



DP200/DP102 DP201/DP202 2X / 2X DP303 3DWOX 1

3DWOX Desktop Manual

- Read the User Manual before operating the product, and keep the manual at a convenient place near the product.

3dprinter.sindoh.com

3DWOX 2X



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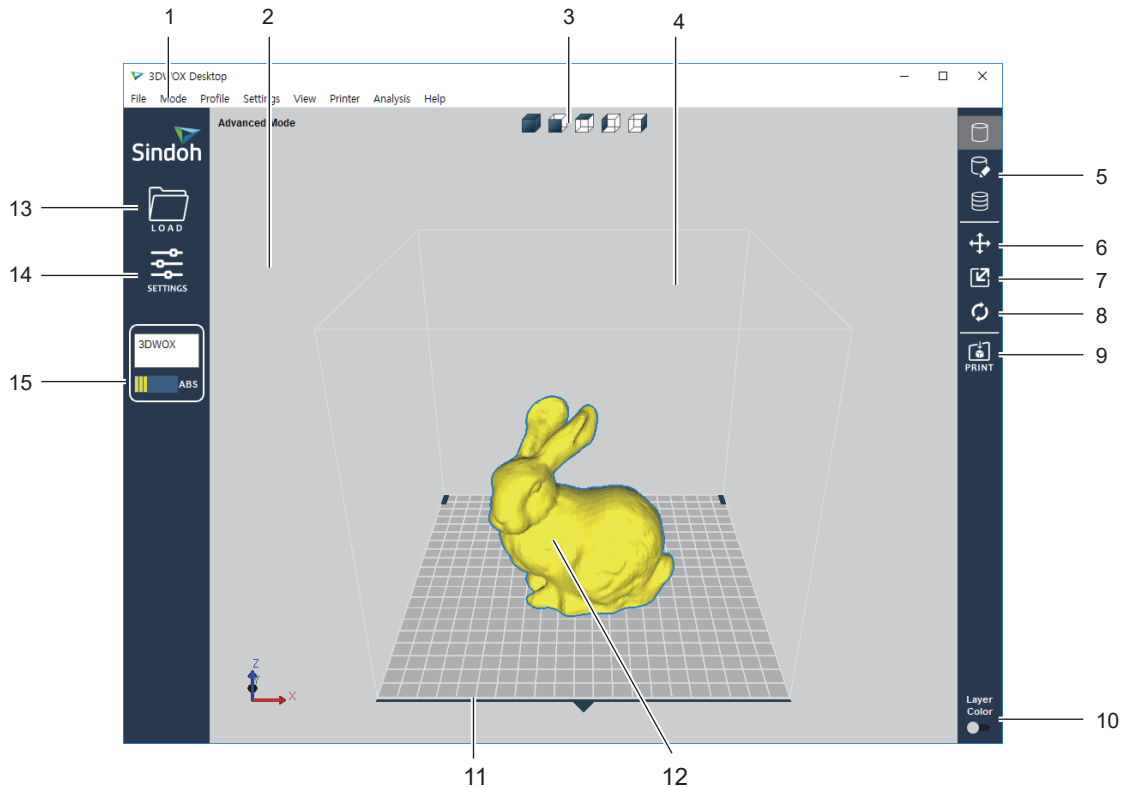
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1. Basic UI Elements

Reference

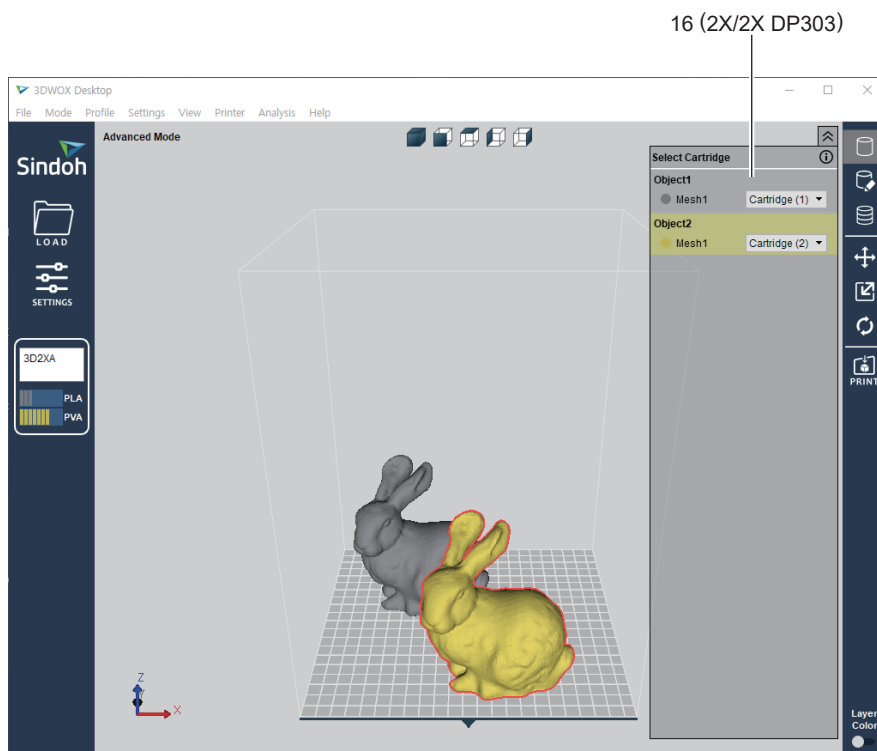
- Font used in the printer GUI and the user manual is the “**NANUM**” font provided by NAVER.

After installation is complete, double click on the icon created on your desktop, a screen similar to the following appears. Explanation is as follows.



No.	Name	Explanation
1	Standard menu bar	Most program functions are available in this menu bar. Opening files, Loading preset values, Exporting program values and more functions available.
2	3D view	Displays a reconstructed 3D model loaded on the program.
3	Select view angles	You may look at the three-dimensional view from the front, back, left, right, up, and down based on the selected angle.
4	Printer Domain	In 3D view, displays actual printer domain showing the location and size of the model.
5	View Mode Selection button	On the screen 3 types of viewing modes are available. 3D Model Viewer, Support Edit Viewer, Layer Viewer are available.
6	Position button	Moves model in direction of 2 axes.
7	Scale button	Changes the model's size. (zoom or change length)
8	Rotation button	Rotates object on set angles based on 3 axis.
9	Print button	Connects to a printer to print a sliced model over the network.
10	Layer Color button	Select colors to print by layers.
11	Printer frontal indication	Indicates the front of the printout.

No.	Name	Explanation
12	3D model	3D model data displayed on the screen.
13	Import button (LOAD)	Loads printable 3D data into program.
14	Settings button	Settings for values necessary for slicing.
15	Filament information indicator	Shows information on filaments inside the printer. Easily informs user of filament material, color and remaining quantity. 2X and 2X DP303 display two bars when both cartridges are loaded.




No.	Name	Explanation
16	Select a Cartridge button	It is enabled only for the 2X and 2X DP303. Loaded cartridges will be displayed . If two or more objects are loaded, additional lines with cartridge selection options will be displayed. Cartridges can be selected and printed according to each mesh or object.

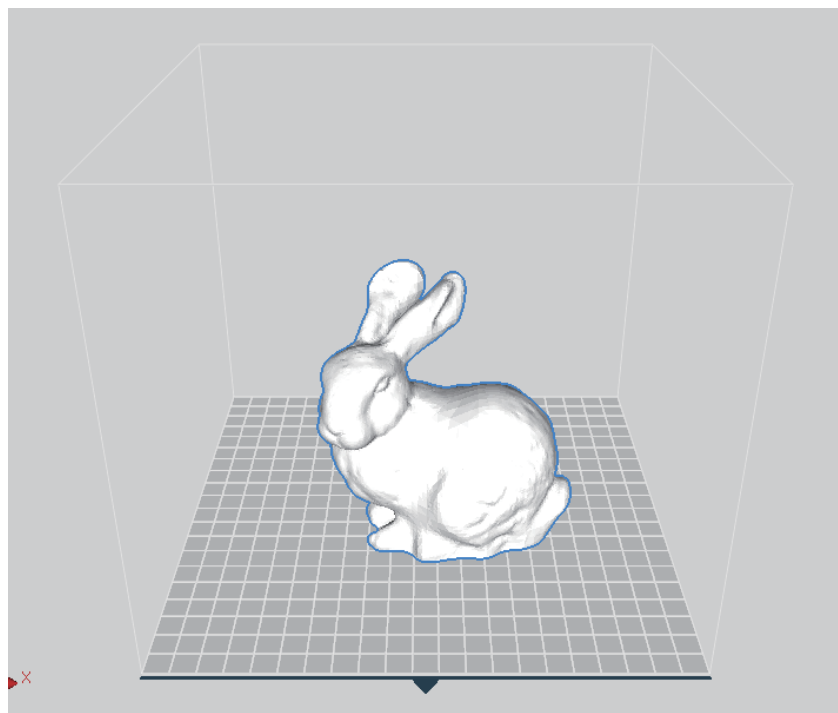
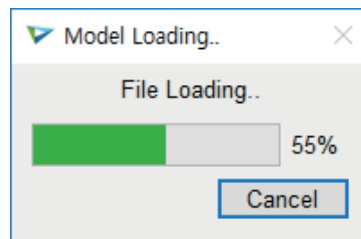
2. Functions and Information

2.1 Loading

Loads a printable 3D model and displays it on the screen.
Currently supported file formats are ply, obj, stl (binary, ascii, amf)

Detail description


- 1 Click on the  Import button located left of screen.
- 2 After selecting file, 3D model file is displayed as if it's on the printer bed.



2.2 Profile Value Setting

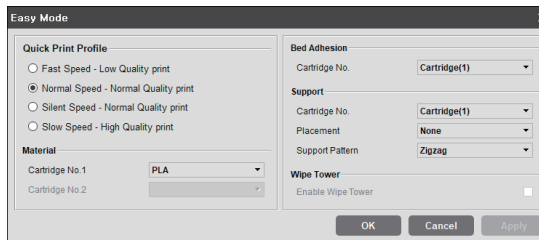
Slicing and printing require variety of parameter values. From the material of the filament, to the height of the sliced layers, and to the printing speed, various parameters should be configured.

Detail description

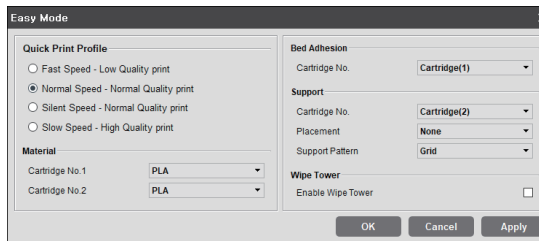
- 1 Click on the Settings button  located on left bar.
- 2 According to selected mode a window will pop up, user can input desired profile.

Easy Mode

- Easy mode can be set for printing speed-quality, material, support pattern, and inside filling.



- For the 2X and 2X DP303, Cartridge No. is enabled.

