

# Long Nozzle Change

## Filament Maker TWO

### Introduction

The nozzle of the Filament Maker TWO can be removed. This can be done for the purpose of cleaning, changing to a different size, or to conduct a maintenance check. This document provides a step by step guide with pictures, safety warnings, and detailed instructions.

### Nozzle difference:

It's important to note that this procedure is for the new, updated "long" nozzle.

The earlier version of the nozzle is a nozzle and adapter subassembly. **Pictured:** "long" nozzle (left), nozzle adapter assembly (right)

Please ensure you are following the correct instructions based on which nozzle is currently in your Filament Maker TWO.



### Common tools

These tools are not provided by 3devo, but are required to perform maintenance tasks and part replacements. They can easily be sourced locally.

- Pliers, to remove plastic debris
- Tweezers, to remove plastic debris
- Heat resistant gloves

### Maintenance kit tools

These are tools provided by 3devo.

- Wrench 21mm, for the nozzle
- 2.5mm Allen key for panel screws

### Consumables:

These consumables are provided by 3devo and machine specific.

- Nozzle ("long" nozzle, this is a single item, without the adapter)
- Nozzle gasket, installed between the nozzle and the diehead
- Nozzle cover, installed between outside of nozzle and nozzle plate

## Nozzle Change

### Safety

1. Carry out procedure with two persons!
2. Hazards of burns! Use necessary tools and protective equipment.

### Preparation

The nozzle is easier to remove when the material is still hot and partially melted. For ease and reduced risk of damage, we recommend using 3devo supplied PLA or HDPE. Once the machine is switched off after extrusion, the heaters will slowly lose heat. This is approximately within 30 minutes of switching off the Filament Maker TWO. It's important to move at a steady but safe pace.

### Prepare the machine

1. Stop extrusion by setting all Heaters to 0 degrees and hit 'Confirm'.
2. Stop screw rotation by pressing 'Stop' on screw speed.
3. Switch OFF the machine with the power switch at the back, and unplug.
4. Hoover out hopper, in case it is filled above the black base.

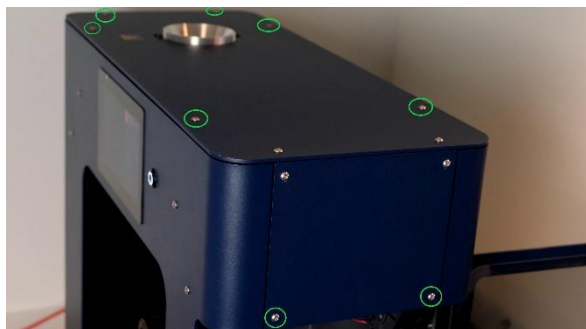
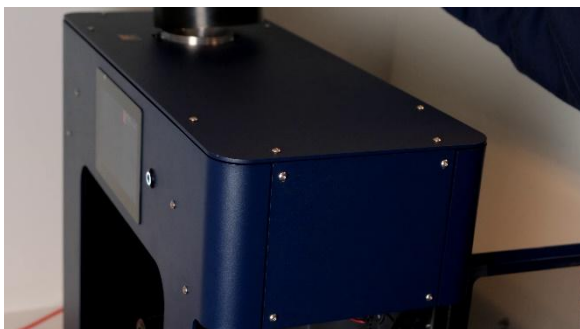


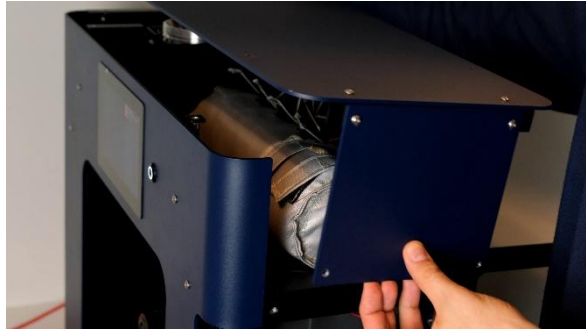
**Heat resistant gloves:** Ensure to always wear heat resistant gloves when accessing the extrusion area while the machine is turned on.

5. Open the door to access the extrusion area.
6. Rotate the fans to direct away from the nozzle.
7. Insert the bib to prevent any material from falling into the extrusion area or sensor.

### Remove panels

8. Unscrew the hopper from the top of the machine by turning it anticlockwise.
9. Remove 6 of the 8 screws from the top panel. Leave the two front screws attached. Place the removed screws in a tray to prevent misplacement.
10. Remove the 2 bottom screws from the front panel, so that the top and front panel remain attached to each other.
11. Remove the panel assembly and place it in a safe area.





