FlashDental

User Manual

The user interface illustrations in the help document are schematic diagrams for reference only.

Due to product updates and upgrades, the actual product may be slightly different from the schematic diagram. Please refer to the actual situation.

This document is only applicable to Flashforge dental slicing software

FlashDental

Catalog

Preface

1. Software Introduction

This Software is designed exclusively for dental users, especially for the usage of Flashforge photocuring 3d printers and the print of related dental products. This software has built-in various functions and convenient operations of dental, and users can directly complete the function of moving, rotating and support adding in the same interface. More application introduction visiting Flashforge official website: www.flashforge.com.

2. Software-applicable Printer：

This software is application to Flashforge photocuring 3d printer:

FlashForge Hunter / Flashforge Focus

3. Software Installation

Obtaining FlashDental software package as below:

1、Search www.flashforge.com. Click support and choose download center, and click FlashDental icon, choose the software version you want to download.

2、Obtain the software installation package from the usb flash drive delivered with the package.

Icon Explanation

	Load: Import files.
	Position： Precisely move the model.
	Tool： Provide model add word, cutting function.
	Layout： Set layout parameters to realize model layout.
	Support: Edit support to ensure successful print.
	Print: Set print parameters, output print files.

Exploring Software

1. Main Interface

The main interface consists of menu bar, icon bar, build platform ,the bottom bar,View Navigation and Layered preview bar.As shown in Figure 1.

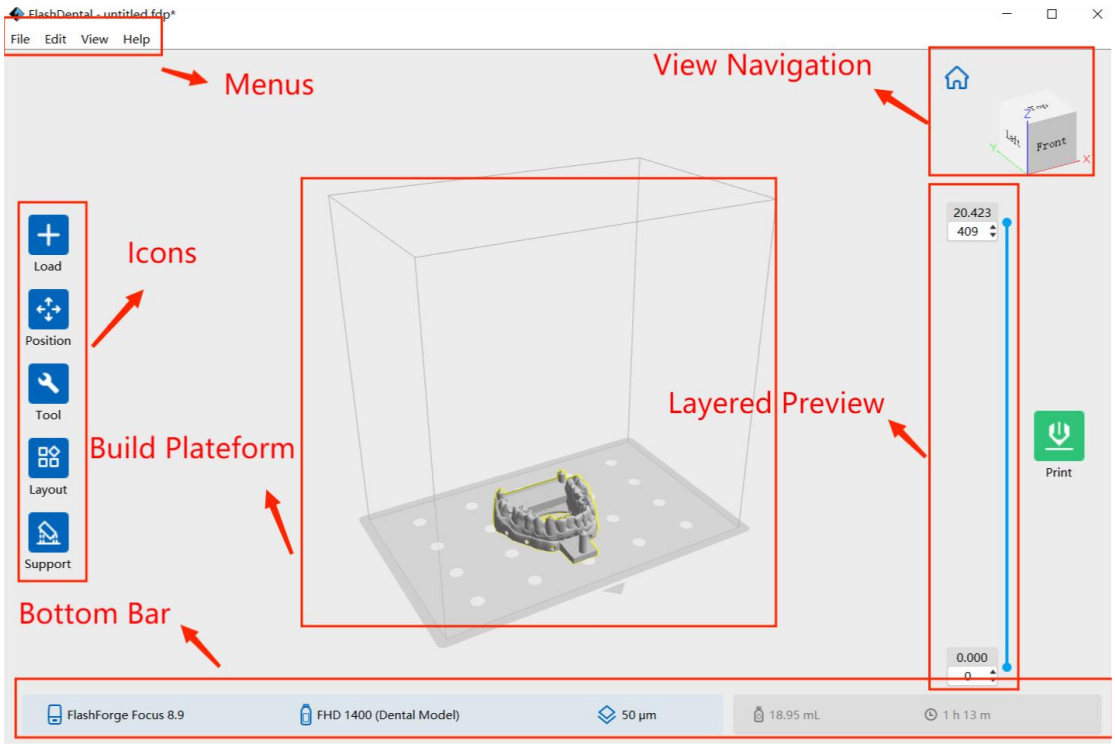

Figure 1 Software main interface

The menu bar contains the basic and additional functions of the software.

The icon bar contains the functions needed to edit and print the model.

The build platform shows the model state.The black border (not the gray one) indicates the printable area, the arrow on the bottom plate indicates the front, and if the model exceeds the print area, there will be a red warning appearing on the side beyond.As shown in Figure 2.

The bottom bar contains the status of the printed model equipment, materials, etc.

View Navigation: Click to provide the states of different views of the model.

The Layered preview bar: You can observe the model status of each layer.

