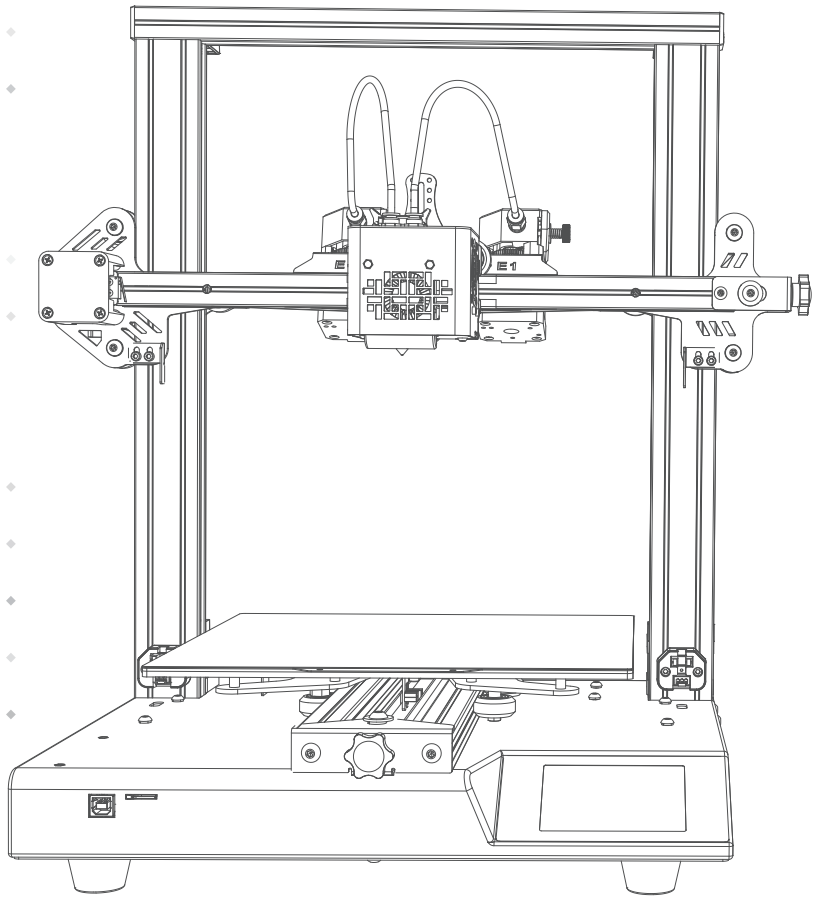
GEEETECH®

# Mizar M

# USER MANUAL V1.0



Shenzhen Getech Technology Co., Ltd.
www.geeetech.com

## TERMS

Please be advised of the following terms (the “Terms”) regarding this User Manual (this “Manual”):
All information in this Manual is subject to change at any time without notice and is provided for convenience purposes only. GEEETECH reserves the right to modify or revise this Manual in its sole discretion and at any time. You agree to be bound by any modifications and/or revisions. Contact the GEEETECH Support Team for up-to-date information.

## DISCLAIMERS

Neither GEEETECH nor any of our affiliates warrants the accuracy or completeness of the information, products, or services provided by or through this Manual, which are provided “as is” and without any express or implied warranties of any kind, including warranties of merchant ability, fitness for a particular purpose, or non-infringement of intellectual property. To the fullest extent permissible by the applicable law, we hereby disclaim all liability for product defect or failure or for claims that are due to normal wear, product misuse or abuse, product modification, improper product selection,non compliance with any codes, or misappropriation. To the fullest extent permissible by the applicable law, we hereby disclaim any and all responsibility, risk, liability, and damages arising out of death or personal injury resulting from assembly or operation of our products. GEEETECH assumes no respon sibility, nor will be liable, for any damages to, or any viruses or malware that may infect your computer, telecommunication equipment, or other property caused by or arising from your downloading of any information or materials related to GEEETECH products.

## CONTACT US

After-sales E-mail
Rita technical <technical@geeetech.com>

Technical support
https://www.geeetech.com/contactus.html

Mizar M Wiki

Technical support

*CONTENTS*


1. WARM TIPS ---- 1

2. PACKING LIST ---- 2

3. MACHINE COMPONENTS ---- 3

4. ASSEMBLE THE MACHINE ---- 4

5. CONNECT CABLES ---- 7

6. MACHINE STRUCTURE CHECK ---- 8

7. CHECK POWER SUPPLY ---- 10

8. UI INTRODUCTION ---- 10

9. HOTBED LEVELING ---- 20

10. OPERATING INSTRUCTIONS OF PRINT HEAD MODULE ---- 23

11. LOADING FILAMENT ---- 25

12. GRADIENT COLOR PRINTING SETTING ---- 26

13. SEPARATE PRINTING SETTING ---- 28

14. PRESET ---- 30

15. START PRINTING ---- 32

16. AJUST PARAMETER AFTER STARTING PRINTING ---- 32

17. PAUSE PRINTING ---- 34

18. BREAK-RESUMING ---- 34

19. FILAMENT DETECTOR ---- 35

20. SLICING SOFTWARE ---- 35

21. ONLINE PRINTING ---- 35

22. DAILY MAINTENANCE AND USAGE SUGGESTIONS ---- 36

23. FAQ ---- 37

24. MACHINE PARAMETERS ---- 39

## 1 WARM TIPS

- Please read this document carefully to ensure that you understand each installation step, which will improve the efficiency of your assembly and reduce errors.
- After unpacking, please check whether the accessories are complete or not. If any accessories are missing, please contact customer service of Geeetech.
- Please place the printer in a spacious, flat and ventilated environment. If you do not use the machine for a long time, please pay attention to waterproof and moisture- proof protection for the printer.
- Do not touch any moving parts while the printer is running to avoid personal injury.
- Do not touch the nozzle and hot bed when the printer is working, so as not to cause burns.
- When using the touch screen in the printing process, please pay attention to the movement of the hot bed to prevent the hot bed from hitting your fingers.
- Please use the printer in the environment of 10~40°C, otherwise the printing will be adversely affected.
- Mizar M has two print head modules, they are "Separated Color Module" and "Gradient Color Module", corresponding to "Separate Mode" and "Gradient Mode" two modes, the "Gradient Module" print head module is installed by default at the factory.
- Mizar M has two sets of UI, it will automatically switch UI according to the currently installed modules.
- The nozzles of Mizar M Separated Color Module and Gradient Color Module cannot be mixed, please pay attention to the distinction when replacing the nozzles.
- There may be slight differences between the actual product and this document, please refer to the actual product,subject to change without notice.
- Before the delivery of Mizar M, the factory will conduct reliability test on the Gradient Color Module and Separated Color Module, so there may be residual filament in these two modules. This is a normal situation, please be aware.

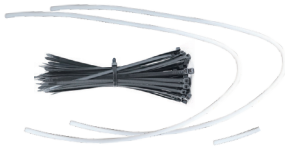
## 2 PACKING LIST



Hot bed kit *1



Gantry kit *1



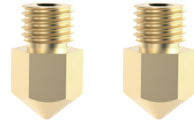
Teflon Tube*3 & Cable Tie*1



Quick Plug *4



Separated Color Nozzle*2



Gradient Color Nozzle*2



Extruder kit*1



Shovel*1 & Test Filament *2



USB Cable *1
& TF*1



3D-Touch*1



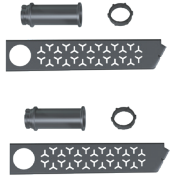
Buckle *4



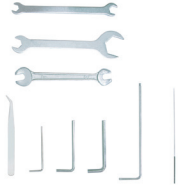

Separated Color
Module*1



M5*35 Screw*6



Filament Holder*2



Tool Kit*1



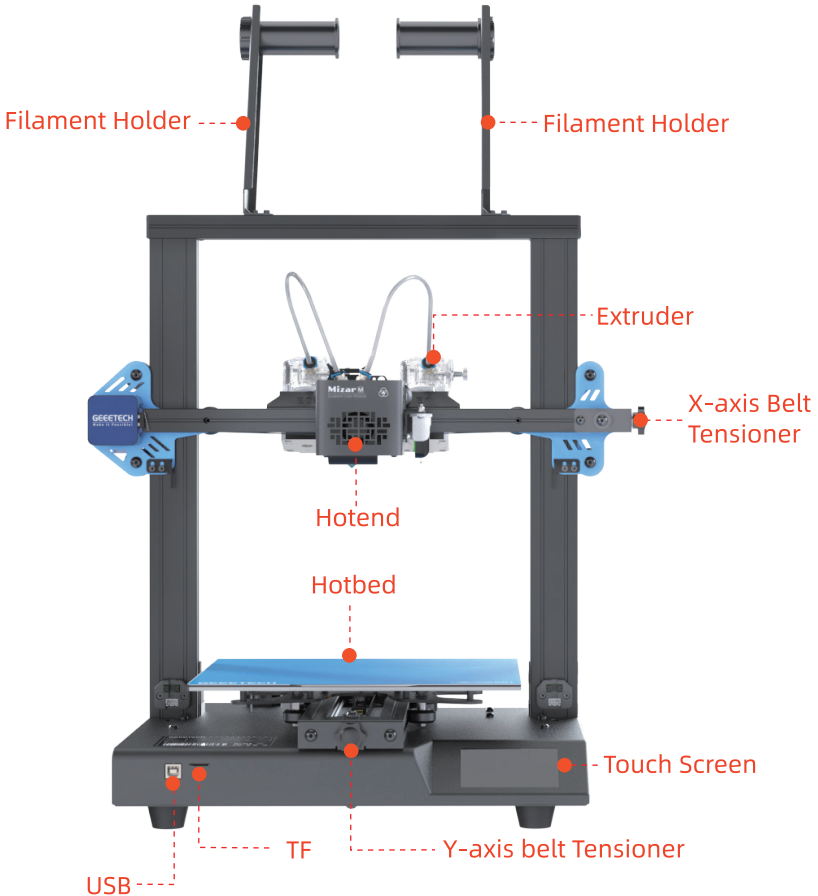
Belt Tensioner*2

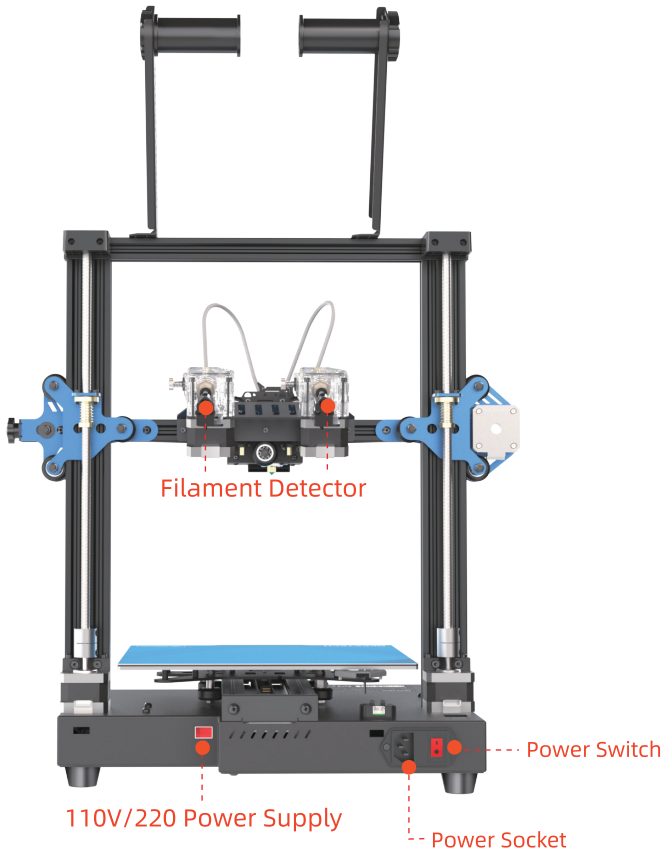



After-sales service card *1
& User manual*1



Tips Card*1


Filament Holder
Filament Holder
Extruder
X-axis Belt Tensioner
Hotend
Hotbed
Touch Screen
TF
Y-axis belt Tensioner
USB


Filament Detector
Power Switch
110V/220 Power Supply
Power Socket

4.1 Find out the hot bed kit and gantry kit, placed them on a flat workbench(See Pic 4-1, Pic 4-2).

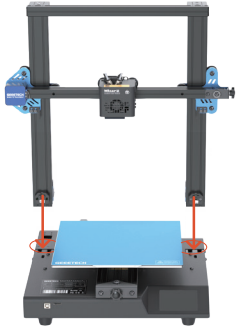


Hot bed kit
Pic 4-1



Gantry kit
Pic 4-2

4.2 Find the M5*35 screws in the tool kit, assemble the gantry kit and the hot bed kit according to the picture below.Totally 4 M5* 35 screws are required(See Pic 4-3, Pic 4-4).

