

## Industrial grade 3D Printer

**Important:** Please be sure to read the following instructions carefully before operating this machine. Incorrect and inappropriate operation, maintenance and installation may cause injury, machine damage and failed prints. Becoming familiar with the machine and being aware of its functions and capabilities before printing is strongly advised to safely perform reliable and high quality prints.

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## Personal Safety and Avoiding Machine Damage

### 1. Safety precautions

Only use the consumable recommended by the original manufacturer and do not use other manufacturer's consumable willingly, as this could clog the nozzle. Do not attempt to use the machine in any way not described in the instructions for use to avoid causing personal injury and property damage.

### 2. Properly choose the location

The machine is suitable for placement in ventilated, cool, dry and dustless environments.

Pay attention to the heat dissipation of the surrounding environment of the printer and avoid placing it on a thick carpet or against a wall. Do not place this machine near flammable materials or high heat sources. Do not place the machine in high vibration or other unstable environments. Do not stack heavy objects on this machine.

### 3. Use the power supply according to the specification

Use the power cord supplied with this machine. Do not plug or unplug the power plug while your hands are wet. Use a qualified three-hole socket with a ground wire.

Be sure to fully insert the power seat when using the plug.

Do not intentionally pull or twist the distribution line of this machine to prevent open circuit or short circuit.

### 4. Pay attention during the printing process

Be careful not to set the hot bed temperature too high to avoid burns when using the hot bed function.

Do not use this machine under the age of 10 without supervision by personnel to avoid personal injury.

Do not touching the nozzle head to anti-scald during printing and just after printing.

If abnormal noise occurs during printing, immediately turn off the power switch and stop the printer, then contact your purchaser.

Always do product maintenance and regularly dust and lubricate the machine.

Do not attempt to disassemble or modify the machine not described in this manual to prevent the printer from damage or other more serious safety incidents.

Periodically clean the printer with a dry cloth to remove dust and sticky print material. If you must use a damp cloth to clean.

Do not use flammable solvents and prevent flammable solvents from contacting the printer's internal circuitry to cause fire or electric shock.

### Notice after printing

Power off in a timely manner after printing. Use the remaining temperature of the nozzle promptly to clean the consumable on the nozzle with the tool. Do not directly touch the nozzle. Try not to scratch the hot bed board when using a blade to take the model. Ensure the machine is well maintained. Dust removal and lubrication should be performed in a timely manner the later period. The machine must be de-energized and be protected against dust when the printer is not used for a long time.

## Specifications

Modelling technology	: FDM (Fused Deposition Modelling)
Printing size	: 200mm × 200mm × 200mm
Machine size	: 370mm × 390mm × 500mm
Filament diameter	: 1.75mm
Layer height	: 0.05 ~ 0.4mm
Nozzle size	: 0.4mm
Connectivity	: online & SD card
Print speed	: <200mm/s normal50mm/s
Printing material	: 1.75mm PLA, ABS, TPU, composites and more
Support format	: STL obj gcode

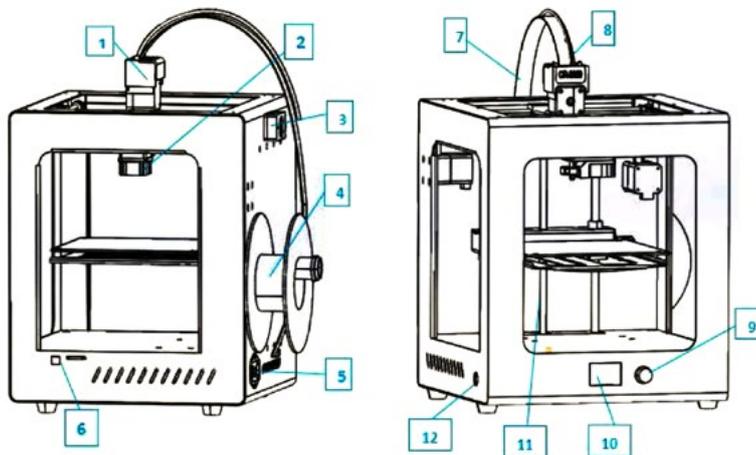
System : Linux, Windows and OSX  
 Software : Multicomp 3D slicing software, Cura, simplify3D  
 Applicable voltage : 110 – 240v  
 Environmental requirements : 10°C - 30°C, Humidity 20-50%

