ROKIT

Think! Make! Touch!

3DISON H700

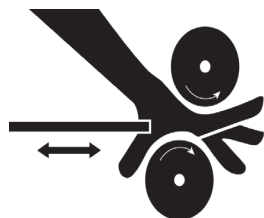Multiple Perfection, Desktop 3D Printer 3DISON H700

USER MANUAL

This User Manual is designed to help you start your experience with 3DISION H700. In order to achieve great results, you will need to experiment and tinker. That's why it's so crucial to take the time to learn about your new machine. In this User Manual, you will learn the basics of the 3DISON H700, as well as how to unpack it safely and get it set up. Okay. Let's get it started.

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A. Safety Information

WARNING The 3DISON H700 generates high temperatures and includes moving parts that can cause injury. Never reach inside 3DISON H700 while it is in operation.

WARNING There is a risk of shock. This product is not user serviceable.

WARNING Do not leave the 3DISON H700 unattended during operation.

WARNING Using the laser engraver requires instruction from the salesperson.
Thus, not instructed user is prohibited to use the function.

CAUTION Wearing protective glasses is recommended before using the laser engraver.

CAUTION is When opening the 3DISON H700 for service, ensure that the power supply turned off and the cord is disconnected from the wall socket.

CAUTION Only use power supply provided with your 3DISON H700.

CAUTION Do not print using materials that have not been approved by ROKIT.

CAUTION The socket outlet must be located near the equipment and must be easily accessible.

KC, CE, FCC certification - 3DISON H700 is certificated by KC, CE, and FCC which indicates that 3DISON H700 meets the requirements of customer protection on safety, health, and environment in Korea, European, and the U.S.

B. Welcome to 3DISON H700!

B1. About 3DISON H700

3DISON H700 is a desktop 3D printer based on the fused filament fabrication (**FFF**) method. 3DISON H700 is a world-class Desktop 3D printer boasting up to 25 micron(0.025 mm) of superfine layer and speed of 1000mm/sec. 3DISON H700 features versatility when it comes to **wider options of materials** such as metal paste as well as filament types just by interchanging its extruder.

Besides, 3DISON H700 performs the function of cutting or carving with **the laser engraver**. This printer also comes with **an internal WiFi Camera** enabling monitoring in different locations and **embedded back-up battery** in case of power failures.

※ FFF method : This method works by laying down consecutive layers of material at high temperatures allowing the adjacent layers to cool and bond together before the next layer is deposited.

Specifications

lPrinting

Method of printing	Fused Filament Fabrication (FFF)
Maximum Build Size	41.6 ℓ (290mmX205mmX700mm)
Printing Speed	40mm/sec ~ 1000mm/sec (* the speed of 1000mm/sec is possible in acceleration mode)
Hot-end(nozzle) Size	0.4mm, 0.6mm (an 0.2mm nozzle additionally provided)
Layer Resolution	25 ~ 600micron (100~300micron recommended)
Positioning Precision	X, Y : 11micron, Z : 2.5micron
Printing Material	- Spool Type: PLA, ABS, Nylon, Flexible-plastic, HIPS, PVA, Heat-resistant PLA, Wood, Stone, Engineering-plastic(Thermoplastic) etc. - Paste Type: Metal Paste(Silver, Bronze, Copper), Chocolate Paste etc. (*Please visit our website as often as possible and meet newly added and improved materials which are optimized to 3D desktop printer 3DISON. http://en.3disonprinter.com/)

Specifications

|Hardware

Extruder	Dual Extruder System, Universal Extruder
Shaft Thickness	X : 8mm, Y, Z : 12mm
Belt/ Pulley	2GT Belt / Pulley
Internal LED Lighting	O
LED for checking operation of the heated bed	O (for checking the working status)
Inner Thermometer	O
Laser Engraver	O
Monitoring WiFi Camera	O
Embedded Battery	O

|Hardware

Storage Temperature	10℃ ~ 40℃
Extruder Temperature	190℃ ~ 300℃ or more

|Software

Control Program	CreatorK
Operating System	Windows, Mac OS X
Compatible File Format	STL, OBJ

|Electrical

Input	100 ~ 220v, 50/60Hz
Output	24v, 9.0A
Connectivity	Stand-alone SD card USB Cable

|Sound

Average Operational Noise	About 50 dBA.

|Physical Dimensions

Frame Dimension	511mmX402mmX1030mm
Total shipping weight	32.5 kg

B2. 3DISON H700 Overview

Upper view

Front view   Back view   Side view

1 Door   2 LCD thermometer of the heated bed
3 Printing bed 4 Extruder 5 Roof case 6 LCD keypad
7 Arrows and OK button   8 SD Card slot 9 USB drive port
10 Power socket   11 Power switch

C1. Unpacking your 3DISON H700

1. Open the box containing 3DISON H700. Then you will see a foam case containing accessories. Remove this foam case and check what is in it.

NOTE: You can download a PDF copy of this User Manual on our website.

2. Carefully remove a cardboard and protective air bag covering the body of 3DISON H700, and now you should see a glimpse of your 3DISON H700. Take the box with the accessories out and check what is in the box.
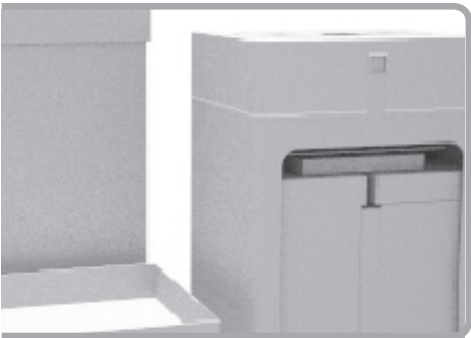
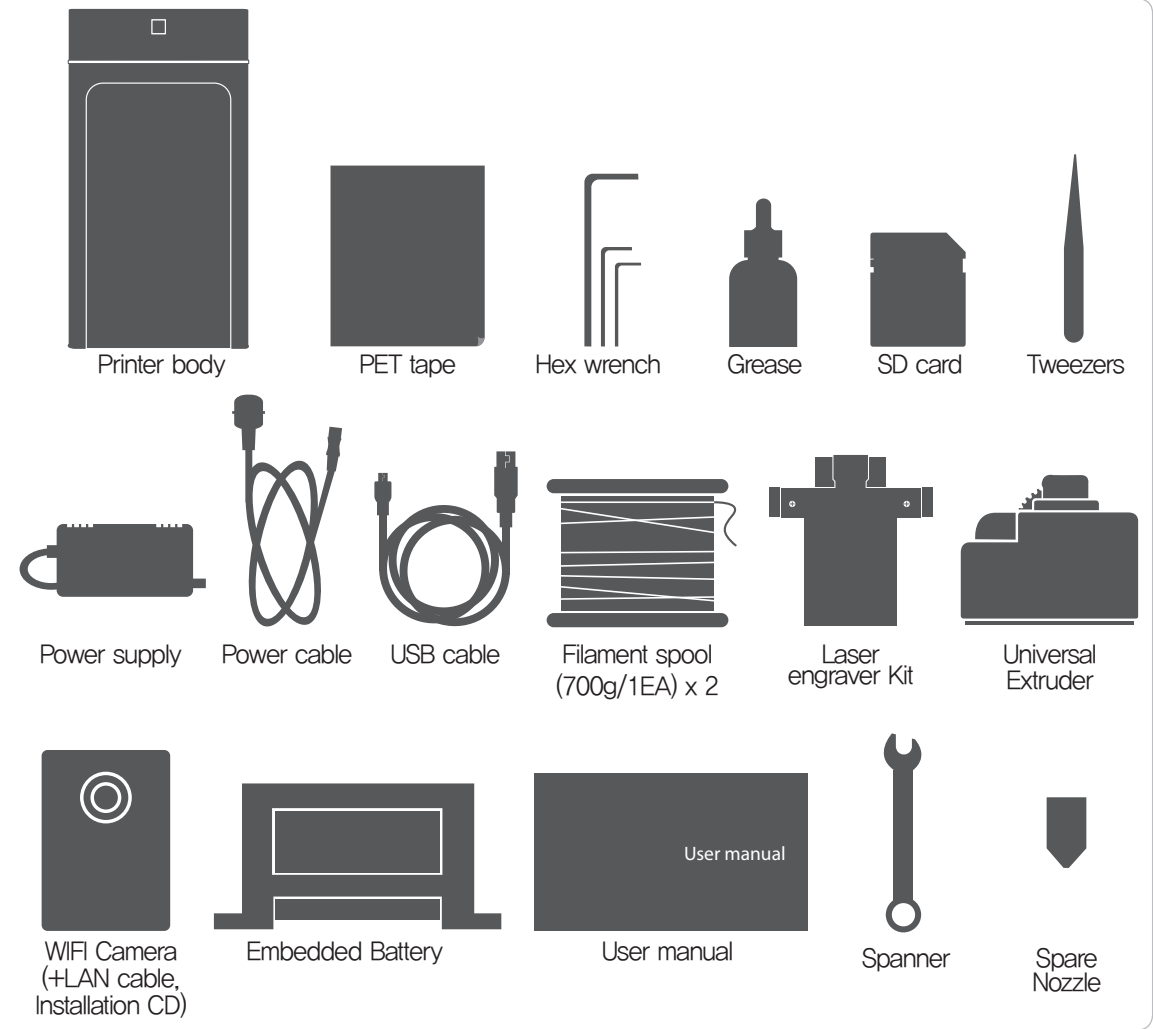3. Now you finally set it down on a stable surface.