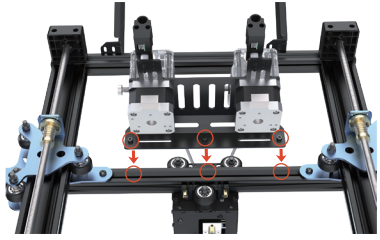


Pic 4-3



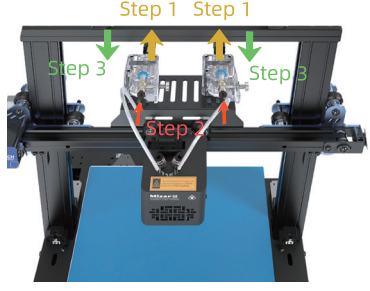
SCREWS(M5*35)
Pic 4-4

4.3 To assemble the extruder assembly, Mizar M has already installed the screw on the extruder assembly at the factory. The user only needs to use a screwdriver to fix the extruder assembly on the X-axis aluminum profile(See Pic 4-5).

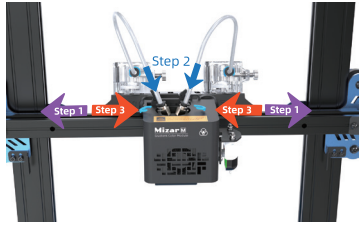


Pic 4-5

4.4 To install the Teflon tube of the extruder.
Step 1: Remove the blue buckle from the quick plug.
Step 2: Insert the other end of the hot teflon tube into the quick plug of the extruder.
Step 3: Reinstall the blue buckle on the quick plug(See Pic 4-6, Pic 4-7).

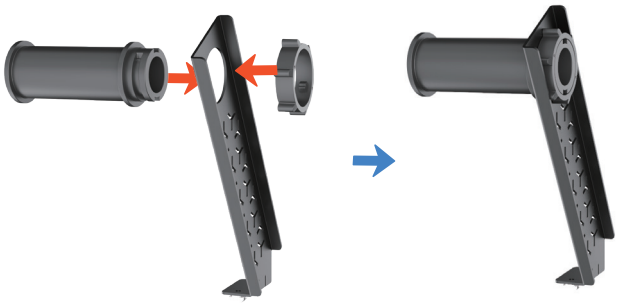



Pic 4-6



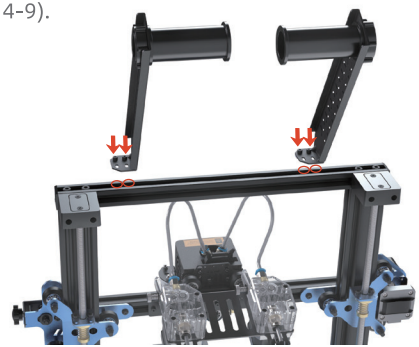

Pic 4-7

4.5 Find the filament holder assembly and assemble the filament holder.(See Pic 4-8).




Pic 4-8

4.6 Mizar M has two filament holders. Mizar M has been screwed on the filament holder when it leaves the factory. Please use a tool and fix the filament holder to the top of the gantry assembly as shown in the figure. The distance between the filament holder cannot be too close(See Pic 4-9).



Pic 4-9

4.7 Use 2 M3*10 screws to fix the 3D Touch on the mounting bracket (See Pic 4-10).



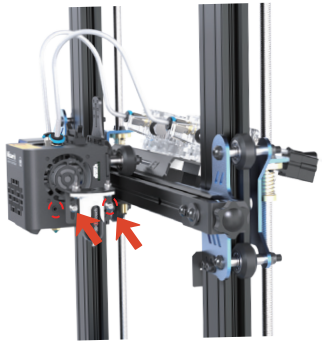

Pic 4-10

4.8 Insert one end of the 5pin electronic wire into the 3D-Touch and the other end into the port on the right side of the Mizar M print head (See Pic 4-11).

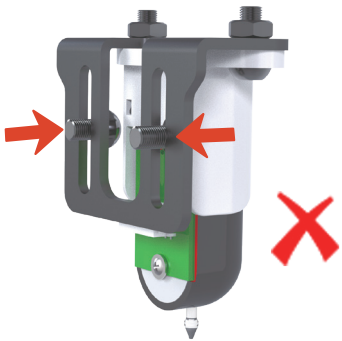


Pic 4-11

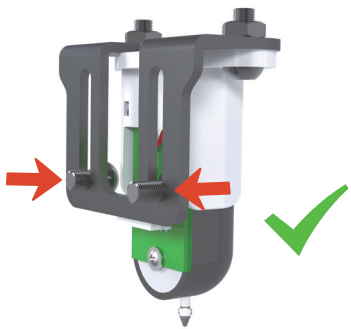
4.9 Use two M3*6 screws to fix the 3D-Touch holder on the print head shell. Please note here that the bottom of the bracket's elongated mounting holes should be close to the mounting screws (for the convenience of users to install 3D Touch, we have pre-positioned the holder), otherwise 3D-Touch will not work properly(See Pic 4-12, Pic 4-13, Pic 4-14).



Pic 4-12

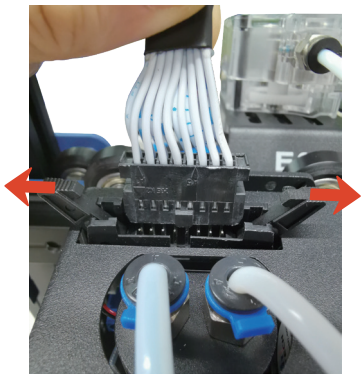


Pic 4-13

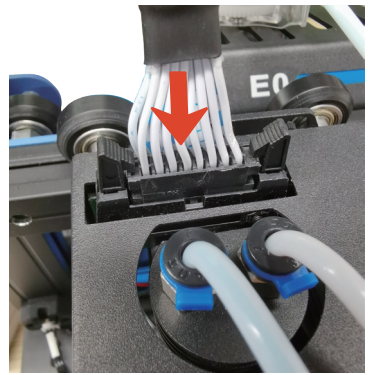


Pic 4-14

4.10 For continuous print head cables, first separate the two buckles on the print head connector to both sides (as shown in Figure 4-15, 4-16), then insert the hot end cable into the connector on the hotend, and the connector card on the hotend. The buckle will automatically lock the connector on the cable.



Pic 4-15



Pic 4-16

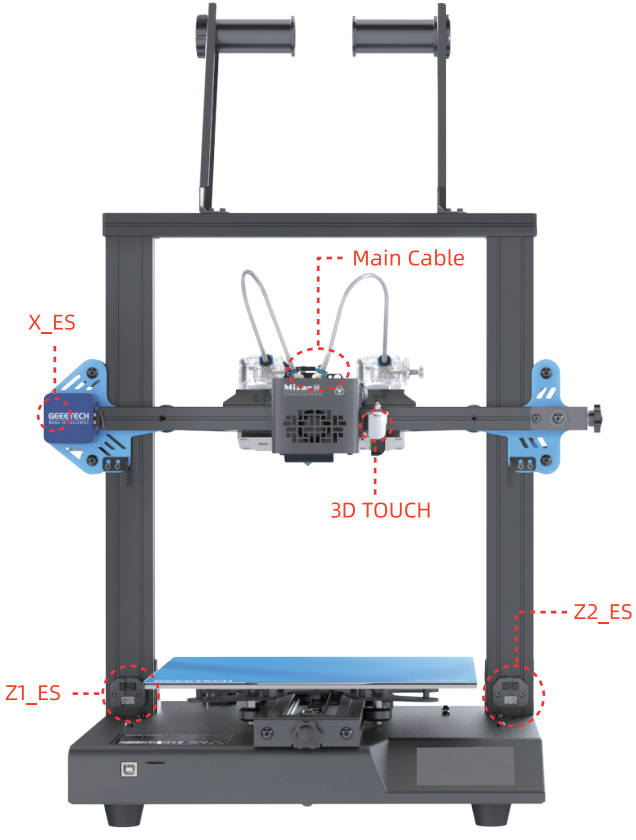
4.11 Fasten the cables with cable ties(See pic 4-17).



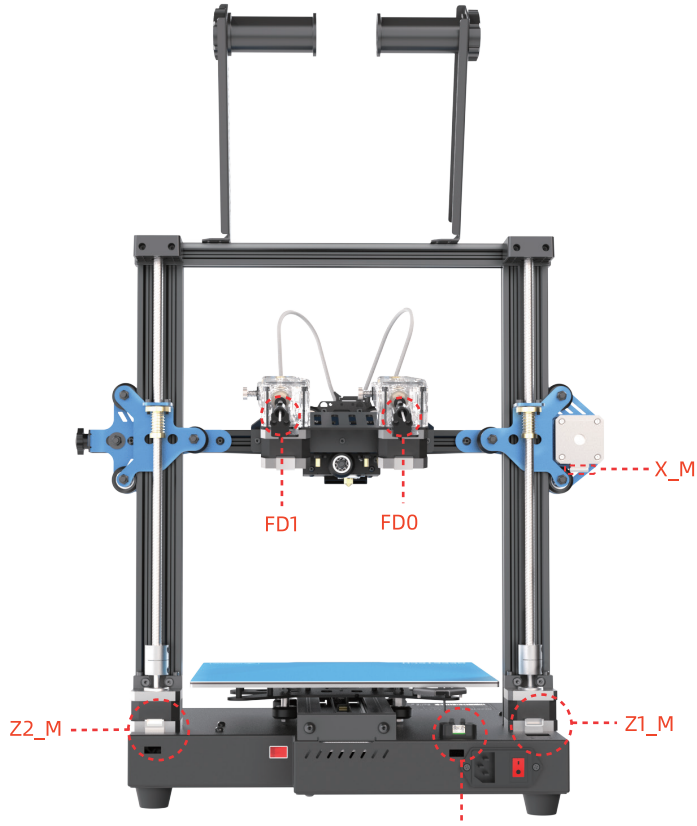
Pic 4-17

## 5 CONNECT CABLES

Each cable of the printer has a text label on the end. Please connect the cables correctly according to the following picture.




