

# ORBIT

INKSMITH



## User Manual

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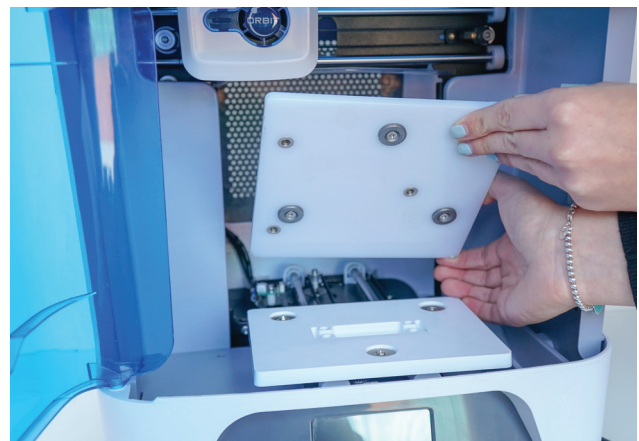
## 1.0 Orbit 3D Printer Setup Guide

**Step 1:** Unpack the printer, dismantle internal and external packaging, open the front door of the device, then remove its shockproof foam materials (three shockproof foam materials serve to fix nozzle module, XYZ axis and platform printing plate respectively);



**Step 2:** Put the printer on a flat, level surface and connect the power adapter as shown;

**Step 3:** Open the front door of the printer and take out the printing plate from the accessory box. Align the ABC magnetic points following the installation picture;



**Step 4:** Next, install the filament and feeding tube:

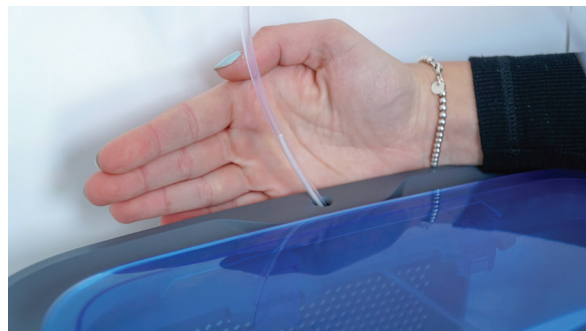
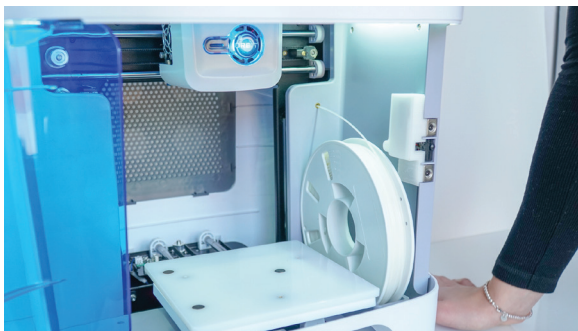
(A) Find the filament feeding tube inside the device (one end of which has been installed and fixed in the printer), thread the unfixed end through hole from inside the printer (as seen in the picture below).



(B) Take out the printer filament from the accessory box, dismantle internal and external package.

(C) The printer filament will be placed inside the printer, on the shelf on the right side.

(D) Feed the end of the filament into the hole of the feeding tube, from the inside of the printer. Push the filament through the feeding tube as seen in the picture below, continue pushing the filament until it comes out the end of the feeding tube. Then, take the end of the filament and insert it into the opening at the top of the print extruder.



## 2.0 Overview

### 2.1 Safety

The Orbit 3D printer must only use the power adapter provided, or it may damage the device or cause risk of fire.

To avoid burns or model distortion, please keep the printer door closed during operation. Please do not touch the model, nozzle, print platform or other parts of the device during operation.

We advise that you wear goggles when removing the support material. There may be a slight odor during printing, this is normal and occurs as a result of extruder melting the plastic filament. We advise you use the device in a well-ventilated environment. In addition, keep the printer door closed during printing in order to isolate the outside airflow, as it may have an impact on printing quality.

### 2.2 Protection Measures

- Keep the printer away from water, it can cause damage to the machine.
- Do not turn off the power or unplug the USB data connector during printing operation, or the model may fail to print.
- The normal room temperature for operation of Orbit 3D Printer is ranged from 5°C to 30°C. If beyond this range, the model's molding quality may be affected.