NOTE: Do not discard the box and protective air bags. Save these – they will be handy if you ever need to transport the printer in the future.

C1. Unpacking your 3DISON H700

❙Hardware

Printer body　　PET tape　　Hex wrench　　Grease　　SD card　　Tweezers

Power supply　　Power cable　　USB cable　　Filament spool (700g/1EA) x 2　　Laser engraver Kit　　Universal Extruder

WIFI Camera (+LAN cable, Installation CD)　　Embedded Battery　　User manual　　Spanner　　Spare Nozzle

	ƎDISON H700
ƎDISON H700 Printer	Printer Body
Tool Kit	PET Tape, Hex Wrench, Grease, Spanner, SD Card(4G)
Filament Box	Filament Spool x 2 (700g/ 1 EA)
Accessories	Power Supply and Cable, USB Cable, Spare nozzle Tweezers for removal
	Universal Extruder(for Paste-type Printing)
Options	Laser Kit, WIFI Camera, Embedded Battery

※ *Please visit our website to purchase additional printing materials and accessories.*

C2. Setting up your 3DISON H700

1. Make sure the power switch is Off. Locate the power cord and plug it into the power input port at the back of the 3DISON H700. Plug the power cord into an electrical outlet.

*NOTE: The socket outlet must be located near the equipment and must be easily accessible.*

2. The on/off button ('– | O') of the 3DISON H700 is located in the upper part on the back of the machine. The 'O' represents off and the '–' represents on. When the switch ON '–' the 3DISON H700 is turned on and should start up. Press the power button to start.

NOTE: It is recommended to turn off the 3DISON H700 when it is NOT in use.
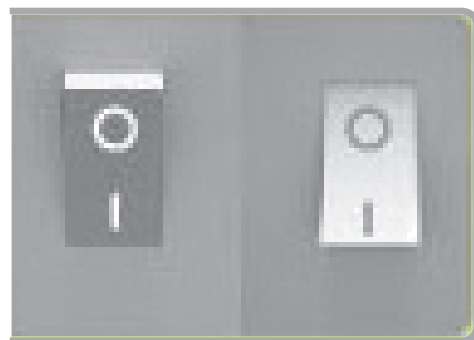
3. Once you see the LCD display as shown in the picture, load filament and then level your the printing bed for the first time. You can load or unload filament, or adjust the horizontality of the printing bed by selecting the concerned menu Utilities.
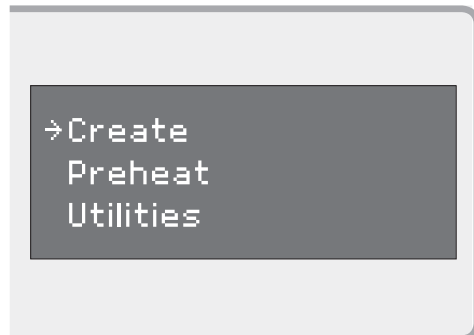
Tip. LCD Display
• Four Arrow buttons surround a central OK button. Use the arrows to navigate through the LCD menus
• OK button is to make selections.
• The left arrow often allows you to go back or cancel an action.

**❙Display Menu Introduction**

1. Create from SD : To load a file from SD Card

2. Preheat : To preheat the hot-end(nozzle)
    - Extruder : by setting On/Off you can start preheating of the extruder
    - Platform : by setting On/Off you can start preheating of the print bed

3. Utilities : It will lead to 12 different options for hardware. You do not want to change the settings without any specific explanation because they are only for developers or after-sales service
    - Monitor mode : it shows current temperature of the extruder and printing status
    - Filament loading : to put the filament into the extruder or pull it out of the extruder
    - Preheat settings : to set up temperature and the printing bed
    - Level Build Plate : to manually level the printing bed
    - Pre-leveling : to level the printing bed before starting Auto-leveling
    - Home Axes : To default the position of X, Y, Z axis
    - Bot Statistics : Shows the operation time spent printing.
        - *Life Time: Total operation time of 3DISON H700*
        - *Last Print: Last build time*
        - *Filament: Total amount of filament used (in meter)*
        - *Fil. Trip: Amount of filament used for the last build (in meter)*
    - Filament Odometer : Not only this shows the filament information, but also you can de fault the trip value here.
        - *Life: Total amount of filament used (in meter, unable to reset)*
        - *Trip: Amount of filament used for the last build (in meter)*
    - General Settings : To configure sound, LED color or etc
        - *Ditto Printing Off*
        - *Override GCTemp OFF*
        - *Pause with heat OFF*
        - *Sound ON/OFF*
        - *Heat LEDs ON/OFF*
        - *LED Color :to change LED colors.*
        - *Accelerate : To accelerate the extruder speed*
        - *Extruders : To choose SINGLE or DOUBLE depending on 3DISON H700*
        - *Extruder Hold ON/OFF*
        - *HBP Installed NO*
        - *Tool Offset Sys NEW*
        - *Check SD Reads YES*
        - *P-Stop Control OFF*
    - Profile
    - Home Offsets
    - Jog Mode : To control manually the location of the extruder and the build platform
            * Press the 3D button to go back to the main menu
    - Disable Steppers : To stop the motor.
    - Enable Steppers : To start the motor.
    - Blink LEDs : To make LED lamp flickering
    - Calibrate Nozzles
    - Restore Settings :To initialize 3DISON H700
    - Eeprom
   - Version Information : It shows the firmware version.

D1. Filament Loading and Unloading

|When loading

1. Go to the LCD panel and select **Utilities > Filament Loading.** Select **Load Right** or **Load Left** depending on which side you want to load the filament. Then the extruder will start preheating.
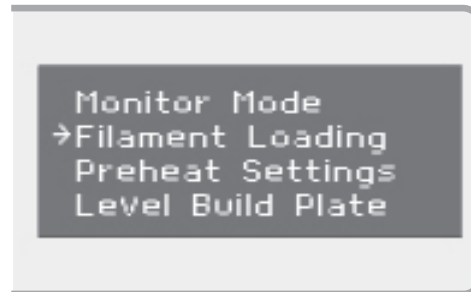
2. When the extruder is completely heated with the alarm, put the filament spool into the roof case and insert the filament into the hole in the middle of the roof case.
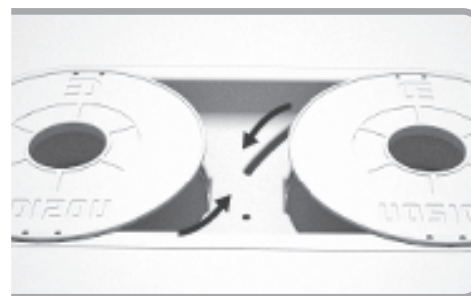
NOTE: Put left filament into the front hole and right filament into back hole on the roof case.