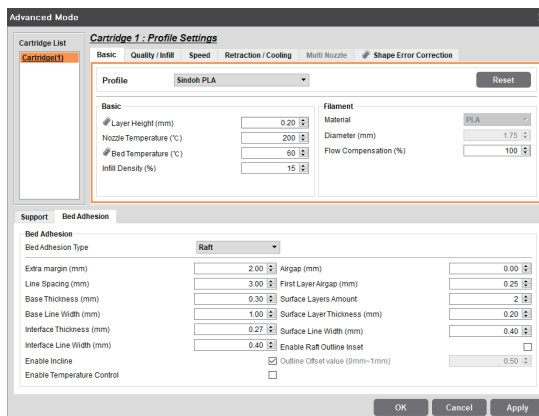


Advanced Mode

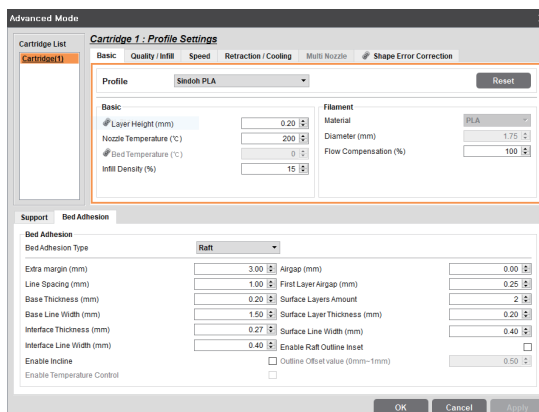
- This enables the user to change profiles to modify output values as he/she desires.
- Custom profiles (= user-defined profiles) can also be edited in the advanced mode. (See 2.3 Custom Profile.)


• Basic

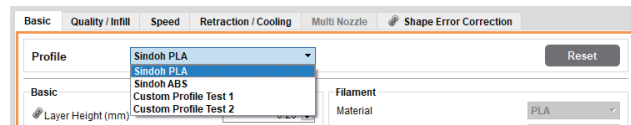
<This applies to the default profiles of the slicer program.>



- For the DP 201, DP 201 bed temperature and material settings are disabled.

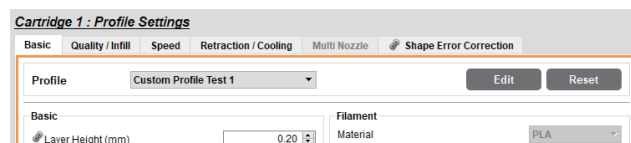


- For the 2X or 2X DP303, two cartridges will be on the list, and each cartridge can be set individually.
-  sign marked values are synchronized for two cartridges. Individual values cannot be set independently.
- Support type can be selected or disabled.



- **Profile selection bar:** The user may choose either a default profile or a custom profile.
- **Reset button:** Clicking the “Reset” button will restore the current setting before the new setting is saved (before the “OK” or the “Apply” button is clicked).
However, the “Creation Position” in the “Support” tab and the “Bed Fixation Type” in the “Bed Fixation” tab will be retained even after the “Reset” button is clicked.
- **OK button:** This will save all the setting values and close the dialog box.
- **Apply button:** This will save the setting values without closing the window.
- **Cancel button:** This will close the dialog box without saving the setting values.

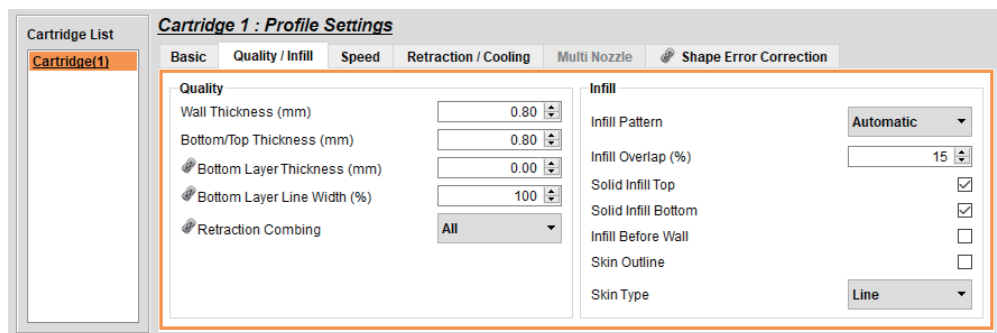
<This applies to custom profiles (not the default profiles of the slicer program).>




- **“Edit” button:** If the user clicks this button, the changes in the “Edit Custom Profile” will be saved, and the user will return to the advanced mode, where the changes will also be reflected.
If the user does not save the changes in the “Edit Custom Profile”, the changes will not be reflected in the advanced mode.
- The other settings will be identical to those of the default profile.

• Quality / Infill

- Sets values for thickness and infill rate of external walls and bottom/top surface of the model .



-  sign marked values are synchronized for two cartridges.
Individual values cannot be set independently.

- **Speed**

- It controls the printing and travel speeds.

Cartridge 1 : Profile Settings

Basic Quality / Infill **Speed** Retraction / Cooling Multi Nozzle Shape Error Correction

Speed

Print Speed (mm/s) 40 Top/Bottom Speed (mm/s) 0

Travel Speed (mm/s) 180 Outer Wall Speed (mm/s) 0

First Layer Speed (mm/s) 10 Inner Wall Speed (mm/s) 0

Infill Speed (mm/s) 0

- If you print large object with a high “**Fill Density**”, please reduce the “**Travel Speed**”.

- **Retraction / Cooling**

- Sets control values for the retraction of filament and nozzle cooling fan.

Cartridge 1 : Profile Settings

Basic Quality / Infill Speed **Retraction / Cooling** Multi Nozzle Shape Error Correction

Retraction

Enable Retraction ☒

Speed (mm/s) 30

Length (mm) 6.00

Minimal Travel (mm) 1.50

Minimal Extrusion Before Retraction (mm) 0.02

Lowering Bed during Retraction (mm) 0.00

Cooling

Fan Speed (%) 50

Minimal Layer Time (sec) 5

Enable Cooling Fan ☒

Fan height at maximum speed (mm) 0.60

Minimum Speed (mm/s) 10

Minimum wait period for Lowering Bed ☐

- **Multi Nozzle**

- It is enabled **only for the 2X or 2X DP303**.
- It is used to adjust setting values for filament control and wipe tower creation when the nozzle is changed.

Cartridge 1 : Profile Settings

Basic Quality / Infill Speed Retraction / Cooling **Multi Nozzle** Shape Error Correction

Nozzle Switch

Retraction Amount (mm) 15.00

Retraction Speed (mm/s) 30

Lowering Bed (mm) 0.20

Extra Restart Position (mm) -0.50

Extra Restart Speed (mm/s) 15

Standby Temperature Setting ☐

Operating Standby Temperature (°C) 200

Initial Standby Temperature (°C) 80

Wipe Tower

Enable Wipe Tower ☒

Tower Size (mm) 12.00

Tower Thickness (mm) 4.00

Tower Infill Density (%) 50

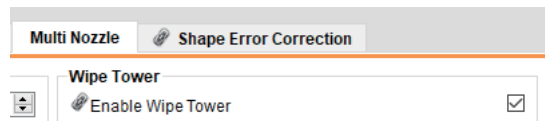
Tower Position **Rear Center**

Tower Raft Margin (mm) 8.00

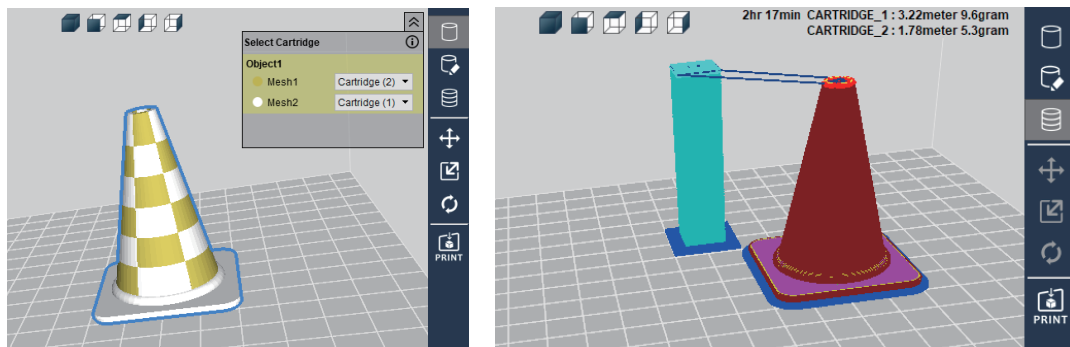
- For outputting a large printout with the multi-nozzle, set the lowering bed value to be larger (0.8 mm recommended) than the default value (0.2 mm).

❖ What Is the Purpose of Wipe Tower?

- This feature is recommended for use when printing on one layer with two cartridges.
 1. Wiping out leaking filaments from the waiting nozzles while other nozzle is in use.
 2. Wiping around nozzles for a smooth output surface.



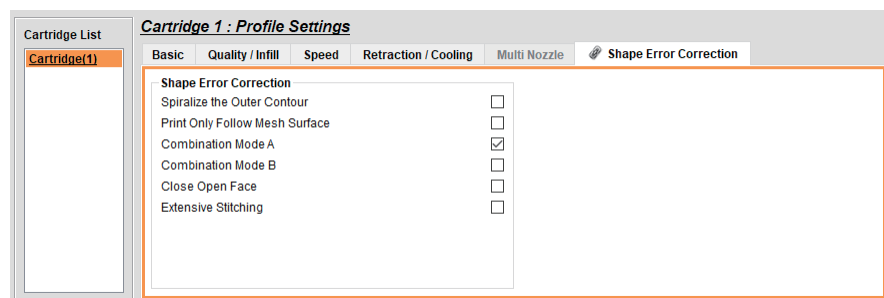
- If two materials are used at the same time, set the wipe tower larger than 12 mm.
- If the height of the output is too high, the Wipe Tower may collapse.
In this case, please enlarge the size of the Wipe Tower sufficiently.



- Select [Advanced Mode]-[Enable Wipe Tower] and [Layer Viewer] to show the Wipe Tower.

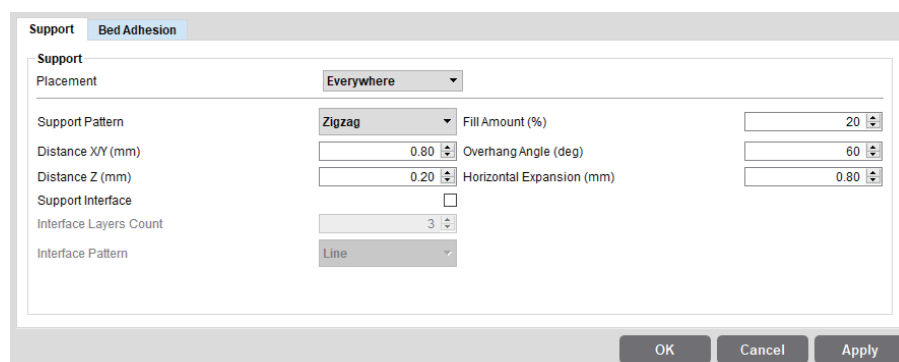
• Shape Error Correction

- Shape error correction provides functions to correct mesh errors. (Ex: Printing along the mesh surface).