### 2.3 Getting Started with 3D Printing

The Orbit 3D printer uses FDM technology, or Fused Deposition Modeling. This type of technology uses a thermoplastic filament, which is heated to its melting point and then extruded, layer by layer, to create a three dimensional object

If you've never 3D printed before, there are three basic steps from start to finish. The first step is to obtain a 3D CAD model. You can design this model yourself using a CAD software like Tinkercad, or by downloading an open-source file from a website like Thingiverse. After you've obtained your 3D model file you need to 'slice' it. Slicing is a term used to describe the process of translating your model file into a language your 3D printer can understand. You can access InkSmith's Launchpad Slicing software free with your Orbit 3D printer. After your 3D model file has been sliced you can transfer it to your machine to print.

For more information about the basics of 3D printing you can download InkSmith's 3D Printing Guide at: <https://www.inksmith.co/3d-printing-guide>

## 3.0 Launchpad Slicing Software

### 3.1 Accessing Launchpad Slicing Software

The term 'slicing' describes the process of taking your completed 3D model and translating it into a language your 3D printer can understand. During this slicing process you can also change the scale, position, and orientation of your model as well as add any necessary supports.

Your Orbit 3D printer includes free access to InkSmith's Launchpad Slicing Software. This software is cloud-based and requires no downloading or installation.

To access Launchpad simply visit: [www.launchpad3d.com](http://www.launchpad3d.com)

### 3.2 Launchpad Quick Start Guide

1. Go to: [www.launchpad3d.ca](http://www.launchpad3d.ca) to access the Launchpad Slicing software.
2. Once the program loads, there will be a default file pre-loaded on the bed. Select the object on the bed (it will turn green when selected) and then press delete on your keyboard.
3. Next, you will need to upload your .STL file to Launchpad. To do this, click the "Add File" button in the top right hand corner of the screen.
4. Locate the .STL file from your computer and click "Choose" to upload the file to Launchpad. The file will appear on the bed in the orientation in which it was designed.
5. Once you have uploaded your file to the Launchpad software you can now begin preparing the file to print.
6. When you are you finished preparing your file you can slice it print by click the "Print" button in the upper right-hand corner. Click the "Download Print File" button to download the file to your computer. This file can then be transferred to your 3D printer.

### 3.3 Launchpad Tools



**Arrange:** Click on the object to move it around the bed. Click and drag to change your viewpoint manually.



**Preview:** Preview your sliced file. Using the 'print progress slider' you can see the progression of the printer's tool path. This function gives you an exact preview how your file will print. This function is useful to prevent printing failures that occur as a result of poor supports or incorrect orientation.



**View:** This function allows you to quickly choose which angle or orientation you are viewing the print bed from.



**Duplicate:** The duplicate functions allows you to create multiple print files without needing to upload a new file. To duplicate an object, select it (it will turn green), then click the "Duplicate" button. Launchpad will allow you to duplicate your files as many times as you want, so long as they all fit on the bed space.



**Scale:** This tool allows you to increase or decrease the size of your object. It is important to ensure that "Uniform Scaling" is selected to ensure the object scales evenly and does not become distorted.



**Rotate:** Rotation, in degrees, allows you to change the orientation of your object. This step is important in order to ensure the maximum surface area of the object is on the bed.



**Delete:** To delete an object, select it (it will turn green), and hit delete to remove it from the bed.

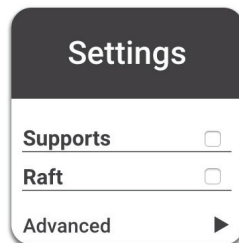


**Help:** Use the "Help" button to find more information on the Launchpad software.

In addition to the tool menu, Launchpad also has a Settings Menu and a Printing Menu. Both of these menus can be accessed on the right-hand side of the Launchpad interface.

### Settings Menu

- **Supports:** Enabling supports will automatically generate support structures on your object where they are needed.
- **Raft:** Enabling rafts will automatically generate a raft structure underneath your print in order to ensure maximum surface area is achieved. A raft is a thin layer of print material which is used to increase the surface area of the object and ensure stability.
- **Advanced Settings:** Accessing the “Advanced Menu” will allow you to control specific variables such as, bed temperature, extruder temperature, layer thickness, etc. These variables should only be modified by advanced users.