3. After opening the front door, check to see if the inserted filament is in, then locate the extruder to the middle.

4. Push the filament into the blue cap on the extruder by pressing the spring block until you feel the motor pulling in it. Wait until you see the filament coming out from the extruder nozzle.
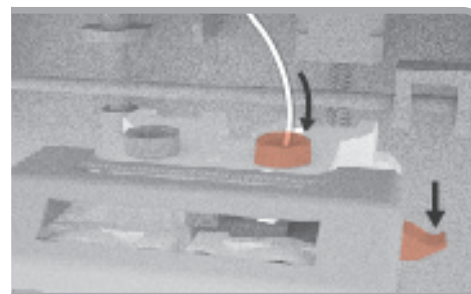
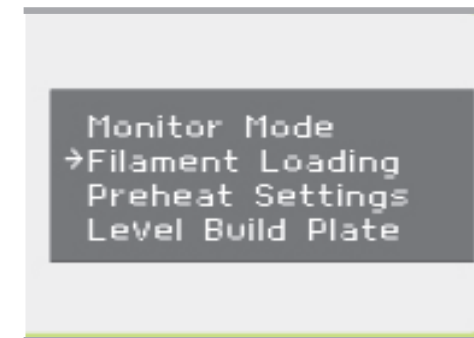*NOTE: Please make sure to keep the end of curved filament straight before inserting.*

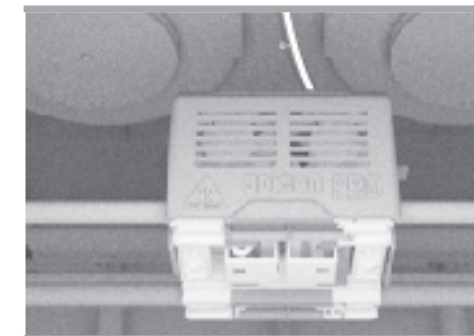5. Press **OK** button to stop loading.

D1. Filament Loading and Unloading (Continued)
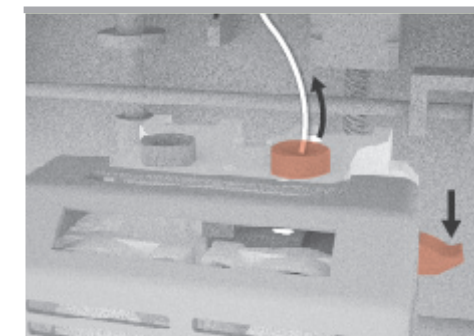
|When Unloading

1. To remove the filament from the extruder, select **Utilities>Filament Loading** and select **Unload Right** or **Unload Left** depending on which side you want to remove the filament.

2. When the extruder is completely heated with an alarm, locate the extruder to the middle.

3. Pull the filament out of the extruder with the spring block pressed.

4. Press the **OK** button to stop unloading.

D2. Leveling the Printing Bed

Leveling before 3D printing is so crucial that it can influence the quality of the print-out. If the printing bed is too far from the extruder's nozzles, or if one part of the bed is farther away from the nozzles than another part, your 3D prints might not stick to the bed.

Meanwhile, if the printing bed is too close to the extruder's nozzles, the bed can block the filament from extruding from the nozzles. This can also scratch the printing bed and tear the PET tape on it.

❙When using Standard Leveling (manually adjusting)

1. Press the power button to start to adjust the horizontality of the printing bed. Open the front door and put a sheet of A4 paper onto the printing bed before manual leveling.

NOTE: The thickness of A4 size paper is about 0.1mm and this paper is used in leveling the bed to keep 0.1mm space between the nozzle and the printing bed.

2. Select **Utilities > Standard Leveling** on the display menu.

3. Level the printing bed by adjusting the round knobs each time when the extruder reaches to the front, rear, left, right and center in sequence. (Press the OK button so that the extruder move to another point.)

NOTE:
• At this time, it is important that you should turn the round knobs as same degree as possible at the same time using both hands.
*• If knobs are turned to the **left**, the gap between the nozzle and the printing bed will **increase**. If knobs are turned to the **right**, the gap between the nozzle and the printing bed will **decrease**.*

4. Upon completion of adjusting the round knobs each time when the nozzle reaches to the printing bed in sequence, pull forward the A4 size paper and if the A4 size paper touches the nozzle and slides with feeling of a little bit scratching, leveling has been completed. Press OK button to finish the leveling.
NOTE: In CreatorK, uncheck the mark in the Auto-leveling item when generating Gcode.
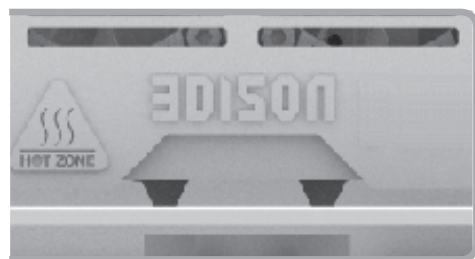
D2. Leveling the Printing Bed (Continued)

❙When using Auto-Leveling

1. Place the A4 size paper first before using Auto-leveling functions. Select **Utilities > Auto-Leveling** in the display menu.

NOTE: The thickness of A4 size paper is about 0.1mm and this paper is used in leveling the bed to keep 0.1mm space between the nozzle and the printing bed.

2. When the extruder comes to the center, adjust 4 round knobs while trying to pull forward the A4 paper to verify the space as the same manner as Standard Leveling (See item 4 in page 14).

NOTE:
• In case of using Auto-Leveling, it is okay to level the center of the printing bed only before use unlike Standard Leveling.
• It is recommendable to use Standard Leveling one time in 10 times of Auto-leveling, or when physical shock occurs to the printing bed.

3. Insert the SD Card on the top of the printer and select the file on LCD panel. It starts to print with auto leveling function.

NOTE: In CreatorK, check the mark in the Auto-leveling item when generating Gcode.
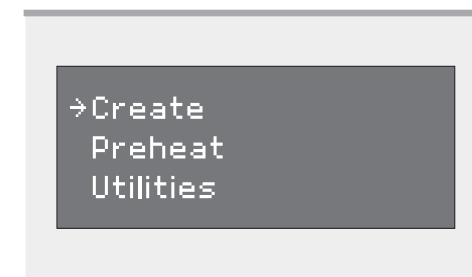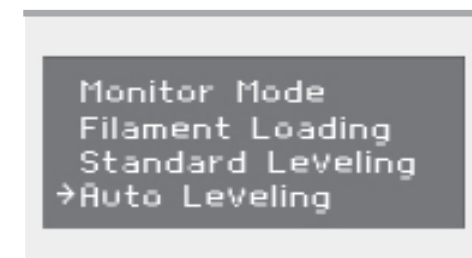
E1. CreatorK 8 Overview

Rokit Inc. has developed **CreatorK 8** to help its users to easily convert STL and OBJ files into G Code, X3G format that can be 3D printed with this 3D printer.
You can always expect the best output by changing a variety of settings on CreatorK 8.
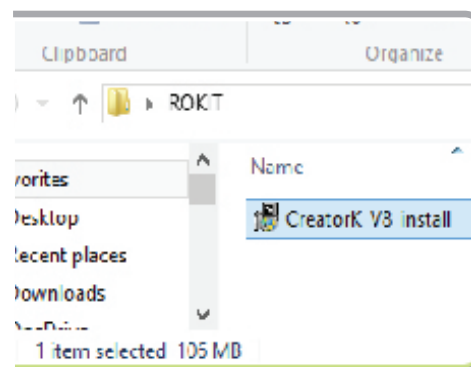
|Menu Bar Overview

|	
G CODE	Generating G-code
G-CODE	Save into SD Card
	Connecting : When you connect your computer and CreatorK8 with USB cable
	Disconnecting
▶	Build : When you want to print out the x3g file directly through USB cable
❚❚	Pause
	Generating G code to use Laser Engraver

E2. How to use CreatorK 8

**|Installing CreatorK 8**

1. Run "CreatorK V8 Install" setup file.

2. Follow the directions to install the software. The installation of Python 2.7.6 and USB driver is automatically implemented at the same time.