FRONT



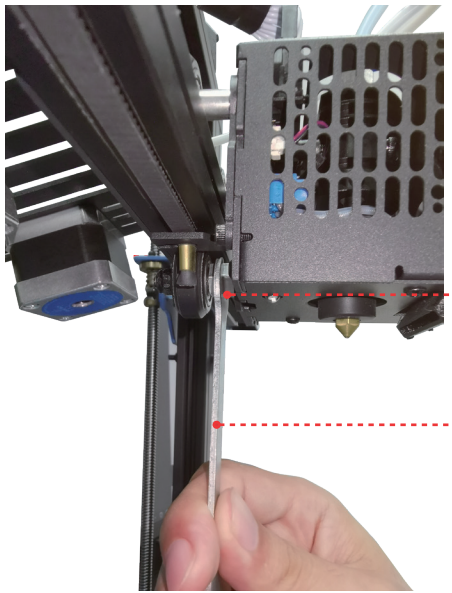

BACK

6.1 Check the hotend(See Pic 6-1).

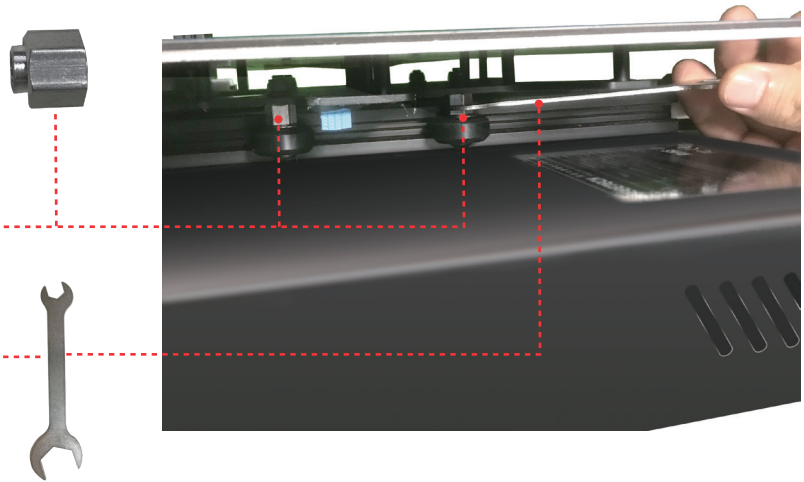
Move the hotend by hand to check whether it runs smoothly on the X-axis. If it is found to be loose or stuck, please use the wrench in the tool kit to adjust an eccentric nut behind the hotend. It is recommended to move the hotend while adjust ing to prevent the hotend from being adjusted too loose or too tight on the X axis.

6.2 Check the hot bed(See Pic 6-2).

Move the hot bed by hand to check whether it runs smoothly on the Y axis. If it is found to be loose or stuck, please use the wrench in the tool kit to adjust the 2 eccentric nuts under the hot bed. It is recom mended to move the heat bed while adjusting to prevent the hot bed from being adjusted too loosely or too tightly on the Y-axis.



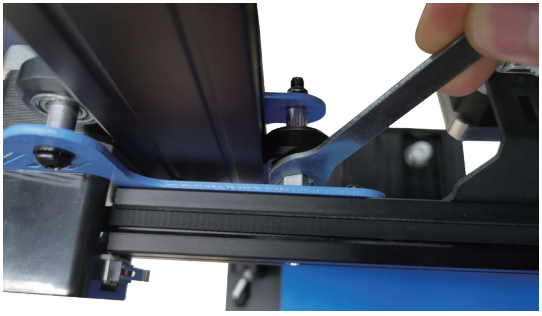
Pic 6-1



Pic 6-2

6.3 Check the Z axis(See Pic 6-3, Pic 6-4).

Shake the left and right sides of the X axis by hand to check whether the pulleys at the left and right ends of the X axis are close to the aluminum profiles on both sides of the gantry.



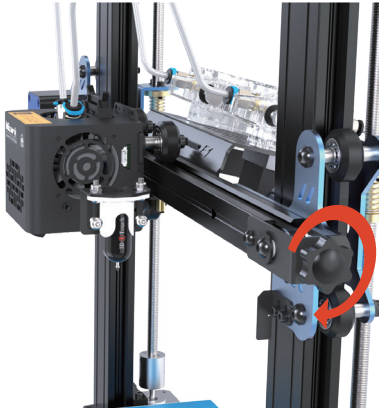
Pic 6-3




Pic 6-4

6.3 Check the XY axis belt(See Pic 6-5, Pic 6-6).

Pull down the belts of X-axis and Y-axis by hand to check whether the tightness is appropriate. If it is too loose or too tight, please use the belt adjustment device on the X-axis and Y-axis side to adjust.



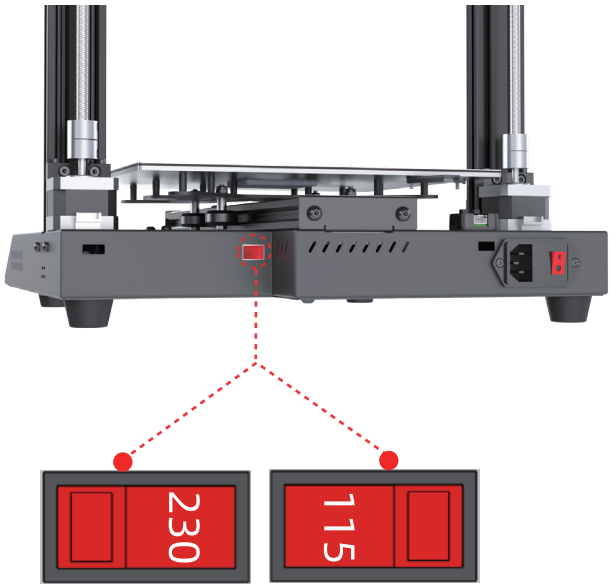
Pic 6-5




Pic 6-6

## 7 CHECK POWER SUPPLY

MIZAR M power supply has two voltage ranges of 230V and 115V. Please select the voltage range according to the country or region where you are located and ensure that the voltage range is in the correct position. Otherwise, the power supply will be damaged. Please make sure, then power on the printer(See pic 7-1).

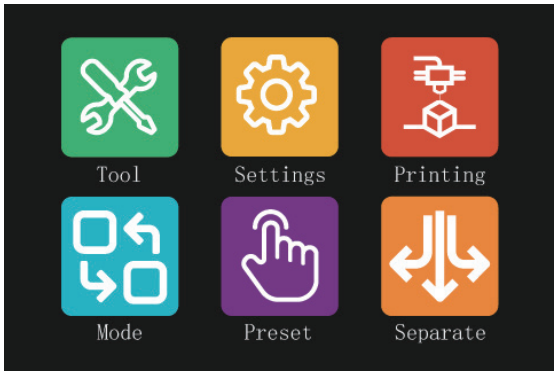



Pic 7-1

## 8 UI INTRODUCTION

Mizar M has two print head modules, they are "Separated Color Module" and "Gradient Color Module", corresponding to "Separated Mode" and "Gradient Mode" two modes, the "Gradient Module" print head module is installed by default at the factory. Mizar M designed automatic detection circuits for "Gradient Color Moudle" and "Separated Color Moudle". When different print head modules are installed, the system will automatically detect the type of the currently connected print head module, and will automatically switch between different UI interfaces. There will be some differences in menu arrangement and content between the two modes.

**Note:** UI provides a manual switch between Gradient Mode and Separated Mode. It is forbidden to switch to Gradient Mode when Separated Color Moudle is installed, and it is also forbidden to switch to Separated Mode when Gradient Color Moudle is installed, which avoids problems such as nozzle blockage.




Separate Mode Main Page

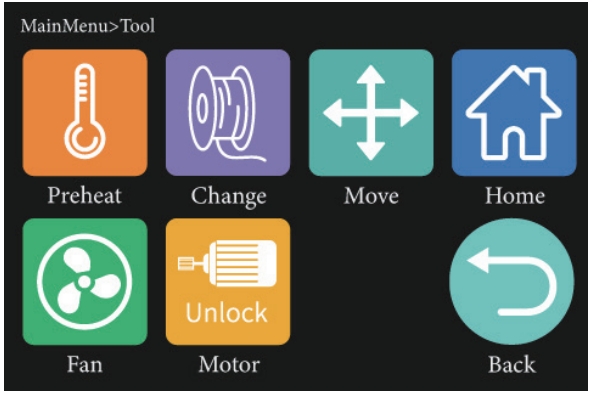



Gradient Mode Main Page




Separated Mode “Tool” Menu

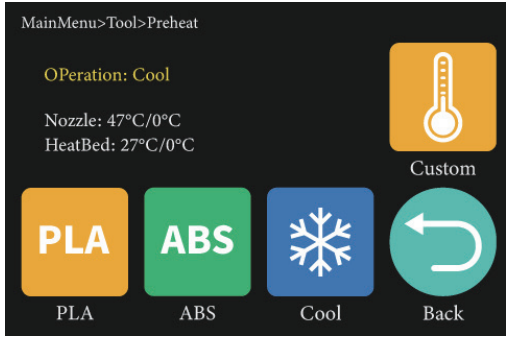
## 8.1 Tool



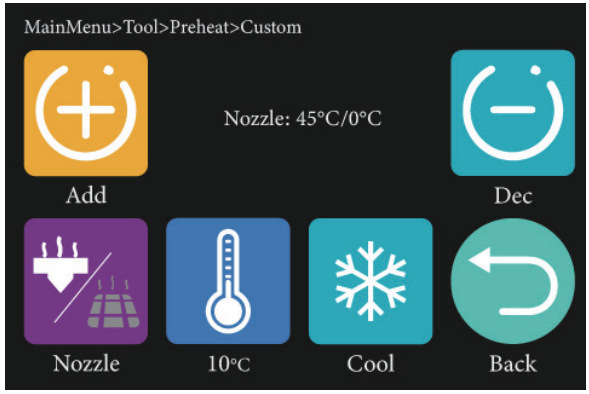

Gradient Mode “Tool” Menu

### 8.1.1 Preheat

This menu can be used to preheat the hotbed and nozzles (See Pic 8-1, Pic 8-2).




Pic 8-1




Pic 8-2

PLA Preheat according to PLA filament, in which the hotbed will be heated to 60°C and the nozzle will be heated to 200°C.

ABS Preheat according to ABS filament, the hotbed will be heated to 90°C, and the nozzle will be heated to 240°C.

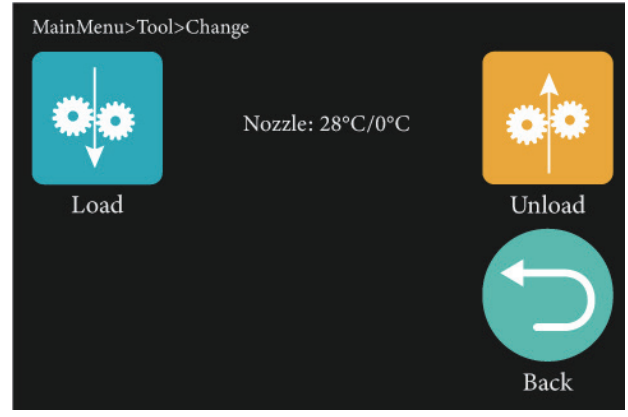
Cool During the preheating process, you can click this icon, and the nozzle and hotbed will stop heating.

Custom In this menu, you can customize the temperature of the spray and hotbed preheating. Click the Nozzle icon in the picture to switch between the hotbed and the nozzle. Users can set the temperature of the hotbed and the nozzle according to their needs.

