



THE HONG KONG
POLYTECHNIC UNIVERSITY
香港理工大學

FACULTY OF
ENGINEERING
工程學院

WHERE CONCEPTS BECOME REALITY

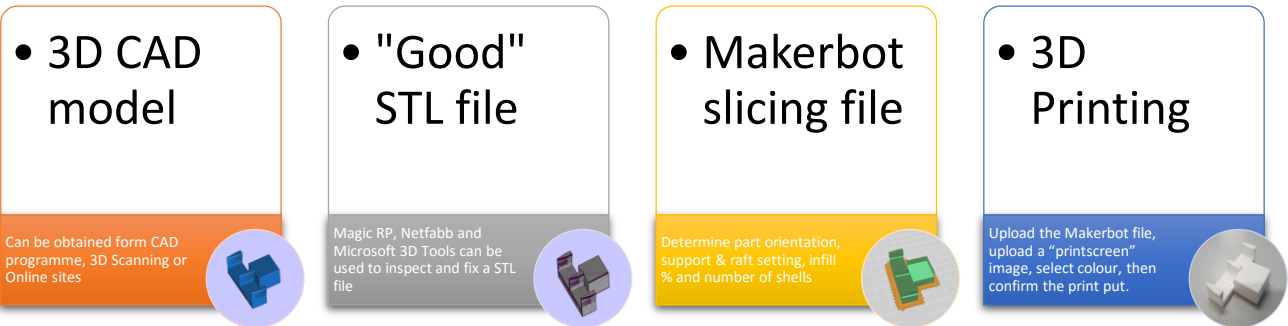
U3DP

User Printing Manual

<https://u3dp.polyu.edu.hk/facilityBooking.html>

U3DP Hotline: 3400-3131

Using our desktop 3D Printing Service



Step 1: Prepare 3D CAD Model

3D CAD model can normally be achieved by:

- CAD software, i.e. Solidworks, AutoDesk 123D Design, Goggle Sketch, Rhino, etc.
- 3D scanning (*You may seek for 3D scanning support from IC at Room W503c)
- Download from On-line sites, i.e. Thingiverse, Yeggi, Pinshape, etc.

Step 2: Prepare "Good" STL File

"STL" file is the most commonly used file type for 3D printing which can normally be converted directly from most of the 3D CAD software and 3D Scanners. "Good" STL file means the lack of surface error. The U3DP has installed **Magic RP** for you to inspect and fix your STL file.

Step 3: Prepare MakerBot Slicing File

You need to go through the most important step to prepare a slicing file with a bundle free software **MakerBot Print** which can be downloaded from the MakerBot website at <https://www.makerbot.com/print/>. The U3DP has also installed the **MakerBot Print** for your use. The steps for preparing the slicing basically include:

- Select the Printer (MakerBot Replicator 5th Gen / MakerBot Replicator Z-18)
- Determine the part orientation (i.e. how to place your part on the platform)
- Decide Print Setting, Infill Density, Number of Shell, Support Structure & Raft
- Estimate & Preview
- Export

Step 4: 3D Printing

Finally, you need to upload the slicing file with a "print screen" image, select the material colour and input the total material usage. Then, you will be asked to print a payment notice for settlement of payment from the FO counter. We'll start the printing request on the next working day and you can collect your printed parts once the printing is completed. You will be asked to present the receipt to us during collection.

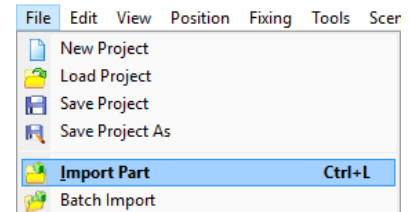
How to obtain a “Good” STL file?

Magic RP is one of the most commonly used 3D Printing software to verify and fix a STL file if the file has some surface problems. The following describes the basic steps of conducting file fixing.

1. Launch **Magic RP** by clicking the icon  on the desktop

2. Import file to **Magic RP** for inspection

Pull down menu: File > Import Part > Select Part > Open

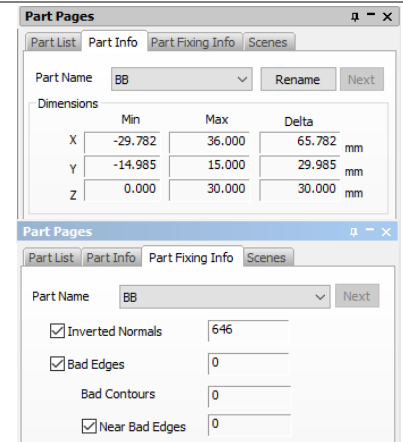


3. Check the basic part information

Check the left hand side “Part Pages” > Part Info to check the overall dimension of the part

Select “Part Fixing Info” and click Update to check the integrity of the STL file.

If “0” is displayed in Invert Normals, Bad Edges, Bad Counters, Near Bad Edges, Planar, etc., congratulations! Your STL file is good to print and you can save the file for 3DP output. Otherwise, please follow “Step 4” to fix the file.

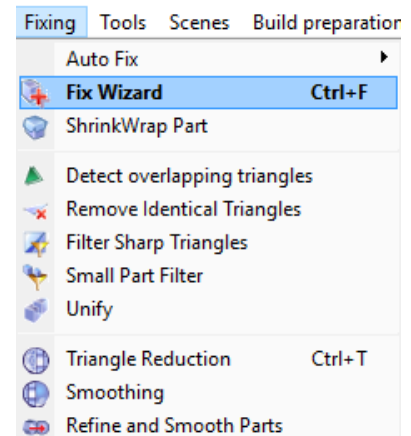


4. Pull down menu: Fixing > Fix Wizard

Click “Update” > Follow Advice > Automatic Fixing

Repeat the above operation to fix the surface problems. In most circumstances, problems can be solved by automatic fixing.