※ *Python : It is one of the widely used program- ming languages which enable the slicing program named Skeinforge to activate.*
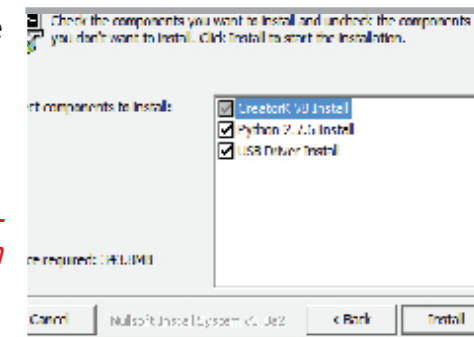
3. Go to the Desktop and you can see the "Crea- torK" generated. Once you opened CreatorK 8, se- lect **Machine > Machine Type.** You should select corresponding Machine Type of 3DISON+ single, 3DISON+ duo, 3DISON MULTI, 3DISON PRO or 3DISON H700.
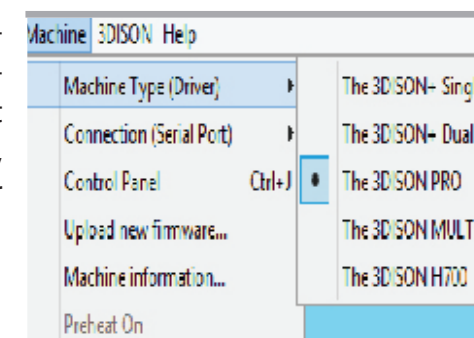
4. In order to select the language displayed on this software, please refer to the below images(it shows how to change Korean into English). Finally, close the CreatorK 8 and restart it. Now CreatorK will be ready to use.
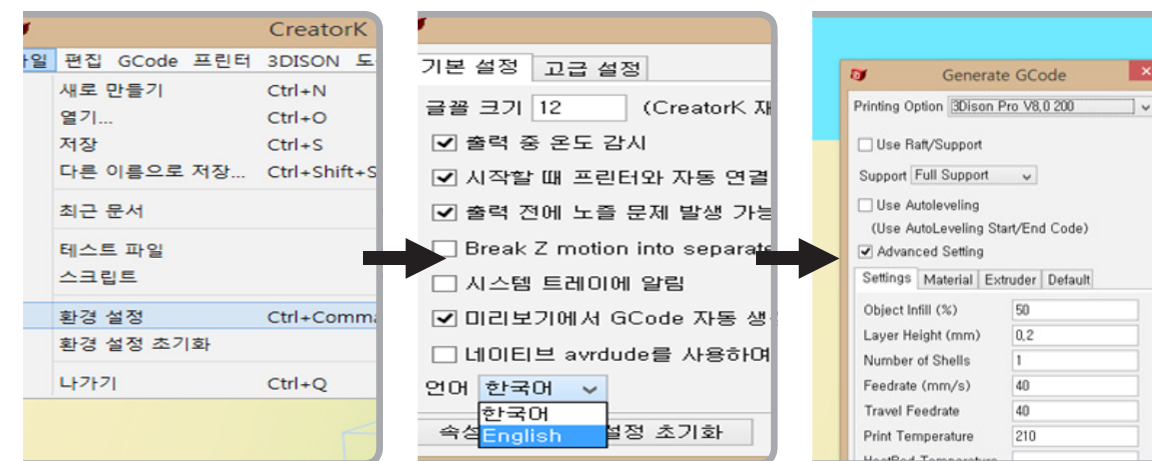
E2. How to use CreatorK 8 (Continued)

Basically, it is recommended to use SD card to save .x3g file for 3D printing for safety in case of power outage. However, you can also print directly on your CreatorK by connecting your computer to the printer with the USB cable without saving and using SD card.

❙Connecting to Printer on CreatorK 8

1. Connect your computer to the printer with the USB cable.

2. Go Select **Machine >Connection(Serial Port)** and choose one of the detected serial ports on the same menu bar.

NOTE : If you are using Windows 8 and want to connect the computer and printer, please visit Rokit Inc's website and refer to the instruction to install a driver to use this function.
3. After choosing your serial port, click the Connect button on the menu bar.

4. Connect to your printer by clicking "Build" button to start your printing.
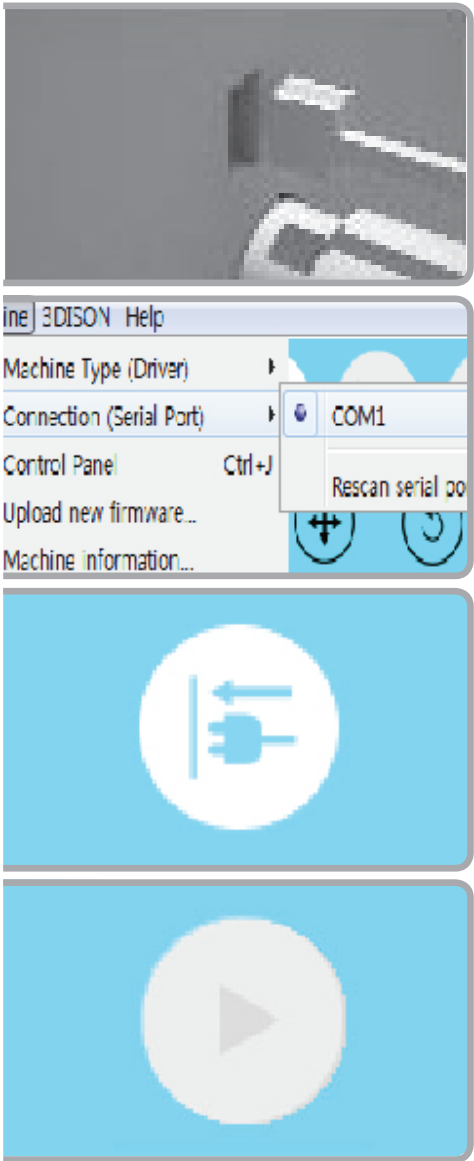
E2. How to use CreatorK 8 (Continued)

❙Generating G-code

1. Select **File > Open** and choose STL file you want to 3D print. Otherwise you can just drag and drop the 3D image file into CreatorK 8.

2. When the file appears, you can adjust the size and the position of the object using the icons below on the menu bar.

Tip. If you push "Ctrl Z" it will undo the last function. The opposite of Ctrl Z is "Ctrl Y" which commands reverses the undo.

	Mirror function If you want to change x, y, z's mirror, click and put the mouse pointer on the box. Click right mouse button, and you can adjust x, y, z mirrors.
	Position change Using the 4 arrow icon, you can move the object. After clicking this button, you can adjust the position using direction keyboards.(It moves 1mm per click) And you can also move the position of the object using right button of the mouse. When clicking right mouse button, you can see x, y, z and center of the platform. You should choose center of platform every time you print out. *※ NOTE : Since 3DISON is based on a FFF(Fused Filament Fabrication) method in the 3D printer, the object piles up in layers on the plate. Therefore, if it is not fixed upon the surface, you may not get the result you expected.*
	Rotation change Using this circle arrow icon, you can rotate the object as you wish to print out. When clicking the right mouse button, you can see the screen below. You can rotate the object by X, Y, Z axis or by dragging it with the left mouse button. *※ NOTE : Depending on the rotation, the quality of objects may vary. The support is created automatically if the tilting degree of the angle is at least 45°. So this process is very important.*
	Rescale You can adjust the size using this magnifying glass icon. By dragging up and down mouse, you can rescale the object. And when you click on the platform, you can rescale the object to the maximum size. If you enter one, the others will change in proportion.

E2. How to use CreatorK 8 (Continued)

3. Once you finished, click on the G-code icon on the far left to generate G-code. Then a pop-up window will show up to save or not to save the .stl file which you have edited in location or size etc. After this, you can see this display.

Tip. 3DISON's software CreatorK 8 is based on the Skeinforge, which has a plenty of settings. We are providing about 9 appropriate printing options so that any users can set up the profile easily.
But, please note that you should enter each settings unless you choose a specific printing option. (Uncheck the mark in the Advanced Setting item.)

Following are specific explanations about the items you should set up before generating G-code. Your print-out's quality and time will be affected.

1) Printing Option   There are basic profiles optimized to print out what you want conveniently. (suggested but not required)
※ If you don't want to use these printing option, generate your own printing option by selecting **GCode-Edit Slicing Profiles** and clicking any profile and **Copy.**
① High Speed : 0.2 mm layer height for big-sized object
- 700 mm/sec on 3dison Pro and 3dison H700
- 300 mm/sec on 3dison Multi
② Standard : 0.2 mm layer height for mid-sized object
- 100 mm/sec on 3dison Pro and 3dison H700
- 100 mm/sec on 3dison Multi
③ High-Precision : 0.05 mm layer height for small-sized object
- 40 mm/sec on 3dison Pro and 3dison H700
- 40 mm/sec on 3dison Multi
④ Supreme-Precision : 0.025 mm layer height for small sized and smooth surface
- 40 mm/sec on 3dison Pro and 3dison H700
- 40 mm/sec on3dison Multi
※ The thinner the layer height the more the time is required to finish 3D printing
⑤ Laser : to cut 3 mm-thick acryl and 2 mm-thick plywood
⑥ Metal(Silver), ⑦ Metal (bronze), ⑧ Metal (Cooper), ⑨ Metal (Steel)