**Note:** If there is no printing plan, please do not preheat for a long time, so as to avoid nozzle blockage and energy waste.

8.1.2 Change

This menu is used to change the filament before or during printing (See Pic 8-3).



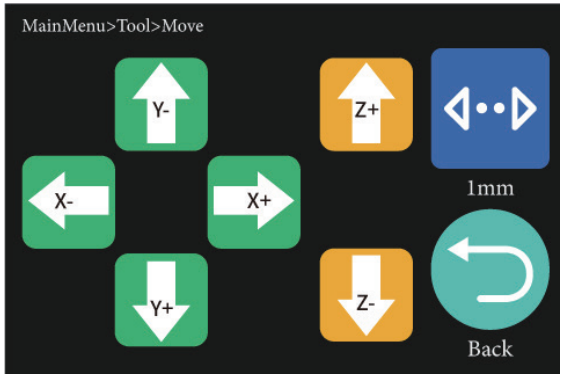

Pic 8-3

Load Load filament.

Unload Exit filament.

8.1.3 Move

This menu is used to move the X, Y and Z axes individually (See Pic 8-4).




Pic 8-4

**X-:** move the X axis to the left .

**X+:** move the X axis to the right.

**Y-:** move the Y axis backward.

**Y+:** move the Y axis forward.

**Z-:** move down the Y axis.

**Z+:** move up the Y axis.

**1mm:** By clicking this icon, you can switch between 0.1mm, 1mm, and 10mm scales, indicating the moving distance of the X-axis, Y-axis and Z-axis each time the X-, X+, Y+, Y-, Z+, Z- icons are clicked.

**Reminder:** If the hotbed has been leveled, when the "Z-" is operated to reduce the hotend to the lowest level, the limit switch blocks of the two Z axes may not reach the position of the limit switch at this time, which is a normal situation.

### 8.1.4 Home

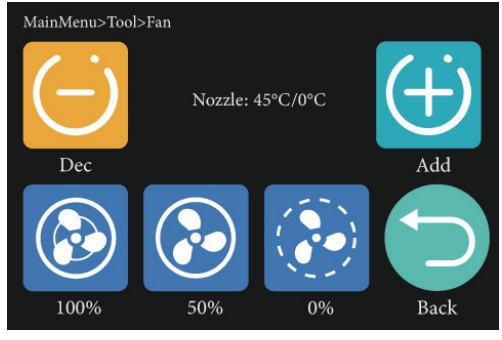
used to reset the X, Y, and Z axes to zero at the same time. This button has no next-level menu. Press it once, and the X, Y, and Z axes will be reset to zero at the same time(See Pic 8-5).




Pic 8-5

### 8.1.5 Fan

used to adjust the speed of the Part Cooling Fan(See Pic 8-6).




Pic 8-6

0% Turn off the Part Cooling Fan.

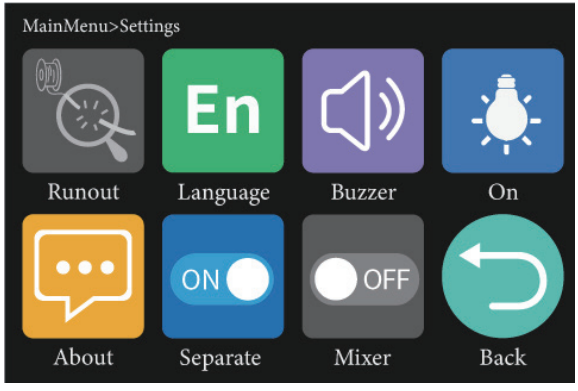
50% Indicates that the Part Cooling Fan is turned on at half the maximum speed.

100% Indicates that the Part Cooling Fan rotates at the maximum speed.

8.1.6 Motor

used to unlock the X-axis, Y-axis, and Z-axis motors.
After unlocking the motor, if you want to lock the motor again, you only need to operate "Home" to re-lock the X-axis, Y-axis and Z-axis.

8.2 Settings(See Pic 8-7).




Pic 8-7

Runout the switch for the filament detector function, the motor icon can turn on and off the filament detector function, and the gray means to turn off this function.

Language switch the language, you can switch between Chinese and English.

Buzzer Buzzer switch, gray means to turn off the buzzer.

On/Off Nozzle lighting LED light switch, Off is to turn off the lighting LED, On is to turn on the nozzle lighting LED.

About You can see the motherboard version, firmware version, serial port baud rate, etc. in the lower menu of this icon.

Separate Separated Mode switch, click the icon to turn on the Separated Mode, and Mizar M will automatically turn off the Gradient Mode and automatically switch to the Separated Mode UI interface.

Mixer Gradient Mode switch, click the icon to turn on the Gradient Mode, and Mizar M will automatically turn off the Separated Mode and automatically switch to the UI of Gradient Mode.

8.3 Printing(See Pic 8-8).

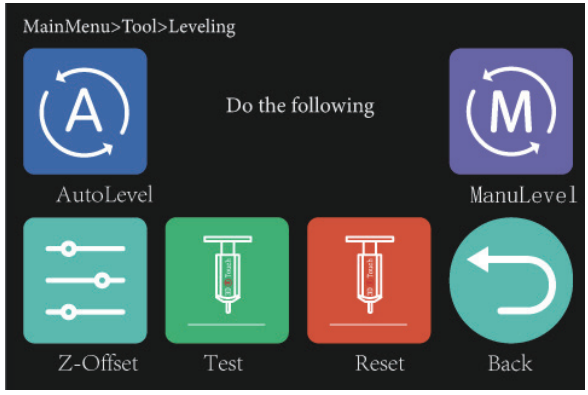
Under the menu, the user can see the G-code file stored on the Micro SD, just click on the file to be printed, and then start printing. In the upper right corner of this page, there is Mizar M leveling status indication "Leveling: Yes", which means that the hotbed has been leveled. If it displays "Leveling: No", it means that the hotbed has not been leveled, and the printer will prohibit printing.




Pic 8-8

8.4 Leveling(See Pic 8-9).

It is used to level the hotbed. There are two methods: automatic leveling and manual leveling. For automatic leveling, 3D touch or BL Touch need to be installed.




Pic 8-9

Auto Level Auto-leveling, Mizar M adopts 16-point auto level.

Manual Level Manual Leveling.

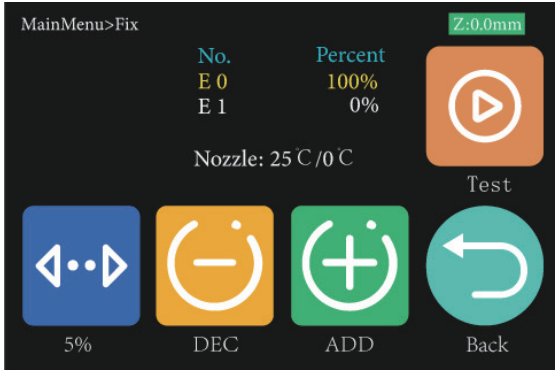
Z-Offset Z-It is used to manually calibrate the distance between the nozzle and the hotbed after installing the 3D Touch/BL-Touch. After installing the 3D Touch for the first time, the Z-offset parameter must be adjusted. It should be noted that before the heated bed is leveled, the Z-offset icon is gray and inoperable.

Test For testing 3D Touch, click the icon once, the probe of 3D Touch will extend, click the icon again, the probe will automatically retract, and the red light will be on. If the icon is clicked multiple times, and the 3D Touch probe does not extend or retract, it may be that the 3D Touch is damaged, or the 3D Touch cable is not properly installed and protected or is in poor contact.

Reset When the 3D Touch is abnormal, the red indicator light on the 3D Touch will flash to indicate an abnormality. Use this icon to stop the 3D Touch red light flashing.

8.5 Fix(See Pic 8-10).

This menu is only available in the Gradient Mode. It is used to set the parameters of the fixed color mixing in the Gradient Mode. After the parameters are set, the two extruders of Mizar M will always work according to the set ratio.You can get a different color from the two filament used.




Pic 8-10

E0 Indicates the extrusion ratio of the filament of the E0 extruder relative to the E1 extruder.

E1 Indicates the extrusion ratio of the filament of the E1 extruder relative to the E0 extruder.

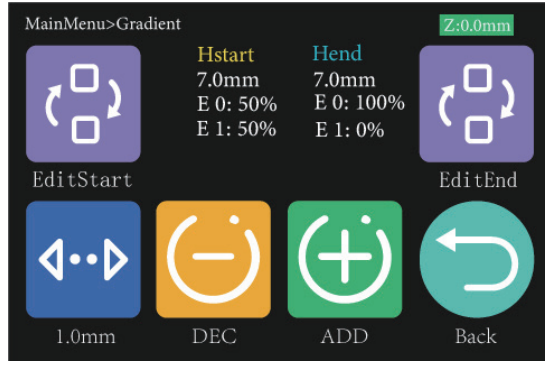
5% The scale at which the gradient color percentage increases or decreases each time, click this icon continuously to switch between 1%, 5%, and 10%.

Z:0.0mm Indicates the height of the current nozzle.

Test Click this icon to test the current fixed color mixing parameters to verify the currently set color mixing parameters. It should be noted that after the test, you must manually stop the test, otherwise the extruder will continue to work.

8.6 Gradient(See Pic 8-11).

This menu is only available in Gradient Mode, and is used to set the parameters of gradient mixing in Gradient Mode.




Pic 8-11

EditStart Click this icon to switch between E0 extruder and H start.

EditEnd Click this icon to switch between E1 extruder and H End.

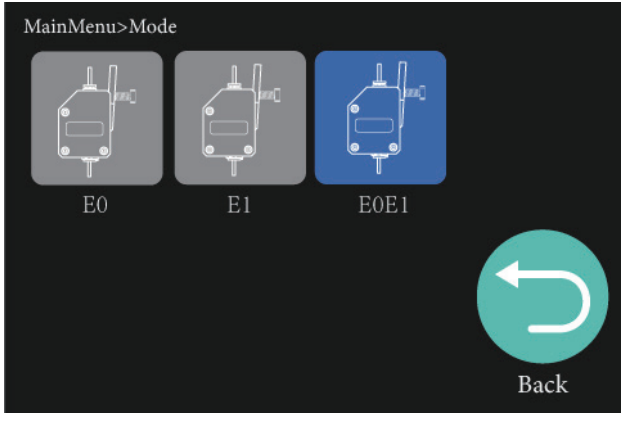
H start the starting height of the gradient color mixing, the unit is mm, you can use "DEC" and "ADD" to adjust the value.

H end the end height of the gradient mixing color, the unit is mm, you can use "DEC" and "ADD" to adjust the value.

1.0mm Each time you click the "DEC" and "ADD" icons, the step value of the height increase, click the icon continuously, you can switch between 0.1mm, 1mm, 10mm.

8.7 Mode(See Pic 8-12).

This menu is only available in Separate Mode. When Mizar M uses the Separated Color Module, users can choose to use the specified extruder according to their needs.




Pic 8-12

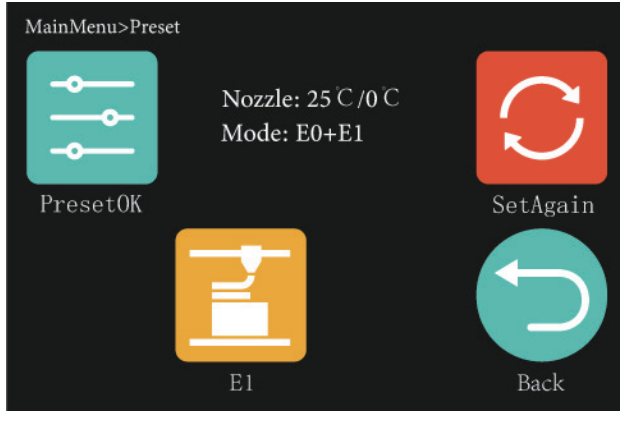
E0 Click to select E0, indicating that Mizar M only uses the E0 extruder, and the user needs to load the filament into the E0 extruder.

