Technische Universität Braunschweig

Die Lernfabrik
Forschung · Ausbildung · Anwendung

Institut für Werkzeugmaschinen und Fertigungstechnik

Manual for PET filament extruding

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October 12th 2015

Institute for Machine Tools and Production Technology

Outline

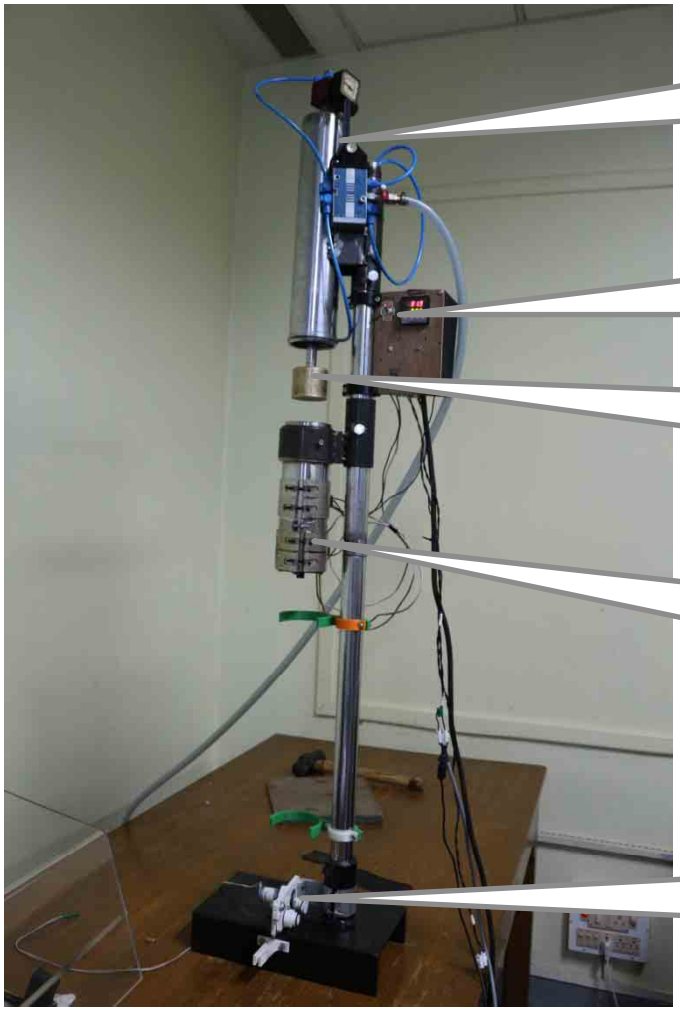
- Explanation of the extruder with whole views

Steps for extrusion:

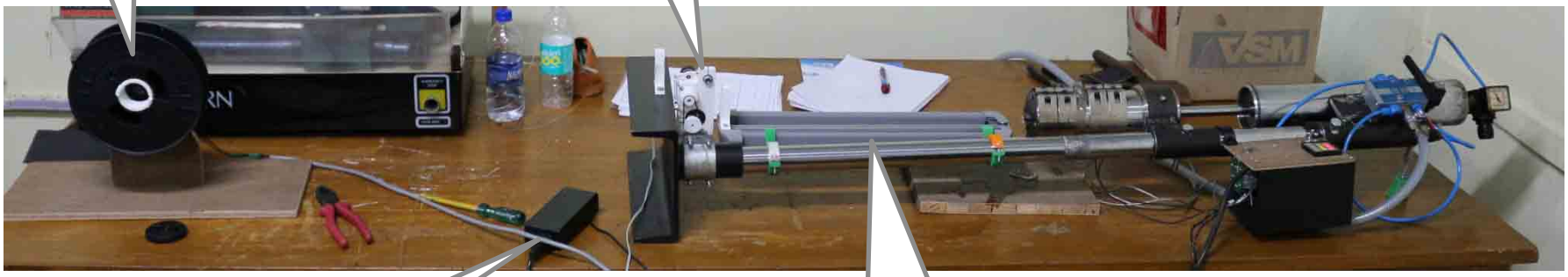
- Bottle cleaning and crushing
- Drying of the crushed bottles
- Extrude
- Winding

