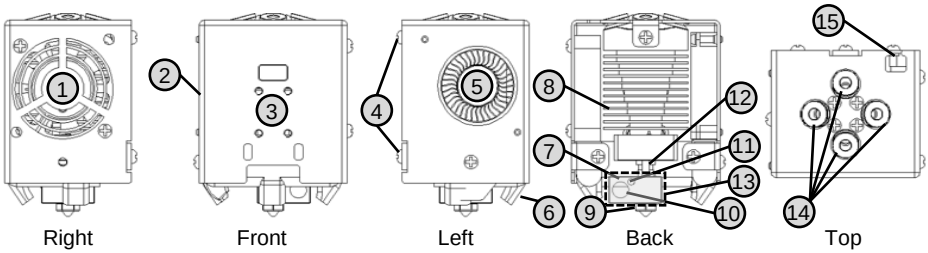
1. Specifications

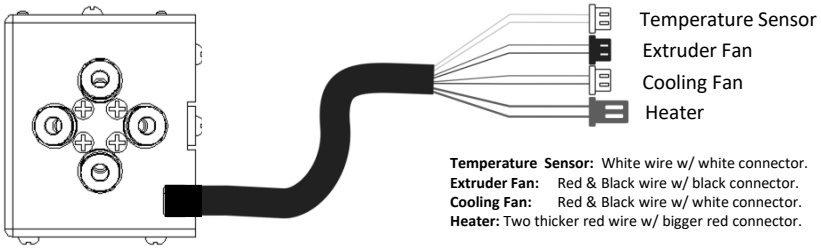
Name	4-IN-1-OUT Non-Mixing-Color Hot end Assembly		
Item	**Value/Parameters**	**Item**	**Value/Parameters**
Rated Voltage	DC24V/60W Max	**Nozzle Diameter**	0.4mm Default
Input Channels	4	**Nozzle model**	V6 Volcano nozzle
Nozzles Number	1	**Filament Size**	1.75mm
Heater	24V/60W ⌀6mmx25mm	**Temperature Sensor**	NTC Thermistor 100K B3950
Cooling Fan	4010/5000RPM/24V 0.15A	**Extruder Fan**	4010/5000RPM/24V 0.15A
Applied to	P802/Z5/Z8/Z9/Z10	**Filaments**	PLA/ABS/PETG, etc.
Wire length	1 meter	**Outer Dimensions**	50mmx60mmx75mm
Net weight	300g	**Gross weight**	500g

2. Components



1. Cooling Fan
2. Housing
3. Bed leveling sensor(optional)
4. Mounted Screws
5. Extruder Fan
6. Fan Duck
7. Heating block
8. Heat sink
9. Nozzle
10. Cartridge heater
11. Temperature sensor
12. Throat
13. Silicone sleeve
14. Fittings
15. Cable

3. Wire and Terminals

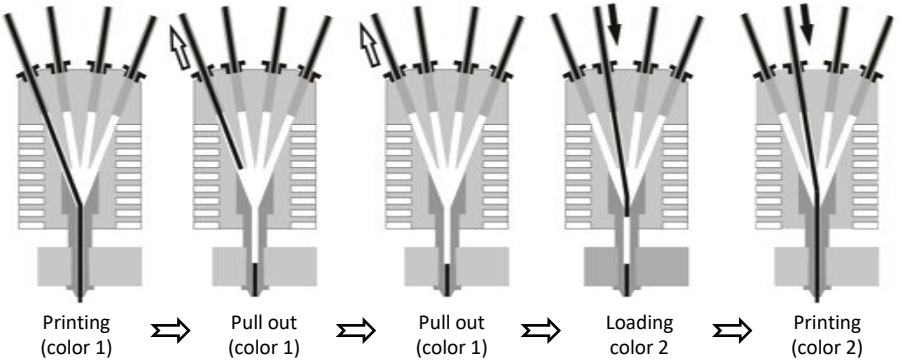


Temperature Sensor: White wire w/ white connector.
Extruder Fan: Red & Black wire w/ black connector.
Cooling Fan: Red & Black wire w/ white connector.
Heater: Two thicker red wire w/ bigger red connector.

4. Working principle

4-IN-1-OUT hot end is composed of fitting, heat-sink, heater, nozzle and other components, when printing, extrusion feeder insert this color filaments into the hot end, then the filament is melted and flowed from the nozzle.
While changing the color, the extrusion feeder needs to pull the previous color filament out of the hot end, and then insert another color filament.

Since the melted residual filament in the nozzle cannot be completely pulled out, after replacing the filament, a "wipe tower" needs to be added to remove the residual filament in the nozzle to make better color discrimination. (Refer to **Slicing**)

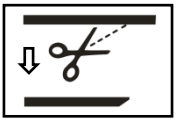


5. Pre-load filaments

Before printing, please pre-load the filaments into the appropriate position of the hot end so that the extruder can load smoothly the filaments into and out of the hot end.

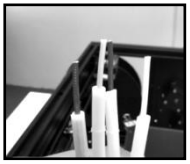
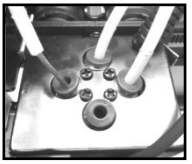
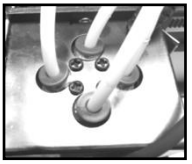
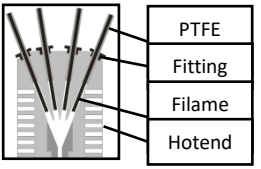
Step 1: Load filament from the extruder and let the filaments extend 10 ~ 15mm out of PTFE tubes.

Step 2: Plug the PTFE tubes (with filaments) into the fittings of HOTEND.