E1 Click to select E1, indicating that Mizar M only uses the E1 extruder, and the user needs to load the filament into the E1 extruder.

E0E1 Click to select E0E1, indicating that Mizar M uses both E0 and E1 extruders, the user needs to load the filament to the E0 and E1 extruders respectively, and the model can be printed in two colors.

8.8 Preset(See Pic 8-13).

This function is only used in color separation mode to initialize the initial position of the filament in the E0 and E1 extruders. Before using the Separate Mode to print the model, be sure to perform the step of "Preset" to complete the calibration of the position of the filament, otherwise the system will prohibit printing.




Pic 8-13

Preset OK Click this button, no matter whether E0 and E1 have been calibrated, E0 and E1 will directly become calibrated. This function can only be used for "manual filament preset" (for details, see Section 14.2), be sure to confirm that the "Preset" ("Preset") has been completed before use, otherwise it may cause a serious problem of nozzle blockage in separated color module.

Set Again "Preset" E0 and E1 again. Clicking this icon will clear the current Preset status data of E0 and E1.

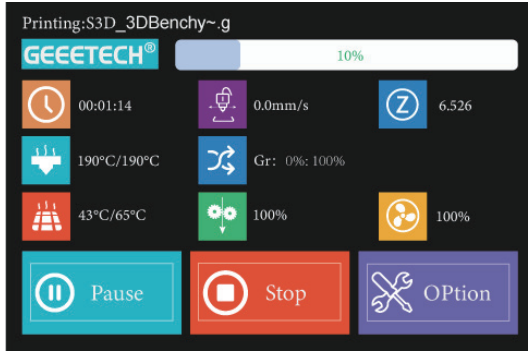
8.9 Separate(See Pic 8-14).

By setting the height parameter of E0 here, the model can be printed in two colors alternately, and users can also customize more colors through the slicing software.

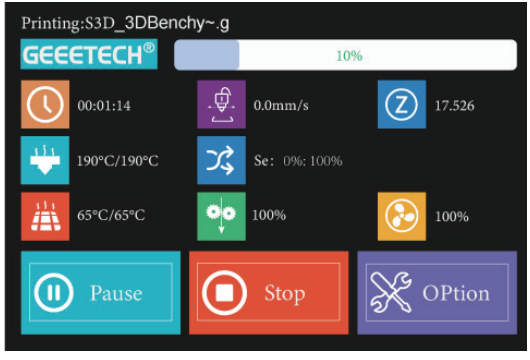



Pic 8-14

8.10 Printing State Interface(See Pic 8-15, Pic 8-16).




Pic 8-15




Pic 8-16




Percentage of printing progress.



The Printed Time.



Real time printing speed.



The height that the model has been printed.



Current nozzle temperature.



Current Part Cooling Fan speed, 0 means turn off the fan, 100 means the maximum speed.



Gr: 100%: 0%
The color mixing ratio of the current E0 and E1 extruders in Gradient mode.



Se: 0%: 100%
Extruder status indication of current E0 and E1 in Separate Mode, 0% means that the current E0 is not working, 100% means that the E1 extruder is working, the same, if the first number is 100%, the second number is 0%, it means that the E0 extruder is working, and the E1extruder is not working.



The extrusion ratio of the current extruder, 100% is not the default value. If you find that there is a shortage of filament during the printing process, you can appropriately increase the extrusion ratio to compensate.




Click this icon to pause the current printing. If the printer currently has an unfinished operation, the Waiting icon will be displayed in this position. After the printer completes the operation, it will turn into a Resume icon.



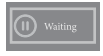

This icon has a lower-level menu, which is mainly used to adjust Z-axis compensation (Babystep), printing speed, printing temperature, fan speed, LED light switch, etc.



Current hot bed temperature.




Resume the current printing.

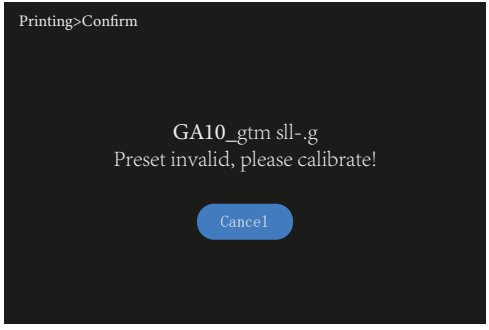



Wait for the printer to complete the current operation.




Click this icon to stop the current printing.

- Mizar M does not level the hot bed by default when leaving the factory. After assembling the printer, the user must level the hot bed before printing, otherwise the system will prohibit the printing operation(See Pic 9-1).

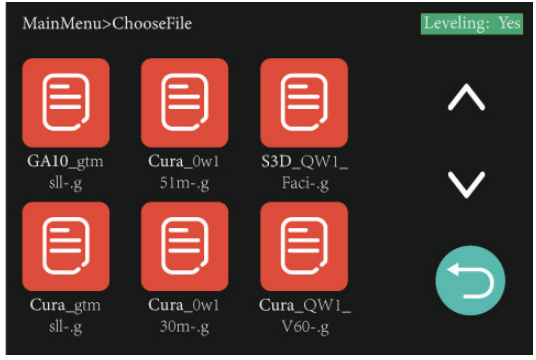



Pic 9-1

- Mizar M has two kinds of leveling method: auto-leveling and manual leveling.

**How to judge whether the printer is leveled well?**

You can click "Printing" on the home interface to enter the Printing file selection page, the leveling state of the printer will be displayed in the upper right corner of the interface.




Hot bed leveled

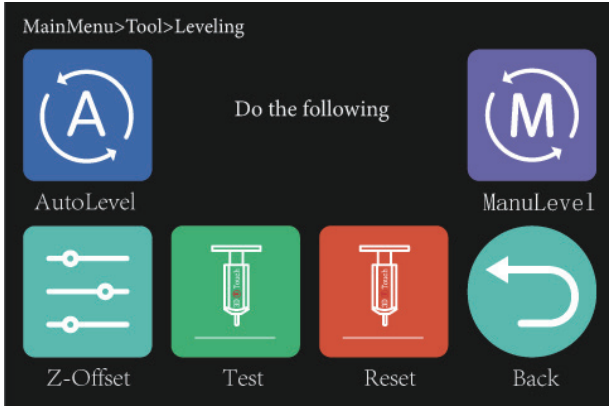



Hot bed not leveled

## 9.1 Auto-leveling

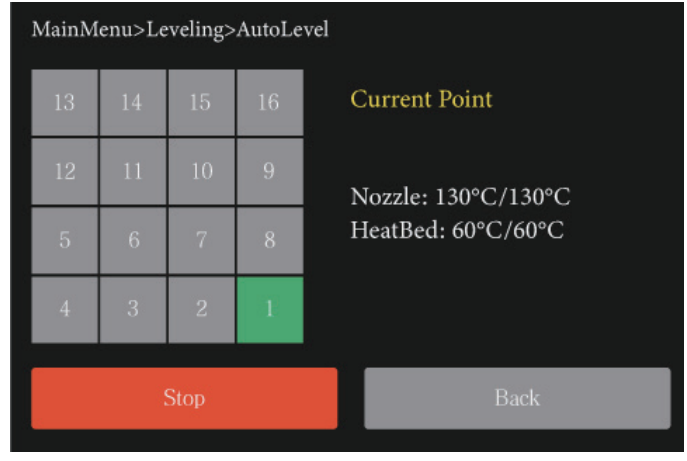
**1.** Please install the 3D Touch auto-leveling sensor in advance and prepare a piece of A4 paper.

**2.** Before automatic leveling starts, first test whether the 3D Touch is normal, click the "Test" icon once, you should see the 3D Touch probe stick out, click the "Test" icon again, At this point, you can see that the 3D Touch probe is retracted. You can try several times to ensure that the 3D Touch function is normal. If the 3D Touch probe does not move, please check whether the 3D Touch wiring is correct. It is also possible that the Mizar M is executing other operation, you need to wait for the current command to be executed before executing the 3D Touch test command(See Pic 9-1).




Pic 9-1

**3.** Click "Leveling" →"AutoLevel" to enter the automatic leveling page. After entering the page, the X axis, Y axis and Z axis will be automatically zeroed at the same time, and then the automatic leveling will start. Mizar M uses 16-point leveling, it takes about 5 minutes, please wait patiently, during the leveling process, you can click the "Stop" icon to stop the current leveling(See Pic 9-2).




Pic 9-2

**4.** After the 16-point leveling is completed, the buzzer will sound to indicate that the heated bed is leveled, click "Back" to return to the "Leveling" page, and then click "Z offset" icon(See Pic 9-3).




Pic 9-3

**5.** On the "Z-offset" page, click the "Start" icon, the hotend will automatically move to the center of the hot bed, at this time, please place A4 paper under the nozzle, and then click Z+ Adjust the nozzle to move up and down with the Z- icon, and move the A4 paper at the same time. In order to ensure that the Z-offset height is appropriate, when adjusting Z+ or Z-, click the "0.05mm" icon next to it to switch between the three scales of 0.05mm, 0.1mm, and 1mm.

**6.** Click "Save" to save the adjusted Z-offset parameters, complete the hotbed leveling, and the user can start using the Mizar M printer.

### Abnormal Failure of auto-level elimination:

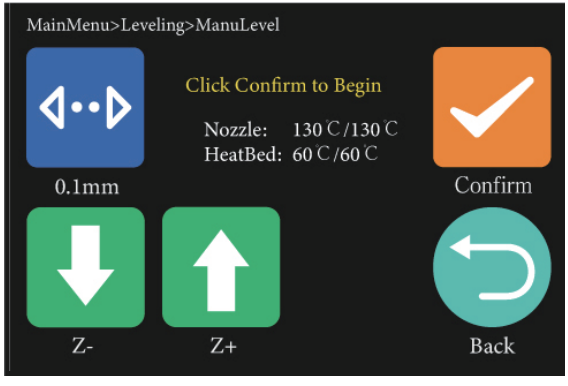
**1.** Please check whether the connection socket between the motherboard and the hotend is plugged in properly, you can re-plug it once.

**2.** Please check that the connection between the 3D Touch and the hotend is loose, and re- plug it once.

**3.** The 3D Touch sensor is damaged, please replace it with a new 3D Touch leveling sensor.

**4.** The installation height of 3D Touch is wrong, which will cause the nozzle to hit the hot bed or the 3D Touch probe to retract, and the probe still hits the hot bed.

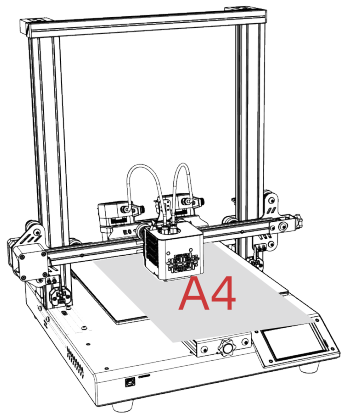
## 9.2 Manual Level(See Pic 9-4).




Pic 9-4

**1.** Click "ManuLevel" to enter the manual leveling page, click the "Confirm" icon, the hot end will move to the first leveling point and start manual leveling.