### Printing Menu

- **Devices:** The “Devices” menu allows you to select which 3D printer you are using. It is important to select the correct 3D printer as the print settings and bed size vary between different machines.
- **Add File:** The “Add File” function allow you to select and upload your print files to the Launchpad software.
- **Print:** Clicking the “Print” button will prompt a pop-up where you can view the file output information. Here you can change the file name as well as see the file size, estimated filament usage, and approximate print time. The file output pop-up is also where you can download the .gcode file to transfer to your printer.

Devices Add File Print



### 3.4 Launchpad Slicing Checklist

When slicing an .STL file for 3D printing there are a few necessary steps you should follow to ensure a successful print.


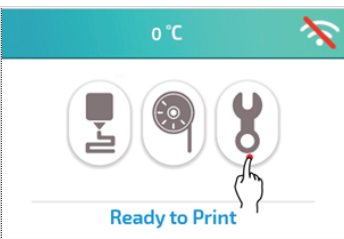
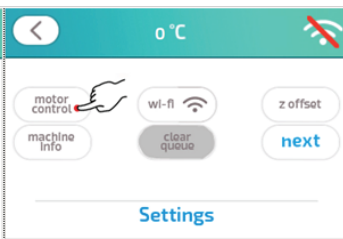
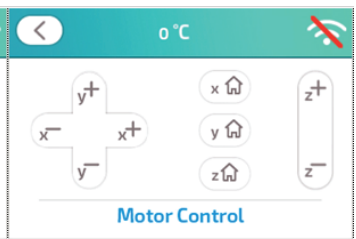
- **Correct Device Selected:** It is important to ensure the proper 3D printer is selected under the “Devices” menu. Each 3D printer is different, therefore if the wrong device is selected an error message will appear when attempting to print your file.
- **Print File Loaded:** An .STL file format is the only acceptable file type that can be uploaded to the Launchpad software.
- **Correct Orientation:** With all 3D printed objects, it is extremely important to ensure there is the maximum amount of surface area face down on the bed. The more surface area on the bed, the more stable and adhered your object will be. The correct orientation for your object is whichever side has the most surface area flat on the bed.
- **Appropriate Supports Added:** Supports are useful for objects where there is overhang or poor bed adhesion. For an object where there is overhang, select the “Support” feature in Launchpad. For objects that have few contact points on the bed (i.e. poor surface area distribution), select the “Raft” feature, this will create a more stable base as well as increase adhesion to the bed.
- **File Previewed:** Use the “Preview” function to check the tool path of the printer. Here you can see exactly how the file will be printed. This feature is useful for identifying where any additional supports may be needed and what the print will look like start to finish.
- **Print File Downloaded:** After all of the previous steps have been completed, you can download the print file. Once downloaded, the file will be located in your Downloads folder. For Cubicon printers the file extension will be “.hvs”, for the InkSmith Orbit printer the file extension will be “.gsd”. Now your print file is ready to be transferred via USB drive to your 3D printer.

## 4.0 Basic Printer Functions

The following are basic functions of the Orbit 3D printer along with the scenarios where these functions may be required.


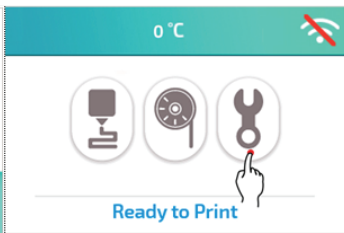
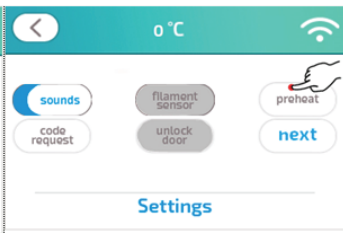
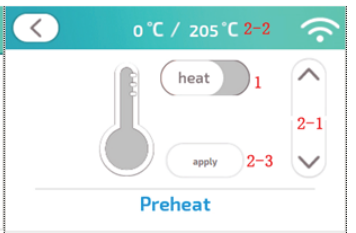
### 4.1 Motor Control Function

The motor control function can be used to manually adjust the print bed or extruder.