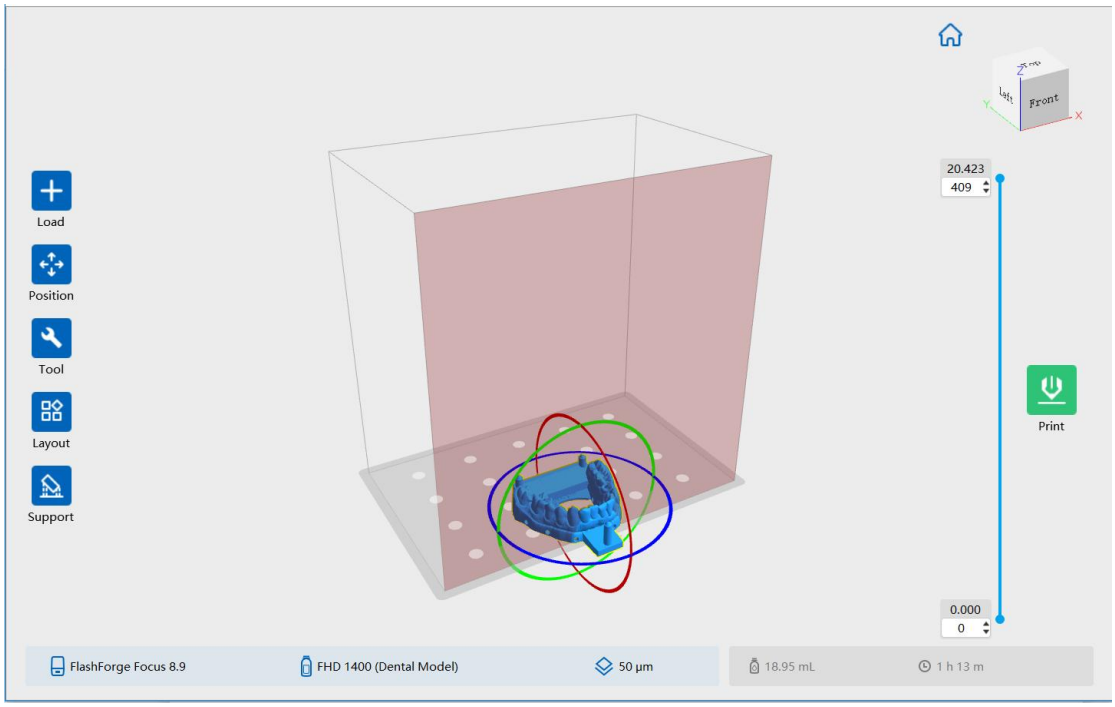

Figure 2 Red warning diagram of model exceeding printing area

2. Tool Bar

2.1 File

Click the menu bar -[File] and the following function appears, as shown in Figure 3.

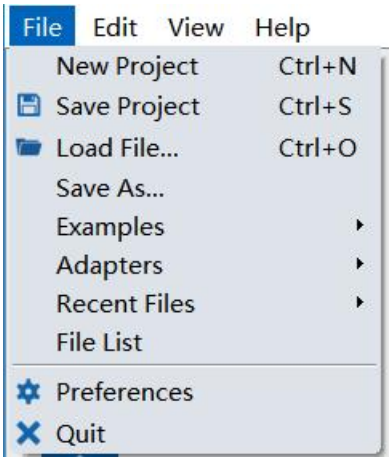

Figure 3 The file function diagram

2.1.1 New Project

Create a new project. If the original project modified without saving, there will be a tip to remind you of saving the change.As shown in Figure 4.

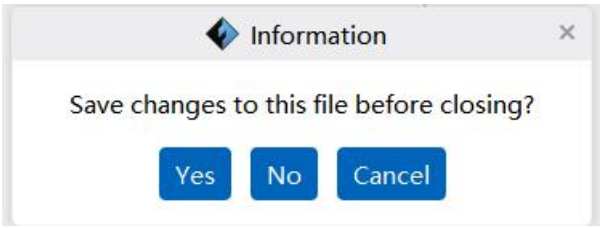

Figure 4 Save change prompt diagram

2.1.2 Save the file

After completing the edit, there will be 2 methods of saving all the models in the scene.

- **Method 1**:Click [Save project] or use shortcut key Ctrl+S to save the file as a project file with .fdp. Among this kind of files, all the models in the scene (including support) are independent with each other. After reloading the file, all the configuration information and the model location are consistent with the saved configuration.

- **Method 2**:Click [Save as] to save the scene as project file (.fdp) or save the file with .3mf, .stl or .obj. Among files with .3mf, .stl or .obj, all the models in the scene (include support) are not independent with each other, but merge into a new model. After reloading the file, the model location is consistent with the saved configuration.

2.1.3 Load the file

Same as the function of loading of icon bar, import the model of file.

2.1.4 Examples

Include the example models.

2.1.5 Adapters

Include the articulator connector for the dental model.

2.1.6 Recent Files

Show 15 opened files recently.

2.1.7 File list

Clicking this option will bring up a list of models on the current build platform. Click the model name, the model name changes from white to blue, as shown in Figure 5, then the corresponding model on the construction platform will also be selected. Click the left mouse button and drag the mouse to select multiple models. Similarly, when selecting a model, the corresponding file name turns blue.

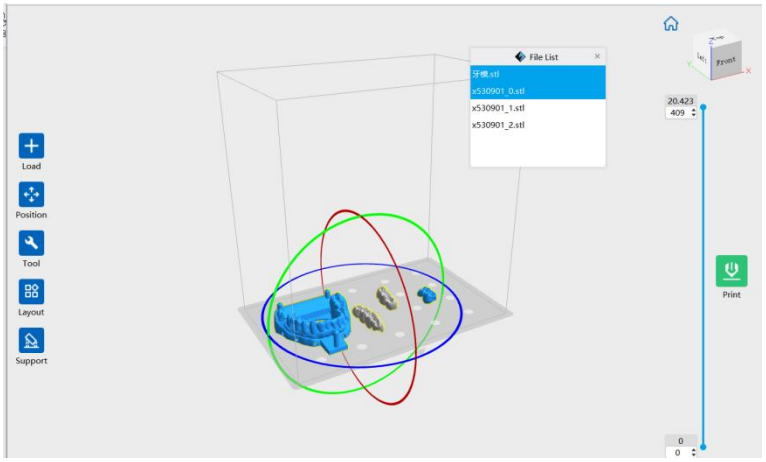

Figure 5 File list interface

2.1.8 Preferences

You can choose the interface language, font size, whether to check for updates at startup, whether to automatically place the newly loaded model, and whether to maximize the interface at startup, as shown in Figure 6.

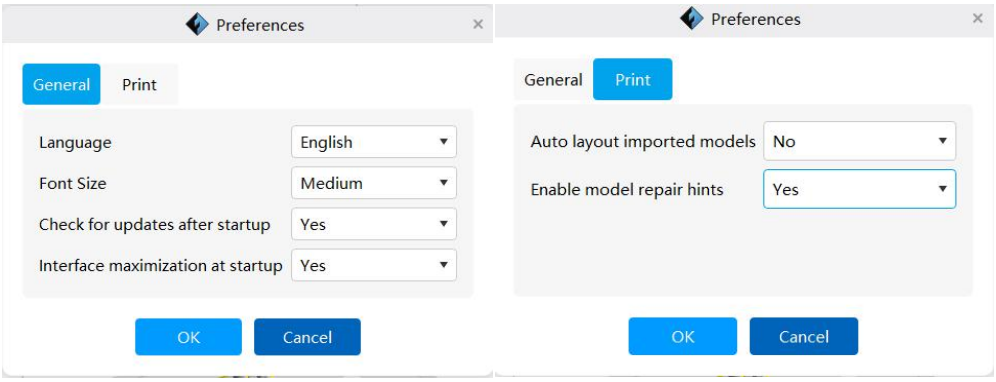

Figure 6 Preference setting interface

- Language: used to select interface language
- Font size: set large, medium and small font.
- Check updates when starting up: It is used to set whether the online automatic update function is enabled. If is, it can automatically detect whether there is a new version of the software online every time when starting the software up. Once a new version is found, the user is prompted to download and install the updated version.
- Interface maximization at startup: Used to set the software interface to maximize at startup, or maximize the display every time the software is started, if the selection is an option.
- Print-Auto placement of newly loaded model: If the model is automatically placed, when choosing yes, the loaded model will be automatically placed. Try to ensure that the model is in the print area. When loading multiple models, they will be placed separately considering the interference between models.