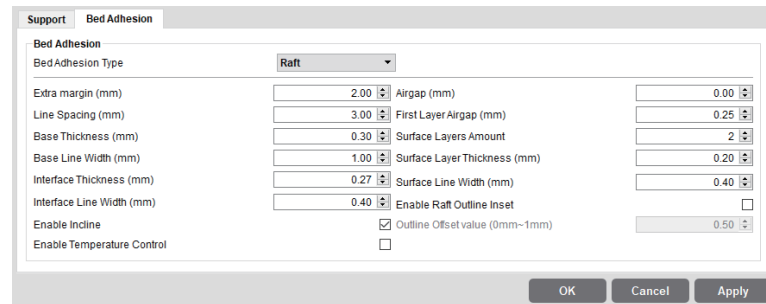
• Support

- It is used to set the position and pattern of support.



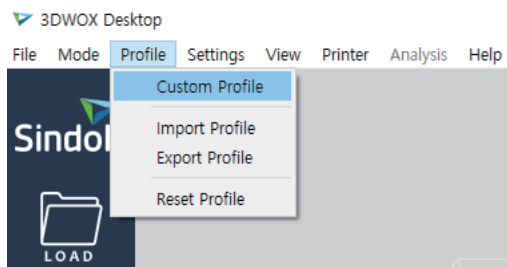
• Bed Adhesion

- It tab enables setting according to assigned fixing type.

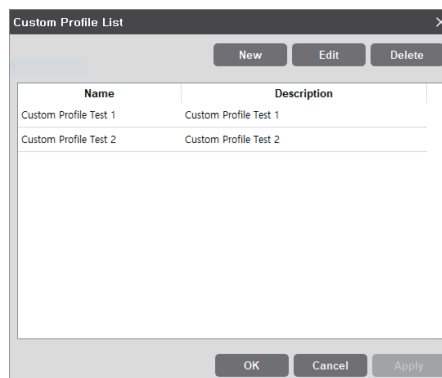


- Please set the bed adhesion type to **[Brim]** if the flexible filament is used to print a model with narrow bottom. Otherwise, the output will not stick to the bed or warp.
- In outputting a printout of large volume with a filament made of ABS material, the printout and the raft may separate from each other because the printout is shrunk during the outputting. In such case, decrease the “**First Layer Airgap**” or increase the “**Flow Compensation**” ([Basic]) before outputting the printout.

2.3 Custom Profile



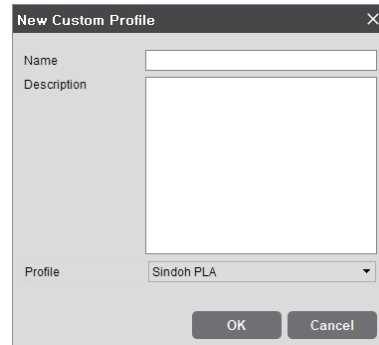
Clicking **[Profile] - [Custom Profile]** will open the **[Custom Profile List]** window.
Only custom profiles that are exclusive of the slicer program's default profiles will be listed.
If the user has not created a custom profile, the list will be empty.



- * **Name:** This is the profile name input by the user for profile creation.
- * **Description:** This is the description of the profile input by the user.
 - The description may be edited by double-clicking the button on the **[Custom Profile List]** window.
(Enter after editing) The changes will be saved when the user clicks the “**OK**” or “**Apply**” button.
- * **[New] button:** This button enables the inputting of a new custom profile.
 - When this button is clicked, the **[Add Custom Profile]** window will appear.
- * **[Edit] button:** This button enables the editing of an existing custom profile.
 - When editing, the user should select one custom profile at a time.
 - When this button is clicked, the **[Edit Custom Profile]** window will appear.

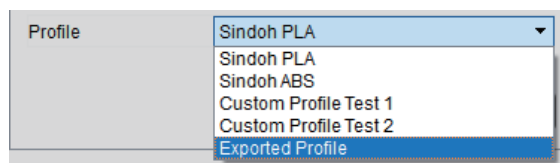
- * **[Delete] button:** This button enables the deletion of an existing custom profile.
 - A deletion will only be saved when the user clicks the “OK” or “Apply” button.
 - The user may select and delete multiple profiles at a time.

- 1 Clicking the **[New]** button → **[New Custom Profile]** window
 - This window is for the creation of a new custom profile.

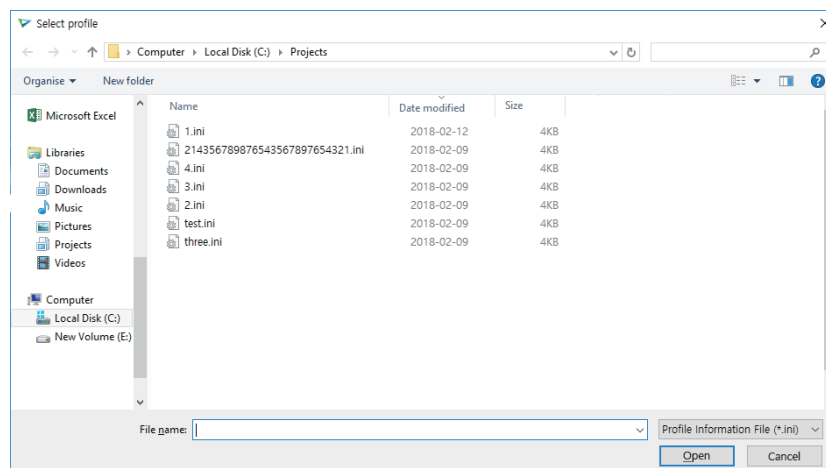


- * **Name (required value):** Input a profile name with a maximum length of 30 characters.
 - The symbols ?, “, *, \, /, |, :, <, >, [, and] cannot be entered in the custom profile name.
- * **Description (optional value):** Input a profile description with a maximum length of 300 characters.
- * **Profile (required value):** Select the profile number to be imported.
 - The user may copy not only a default profile but also a previous custom profile that he/she has created.
 - The list of default profiles varies depending on the model.
 - e.g., In the case of the DP200, when no custom profile is defined, only the “**Sindoh PLA**” and the “**Sindoh ABS**” will be listed.
 - In the case of the 3DWOX 1 model, the **[New Custom Profile]** window will show the “**ETC**” profile. In profile editing, if the user selects a Sindoh profile, he/she can select only profile values within the limits given by Sindoh. However, if the user selects “**ETC**”, he/she can select a wider range of profile values.

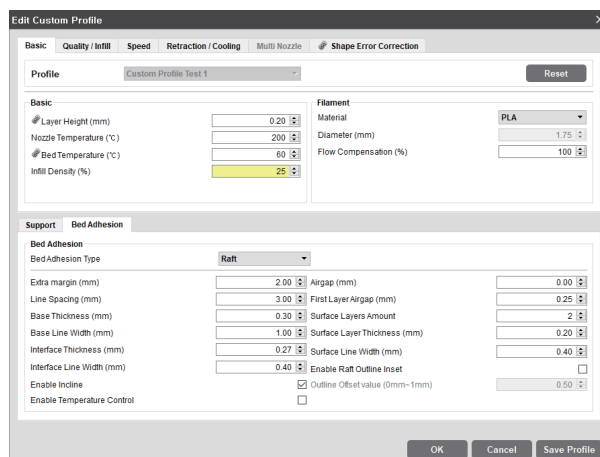
<“Import Profile” function>



- Clicking the “**Import Profile**” button at the bottom of the profile window will show a pop-up window for the selection of a profile from exported profiles. The user may create a custom profile by selecting a profile of *.ini format to be imported.



- 2 Clicking the **[Edit]** button → **[Edit Custom Profile]** window
 - This window is for editing and saving existing profile values.



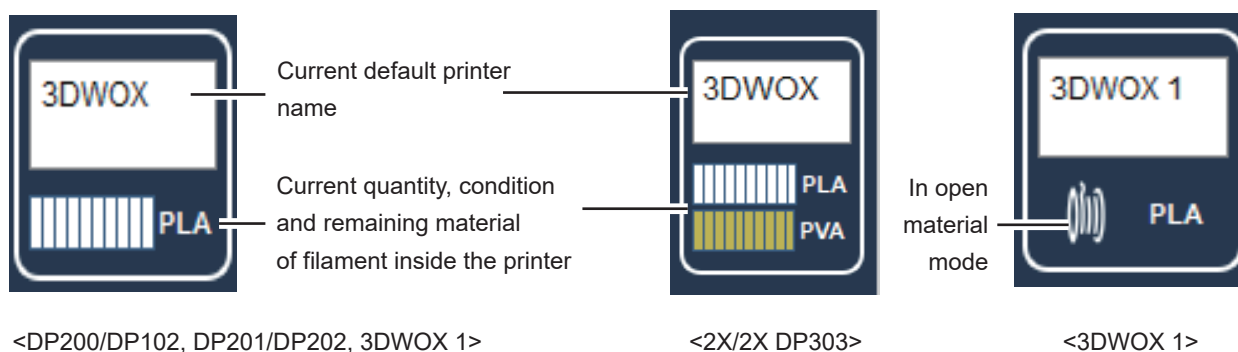
- Clicking the **[Reset]** button will reset the setting values before they are saved (before the “OK” or “Apply” button is clicked).
- In the case of the 3DWOX 1 model, the “Filament” and the “Material” fields of the **[Default Setting]** will show the “ETC” profile.
The user should select the “ETC” material if he/she uses a material that is different from those provided by Sindoh.

- * **[OK] button:** This will save all the setting values and close the dialog box.
- * **[Cancel] button:** This will close the dialog box without saving the setting values.
- * **[Save Profile] button:** This will save the profile setting values without closing the window.

2.4 Filament Information Indicator

Printer automatically reads condition of filament in printer and displays on screen.

Detail description



2.5 View Mode Selection Button



At the top right hand side of the viewer, you will see buttons as shown on the left. Clicking the button on the screen will display three types of view modes to be selected. (From the top, Normal View, Support Edit View, Layer View) Once selected, the selected view type is highlighted for the user.

Detail description

3D Model Viewer



This mode renders the 3D model loaded and displays it on the screen.

In this mode user is able to change position, angle and size of the 3D model and print it out.

Support Edit Viewer



When the model contains a slant surface, a support is needed at the bottom of the model to ensure good printing output. Hence, in this mode user is given the accessible views to position the support at the right location.

Layer Viewer

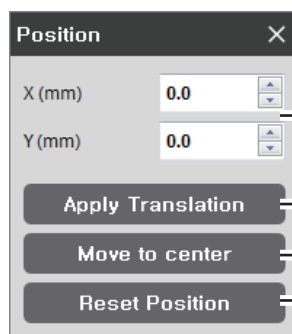


This mode slices the 3D model to print. Pressing this button allows user to slice 3d model parallel to the printer bed by reflecting parameter values, and to display the layers.

2.6 Moving a model



Moves the model on screen in directions of x and y axes.