			
<p>Step 1: Turn the printer on using the switch on the bottom right of the printer. Click the "HOME" icon to enter the home page once the LED and touch screen have lit up</p>	<p>Step 2: Click this icon to enter "settings" page.</p>	<p>Step 3: Click this "motor control" to enter the motor control page.</p>	<p>Step4: On this page, you can adjust the coordinates of the print bed, print head, and platform.</p>


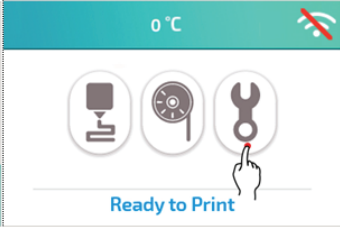
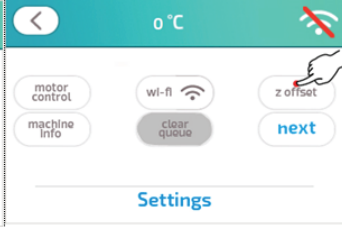
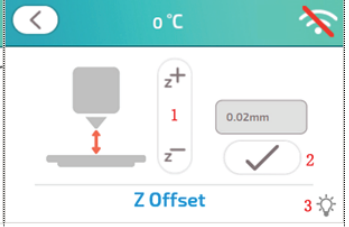
### 4.2 Nozzle Preheat Function

The nozzle preheat function is used to manually adjust the printing temperature of the nozzle. This function can be used when changing print material or during maintenance and replacement of the nozzle.

			
<p>Step 1 : Turn the printer on using the switch on the bottom right of the printer. Click the "HOME" icon to enter the home page once the LED and touch screen have lit up.</p>	<p>Step 2 : Click this icon to enter the "settings" page.</p>	<p>Step 3: Click "preheat".</p>	<p>Step 4: Manage the preheat on this page:                      (1) Use the switch 1 to start or finish heating.                      (2) Reset the temperature for preheat by clicking the up and down arrows( 2-1 in the picture). The number at the top( 2-2 in the picture) displays the temperature you are setting. Click apply( 2-3 in the picture) to set the temperature.</p>


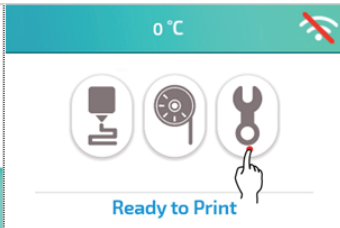
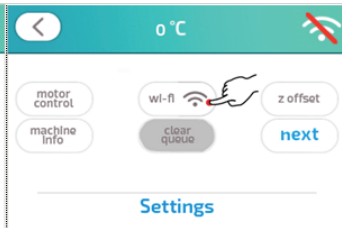
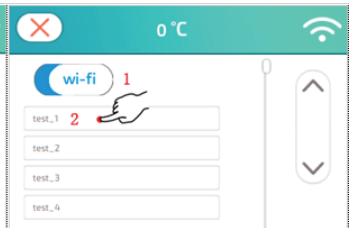
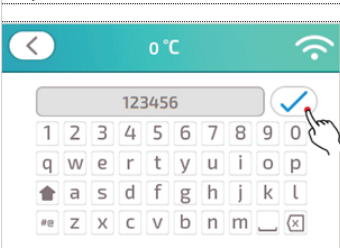
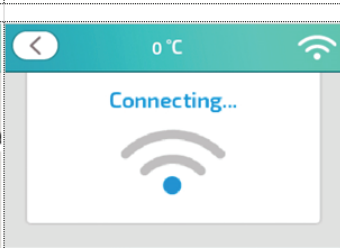
### 4.3 Platform Offset Value Function

The "platform offset value" function can be used to manually set the height of the nozzle from the platform. This function may also be used to readjust the height of the nozzle from the platform when it deviates from the set value.

			
<p>Step 1 : Turn the printer on using the switch on the bottom right of the printer. Click the "HOME" icon to enter the home page once the LED and touch screen have lit up.</p>	<p>Step 2 : Click this icon to enter "settings" page.</p>	<p>Step 3: Click "z offset".</p>	<p>Step 4 : Ajust the offset for Z axis:                  (1) If the nozzle is too close to the print bed, e.g. the nozzle is scratching the print bed when printing. Click "z+" to raise the value until the proper distance between the print bed and nozzle has been reached. Then click "√".                  (2) If the print bed is too far from the nozzle when printing, click "z-" until the proper distance between the print bed and nozzle is reached. Then click "√".</p>