- Troubleshooting

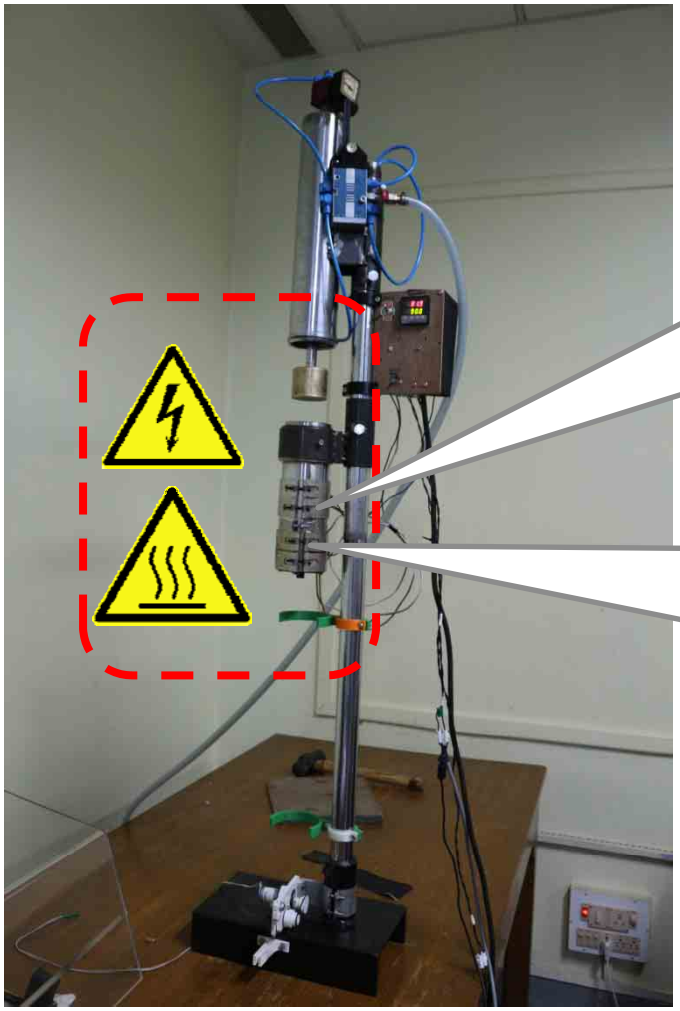
Whole view (upright)



Whole view (lying)



