

Cubicon Single (3DP-110F)

Operation Manual






- Please read the safety cautions carefully before using the product, and use the product appropriately.
 - This document is provided to ensure the safety of users and to prevent property damage.
 - This device complies with part 15 of the FCC rules. Operation is subject to the condition that this Device does not cause harmful interference.
 - The operation manual may be changed when necessary for a product upgrade.
- Please refer to the Cubicon homepage (www.3dcubicon.com) to download this document.

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Symbols used in the operation manual

	Warning: Serious injury or property loss may result if the instruction is not followed.
	Caution: Minor injury or property damage may result if the instruction is not followed.
	Note: Indicates a useful tip or additional information.
[]	This shows the buttons to be clicked.
{..>..}	This shows the tree structure in the LCD menu.

1. Safety Caution

Please read this 'Safety Caution' before using the printer and always follow the guideline provided. This guideline is provided to ensure the safety of users, prevent the injury of third parties and prevent damage to the printer.

Failure to follow this guideline may lead to serious injuries or printer damage.



Since the printer generates a high level of heat during operation, there is the risk of burning if you place your finger or another part of your body or fixtures inside the printer during operation. Place the body part or fixtures only after the operation is terminated and the printer has been sufficiently cooled.



The printer has a number of moving parts, including the motor, belt and gear. There is the risk of injury or property damage from being trapped if a body part or fixtures are placed inside the printer during an operation.



Penetration of water or other liquids as well as the metal pieces or other conductive foreign substances inside the printer can cause fire or electric shock. Please take care to avoid operating the printer with wet hands, as this can cause fire or electric shock.



Select the installation site carefully to avoid causing injury to children or pets. Children or pets must be observed and protected carefully if they are near the printer.



The printer and its parts have sharp edges. Be careful to avoid injury or printer damage.



Since the filament used in the printer can cause fire or injury, do not heat it or deform it with another piece of equipment. Carefully handle the outputs and filament scraps, as swallowing them can cause suffocation, etc.



Never use a volatile substance with the printer, as it can cause a fire or explosion. In addition, remove ignition materials or flammable materials around the printer as they can cause fire.



The printer uses a high brightness LED for illumination. Do not look at it directly in order to protect your eyes.



Do not destroy or alter the printer's power cable or USB cable, and make sure that only the rated voltage is supplied.



To move the printer, stop the printer operation and disconnect the power cable and USB cable after the internal parts are sufficiently cooled and the printer is turned off.



Do not place a filament or object in an empty space inside the printer, as it can cause printer damage and fire.



Do not turn off the power while the heated bed or extruder is heated up. Because the cooling fan is not spinning the print may be broken down or fire may occur by high temperatures.



The cooling fan is not spinning equipment failure or fire may occur by high temperatures.



Do not install the printer outdoors or in a vibrating, humid or dusty area.



Do not install the printer in an unstable or uneven surface. In addition, please take care to remove any object that may be damaged by the heat or vibration generated by the printer's operation.



If an unauthorized filament or part is used with the printer, it may damage the product and/or violate the conditions of the product warranty. Any problem caused as a result will not be covered by the warranty.



Do not disassemble or alter the printer except as specified in the Operation Manual, as it may cause the injury or printer damage. Any problem caused as a result will not be covered by the warranty.



Do not apply excessive force or impact to the printer, as it may cause injury or printer damage. Read the caution in the Operation Manual carefully before using the printer.

2. Directions for use

Please read thoroughly “Directions for use” prior to the printing and comply with it. It contains the most importance things from operation manual and therefore you should comply with it to prevent the printer failure or deterioration of printed object. If you do not follow this direction, it causes the serious problem on print quality of printed object or damage on the printer.

Filament	<p>Please use the authorized filament which HyVISION SYSTEM provides. * It is excluded from warranty in case of the breakdown caused by using 3rd party filament.</p> <p>Please use the unsealed filament spool as soon as possible. Keep your filament tightly wound on the spool and sealed. * Using contaminated filament by humidity and dirty can cause the breakdown of printer and printing quality problem.</p>
Mounting and Dismounting of filament spool	<p>After mounting the filament considering the spool rotation/ insertion direction, assure if the spool door is closed. Make sure if the filament is loosened on the spool during dismounting it.</p>
Replacement of Filament Loading & Unloading	<p>Take notice of Extruder temperature setting. * If the extruder temperatures are not set properly, nozzle blockage and filament grinding can be occurred.</p> <p>When exchanging the new filament, take notice of Extruder temperature setting and remove residuals inside of nozzle</p>
Temperature condition of Extruder(Nozzle) and Heated bed.	<p>Heat up the extruder (nozzle)/ heated bed to fit the proper temperature of filament. * The printing quality can be improved by configuration of optimal value acquired through user experience.</p> <p>In case the temperature of filament is out of proper temperature range, bad printing quality and breakdown of the printer such as carbonization, extruding failure, grinding, and warping. Remove the print object after the heated bed cools down accordingly.</p>
Cleaning of Extruder and Nozzle	<p>Regular maintenance of extruder condition and cleaning. * The replacement of worn nozzles (Grinding) due to normal use is excluded from the warranty service.</p> <p>After heating up the Extruder and clean the external nozzle of Extruder with pure cotton cloth. Pay attention not to damage the Extruder when cleaning the internal nozzle using Nozzle Management Pin. * Extruder failure can occur by improper use, so thoroughly become skilled.</p> <p>Use the Nozzle Management Pin after separating the detachable Extruder to prevent the damage to internal Extruder. Do not repeat cooling and heating while the filament remains inside of the nozzle.</p>
Separating/ Mounting of the detachable Extruder.	<p>Be sure to turn off the power when separating or mounting the Extruder. Do not power down when the detachable Extruder is heating up. (It allows to separate the detachable Extruder right after the power down for maintenance/ replacement. * It causes the damage to the internal circuitry because fan is not working.</p>
Fixed Extruder	<p>Regularly manage the fixed Extruder such as cleaning. After separating the detachable Extruder, remove the contaminants of gear at the bottom of the fixed Extruder and filament path.</p>
Cleaning the heated bed.	<p>Clean the contaminants with scraper or dried cotton cloth. * The replacement of damaged heated bed such as peeling off the coating due to normal use is excluded from the warranty service.</p> <p>Use the high purity acetone or water to clean the contaminated heated bed. * Do not use wet wipes because washing ingredient of some wet wipes can contaminate the coating of heated bed.</p>
Autotilt	<p>Regular check-up the operation of the detachable Extruder and remove the contaminants on the bed.</p>
Preparation of AS request	<p>Take a picture or video the malfunction status or inside of the printer or LCD Display. * Users need to clarify the situation as much as possible to proceed the repair service.</p>

3. Introduction to Cubicon Single

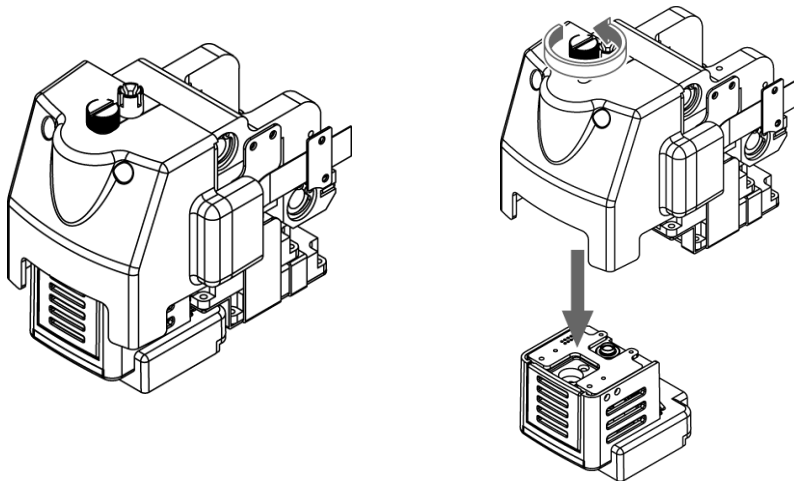
Operation

What is Cubicon Single?

Cubicon Single is an FFF (Fused Filament Fabrication) type 3D printer that controls the position of an extruder with an x/y/z axis controlling motor, uses a heating system to melt the filament supplied to the extruder, pushes the melted filament outside the nozzle with the extruder motor, and constructs a printed object layer by layer.

Cubicon Single greatly improves print stability by adding user-friendly and innovative functions.

Mounting of Uniquely Designed Detachable Extruder



The most important and key part of an FFF(Fused Filament Fabrication) type printer is the extruder, which heats and melts the filament and then pushes it out of the nozzle.

Cubicon Single features our own uniquely designed detachable extruder, the first of its kind in Korea. Using the detachable extruder maximizes the user friendliness, as the extruder can be easily removed from the printer for service when the nozzle is plugged. As well, an extruder specific to the filament being used can be selected to prevent the problems that can arise from using the same extruder for different types of filament.

The detachable extruder will help create the optimum printing environment.

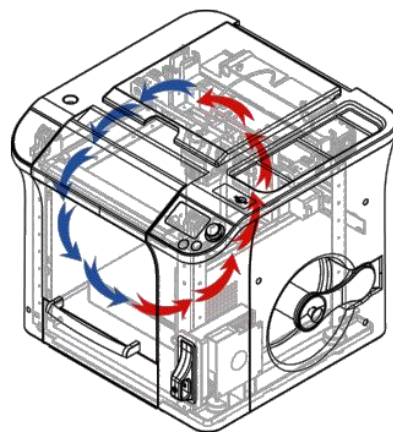
Auto Leveling Plus Function

The flatness and distance from the nozzle of the heating bed, which is the platform on which the printed object is constructed, are important factors determining the quality of the printed object. The conventional FFF printer not fully auto levels, as the user must manually or semi-manually adjust the bed height, or even when it claims to be auto level, it was not fully auto level since the deviation is calculated with the software and reflected in printing.

Cubicon Single features the unique Auto Leveling Plus function, which precisely measures the height of the heating bed and uses it to adjust the space from the nozzle in optimal condition. Moreover, it applies a special coating on the heating bed to eliminate the inconvenience of having to use the Kapton tape, and thus ensures an optimum print quality and minimum maintenance.

Experience Cubicon Single's unique Auto Leveling Plus function.

Convection Circulation Function



Cubicon Single applies the convection circulation function internally.

This function maintains a constant internal temperature and uses the filter to filter out the pollutants that are generated during printing. It helps create a more comfortable and uniform printing environment.

Clean Filter to Ensure User Health



The filament material used by the FFF type printer is known to be harmless to the human body. However, dusts and impurities can be generated when it is melted by heat.

Cubicon Single uses a deodorizing filter, HEPA filter and Purafil catalyst to improve the filter performance.

- > HEPA filter: 13H grade to collect 99.97% of 0.3um particulate matter.
- > Deodorizing filter: Filtering of harmful gas.
- > Purafil catalyst: Filtering of organic compounds generated by copiers and printers.

Source	Gases Removed	Purafil	Activated carbon
Automobile Exhaust Gas	Hydrocarbons Hydrogen sulfide Nitric oxides	○ ○ ○	○
Effluent from Living Body	Organic acids Oxides of sulfur	○ ○	○
Cleaning Product	Ammonia	○	
Copier/Printer	Ozone Volatile Organic Compounds	○ ○	
Discharge Gas from Industrial Complex	Acrolein Hydrocarbons Hydrogen sulfide	○ ○ ○	
Office Furniture	Aldehydes Formaldehyde	○ ○	○

[Comparison of Filtering of Activated Carbon and Purafil Catalyst]

Ergonomic and Stylish Design / Easy Operation



Cubicon Single was designed with conventional printers as the inspiration, making it a good match for an office environment.

Moreover, it places a dial button (rotation and pushing) and push button with LED lights on the indicator panel so that users can intuitively understand the operation without expert knowledge. In addition, the menu is arranged around the most frequently used functions, so that the users can easily familiarize themselves with the printer regardless of their level of previous experience with 3D printers.

Filament Detection Function

Cubicon Single has a built-in function to monitor the filament feed status so that the user can pause printing to check the filament feed when the filament is not supplied to the extruder after the filament is used up or cut off during printing. Printing can then be resumed after the problem is resolved.

Using this function, the user can continue printing after replacing the filament without having to start again, even when the filament runs out in the middle of a print job.

Use of Diverse and Smart Materials



Many FFF type printers are exclusively for PLA. This is because despite being a superior material in many respects, such as strength, reliability, ease of post-processing and coating, ABS creates some difficult problems, such as the dusts generated when being melted, the difficulty of shaping and the difficulty of managing the heating bed.

Cubicon Single has adopted convection ventilation, clean filter and Auto Leveling Plus functions to support the use of both PLA and ABS. Cubicon's Smart Spool features an untangling prevention function to reduce the possibility of printing failure. The filament with Smart Spool label is sufficiently tested, so that you can use it with confidence.

