Choose Language (Translated by google)

M4V6 hot end use manual

ZONESTAR 4-IN-1-OUT **mix color** hot end (referred to as **M4 Hot end**) has 4 input channels and 1 nozzle, four filaments are mixed in the hot end and then extruded through a nozzle.Therefore, the M4 hot end not only allows the printer to print the original color of the filaments, but also allows for printing more colors by adjusting the filament mixing ratio.

You need to load all the 4 filaments to the hotend whether printing one or multi color 3d prints, incorrect operationa may block the mix color hotend. If the hot end blockage caused by incorrect operation, it is not covered by the warranty. For how to load filaments, please refer to this guide.

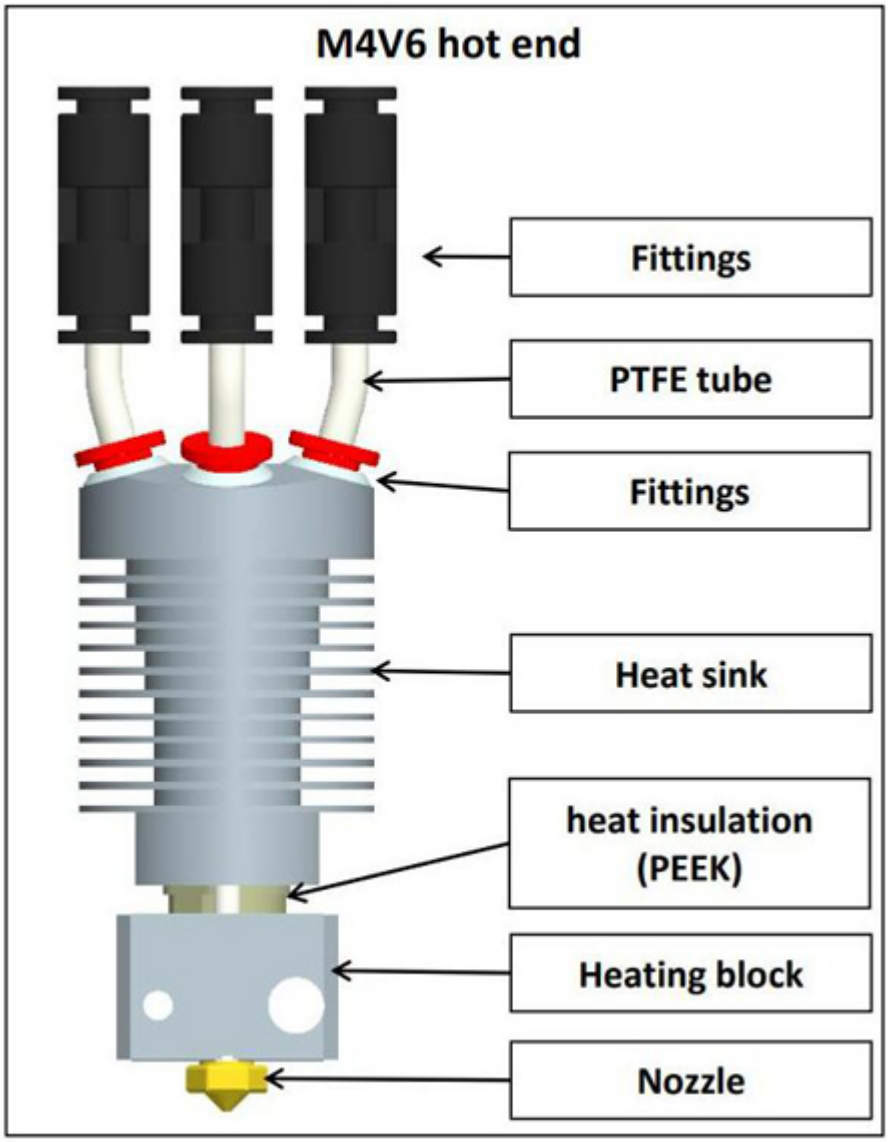
DONOT pull out the "inner PTFE tubes" (the 4 white tubes with black fittings) from the M4V6 hot end.