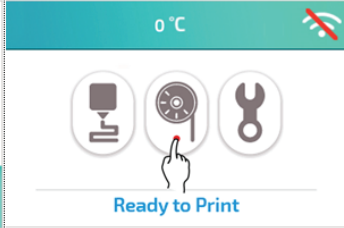
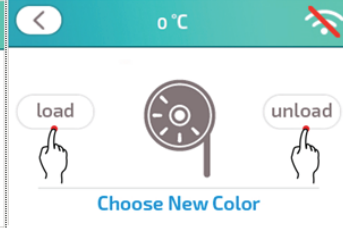
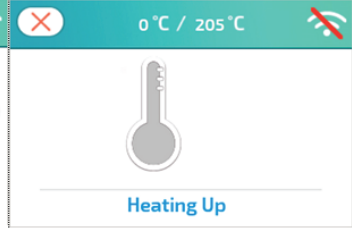
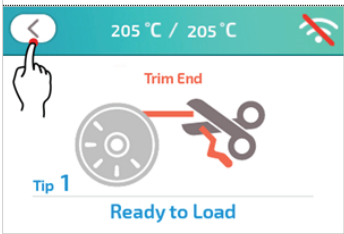
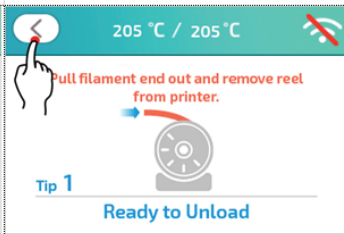
### 4.4 WiFi Funtion

The Orbit 3D printer uses a WiFi connection to update and load firmware as well as print wirelessly with cloud printing applications. To connect your printer to a WiFi network, please follow the instructions below.

			
<p>Step 1: Turn the printer on using the switch on the bottom right of the printer. Click the "HOME" icon to enter the home page once the LED and touch screen have lit up.</p>	<p>Step 2: Click this icon to enter the "settings" page.</p>	<p>Step 3: Click this icon to enter the Wi-Fi page.</p>	<p>Step 4: Turn the wi-fi function on by clicking icon 1. Then Choose an available Wi-Fi network to connect to from the list.</p>
			
<p>Step 5: Input the password of the chosen Wi-Fi Network. You can use the included PLA handy tool to operate the keyboard. Click "√" after entering the password.</p>	<p>Step 6: The Einstart-C is connecting to the Wi-Fi. It will prompt you once it has connected. Once connected, you can click the back icon on the top left corner to return to the operations menu.</p>		

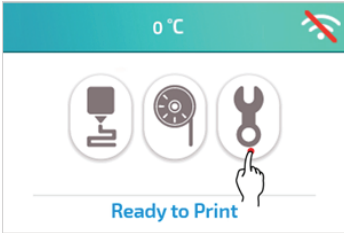
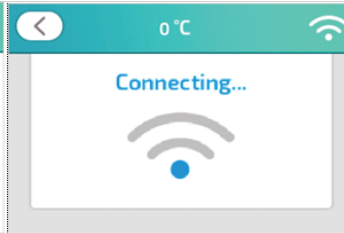
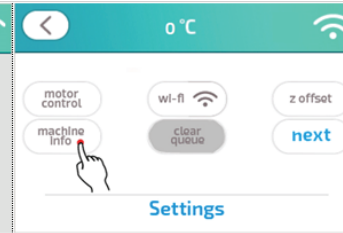
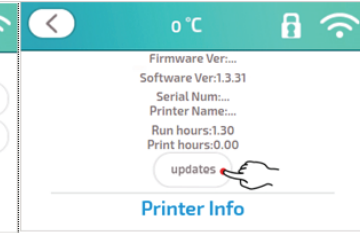
### 4.5 Material Management Function

The Material Management function is used during the loading and unloading process of filament. Loading and unloading is performed when the filament material is changed or during a print to change the colour of the filament.

	 <p>Ready to Print</p>	 <p>Choose New Color</p>	 <p>Heating Up</p>
<p>Step 1: Turn the printer on using the switch on the bottom right of the printer. Click the "HOME" icon to enter the home page once the LED and touch screen have lit up.</p>	<p>Step 2: Click this icon to enter filament management page.</p>	<p>Step 3: Click "load" to load the filament or "unload" to unload the filament according to user need.</p>	<p>Step 4: When either "load" or "unload" are selected, the extruder will begin heating up. No further action is required until the temperature is reached.</p>
 <p>Tip 1 Ready to Load</p>	 <p>Tip 1 Ready to Unload</p>		
<p>Step 5: When the target temperature is reached, the page will prompt the user to install filament for "Load" or pull out the filament to "unload". WARNING: The extruder's operating temperature is very high. To avoid injury, Do Not touch the nozzle during loading or unloading.</p>			