## Getting Started

### 1. Open the box

- a. Multicomp MC-I20 3D printer
- b. Material Guide
- c. Material Spool
- d. Cutting Knife & Scalpel
- e. Allen Keys
- f. Nozzle Key & Nozzle Needle
- g. Pliers
- h. Spatula & Tweezers
- i. Service Grease
- j. Power Cable
- k. SD Card & SD Card Reader

### 2. Get familiar with your 3D printer



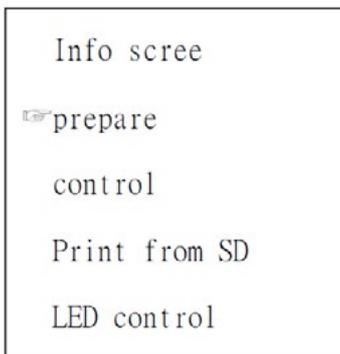
1. Extruder	7. Extrusion line
2. Nozzle and fan	8. Guide tube
3. Broken material detection	9. Control knob
4. Rack	10. Display
5. Switch and power socket	11. Z axis
6. SD and USB	12. Reset switch

### 3. Installation

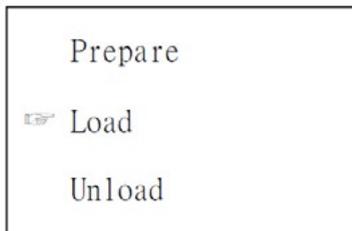
- a. Connect the power cord
- b. Install extrusion line, guide tube and rack
- c. Load material – when feeding, the material tray should rotate counter clockwise

### 4. Load material

- a. All installations have been done well. “prepare” >> “change filament”



- b. “Load”



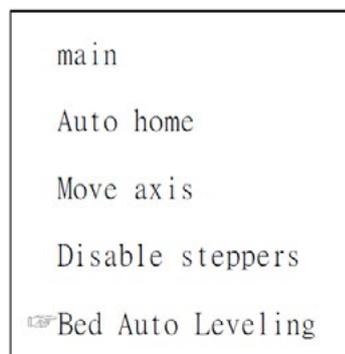
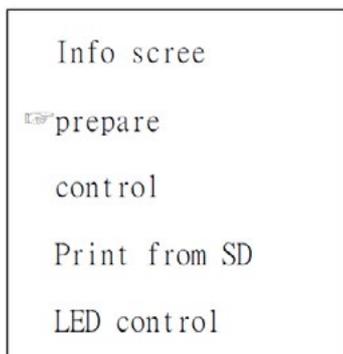
Attention: When the material is unloaded, the material is quickly pulled out, otherwise the consumable material will be blocked.

- c. When temperature reaches the pre-set temperature, extruder will move.

### 5. Adjust platform

Adjusting platform is very important. It has effect on the printing quality and success. Before your printing, when you have adjusted the platform, the later cannot adjust platform.

- a. “prepare”>> “Bed Auto Leveling”