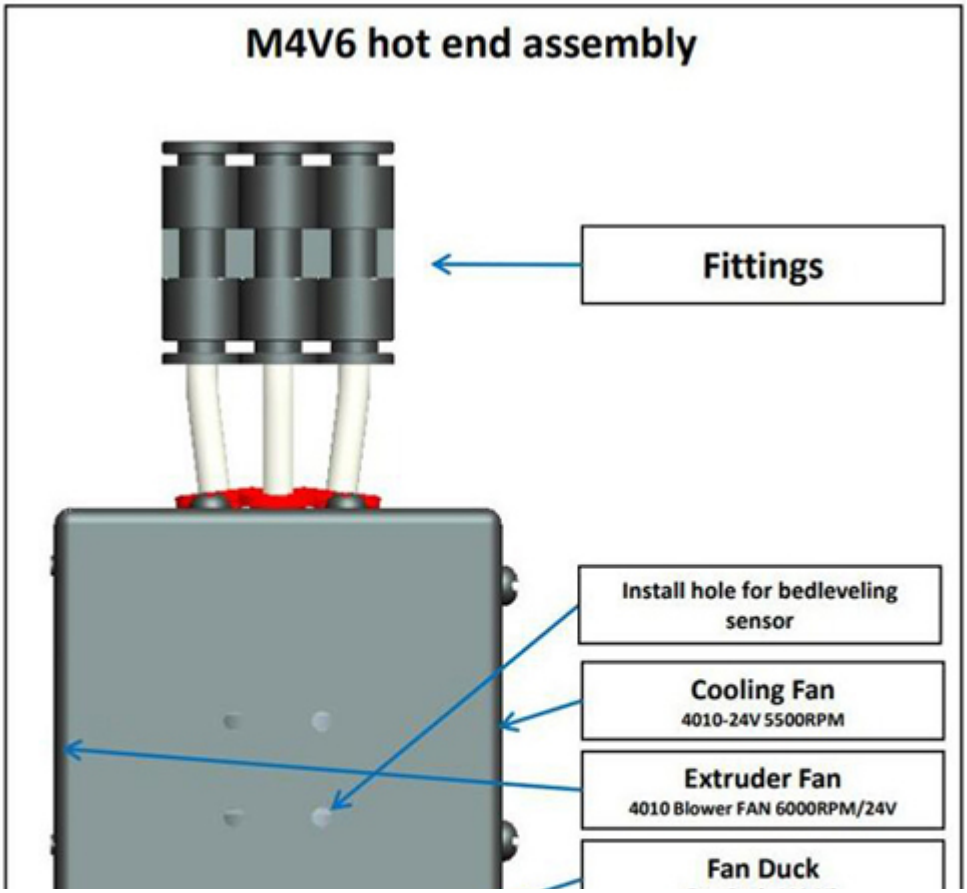
1.Specifications

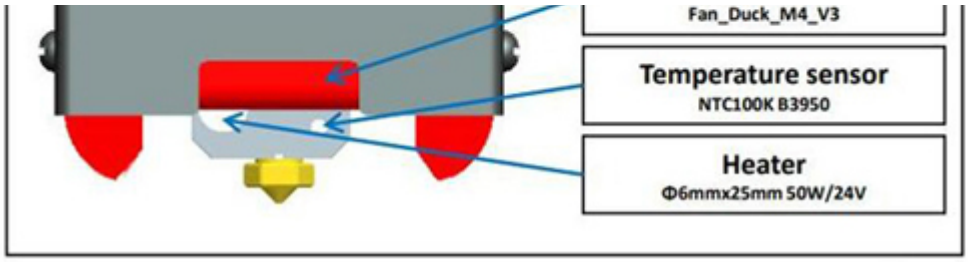
Item	Parameters	Item	Parameters
Rated Voltage	DC24V/60W Max	Nozzle Diameter	Default 0.4mm[1]
Input Channel	4	Nozzle model	E3D V6
Nozzles Number	1	Filament Diameter	1.75mm
Heater	24V/60W ⌀6x25mm	Temperature Sensor	NTC Thermistor 100K B3950
Cooling Fan	4010/5000RPM/24V 0.15A	Extruder Fan	4010/5000RPM/24V 0.15A
Support Filaments	PLA/PLA+/PETG/ABS/ASA etc.	Working Temperature	260℃ Maximus