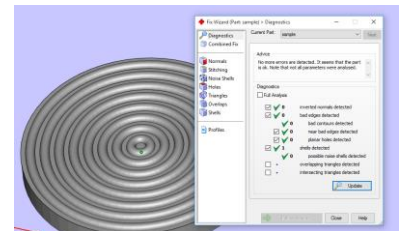
If the problem cannot be fixed, you are suggested to check your original 3D CAD model. You can also approach our staff at the helpdesk for assistance.



5. After the completion of file inspection & fixing, you can now save the file for the slicing operation.

File > Save Part(s) As > XXX.STL (where XXX is your file name)

*Remark: **Save Part(s) As** should be used instead of **Save Project** or **Save Project As***



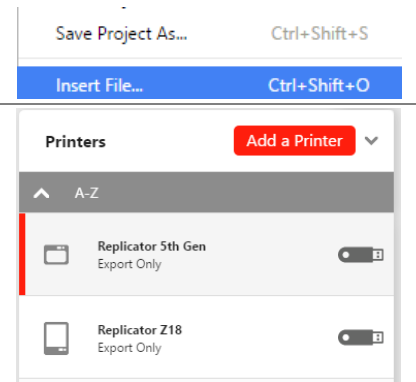
How to prepare MakerBot Slicing file?

MakerBot Print is a free bundle software to prepare slicing file for our MakerBot 3D Printers. You can download the software from MakerBot free of charge to prepare your file. The U3DP has also installed the software for your use. The following describes the basic steps for preparing the MakerBot slicing file.


1. Launch **MakerBot Print** by clicking the icon  on the desktop

2. Import STL file


File > Insert Part > Select part > Open




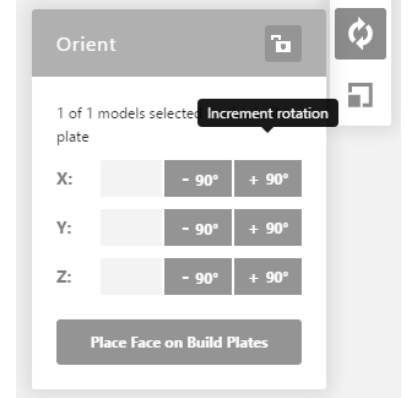
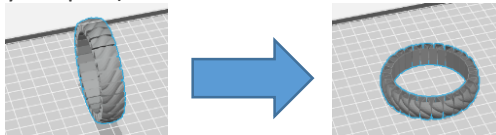
3. Select Printer

At right lower corner click  to select **Replicator 5th Gen** or **Replicator Z18**

	Platform Size (mm)	Colour Option
Replicator 5th Gen	252 x 220 x 150	More (about 20)
Replicator Z18	300 x 305 x 457	Limited (4)

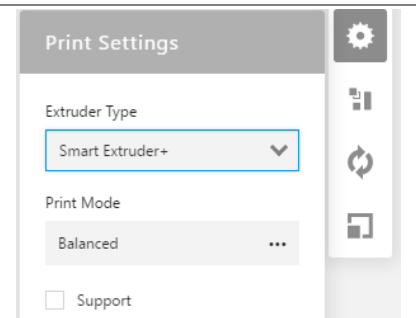
4. Change the part Orientation  : At right top corner

Select the part to be rotated by move the cursor to the object > Click left most button to select > input the degree of rotation according to the axis to click  the orientation. (approach our helpdesk if you are not sure which orientation is the best for your part)



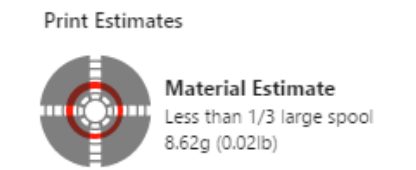
5. Print Setting  : At right top corner

- **Extruder Type: Smart Extruder+ (MUST select this type)**
- Infill Density: 10-100% (depends on your application, i.e. concept model/display model: 10-30%, functional part: 70-100%)
- Number of Shell: 2 Shells are recommended
- Support: Normally needed, only if you are sure the model can be self-supported or support has been generated by other software
- Raft: needed at all times

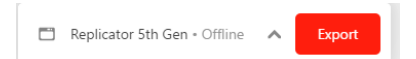


6. Estimate and print preview click 

Check the slicing file by moving the layer bar (left hand side)
If no problem is found, you can record the “weight in gram” and create a “printscreen” image by using **Paint** for further uploading.



7. Click “Export” to save the slicing file to **D:/Temp**



Bonus Service

Service	How much	Where
<p>Photo Studio All-in-one photo studio box makes product shot taking more professional and convenient</p>	Free	W501a
<p>Post-treatment Hand Tools Handy tools to remove support easily</p>	Free	W501 Helpdesk
<p>Surface Post-Treatment Gives new looks and new possibilities of use to your product</p>	Subject to Material Usage (pls approach W401 for enquiry)	W401
<p>Rapid Tooling Quickly duplicates your product in other formats</p>	Subject to material Usage (pls approach our helpdesk)	W002
<p>3D Scanning Get 3D CAD Model from existing object in the blink of an eye</p>	Free	W503c