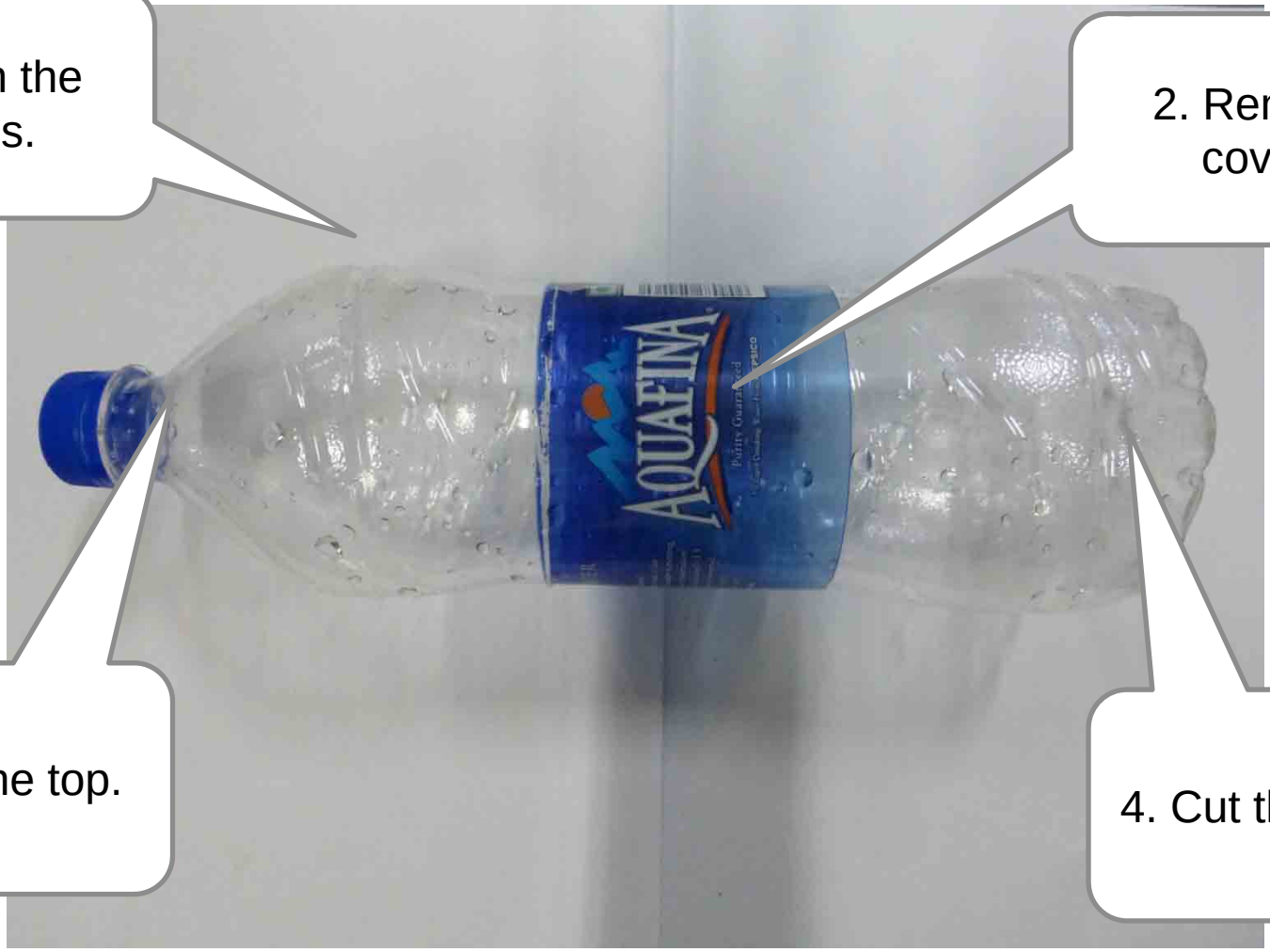
Safety informations



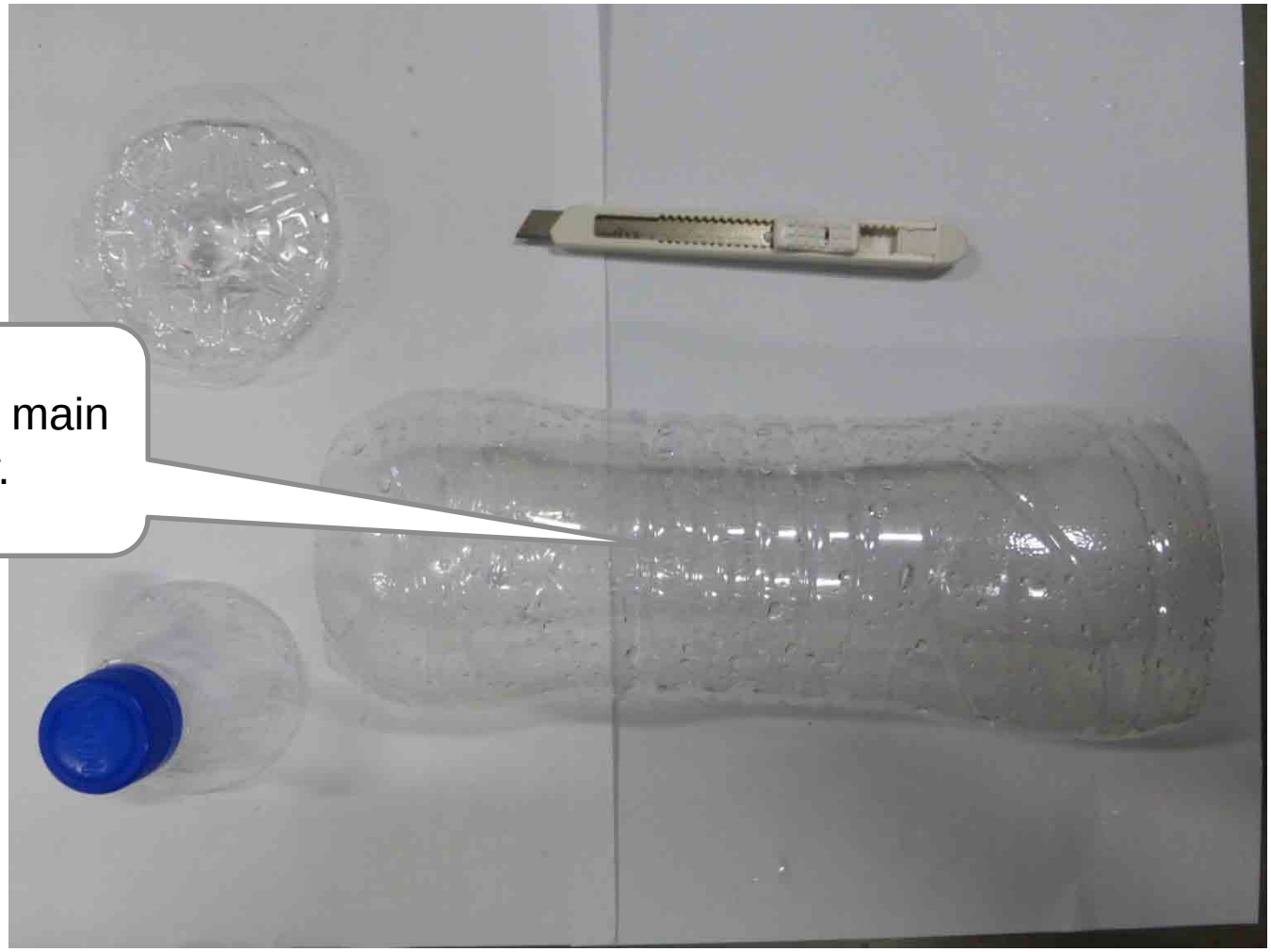
Warning of electric shock at the heating elements.