Item	Parameters	Item	Parameters
Wire length	1 meter	Outer Dimensions	50x60x75mm
Net weight	220g	Gross weight	350g

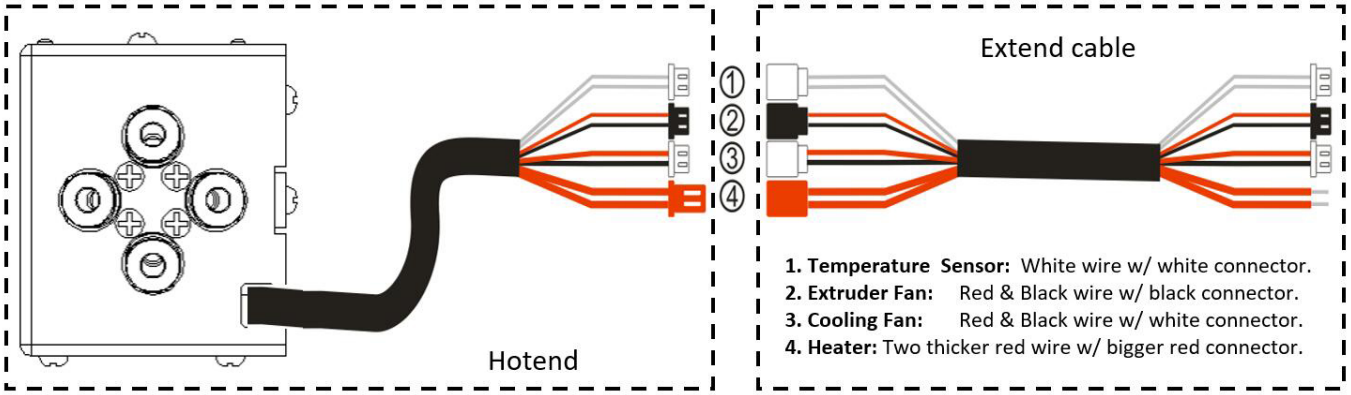
2.Components


M4V6 hot end
Fittings
PTFE tube
Fittings
Heat sink
heat insulation
(PEEK)
Heating block
Nozzle