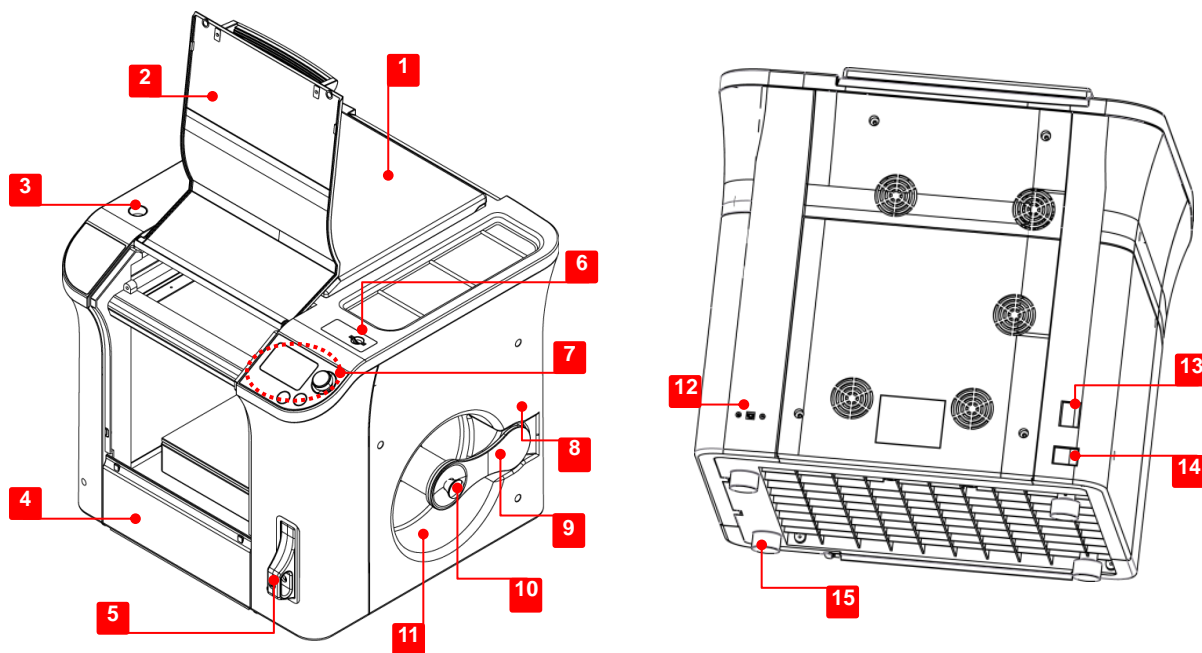
Although only limited colors of ABS and PLA filament spools are currently available, new filament colors and materials are being developed to satisfy various printing requirements of users.

4. Printer Parts and Accessories



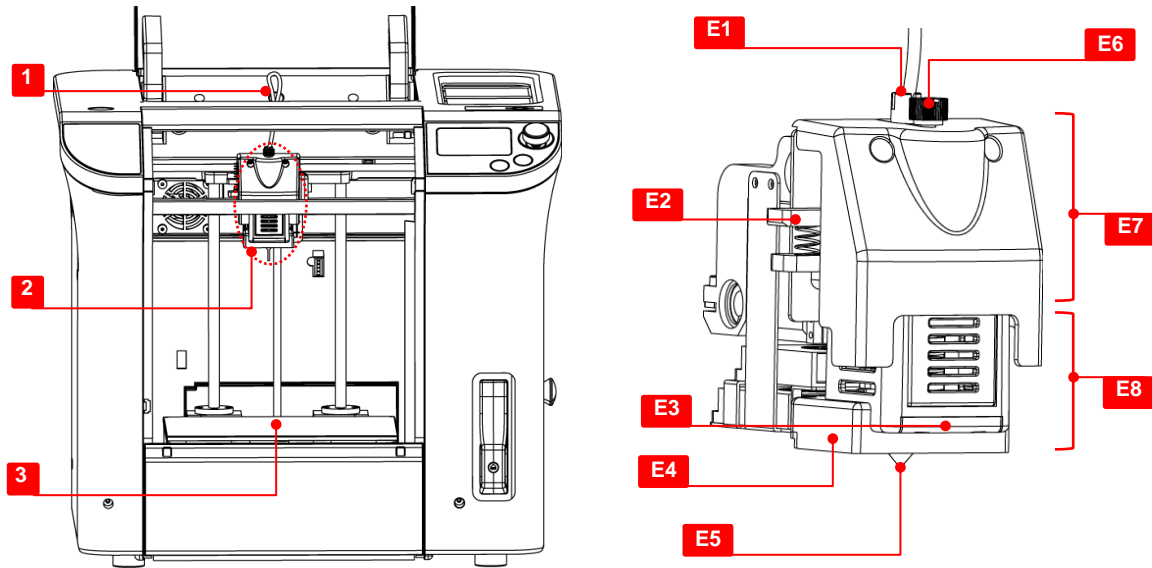
The printer is packaged after a total test of output conditions. This testing may leave traces of usage on the heating bed, nozzle, etc. Be assured that these are traces of testing, and that there is no problem with the product.

4.1. External Printer Parts



[1] Top door	Used for maintenance such as the filament replacement (loading / unloading), separation of detachable extruder, etc.
[2] Front door	Used to pull out the molded part
[3] Inclinator	Used to check levelness when the printer is installed
[4] Bottom door	Used for cleaning the bottom, etc.
[5] Clean filter case	Used to mount the clean filter
[6] SD memory insertion hole	Used to insert the SD memory
[7] LCD and operating buttons	Used to operate the LCD screen and printer
[8] Filament insertion hole	Used to supply the filament (located at the inner top when the spool door is opened)
[9] Spool door	The door is used to fix the filament spool
[10] Spool door handle	Used to lock the spool door (should be locked after the spool is mounted)
[11] Spool carrier	Area in which the filament spool is mounted
[12] USB input (Type-B)	USB input terminal to connect to a PC
[13] Power switch	Main power switch for the printer
[14] Power input	Terminal to connect the power source of the printer
[15] Leveling foot	Used to set the horizontal levelness of the printer (4 at the bottom)

4.2. Internal Printer Parts and Extruder



[1] Teflon tube	The path to supply the filament to the printer extruder (be careful not to bend, etc.)
[2] Extruder part	The extruder extrudes the filament and melts it through the nozzle
[3] Heating bed	The platform to output the printed material during printing

Extruder part	
[E1] Filament insertion hole	Hole through which filament is inserted into the extruder; a Teflon tube is placed inside it
[E2] Filament handle	Handle to manually pull the filament out of the extruder or insert it
[E3] Mold Lighting LED	White LED to check the molding status; located in the detachable extruder part
[E4] Ventilation guide	A fixture sending the air from the molding fan to the molded parts; located in the detachable extruder part
[E5] Nozzle	Nozzle through which the melted filament flows; located in the detachable extruder part
[E6] Detachable screw	Fastening screws used to mount and dismount the detachable extruder part
[E7] Fixed extruder part	Fixed part of the extruder
[E8] Detachable extruder part	Detachable part of the extruder

	<p>Do not touch the nozzle and heating bed of the detachable extruder during the printing operation, as these are hot.</p>
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4.3. Accessories included with Package



Tweezers (x1)

Used to remove foreign substances, such as filament residues.



Power cable (x1)

The power cable for the printer



Scraper (x1)

Used to separate the molded part or remove foreign substances from the heating bed



USB cable Type-A/Type-B (x1)

Connected to a PC and used for output printing.



Antistatic brush (x1)

Used to remove the pollutants such as the filament residues.



Clean filter (x1)

Mounted in the clean filter case of the main body.



Nozzle pin $\phi=1.5\text{mm}$ (x1)

Used to clean inside of the nozzle when the output quality has deteriorated due to a polluted nozzle.



Filament spool

Mounted in the spool carrier. A filament spool is provided to PLA or ABS with random color



SD Memory (x1)

Stores the slice files(.hvs) of 3D models for molding used by the printer



Quick Start Guide / Operation Manual

Included as a printout or a file in the SD memory.



- * The filament spool and clean filter are not mounted in the printer, but are packaged separately.
- * The type and specification of the accessories included in the part may be changed without notice to enhance the product.
- * Please use the Cubicon homepage or contact a distributor to purchase additional accessories.



Using an unauthorized filament or part may cause damage to the product. Any problem related to the use of an unauthorized part will not be covered by the after-sales service. Always use accessories supplied by Cubicon.

5. Installation



Be careful when unpacking and installing the product, as excessive force or ripping can damage the content.

5.1. Unpacking

① Place the package on a level floor.



② Open the box and remove the top cover.



③ Pull the product out of the vinyl bag. (two persons recommended)



④ Move the product to its installation location. (two persons recommended)



* Two or more people should lift the printer because of its weight and volume.
* As the printer may slide off if you lift it by the vinyl cover, open the vinyl cover and hold the printer body when lifting it.

⑤ Open the front door and pull out all internal parts and accessories to make sure that they are all there.



⑥ Open the top door and pull out the extruder package. Be careful not to bend the extruder-driven cable or the Teflon tube.



⑦ Remove the package and tape.

Set the horizontal levelness of the printer by adjusting the feet, while referring to the inclinometer.

Inclinometer



* The driving part is fixed with packaging material only, without using a cable tie, in order to prevent potential problems when the printer is operated. Please be careful not to damage the part when removing the internal packaging material.
 * The Teflon tube is located near the extruder fixing packaging material. Since the Teflon tube is the moving path of the filament, it should be handled carefully to avoid damage caused by being excessively pulled, bent or pressed.

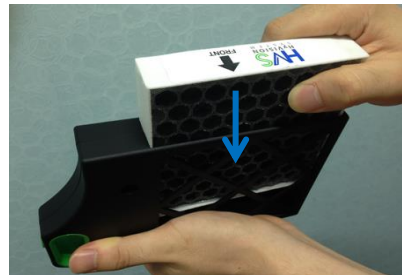
5.2. Installation of Printer

5.2.1. Mounting of Clean Filter

① Pull out the clean filter case from the printer body.



② Place the clean filter inside the case. Position the clean filter carefully

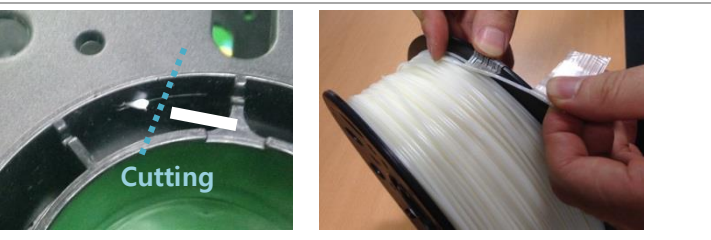
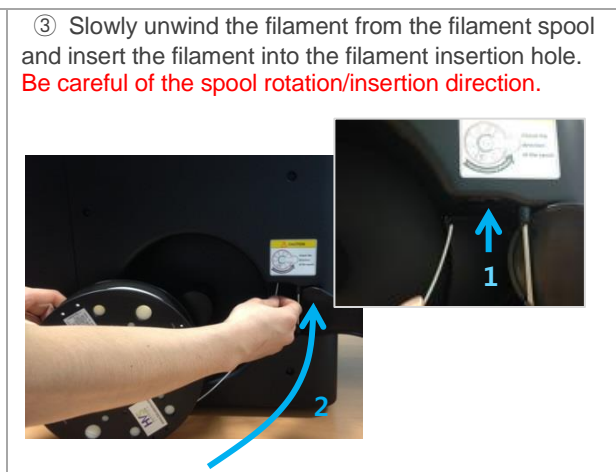
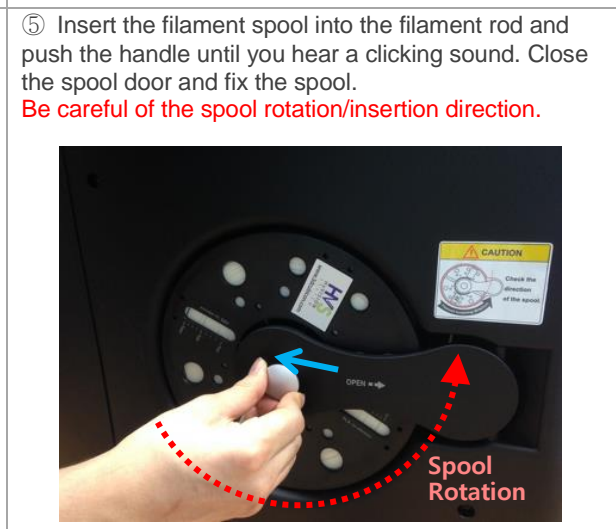




③ Insert the clean filter case into the printer body.