Moves (in mm) a selected model in two axes.

Applies values to model. (Equivalent to Enter key)

Place the selected model in the center of the bed.

Moves the selected model to the location where it was initially loaded.

2.7 Adjusting Model Size



Scale and length of selected model on screen can be adjusted.

Size of scale can be controlled in direction of three axes.

Size of length can be controlled in direction of three axes.

Expansion and contraction on the x,y,z directions at the same ratio.

Adjust model to maximum printable size.

Reset to original size.

2.8 Model Rotation



Selected model can be rotated in the direction of the three axes.

Enter the angle to rotate in three axes.

Apply the entered value to the model (Same as the Enter Key)

Restore the model's original direction when it was initially loaded.

If the model's angle is tilted, this will automatically adjust the angle so that the model is adhered to the flat surface of the bed.

2.9 Print



Connect to a printer to print a sliced model over the network

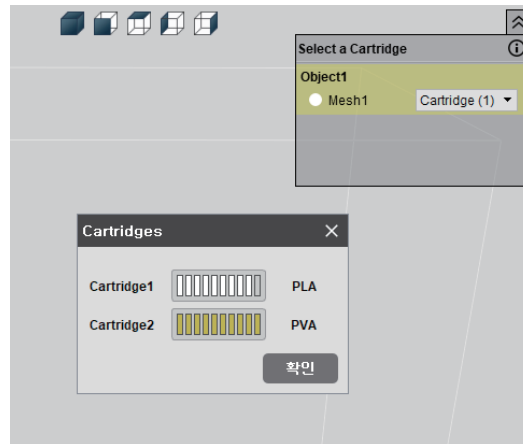
2.10 Standard Menu Bar

File Mode Profile Settings View Printer Analysis Help

Contains File, Settings, and Network printer related functions and located at the top of the program window.

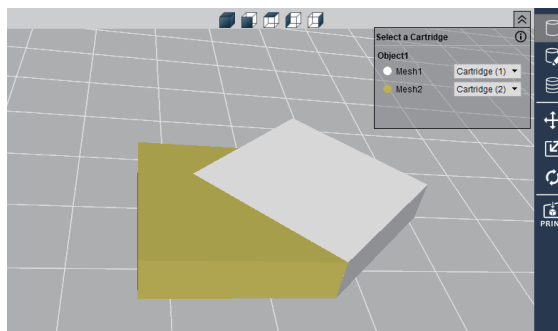
2.11 Select a Cartridge

- It is enabled only for the 2X or 2X DP303. When two models or a model consisting of two or more meshes is loaded, it may print with a different cartridge by specifying the cartridge number for each mesh or object.
- Press the ⓘ button to check the filament amount of each cartridge.



1 When the Layer Color is off, [Select a Cartridge]

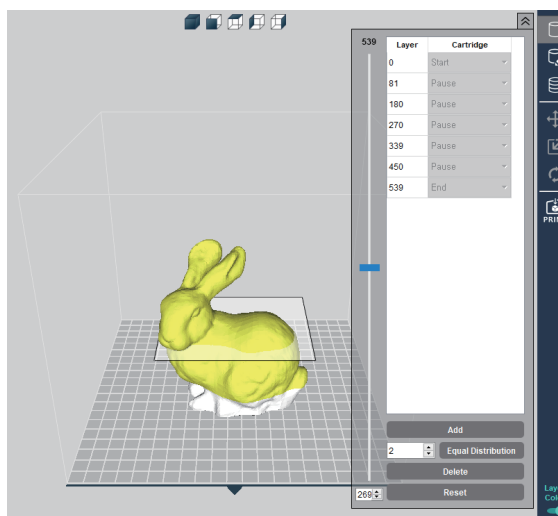
To print Mesh 1 with Cartridge 1 and Mesh 2 with Cartridge 2, select the cartridge for each Mesh as shown above.



2 When the Layer Color is on, [Select a Cartridge]

If the Layer Color is activated, a 3D model cannot be right-clicked. (To delete or move object.)

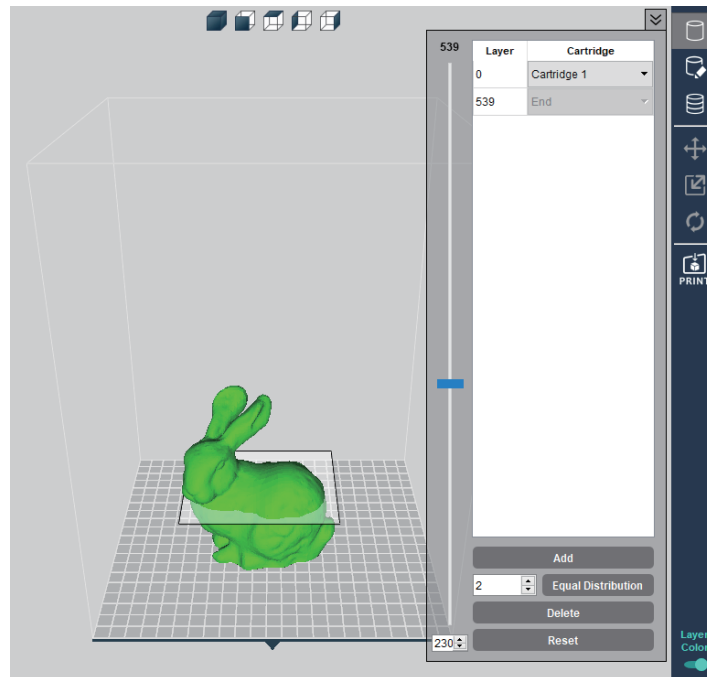
❖ For DP200/DP102, 3DWOX 1 and DP201/DP202



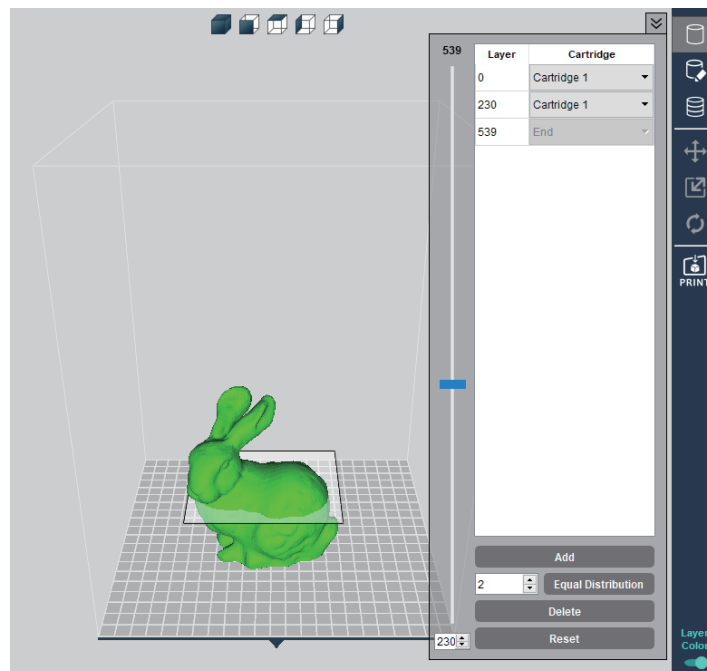
- Pause the printing on the desired layer. Unload the cartridge, replace it, and continue printing.

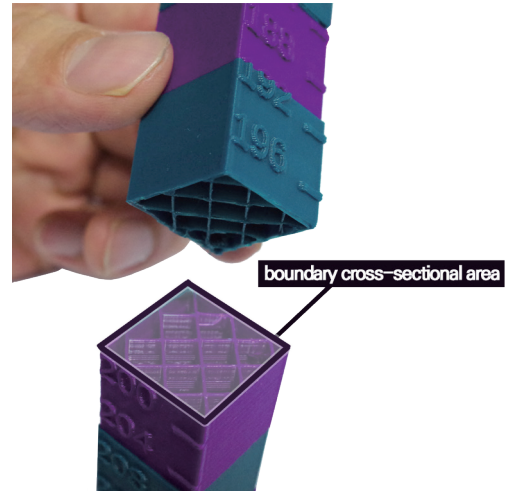
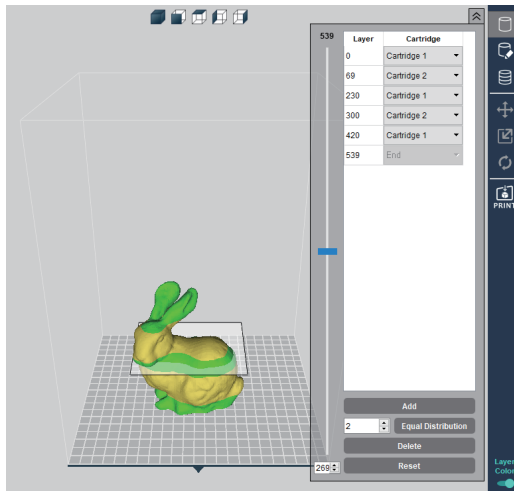
❖ **For 2X and 2X DP303**

- 1 The Layer Color is a function to specify different cartridges for different layers. Move the left-side slider to show slider positioned layer and the layer number. Position the slider at cartridge change desired layer and press the **[Add]** button in the bottom.



- 2 Then, another tab is created to replace cartridges by layer. Move the slider, and press the **[Add]** button to add more Layer Color.

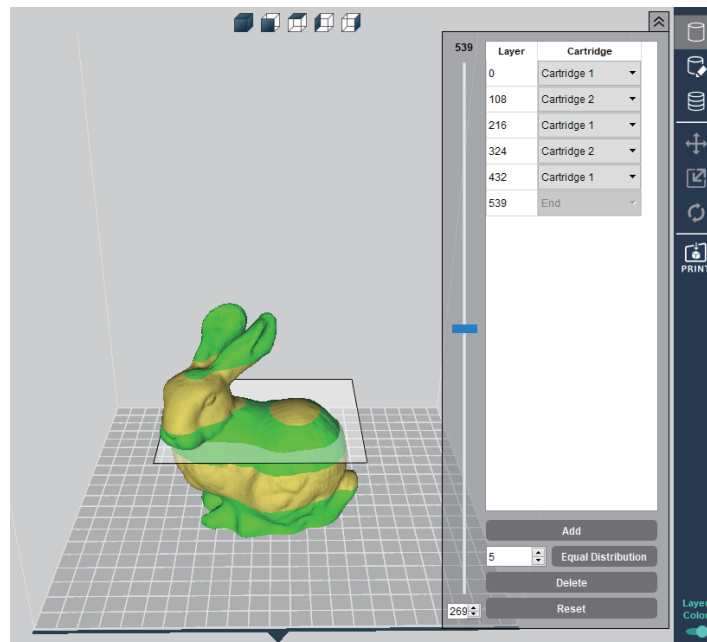




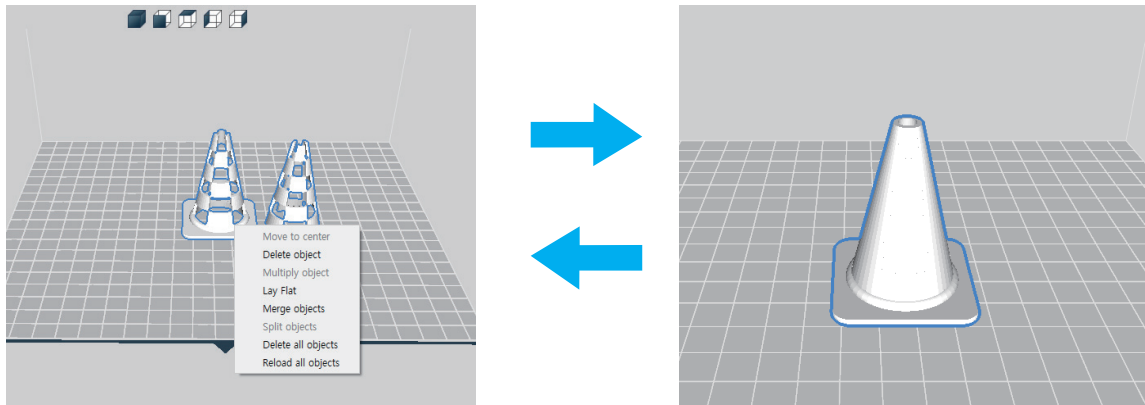
0th to 69th layers are printed by cartridge 1 and 69th to 230th layers are printed by cartridge 2.
If the boundary cross-sectional area of the layer color is small, increase the infill density of the internal filament for ensuring durability.