Note: If choosing no, when loading die-type models, there will appear the coincidence of die-type and model hole, then you need to move die type model manually. If choosing yes, die type models and models will be placed separately.

2.2 Edit

Click the menu bar -[Edit] and the following function appears, as shown in Figure 7.

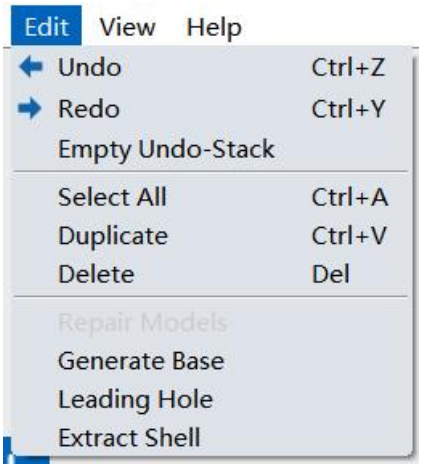

Figure 7 Edit the function page diagram

2.2.1 Undo

Click [Undo] or use shortcut key Ctrl+Z to undo the previous edit to the model.

2.2.2 Redo

Click [Redo] or use shortcut key Ctrl+Y to restore the undo edits on the previous models.

Note: This function takes effect only after the user has performed the undo action.

2.2.3 Empty Undo-Stack

Clear recorded operation procedures of undo key and free memory up.

2.2.4 Select All

Click [Select All], use shortcut key Ctrl+A or Ctrl+mouse left to select all the models.

Note: If the model is too small or out of view, you can select all the models in the scene and then adjust the model using the center and scale functions.

2.2.5 Duplicate

After selecting the model, click [Duplicate], use shortcut key Ctrl+V to create corresponding copy of the model.

2.2.6 Delete

After selecting the model, click [Delete] to use shortcut key Delete to delete corresponding models.

2.2.7 Repair Models

When the model is imported, a model check is performed. When the model detects the problem; it will pop up an inspection prompt to remind the user. At this time, you can directly click [Repair] of the pop-up dialog box, or repair the model in [Edit]-[Repair models].

2.2.8 Generate base (only valid for oral scanning dental files)

When loading the oral scanning data (STL format), the software will recognize this kind of files, first rotate the oral scanning mode so that the teeth are vertically up or down. click the dental model with mouse right, there will be an option to generate the dental model base.As shown in Figure 8.

Figure 8 Generate dental model base interface diagram

The user can select the height of the generated dental model base. Generally, automatic detection is selected for hole position. Select face up or face down manually to generate the correct model in case of software detection error.As shown in Figure 9.

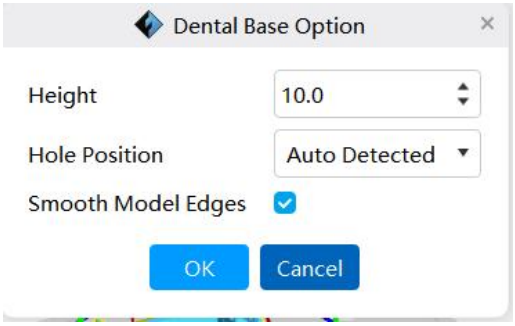

Figure 9 Interface diagram for generating height selection of dental mold base

2.2.9. Leading Hole

Drilling holes in the model allows uncured resin inside the hollow model to flow through the holes.

Click [Leading Hole], the interface icon toolbar changes, and the icon description is shown in the table below .Click [Hole options], the following interface will pop up.As shown in Figure 10.According to the need to choose the hole shape, hole diameter, hole depth and hole direction. The drilling direction can be used to limit the position and orientation of the hole. After clicking ok, you can directly punch holes in the model, and the holes will be displayed on the model with the same shape of green cylinder. After slicing, you can see the holes by pulling down the scroll bar on the right. When the interface is in the state of adding a hole, click the mouse to add a hole directly. When the interface is in the state of deleting holes, clicking the mouse will directly delete holes.

Punch setting icon toolbar Description:

	Hole Options：Click on the pop-up box to set the parameters. Modify the parameters to control the size and shape of the holes.
	Create Drain Holes：Click the [Create Drain Holes] model to dig the hole and leave the hole.
	Remove Holes：Clear the punch setting and all the holes will be cleared
	Back：Return to the main operation interface.

	Add：The model interface is in the state of adding holes.
	Delete：The model interface is in the state of deleting holes.

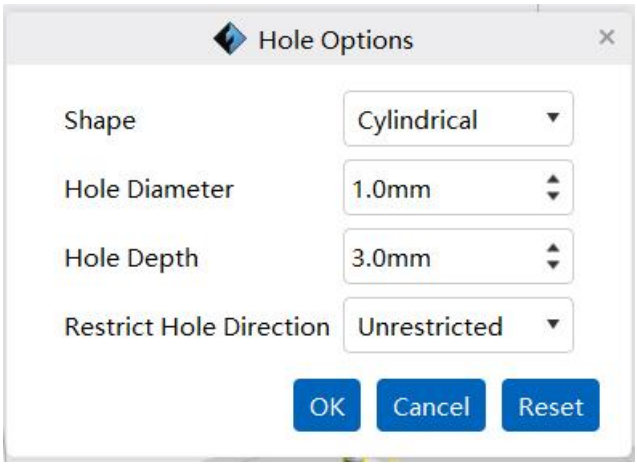

Figure 10　Punching options interface

2.2.10 Extrat shell

When selecting model, click [Edit]-[Extract shell] and set the extraction parameter. The precision refers to the roughness of the inner surface of the model. Then click [OK] and get a hollow model.As shown in Figure 11.

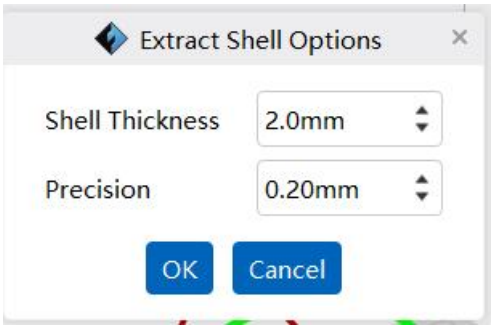

Figure 11 Shell drawing interface

2.3 View Menu

Click the menu bar -[View] and the following function appears, as shown in Figure 12.