Mount the clean filter in the correct position inside the case. If it is positioned incorrectly, the filter performance will degrade and cause a malfunction of the ventilation fan.

5.2.2. Mounting of Filament Spool

<p>① Prepare the filament spool to be used. Cut off the filament sticking out of the filament fixing hole at the center of the spool and remove the fixing tape of the filament.</p>	 <p>The first image shows a close-up of the filament being cut with a white arrow pointing to the cut point and the word 'Cutting' below it. The second image shows a hand holding a spool of filament, with a white arrow pointing to the filament being cut.</p>
<p>② Push the spool door handle on the printer body in the direction of the arrow shown in the picture to open the door of the spool carrier.</p>	<p>③ Slowly unwind the filament from the filament spool and insert the filament into the filament insertion hole. Be careful of the spool rotation/insertion direction.</p>  <p>The first image shows a hand pushing a handle on the printer body, with a blue arrow indicating the direction. The second image shows the filament being inserted into the insertion hole, with a blue arrow labeled '1' pointing to the filament and another blue arrow labeled '2' pointing to the insertion hole.</p>
<p>④ Open the top door and push the filament all the way into the printer body so that the filament is out of the Teflon tube. Be careful not to bend, cut or twist the filament tube. This may prevent the filament from being supplied properly.</p>	<p>⑤ Insert the filament spool into the filament rod and push the handle until you hear a clicking sound. Close the spool door and fix the spool. Be careful of the spool rotation/insertion direction.</p>  <p>The first image shows a hand pushing the filament into the printer body, with a blue arrow indicating the direction. The second image shows the filament spool being inserted into the filament rod, with a blue arrow pointing to the spool and a red dashed arrow labeled 'Spool Rotation' indicating the direction of rotation.</p>
	<ul style="list-style-type: none"> * The filament spool should be installed in the correct direction. Mount the spool so the company logo or product sticker is shown from outside. The filament spool is designed to supply the filament while rotating counterclockwise. If the direction is not set correctly, there can be a problem with filament supply, which can cause the printer to malfunction. Use the printer only after confirming that the filament is correctly mounted. * An obstacle between the filament rod and spool interfering with the spool's rotation will create a problem with filament supply and cause the printer to malfunction. Remove any obstacle to rotation when inserting the spool into the spool rod. In particular, the silica gel included in the spool package must be removed from the spool. * The Teflon tube is the moving path of the filament from the spool to the extruder. Since its length is optimized specifically for the printer, pulling the tube with excessive force will bend or twist the tube inside the printer and interfere with filament movement, causing a malfunction. Do not bend, cut or pull the Teflon tube with excessive force.
	<ul style="list-style-type: none"> * When detaching the rest of filament spool from the spool carrier, pay attention to secure it and unwind it during the storage. If the filament is unwound, it causes the twist of filament. * Keep the rest of the filament in plastic bags not to be exposed to the external environment such as humidity and dirt and use the filaments as fast as possible after opening. If the filament is exposed to the external environment for a while, the printing quality may get worse or even worse, it stops extruding from the Extruder.

5.2.3. Turning on Printer

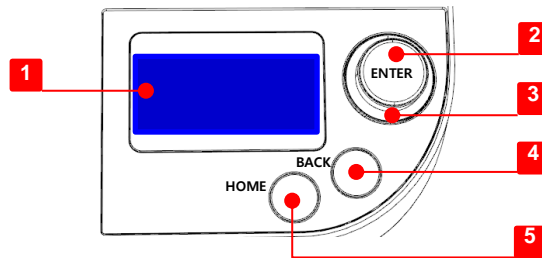
	<p>Confirm that the packaging materials inside the printer have been completely removed, that there is no damage, and that the spool mounting/rotation direction/rotation conditions are all normal before turning on the printer.</p>
	<p>Do not turn off the power while the heated bed or extruder is heated up. Because the cooling fan is not spinning the print may be broken down or fire may occur by high temperatures</p>
<p>① Turn off (O position) the power switch on the rear of the printer body.</p> 	<p>② Push the power cable into the power input connector on the printer body, arrange the power cable so that it is not twisted, and push the power cable into the socket.</p> 
<p>Please double-check the following before you turn on the printer.</p> <ol style="list-style-type: none"> 1) Eliminate any bending or twisting of the power cable; check the connection of the power cable to the socket. 2) Confirm the mounting of the filament spool (with attention given to the spool rotation direction). 3) Check the proper movement of the Teflon tube. Confirm that the Teflon tube is in a slightly inclined position when the Teflon tube is inserted into the filament insertion hole of the extruder and the extruder is pushed all the way to the left. 4) Check the condition of the extruder-driven cable. Confirm that there is no damage to the cable and that the extruder-driven cable is in appropriate condition. 5) Confirm that the detachable extruder is properly mounted and fastened. Ensure it is fastened, as the fastening screws may be loosened during transport. 6) Confirm that the heating bed is mounted in the correct position. Ensure it is fastened, as the heating bed may have been moved during transport. 	
<p>③ Turn on (I position) the power switch on the rear of the printer body.</p> 	<p>④ Check the LCD display.</p> <div style="border: 1px solid gray; padding: 5px; margin-bottom: 10px;"> <p>Activation Indication</p> <p>Cubicon Single CubiFW Vx.xx CubiHW Vx.xx HyVISION SYSTEM</p> </div> <p style="text-align: center;">↓</p> <div style="border: 1px solid gray; padding: 5px;"> <p>Initial Screen</p> <p>↓ 32/ 0° ⌘ 32/ 0° ⌘ 32/ 0° F 0% □ Cubicon Ready</p> </div> <p>* The figures on the screen will change according to the surrounding temperature. * The displayed statement may be different text with firmware version.</p>
	<p>* When you disconnect the power or USB cable, do not grip the cable part, but grip the connector and pull it out. * The USB cable is to connect to a PC to print from the PC or update the printer's firmware. If the printer is not connected to a PC, the USB cable does not need to be connected.</p>

6. How to use printer

Emergency Stop

The printer can be stopped immediately if there is a problem while the printer is in operation. Press the **[BACK]** and **[ENTER]** buttons simultaneously to instantly stop the printer and reboot it (soft reboot)

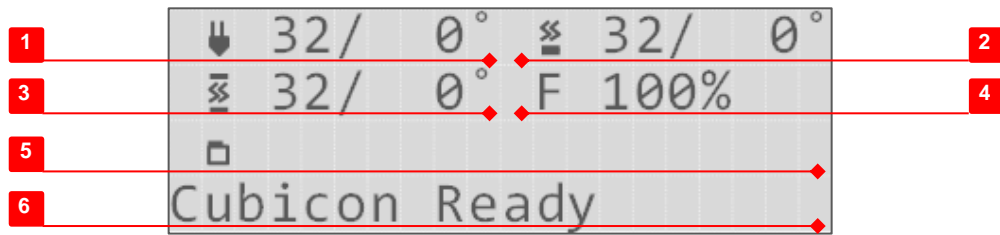
6.1. LCD and Operating Buttons








[1] LCD	Shows the current status or menu of the printer										
[2] ENTER button	<ul style="list-style-type: none"> - Launch the function menu - Rotate Right/Left: Navigate among menus or change a menu item - Pressing: Select a menu or setting 										
[3] Status lighting	<p>Display printer statuses in different LED colors</p> <table border="1"> <thead> <tr> <th>Status</th> <th>Being heated</th> <th>In printing</th> <th>Printing Completed</th> <th>Standby</th> </tr> </thead> <tbody> <tr> <td>Color</td> <td>Red</td> <td>Blue</td> <td>Green</td> <td>White</td> </tr> </tbody> </table> <p>* If you operate a function, LED will be flickering and it will require users to check if there are subsequent actions that need to be performed.</p>	Status	Being heated	In printing	Printing Completed	Standby	Color	Red	Blue	Green	White
Status	Being heated	In printing	Printing Completed	Standby							
Color	Red	Blue	Green	White							
[4] BACK button	Move to the previous menu item										
[5] HOME button	Move to the status display										

6.2. LCD Display of Status

When Cubicon Single is turned on or when the menu is not activated for functional setting, the current printer status is shown on the LCD display.



[1] Extruder nozzle temperature	Current temperature / Target temperature
[2] Heating bed temperature	Current temperature / Target temperature
[3] Printer inside temperature	Current temperature / Target temperature
[4] Molding fan rotating speed	Rotating speed of the molding fan (max. 100%)
[5] File for output	Name of the output file in the SD card (in English)
[6] Printer operation status	Current printer operation status. If the printer is currently printing, the current printing time (hh:mm) and progress rate are displayed.

	<ul style="list-style-type: none"> * The extruder nozzle and heating bed are heated or cooled to achieve the target temperature. * The printer's internal temperature rises with the heat from the nozzle and heating bed when the printing begins. Once the current temperature reaches the target temperature, the outside air is circulated to cool the printer. To ensure safety, this product does not use a separate heater to increase the current temperature. * The noise from the ventilation fan is generated when the convection circulation function is activated to lower the inside temperature.
	<ul style="list-style-type: none"> * The unit of temperature is "°C". * When the printing is paused, the file name and printing time are displayed on [5].
	<ul style="list-style-type: none"> * The details of the LCD display may be different according to the firmware version.
	<ul style="list-style-type: none"> * The extruder nozzle and heating bed are heated or cooled to achieve the target temperature. * The printer's internal temperature rises with the heat from the nozzle and heating bed when the printing begins. Once the current temperature reaches the target temperature, the outside air is circulated to cool the printer. To ensure safety, this product does not use a separate heater to increase the current temperature. * The noise from the ventilation fan is generated when the convection circulation function is activated to lower the inside temperature.
	<ul style="list-style-type: none"> * For the filament, the target temperatures (heated temperatures) of the [1] extruder and [2] heating bed are very important. [1] If the extruder nozzle temperature is too far above or below the filament melting temperature, extrusion quality can be poor, and an extruder malfunction may result. The recommended filament melting temperature ([1]Extruder target temperature) is printed on the sticker of the filament spool. Make sure that the printer is maintained at the proper temperature, by referring to the target temperature. [2] The heating bed temperature also differs according to the type of filament used. The recommended heating bed temperature for Cubicon Single is 60~70 for PLA and 110~120 for ABS. However, as the actual temperature may differ according to the printed object, use the proper temperature accordingly. If the heating bed temperature is not suitable for the filament being used, the printed object may not adhere to the heating bed or the bottom output status may be defective. Cubicon Single's heating bed is designed to ensure that the printed object is adhered to the heating bed when printing at a specific temperature or higher in the case of PLA/ABS filament even without the Kapton tape, as well as to ensure that the printed object is easily removed from the bed when the temperature drops.

6.3. Functional Menu during Printer Standby

If “[6.2. LCD Display of Status](#)” is shown on the LCD screen of Cubicon Single, press the [ENTER] button to display the functional menu. You can access each item of the function menu by turning and pushing the [ENTER] button or pushing the [BACK] button. Press the [HOME] button to return to the status display window.

The following menu is available when the printer is in standby mode. A different menu is displayed when the printer is in printing mode.

> SD Card	Selects the output file in the inserted SD memory.
> Prepare	Preparation for printing
> Preheat	The heating bed and extruder nozzle are preheated to the set temperature.
> ABS / PLA / U01 / U02	They are preheated to the preset temperature.
> Autotilt Align	This tests Auto tilt.
> Load Filament	This inserts a new filament into the extruder.
> Temp	This sets the extruder nozzle temperature to use a new filament.
> Load Start	This inserts the filament into the filament entry when the target nozzle temperature is reached.
> Unload Filament	This removes the filament in the extruder.
> Temp	This sets the extruder nozzle temperature to remove the filament.
> Unload Start	This pulls out the filament when the target nozzle temperature is reached.
> Temperature	Printer operation temperature control
> Cooldown	Temperature initialization (Heating is stopped to lower the temperature)
> Extruder	Extruder nozzle temperature setting
> Bed	Heating bed temperature setting
> Chamber	Printer inside maximum temperature setting
> Fan speed	Print fan speed setting
> Motions	Printer movement control in standby mode
> Disable stepper	This disables the motor to enable manual control.
> Bed Up	The heating bed is lifted.
> Bed Down	The heating bed is lowered.
> Extr. Move	The extruder motor is manually rotated (manual lifting or lowering of the filament).
> Home	The X/Y (extruder) and Z (heating bed) are moved to the zero position.
> Parking	They are moved to the position (rear center) during idle status.
> Configuration	Default setting
> Preheat Temp	This sets the preheat temperature.
> ABS / PLA / U01 / U02 Preheat Temp	This sets the preheat temperature according to each condition.
> Extruder	Extruder nozzle preheat temperature setting
> Bed	Heating bed preheat temperature setting
> Chamber	Printer inside maximum temperature setting
> Autotilt	This adjusts Auto tilt.
> Bed Offset	Offset between heating bed and nozzle after Auto tilt
> Always Autotilt	Option to always run Auto tilt before printing.
> Filament Check	Option to use the filament supply detection function.
> Filter Fan	Filter fan operation setting.
> Baudrate	This sets the communication speed when printing through USB connection from PC.
> 250000 / 115200	Default 250000, Printing through PC connection(MAC OS) 115200
> Store to EEPROM	The changed settings are saved in EEPROM. When reboot without saving the changed setting, it cannot apply the changed setting value.
> Initialize EEPROM	The settings are initialized.
> Information	This displays the equipment model name and firmware/hardware version.