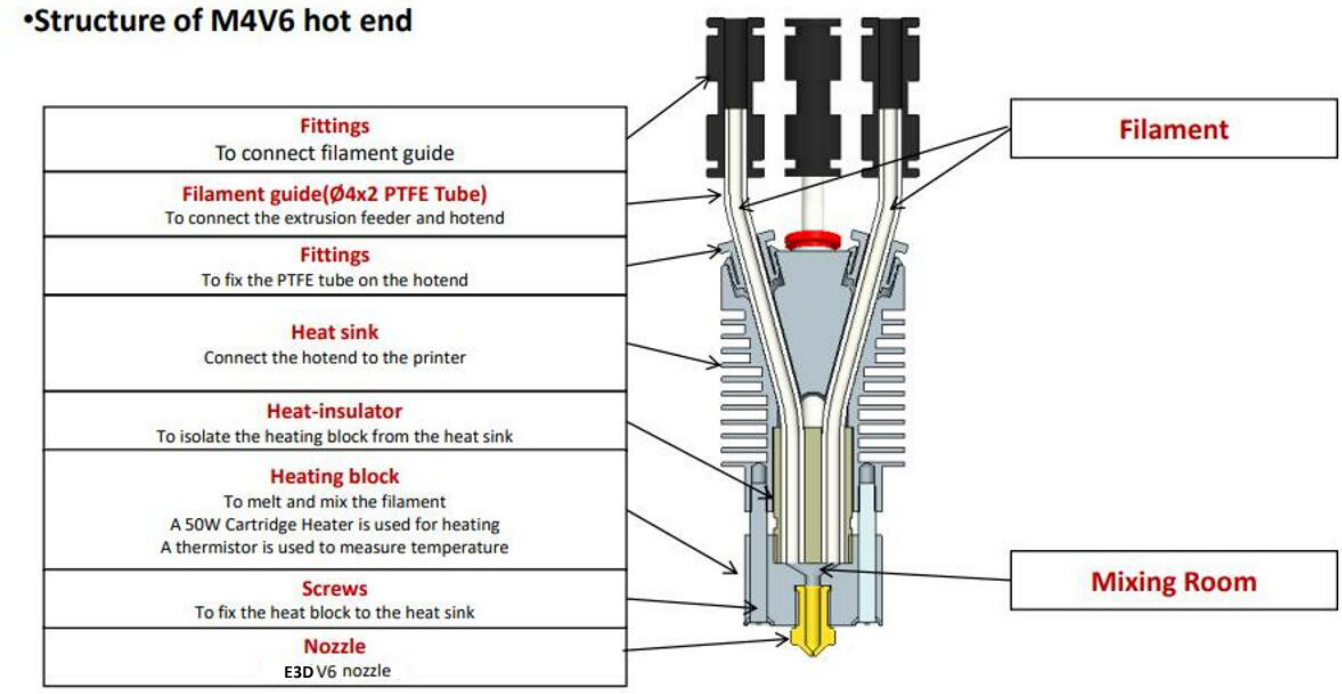

M4V6 hot end assembly
Fittings
Install hole for bedleveling
sensor
Cooling Fan
4010-24V 5500RPM
Extruder Fan
4010 Blower FAN 6000RPM/24V
Fan Duck