### 4.6 Firmware Update Function

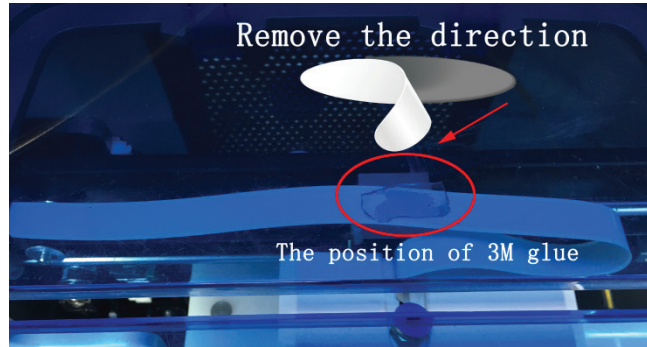
As soon as your printer is connected to WiFi, the device will automatically retrieve the latest firmware updates. It is recommended that you keep your device up to date with the latest firmware to ensure the performance of your printer.

 <p>Ready to Print</p>	 <p>Connecting...</p>	 <p>Settings</p>	 <p>Printer Info</p>
<p>Step 1: Click this icon to enter the "settings" page.</p>	<p>Step 2: Connect your printer to a Wi-Fi network.</p>	<p>Step 3: Click "machine info" in the "Settings" page.</p>	<p>Step 4: This page shows the information of the printer, including the current firmware version, current software version, serial number and running hours, etc. Click "updates" and the printer will detect and update automatically. The icon "updates" is not available unless you are connected to Wi-Fi</p>

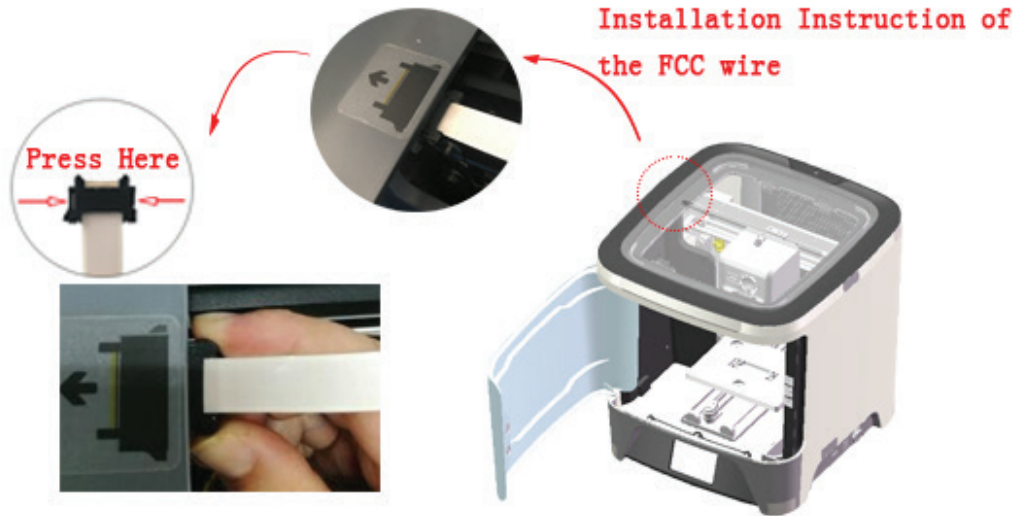
### 4.7 Extruder Disassembly

The extruder of the Orbit 3D printer is removable for easy maintenance and cleaning.

(1) Open the top cover plate of the device, remove the 3M glue that holds the top cover plate and FCC wire harness. Notice that it needs to be removed from right to left with care and keep the FCC wire harness from being pulled out from the installation card slot;



(2) Press and pull out the plug of the extruder's FFC wire from the socket at the left side of the device's top cover;



(3) After taking out the FFC wire, grab the two sides of the extruder and lift the whole module gently to remove it from the machine.

Grab two sides of the nozzle by hands, lift the whole nozzle gently



Nozzle can be removed from the machine

Please note: to reassemble the printer extruder, follow these steps in reverse.

### 4.8 Pre-saved Prints

Pre-saved prints are files that have saved locally on the printer’s internal memory. To access and print these files, follow the steps below.