## Disassembly

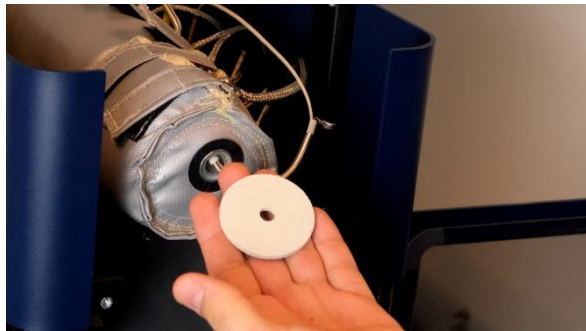


**Warning:** The extrusion barrel is exposed in various areas and is hot, do not touch the part without wearing heat resistant gloves.



**Warning:** The heaters near the back panel of the machine carry 230v or 110v of current, do not touch the part when the machine is turned on.

12. Remove the nozzle panel by sliding it out in a forward direction. Check quality of the nozzle cover. If necessary, discard and place a new one.



13. Open the two velcro straps of the barrel above the nozzle. Slide the insulation sleeve forward and slightly down so that it is free of the nozzle. This is not easy.



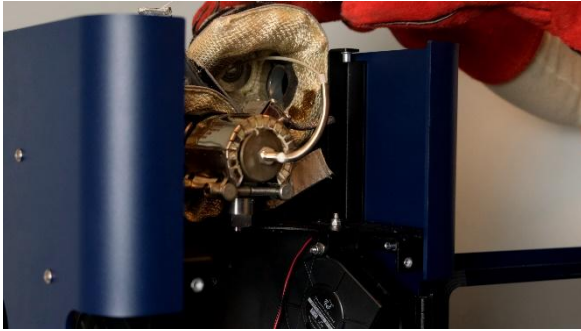
**Warning:** The thermocouple is connected to the front of the barrel through the insulation sleeve and must be treated with care.

14. The heater and thermocouple cable remain attached, place the sleeve carefully on top of the back side of the barrel, while preventing stress on the cables.



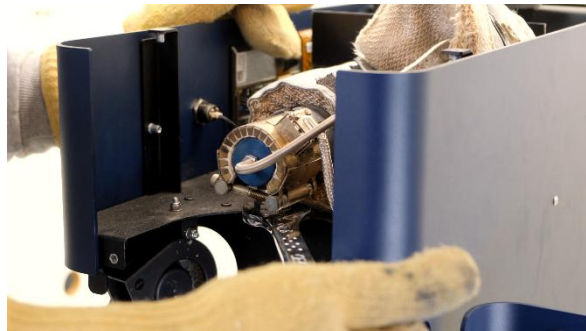
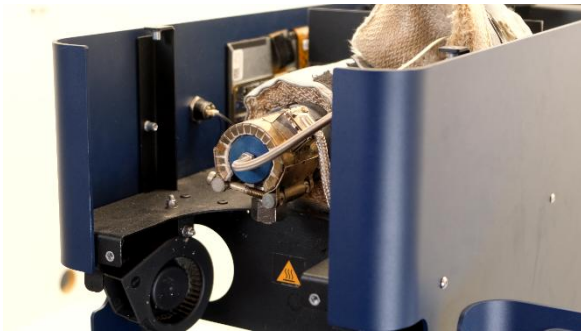
**Note:** Avoid placing the insulation sleeve close to the touchscreen display to prevent possible damages.





## Remove the nozzle

15. Loosen the nozzle with the 21mm wrench by turning it to the left (or clockwise when viewed from top). It will help to stabilize the machine with a free hand.
16. When the nozzle is loosened, continue untightening until you can remove the nozzle by hand wearing the heat protective gloves.