Note) The actual menu structure may differ depending on the firmware version.
This document is based on Firmware Ver. 2.0.0, Cubicreator v2.0.

6.4. Functional Menu during Printing



A different functional menu is displayed when the [ENTER] button is pressed while the printer is printing an object. To prevent problems related to user error, only the applicable menus such as print suspension are displayed.

You can access each item in the function menus by turning and pushing the [ENTER] button or pushing the [BACK] button. Press the [HOME] button to return to the status display window.

Refer to the following table for the description of each functional menu item.

> Temperature	Printer operation temperature control
> Extruder	Extruder nozzle temperature setting
> Bed	Heating bed temperature setting
> Chamber	Printer inside maximum temperature setting
> Fan speed	Print fan speed setting
> Pause Print	Printing is temporarily stopped.
> Continue Print	Printing is continued.
> Load Filament	A new filament is inserted into the extruder.
> Temp	This sets the extruder nozzle temperature to use a new filament.
> Load Start	This inserts the filament into the filament entry when the target nozzle temperature is reached.
> Unload Filament	This removes the filament from the extruder.
> Temp	This sets the extruder nozzle temperature to remove the filament.
> Unload Start	This pulls out the filament when the target nozzle temperature is reached.
> Stop Print	This completely stops printing after a job is paused.
> Stop Print No/Yes	Stop printing confirmation
> Stop Print	Printing is completely stopped.
> Stop Print No/Yes	Stop printing confirmation
> Configuration	Basic setting
> Filament Check	Option to use the filament supply detection function.
> Filter Fan	Filter fan operation setting
> Information	Displays the equipment model name and firmware/hardware version.

Note) The actual menu structure may differ depending on the firmware version.
It may also be different if the printing is controlled by a PC over the USB connection.
This document is based on Firmware Ver. 2.0.0, Cubicreator v2.0.




	<p>* When the Pause or Stop function is selected during printing, there will be a slight time delay. This is due to the process of printing data that are already in the buffer memory. Printing will be paused or stopped after a brief delay.</p> <p>* When the {Loading/Unloading} menu is selected, the function is executed in the sequence of “Step to increase the nozzle temperature (Wait...) → Step to insert or pull out the filament (Insert Filament/Pull Out Filament) → Step to complete the function (Press Enter to Loading/Unloading Stop).” Follow the text on the LCD screen during the execution.</p>
	<p>“Check Filament” may be displayed in some function menus if the filament is not detected in the extruder. In that case, check the filament and execute the {Unloading/Loading} function to supply the filament in the extruder, and then continue printing.</p>






6.5. Caution and Notes on Using the Functional Menu

Cubicon Single contains a motor and a heating unit, and the printer functions are interconnected with these parts.

Inappropriately combining these functions may cause printer damage or injury.

Please remember the following cautions and notes when you use the product.

<p>{SD Card}</p>	<ul style="list-style-type: none"> - Cubicon Single can print a 3D model file using a G-Code file (*.hvs) created by the slicing program Cubicreator. The printer will not recognize files in other formats. - Use the dedicated software Cubicreator to create G-Code files for the printer. G-Code files created by other slicing software program cannot compatible to the Cubicon. - Because the file name in the SD Card is recognized in English only, save normal G-Code file name in English. - Files in the SD Card will be shown on the screen from the latest sorted files. - The number of Files in the SD Card is limited up to 150 per each folder. Clean up the folder because it is not shown if there are more than 150 files in the folder. - Folder of the SD Card will be recognized up to step# 2 Sub- folder. In other words, it is recognized as Root / Sub1 / Sub2. 	
<p>{Preheat} and {Temperature}</p>	<p>The extruder nozzle and heating bed must be preheated according to the filament being used in order to properly print the model. Although the extruder nozzle and heating bed are automatically preheated to the temperature set in G-Code before printing an object using a G-Code file, the user can manually preheat the nozzle and heating bed using the {Preheat} and {Temperature} settings.</p> <p>{Preheat} raises the temperature of the nozzle and heating bed to the preset temperature according to the ABS or PLA material. {Temperature} is used to separately adjust the nozzle temperature, heating bed temperature, convection circulation temperature, and print fan speed.</p>	
		<p>When printing with G-Code, the temperatures of the heating bed and nozzle are sequentially raised to the values set in G-Code. Therefore, the target temperature of the extruder nozzle is displayed as "Wait" when the temperature of the heating bed is not at the target temperature.</p>
<p>{Extruder} temperature setting =Nozzle temperature</p>	<p>To push the filament out of the nozzle, the filament must first be heated to the melting point. In other words, the extruder nozzle must be heated to melt the filament, as the filament must pass through the nozzle for printing. Set the extruder temperature to be sufficiently high to melt the filament.</p>	
		<p>* Operations involving the extruder motor, including print, {Load}, {Unload}, {Auto tilt Align}, etc. automatically include heating of the extruder nozzle. * The temperature setting range of Extruder is 160 ~ 260C. If the temperature is less than 160C it will be shown as 0C and it means the temperature of non-heated extruder.</p>
<p>{Heat Bed} temperature setting</p>	<p>To print the model on the heating bed, the heating bed must be heated so that the melted filament out of the nozzle will adhere well to the bed.</p> <p>As the printed object may not adhere to the bottom or may be in a distorted shape if the temperature of the heating bed is not suitable for the filament in use, the target temperature of the heating bed should be set according to the filament in use and the printed object.</p>	
		<p>* Printing will begin when the heating bed is heated to the temperature set in the G-Code. * The 'bottom aid' option can be applied when G-Code is saved by Cubicreator if the printed object does not adhere to the bottom even after adjusting the temperature of the heating bed. * Temperature setting range of heating bed is 40 ~ 120C. In the case of less than 40C it is shown in 0C which means a temperature of heated bed does not heated the heating bed. If you use a tape on a bed, and do not use heated, it allows to set temperature of bed 0C.</p>
<p>{Chamber} temperature setting</p>	<p>The chamber controls the convection circulation temperature inside the printer. If the internal temperature is higher than the set temperature, it uses the outside air to cool the printer down to the set temperature.</p>	

		<p>* The temperature setting range of Chamber is 30 ~ 55C. If less than 30C, it will be shown as 0C meaning that the internal cooling fan is not operating.</p> <p>* Cubicon Single cools the inside with the external air, please note if temperature of chamber is set to 0C, the internal temperature will be increased because the cooling fan is not working.</p> <p>* The internal temperature cannot go down as setting temperature according to the external air because the Cubicon single cools down the inside with the outside air.</p>
<p>{Load/Unload Filament}</p>		<p>Load/Unload Filament operates the extruder motor to move the filament after the extruder nozzle temperature reaches the set temperature. Check the extruder temperature when you load or unload the filament.</p> <p>* Load/Unload is generally used to replace the filament. To replace a filament, it is recommended to preheat the extruder nozzle in advance by setting the extruder temperature to the extruder nozzle temperature of the filament already melted in the nozzle or that of the new filament, whichever value is higher.</p> <p>* When you use the filament supply detection function, the printer may suggest only "Load Filament" or "Unload Filament" in some cases. In that case, execute the task requested by the printer.</p>
		<p>When a filament is used up, the edge of the filament will remain inside the extruder. Using the printer without removing the residual filament may cause an extruder problem. Unload the filament using {Unloading} after a filament is used up to remove the filament remaining inside the extruder.</p>
	<p>{Motions}</p>	
<p>{Always Autotilt}</p>		

6.6. Replacing Filament (Loading/Unloading)

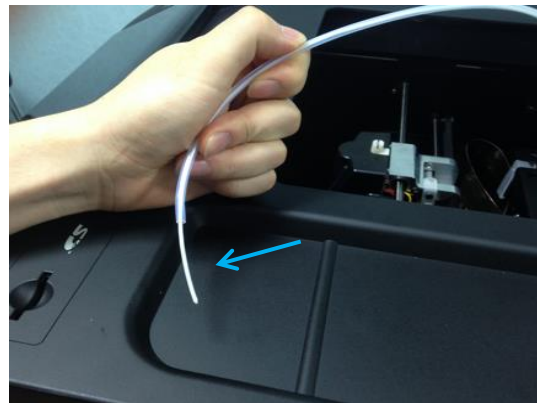
Filament must be inserted into the extruder to push the melted filament, which is the printing material, through the nozzles, and the filament must be pulled out of the extruder to replace a filament with another.

Loading is the process of inserting the filament into the extruder when there is no filament inside the extruder so that the filament can be melted and pushed out of the nozzles for printing, while unloading is taking the filament out of the extruder.

To replace the currently used filament with another filament, the current filament must be unloaded and the new filament must be loaded.

6.6.1. Loading Filament (Printer in Standby Mode)

① Pull out the filament to the edge of the Teflon tube, referring to "[5.2.2. Mounting of Filament Spool](#)".



② (While the power is on)
Select **{Prepare > Load Filament}** from the menu.

```
SD Card      →
>Prepare     →
  Temperature →
  Motions     →
```



```
Preheat
Autotilt Align
>Load Filament
Unload Filament
```



```
*Temp : ↓134/240°
Wait...
```

You can click **{Temp}** and set or change the target temperature to load. Set the temperature to suit the filament in use.

The figure on the right shows the heating nozzle temperature changed to 240C.

The "Wait..." message will blink until the extruder nozzle temperature reaches the target level.

③ When the extruder nozzle temperature reaches the target value, the “Wait...” message disappears, and the {Load Start} menu is displayed.

When you select {Load Start}, the extruder motor to move the filament is operated, and the “Insert Filament” message is displayed.

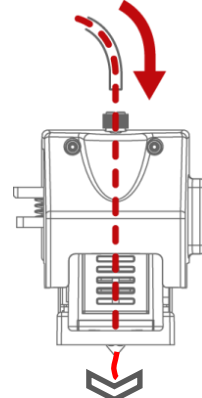
If the edge of the filament in the Teflon tube is bent or pressed, cut off the part with scissors. Hold the filament and push it until you can feel it is pulled to the filament entry at the top of the extruder. If you insert the filament by around 7cm, the filament is notched to the gear and automatically pushed.
You may feel a little tightness when the filament is inserted into the entry. This is due to the filament supply detection switch. Push it with more force.

When the filament is pushed automatically, wait for a while until the melted filament sticks out of the nozzle at the bottom. Click the [ENTER] button to stop loading after around 30cm of filament slides down.

```
Temp : ↓240/240°
>Load Start
```

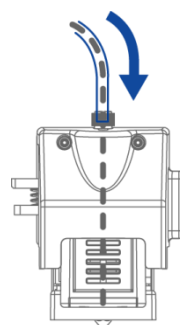


```
Loading...
Insert Filament
```


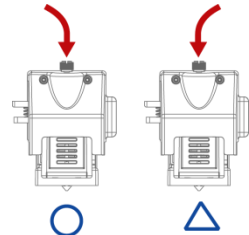


```
Loading...
Press Enter Key
To Load Stop
```

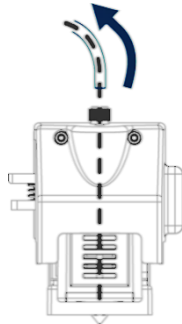
④ Insert the edge of the Teflon tube into the filament entry. Remove the filament sticking out of the nozzle with tweezers or another appropriate means.