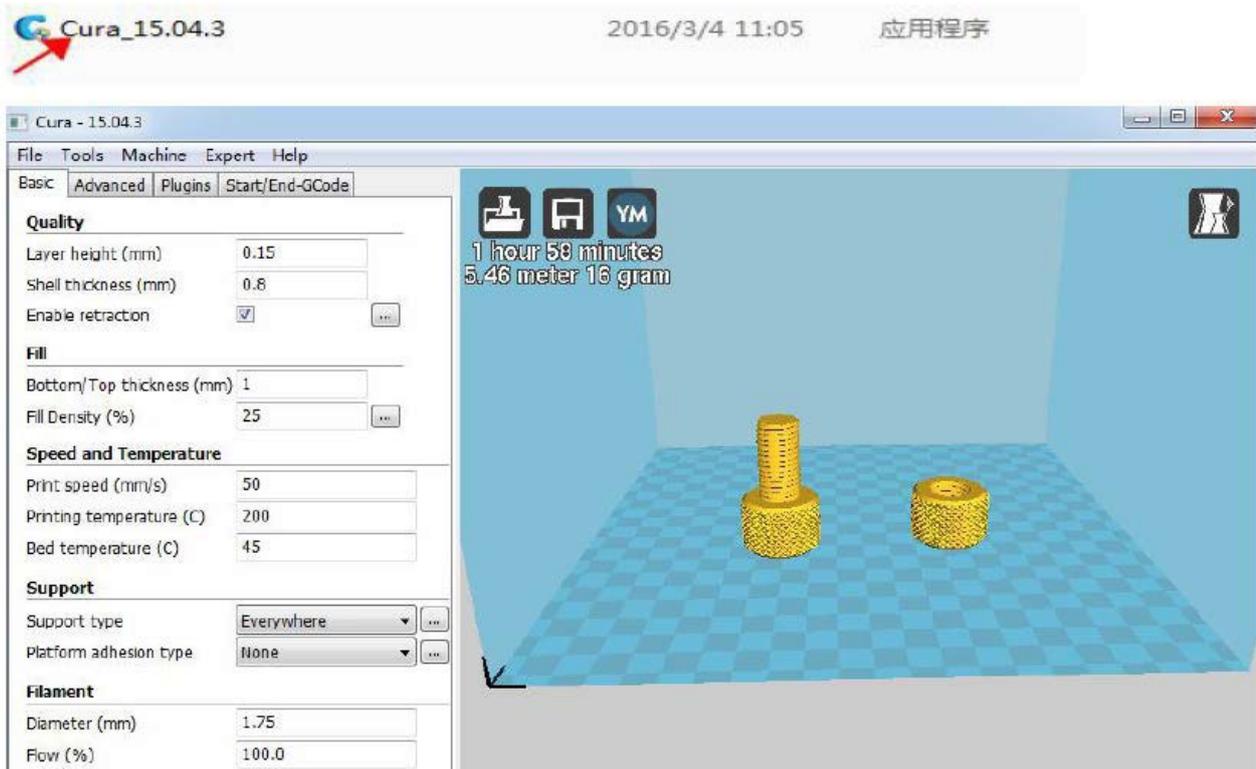


b. After choose the command, according to the screen, by rotating platform of screws, check the platform with a horizontal nozzle of A4 paper. Choosing “Auto home”>> “ Disable steppers”, Then you move the nozzle, you may find that there are shallow scratches on the paper.

Prepare	Main	main
☞ Next	☞ Auto home	Auto home
	Move axis	Move axis
	Disable steppers	☞ Disable steppers
	Bed Auto Leveling	Bed Auto Leveling

## 6. Install Software

Double click Install Package. Details refer to the software description from SD card.



```
基本 高级 插件 Start/End-GCode  
start.gcode  
end.gcode  
  
;End GCode  
M104 S0 ;extruder heater  
M140 S0 ;heated bed heat  
  
G91 ;rela  
G1 E-1 F300 ;retr  
G1 Z+0.5 E-5 X-20 Y-20 F{travel_speed} ;move  
G28 X0 Y0 ;move  
  
M84 ;steppers off  
G90  
M81 ;absolute positionin  
;{profile_string}
```

Add new machine wizard: "other">> "Prusa Mendel i3", then changing settings. If you want to automatic shutdown, you should add the "M81" command in the "end.gcode". You can open your machine by the reset switch.

## 7. Printing

a. Choose "Print from SD".

- Info scree
- prepare
- control
- Print from SD
- LED control

b. Choose the file you want to print

```

main
01.gcode
02.gcode
03.gcode
04.gcode
    
```

c. Wait for the temperature to reach its predefined settings, once the machine is up to temperature, the machine will start to print

d. After printing, the heat will reset automatically, and you can separate the model from the print bed

## 8. Menu item function description

Menu options	Sub menu	Explanation
Info screen		Show the nozzle and bed temperature, Fan and printing speed,printing time.
Prepare	Main	Return to previous menu
	Disable steppers	Moving X Y Z axis by your hands
	Auto home	Return to the origin position
	Preheat PLA	Different materials have different printing temperature
	Preheat ABS	
	Bed Auto Leveling	Adjusting platform
	Change filament	Load and unload material
	Cool down	Closing heating
	Move axis	Moving X Y Z axis by switching the knob. There are three choices, stepping 10mm/1mm/0.1mm
Control	Main	This selection is generally not used. We advise that these parameters are not modified
	Temperature	
	Restore failsafe	
Print from SD		Selecting the file that what you want to printing.(.gcode)
LED control		Take on/off LED