Warning of incineration at the heating elements.

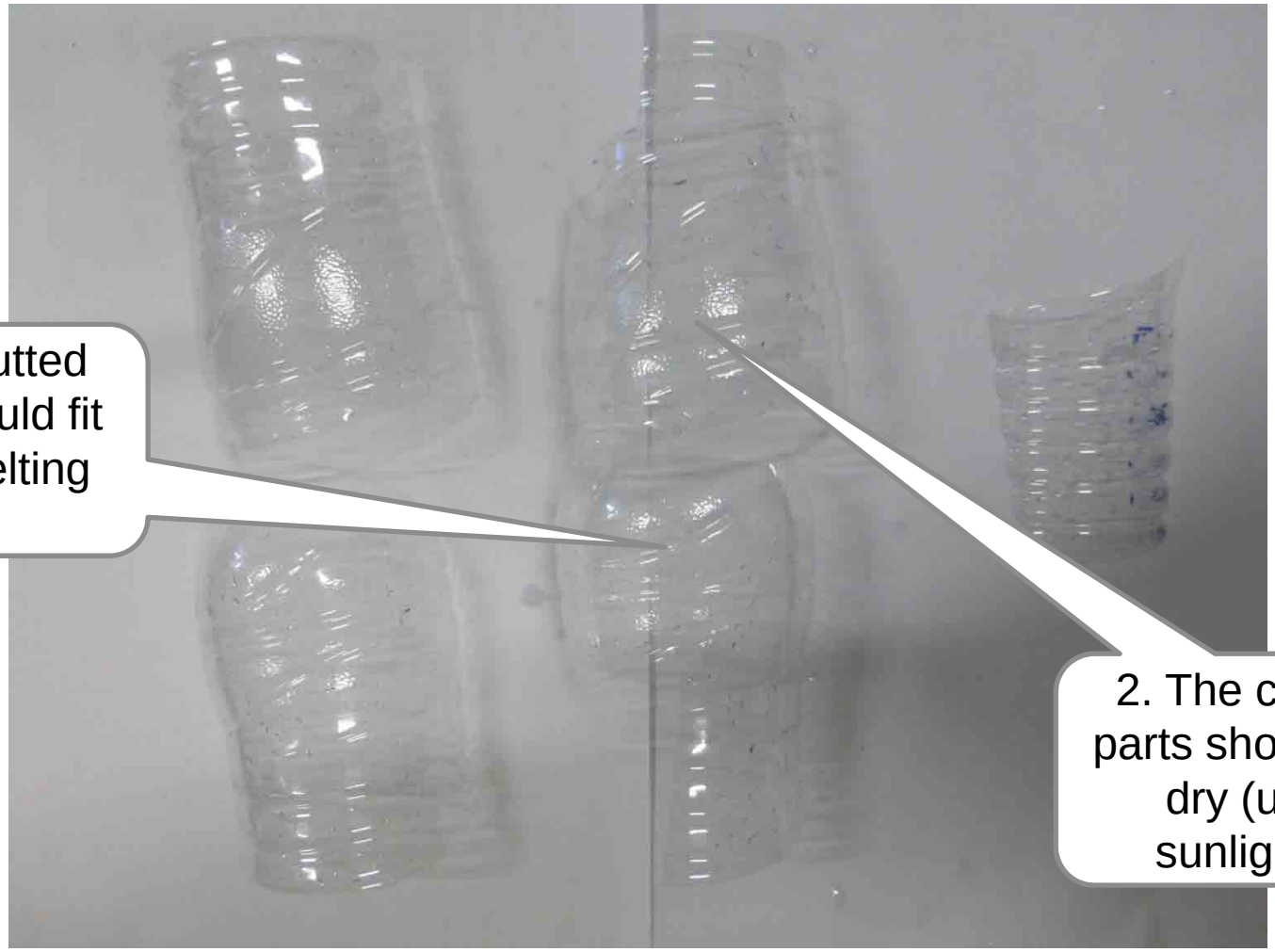
Bottle cleaning and crushing



Bottle cleaning and crushing



Bottle cleaning and crushing



1. The cutted parts should fit in the melting pot.

2. The cutted parts should be dry (use sunlight).

<u>Drying</u> and homogenising of the crushed bottles

1. Leave the piston upright.

1. Fill the melting pot of the upright **extruder** with the parts (approx. 8 bottles).

Drying and homogenising of the crushed bottles

1. Push the main power lever up.

2. Heat the extruder step by step to 120°C by pushing set and use the cursor buttons. Start with 60 then 90 and then 120°C.