- * Make sure that no part of the body contacts the nozzle area, as both the nozzle and the filament are hot when the extruder nozzle temperature is raised.
- * The filament may be stuck at the entry of the nozzle rod when it is pushed into the nozzle rod of the detachable extruder part. (A cracking sound may be produced.) In that case, press the filament handle and pull out the filament. Cut off the edge with scissors and insert it into the filament entry to attempt loading again.
- * If you manually handle the filament with the handle, be careful not to pull out the filament with excessive force, as it may damage the internal sensor or nozzle rod.
- * If there is no filament inside of Extruder, Loading menu will be deactivated. In this case insert the filament into the extruder slot, and then Loading menu will be activated

	<p>The filament is coiled around the spool. Because of its shape, the filament that is unwound from the spool will have a gentle curved shape. When this curved shape is inserted into the extruder, it may not be smoothly pushed into the entry of the nozzle rod. It will be easier if the filament is positioned so that it is curved in the clockwise from the front.</p>	
---	--	---

6.6.2. Unloading Filament (Printer in Standby Mode)

<p>① Pull the Teflon tube out of the filament entry of the extruder.</p>	
<p>② (While the power is on) Select {Prepare > Unload Filament} from the menu.</p> <p>You can click {Temp} and set or change the target temperature to unload. Set the temperature to suit the filament in use.</p> <p>The figure on the right hand side shows the heating nozzle temperature changed to 240C.</p> <p>“Wait...” blinks until the extruder nozzle temperature reaches the target level. Wait until the nozzle temperature reaches the target value.</p> <p>When the extruder nozzle temperature reaches the target value, the “Wait...” message disappears, and {Unload Start} is displayed.</p>	<pre> SD Card → >Prepare → Temperature → Motions → </pre> <p style="text-align: center;">⌵</p> <pre> Preheat Autotilt Align Load Filament >Unload Filament </pre> <p style="text-align: center;">⌵</p> <pre> *Temp : ↓134/240° Wait... </pre> <p style="text-align: center;">⌵</p> <pre> Temp : ↓240/240° >Unload Start </pre>

③ When you select **{Unload Start}**, the extruder motor to move the filament is operated to pull up the filament inside the extruder. Wait until the filament is automatically pulled up.

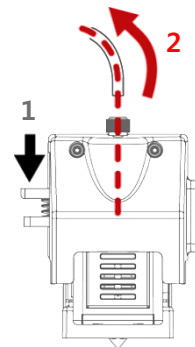
After a while, **“Pull Out Filament”** will be displayed on the LCD screen. **Pull out the filament (2) while the filament handle is pressed (1).** You may feel a little tightness when the filament is inserted into the entry. This is due to the filament supply detection switch. Push it with more force.

The “Pull Out Filament” message is not displayed when there is no filament in the extruder, and thus the filament is not detected by the filament supply detection switch during unloading.

Unloading...
Wait...



Unloading...
Pull Out Filament



④ Press the **[ENTER]** button to terminate unloading.

Unloading...
Press Enter Key
To Unload Stop



* Loading the filament while ignoring the fact that the printer is turned on when the filament is not supplied to the extruder (incl. the initial installed condition) or there are filament fragments inside the extruder may cause an extruder problem.

The printer has the logic to unload the filament if the power is turned on when there is no filament (no filament detected by the filament supply detection switch). If you do not see the filament in the filament entry of the extruder and the printer begins unloading, load the filament after waiting for unloading to be completed.



* Make sure that no part of the body contacts the nozzle area, as both the nozzle and the filament are hot when the extruder nozzle temperature is raised.

* Always press the filament handle when you pull out the filament.

This is to prevent the problem that result when the edge of the melted filament is stuck inside the extruder.



* When unloading the filament, it can be stuck into the extruder due to the different end shape depending on the filament type.

Do not force to pull out the filament during unloading in case the filament is stuck in or it may cause the blockage.

1) Unload the filament after pushing it into the nozzle to melt its end and make the shape or
2) after cutting the filament outside of Extruder, detach the Extruder and remove the filament.

If you are forced to pull out the filament and it is stuck inside of the extruder as residuals, you should repair the fixed Extruder unit.

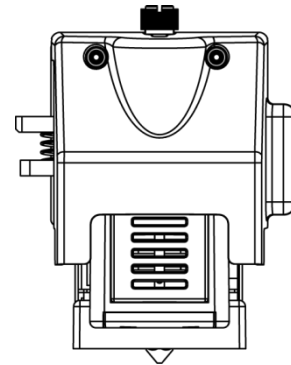
6.7. Separating Detachable Extruder (Mounting)



An electric shock can damage the printer if the detachable extruder is separated or mounted while the power is [ON].
Separate or mount the detachable Extruder when the power is off.

You can easily separate the detachable extruder part from the fixed extruder part by unfastening the screw with a screwdriver. The process of separating the detachable extruder part is described below. To mount the part, just follow the same steps in reverse order.

① To separate the detachable extruder part, pull out the Teflon tube inserted into the filament entry of the extruder and **run unloading to remove the filament inside the extruder.**



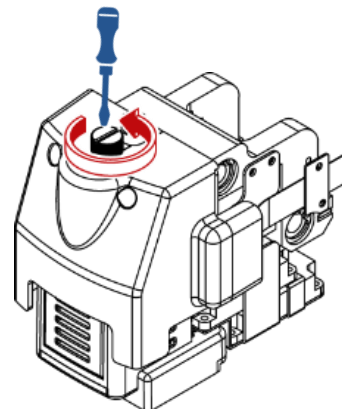
* It should be noted that separating the detachable extruder part while the filament is inserted into the extruder can damage the sensor or the equipment.
* If unloading is not possible because of a printer problem, etc., cut off the filament at the filament entry of the extruder and carefully separate the detachable extruder by pressing the filament handle.

② **Turn [OFF](O) the printer.**

An electric shock can damage the printer if the detachable extruder is separated while the power is [ON]

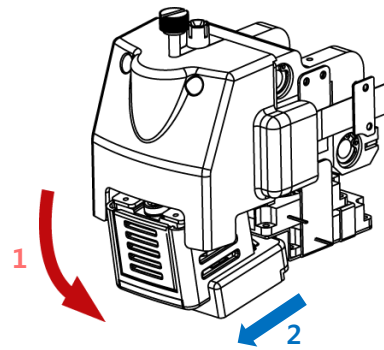


③ Unfasten the screw by turning it counterclockwise by hand using a screwdriver.



④ **Lower (1)** the detachable extruder part **and pull (2)** it to separate it from the fixed part.
As the wind guide of the detachable extruder part is inserted into the fan of the fixed part, this may require some force. Handle it with care.

For mounting, insert the wind guide of the detachable extruder part into the fan hole at the bottom of the fixed extruder part and push it.



Periodically separate the detachable extruder part and clean the nozzle rod area (the filament entry into the nozzle).



- * **Separate or mount the detachable extruder part only when the printer is turned off and the extruder nozzle is sufficiently cooled.**
- * **Be careful to avoid being burnt** if you have to separate or mount the detachable extruder part when the nozzle temperature is high.
- * **Be careful when you separate or mount the detachable extruder part, as the excessive force can damage the extruder parts.**
- * **If the detachable extruder part is not properly mounted, “def” is displayed on the printer status window instead of the temperature. In that case, turn off the printer and mount the detachable extruder part again.**
- * **If you print a model while the detachable extruder part is not properly mounted or the screw is not tightened, the extruder may malfunction during printing, resulting in a printer error or malfunction.**

Make sure that the detachable extruder part is properly mounted before printing.

- * **As the extruder unit contains electrical parts, do not touch it with wet hands in order to avoid electrical shock.**

6.8. Cleaning Printer



- * Each printer is packaged only after it has been tested.
For this reason, there may be some traces of usage on the heating bed, extruder, nozzle, etc. when you open the package. You can be assured that this is due to testing.
- * When you clean the printer, turn it off first if possible.

6.8.1. Cleaning of Heating Bed

The heating bed is the bottom on which the printed object is formed through the extrusion of the melted filament. It can easily become dirty due to melted filament or filament fragments, and when printing is continued in this condition, the dirt may adhere to the printed object, damaging the object, or the printed object may not adhere to the heating bed during printing.

The heating bed must be cleaned before and after printing to prevent defective printing due to dirt.

- ① Filament residue on the heating bed can be removed using tweezers, a scraper or a brush. Make sure that the surface of the heating bed is not scratched. If the surface is scratched, the coating can be removed, and the printed object will not adhere to the heating bed.
- ② Filament stuck on the heating bed surface during printing or residual left after printing may not be easily removed. For this type of cleaning, use concentrated acetone to wipe out the pollutants. **Use another wet towel to completely remove the acetone from the bed's surface before using the printer again.**

*** Use the high purity acetone or water to clean the heated bed.**



- *The heating bed may look stained, but it is natural due to the coating, and there is no problem with using the heating bed for printing.
- *The life of the coating on the heating bed depends on the printing habits of the user. If the printed output comes off the heating bed too easily, replace the heating bed.
- *The heating bed of Cubicon Single does not require the Kapton tape when using the ABS/PLA certified with Cubicon Single under appropriate temperature conditions. Please note that the Cubicon homepage sells Kapton tape to be used with the printer if the user's printing pattern or printed model requires the use of Kapton tape.



For a printer using the melted filament, contraction can occur due to the hardening of melted filament. This may cause the printed object to come off the bottom. Although the problem can be corrected by changing the print temperature condition, heating bed adhesion or slicing option, the problem is basically generated by the material, which contracts when it is cooled and hardened. **To solve the problem, consider using a design that distributes the contractile force during the design of 3D model.**



- * Do not use a solvent other than the water and acetone on the heating bed. This may damage the coating.
- * When you use acetone to clean the heating bed, make sure that no part other than the heating bed is stained with the acetone. It may damage the product.
- * When using acetone, make sure there is sufficient ventilation and use it with caution. (Strictly follow the safety rules provided on the acetone package.)
- * Do not use wet wipes because washing ingredient of some wet wipes can contaminate the coating of heated bed.
- * **Do not disassemble the heating bed or apply excessive force to remove the printed object. The impact can cause a problem.**

6.8.2. Cleaning of Detachable Extruder and Nozzle

The extruder nozzle is positioned at the bottom of the detachable extruder part, and pushes out the melted filament to form the printed object.

After extended use, the printing condition may become poor due to filament residue or external pollutants, and in severe cases the nozzle may even become plugged, requiring the replacement of the nozzle.

You need to clean the nozzle regularly to use it for an extended period of time.

a. Maintaining the Nozzle in Clean Condition for a Long Period of Time

If a nozzle becomes plugged, it is likely to continue causing problems until it is replaced. As it is possible to keep a nozzle clean for a long time through good management, take note of the following tips.

- ① Check the nozzle's condition regularly and clean it.
- ② If the filament discharge condition is anomalous, such as the filament coming out of the nozzle during printing being too thin or not uniform, stop printing and clean the nozzle. This should be performed immediately, as a pollutant inside the nozzle can deteriorate the nozzle's condition at any time.
- ③ Sufficiently clean the nozzle if possible when the filament is replaced. **In particular, the nozzle must be cleaned when a different type of filament with different printing temperature condition is being replaced, such as ABS or PLA.**
It is recommended that the detachable extruder part specific to the filament be used when a filament with a different printing temperature is used.
- ④ Generally, a filament pollutes the nozzle more severely if it has a color (incl. white) or has a darker color. Clean the nozzle more often when you use such filaments.
- ⑤ A filament will have properties that are different from its initial properties if it has been melted once and hardened. In other words, if heating/cooling is repeated without the filament inside the nozzle being discharged, the filament will become the pollutant, and will not be able to be used for printing. Therefore, make sure that the heating/cooling is not repeated without the filament nozzle being discharged.
- ⑥ The filament will begin to be polluted by moisture and dust as soon as it is removed from the vacuum pack. Start using the filament as soon as possible after it is opened, as the nozzle will become plugged when an excess of pollutants is accumulated.

b. Cleaning Inside Nozzle Using Cleaning Loading

- ① Pull out the filament sufficiently by selecting **{Prepare > Load Filament}** from the functional menu. Loading will stop automatically after a certain amount of filament is discharged if the user does not stop it.
Set the temperature of load filament to be the same as the filament temperature.
- ② If the print condition is not satisfactory after step ①, set the temperature of Load Filament to a higher temperature than the filament temperature and repeat step ①.