2.12 Equal Distribution

Enter desired number of layers, and press the **[Equal Distribution]** button to divide all layers evenly.



2.13 Merge & Split



It is not applicable if the **[Layer Color]** is enabled.

Merge

Merge is a function to align the axis with respect to the origin.

Ctrl + Select (left-click) two or more objects. Then, right-click and click merge object to merge the selected objects. After merging them, it can be checked with Select a Cartridge. Individual meshes can be assigned to different cartridges.

Split

Right-click and click Split to split the merged object.

Detail description

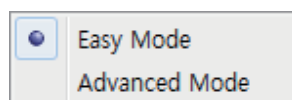
File

Load Model	— Loads 3D model (equivalent to Load button)
Save Model	— Save the loaded model to another type of file or name
Load G-code	— Load G-code and the model to show the print path
Save G-code	— Save G-code after slicing the loaded model
Print	

MODE

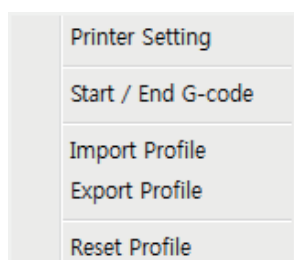
3DWOX offers users two types of different modes for slicing.

“**EASY MODE**” offers a predefined setting for a fast and easy print, “**ADVANCED MODE**” allows users to set each and every detailed value for user preference, to achieve desired printouts.



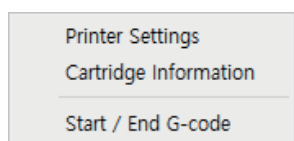
Profile

There are many profile-related functions. For custom profiles, see “2.3 Custom Profile.”

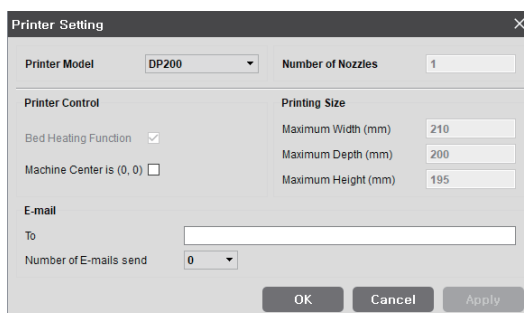


Setting

This enables the designation of various setting values needed for slicing.



• Printer Setting (DP200/DP102, 3DWOX 1)



- **Printer Model:** A connected default printer appears on the screen.
- **Number of Nozzles:** The number of nozzles of the device is displayed
- **Bed Heating Function:** Only select when bed heating function is available. When left unchecked, G-code for bed heating will not be created.
- **Slicing Origin Point Correction (based on the equipment's origin point):** Place the 3D model on the bed based on the equipment's origin point (0,0).
- **Origin Correction (Bed center):** Automatically controls model to be always positioned in center of printer bed.
- **Maximum Printing Size:** Insert maximum printable size of the connected printer.
- **E-mail:** Sends the printing status to the entered e-mail address.

Under “email,” input the recipient email address(es) and select the number of times to send the notification emails. Additional recipient addresses can be added by using “;,”
ex> recipient1@test.com; recipient2@test.com; recipient3@test.com

The maximum number of notification emails that can be sent is 10.

An email notification, an email will be sent out for the user to see if the email notification is working properly by default. So the email will be sent out one more time than the number that the user entered. However, the number of email that is sent will not exceed 10 times.

(When user selects 10 times, the notification email will be sent out 10 times)

❖ When the printer in use is DP200/DP102, 3DWOX 1

- Below is the settings screen of DP102.

Printer Setting

Printer Model	DP102	Number of Nozzles	1
Printer Control		Printing Size	
Bed Heating Function	<input checked="" type="checkbox"/>	Maximum Width (mm)	210
Machine Center is (0, 0)	<input type="checkbox"/>	Maximum Depth (mm)	200
E-mail		Maximum Height (mm)	195
To	<input type="text"/>		
Number of E-mails send	0		

OK Cancel Apply

- Printer Settings screen and features are same as DP200 and 3DWOX 1.

❖ When the printer in use is DP201/DP202

- For DP201, the printer setting screen has been changed as below.

Printer Setting

Printer Model	DP201	Number of Nozzles	1
Printer Control		Printing Size	
Bed Heating Function	<input type="checkbox"/>	Maximum Width (mm)	210
Machine Center is (0, 0)	<input type="checkbox"/>	Maximum Depth (mm)	200
E-mail		Maximum Height (mm)	189
To	<input type="text"/>		
Number of E-mails send	0		

OK Cancel Apply

- Bed Heating Function: This function is deactivated for DP201/DP202.
Beside the change above, other setting screens are same as DP200/DP102.

❖ When the printer in use is 2X/2X DP303

- For 2X, the printer setting screen has been changed as below.

Printer Setting

Printer Model	2X	Number of Nozzles	2
Printer Control		Printing Size	
Bed Heating Function	<input checked="" type="checkbox"/>	Maximum Width (mm)	228
Machine Center is (0, 0)	<input type="checkbox"/>	Maximum Depth (mm)	200
E-mail		Maximum Height (mm)	300
To	<input type="text"/>		
Number of E-mails send	0		

OK Cancel Apply

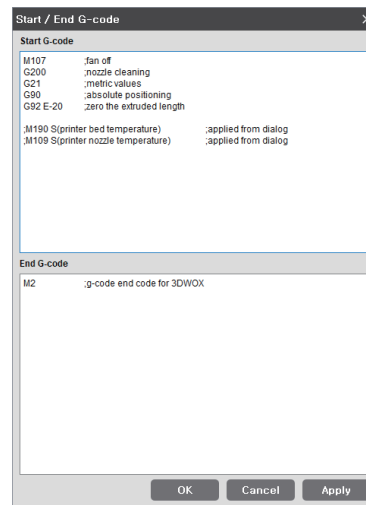
- 2X/2X DP303 has two nozzles.
Beside the change above, other setting screens are same as DP200/DP102.

⚠ Caution

- E-mail feature must be selected from the UI menu before being used.
For further details, please refer to "UI Menu Feature Description."

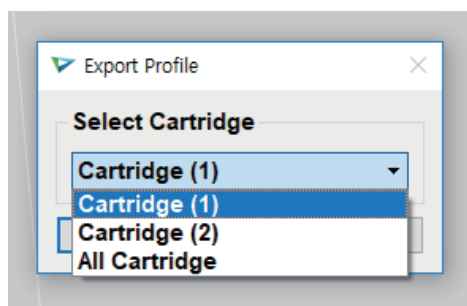
- **Start/End G-code**

View default settings for start/end code, modify text to apply to sliced model.



- **Import/Export Profile**

This function allows user to import predefined profile parameter values or export values for slicing. File format for profile is *.ini and editing is available through “**notepad**”.



2X performs Import/Export by cartridge.

- **Reset Profile**

Resets all profile parameter values to default value.

View

Able to choose viewing mode that is equivalent to features of View Mode Selection button. For more details, please refer to “**2.4 View Mode Selection button**” on page.11.

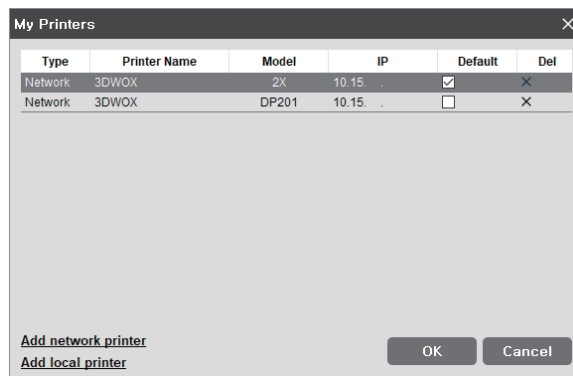
Printer

Finds and adds printers on the network.

- **My Printer Management**

This screen manages the printers added by user.

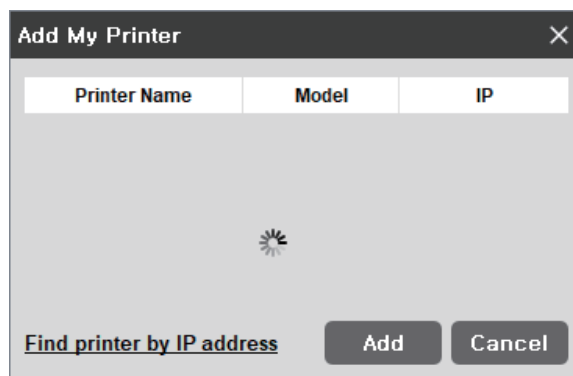
On restart of the program, without any settings required, prints will be directed to the default printer.



- **Add Network Printer**

Automatically searches and finds available printers in network.

Select from the found printers and press “**add**”, then selected printer will be added to “**My Printer**”.



• Find Printer by IP Address

Add by inserting specific printer IP address.

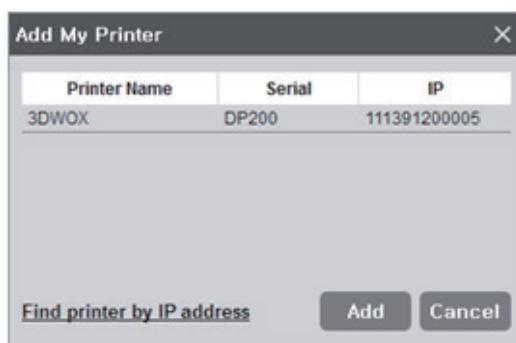
After typing the IP address, press “Add”. If the IP address is available, the printer within the IP address will be added to “My Printer”.



• Add Local Printer

Automatically searches the printer that is connected by the USB Cable and displays it on the screen.