<p>Step 1: Turn the printer on using the switch on the bottom right of the printer. Click the "HOME" icon to enter the home page once the LED and touch screen have lit up.</p>	<p>Step 2: Click this icon to enter the print page.</p>	<p>Step 3: Click this icon to enter local file page.</p>	<p>Step 4: Choose one of the pre-saved files to print.</p>
<p>Step 5: Once the file is ready you will be prompted to continue. Click this icon to start printing.</p>	<p>Step 6: The printer will check the bed level once you start printing. No additional operation is required.</p>	<p>Step 7: The printer will start to heat up once the leveling is completed. Once the target temperature is reached, the print will begin.</p>	<p>Step 8: Wait until the print is completed. When the print is completed, use the scraper to assist with removal of the piece.</p>

### 4.9 USB Drive Print

It is recommended that you use a USB drive for transferring files to the Orbit for printing.

<p>Ready to Print</p>	<p>Let's make things!</p>		
<p>Step 1: Click this icon to enter the print page.</p>	<p>Step 2: Click the USB icon to print from your USB flash drive.</p>	<p>Step 3: Connect the USB flash drive, containing gsd file, to the printer.</p>	<p>Step 4: Choose the file you want to print. The printer will copy the file you chose into local storage. After that, you can unplug the USB flash drive for other usage.</p>
<p>Do you want to print?</p>	<p>Preparing to Print</p>	<p>Printer Heating Up</p>	<p>Printing</p>
<p>Step 5: Once the copy is done you will be prompted to continue. Click this icon to start printing.</p>	<p>Step 6: The printer will check the bed level once you start printing. No additional operation is required.</p>	<p>Step 7: The printer will start to heat up once the leveling is completed. Once the target temperature is reached, the print will begin.</p>	<p>Step 8: Once the print is completed (the percentage reaches 100%), use the scraper to assist with the removal of the printed piece.</p>

### 4.10 Last Print

When printing more than one of the same model, users can use the "Last Print" function to quickly repeat the previous print.

<p>Ready to Print</p>	<p>Let's make things!</p>	<p>Copying File</p>	<p>Do you want to print?</p>
<p>Step 1: Click this icon to enter the print page.</p>	<p>Step 2: Click this icon to print the latest model you printed.</p>	<p>Step 3: The Orbit 3D Printer download the print file you printed last time. If the printer was reset or is in its initial use, no file will be detected in this function.</p>	<p>Step 4: Once the copy is done you will be prompted to continue. Click this icon to start printing.</p>
<p>Preparing to Print</p>	<p>Printer Heating Up</p>	<p>Printing</p>	
<p>Step 5: The printer will check the bed level once you start printing. No additional operation is required.</p>	<p>Step 6: The printer will start to heat up once the leveling is completed. Once the target temperature is reached, the print will begin.</p>	<p>Step 7: Once the print is completed (the percentage reaches 100%), use the scraper to assist with the removal of the printed piece.</p>	

## 5.0 Printer Maintenance

### 5.1 Printer Operating Environment

Please ensure that the printer is positioned on a flat, stable platform. It is also important to ensure there are no obstructions that could cause the filament bowden tube to become tangled.

### 5.2 Importance of a Clean Operating Environment

It is important to have a printing environment that is clear of dust or other debris that may cause unnecessary damage to the printer. Excess dirt and dust can result in poor lubrication of the printing platform which could cause the platform to become jammed.

### 5.3 Replacing Filament

When the printing filament is nearing the end of the roll, it is recommended that it be replaced before it is completely used up. If the remaining end of the printing filament is taken into the printer it may become difficult to replace or remove. For this reason, it is suggested that you replace the filament roll before it completely runs out.

### 5.4 Loading Filament

When loading filament into the printer it is important to ensure the end is cut with a sharp, straight edge and inserted into the open hole on the extruder. After the filament is inserted, the printer will need to heat the nozzle to the correct temperature before extruding any filament. Once the correct temperature has been reached, the printer will extrude the plastic filament.

### 5.5 STL Data File Considerations

The printer slicing software 3Dstar, only supports .STL file types. All print models imported into the software must be saved as .STL file types.

### 5.6 Print Platform Consideration

Before each print, it is important to ensure that the print bed is flat and connected with the three magnetic points. If the print bed is still not completely level, it can be manually adjusted using the "Motor Control Function" found in Section 4.1.