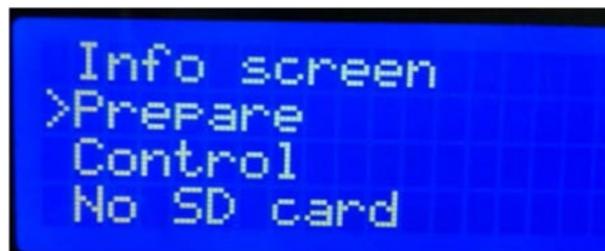
## Equipment and Printing Instructions

### 1. Prepare before printing

- a. Connect the power supply, turn on the switch (connect the main switch at the power cord and the sub switch on the side of the machine), and install the rack



- b. Feed (Note: 1, preheated nozzle before the feeding, click "Prepare" → "Preheat pla", until the temperature is heated to the specified temperature, the consumable are sent to the feed gear, select "change filament" ("loading"))

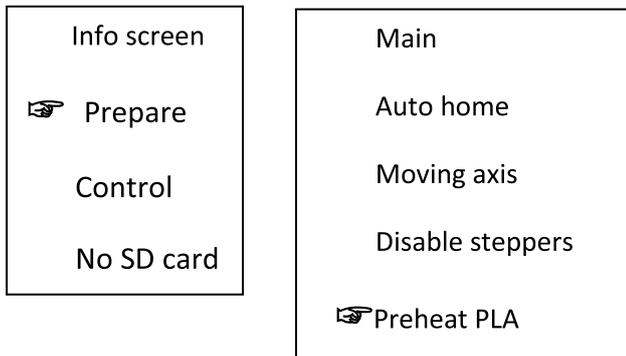


Preheat the nozzle before feeding and retreating, quickly pull out the filament after the filament is withdrawn, otherwise the filament will block the nozzle.

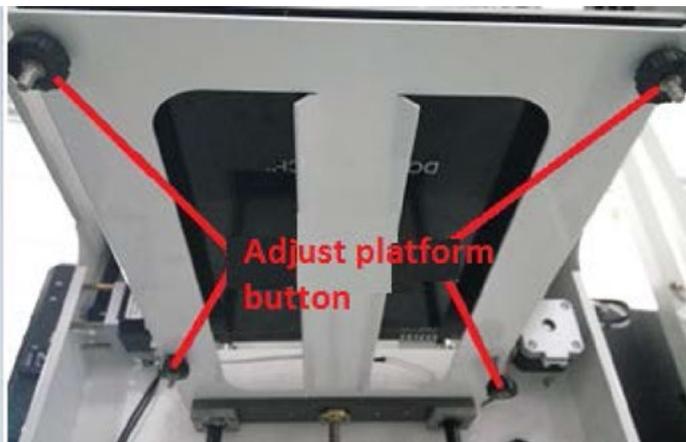
## 2. Levelling the platform

When we use the utility knife to peel off the print from the print plate, the first layer of the next print may not stick after finishing printing. Apply a stick of solid glue on the tool box to the platform, depending on the size of the model you are printing. To level the print plate, see instructions below:

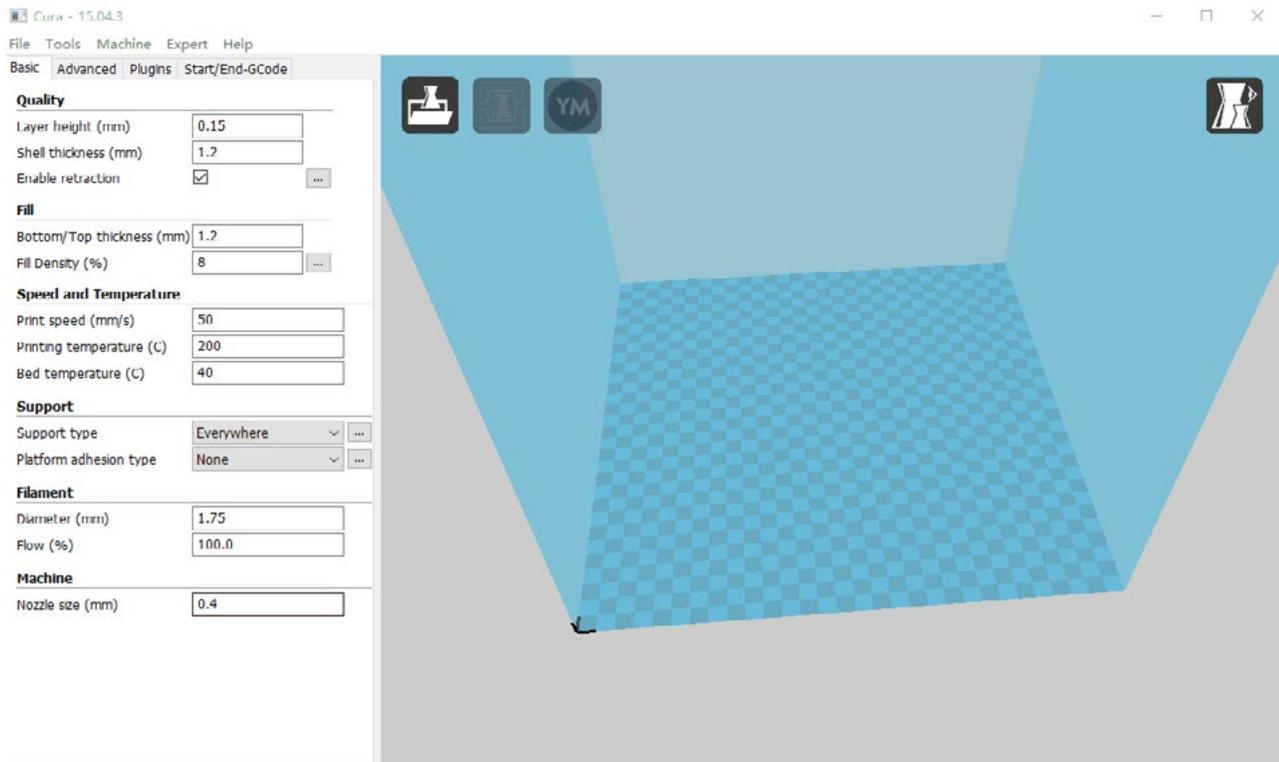
a. Press the control knob to select "Prepare" -> "Leveling"



b. After selecting the "leveling" command, according to the screen prompts, the nozzle will move to the four corners of the platform in order, horizontally observe the distance between the platform and the nozzle, and adjust the distance between the nozzle and the platform through the knob under the platform. Just can put A4 paper between them. After the adjustment, select "Auto- home" "Disable steppers" and when moving the nozzle manually, there should be shallow scratches on the A4 paper.



3. Install the slicing software and slice to generate an executable file (.gcode). For details, please refer to the installation instructions of the slicing software separate to this User Guide.



## 4. Start printing

- Import the model you want to print into the slice software. After setting the parameters, click File - Save GCode to save the G code. Note that the file name cannot be Chinese or special characters.
- Before printing, transfer the G code of the model you want to print to the SD card, insert the SD card into the slot on the right side of the machine, and note the front and back sides of the card.
- Press the knob to enter the menu, select "print from SD", find the file to be printed, press the knob to confirm, the nozzle starts heating automatically, and the preset temperature starts printing.

### Note

Before printing, apply a textured paper on the print plate so that after finish printing, it will be easier to peel the print from the platform. Make sure the PLA supplies are sufficient to complete this print, otherwise replace the consumable before printing.

During the printing, the temperature of the nozzle reaches 205~210°C, and do not bring the body part or the flammable and explosive articles close to the spray head.

At the beginning of printing, see whether the consumable are tightly stuck on the platform. If there is no problem, they can leave; otherwise, please readjust the platform.

## 5. Finish Printing

When the printing process is over, the machine will automatically shut down. Next time you turn on the printer, what you need to do is booting with the sub switch. Be careful when removing the model from the platform. In order to facilitate the model, the hot bed can be heated to 50 for a while. When peeling the model, be careful not to damage the platform. After you finish peeling, you can use the utility knife to clean the debris on the platform.

## Testing Instructions

Before printing, manual unilateral debugging is required to test the normal operation of each component. The inadvertent assembly and connection problems in previous steps can be tested and resolved in the step-by-step debugging steps.

**In general, you need to test the following:**

1. Whether the motor is running normally or not
2. Whether the nozzle and hot bed heating are normal
3. Whether the platform is adjusted well, the general platform and the nozzle just make contact and there is a slight scratch

Note: unilateral debugging involves the integrated control of software, hardware and machinery and is the coordinating work of the entire electromechanical system. If you encounter problems in the debugging process, you need to consult relevant manuals for analysis and understanding. If you have any difficulties, please contact with the customer service.