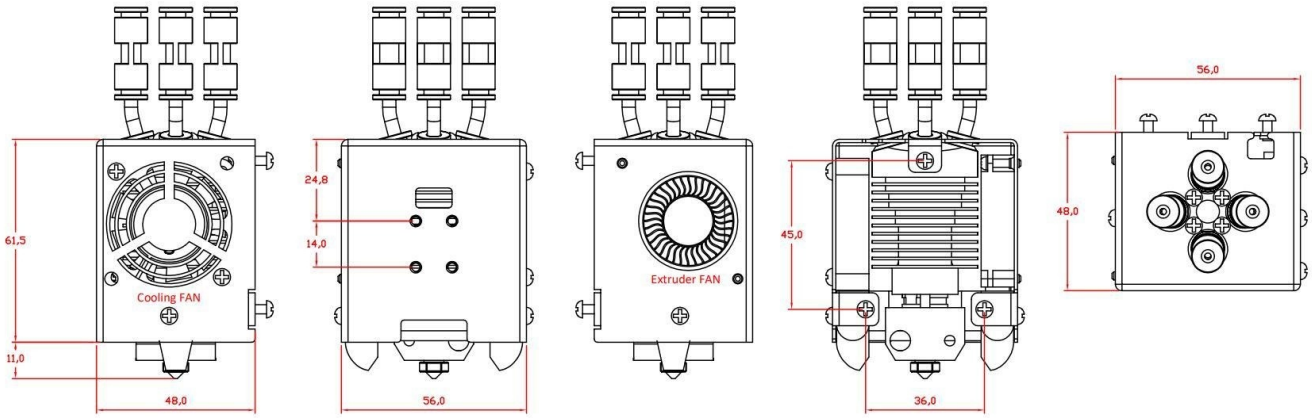
3.Wire and Terminals



4.Structure



5.Dimensions



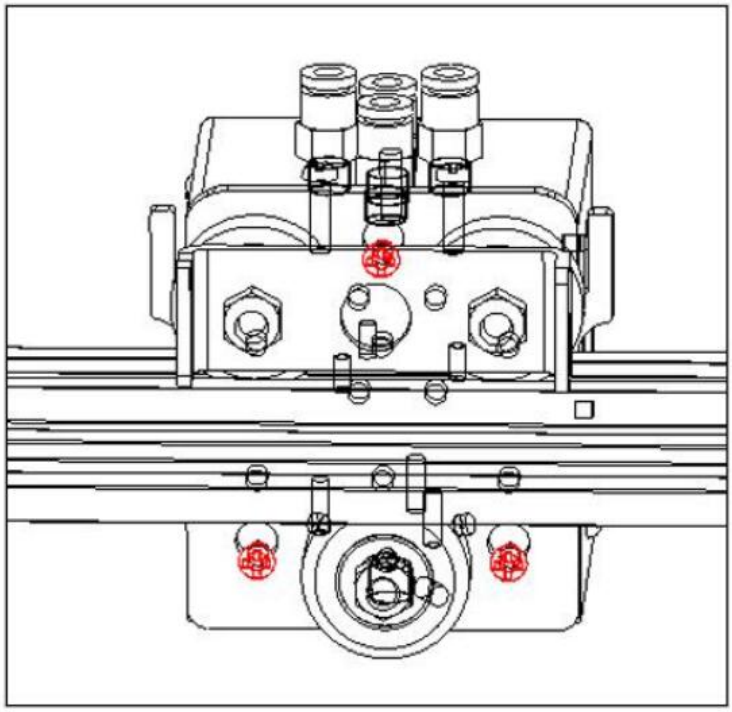
PH-M4-V6
Unit: mm

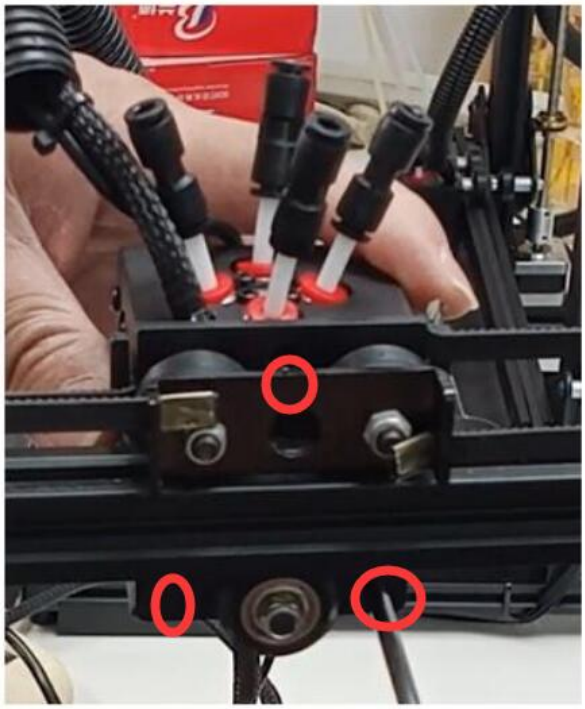
6.Installation & wiring

The mounting position of M4 hot end conform to the "ZONESTAR hot end mounting standard", which can be installed on almost all ZONESTAR 3d printers, including P802, M8, D805S, Z8, Z9, Z10 etc. series of products.

6.1 Installation

Simply remove the 3 screws behind the hot end assembly and install the M4 hotend assembly on the X carrier of the machine.





6.2 Wiring

Attention

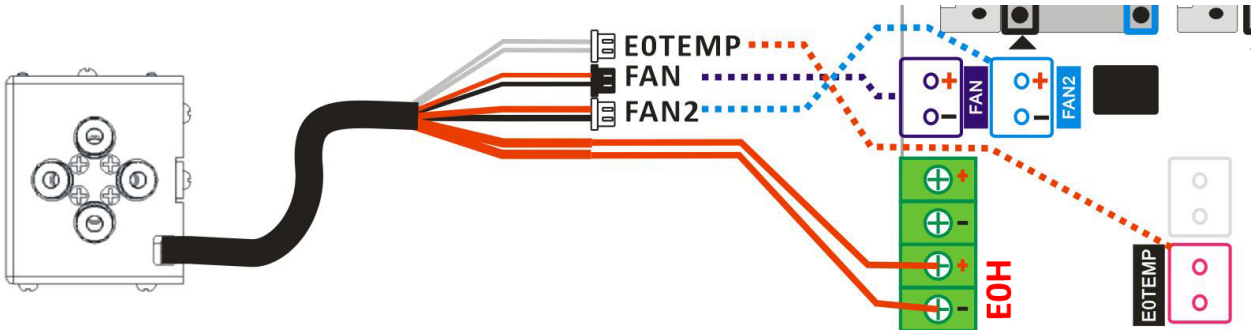
- **Please watch for to distinguish terminals 3 and 4**, because their terminals color are the same, but the wires color are different.
  If the wires of 3 and 4 are connected reversely, you can see the nozzle temperature displayed on the LCD screen will be much higher than the room temperature after you powered on the machine.
- When pluging the terminal, **be careful not to push the metal terminal from the plastic case**.