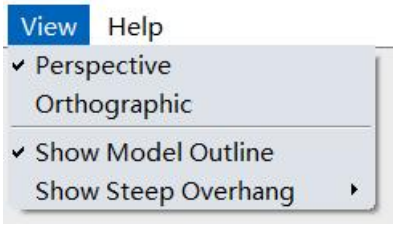

Figure 12 View the function page diagram

2.3.1 Perspective

The interface view displays the perspective status.

2.3.2 Orthographic

The interface view is in the orthogonal state.

2.3.3 Show Model Outline

Click to show model frame and a border line is displayed on the outside of the model.

2.3.4 Show Steep Overhang

After clicking, you can choose whether to display the steep surface of the model, and you can set the steep threshold to select the steep surface that displays different angles. This function can help determine whether to add support.

2.4 Help Menu

Click the menu bar -[Help] and the following function appears, as shown in Figure 13.

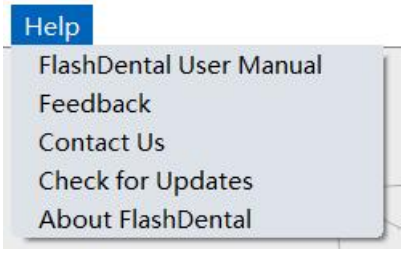

Figure 13 Help the function page diagram

2.4.1 FlashDental User Manual

Click [FlashDental User Manual] to check help document on line.

2.4.2. Feedback

Feedback on FlashDental can be provided in the pop-up window, and your valuable opinions will be sent to Flashforge technician's mailbox by email.

2.4.3 Contact Us

Click to [Contact Us], you can go to the Facebook interface to contact us.

2.4.4 Check for Updates

Click [Check for Updates] to check whether there is updatable software version. If there is updatable software version, users can download and install the newest version.

2.4.5 About FlashDental

Click [Help] - [About Flashdental] in the menu bar to display the information of the software, including the current software version, copyright and other information.

3 Icon Bar

3.1 Load

Loading function is as same as [Load] on the menu bar.

You can load a model file or Code file into your FlashDental by the following six methods:

- Method 1: Click the Load icon on the main interface. Then select the object file.
- Method 2: Select the file for loading and drag the file to the main interface of the software.
- Method 3: Click [File]--[Load File]. Then select the object file for loading.
- Method 4: Click [File]--[Sample Files] to load the example files
- Method 5: Click [File]--[Recent Files] to load the files opened recently.
- Method 6: Select and drag the target file to the icon of FlashDental.

When loading the model, if the model has broken faces, a prompt box will pop up, as shown in Figure 14. If you do not click repair, the dialog box will not disappear; After clicking repair, the model is automatically placed on the base plate.

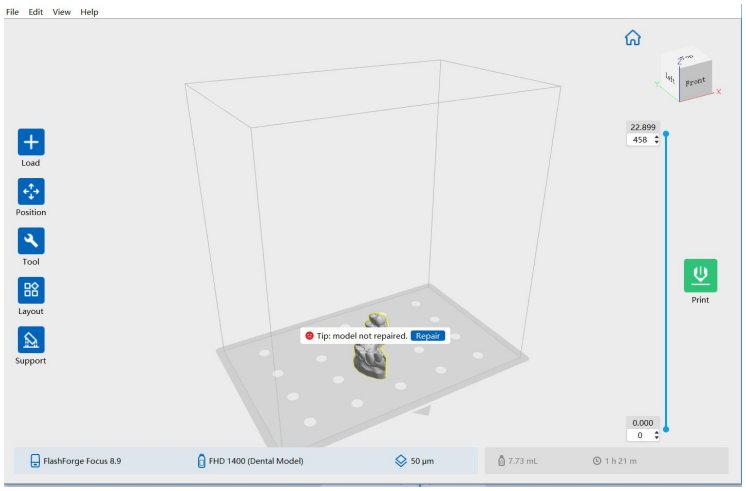

Figure 14 Load the broken surface model interface diagram

3.2 Position

Click the icon bar -[Position] to display the following function, as shown in Figure 15.

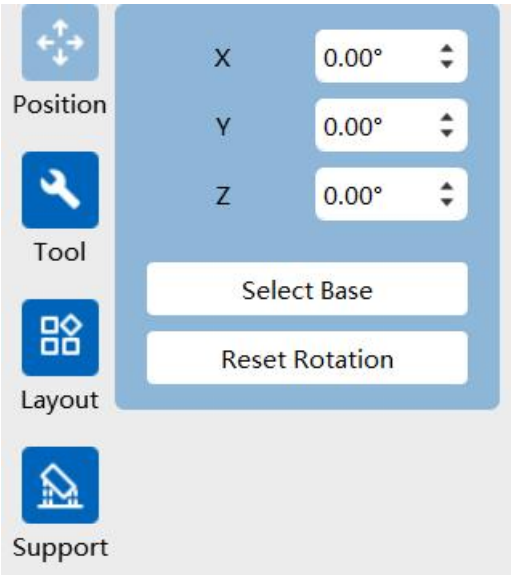

Figure 15 Position the function page diagram

Users can move, rotate and add support directly from the same interface when using Flashforge.If you need to move the model accurately, you can click the icon after selecting the model and set the coordinate position in the popup box. For multiple models, you can press CTRL to select all models and click[Select Base] to put the bottom model on the base plate as the benchmark; Click[Reset rotation] to undo the rotation and restore the model to its original state.

Note: In general, after adjusting the position of the model, you need to select the [Select Base] option in the move icon to ensure that the model is in the printing range and close to the printing platform.

3.3 Tool

Click the icon bar -[Tool], the following function appears, as shown in figure. 16.