If you click the [Add] button after selecting the searched printer, the printer is added to “My Printer”.

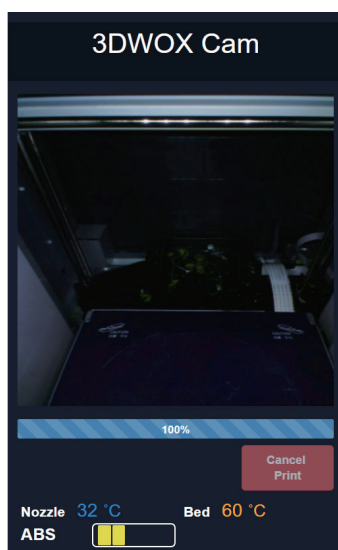


• Web Monitoring

Function allows user to monitor the operation of the network printer connected to this program.

⚠ Caution

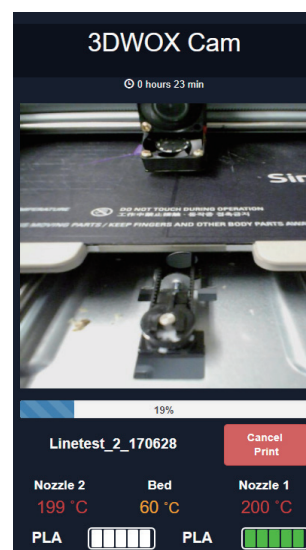
- Compatible browser versions are Internet Explorer 11 or FireFox 40.0 or Chrome 47.0 or higher. Some features may not function properly if the browser version is lower than the above.



<For the DP200/DP102 and 3DWOX 1>



<For the DP201/DP202>



<For the 2X, 2X DP303>

Analysis

This function analyzes the 3D model and notifies user of any problems that might arise.
(refer to Advanced Functions)

Help

User can gain access to information on Language, Keyboard Shortcuts, Online FAQ and Program Updates.

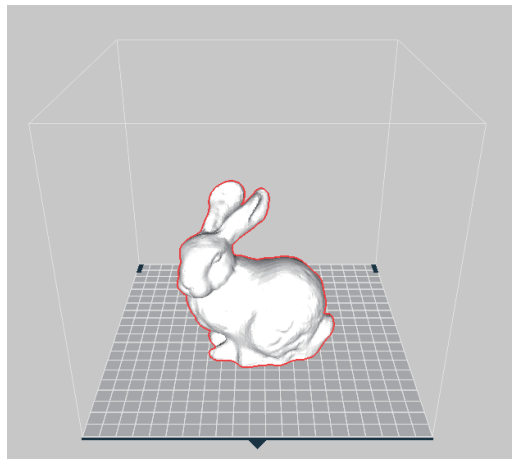
3. Printing (basic functions)

Explanation of the steps to printing 3D model using base functions.

3.1 Loading 3D Model Files

Click on the **[LOAD]** button located on the left hand side of the screen and select the 3D model file user wants to import. (For each function refer to detailed descriptions).

Selected model will be positioned in the center of showing printer bed.



3.2 Basic Parameter Setting



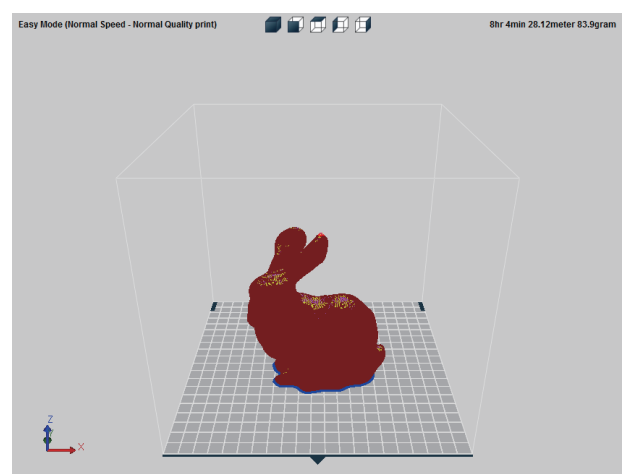
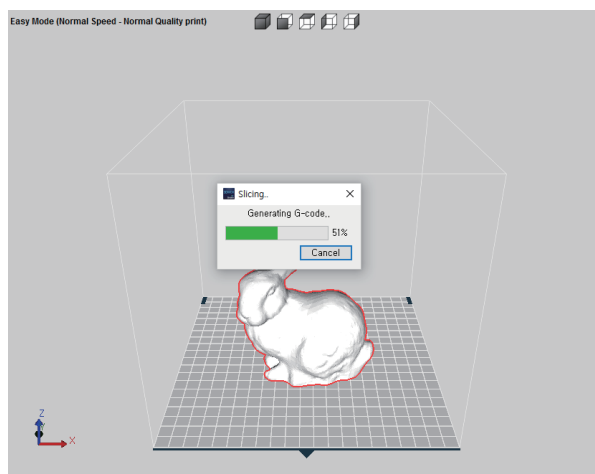
Click on the **[SETTING]** button to change any parameter values.

e.g.) change the slicing layer height value which does determine the quality of the printable or adjust the support application.

3.3 Slicing

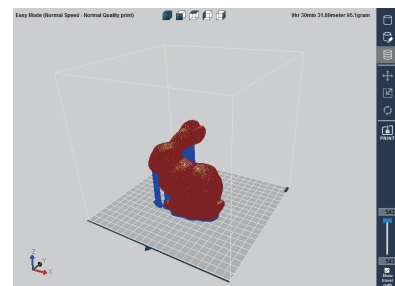
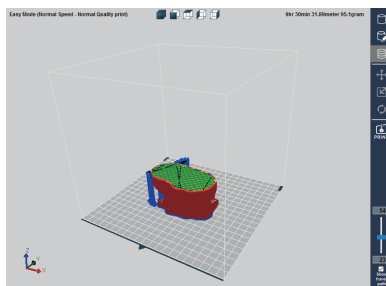
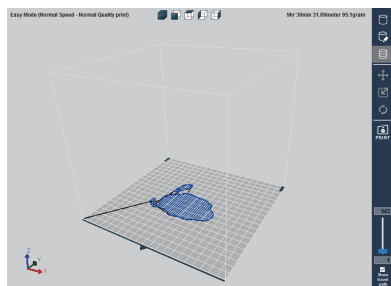
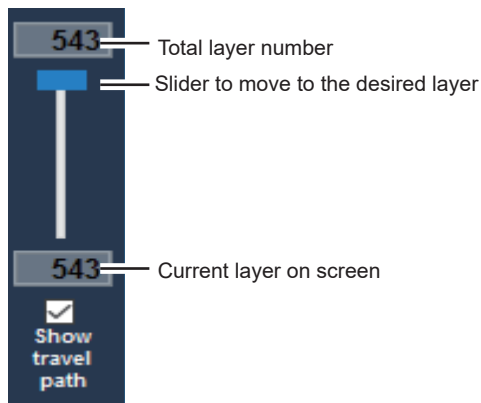


After checking 3D model is positioned on the bed, selecting Layer Viewer mode will apply the parameter values and execute the slicing.



The result of slicing in the layer view will be displayed on screen.

Model will not be a whole instead will be displayed in lines of layers, using the slider located at the bottom, user is able to analyze each layer of the model.

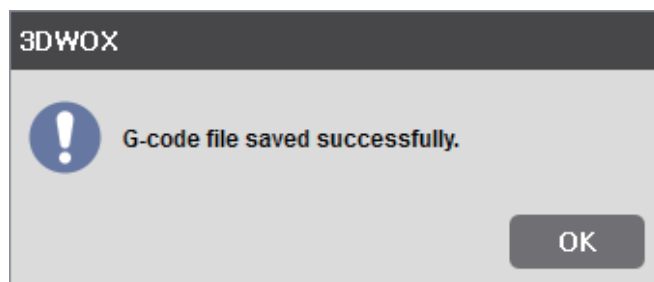


3.4 Print

There are three ways to print the sliced model.

USB Thumbdrive

- 1 Slice the model and press **[Save G-code]** on the File menu.
- 2 Save the G-code file in the USB Thumbdrive.



- 3 Connect to the USB port on the front side of the printer and load the G-code file to directly print the model.

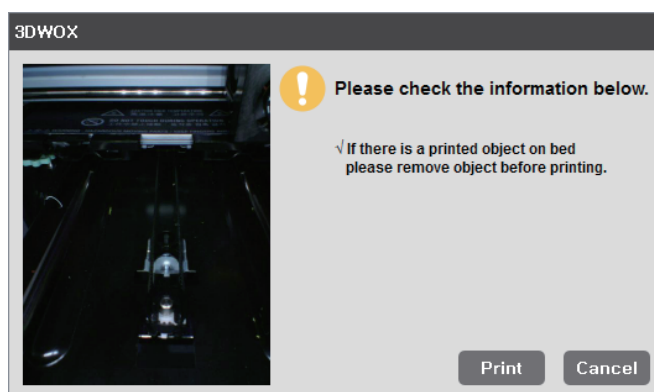
Network Connection

In order to use this function, the printer has to be connected through network.

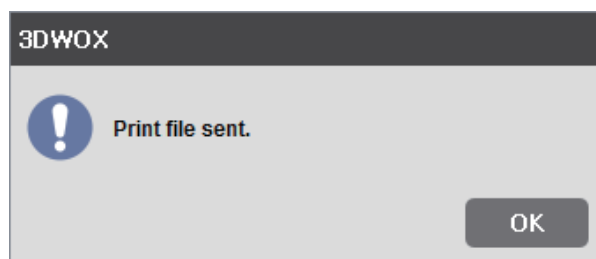
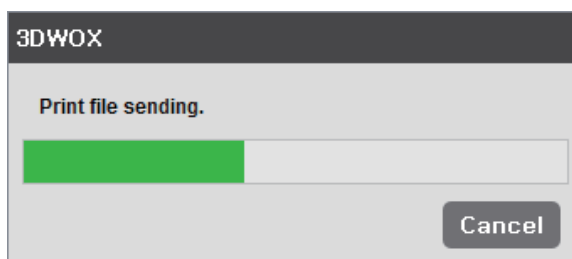
More details can be found in the **<My Printers>** and **<Add Network Printers>** section.

- 1 Slice the model and select the print Icon  on the right or **[Print]** in the File menu.

- 2 If the monitor shows no problems as shown below, press **[Print]** to begin printing.




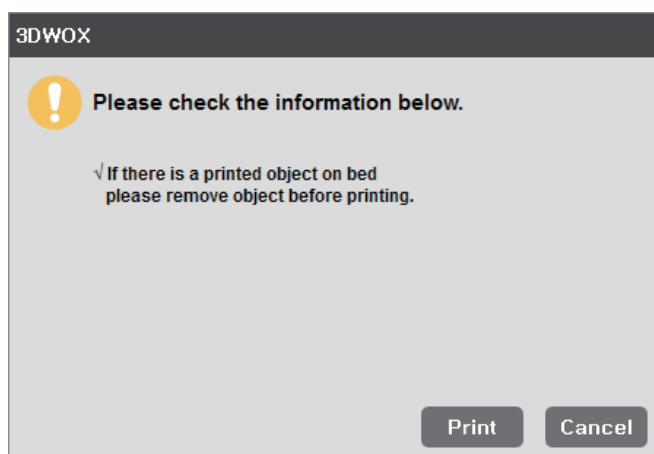
- 3 G-code is sent through the Network and the printer begins printing.