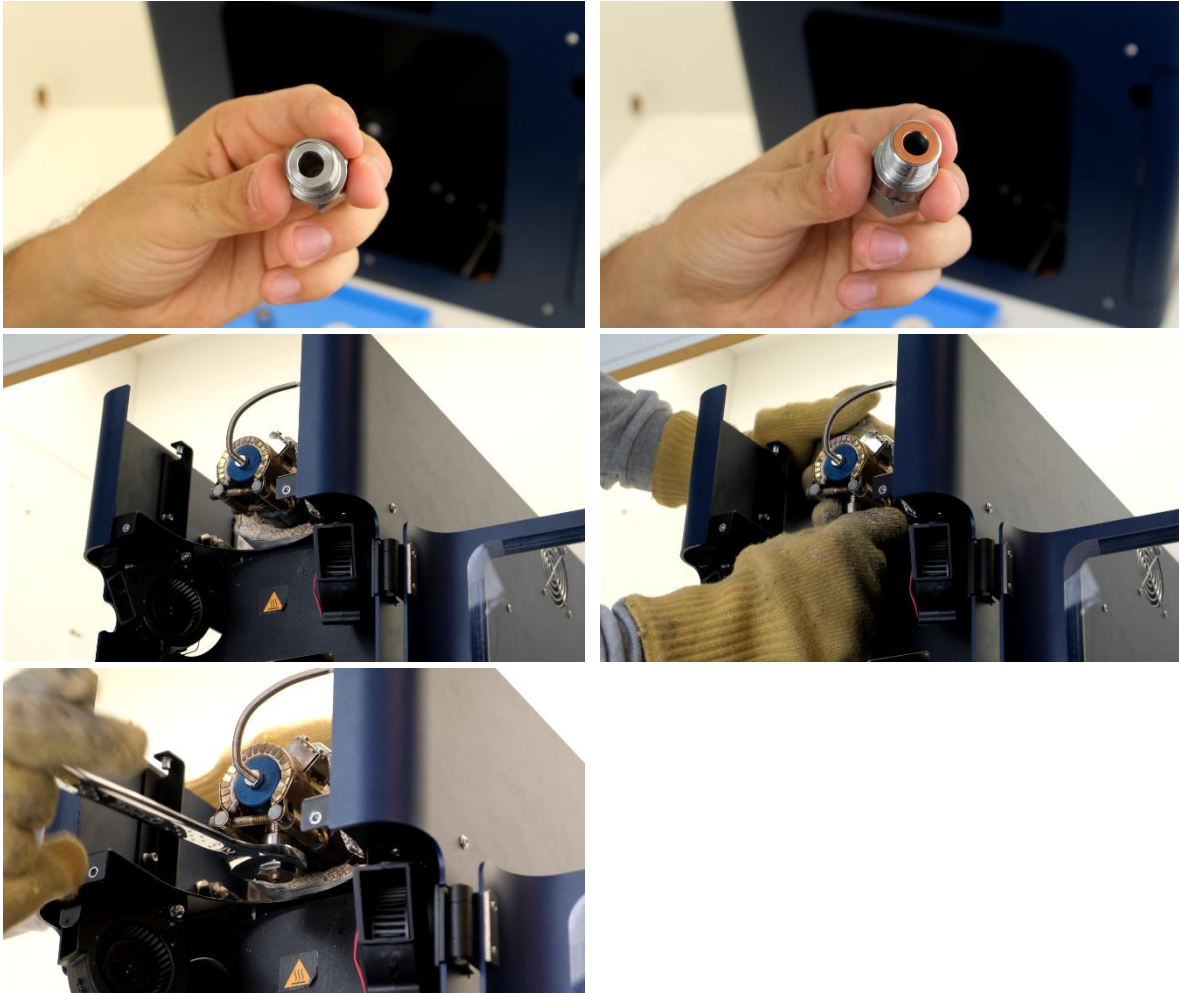
## Cleaning

The cleaning of the nozzle is done at a work station with a vise, blow torch, and an optional oven. If the parts cool down fast, it might be necessary to heat them up with an oven or blow torch before removing any plastic residue. **Wear eye protection and heat resistant gloves.**



## Insert new nozzle

17. Insert the copper gasket into the new nozzle. Ensure it is aligned properly and sits tightly on the inside of the nozzle.
18. Screw it in first by hand (wearing heat resistant gloves), followed by tightening it with the 21mm wrench, with 25Nm strength.



**Picture:** A single 21mm wrench is used to tighten the nozzle turning it to the right, or anticlockwise (when viewed from the top).