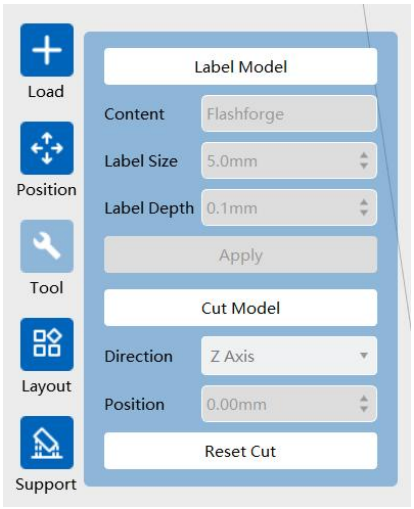

Figure 16 Tool the function page diagram

3.3.1 Font Model

The user can choose to add raised font continuously on the tooth mold. You can change the font height and bump height, as shown in Figure 17.

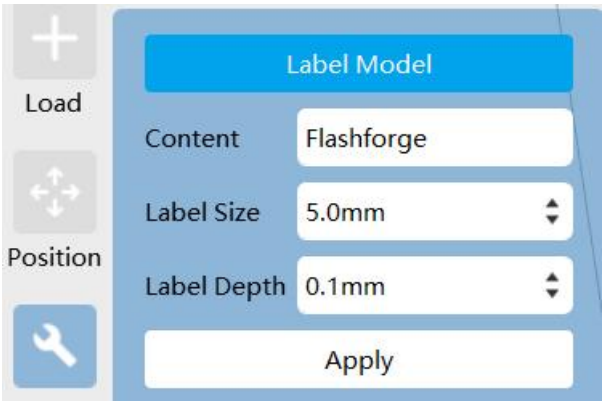

Figure 17 Font Model interface diagram

3.3.2 Cut Model

The cutting setting interface has three options: Direction, Position and reset cut. You can choose Draw With Mouse or X/Y/Z axis cutting in the cutting direction. In the cutting position can enter the value, can be accurately positioned to the specified position for cutting. After cutting, click [Reset cut] to cancel and restore the model to its original state.

① Draw with Mouse:

Draw the cutting line according to the user's requirements, and the system will

automatically generate the cutting surface. Rotate the viewing angle to see the cutting surface.As shown in Figure 18.

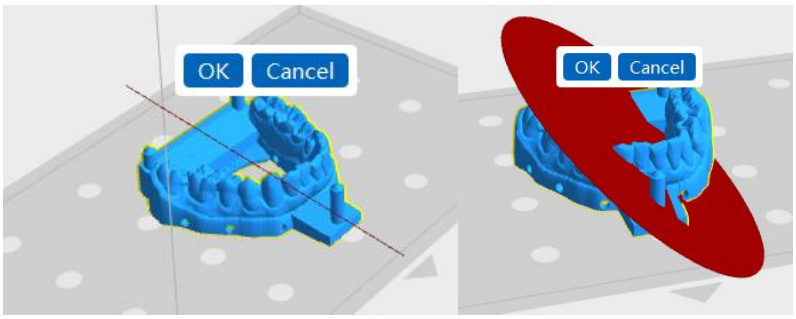

Figure 18 Mouse drawn cutting interface

② X Plane:As shown in Figure 19.

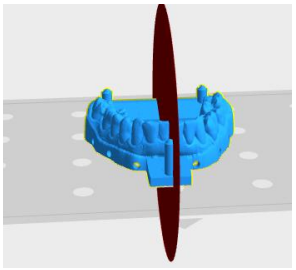

Figure 19 X plane cutting interface

③ Y Plane:As shown in Figure 20.

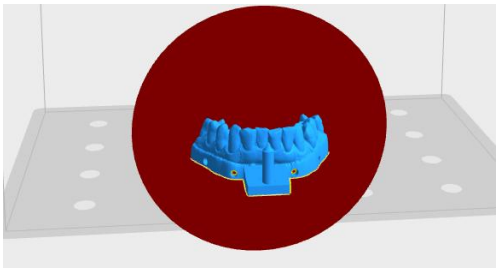

Figure 20 Y plane cutting interface

④ Z Plane:As shown in Figure 21.

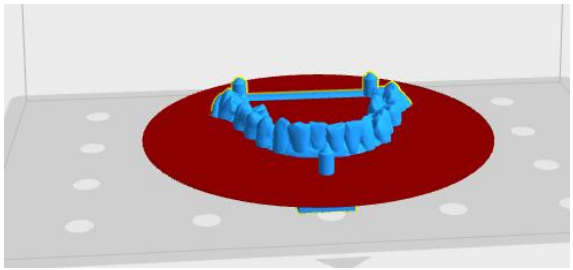

Figure 21 Z plane cutting interface

3.4 Layout

Click the icon bar -[Layout] to display the following function, as shown in figure 22.

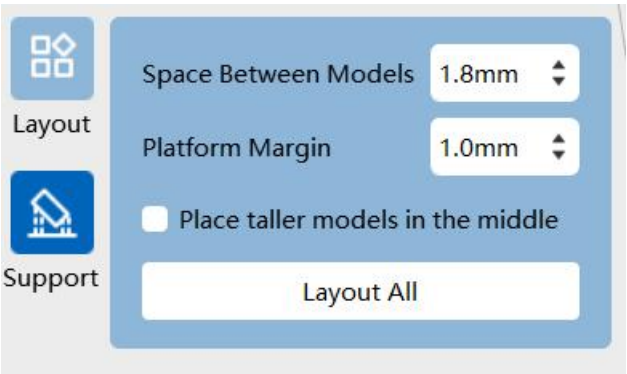

Figure 22 Layout the function page diagram

The layout is mainly set for the layout model. Users can choose to adjust the model spacing and platform margins to arrange the model in one click. Select [Place taller models in the middle], the model will be automatically placed according to the model with higher center.

3.5 Support

Click [Support], and the support option pops up, as shown in Figure 23.

Figure 23 Support the function page diagram

Users can set various support parameters according to the needs of the model to obtain strong support, so as to ensure the complete printing of the model.

3.5.1 Generate Support

Select the model, click [Support]-[Generate support], then only add support to the selected model;

3.5.2 Delete Support

Select the model, click [Support]-[Delete support], then only delete support to the selected model;

3.5.3 Base

The Base has three models to choose:model projection, rectangle and disable, the default is model projection, color deepen; When the corresponding lifting height is 0.0 mm, the base will not be added by default after the support is generated.

3.5.4 Density

Support density is divided into: lower, medium and high; The default is medium and the color is darker. The corresponding relationships are lower-4.0 mm, medium-3.0 mm, and high-2.0 mm.

3.5.5 Intensity

Support strength refers to the thickness of support, which is divided into: light, medium and heavy; The default is medium and the color is darker.

