After a period of use, if there are a lot of obvious creases on the FEP film, replace the new FEP film in time.
- ③ Please clean the resin residue on the upper and lower sides of the FEP film in time to avoid printing failure.
- ④ When installing the tank, the FEP film should be in close contact with the LCD screen.
- ⑤ The FEP film is stretched at the bottom of the tank. This material has low adhesion, can pass ultraviolet light, and has a long service life. Its function is elastic release, and materials such as glass and ordinary plastic film cannot be replaced.

#### ©Precautions for the use of the tank

- ① If the resin in the tank is not used for a long time, please pour the resin into the storage container. Don't store it in the tank for more than two weeks.
- ② Please do not pour in excess resin to prevent the resin from overflowing and causing damage to the LCD screen.
- ③ Please do not put the resin into the screw mounting hole and the outer wall of the tank, which will cause the LCD screen to be damaged. If it accidentally flows in, please clean it in time.
- ④ When installing the tank, the FEP film should be in close contact with the LCD screen.
- ⑤ The slot mounting screws should be balanced and tightened to tighten the FEP film.

#### ©Print model considerations

- ① The model file must have no file errors such as broken faces and file corruption.

- ② The long-span cantilever position,the lowest point position of the layer,the position that needs to be strengthened and so on in the model file are all added with the right thickness,the right number of supports and the correct bottom valve.
- ③ The slice parameters such as the layer thickness,exposure time,and lift speed of the print file are set correctly.
- ④ The slice file is completely saved in the SD card,the bottom surface is completely attached to the ground,and there is no fault in the middle.
- ⑤ If you use the knob to control the printer,you need to name the print file as "print.wow"(for SparkMaker version)or "print.fhd" (for SparkMaker FHD version) and save it to the SD card.

#### ©How to check if the LCD screen and light board are working properly?

First remove the tank and printing platform,then insert the SD card with the printed file,press the knob to start printing,then wait for the light board to light up,the LCD screen displays the image,observe whether the image is normal,the light on the light board Whether the beads are normally lit.

#### ©Problems about the loss of LCD screen and light board.

The SparkMaker SLA 3D printer uses a liquid crystal screen as a graphic display component and uses a UV backlight as the light for curing the resin. Because the LCD screen is exposed to UV light,it will be damaged under long-term use. It has a life of **2-3 months** under frequent use. When the LCD screen has black spots and the light transmittance is poor,the exposure time is obviously longer or the graphics or the like cannot be displayed normally,the LCD screen should be replaced in time. The UV LED board will also wear out during long-term exposure. It can be kept for **2-3 months** without significant light energy loss under frequent use. When the light intensity is obviously weakened,the exposure time is obviously longer or there are some UV LEDs don't light or weak,the light board should be replaced in time.

#### ©Do I need to leveling the platform before every print?

The SparkMaker SLA 3D printer uses a high-precision photoelectric switch with high repeatability,so after proper leveling,if you do not adjust the Z axis,do not loosen the four screws on both sides of the platform,and do not reinstall the resin tank,normally you don't need to leveling the platform again.

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## Basic operational concept

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**©Layer thickness:**

The thickness of the layer printed by the printer each time, the supported thickness range is **0.1mm~0.025mm**.

The **0.1mm** layer thickness prints faster and the printing accuracy is relatively low.

The time and precision of **0.05mm** layer thickness printing tend to be relatively balanced.

The **0.025mm** layer thickness prints more accurately and prints for a longer period of time.

**©Layer exposure time:**

In addition to the bottom layer, each layer is exposed to UV light for curing. Different resins also have different layer exposure times.

**©Bottom layer exposure time:**

The time of bottom layer cured by the UV light, because the bottom layer is the base layer that supports the entire model, the exposure time is longer. Different resins also have different bottom layer exposure times.

**©Factors affecting exposure time:****1. Type of resin:**

Different resins are not sensitive to light, so different resins cure at different times. Generally, the gray resin bottom layer exposure time is longer.

**2. Model factor:**

① Structures such as small cylinders, thin walls, and thin supports need to increase the exposure time of the layers.

② Structures such as small holes and small gaps need to reduce layer exposure time.

③ The model with an excessively large underside requires an increase in the bottom layer exposure time in order to adhere firmly.

**3. Layer thickness factor :**

The larger the layer thickness, the longer the exposure time required, and the smaller the layer thickness, the shorter the exposure time required.

**©Exposure intensity:**

The light intensity of the light board, this item is basically a fixed value of **255bit**, and generally does not need to be adjusted.

**©Lifting distance:**

After printing each layer, the model is separated from the tank and lifted upwards. In general, the larger the cross-sectional area of the model or the more dispersed the model layout, the larger the lifting distance required; the thicker the photosensitive resin, the larger the lifting distance required.

**©Lifting speed:**

The rate at which the resin is lifted upwards to separate the model from the FEP membrane after the resin has cured. When the model is separated from the FEP membrane, in order to ensure that the integrity of the model is not broken, the lifting speed should be reduced, so the platform lifting speed should be less than the falling speed. Under normal circumstances, there are small features or models using fine support, the lifting speed should be reduced; the softer resin after printing should reduce the lifting speed; the larger the cross-sectional area of the model or the more dispersed the model layout, the lower the lifting speed.

**©Decline speed:**

After the resin is cured, the platform is lifted and the speed of the film is lowered. In general, there are small features or models that use fine support, and the speed of descent should be reduced; the softer resin after printing should be reduced in speed.

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# Terms & Conditions

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## ©What does the warranty cover?

- 1.The 6-month warranty covers all functional aspects of **SparkMaker** 3D printer under normal use,excluding LCD screen,the resin tank,and UV LED backlight.
- 2.The 2-month warranty covers LCD screen,the resin tank,and UV LED backlight.

## ©What does the Warranty NOT cover?

- 1.Man-made damage or any problem caused by misoperation.
- 2.Self-refitting and self-dismantling are not covered by the warranty.
- 3.Damage caused by using third-party resin or parts will void the warranty.

## ©When does the Warranty begin?

- 1.It starts from the date of receipt of the goods.

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# C u s t o m e r   s e r v i c e

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## © How to solve the problem ?

- Send an email, leave a message on the official SparkMaker website or ask experienced users on official Facebook group.

- **Email:** [hello@wow-innovation.cn](mailto:hello@wow-innovation.cn)

- **Official SparkMaker website:** <https://www.sparkmaker3d.com>

- **Official Facebook group:**

<https://www.facebook.com/groups/140657399943252/>