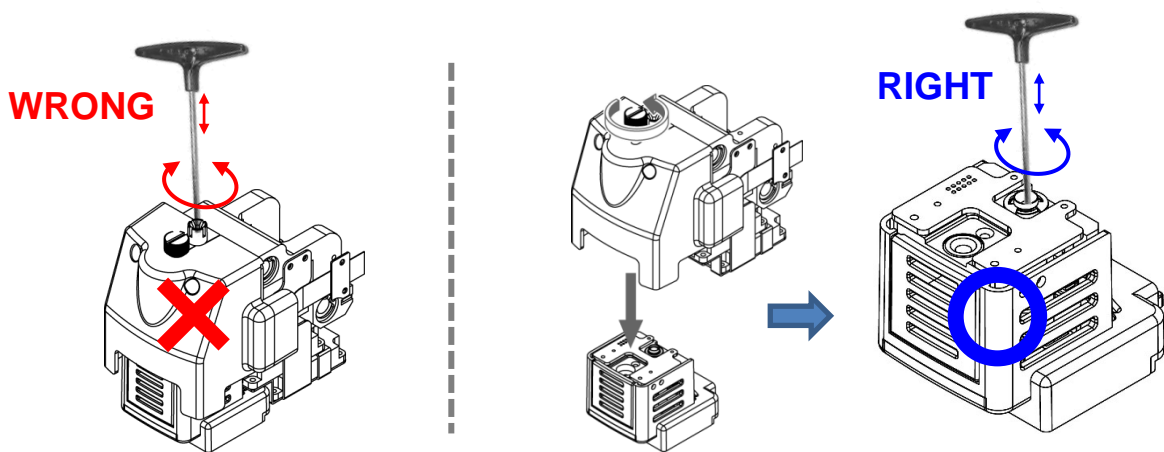


* Do not raise the temperature more than 10% higher than the normal filament discharge temperature. This may change the filament property and intensify nozzle plugging.
* Do not perform "step b" if the filament does not come out of the nozzle or is too thin. This may split the filament or twist the filament inside the fixed extruder part and cause a problem.

c. Cleaning Inside the Nozzle Using Nozzle Management Pin

If you cannot improve the printing quality with loading or cannot load the filament, it is likely that residue has been left in the nozzle or that nozzle hole plugging is too severe for the pollutant to be removed by loading only. In that case, clean inside the nozzle with the enclosed nozzle management pin, in consideration of following:

Detachable Extruder should be cleaned after separation from the fixed Extruder.



- ① Remove the filament of internal Extruder through unloading.
- ② Heat the extruder (nozzle) to a temperature that is not more than 10% higher than the discharge temperature of the filament remaining inside the nozzle.
This is to melt the residuals inside of the nozzle, so please note if the extruder is heated up at too much high temperature, the residuals of internal extruder will be carbonized causing blockage of nozzle.
- ③ Turn off the power and separate the detachable Extruder. (Refer to [“6.7. Separating Detachable Extruder”](#))
Please put on the heat-resistant glove to prevent to be burnt with the high temperature of Extruder.
- ④ Slowly move the nozzle management pin right/left and up/down or rotate it to clean the nozzle by pushing down the impurities inside the nozzle. If the detachable Extruder is cooled down, so the Nozzle Management Pin cannot be moved, mount the detachable Extruder into the machine and repeat from the step ②.
- ⑤ When the impurities inside the nozzle are removed, wait a while at high temperature and repeat the removal of the impurities (from step ③). This step is to remove the impurities after waiting for the impurities stuck on the inner wall of the nozzle to be melted and lid down.
- ⑥ Load or unload the filament in use to melt the filament inside the nozzle, and repeat the steps beginning with ①. This is to remove the impurities by dissolving them into the melted filament.

The figure on the right shows the discharged filament after loading to remove the impurities inside the nozzle. It clearly shows the filament polluted with impurities at the edge. Remove the impurities inside the nozzle sufficiently until the point at which the filament does not show the pollution any longer.

Since the pollution inside the nozzle is usually detected when the nozzle is plugged during printing despite being normal when the printing began, proper management of the nozzle is needed.



If the filament is discharged (pushed down to the bottom) from the nozzle or the print quality is poor, it is likely that the nozzle has been damaged. In this case, replace the nozzle. Make sure the nozzle is replaced by an authorized service technician.

d. Cautions When Using Nozzle Management Pin

Proper use of the nozzle management pin can greatly help nozzle management.

However, as the nozzle management pin moves along the path of the filament's movement inside the extruder, improper use of the nozzle management pin can cause damage or pollution to the extruder inside, which can create severe problems for the extruder. As an extruder problem caused by the improper use of the nozzle management pin is considered to be damage caused by the user, it will not be covered by the warranty.

① **Plugging of Nozzle by Damaged Part**

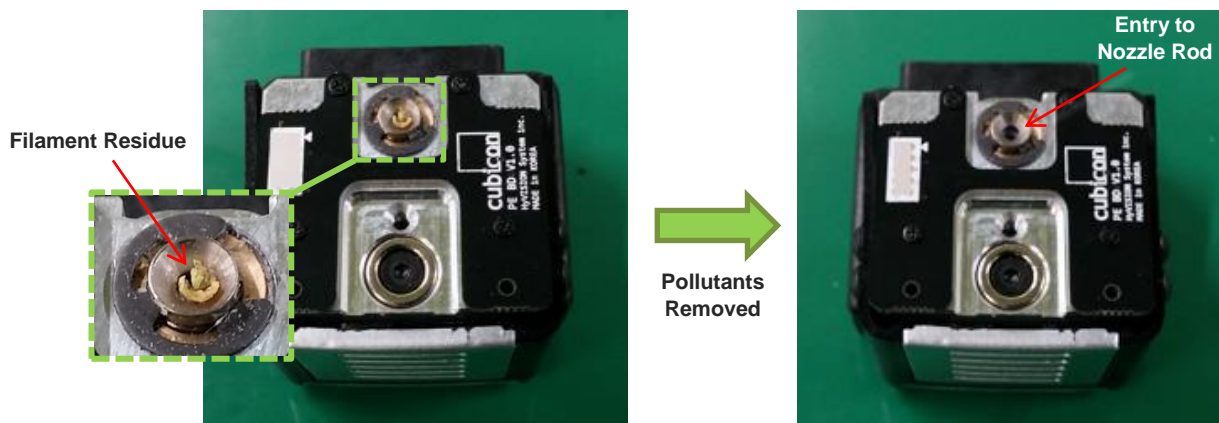
Using the nozzle management pin with excessive force will damage the part on the moving path or scratch the part, causing fragments to fall inside the nozzle and plug the nozzle. This will make it very difficult to unplug the nozzle, and the whole nozzle rod may have to be replaced. For this reason, you should be careful not to damage the parts.

② **Secondary Pollution by Filament Residue Stuck on the Nozzle Management Pin**

When the nozzle management pin is used, the melted filament residue will be stuck at the edge of the nozzle management pin. If you pull out the nozzle management pin while the filament residue is not sufficiently cooled, the filament residue may be stuck in the entry of the nozzle rod or on the parts in the path of filament movement inside the extruder, preventing the nozzle management pin or filament from moving.

In this case, disassemble the detachable extruder part by referring to “[6.7. Separating Detachable Extruder](#)” while the printer is turned off, check for filament residue on the path of filament movement, and remove the pollutants. If it is difficult to remove the pollutants as they are already hardened, heat the nozzle management pin and push it. Be careful not to damage any parts that are vulnerable to heat.

The following figures show a case in which residue was stuck in the entry to the nozzle rod, preventing the nozzle management pin or filament from moving into it. The printer will work properly if the pollutants are removed, but if the nozzle management pin is used without removing the pollutants based on assumption that the nozzle is plugged, the pollutants will continue accumulating and eventually cause an extruder problem.

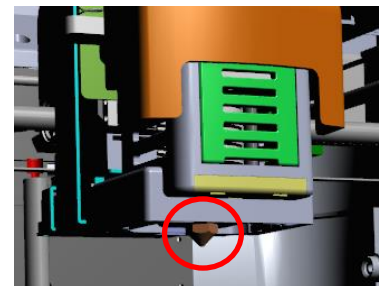


* When disassembling the detachable extruder part while the nozzle is hot, wear gloves to avoid burns.
 * Use the nozzle management pin with extreme caution until you are familiar with it.
As improper use of the nozzle management pin can damage the extruder part beyond repair, it is recommended not to use it if you are not familiar with its use.

e. Cleaning Outside Nozzle

The nozzle is at a high temperature during printing, and often has melted filament residue stuck on its surface. Filament stuck on the nozzle surface can adhere to the printed object during printing, creating stains.

- ① Heat the nozzle to a level high enough to melt the filament stuck on the surface. Then, remove the filament residue with the tweezers or wipe it out with pure cotton cloth.
- ② If the pollution on the nozzle’s surface is severe, cool the nozzle completely and turn off the printer. Wipe out the pollutant using a rag with a small amount of acetone. Use the printer only after the acetone is completely vaporized.
- ③ During the loading or auto tilt process before printing, some filament is taken out through the nozzle



to form the printed object with clean filament. Remove any residues on the nozzle before printing, as they can affect the printed object.



- * **When you clean the printer while the nozzle is heated, be careful with the hot nozzle.**
- * **It should be noted that the nozzle can be damaged and the print quality deteriorated when you press the nozzle hole with tweezers, etc.**
- * **If you use acetone for cleaning the nozzle, be careful not to stain parts other than the metallic nozzle with acetone. This may damage the product.**
- * **When using the acetone, make sure there is sufficient ventilation and use it with caution. (Strictly follow the safety rules stated on the acetone package.)**

6.8.3. Replacement of Clean Filter

To filter the pollutants generated by the FFF type printer, Cubicon Single uses a clean filter organized into three filter layers: Purafil catalyst, HEPA filter and deodorizing filter.

If the clean filter unit contains too many pollutants, it not only will degrade the filter's performance but will also interfere with the operation of the filter fan, causing problems. If the pollution of the clean filter is too severe, do not clean the filter but replace it.

Although the clean filter replacement interval differs according to the printing environment and user printing habits, it is recommended to replace it every 6 months.



The clean filter should be installed in the correct direction in the case. If the direction is not correct, the filter's performance will deteriorate, and it will cause a ventilation fan problem.


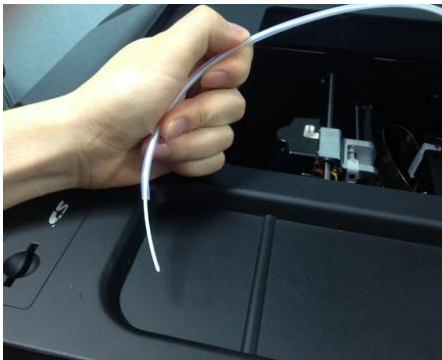
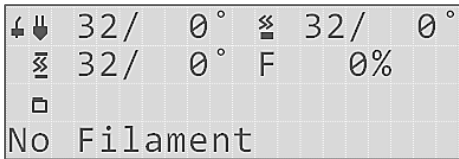
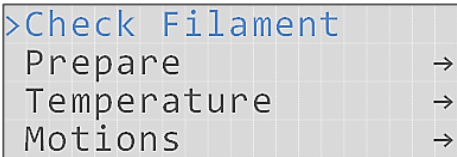
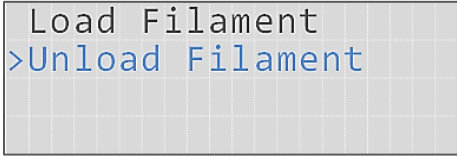


7. Printing

This chapter describes several important scenarios of actual printing using the SD memory card after the printer is installed.

(Refer to the Cubicreator Software Operation Manual for the details of printing using a USB connection to a PC.)

7.1. Printing for the First Time

After the printer is installed, print a sample as shown below to check the condition of the printer.

	<p>Before turning on the printer, confirm that all packing materials inside the printer have been removed, the cables and parts are not damaged, the bed and extruder are properly installed, and the spool mounting/rotation direction/rotation condition are normal. If there is any problem, correct it first before turning on the printer.</p>	
<p>① Mount the filament spool in the spool carrier of the printer and push the filament all the way to the entry of the Teflon tube inside the printer.</p> 	<p>② Turn [ON] the printer. Since the filament is not yet mounted in the extruder, “No Filament” is displayed on the LCD screen.</p> 	
<p>③ Press the [ENTER] button to display the menu. {Check Filament} generally flashes in the position of {SD Card}, since there is no filament in the extruder.</p> 	<p>④ When you select {Check Filament}, {Load Filament} / {Unload Filament} are displayed as shown below, and {Unload Filament} blinks to instruct the user to execute {Unload Filament}.</p> <p>Unload the filament, referring to “6.6.2. Unloading Filament”.</p> 	
	<p>If the printer is turned on when there is no filament in the extruder (incl. right after installation) or the filament is loaded while filament fragments remain in the extruder, this can cause an extruder problem. The printer logic requires it to unload the filament if the power is turned on when there is no filament (no filament detected by the filament supply detection switch). If you do not see the filament in the filament entry of the extruder and the printer begins unloading, load the filament after waiting until unloading is completed.</p>	
	<p>If {Check Filament}, {Unload Filament} or {Load Filament} blink in the menu, select the blinking menu and follow the instructions to prevent an extruder problem.</p>	

⑤ When unloading is completed, {Load Filament} blinks because there is no filament inside the extruder. Select **{Load Filament}** to insert the filament inside the extruder. If {Load Filament} is not selected, push the filaments into the filament insertion hole of the Extruder.

```
>Load Filament
Unload Filament
```

⑥ Select **{Temp}** in {Load Filament} and turn the [ENTER] button to **set the temperature to 240C and heat the nozzle.**

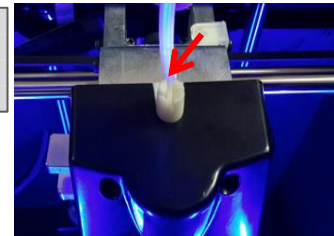
```
*Temp : ↓234/240°
Wait...
```

When the extruder nozzle temperature reaches the target temperature, the “Wait...” message will disappear and the {Load Start} menu will be displayed.

```
Temp : ↓240/240°
>Load Start
```

When you select **{Load Start}**, the extruder motor to move the filament is operated, and the “Insert Filament” message is displayed. Insert the filament into the filament entry of the extruder. When you push it approximately 7cm into the entry, it is notched and automatically pushed down. Manually push it until it is notched.

```
Loading...
Insert Filament
```



When some amount of melted filament is pushed out of the nozzle, press the [ENTER] button to stop filament loading.

```
Loading...
Press Enter Key
To Load Stop
```

Do not worry if the color of the melted filament that comes out of the nozzle during loading is different from the loaded filament. It is filament that was used during the test and left in the nozzle.