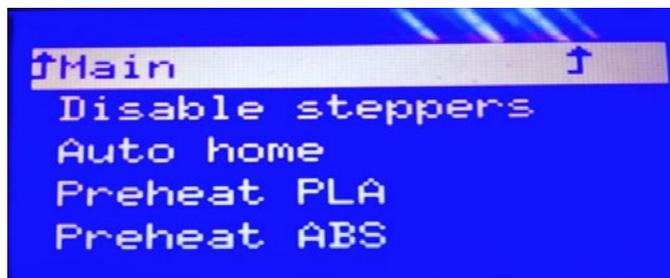
### Step 1: Test the direction of each axis

Here is the test of the machine through the LCD screen. First of all, check the LCD screen comments

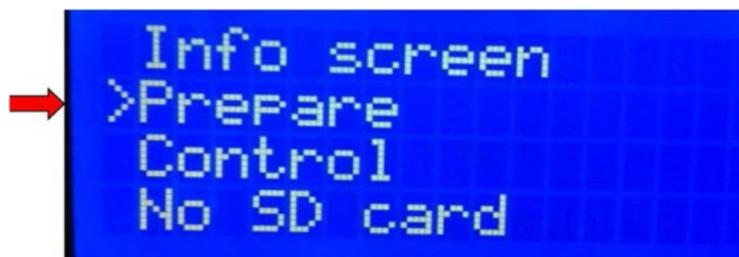
- a. Select "Prepare" "Auto-home", each axis will return to the origin (lower left corner position), and the limit switch stops, indicating that the direction is correct.

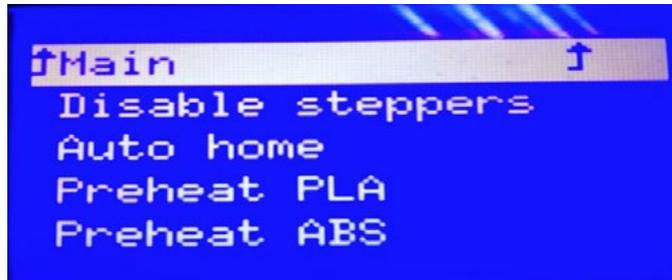


- b. Select "disable steppers", the motor can rotate freely. After returning to zero, you can manually slide the nozzle to level.



### Step 2: Preheat the nozzle



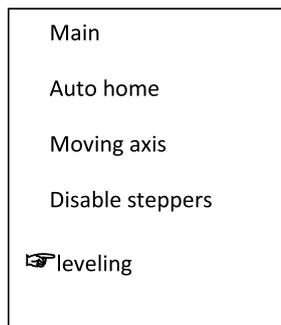
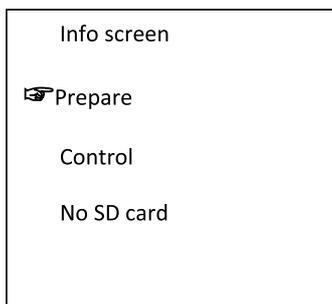


(On the top is the preset temperature, on the button is the actual temperature)