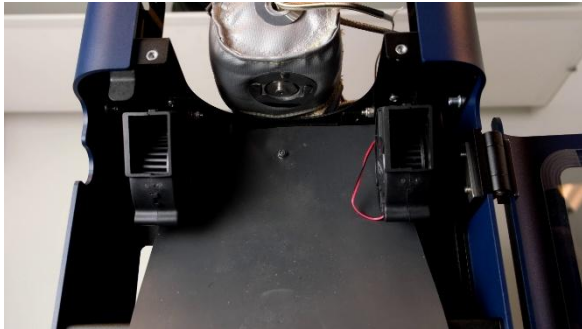
## Re-assembly

19. Place back the insulation sleeve by aligning the nozzle hole on the bottom of the sleeve with the nozzle.

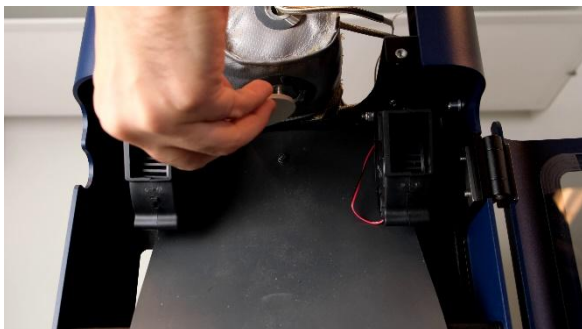
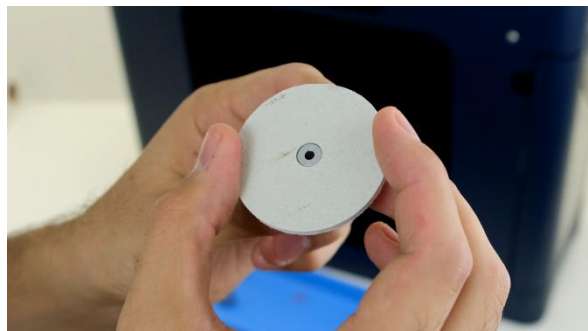


**Warning:** Align the front metal ring over the thermocouple, being careful not to put any stress on the thermocouple cable.

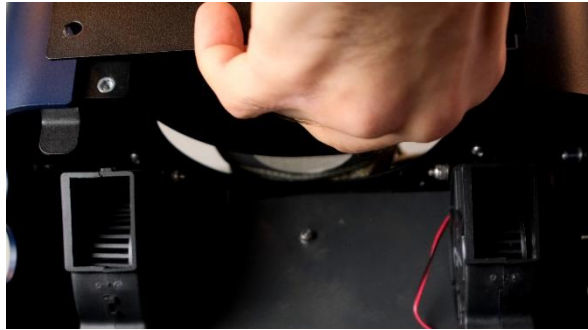
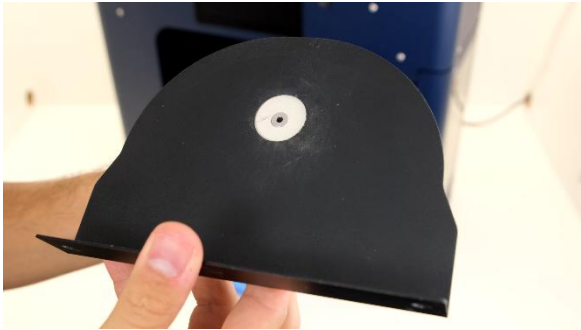
20. Reattach the two velcro straps while tightening the insulation sleeve.



21. Take the old or a brand new nozzle cover. The middle circle fits perfectly around the rim of the nozzle, as pictured below. Press the nozzle cover against the bottom side of the nozzle.

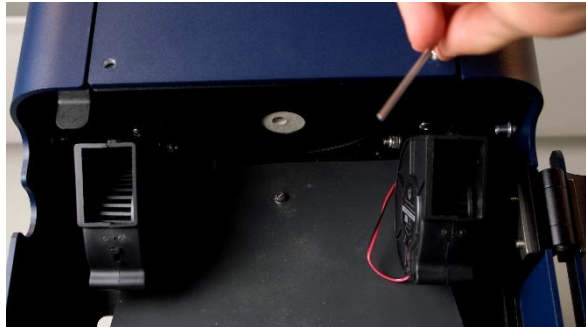
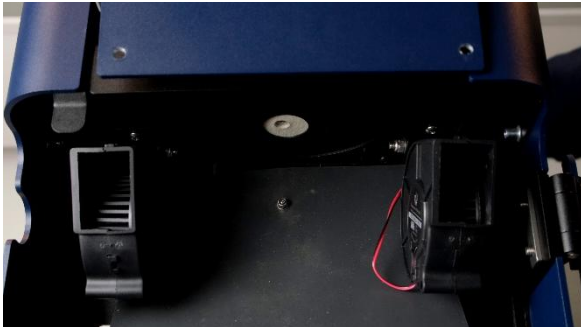


22. Pictured below is the alignment of the nozzle, nozzle cover, and nozzle plate. Slide the nozzle plate in place. Ensure the nozzle cover is properly aligned and does not block the nozzle output.



## Re-attach panels, and hopper

23. Place the front and top plate assembly and insert all 8 screws holding it in place.



24. Re-attach the hopper to the top of the machine.  
25. Remove the bib and close the door.