### 5.7 Maintenance of guide rail

The Orbit printer extruder operates on four primary guide rails to move the print bed. These rails come lubricated from the manufacturer but will need to be re-lubricated over time. Ideally the guide rails should be lubricated once per year.



## 6.0 Troubleshooting

### 6.1 Filament gets stuck during printing

If your print extruder is making a clicking noise and failing to extrude any plastic, the filament may be stuck. To fix this, release the filament from the extruder, then trim the end of the filament to ensure a flat, sharp edge then re-insert it. If there is still a clicking sound and there is no extrusion you may need to remove the printer's nozzle module and clean it.

### 6.2 Setting the height of the platform

If your extruder is not printing flat on the bed, or there are nozzle scratches on the printing platform you may need to manually adjust the height of the platform, the Z-axis. If the distance between the platform and nozzle is greater than 2 mm, you need to set the Z-axis height, to do this, please refer to section 4.3 of this manual.

### 6.3 The filament layer does not stick to the print bed

If you find that your print model is not sticking to the bed or the model has curled up edges you can try adjusting the "peel off factor" in the 3dStar software to improve this. The peel off factor is a setting that affects how firmly the first layer adheres to the print bed - a lower value will allow the print to adhere more firmly. It is recommended to try adjusting the settings by small increments and testing each to determine the best possible result. You can also try increasing the nozzle temperature by 5-10° which can help to ensure good adhesion.

### 6.4 Filament clog

Filament may become clogged in the extruder nozzle for a variety of reasons. If this occurs, remove any excess plastic filament from the outside of the extruder. You may also wish to heat the extruder up to printing temperature and use a brass brush to remove any excess filament.

### 6.5 The USB drive cannot be read

If the printer fails to recognize the file on your USB drive, please ensure it is in the correct .gsd file format. Once you have the correct file format you can select the desired file on the printer and the file will be copied onto the device. After the file has been copied you can remove the USB file.

### 6.6 Poor or uneven surface quality

If you find that the surface quality of your print is uneven or thicker in some spots and thinner in others your extruder may be having trouble pulling in filament. If the filament reel becomes tangled the extruder will not be able to extrude any plastic, thus resulting in thin or uneven layers. To prevent this, ensure the filament reel is not tangled. Additionally, you can check the lubrication of the print bed by moving it manually on the X and Y-axes. If the guide rails on the print bed do not move smoothly there may be a build up of filament extruded on the platform. To fix this, lubricate the platform guide rails.

## 6.0 Troubleshooting

### 6.7 Limit switch is broken











At the end of each X-axis and Y-axis guide rails there is a limit switch that detects when the print platform is at the end of the track. This switch may become broken during cleaning or transportation of the printer. If this switch is broken you may hear a noise when the printer is turned off. If this occurs, the limit switch will need to be replaced.

### 6.8 USB drive cannot be recognized

If the printer is unable to recognize your USB drive, first pull the drive out and try reinserting. If this still does not work, try restarting the printer and trying again.

## 7.0 Index

### 7.1 List of products and accessories

Picture										
Productname	3D printer	Printing platform	Printer consumables	USB drive	Print wire feeding tube	Power line	Power adapter	USB cable	Scraper knife	Wirefeedingtoolfork uick disassembly
Material/type	Orbit 3D Printer	Acrylic	250g/roll PLA	4G	Length 60cm	Output19V/4.95A		USB data transmission	General specification	PLA print
Number	One	One	One	One	One	One	One	One	One	One

### 7.2 Product Specifications

Parameters	
Product model	Orbit 3D Printer
Print technology	FDM
External dimension (mm)	364mm×386mm×380mm
Molding size (mm)	153mm×153mm×153mm
Slice thickness (mm)	0.1/0.15/0.2/0.25/0.4
Print speed (mm/s)	60-200 mm/s
Nozzle diameter(mm)	0.4mm
AC Input	100-240V, AC 50-60Hz
Power voltage	19V
Printing supplies	1.75mmPLA
Display screen	3.5 inch Color Touch Screen
Local memory	4GB
Data transmission mode	Thumb drive,USB Cable,Wi-Fi
Slice software	3dStar
File format	STL、GSD
Leveling method	Fully Automatic Leveling
Nozzle number	1
Door lock detection	YES
Process prompt	YES
Smart child lock	YES
Support system	Mac,Win7 and above