※ When generating Gcode before starting metal printing, be sure to choose the corresponding 'printing option' depend-ing on materials. These settings are optimized to the material and theses are provided by the developers of ROKIT Inc.
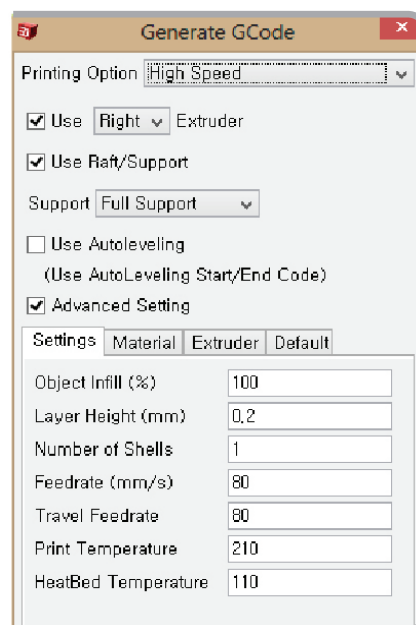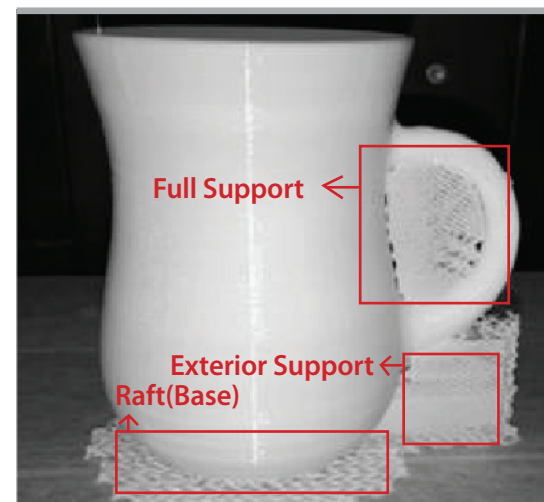
E2. How to use CreatorK 8 (Continued)

2) Support   **None :** 3DISON H700 would not build support, but only raft.
Exterior Support : Choose if there is a space between the bottom surface of the object and the plate.
Full Support : Choose if there is a space in the middle of the object.

Full Support

Exterior Support

Raft(Base)

(Before removing a raft and supports)

(Right after removing a raft and supports)

Tip. According to how you locate the object, different shape of supports will be printed. Minimizing supports as possible leads to better results as well as saving the material used for support.

3) Use Auto Leveling   You can choose auto leveling function optionally. If you want to adjust the printing bed manually, don't check the box.

4) Advanced Settings   If you check advanced setting box, you can find several setting options for printing. There are four categories in this advanced setting.

Settings
① Object Infill (%)
You can enter a number between 10 and 100 to fill inside.
Tip. It determines the density. If the density is not an important factor, you may set it up to less than 50 to save the overall printing time and material.
② Layer Height (mm)
You can enter a number between 0.05 and 0.3 for layer height.
Tip. The higher the layer is, the less the printing time. It is recom-mend-able for you to enter the number of over 0.1 mm in this item.
③ Number of Shells
You can enter a number from 0 to 3 to determine the thickness of outer cover and it depends on the object infill settings. When you don't want to make a shell, you should fill 100% inside.
Tip. When you want to enter '0' for shell, you should fill '100%' inside.
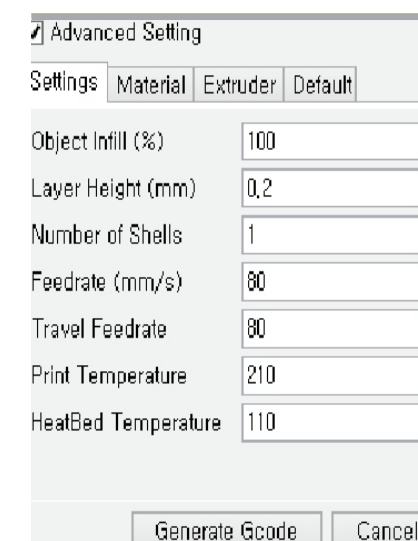
E2. How to use CreatorK 8 (Continued)

④ Feedrate (mm/s)

This shows how fast the extruder moves per second when it prints. You can choose between 20 and 1000. The lower the speed, the less the vibration and the output has smoother surface. The speed of 80~100 is recommended.

⑤ Travel Feedrate

This shows how fast the extruder moves per second when it does not print. The same number of feed rate is recommended.

⑥ Print Temperature

This determines the extruder's temperature at which the filament is melted. The temperature is variable depending on the materials. 195-215℃ for PLA, 235-250 ℃ for ABS recommended.

⑥ Heat Bed Temperature

70-80℃ for PLA, 145-150 ℃ for ABS.

Material

When you use different diameter of filaments, you should input corresponding diameters.

Extruder

It indicates nozzle's diameter. 3DISON H700 applies 3 different nozzle diameters : 0.2mm, 0.4mm and 0.6mm. You should select corresponding diameters when using different nozzles.

Default

Click 'Set Default Value' if you want to change values which were changed in Advanced Settings to initial set value.

4. After setting all the options, click generate G-code button which is at the bottom of the pop-up. And then you can see G-code build process screen. This process is a slicing process enabling 3DISON to 3D print the STL 3D image.
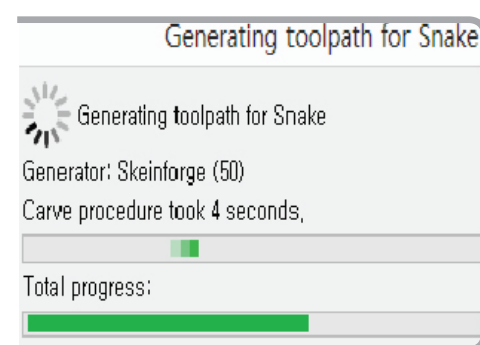
5. Once finished this work, SD card icon color will change, indicating G-code has been generated successfully. And then click the SD-Card button to save the file in the SD Card.(.x3g)
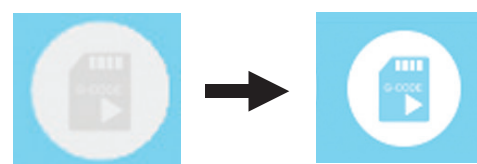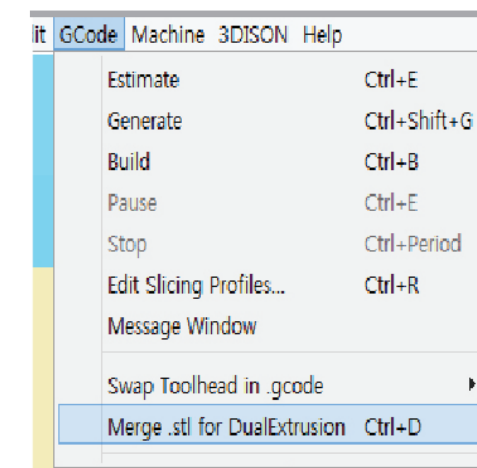
## E2. How to use CreatorK 8 (Continued)

|Printing with Dual nozzle system

1. Prepare two STL or OBJ files which compose a single object. Click G-code bar on the top of the window. Click **Merge.stl for Dual Extrusion** to merge into one g-code file.

NOTE：You CANNOT use support function in the dual nozzle system. For two files cannot mesh with each other if the supports are printed.

2. Choose two of each files(①, ②) you want to merge and designate the location to save. Then create the name of the G-code file to be generated. Then click merge button. You will see the two pop-up windows that settings must be made separately.
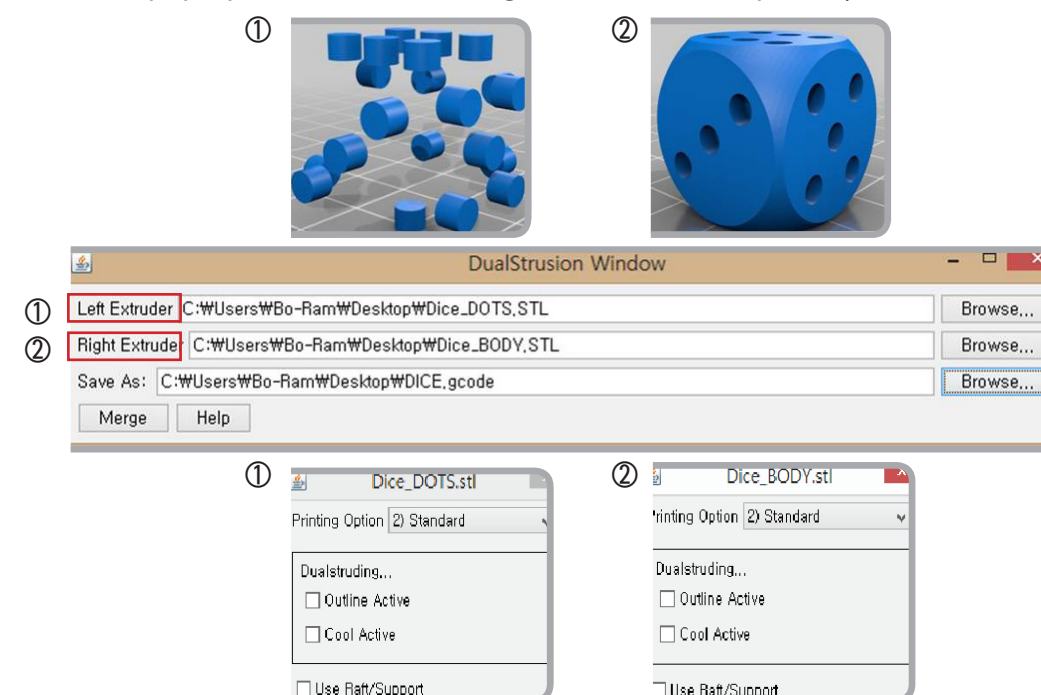
F1. Troubleshooting (FAQ)