Please note

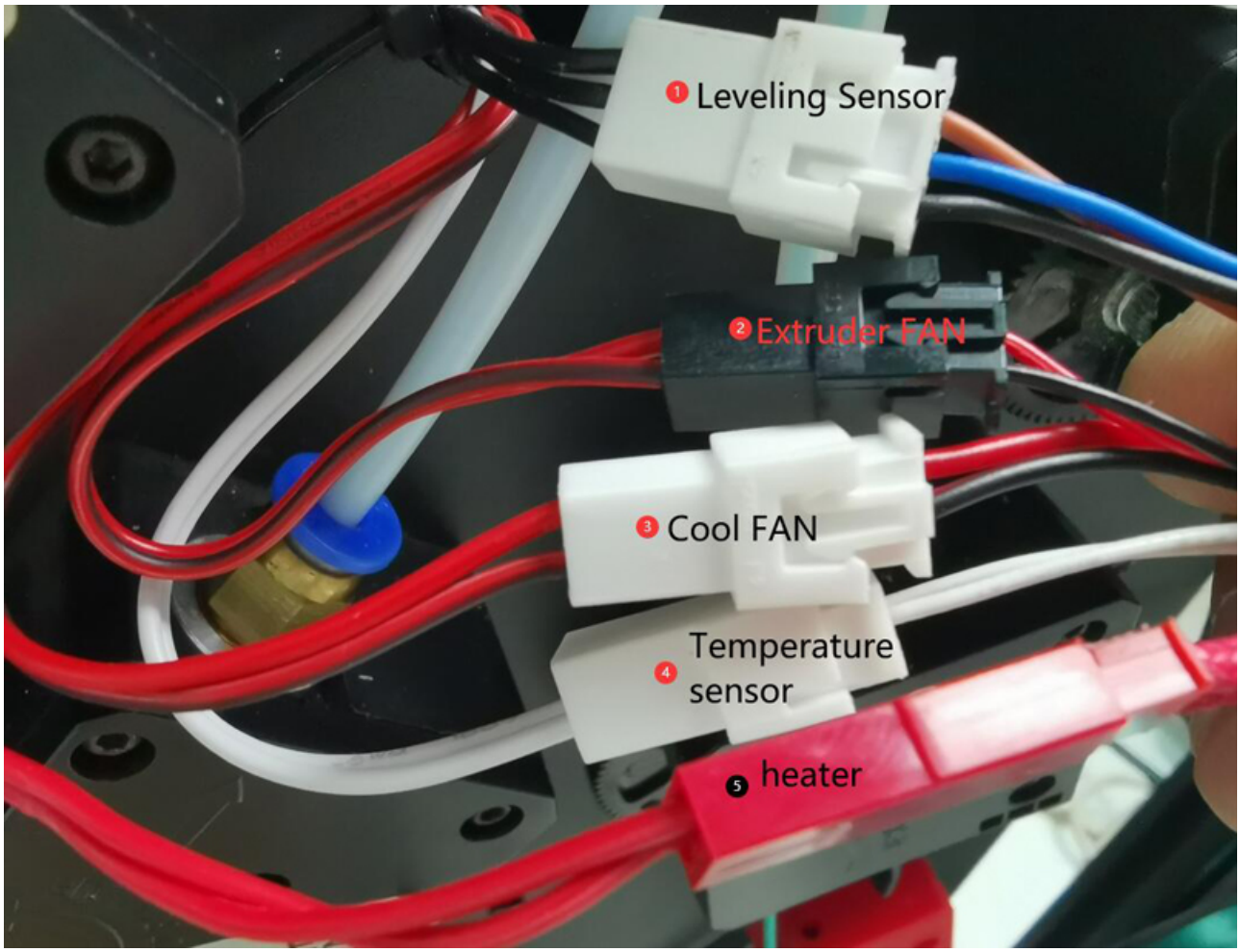
- **The cooling fan must be turned on** (when the temperature of the hot end is higher than 60°C), otherwise the hot end may be blocked or even damaged.
- By default, the **working voltage** of the fan and heater at the hot end is **DC 24V**.