3.5.6 Lift Height

After setting the lifting height, click [Generate support], the model will generate support after lifting to the height set from the bottom plate.

3.5.7 Edit Supports

After clicking [Edit supports], click on the model to add support at the steep part of the model. Click on the original support, the support will be selected and turn from green to blue. Click again to delete the support.

3.5.8 Expert Mode

Click [Expert Mode], the interface as shown in figure. 24 will appear, enter the expert mode, support parameters can be adjusted, satisfactory support effect has been achieved. Click the [Expert mode] again and the secondary popover closes. An explanation of each option can be obtained by hovering the mouse over the corresponding option.

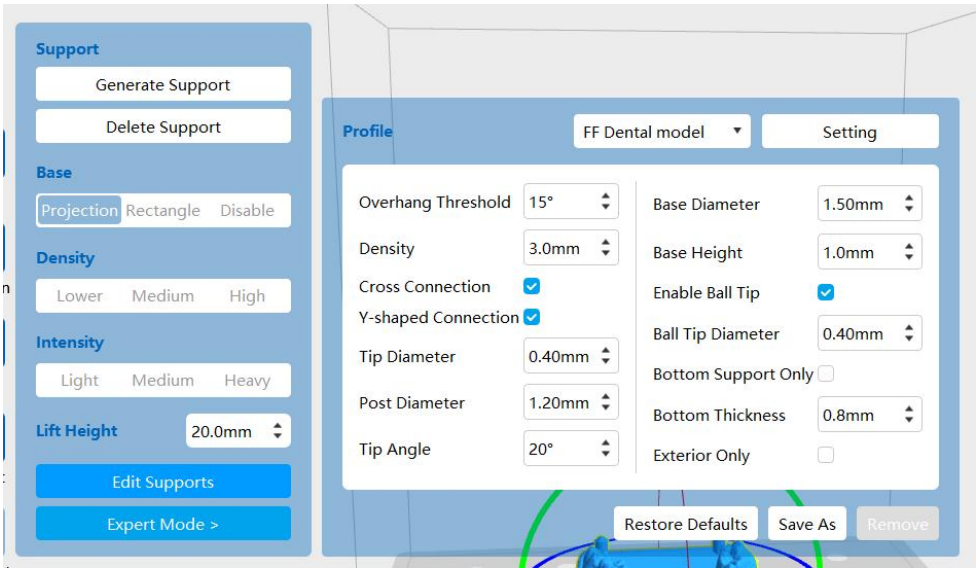

Figure 24 Expert mode interface diagram

- Profile

Users can directly use the support option in [Profile] to obtain the support setting experience of Flashforge with one click. These parameters are debugged by special models printed by special resin, which can help customers quickly grasp the method of setting support.

- Setting

There are four options: Import support profile, export current support profile, export all profile, and rename current profile

1) Import support profile: Users can import support configuration files to obtain support parameters.

2) Export current support profile: Support parameters of the selected model can be exported as a configuration file for the convenience of importing the support

configuration next time.

3) Export all profile: Support parameters of all models adjusted by users can be exported as a configuration file, which is convenient for importing support configurations next time.

4) Rename current profile: Click[rename current file], change the name of the configuration file in the window that is displayed, and click OK or cancel.

- Restore Defaults

Click [Restore Defaults] to restore the support parameters to the default parameters of the selected configuration file.

- Save As

Click [Save as] to save the current supporting parameters into a configuration file after entering a new configuration name, as shown in Figure 25. This file can be selected in the configuration file options.

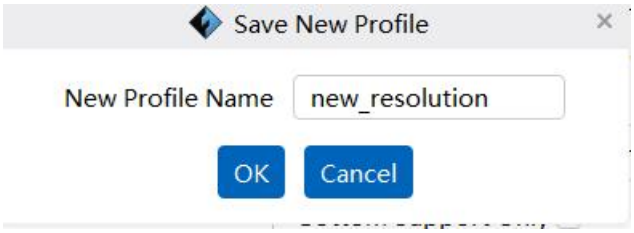

Figure 25 Save the new profile function page

- Remove

On the New Profile parameter screen, click Remove to delete the configuration file.

3.6 Print

Click the [Print] icon on the right of the interface, and the print option will pop up, as shown in Figure 26.

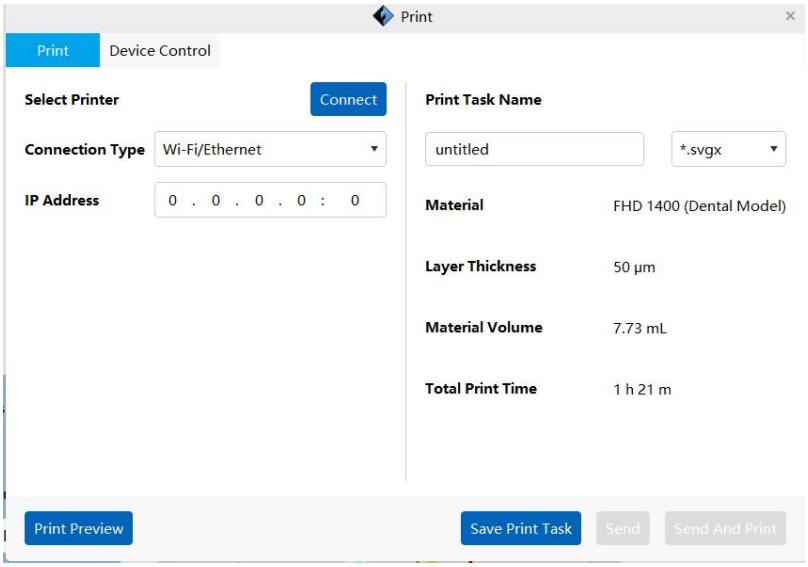

Figure 26 Print function options

3.6.1 Connect Machine

- Wi-Fi/Ethernet

a. Wi-Fi:Click the [Tool] button on the printer to connect the computer and printer to the same WiFi；Ethernet：Connect the Ethernet cable to the network port on the back of the printer.

b. Hunter: Click on [About] in the touch screen [Settings], Focus:Click on [Information] in the touch screen [System], and a string of IP addresses appear in the interface.

c. Click the [Print] icon on the right of the menu bar in the software. In the print dialog box that pops up, select the connection type [WiFi/ Ethernet], and enter the IP address displayed in the touch screen of the printer in the IP and port below [Connection Type].

d. Click [Connect],the connected machine and ITS IP address appear under the connection mode, as shown in Figure 27, indicating that the machine has been successfully connected.