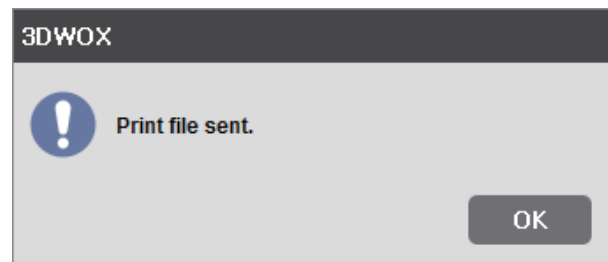
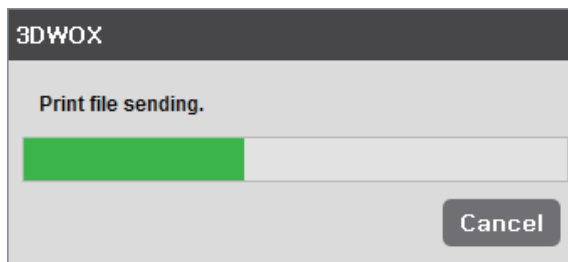
Local Network Usage

In order to use this function, the printer must be connected through the USB cable.
More details can be found in the **<My Printers>** and **<Add Local Printers>** section.

- 1 Slice the model and select the print Icon  on the right or **[Print]** in the File menu.
- 2 If the monitor shows no problems as shown below, press **[Print]** to begin printing.



-
- 3 G-code is sent through the USB Cable and the printer begins printing.



4. Advanced Features

4.1 Support Edit Function

3DWOX offers users to not only use the setting values automatically calculated by the program but can be changed manually.

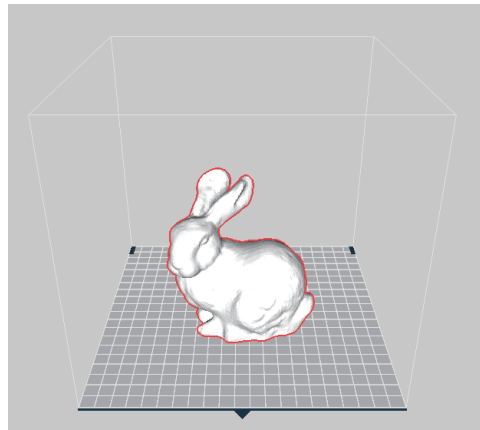
Thus, you can add or delete additional supports in addition to the established supports.

These types of editing tools can be executed in Support Editing View Mode.

Support Editing View Mode

3D Model

First load 3d model into program.



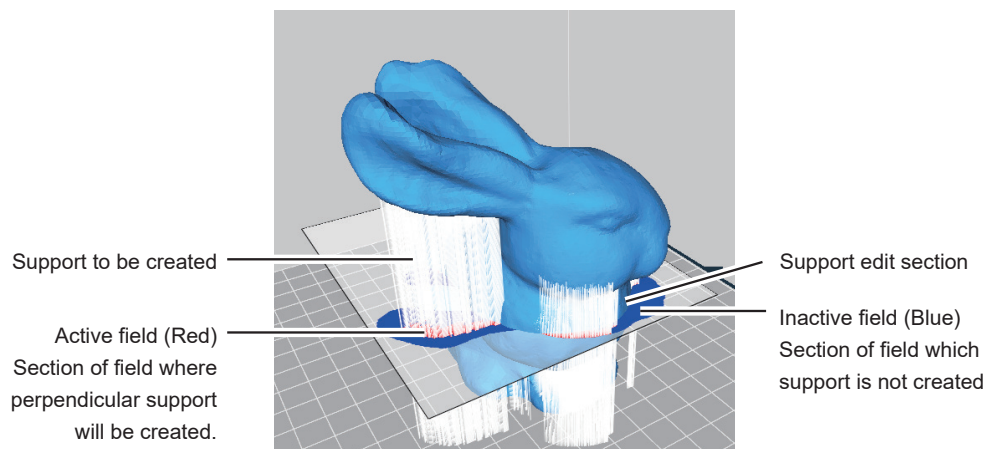
Conversion to Support Edit Viewer mode



Click Support Edit Viewer mode button located on right side of screen.

By changing View mode user will be able to view model with supports, shown below.

Brief explanation of support edit view is as the following.



By standards support is shaped in a section projecting in the direction of Z axis.

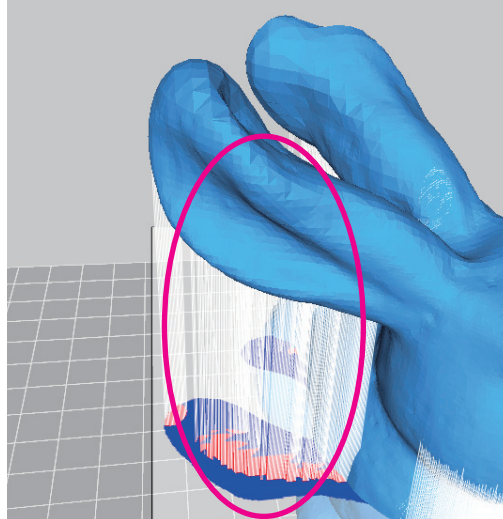
Thus, shape can be created in perpendicular direction and support edit cross sections will show the maximum area that support can be created in the current section.

Creating and Removing Support

• Support Creation

To create a support, click on the inactive area (blue) in the edit region.

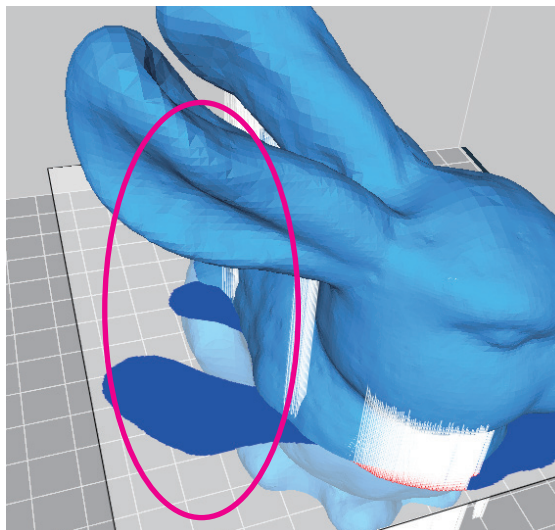
Now, the region will turn red and creation of perpendicular supports can be seen .



• Removing Support

To remove support, press and hold Ctrl key and click on the active area of the edit cross section.

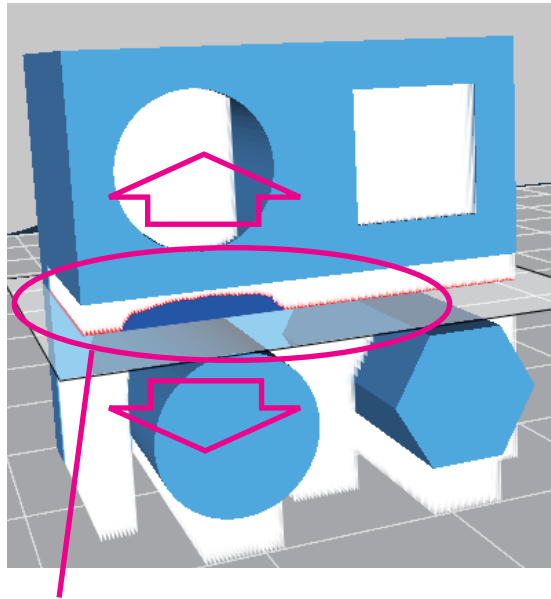
The area that has been selected will turn black (inactive), Supports that have been created will be removed.



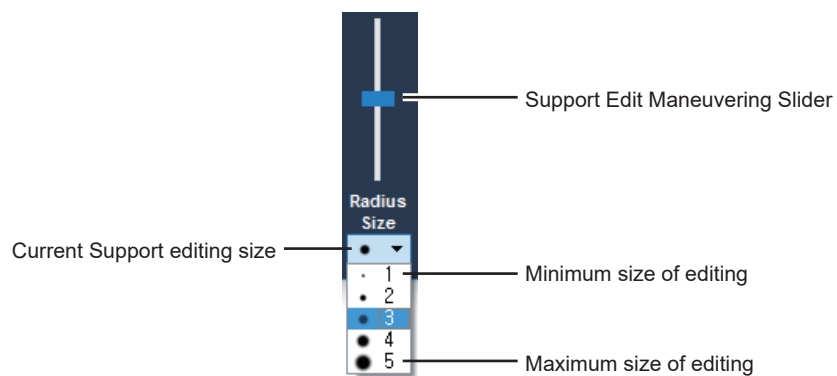
Support Edit Cross Section Maneuvering

Length of Support is determined by having the cross section as the center and creating a support vertically both ways until a shape is created.

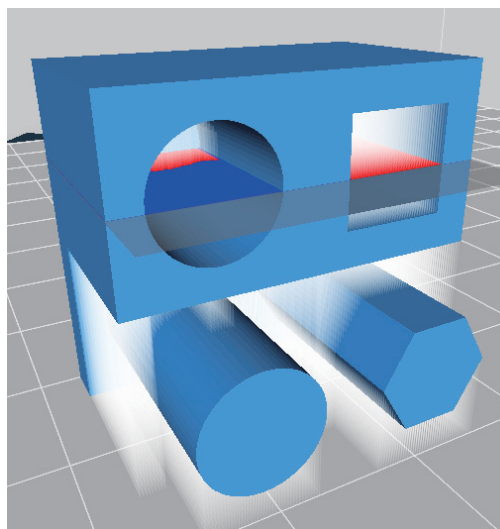
Thus, if there is a shape in the middle of the area, support creation have to be divided and edited separately. For example like the model below, when editing the support located in the middle of the model, in the circle, only the lower half will be edited. So when removing, only the lower half of the support will be removed, and the support in the middle of the model will remain as is.



Because of the shape in the middle, Support area has been divided.



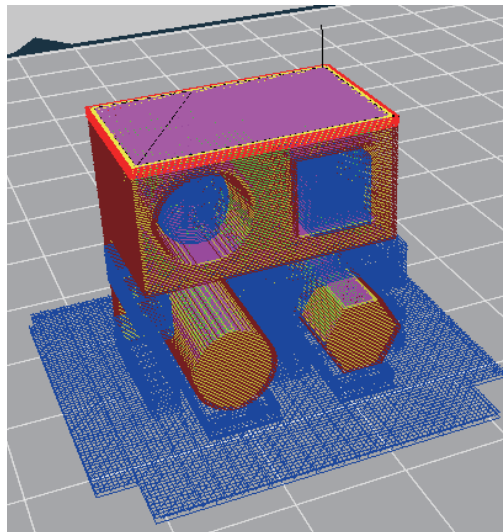
To edit the support inside, the model user has to move the edit cross section.
Use the support edit slider to maneuver around.