Please following the define of terminals to connect the hotend to your control board.

- **Without extend cable**



- **With extend cable**



6.3 Set hot end type on LCD MENU: Control>>Configure>>Hotend Type: Mixing

⚠️ If your printer hasn't a 4.3" TFT-LCD screen, ignore this step.
⚠️ If you can't see the menu on the LCD screen of your printer, please upgrade to the newest version. 🔗 **Firmware Download Link**

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7. How to load and unload filaments

⚠️ ATTENTION PLEASE

For M4V6 hotend, you need to load 4 filament to the hotend even you print one color 3d model, DONOT leave any channel empty before printing.

- **Load filament to the hotend:**
  🎬video tutorial.
  - Cut the front of the filament with diagonal pliers before loading it to the extruder and hot end.
  - Load 4 filaments to all extruders one by one.
  - Rotate the gear of extruders to load filament one by one, do not rotate each extruder more than 2 turns at a time, until all the filaments enter to the inner PTFE tube of hot end, extrdue more 4 ~ 5 turn for each extruder and then stop.
    ⚠️It is recommened to use the ***Prepare>>Filament>>Extruer: All*** and ***Prepare>>Filament>>Load quickly*** menu to load filamets if your printer has a "filament" Menu.
    ⚠️ Don't extrude filament when any one of the channel is empty.
- **Unload filament from the hotend:**
  - Heating the nozzle (200℃ for PLA / 230℃ for PETG/ABS).
  - Operature on the LCD menu or rotate the extruder gear to unload filaments.

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8. Steps to use M4V6 hotend

Print one color 3D model by M4V6 ho tend

- **Prepare gcode file**. Slicing the 3d modle by using one color 3d printer settings, please refer to **here**.
  Here is a test gcode file for your reference: ⬇️ **download xyz_cube zip file** and unzip it on PC, and then copy the **xyz_cube.gcode** to SD card. Plug the SD card to the SD socket of machine.
- **Load filaments**. Refer to ☝🏻 **"How to load and unload filament"** to load all 4 color filaments to the extruders and hotend.
- **Print from SD card**. Move item to **Print** item on LCD screen and click the knob and choose the gcode file, click knob to start print.
- **Fine tune nozzle height**. Wait the nozzle and hotbed heating, and when the printer starting to print the first layer, double click the knob of LCD screen to fine tune the distance from the nozzle to the bed, and then wait it to finish.

Print multi color 3D model

- **Prepare gcode file**. Slicing the 3d modle by using M4 multi color 3d printer settings, please refer to **here**.

  Here is a test gcode file for your reference: ⬇️ ****download M4_4CTest zip file** and unzip it on PC, and then copy the **M4_4CTest.gcode** to SD card. Plug the SD card to the SD socket of machine.
- **Load filaments**. Refer to ☝🏽 **"How to load and unload filament"** to load all 4 color filaments to the extruders and hotend.
- **Print from SD card**. Move item to **Print** item on LCD screen and click the knob and choose the gcode file, click knob to start print.
- **Fine tune nozzle height**. Wait the nozzle and hotbed heating, and when the printer starting to print the first layer, double click the knob of LCD screen to fine tune the distance from the nozzle to the bed, and then wait it to finish.