**2.** At this time, please place A4 paper under the nozzle, and then click the Z+ and Z- icons to adjust the nozzle to move up and down, and move the A4 at the same time. When the nozzle just rubs against the A4 paper, stop adjusting Z+ or Z-. To ensure that the Z-offset height is appropriate. When adjusting Z+ or Z-, click the "0.05mm" icon next to it to switch between the three scales of 0.05mm, 0.1mm and 1mm (See Pic 9-5).




Pic 9-5

**3.** After adjusting the first leveling point, click "Confirm" again to enter the next manual adjustment point, and repeat the above operations.

**4.** In order to obtain a better leveling effect, Mizar M adopts 16-point leveling method for manual leveling. When the measurement of the 16th point is completed, click the "Confirm" icon again, and the page will prompt"Levelling Done", the three axes of XYZ will return to zero at the same time, indicating that the leveling has been completed, and the printing can be started.

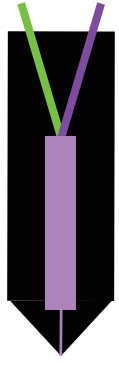
**Note:** Both manual leveling and auto-leveling data will be saved by the printer, and the printer will preferentially use the leveling and calibration data obtained by the last leveling。

## 10 *OPERATING INSTRUCTIONS OF PRINT HEAD MODULE*

Mizar M is equipped with two print head modules, they are "Gradient Color Module" and "Separated Color Module", these two print head modules use different nozzles, they have their own specialties, corresponding to "Gradient Mode" and "Separate Mode" respectively. Mizar M is installed with Gradient Color Module by default.

### 10.1 Gradient Color Module(See Pic 10-1).

Filament1 Filament2



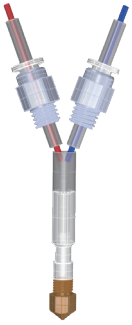
Internal structure of the hotend of the Gradient Color Module.

Two filament can enter the hotend at the same time.

Pic 10-1

## 10.2 Separated Color Module(See Pic 10-2).

Filament1 Filament2



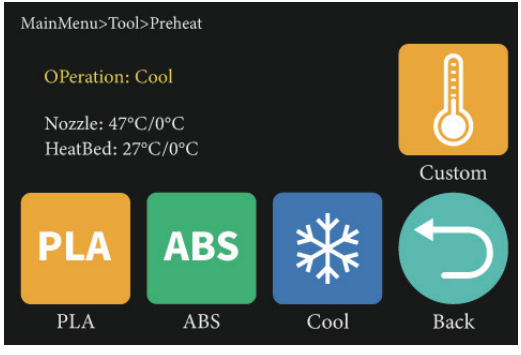
Internal structure of the hotend of the Separated Color Module.

Only one filament is allowed into the hotend.

Pic 10-2

## 10.3 Printhead Module Replacement.

**Step 1:** First turn on the PLA preheating, and then exit the filament from the hotend through the "Change" icon(See Pic 10-3).



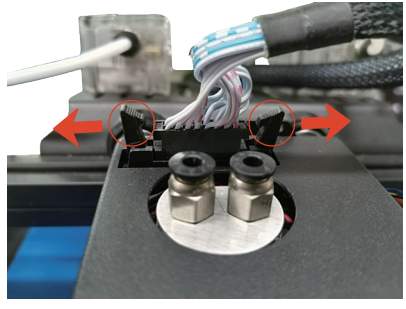

Pic 10-3

**Step 2:** Pull out the Teflon tube on the hotend. When pulling out the Teflon tube, first press down the quick plug on the it, and then pull out the tube (See Pic 10-4).



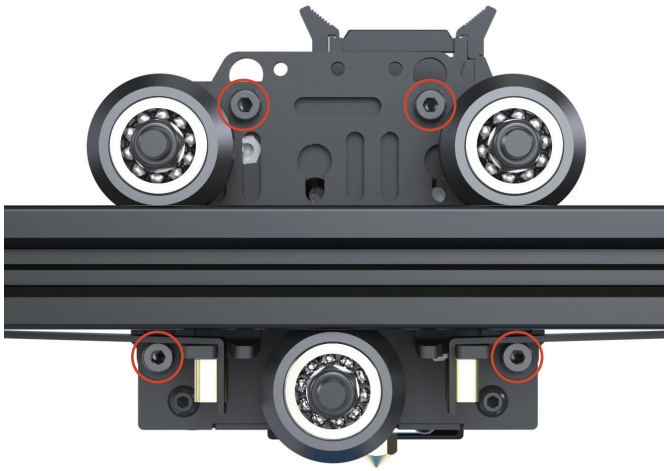

Pic 10-4

**Step 3:** Turn off the power of Mizar M, and unplug the connector on the print head. Please note that the connector cannot be pulled out directly, just pull the buckles to both sides at the same time, and the connector will pop up automatically(See Pic 10-5).



Pic 10-5

**Step 4:** Use tools to remove the four screws that fix the print head,and then you can remove the print head module(See Pic 10-6).



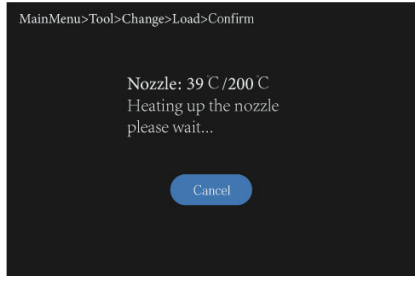
Pic 10-6

**Step 5:** Fix the print head module to be used with the screws removed in Step 3.

**Step 6:** Connect the print head cable and Teflon, and make sure to fasten the buckle on the connector to complete the replacement of the print head module.

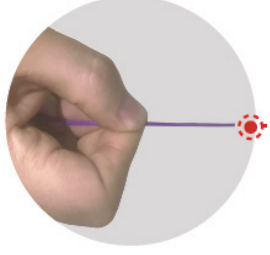
## 11 *LOADING FILAMENT*

**1.** Click "tool" → "Change" to enter the exchange filament spage, and then click the "Load" icon to enter the extruder selection page. We can choose E0 extruder.At this time, the printer will automatically heat the nozzle to 200℃, please wait patiently(See Pic 11-1).



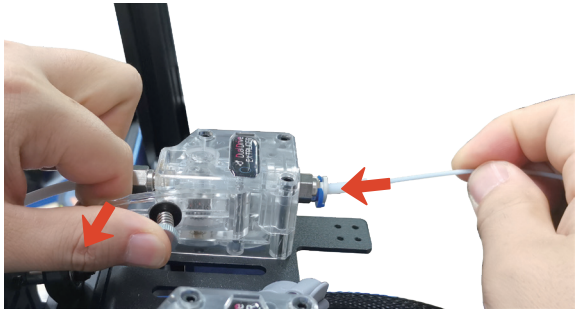

Pic 11-1

**2.** While waiting for the nozzle to be heated, please straighten the head of the filament to be used by about 10cm in advance to facilitate the insertion to the extruder(See Pic 11-2).



Pic 11-2

**3.** After the nozzle is heated, the page will prompt that the heating is completed. Click the "Confirm" icon on the page, and the extruder will start to work. At this time, please insert the filament into the extruder according to the operation method shown in the figure below.Please ensure that the filament pass through the entire extruder, otherwise the consumables may not pass through the extruder smoothly (See Pic 11-3).



Pic 11-3

**4.** When you see that there are filaments extruded from the nozzle, it means that the loading of filaments is completed.

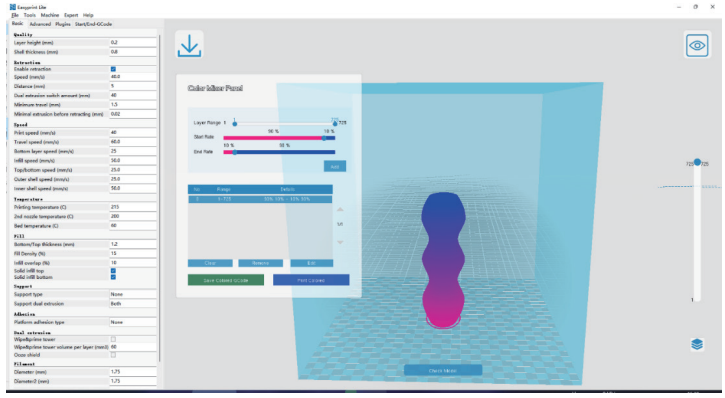
**Note:**

**1)** Withdraw filament is similar to loading filament, there is no explanation here, please use according to the text instruction on the screen.

**2)** In the Separate Mode, due to the particularity of the internal structure of the Separated Color Module, when loading filament, unloading the filament will be performed first, and then the filament will be loaded.

## 12 GRADIENT COLOR PRINTING SETTING

The Gradient Color Module is suitable for scenarios where you want to mix other colors through two color filament or want to gradient from one color to another. Users can realize gradient cColor printing through Mizar M local screen settings or slicing software. When using slicing software to achieve this, we recommend using Easyprint Lite developed by GEEETECH, which has a graphical setting page.Easyprint Lite has been placed in the TF card that comes with Mizar M. Users can also download the software and learn how to use it from the official website of GEEETECH (See Pic 12-1).



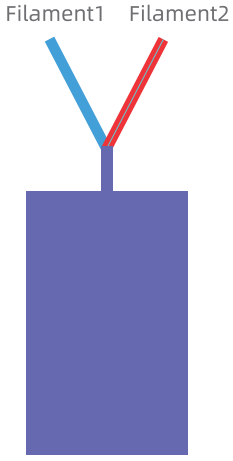
Pic 12-1

Gradient color printing can also be implemented by using slicing software such as Cura, Simplify3D, PrusaSlicer, etc. But this involves using instructions of the M163, M164, M165 (temporarily unsupported) M166 in Marlin firmware, which requires users to have a deep research and understanding of Marlin firmware.

There are two  mixing color methods through the touch screen, one is to achieve fixed color mixing through the "Fix" menu, that is, to use two colors to mix another color, and the other is to achieve gradient color mixing through "Gradient".

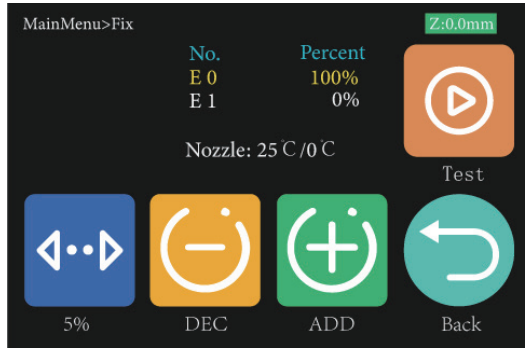
## 12.1 Fix Color Mixing Setting

Fix color mixing is mainly used to mix two colors to make another color(See Pic 12-2).




Fixed Color Mixing Effect
Pic 12-2

On the Fix page, the ratio of E0 can be adjusted, and the ratio of E1 will change accordingly. The sum of the two ratios is 100%. Users can click "Test" to test the currently set parameters. The upper right corner of the Fix page will display current nozzle height(See Pic 12-3).



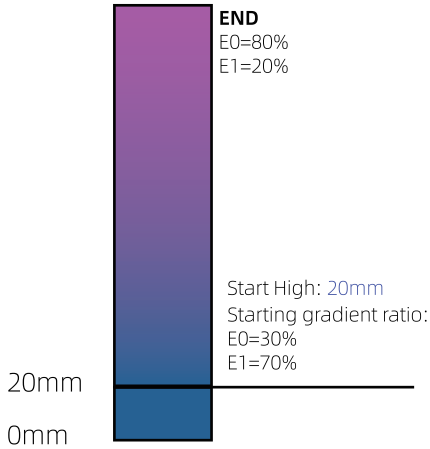

Pic 12-3

Note that for the convenience of users, the color mixing ratio parameters set in the Fix page will be automatically synchronized in the "Gradient" page.