Move the Support Editing Cross Section up to place it in the area to edit.
The supports of the interior can be edited by clicking on the interior area of the editing cross-section.

Creating Final Support

After finishing the touches to the support, change to Layer Viewer mode. The model will go through the slicing process again. Now the user can interact with the finished slice with edited supports.

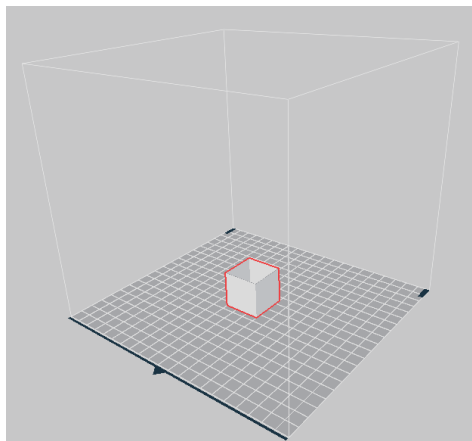


4.2 3D Model Analysis Function

3DWOX has the function where printing the program analyses the shape of the 3D model and informs user of any problems that might occur before printing. Performs thickness analysis of the model based on the cross section of the slicing direction and analyses the counter gradient of the shape in the z axis direction.

Select 3D Model

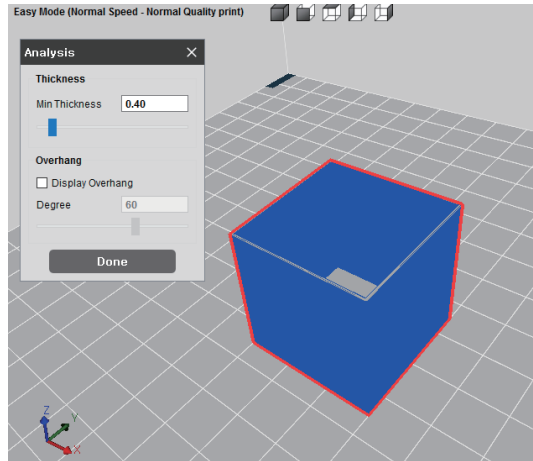
Click and select the 3D model.



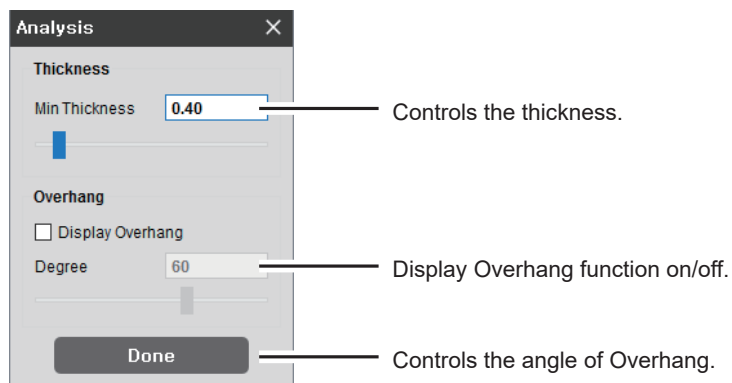
Under Analysis menu, select Thickness / Overhang.

Thickness / Overhang

At the top of the screen, under the Analysis menu select Thickness / Overhang. The analysing process is displayed and calculated results and analysis control window appears.

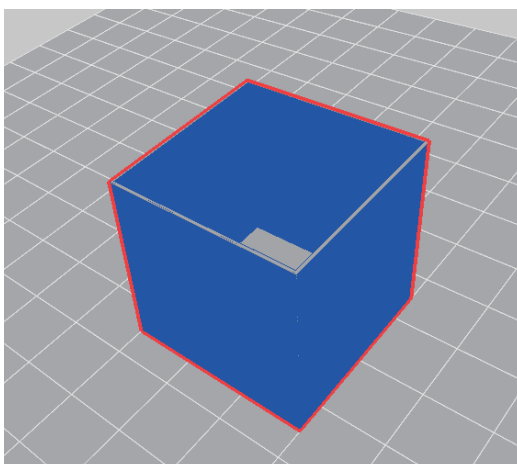


Analysis Control Window

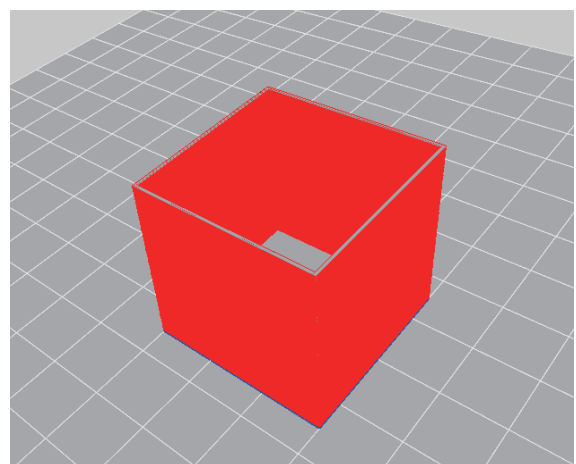


Thickness Analysis Function

Shows layers that are thinner than the minimum thickness value. If minimum thickness layer was set to 0.4mm, any layers that are thinner than 0.4mm (in the order of BLUE and RED) will be indicated, and user will be notified with any problems that might arise.



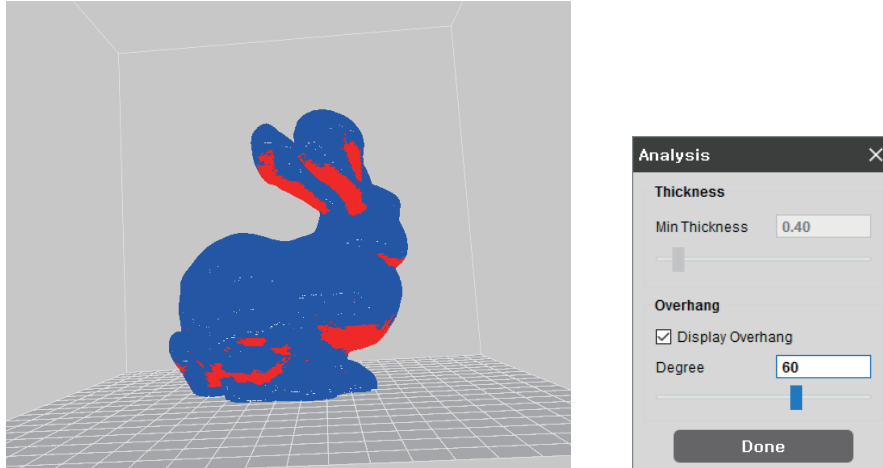
<Geometry is thicker than set value>



<Geometry is thinner than set value>

Overhang Analysis Function

In 3D printing, it's very favorable if object is perpendicular to bed surface, more horizontal the shape is, the more disadvantageous it is. When the angle in horizontal direction is small, supports are needed. The Overhang analysis function calculates the geometry's inverse draft and notifies the user of possible problems that might occur during an actual printing.



4.3 Function to Calculate Optimal Printing Direction

3DWOX has a feature which calculates and recommends the user the most optimal direction for printing. On the basis of pre set standards, this feature calculates 6 different printing directions having the Bed as the base and shows the optimal direction to the user. There are 3 types of evaluation criteria and explanation for each type is as follows.

Estimated Printing Error Surface

Using thickness analysis of the 3D model, the function calculates the area of the part thinner than the current nozzle diameter. For areas which are thinner than the nozzle diameter, there is an extensive chance that the model may not accumulate as expected. So the program pre-calculates these to find printing errors.

Overhang Surface

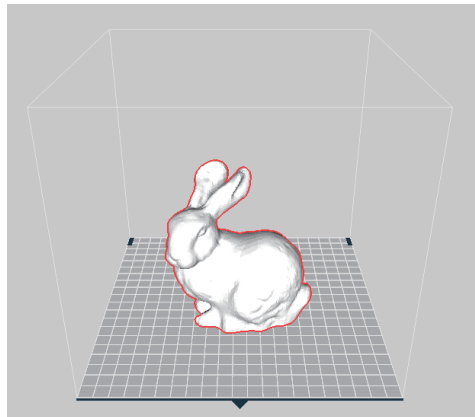
Through Overhang analysis, the program takes into consideration of errors that might occur during printing. Smaller the Overhang surface is, better the quality is. Thus, considering the calculated area value in the opposite way, the optimal printing direction is determined.

Amount of Support

Where there is an Overhang, support is needed for a normal accumulation. However, more supports there are, lower the quality and longer the printing duration becomes. Taking the factors into consideration the program pre-calculates the optimal printing direction.

1 Select 3D model

With the 3D model loaded, click on the model to select.

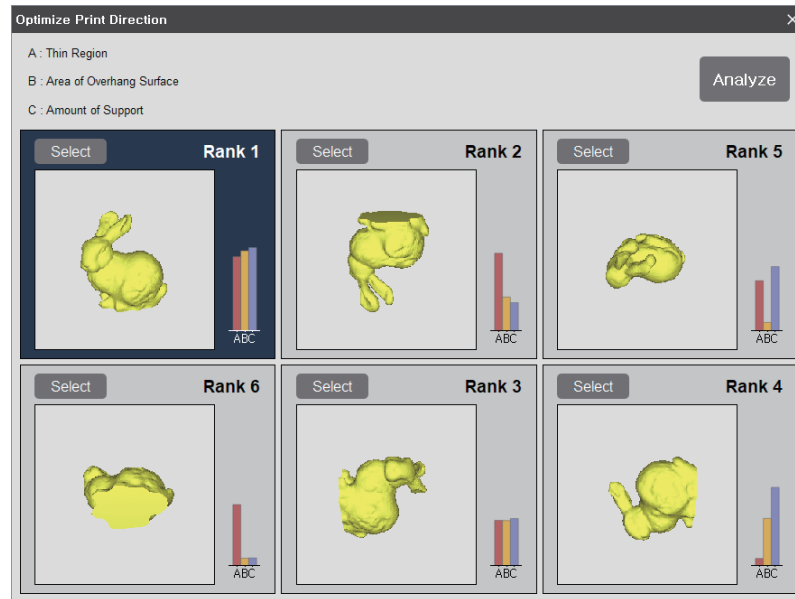


2 In Analysis menu, select “**Optimal Printing Direction**” and a window similar to the following appears.



3 Calculation for each 6 different direction would be initiated once the user clicks on the Caculate button.

- 4 Results of 6 different directions of the model will be displayed, and each direction will be ranked on the evaluation results. Following the results of the evaluation, the most optimal direction will be graded accordingly, and a graph of each evaluation analysis can be examined.



The taller the graph, the higher the scores are achieved for the corresponding evaluation criteria. All scores would be added and ranks of the 6 directions be displayed on the screen.

- 5 Select the preferred direction by pressing the "select" button, and the model appears facing the direction selected. (Rank 2 had been selected in this reference image image)