* It is recommended to set the nozzle temperature during the very first printing as the ABS temperature, regardless of the type of loaded filament, if ABS or PLA is used. It is set to 240°C for the final print quality test. During the test, the ABS load temperature is used to support both ABS and PLA filaments. (Refer to “[6.5. Caution and Notes on Using the Functional Menu](#)” and “[7.2. Printing after Replacing Filament](#)”.)

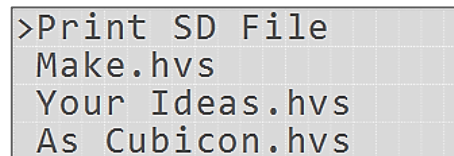
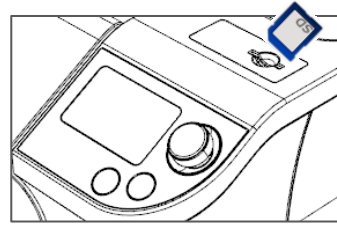
* If the type of filament used in previous printing is not clear, set the extruder nozzle temperature based on the filament of higher temperature, and heat the nozzle.

* When replacing the filament, it is recommended to load the filament so that a sufficient amount of filament is pushed out of the nozzle (1m or longer).

⑦ Insert the enclosed SD card in the SD memory reader and select the file to be printed. Press the [ENTER] button and select {SD Card} from the functional menu on the LCD screen. Select a G-Code file (*.hvs) from the list in the SD card.

Select an “ABS_*.hvs” file if the loaded filament is ABS, and a “PLA_*.hvs” file if it is PLA. Only files with the .hvs extension can be used for printing.

Files in any other format will not be supported. The enclosed SD card contains the G-Code (*.hvs) files of the models with short printing time for sample print.



⑧ The temperatures of the heating bed and extruder nozzle are raised sequentially to the temperature condition recorded in the G-Code file. When the heating bed temperature and extruder nozzle temperature are raised to the target temperatures recorded in G-Code, auto tilt of the heating bed is automatically executed, and printing begins.

The entire process is executed automatically when the user selects a G-Code file to be printed.

⑨ When printing is complete, **do not forcibly remove the printed material from the heating bed, but wait until the heating bed is cooled down.** You can easily remove the printed object from the heating bed when the heating bed temperature is cooled down to room temperature.

If the printed material is not removed from the heating bed even after the heating bed is cooled, create a small space at the edge of the bottom of the printed object with a flat object, and the object will be easily removed.



* ABS and PLA have different print temperatures (extruder and heating bed). The temperature condition must be reflected in the G-Code file (*.hvs for Cubicon) when the file is created. A sample G-Code file is included in the SD card for novice users. To print a 3D model, a user can create a G-Code file (*.hvs) of the 3D model using the latest Cubicreator slicing program included in the enclosed SD card or downloaded from the Cubicon homepage, then print the file.
* The printing condition differs according to the filament type (ABS or PLA) and according to the color even for the same type. In extreme cases, the condition may differ according to the filament manufacturing lot. As well, you can improve the print quality by fine-tuning the print condition according to the 3D model. To obtain the best print quality, it is important to find the optimum condition of the filament according to the model.



* The printing temperature condition of the extruder and heating bed must be the same as the filament temperature. If not, the print quality may deteriorate, and in extreme cases may cause extruder problems. **Check the print temperature condition of the printer and filament in use before printing.** If the temperature condition in the G-Code file differs from the filament temperature condition, you can change the temperature condition by selecting {Temperature > Extruder / Bed} from the functional menu.
* If you use excessive force to remove the printed object from the heating bed after printing, it may cause dislocation of the heating bed or electric shock and damage the printer. Wait until the temperature of the heating bed falls to room temperature.

7.2. Printing after Replacing Filament

This section describes the process of changing the filament before a new print job. It is the process of unloading a filament and loading a new filament, as described in “[6.6. Replacing Filament](#)” and then beginning the print.

The process can be divided into the following steps:

- 1) Unload the old filament (A) (Remove the filament (A) from the extruder)
 - {Prepare>Unload Filament} ..**Nozzle heating temperature (UT)**
 - ..“Pull Out Filament” ..{Unloading Stop}
- 2) Remove the old filament (A) from the filament carrier and mount the new filament (B)
- 3) Load new filament (B) (Insert the new filament (B) into the extruder, melt it and push it out of the extruder nozzle)
 - {Prepare>Load Filament} ..**Nozzle heating temperature (LT)**
 - ..“Insert Filament” .. {Loading Stop}
- 4) Select the G-Code file created with the temperature condition of the new filament, and print.

Even experienced users often make mistakes when setting the nozzle heating temperature, i.e. the extruder nozzle temperature, during loading and unloading.

During unloading, set the nozzle heating temperature (UT) to pull out the existing filament (A). **During loading, set the temperature to insert the new filament (B) into the extruder and discharge it, as well as the nozzle heating temperature (LT) to remove the filament (A) that is already melted in the nozzle. It is important to load a sufficient amount of new filament (B) and discharge it in order to remove old filament (A) remaining in the nozzle.**

This is the most important step in replacing a filament with a new filament.

PLA is generally melted at a lower temperature than ABS. When replacing an ABS filament with a PLA filament, if the nozzle heating temperature during loading (LT) is set to the PLA temperature, the ABS filament inside the nozzle will not melt, and thus will remain as residue, plugging the nozzle.

When replacing a PLA filament with an ABS filament, the PLA filament remaining on the nozzle’s inner wall is sticky and cannot be easily removed. For this reason, a sufficient amount must be loaded to remove the PLA from the nozzle several times to avoid nozzle plugging.

The following table shows the nozzle heating temperatures (UT)/(LT) according to the filament type (A)/(B) when the filament (A) is replaced by the filament (B) given an ABS temperature (extruder temperature) of 240°C and a PLA temperature of 210°C.

Nozzle Temperature	(A) ABS → (B) ABS	(A) ABS → (B) PLA	(A) PLA → (B) ABS	(A) PLA → (B) PLA
Unloading Temp. (UT) for Nozzle Heating	240	240	210	210
Loading Temp. (LT) for Nozzle Heating	240	240	240	210

The values in the table are just examples, and are not absolute values. The users must set the optimum condition based on their experience.

7.3. Replacing Filament during Printing




There may be the need to replace the filament during 3D printing because the filament in use has run out or the user needs to use another filament.

To support this, Cubicon Single has a function that enables the user to suspend printing, replace the filament and then resume printing.

This process is described below.

Press the [ENTER] button during printing to display the functional menu.

As described in “[6.4. Functional Menu during Printing](#)”, a different functional menu is displayed when the [ENTER] button is pressed during printing.

<p>① The figure on the right shows that printing is in progress.</p> <p>To pause printing, press [ENTER] to display the functional menu and select {Pause Print}. The menu structure differs from print standby mode.</p>	<pre> ↓240/240° ⌘115/115° ⌘ 49/ 50° F 100% ▣ testprint.hvs 01:25, 57% [01:05] </pre> <p style="text-align: center;">⌵</p> <pre> Temperature → >Pause Print → Stop Print → Configuration → </pre>
	<p>The menu function can be accessed using the [ENTER] and [BACK] buttons.</p>
<p>② Select {Pause Print} and wait for a while. Printing is suspended, and the menu shown in the figure is displayed.</p> <p>The extruder of the printer moves to the standby position (rear center) and is fixed.</p> <p>Printing is not stopped immediately, but after the data in the buffer memory is printed. The actual time will differ according to the 3D model.</p>	<pre> >Continue Print Load Filament Unload Filament Stop Print </pre>
	<p>When printing is paused, the extruder moves to the standby position and remains fixed there. Being fixed means that the extruder is locked so that the X/Y/Z movement motor is not operated. If the user manually moves the X/Y (extruder) and Z (heating bed) position, the printing position can be incorrect when printing is resumed and cause the printer to malfunction.</p> <p>Never change the extruder and heating bed positions when the movement motor is locked.</p>
<p>③ Proceed with following steps.</p> <p>{Unload Filament} → Nozzle heating → “Pull Out Filament” → {Unloading Stop} → [BACK] → (Replacing the filament spool in the spool carrier and inserting the filament all the way to the edge of the Teflon tube in the printer main body) → {Load Filament} → Nozzle heating → “Input Filament” → {Loading Stop} → [BACK]</p>	
	<p>* The nozzle heating temperature during unloading is set to the nozzle heating temperature before printing was paused unless the user changes it. It can be changed in {Unload Filament>Temp.}.</p> <p>* The nozzle heating temperature during loading is set to be the same as the nozzle heating temperature during unloading. It can be changed in {Load Filament>Temp.}.</p> <p>The nozzle heating temperature during loading should be set in consideration of both existing and new filaments.</p>
<p>④ After replacing the filament, select the {Continue Print} menu and resume printing.</p> <p>The extruder and heating bed of the printer return to the position before the pause, and printing is resumed.</p>	<pre> >Continue Print Load Filament Unload Filament Stop Print </pre>



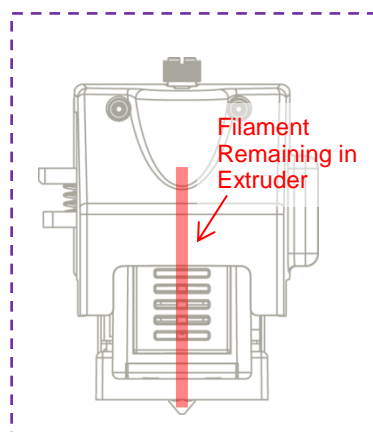
When {Continue Print} is selected, the extruder unit moves to the printer home position, which is left forward, pushes out some filament to maintain a clean discharge, and then moves to the print continuing position. You can easily remove the filament at the edge of the nozzle during loading.

7.4. Supplying Filament after Filament Runs Out during Printing

Cubicon Single can automatically recognize when filament is running out and is not being supplied to the extruder during printing.

If the filament runs out during printing, the switch inside the extruder does not detect the filament, and will automatically stop printing. The extruder then moves to the standby position, and waits for user confirmation and follow-up.

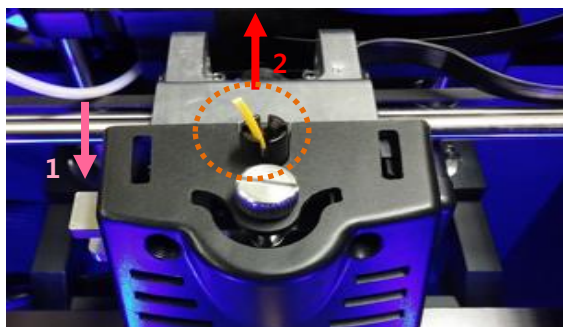
The picture below shows the scenario in which filament runs out during printing. Although the filament is not visible from outside, as shown in the picture on the left, the filament fragment actually remains inside the extruder, as shown in the figure on the right.





If you insert a new filament without removing the filament fragments remaining in the extruder, the new filament will not be pushed out of the nozzle and can cause a problem with the extruder. For this reason, you must unload the existing filament.

When you unload, the filament remaining inside the extruder will come out, as shown in the picture on the right.



Pull (2) the filament up out of the extruder while pressing the filament handle (1). Insert (load) a new filament and continue printing.



For more details on loading and unloading, refer to [“6.6. Replacing Filament”](#) and [“7.3. Replacing Filament during Printing”](#).