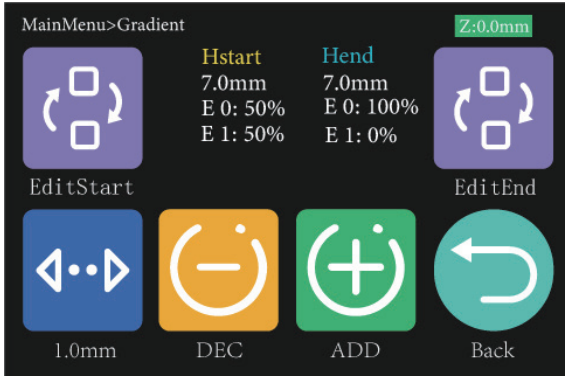
## 12.2 Gradient

This menu is only available in the Gradient Mode. It is used to set the parameters of the gradient in the Gradient Mode. The gradient color mixing means that the two extruders E0 and E1 gradually transition from the initial color mixing ratio to the end color mixing ratio according to the set gradient color mixing height(See Pic 12-4).

In the Gradient page, “H start” represents the starting height of the gradient, which unit is mm. “H end” represents the End Height of the gradient, which the unit is mm. They can be selected with the EditStart icon, and then use "Add" and "DEC" edits.There is a logical relationship between “H end” and “H model” (See Pic 12-5).




Gradient color effect
Pic 12-4




Pic 12-5

If H end=H start, it means that the height parameters are invalid at this time (regardless of whether their values are 0 or other numbers).E0 and E1 extruders will perform fixed-proportion gradient color printing with the E0 and E1 extruder ratio parameters under H start, which is equivalent to fix color mixing printing in 12.1.

If H Start=0mm, and H end>H start, it means that the model starts gradient mixing printing from the first layer, and ends until the height of H start. At this time, if the model still has unprinted height, Mizar M will print the remaining height of the model with the color mixing ratio of the E0 and E1 extruders at the H end height.

Note that the sum of the proportional values of E0 and E1 displayed on the screen may be greater than 100% or less than 100% due to unavoidable errors in MCU floating-point calculations.

## 13 *SEPARATE PRINTING SETTING*

Separate color printing is suitable for scenarios where you want to use different color filament in different positions or areas of the model. Compared with gradient printing, separate printing has clearer color boundaries(See Pic 13-1).

If you want to use the color separation function, you must first ensure that the printed model is composed of more than two sub-models (using Cura, Easyprint Lite, Simplify3D slicing software to achieve separate printing requires 2 models, PrusaSlicer is unlimited). Before using the slicing software, choose different extruders for each sub-model, so that each sub-model of the model can achieve separate printing. For the complete

undivided stl format file, you can use Materialise Magics, PrusaSlicer for simple segmentation. Of course, you can also use professional 3D software to directly design a model composed of multiple parts suitable for partition printing. For generating G-code files, you can use Easyprint Lite, Cura, Simplify3D, PrusaSlicer and other slicing software.




Separate Printing renderings using slicing software
Pic 13-1

Users can also achieve simple zebra pattern color separation through the touch screen. The operation is as follows(See Pic 13-2):




Pic 13-2

First of all, make sure that the G-code file currently ready to be printed only uses one extruder when slicing, otherwise using the Separate page to set separate printing will cause unpredictable problems.

If E0=0mm, Mizar M will always use the extruder set in G-code.

If E0=6mm, Mizar M will use E0 extruder to print 6mm height first, and use E1 extruder for the remaining height, and the final printing effect is shown in Figure 13-3.



Pic 13-3

If you set E0=6mm and the current printing height Z=8mm, you can set E0=10mm again, then Mizar M will use the E0 extruder again at a height between 8mm and 10mm. After multiple settings, the zebra pattern effect shown in Figure 13-4 can be obtained.



Pic 13-4

**Note:** When using the touch screen to achieve separate printing, if the Gcode command appears to switch the extruder, the Gcode command will be executed first.

## 14 *PRESET*

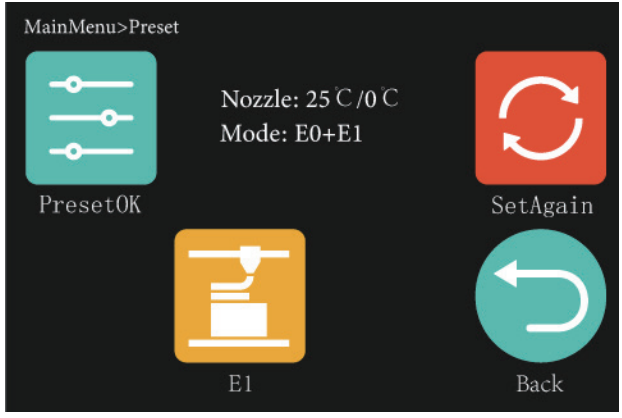
Silk material preset (Preset) is a function menu only in Separate Mode. Due to the particularity of the internal structure design of Mizar M separated color module, you must preset filament before using Separate Mode to print models. The channel of filament inside the separated color module is shown in Figure 10-2. Only one of the two filament can pass through the hotend. Otherwise, the two filament enter the hotend at the same time, which will cause the two filament to block the throat. Filament need to be calibrated before use, otherwise the system will prohibit printing in Separate Mode, as shown in Figure 14-1.




Pic 14-1

Mizar M provides two calibration methods.One is semi-automatic filament calibration and the other is manual calibration.

## 14.1 Automatic Filament Preset(See Pic 14-2)



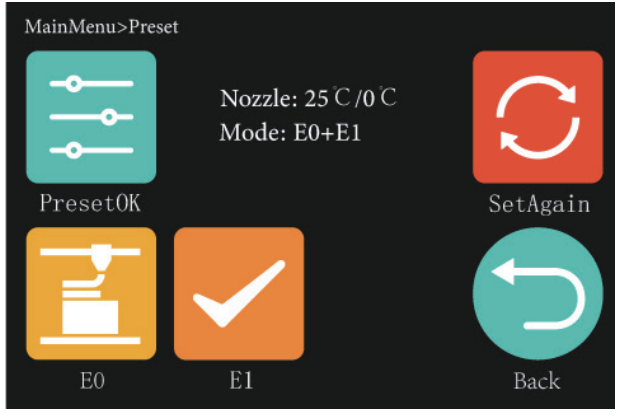

Pic 14-2

Semi-automatic calibration needs to be completed on the "Preset" page, the following are the steps:

**Step 1:** Load the prepared filament into the E0 and E1 extruders respectively.

**Step 2:** Click the E1 icon, the page will jump to a new page, and prompt "Preparing to feed, heating, please wait", it will take some time for the nozzle to heat up, please wait patiently.

**Step 3:** After the nozzle heating is completed, click the "Confirm" icon. At this time, the E0 the E1 extruder will first return the filament and then the E1 extruder will start loading filaments. When the nozzle has filament extruding, it means that the E1 extruder has completed the calibration.Click the "Confirm" icon on the current page again to stop the E1 extruder loading, and the page will jump to "Preset" again.You can see that the icon of E1 has become a "√" symbol, indicating that the calibration of E1 has been completed, as shown in Figure 14-3.




Pic 14-3

**Step 4:** Click the E0 icon and repeat the above E1 operation to complete the preset for the E1 extruder. When calibrating the position of the filament of the E0 extruder, Mizar M will automatically withdraw the filament in the E1 extruder that has been calibrated, which is a normal operation.

**Step 5:** Start Separate Printing.

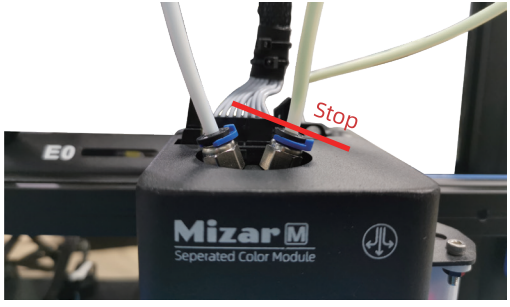
**Note:** The printer will remember the last extruder used, and the E0/E1 calibration sequence shall be subject to the interface display.

### 14.2 Manual Calibration Preset

Manual filament preset is to manually place the filaments of E0 extruder and E1 extruder in an effective position, which can save time compared with automatic filament preset. The following are the operation steps:

**Step 1:** Pull the handle of the E0 extruder, insert the filament into the E0 extruder, and keep sending the filament to the throat position until the filament cannot move forward. At this time, the filament calibration of the E0 extruder is completed.

**Step 2:** Pull the handle of the E1 extruder and insert the filament into the E1 extruder. At this time, pay attention to the Teflon. When the head of the filament reaches the position of the hotend quick plug inlet, as shown in Figure 14-4, stop pushing the filament and complete the filament calibration of the E1 extruder.




Pic 14-4

**Step 3:** Click the "Preset OK" icon to complete the preset of filament.

**Note: Preset only needs to be used in two cases:**

1. When printing the model for the first time, it is necessary to perform"Preset" on the two extruders.

2. When there is an unexpected power failure during the printing process, the two extruders need to be "Preset".

## 15 START PRINTING

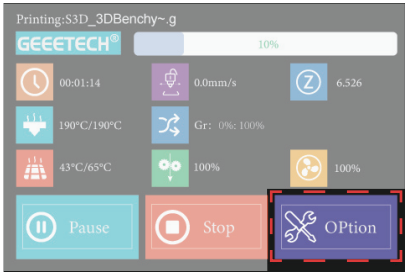
**1.** Mizar M only supports G-code files, you can use Easyprint Lite, Cura, Simplify3D, PrusaSlicer and other slicing software to make G-code files.

**2.** Put G-code in the root directory of Micro SD. Note that G-Gcode cannot be placed in a folder, otherwise the printer cannot recognize g-code in the file.

**3.** Click "Printing" on tjhhe home interface to enter the page for selecting G-code files. Click the G-code file you want to print, and the page will remind you whether to print the selected file, choose “Confirm” to start printing.

## 16 AJUST PARAMETER AFTER STARTING PRINTING

Mizar M can adjust some parameters after printing to obtain better print quality and sample extraction(See Pic 16-1).




Pic 16-1

**Temp** This is to adjust the current hotbed and nozzle temperature.

**Change** This function is used to change filament when needed. When clicking "change" icon, the printer will pause the current work. You can use the "Load" and "Unload" icons on the page to change filament.

After replacing the filament, click "Back" continuously to return to the printing status interface, and then click the "Resume" icon to Resume the previously suspended printing task.

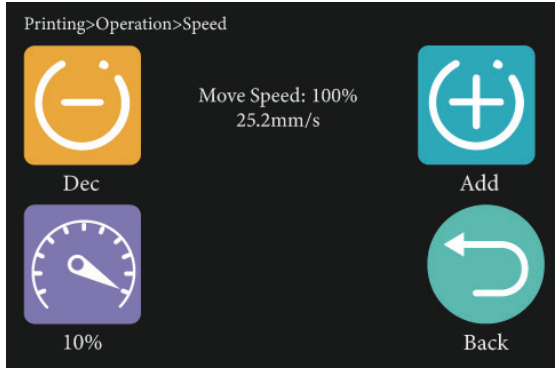
**Fan** This is used to adjust the speed of the hotend blower (Part Cooling Fan).