IHardware

> **Q. What if the filament is not properly discharged?**

A1   There are a few causes to prevent filaments from coming out well. One of the most common causes is when is clogged. When this happens, set the extruder temperature higher than 240℃ at [Utilities] > [Preheat Setting], and use [Preheat] function of display menu to melt the filaments accumulated inside the nozzle, whereby the nozzle can be unclogged. (Reduce the extruder temperature again after use).
If the method mentioned above fails to solve the problem, use a hex wrench to unscrew the two bolts positioned at an upper surface of the extruder and the two bolts positioned at a lower surface of the extruder, separate the two parts and check if filament scraps clog the nozzle hole. Next, unclog the nozzle hole using a long unfolded clip or a smallest hex wrench provided at the time of purchase while the extruder is under a preheated state (do the separation work while the power is turned off after preheat. Malfunction may occur if fan separation work is performed while the extruder is under the preheat state)

A2   Malfunction may also occur when the gear extruding the filament is not properly operated. If malfunction occurs, dismantle the extruder, and remove the wastes accumulated on the gear using a brush such as tooth brush, then the problem can be solved.

A3   It is also important to set the extruder temperature according to material. If the extruder temperature is too high or too low, the material may hold together, or may not be properly solved to prevent a smooth output. Be sure to check the proper temperature according to the used material.

> **Q. What if the printed material is not properly stuck to the printing bed?**

A1   If the printed material is not properly stuck to the output board, or if the printed material is not properly outputted, it means that there is a problem in a gap between the nozzle and the output board. If this problem occurs, select [Utilities] > [Standard Leveling], adjust round knobs underneath the printing bed, and properly adjust the gap between the printing bed and the nozzle. This problem can be easily solved if Auto Leveling function of EDISON H700 is used (See page 15).

A2   The temperature of the printing bed may also be a cause preventing the printed object from being properly attached to the printing bed, which can be solved by setting a proper temperature of heated bed catering to the material to be used. In general, the temperature for PLA is in the range of 60℃ ~ 80℃, and the temperature of ABS requires a bed temperature of above 110℃.

F1. Troubleshooting (FAQ)

IHardware

> **Q. What if the printed object is generated with shrinkage?**

A1   It is important to control an ambient temperature of printed object under FFF method in which filaments are melted and stacked at a high temperature and stacked. When an ambient temperature of printed material is low, shrinkage might happen, and it may also occur if no heat exceeding a predetermined temperature is applied to the output board depending on used material. In order to prevent shrinkage, the temperature inside the printer must be maintained at a predetermined level or the temperature of output board must be adjusted according to used material.

※ Temperature inside the printer may change depending on the season and surrounding environments.

ISoftware

> **Q.Is design also available from the dedicated 3DISON's software (CreatorK)?**

A1   The dedicated 3DISON's software (CreatorK) is an optimized program to enable a simple setting 3D printing whereby no design correction is allowed. Manufacturing and designing of 3D modeling file must use 3D design program.

> **Q. Can MAX OS X use the dedicated 3DISON software (CreatorK)?**

A1   Dedicated 3DISON's software (CreatorK) supports Window and Mac operating systems. These operating systems can easily be installed and used.

> **Q. What types of 3D files are required to use the laser engraver?**

A1   STL file that is identical to the existing 3D modeling file is required. However, the modeling must be performed in such a manner that a shape to be cut be done in a linear format of 1mm width, and a thickness to be cut be three times thicker. The modeled STL file can be easily used by selecting a laser mode on Creator K.

F. Troubleshooting and Maintenance

F1. Troubleshooting (FAQ)

|Material

> **Q. Is it possible to use material purchased from other companies?**

A1   We recommend that you use a certified genuine filament in order to guarantee a stable output and product protection. You might not be able to get after-sales service benefits if non-genuine filament is used.

> **Q. Is it possible to print in filament format using a metal material?**

A1   The metal material is provided in a paste type in a dedicated cartridge, not in the filament type. Various materials may be outputted including a metal material and chocolate by replacing an extruder part from which material is extruded.

F2. Contract Support

For service assistance after purchase, please contact us to the phone number or email below.
T : +82-2-867-0182
F : +82-2-865-0182
Email : 3dison@rokit.co.kr

Please refer to our website for more information and latest news and questions regarding our products on our website. (http://en.3disonprinter.com/)

Annex1. Exchanging the Extruder for the Metal Clay Printing

|3DSION Metal Clay Printing

This metal kit comes with the printer. Final product is made by the process of 3D printing the metal clay through the nozzle and then firing the metal clay. For this interesting 3D printing, you should first open the metal kit.

What's in the METAL KIT

Universal Extruder   Motor Cable   Syringe

Extruder Stopper   Stainless Stell Mrush   Ceramic Tile
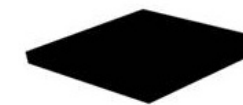
METAL KIT

1 Universal Extruder
(it consists of syringe in which metal clay is contained and an extruder which discharges required quantity)

1 Ceramic tile (used as print bed)

1 Motor cable

1 Stainless steel brush (for processing after firing)

1 Nozzle

1 Extended stopper (for the limited switch)

※ Visit our website to purchase additional accessories (metal clay syringes, coal crumbs, cube box etc.) and get further information on metal clay 3D printing.

- Metal clay syringes : Silver/ Bronze/ Copper/ Steel
- Coal crumbs (carbon for preventing the metal binder from meeting with Oxygen)
- Cube box (for containing coal crumbs with the metal clay printout when firing)

Mini Electric Kiln   Cube box   Coal crumbs

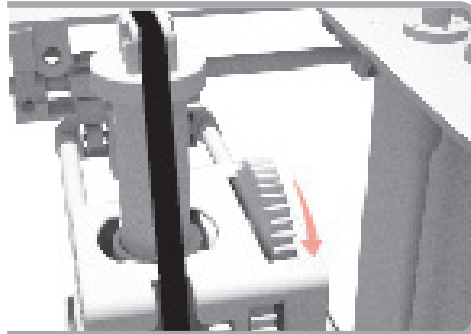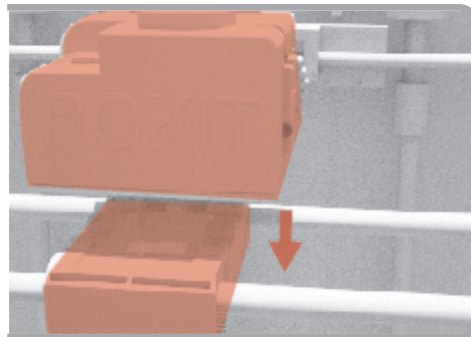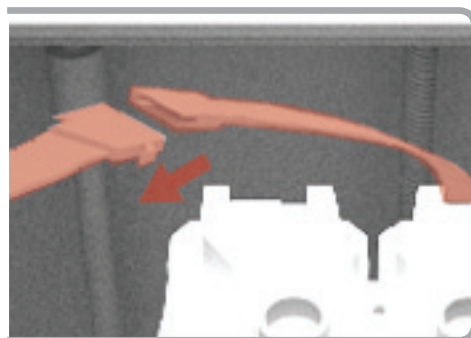## 3DSION Metal Clay Printing

1. How to install and use extruder

① First, open the box and take the metal extruder out of the box. Release 2 bolts on the base part and separate the extruder installed in 3DISON H700. Pull all of the cables out of the PCB and keep the bunch of nozzles separately.