	<p>* The printer may operate differently from intended depending on the type of filament in use, the printed model, or the user's printing habits. In that case, disable the {Configuration>Filament Check} function in the functional menu. When {Filament Check} is turned off, make sure that there is no filament remaining inside the extruder.</p> <p>* During filament unloading, the melted filament residue may be stuck in the filament supply detection switch or the gear of the fixed part. In that case, disassemble the detachable extruder part and clean it with an ESD brush, etc.</p> <p>* When you use Pause/Continue during printing, the filament inside the nozzle may slide out during the movement and contaminate the printed object, or the printed object may show cracks or different colors as the printing condition before and after Pause/Continue differs. For this reason, it is recommended that Pause not be used unless it is absolutely needed in a special case.</p>
	<p>* When the no filament is detected during the printing, it prints all of data in the buffer memory before being {Pause} and stop the output while there is no sense in being {Pause} Stop all the data up to the state before the output buffer memory and stops.</p> <p>According to the print object, there is a lot of data of buffer memory with high filament consumption until {Pause}, and therefore the printing object cannot be used resulting from that filament cannot be pulled out even by unloading process.</p> <p>Please make sure to supply the sufficient filament before printing the object.</p> <p>* Since the filament supply detection function uses a sensitive sensor, it can be easily damaged if you apply excessive impact to the extruder or load/unload the filament with excessive force.</p>

8. Troubleshooting

	<p>* Problems with the printer hardware can sometimes be solved by initializing the printer through {Configuration > Initialize EEPROM} in the functional menu or by updating the firmware. Please refer to the Cubicreator Operation Manual for information on updating the firmware.</p> <p>* In some models, the print quality can depend greatly on the print condition or the Cubicreator option setting during G-Code creation. For this reason, you should attempt different print conditions or option settings to find the optimum print quality.</p>
	<p>If you encounter a problem with the equipment, it is important to clearly determine the problem situation. If necessary, please take a picture or video to refer to when supporting customer.</p>

1) I cannot see the data on the SD card.

- Confirm that the SD card is properly inserted into the SD card reader. Confirm that it is oriented in the correct direction, and insert it again.
- The SD card may have been damaged. Use another card and check.
- The Cubicon Single supports the SD Card formatted with FAT32 file system.
- If it is SD card of other file system, format SD card as FAT32. It cannot support FAT32, depending on the SD card.
- Cubicon Single supports files with file names that use alphabet characters only. If you use another language for the file name, the name may be corrupted or empty. Change the file name to use alphabet characters only and try again.
- Confirm that the file to be printed is a G-Code format file with the *.hvs extension.
- Cubicon Single can use only G-Code files (with the *.hvs extension) format that have been sliced with Cubicreator. G-Code files created using other slicing programs may not be supported.
- The number of Files in the SD Card is limited up to 150 per each folder. Clean up the folder because it is not shown if there are more than 150 files in the folder.
- Folder of the SD Card will be recognized up to step# 2 Sub- folder.
In other words, it is recognized as Root / Sub1 / Sub2.

2) The data in the SD card is not output.

- Confirm that the file to be printed is a G-Code format file with the *.hvs extension.
- Cubicon Single can use only G-Code files (with the *.hvs extension) format that have been sliced with Cubicreator. G-Code files created using other slicing programs may not be supported.
- The data in the SD card may be damaged. Create the G-Code file again and try it.

-
- If you set the wrong option on the Cubicreator when slicing it cannot be printed well. Use the Cubicreator to make sure that G-Code file is normal. If the print path which seems G-code appears to be an unusual path, G-Code is incorrect.
-
- The slicing through the Cubicreator cannot work well due to the wrong 3D Model. Open the original 3d model through the Cubicreator, check if there is any problem on slicing or G-Code conversion 3D and determine whether the 3D model is ok using other 3D model inspection program.
-
- Data may have been incorrectly saved in the SD card because of a security program or a virus. Check the data, make the necessary correction and try again.
-

3) I cannot print with the PC connection.

-
- Check to determine if there is any problem with the PC to printer connection via USB.
-
- Check whether the Cubicon Single driver is installed in the PC. Install it if needed.
-
- Confirm that the OS of the PC is supported by Cubicon.
- If it is OSX(MAC OS), you should use the Cubicreator v2 for OSX, Baudrate of printer should be set as 115,200.
-
- Check to determine whether the PC has been infected by a virus. Correct the problem and reinstall the driver.
-

4) The filament is not extruded out of the nozzle.

-
- Ensure that the filament is authentic.
Because some filament has the different temperature condition to the authorized filament or thermal deformation it may cause the problem when extruding filament and therefore the Extruder can be broken down. The failure of printer by using the unauthorized filament is excluded from the warranty service.
-
- Confirm that the filament is seamlessly supplied. If the filament in the spool is twisted or bent, correct the problem.
Twisted or wound filament may be cause the continuous problem, so it is recommended to discard it.
-
- Contaminated Filament by humidity or dirt can be changed from the first opening.
Using this filament cause the malfunction such as blockage of the Extruder. Please use the opened filament as fast as possible, secure the filament to the spool not to be wound and keep it in the vinyl for a short period to prevent the humidity/dirt.
-
- Make sure the thickness of supplied filament is too thick or thin. Please use the 1.6~1.9mm diameter of filament for the accurate supply.
Using thin or thick filament may cause the malfunction such as getting jammed to the equipment.
-
- In case the filament is twisted or jammed inside of the Extruder, it may cause the problem on the extruding to stop extruding the filament.
The twist problem may be improved with decreasing the temperature of inside of the equipment.
-
- Confirm that the detachable extruder part is properly mounted. If there is a mounting problem, an error message may be displayed on the LCD screen.
-
- Confirm that the temperature conditions of the filament in use and extruder of the printer are correct.
-
- The nozzle may have been plugged. Clean the nozzle, referring to "[6.8.2. Cleaning of Detachable Extruder and Nozzle](#)".
-
- Have the nozzle replaced by an authorized service technician. The nozzle is consumables.
-

5) The printed object does not adhere to the bottom (heating bed).

-
- Confirm that the filament is authentic.
It may cause the malfunction of printer while printing because some filament is not stick to the heated bed.
-
- Contaminated Filament by humidity or dirt can be changed from the first opening.
Using this filament cause the malfunction such as blockage of the Extruder. Please use the opened filament as fast as possible, secure the filament to the spool not to be wound and keep it in the vinyl for a short period to prevent the humidity/dirt.
-
- Clean the surface of the heat bed.
Do not use wet wipes because washing ingredient of some wet wipes can contaminate the coating of heated bed.
-

-
- If the Functional Menu {Configuration > Autotilt > Always Autotilt} is off, set it on. If it is off, the bed tilting is now working properly.
-
- Confirm that the temperature conditions of the filament in use, heating bed and extruder are correct. In Cubicon Single, the heating bed and filament in use must have the proper temperatures to adhere well to each other.
-
- Check whether the area stuck to the heating bed is too small, or the bottom of the printed object is irregular. You can correct the problem by using the bottom aid option or by slowing down the first layer print speed when creating the G-Code.
-
- Use the proper tape when needed. For some models or filament types, it may be helpful to use a separate tape such as Kapton tape on the heating bed.
-
- Check whether coating is damaged or severe warping of the heating bed. In this case, you must replace the heating bed. Use the authorized service.
-

6) Parts (mostly bottom boundaries) of the printed object are taken off the bottom.

-
- Refer to the “5) The printed object does not adhere to the bottom (heating bed).” and take proper action.
-
- The problem can be partially improved by changing options such as internal filling when creating the G-Code
-
- This is due to contraction of the material caused by the printer using the thermal melting method. Adjust the printing condition (extruder, heating bed and printer inside temperatures) or use material that does not contract in this way. Although contraction may improve with some materials, this is a natural phenomenon that occurs as the melted filament is solidified. **The most effective way to correct the problem is to modify the model to reduce the contraction.**
-
-
-

7) The middle of the printed object is cracked.

-
- This is caused by contraction of the material caused by the printer using the thermal melting method. Adjust the printing condition (extruder, heating bed and printer inside temperatures) or use a material that does not contract in this way. Although there may be less contraction with some materials, it is a natural phenomenon that occurs as the melted filament is solidified. **The most effective way to correct the problem is to modify the model to reduce the contraction.**
-
- The problem can be partially alleviated by changing options such as internal filling when creating the G-Code.
-

8) I cannot remove the printed object from the bottom (heating bed).

-
- Wait until the heating bed is sufficiently cooled. The heating bed can be damaged if you remove the printed object from the heating bed by force.
-
- In Cubicon Single, the printed object is stuck to the bottom during printing and can be easily removed when the heating bed is cooled after printing is completed. The temperature at which the printed object is removed depends on the type of filament being used and the model.
-
- If the printed object is not taken off even after the heating bed is sufficiently cooled (to room temperature), push a flat object into the bottom of the printed object to take it off.
-
- If the residues of the printed object remain fixed on the heating bed, the printed object may be stuck to the residue, and not taken off the bed. Always keep the heating bed surface clean.
-
- If you do not completely remove the acetone from the bed after using the acetone to clean the heating bed, the printed object may not come off the heating bed. After using the acetone, completely wipe it out with wet cloth.
-
- You must replace the heating bed if the coating of the heating bed is damaged. Use the authorized service.
-

9) Printing is completed, but only parts of the model are printed. Other parts are not printed at all, or are incorrectly printed.

-
- Refer to the “4) The filament is not extruded out of the nozzle” and take the proper action.
-

-
- Check the model and G-Code. If the model is improperly designed, there can be a problem with G-Code creation. Modify the model and try again.
-
- For some models or supports, the printed object can interfere with the support, causing printing problems. This problem can be corrected by changing the slicing method (adjustment of the printed object, change of direction, etc.).
-
- Remove the foreign substances from inside the nozzle. Clean the nozzle, referring to "[6.8.2. Cleaning of Detachable Extruder and Nozzle](#)".
-
- If the problem continues when there is no problem with the model, replace the nozzle or other parts. Use the authorized service.
-

10) Printing is terminated due to failed auto leveling without completion.

-
- Check whether the vibration in the environment affects the printer during auto leveling. Auto leveling can fail if the vibration is transmitted to the printer.
-
- The printer executes auto leveling of the bed before beginning printing. If the auto leveling fails for whatever reason (after several automatic attempts), the message "Tiltalign Failed" is displayed and printing is stopped. As the problem can be solved by rebooting the printer, turn off the printer, wait for around 10 seconds, and turn on the printer again.
-
- If the Functional Menu {Configuration > Auto tilt > Always Auto tilt} is off, set it on. If it is off, the bed tilting is now working properly.
-
- After removing the filament, and separating the detachable Extruder, check if there is any problem on up and down motion of the detachable Extruder. If up/down motion of detachable Extruder has some trouble due to contaminants may cause problems in the Auto Level.
-
- After checking if there is overload of filament path including internal Extruder, if there is overload by contaminants, remove the contaminants and re-operate the Auto Leveling.
-
- If the problem continues, replace the heating bed or have the authorized personnel check the printer. Use the authorized service.
-

11) Filament supply detection function does not work properly.

-
- Check the diameter of supply filament is range of 1.6~1.9mm and use it.
-
- In case of Flexible filament like TPU, the filament can be pressed to the supply detection sensor, so deactivate the filament supply detection function. (Set off on the menu of Configuration-Filament Check).
-
- The mechanism of supply detection sensor is worn when used for long. Please replace it through the authorized service center.
-

12) Printing is stopped before completion.

-
- Check the power supply.
-
- Check the connection with the PC if the printer is connected to a PC.
-
- If the problem continues, turn off the power and have it checked by authorized personnel.
-

9. Product Specifications

Dimension	
Product size	554x 579 x 524 mm (WxDxH)
Product weight	24 kg
Packaging box	640 x 630 x 610 mm (WxDxH)
Packaged weight (incl. main body and accessories)	about 33 kg
Temperature	
Ambient operating temperature	15 - 35 °C
Storage temperature	0 - 35 °C
Power	
AC input	110V ~220V, 50/60Hz, 2.5A@230V/5A@115V
Power supply	24 V DC @ 13A
Power consumption	~ 320W(Max)
Memory and communication	SD Memory card(FAT 32), USB connect cable
Software	
Supplied slicing software	Cubicreator
Input 3D design file format	.stl and .obj
Supported OS	Windows XP, Windows 7 + / OSX (Cubicreator v2 +)
Printing	
Printing technology	FFF- Fused Filament Fabrication
Printed object size	240 x 190 x 200 mm (WxDxH)
Layer height setting	150~300microns, minimum 100um
Printed wall thickness	Optimal: 400+um with 0.4mm Nozzle
Filament diameter	1.75 mm
Filament type	ABS, PLA Filament
Nozzle diameter	0.4 mm standard
XY position precision	12.5 um
Z position precision	2.5 um
Max. nozzle temperature	260 °C
Max. heating bed temperature	120 °C

- The specifications can be changed, without advance notice, when needed to improve the product.

Information to the User

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING

Any changes or modifications not expressly by the manufacturer could void the user's authority to operate the equipment.