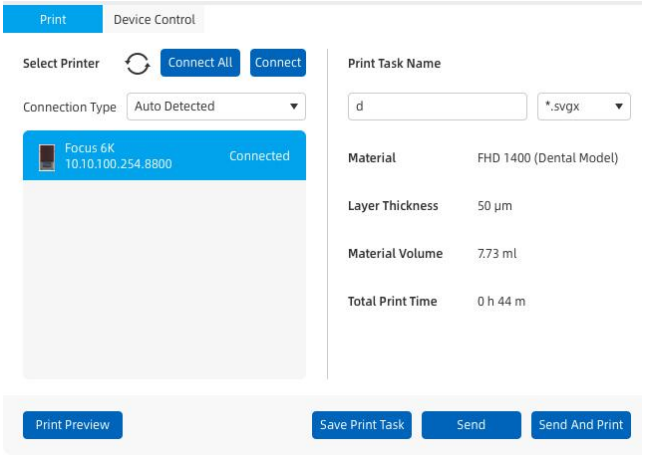

Figure 27 Interface diagram of successful connection

- Auto Detected

a. Click the [Tool] button on the printer to connect the computer and printer to the same WiFi.

b. Click the [Print] icon on the right of the menu bar in the software. In the pop-up print dialog box, select the connection mode [Auto Detected], and the connectable machine will appear, as shown in figure. 28.

c. Select a machine and click [Connect] or click [Connect All] to connect one machine or all machines. After successful connection, machine status information will appear in the list, such as: Idle, printing, occupied (depending on the actual state), as shown in Figure 29.

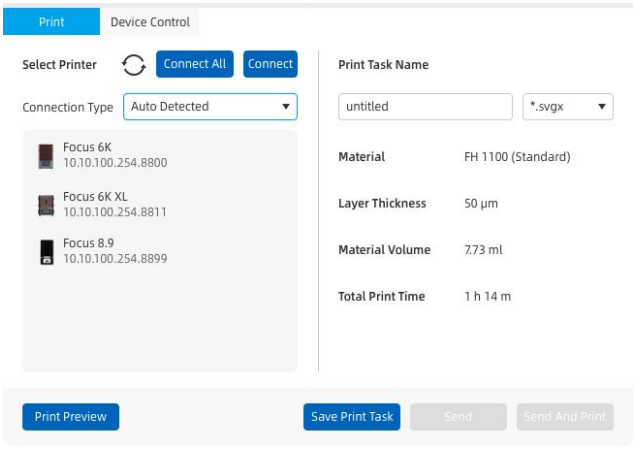

Figure 28 Automatic detection of machine interface diagram

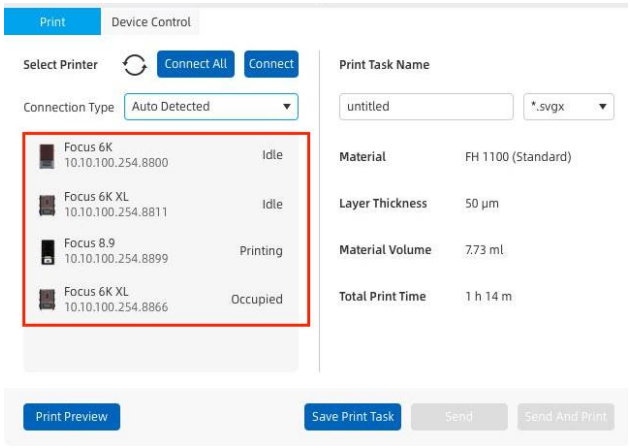

Figure 29 Machine interface diagram after successful connection

3.6.2 Disconnect

After connecting the machine, click [Device Control], the connected machine information will appear. Select the machine to be disconnected and click [Disconnect] in the lower right corner, as shown in figure 30, the machine will be disconnected.

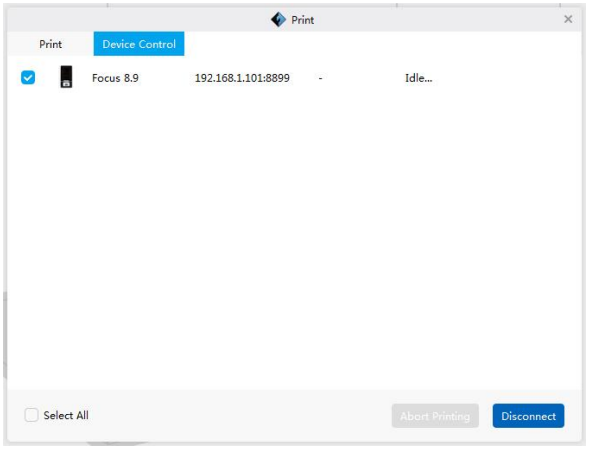

Figure 30 Disconnect the machine interface diagram

3.6.3 Print Task

On the right of the printing interface is the printing task bar, which previews printing information such as material consumption and predicted printing time. You can change the name of the print task and save the print task.

Click [Save Print Task], the save path pops up, and the section is completed; You can copy the file and print it using a USB flash drive.

You can click [Send and print] or just [send]; In this case, the file is directly sent to the terminal.

4、Bottom bar

4.1 Bottom menu

The left side of the bottom sidebar is the bottom menu bar, the current position of the menu bar is highlighted when the mouse hover, and the position of the menu bar is selected after clicking on it, and the printing task setting appears. Users can adjust various printing parameters to obtain a satisfactory model, as shown in figure 31.

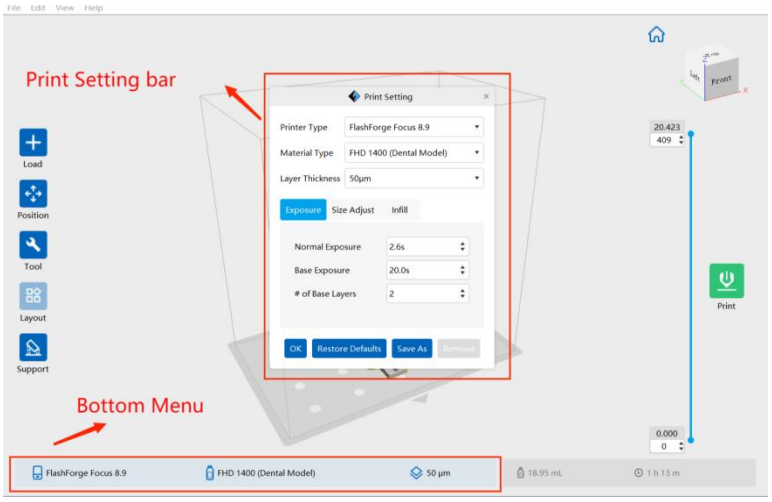

Figure 31 Bottom bar interface

4.1.1 Printer Type

Click [Printer Type] to display all models suitable for this software. Users can upgrade the software to learn more suitable for the dental field of flash casting light curing models.