② Install the metal extruder by fastening the bolts with a hex wrench. Connect supplied motor cables to the motor and PCB.

③ Take the syringe out of the box and insert the yellow nozzle in the head of the syringe. Insert the syringe in the installing part of the extruder and cover it.

NOTE : Check if discharging goes well by pressing the piston to take about 4~5cm of clay.

④ Turn the biggest gear to the front as shown in the image so that the belt will be as tight aspossible.

3DSION Metal Clay Printing

⑤ Attach the Extended Stopper to the lower part of Z axis to make the printing bed stop at the fixed distance for metal printing. (Use stopper in the **image1** for 3DISON Multi and use stopper in the **image2** for 3DISON H700. They differ in length.)

Image 1   Image 2
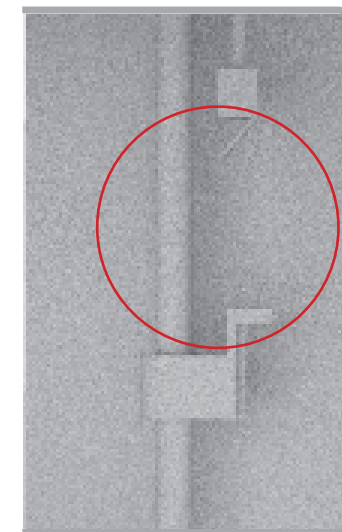
⑥ Put the ceramic tile on the bed after save x3g. file in the SD card. Select file to print and start printing.
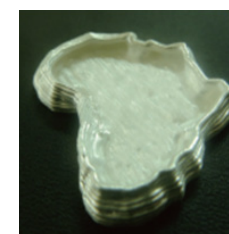
NOTE : In case the thickness of layer is out of the range 0.7~1mm when printing, adjust the thickness by re-tuning the leveling. Or tighten the bolt (small set screw in the gear) using a supplied hex wrench makes thicker layer and releasing the bolt makes thinner layer.
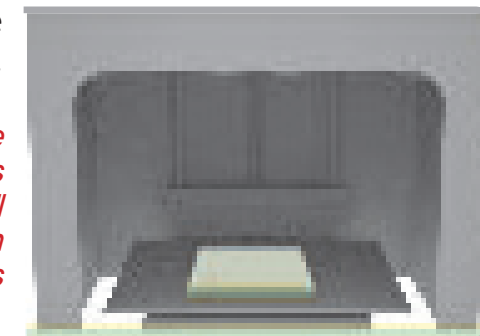
Steel   Bronze   Silver   Copper
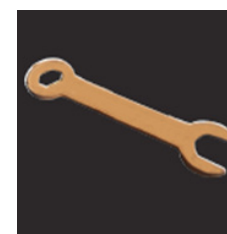
|3DSION Metal Clay Printing

2. How to do a after-treatment for metal print-out : Firing method after 3D printing

 Sample should be processed in after-treatment process of drying and firing when metal paste is still in clay condition after being printed. Process for after-treatment depending on material is as follows;

1) Silver paste

① Take out printed clay with the tile and dry it for 24 hours by natural drying or dry it by warming for at least 1 hour using hair dryer or dry it by heating in the mini toaster oven for 10 minutes in 200℃. Print-out which has been completely dried and cooled down can be detached from the tile easily.

NOTE : Be careful that print-out which is not completely dry, might be difficult to get complete firing and liable to crumble.

② Put the dried print-out in the electric kiln and set temperature at 780℃ and fire it for 10 minutes. Then silver clay changes into fine silver. Switch off the kiln and open the door to cool down the heat enough before taking the print-out out of the kiln.

NOTE : Mini electric kiln which ROKIT Inc. provides or any electric kiln which can be heated up to 980°C can be used but quality of fired output may vary depending on the kiln.

NOTE : Use tongs or wear gloves when take the sample out of the kiln to avoid scald.

③ As the surface of the print-out taken out of the kiln has binder powder on it, brush off the surface using stainless steel brush provided in the kit box and silvery product will be completed.

NOTE : Brush thoroughly every corner for completion.

|3DSION Metal Clay Printing

2) Copper/Bronze/Steel paste

① Take out output clay with the tile and dry it for 24 hours by natural drying or dry it by warming for at least 1 hour using a dryer. Print-out has been completely dried can be detached from the tile easily.

② Prepare firing for dried sample using cube and carbon which are optional items. Build up about 3cm of carbon on the cube and put the sample on it and bury the sample entirely by pouring carbon on the sample as much as possible and then close the cover.

⟨Comparison of set temperature and firing time by material⟩

Copper	Bronze	Steel
Set temperature: 980℃ Firing time: 4 hours total	Set temperature: 130℃>>843℃ Firing time: 9 hours total * After set at 130℃, increase by 130℃ per an hour up to 843℃. I.E. 130℃>260℃>390℃>520℃>650℃>780℃>843℃	Set temperature: 778°>>990℃ Firing time: 1 hour in 778℃, additional firing in 990℃ for 2 hours

③ Upon completion of firing, switch off the kiln and open the door to cool down the heat enough. If the heat cools down to room temperature, finish work by taking the sample out of the cube and brushing the sample using stainless steel brush.

NOTE : Cube and carbon are recyclable (only the part which has not changed into white ash by oxidation).

※ TIP
Be careful of scald when use toast oven or kiln and especially, in case the output has been fired in kiln, cool the output enough by opening the door at least an hour before take the printed object out of the kiln.
When you print in the tile after dry in toast oven, the output will not be separated easily unless you cool it enough so cool it for at least 30 minutes before you separate the output and then put it on wire mesh and put in the kiln.

❘ Laser Engraver

With this laser engraver, it is possible to cut off a thin wood or acrylic board what you design in 3D modeling tool. Before you start installing using this laser engraver, please make sure to be EXTRA PRECAUTIOUS when handling the laser engraver.

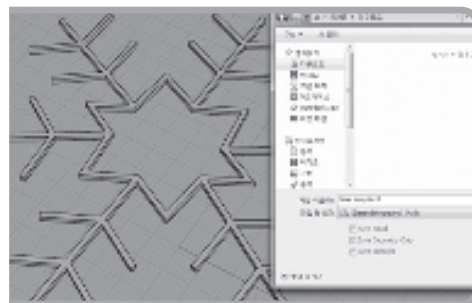(This symbol stands for warning in using lasers.)

1. How to install

① Power must be off before installation for your safety.

② Separate the existing extruder connector and PCB connector.

③ Release connecting two bolts between the nozzle mount and the existing extruder using a hex wrench and then separate.

④ Assemble the laser mount in the right direction on the separated nozzle mount and fix it using a connecting bolt.

❘ Laser Engraver

⑤ Insert the laser nozzle bar into the laser mount and fix it.
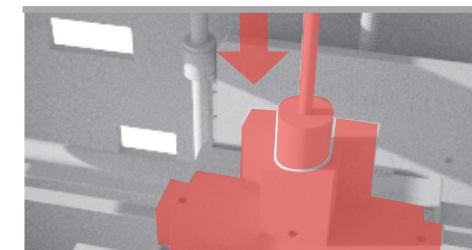
⑥ Switch on power after connecting the laser connector to the PCB connector.
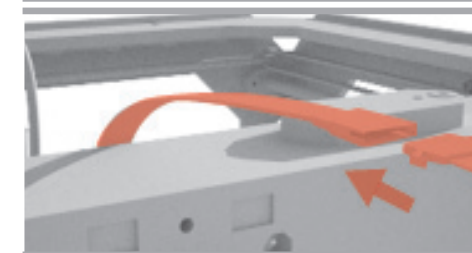
WARNING : Do NOT disassemble the laser mounted in the aluminum socket. This is designed for user's safety. A laser is a light source that can be dangerous to people exposed to it. Even low power lasers can be hazardous to a person's eyesight.
NOTE : Before exchanging the existing extruder, please make sure that the hot end reaches the printing bed.
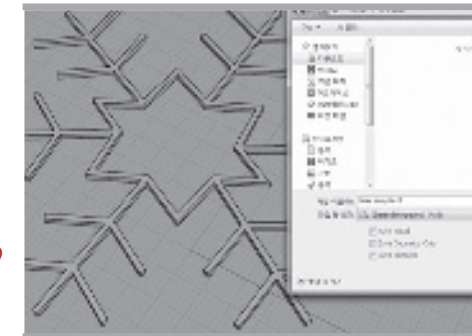
1. How to use

① Put the plywood or acrylic plate to cut on the printing bed of the printer.