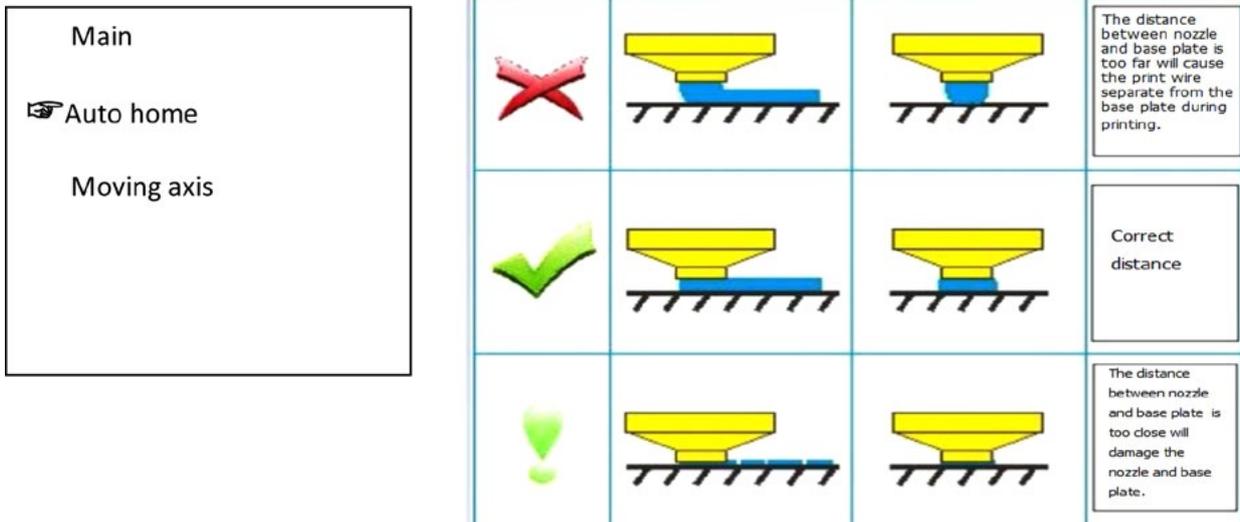
### Step 3: Levelling

Machine levelling is very important and directly related to the print quality. By levelling before printing, you don't have to adjust it when post-printing.

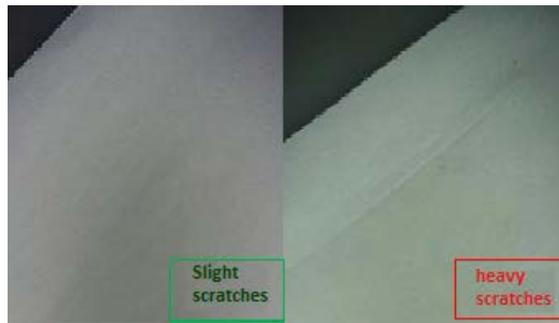
a. Press the control knob to select "Prepare" -> "Leveling"



b. After selecting the "leveling" command, according to the screen prompts, the nozzle will move to the four corners of the platform in order, horizontally observe the distance between the platform and the nozzle, and adjust the distance between the nozzle and the platform through the knob under the platform. Just can put A4 paper between them. After the adjustment, select "Auto-home" "disable steppers" and when moving the nozzle manually, there are shallow scratches on the A4 paper.



Turning the knob clockwise means reducing the distance between the nozzle and the platform to make the two closer; rotating the knob counter clockwise means increasing the distance between the nozzle and the platform to keep the two further away. Remember to lightly tighten / loosen the screws. Adjust them by rotating a little bit.



## Levelling the Heating platform

### 1) Why is levelling so important?

If the distance between the heating plate and the nozzle is too long, or if there is no levelling, resulting in the distance between the heating platform and the nozzle is too far or too close, then it will easily cause the condition of the non-stick.

If the heating plate is close to the nozzle, the heating plate will directly affect the filament out from the nozzle, which may also cause the heating plate to be scratched.

Levelling the heating plate before printing helps ensure that the printed object is adhered to the heating plate.

### 2) How to level the heating plate

The height of the heating plate can be adjusted by turning the three screws under the plate.

Tighten the screws [tighten counter clockwise] to increase the distance between the heating plate and the nozzle.

Loosen the screw [turn clockwise] and the heater plate will be close to the nozzle.

Control the distance between the nozzle and the heater plate to the thickness of a sheet of A4 paper.