**Off/White** During printing, this icon turns the nozzle illumination LED on or off.

**Runout** This is used to turn on and off the filament disconnection detection function. When this function is enabled, if the filament are broken or used up during the printing process, Mizar M will automatically suspend the current printing task. After the filament are replaced, it can resume the print job that has been paused on the print status page.

**Babystep** This function is used after printing starts. If it is found that the nozzle scrapes the hot bed or the first layer does not touch the hot bed, the user can adjust the distance between the nozzle and the hot bed through babystep, and the adjusted Z value will be automatically saved.

**Speed** During the printing process, you can use this menu to adjust the printing speed. When the printing is paused, the icon will be automatically hidden, and the icon will be displayed after the printing is resumed. Click the "Move" icon to switch between the hot bed and the nozzle(See Pic 16-2).




Pic 16-2

**Gradient** The parameters of gradient mixing can be adjusted. For more details, please refer to the content in Chapter 12.

**Separate** The parameters of separate printing can be adjusted. For more details, please refer to the content in Chapter 13.

## 17 PAUSE PRINTING

During the printing process, you can click the "Pause" icon to pause the current printing, and the hot end will move to the original position. If you need to resume printing, just click the "Resume" icon to continue the printing process.

Do not move the XYZ axis during the pause, otherwise it will cause printing failure.

## 18 BREAK-RESUMING

If the printer encounters a sudden power failure during operation, the printer will save the current printing task. After the power is restored, the user only needs to choose to resume printing according to the prompts on the display screen. In the process of using Break-resuming, you need to pay attention to the following matters:

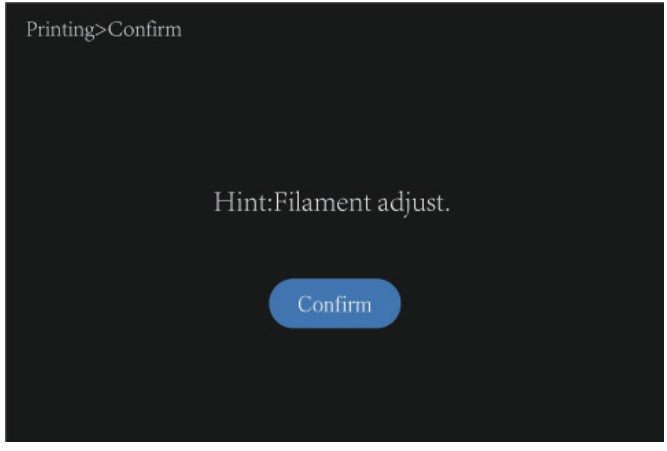
**1.** After the printer is powered off, please do not move the XYZ axis, otherwise it will cause failure to resume printing.

**2.** If the user actively suspends printing and needs to power off, it is recommended to suspend printing before power off, and then disconnect the power of the printer. It is best not to cut off the power directly to ensure that the printer can better save the data of the current printing process.

**3.** In order to keep the surface of the model after Break-resuming without obvious defects, use tweezers to clean up the filament overflowing from the nozzle in time during the process of resuming printing before the nozzle is close to the model.

**4.** If you need to suspend printing and turn off the power of the printer during use, you must wait for 2 minutes before turning off the power of Mizar M after the pause, otherwise it may cause the blockage of hot end.

**5.** When using the separated color module, due to the special reason of its working mode, after the printing task is resumed, the display screen will prompt "Preset", as shown in Figure 18-1. After clicking the "Confirm" icon on the page, the UI will automatically jump to the "Preset" page. At this time, the user needs to complete the relevant settings of the "Preset". For details, please refer to tshe relevant content of chapter 14.

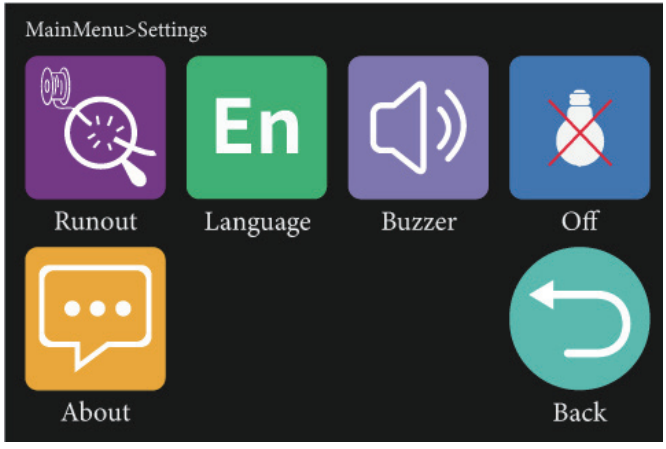



Pic 18-1

## 19 FILAMENT DETECTOR

Mizar M has a filament detection sensor. During printing process, if filament breaks or runs out, the system will automatically suspend the current printing work to prevent the printing failure caused by lack of filament. Users only need to replace the filament again to continue the suspended printing task.

There is a switch in the menu to turn on/off the filament detection sensor. Please confirm that the filament detection switch is on before printing.




Pic 19-1

## 20 SLICING SOFTWARE

Slicing software is a software tool that converts 3d models of objects into G-code files that can be recognized by printers. Mizar M only supports files in G-code format. If you want to use 3D printer to print an object, you need to convert the 3D model of the object into G-code through slicing software.

Common slicing software includes Easy Print Pro (attached with TF card), Cura, Repetier Host and other software. You can download and search their using method on the Internet.

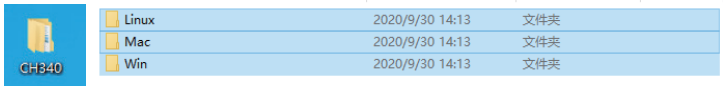
Common slicing software has online printing function. If you need to use online printing, please refer to the following content about online printing.

## 21 ONLINE PRINTING

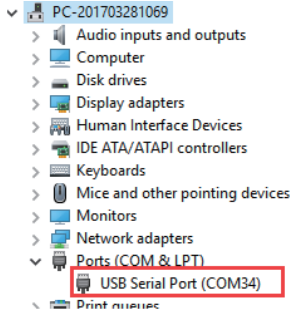
Online printing refers to connecting PC and printer through USB cable (Mizar M standard accessory), and then controlling printer to work through slicing software (Easy Print Pro, Cura, Repetier Host, etc.)



If users need to use the online printing function, you need to install the printer driver first. Mizar M uses CH340 chip, and the driver has been prepared in the TF card attached with the serial port. Please select the corresponding OS version driver according to your needs.




After installing the driver, turn on the power supply of the printer, connect the USB cable to PC and printer respectively. Take PC as an example.
You need to check the port that is connected to the printer in" Device Manager" . If no port is found in Device Manager, check whether the driver is installed correctly and whether the USB port on the PC works properly.




Open the slicing software, set the port and baud rate of the printer. The baud rate of the serial port of Mizar M is 250000. Please fill it correctly in the slicing software, otherwise the slicing software may fail to connect to the printer.

**Tips:**

**1.** Due to unstable factors such as signal interference in the USB cable, it is easy to lead to printing failure. Therefore, it is recommended to choose TF card for offline printing.

**2.** For Online printing, break-resuming capability is disabled. If you need to print a large model, it is not recommended to use online printing in order to ensure the successful completion of the printing task.

## 22 *DAILY MAINTENANCE AND USAGE SUGGESTIONS*

In order for Mizar M to work in the best condition, it must be maintained in time after using.

**1.** Adding grease to the Z-axis screw regularly can reduce the friction between moving parts and reduce the wear of the screw rob.

**2.** Regularly adjust the belts of the X-axis and Y-axis to prevent problems such as misprinting caused by belt slack.

**3.** The printer should be used in an environment with a suitable temperature. Too high or too low ambient temperature will affect the normal operation of the printer.

**4.** Regularly check whether the hot bed and hotend are loose, If there is any looseness, use a wrech to adjust the eccentric nuts on the hot bed and hotend, and fix the hot bed and hotend again.

**5.** After using the printer, please turn off the printer in time.

**6.** If the printer is not used for a long time, please pay attention to the moisture-proof and waterproof treatment of the printer.

**7.** If the filament adhere to the surface of the hot bed and are difficult to scrape off with a spatula, it is recommended to heat the hot bed to about 90°C to soften the filament adhered to the surface of the hot bed, so that the adhered filament can be easily removed with spatula.

## 23 *FAQ (FREQUENTLY ASKED QUESTIONS)*

### Abnormal extrusion

**1.** The filament is tangled.

**2.** The nozzle temp is too low to reach the melting temperature required.

**3.** There is carbonized residue inside the nozzle. Please replace it with the spare nozzle.

**4.** Insufficient heat dissipation of radiator of the Extruder head causes the filament in the tube to melt in advance and the extrusion strength is insufficient. Please check whether the cooling fan works normally.

**5.** The printing speed is so fast that the extruding speed can't match it. Please reduce the printing speed.

### The gear of the extruder skips and makes an abnormal noise

**1.** The nozzle is clogged; please refer to 11.1 abnormal extrusion.

**2.** Check whether the friction force between the extruder gear and the filament is enough. Please clean the residue.

### First layer abnormal

**1.** Non-stick: a. the nozzle is too far from the hot bed. Please re-level the bed, try to stick masking paper or glue stick on the surface of the hot bed.

**2.** Not extruding and the bed scratched: a. the nozzle is too close from the hot bed. Please re-level the bed; b. check if the nozzle extrusion normal.

### Layer shift

**1.** The printing speed of model slices is too fast, please reduce the printing speed.

**2.** The belt of X-axis or Y-axis is too loose, please adjust the belt tightness.

**3.** The synchronous wheel of X-axis or Y-axis is not fixed firmly, please adjust the machine on the synchronous wheel.

**Print stopped**

**1.** USB printing: the signal is interfered. Please copy the model to TF card and print via TF card.

**2.** TF card printing: the gcode file in the TF card is abnormal, please slice again.

**3.** The quality of the TF card is poor. Please try another TF card.

**4.** The power supply voltage in the area is not stable; please print after the voltage is stable.

For more troubleshooting and solutions of printer problems, please refer to the manuals in the attached TF card.

| | | | |
|---|---|---|---|
| Printing Technology | FDM | Power Input | AC 115/230V, 50/60Hz |
| Layer Thickness | 0.1 ~ 0.2mm | Power Output | DC 24/14.6A, 350W |
| Print Size | 255*255*260mm | Support Filament | ϕ1.75mm PLA/ABS/PETG |
| Printing Speed | 20~90mm/s | Connectivity | TF Card , USB Cable |
| Printing Accuracy | ±0.1mm | Nozzle Diameter (mm) | 0.4 |
| Slicing Software | EasyPrint 3D, Repetier-Host, Cura | Nozzle Quantity | 1 |
| Hotbed Max. Temperature (℃) | 110℃ | Supported File Format | .Gcode |
| Environmental Temperature (℃) | 10~40℃ | Hotend Max. Temperature (℃) | 250℃ |
| Machine Size | 400(W)*465(L)*484(H)mm | Packing Size | 522(L)*482(W)*285(H)mm |
| Machine Net Weight | 10.2kg | Package Weight | 13kg |

Shenzhen Getech Technology CO., LTD.

Room 208, Building 8, Yungu II, Pingshan 1st Road, Taoyuan Street, Nanshan District, Shenzhen City, Guangdong Province, China

Website: https://www.geeetech.com