② Perform 3D modeling for the shape to cut in line of 0.4mm width and store the 3D modeling in STL file format.
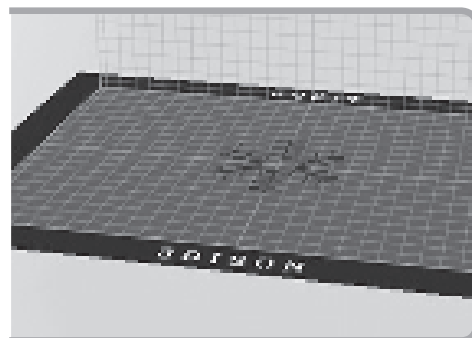The height of the object on 3D modeling should be 1 mm.

NOTE : In using this laser engraver, it is possible to cut a maximum 3 mm-high acryl and a maximum 2 mm-high plywood.
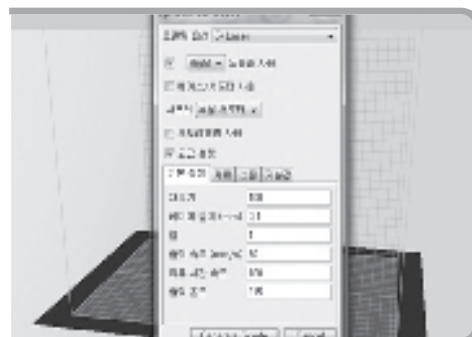
❙Laser Engraver

③ Import worked .stl file after execute CreatorK 8 and click G-code generating button on the top.

④ Select **Laser Mode** in Printing Option and click **Generate Gcode**.

⑤ Transfer the generated Gcode to another Gcode optimized to use the laser function by clicking **Laser Icon.**

⑥ Save the generated Gcode for laser use in the format of x3g in SD Card. Then directly insert it in the printer and turn on the printer.

NOTE : Go to Utilities 〈 Laser Blinking to check if laser works properly or not. This blinking lasts for 5 seconds.

NOTE : Before using the laser engraver, make sure that 'Standard Leveling' has been completed. (refer to page 13)

❙WiFi Camera

It is now now more convenient to check on the printing progress with the Wifi camera. You can promptly take action to solve any kind of trouble using smart phone application (VS Cam).
Following is the instruction on how to utilize WiFi Camera monitoring through your mobile or computer.

1. Connecting to your mobile
① Connect the Internet router to WIFI Camera via LAN cable. About one minute of booting time is required.
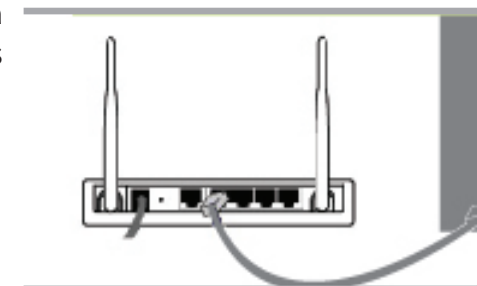
② Download "VsCam" app using a mobile phone. (Android and IOS are supportable)

③ Enter **[Add Camera]** after execution of 'VsCam app' to input UID number attached to a rear surface of body, and input an initial PIN (personal identification number) 888888.
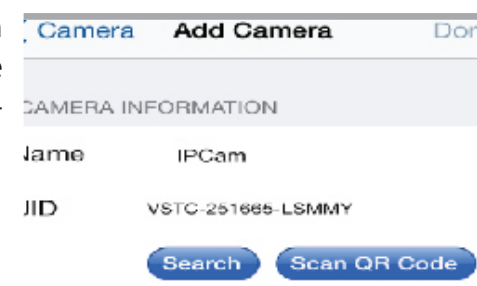
④ Click an added camera to set IPCAM for wireless connect-ion.
[Camera settings] > [WIFI settings] > [WIFI Manager] > select a currently used wireless **SSID** > finish by inputting PIN.
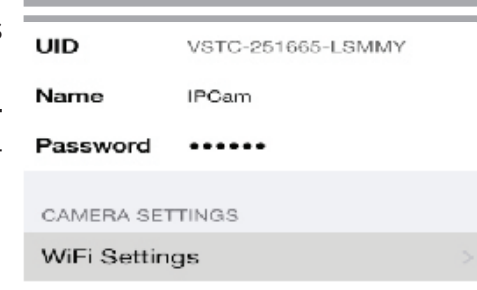
l WiFi Camera

⑤ You can check an image in real time by clicking the added camara to 'VsCam app'.

NOTE :
• The wireless connection may generate a problem if the Internet router SSID (wireless network name) is inputted with special characters, Hangul and/or word spacing, so you must check the SSID when connecting.

• PIN may be changed after installation.
• About two minutes of booting time is required after removal of LAN cable connected to the camera.
• When the wireless SSID is not set with PIN, simply click OK button without inputting the PIN.

2. Connecting to your computer

① Connect the Internet router to WIFI Camera via LAN cable. About one minute of booting time is required.

② Install the **IP Camera Super Client** by executing the CD enclosed in the product.
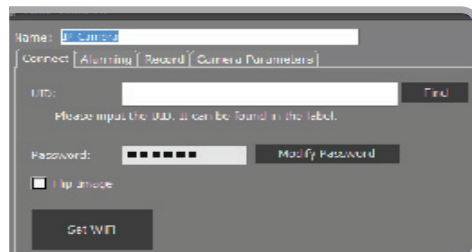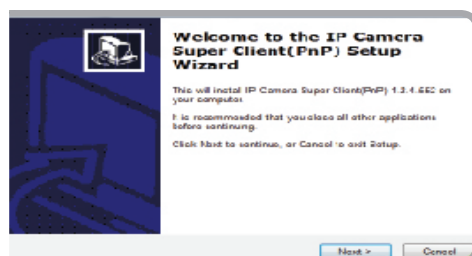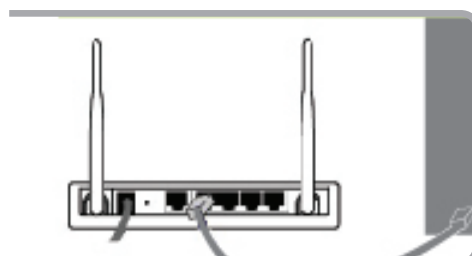
③ Enter **Add Camera** after execution of the program to input UID number attached to a rear surface of body, and input an initial PIN (personal identification number) 888888.

l WiFi Camera

④ Connect the camera to the program by double clicking IP Camera on the right. Once you have checked the connection, Click a button at right of mouse to select **[Camera Options].**
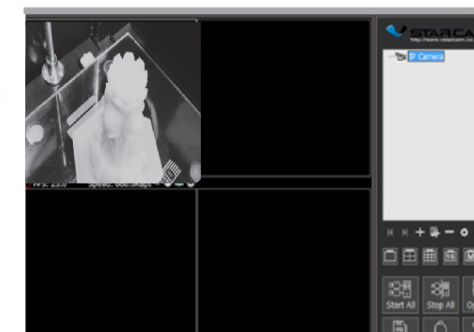
⑤ Click **[Set WIFI]>[Search Signals]** on the option screen. Select currently used wireless **SSID** > click **[Set]** button > click **[OK]** button after inputting PIN. Once the message saying to disconnect LAN Cable appears, disconnect.
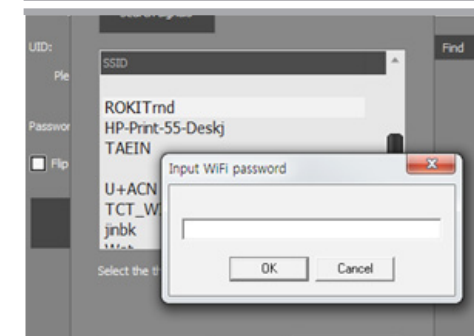
NOTE :
• The wireless connection may generate a problem if the Internet router SSID (wireless network name) is inputted with special characters, Hangul and/or word spacing, and therefore, it is imperative that SSID be checked when connecting.

• PIN may be changed after installation.
• About two minutes of booting time is required after removal of LAN cable connected to the camera.
• When the wireless SSID is not set with PIN, simply click OK button without inputting the PIN.

l Embedded Battery

Embedded battery prevents emergent situation which is unexpected stopping supply of electricity during printing. Continuous printing without stopping is possible even if the power cord is pulled off by mistake or in case of sudden blackout.

Output Power	Maximum Run Time	Battery Type
22.2 Vdc / 5200 mAh	About 40 min.	Lithium

Memo

Multiple Perfection
Desktop 3D Printer
ƎDISON H700