4.1.2 Material Type

Include the recommended printing parameters of Flashforge resin and tested third party resin. We will gradually add the printing parameters of resin that has passed the official test. We also welcome customers to provide resin samples or printing parameters to improve dental printing application of Flashforge.

Since Flashforge curing 3D printer can be compatible with third-party resin, users can save the adjusted resin printing parameters as their own so as to facilitate direct printing next time.

4.1.3 Layer Thickness

The layer height is generally available at 25 μm、50 μm ang 100 μm. The layer height supported by this software is set to 10 μm-500 μm. Users can select [Custom Material] from the lowest material type to adjust the height Settings.

4.1.4 Exposure

- Normal Exposure

You can set the light time required for solidification of a layer of resin solution in the model. That is, the curing time of resin.

- Base Exposure

You can set the light time required for solidification of a layer resin solution of attached layer (whether setting bottom plate or not).

- Of Base Layers

The number of layers from the time of bottom plate to the time of model molding.

4.1.5 Size Adjust

- X Adjust

Adjust X-axis size according to the printed model size error before.

- Y Adjust

Adjust Y-axis size according to the printed model size error before.

- Outline Compensation

Adjust the whole size according to the printed model size error before, which is used to compensate for resin shrinkage under this print parameter setting.

4.1.6 Infill

- Bottom grid：off by default, users can manually open. If the user adds the bottom valve in the open state, a pop-up will appear when slicing "the bottom grid and the bottom valve function are both open, please confirm whether to continue slicing (yes/no)", as shown in Figure 32.

Figure 32 toolTip box

- Density: refers to the density of the mesh structure filled by the internal cavity after the filling function is selected. The higher the value, the denser the filling structure will be. The adjustment range is 40%-100%.
- Line Width:Refers to the thickness of grid lines after model hollowing operation. The larger the value, the larger the remaining cavity model thickness. You can directly enter the value in the input box to set the wall thickness, or you can adjust the parameter size by clicking the increase and decrease keys on the right. The adjustment range is 1mm~3mm.
- Bottom thickness: The thickness of the bottom of the model, the adjustment range is 0.5~2.0mm.

4.2 Material consumption and estimated time

The material consumption and estimated time of the bottom bar cannot be clicked, as shown in Figure 33, but the displayed parameters will change with the first three items (the bottom bar menu bar).

Figure 33 Material consumption and estimated time interface diagram

5、View Navigation

View navigation is located in the upper right corner of the main screen. As shown in Figure 34.

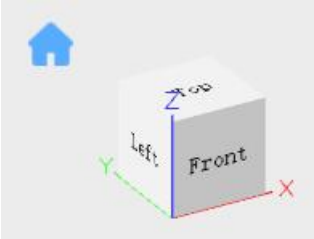

Figure 34View Navigation interface diagram

Click to provide the states of different views of the model:

- If you hover over a surface, the surface will be highlighted.
- Click the mouse, it is presented in this perspective.
- Hold the right mouse button, you can rotate the cube to other sides.
- Click the Home icon to return to the main view.

6、Layered preview

The layered preview bar is located on the right side of the main interface, and the model status of each layer can be observed by moving the upper and lower blocks of the layered preview bar.

When the upper slider is dragged down, the upper part gradually disappears, as shown in Figure 35.

When the sliding block is dragged upward, the lower part gradually disappears, as shown in Figure 36.

When the upper and lower blocks meet, they cannot wear each other.

When the slider moves, the number of layers and the height of the model are displayed in real time.

In addition, the number of layers can be changed by typing or clicking on the increment or subtraction symbol.

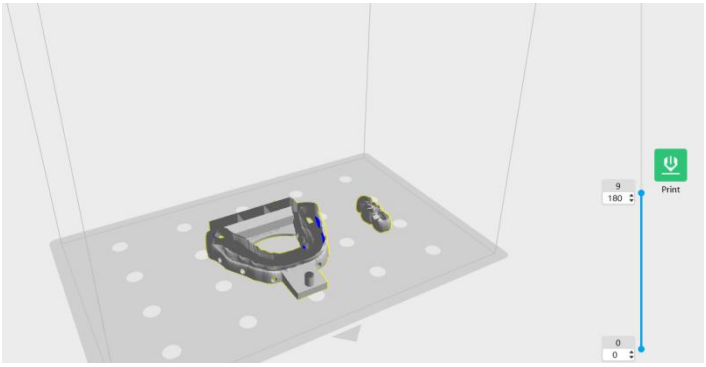

Figure 35 Move up slider interface diagram

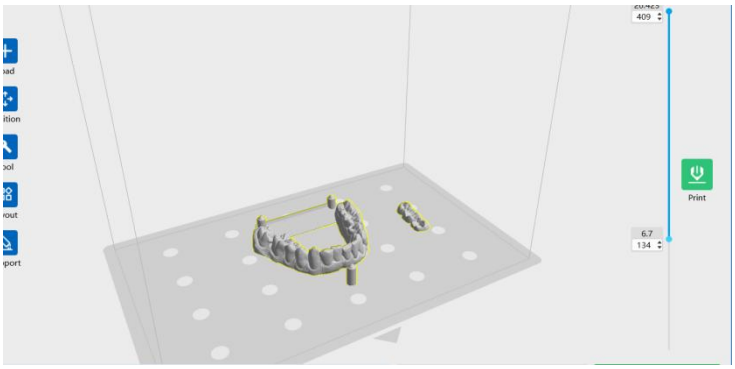

Figure 36 Move the slider interface below

Help and Support

You can visit our official website to search for solutions of problems; you can also contact us by phone or email. We put official videos on Youtube. You can also ask the sales representative for Flashforge dental solutions and related videos. We welcome your valuable comments on our products.

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