## Specific operation method

### a. Auto-home

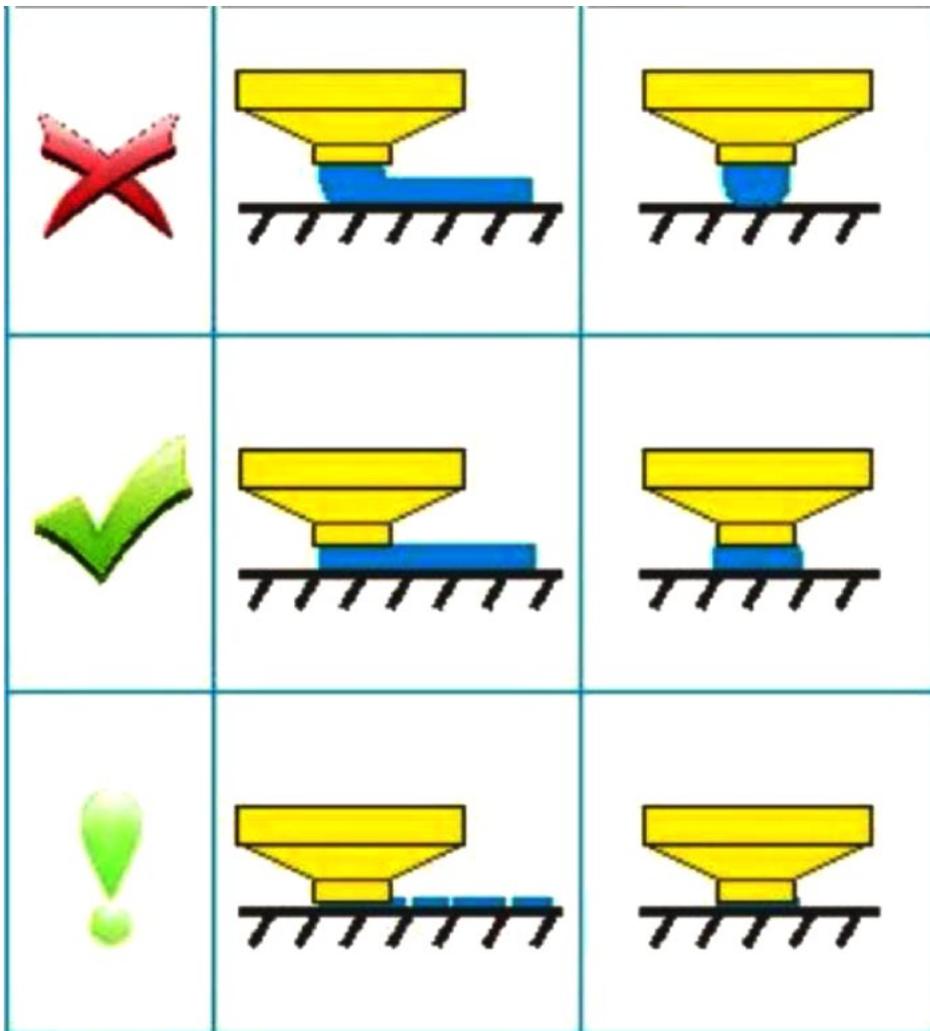
The user can directly enter the operation option page on the LCD screen, select “Prepare”, and then select “Auto home”.

### b. Adjust the distance

After the auto-home is completed, you can directly disconnect the power supply and USB data cable, manually move the nozzle to change the position of the nozzle on the platform, or you can change the position of the extruder through XY displacement of the screen or software. Observe three corner positions of the nozzle and platform and adjust the distance.

After the machine completes the auto-home, it is possible to further adjust the height of the heating plate by turning the three screws under the plate. When you adjust each screw, make sure that the distance between the heater plate and the nozzle is the distance that an A4 paper can travel. You can feel that the nozzle has a little rubbing against the A4 paper, but still can pass without scratching.

Correct distance between nozzle and base plate:



Start 3D printing after platform debugging

## Debugging

### 1) Can't get the model down

Seeing that the 3D printing finished product is done, but the model is too difficult to remove from the print bed. You may feel as if you are pulling on the platform. This is because of the high temperature of the machine's printing space, which should allow the machine's printing space to cool for a few minutes before using the configured tools and then remove it. It is also suggested that if the platform can be heated, the temperature of the platform can be adjusted to between 50 and 70 degrees. After heating for three minutes or so, the model can be easily taken off.

**Note:** Forced removal of the finished product after printing, may cause deformation of the finished product or burns. Hand rubbing will damage the accuracy of the platform.

### 2) The first layer is always incapable of printing, or it has been found to have an edge-up phenomenon after printing several layers

The general 3D printer has been adjusted at the factory before delivery. The platform will be slightly tilted during transportation. After the user gets the machine, the following steps can be used to adjust the platform:

- a) Clean up the build platform or slightly increase it
- b) Use a lint-free cloth with a little rubbing alcohol or some acetone nail polish remover to clean the surface of the platform
- c) If the above methods do not work, try rotating the knob on the bottom of the platform to adjust the height of the platform so that the platform is close to the nozzle. (Regulatory platform, please follow the instructions for platform adjustment)
- d) If it still does not work, run the Replicator calibration script and open it in Utilities->LevelBuild Plate. This time, a sheet of paper is placed on the platform for calibration. The goal is to adjust the platform so that the nozzle is closer to the sheet. This step may have to be tried several more times
- e) Another option is to print in Raft mode, which allows your printed objects to be more easily glued to the platform, which can avoid the phenomenon that the material and the platform cannot be stuck. The reason behind edge-warping is that the temperature of the printing space of the machine is too low, what you need to do is cover the lid of the machine

<b>Part Number</b>
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MC-I20
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