Cutting the front of filaments into a sharp shape before loading filament.

Don't need to load the filaments which doesn't use while printing.

6. Unload filaments

Please follow the steps below to unload the filament from the hotend:
Step 1: Heating the nozzle (190 degree for PLA and 230 degree for ABS).
Step 2: Rotate gear of the extruder to unload the filament.

Some 3d printers (e.g. Z9V5Pro) has a "Filament" Menu on LCD screen, please operate the LCD screen and use menu of "Prepare>>Preheat/Extruder/Unload" etc. to preheat the nozzle, choose extruder and unload filaments.

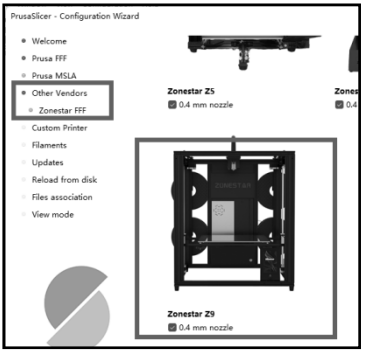
7. Slicing

We recommend using **Prusa-Slicer** for slicing . For details, please refer to :
https://doc.zonestar3d.com/11

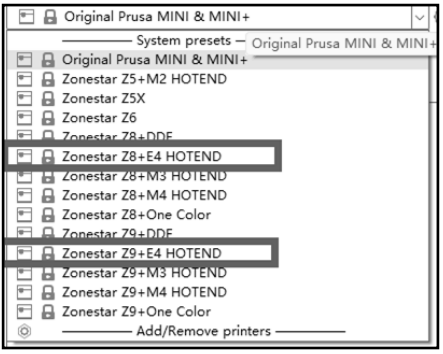
For windows: (Windows 7/8/10/11)

Download **Prusa-Slicer** software from above link and save to the hard disk of your PC or laptop and unzip it, then you can find a **Prusa-Slicer** execute file, click to run it.

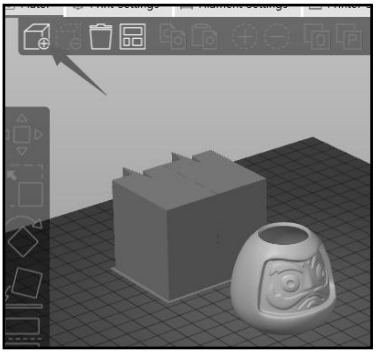
It will start a "**configuration wizard**" if you run Prusa-Slicer for the first time.



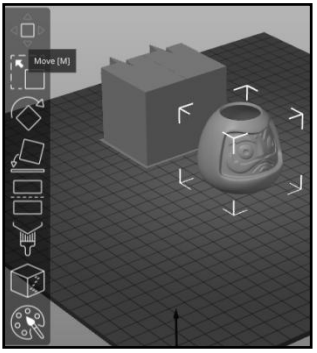
Choose Zonestar FFF and your machine. And click **"finish"**



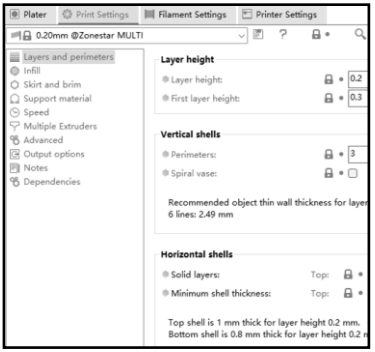
Choose your printer mode on printer settings menu



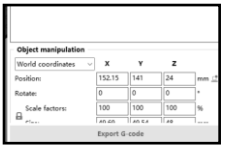
Load 3d model files



Rotate / scale / move the 3d model, or painting color on 3d model



Set/Adjust the setting for slcing

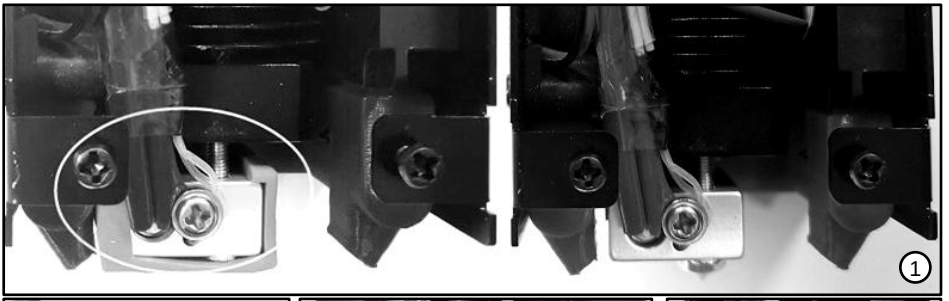


Slicing and save gcode file

8. Maintain

For some reason, it may happen that the filament is clogged inside the hot end and cannot be pulled out and pushed in, in this case, you may need to remove the heating block from the hot end and clean the hot end, the reasons included:

1. The filament breaks inside the hot end, usually because the filament is damaged by moisture or poor quality..
2. When the filament is pulled out, the melted front end will be pulled out a long filament, and when a new filament enters, the filament may be glued together and cannot be inserted. The cause is usually an excess of toughening agent added to the filament.
3. The filament is not completely melted due to the printing temperature setting problem, and may be stuck in the PTFE tube when pulled out.
4. The “switch extruder" setting in the slicer setting is incorrect, such as insufficient load and unload length or wrong sequence, which may also cause blockage.



Remove silicone sleeve ⇨ Remove the able from housing ⇨ Remove screws to fix heating block ⇨ Pull out the heating block from hot end

9. Testing gcode

We have uploaded some test files to our website, you can download them from here:
https://doc.zonestar3d.com/12