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9. Slicing

- **Install Prusaslicer software**
- **Multi Color Slicing**

📄 Appendix I: Achieve high-speed printing by using M4V6 hot end

📖 Use M4V6 to achieve high-speed printing

📄 Appendix II: How to clean the blocked M4V6 hotend

If **all four filaments are loaded correctly**, usually the M4V6 hot end is not easy to be clogged.

1. Take down the nozzle from the hotend.

2. load all 4 filaments to the hot end, and ensure that the filaments enter the bottom of the hot end.

3. Heating the nozzle to over 200 degree and feed some filament from

Rotate the gear of the extruders to feed filaments, but you should rotate the gears of four extruders simultaneously (that is, do not rotate the gears of the same extruder more than one turn each time). If you find that the filament is slipping on the gear of the extruder, you can: - Increase the pressure of the extruder or - Take down the PTFE tube from the fittings of the hotend and push the filaments into the hotend by hand directly.

4. Install the nozzle back to the hot end

5. Extrude filaments one by one

If the hot end cannot be cleaned by doing the above steps, or the hot end is still easily clogged after cleaning, you need to replace the nozzle or replace the "inner PTFE tubes"

📖**How to replace the inner PTFE tubes.**

Why the hot end is blocked

- If the filaments are not loaded properly before printing, for example, one of the channels is empty or the filament is not loaded deep enough reached to the ***heating block***, the molten filaments will flow back into the empty channels and cause blockage.

  In this case, you can heat the hot end and then insert the filament into the PTFE tube and push it manually (it is better to remove the nozzle first before inserting the filament).
- If the ***inner PTFE tubes*** are not inserted enough deep to reach the bottom of the hot end, the molten filaments will flow back into the ***isolation block*** and cause blockage.

  In this case, you can heat the hot end and then insert the PTFE tube downward into the hot end. If the PTFE tube cannot be inserted, please refer to **"How to replace of the inner PTFE guide"** to disamble the heating block and clean the ***isolation block***.

Appendix III: How to replace of the inner PTFE tubes

- Prepare 4 piece PTFE tube (ID=2mm/OD=4mm), length is about 100mm (Fig 1). To cut the PTFE pipe by a knife (paper cutter) and try to keep the front end flat.
- Remove the screws which to fix the hot end on the top of the hot end housing (Fig 2).
- Loosen the screws which to fix the heater and temperature sensor (Fig 3).
- Remove the heater and temperature sensor from the hot end (Fig 4).
- Remove the hot end from the housing (Fig 5).
- Remove the 2 screws to fix the heating block (Fig 6).
- Pull out the heating block (Fig 7).
- Press the “RED ring” of the fitting and pull out the PTFE tube (Fig 8).
- Insert the new PTFE tube and install the heating block back in reverse order.
- Push the PTFE guide to the bottom after installed the heating block.

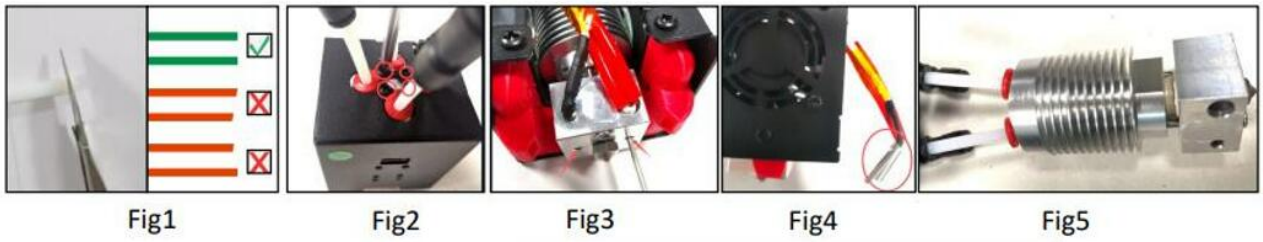

Fig1 Fig2 Fig3 Fig4 Fig5

Fig6 Fig7 Fig 8 Fig 9

How to switch hotend between E4 hotend and M4 hotend