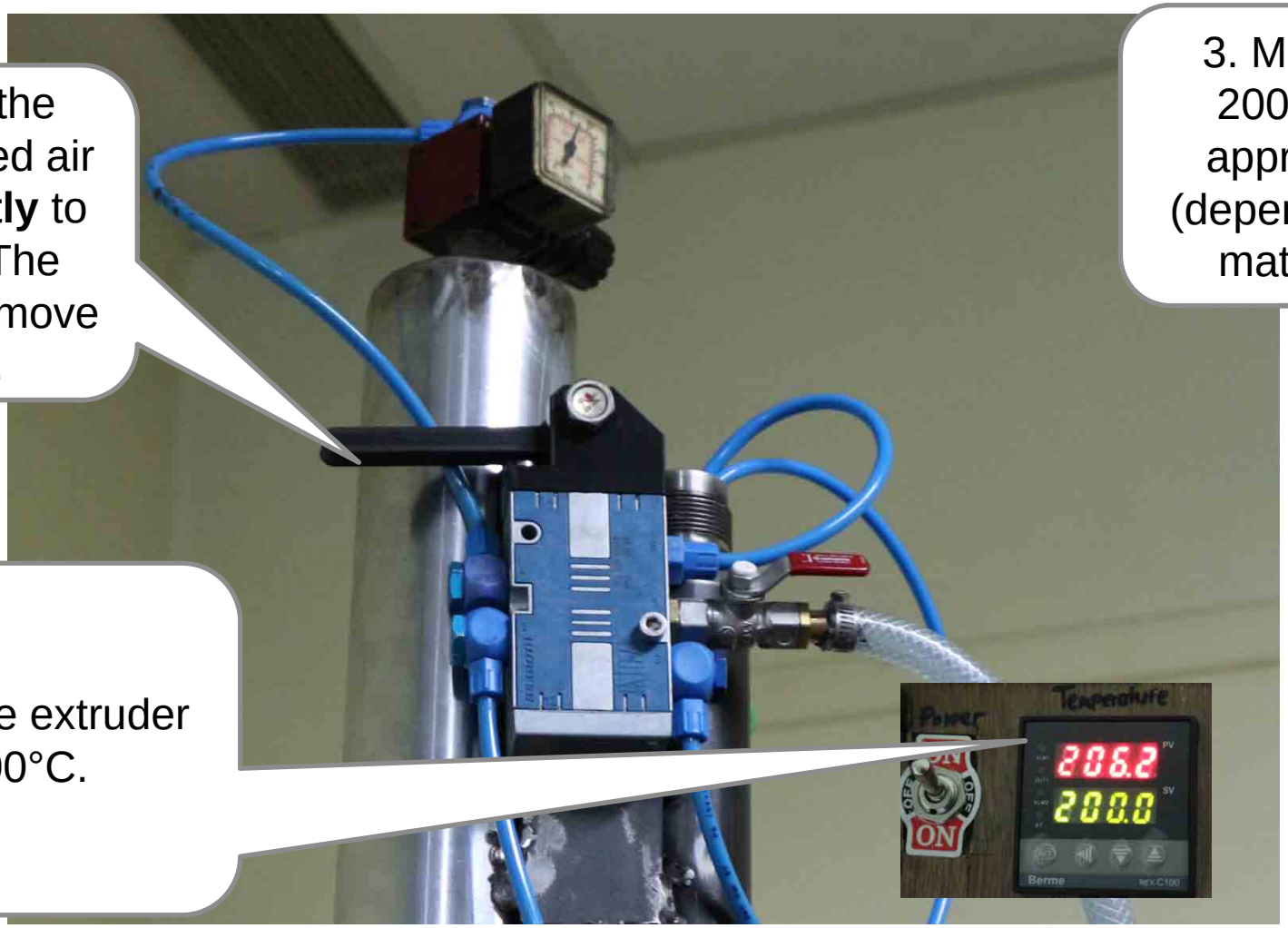
3. Maintain 120°C for approx. 4h.

Drying and homogenising of the crushed bottles

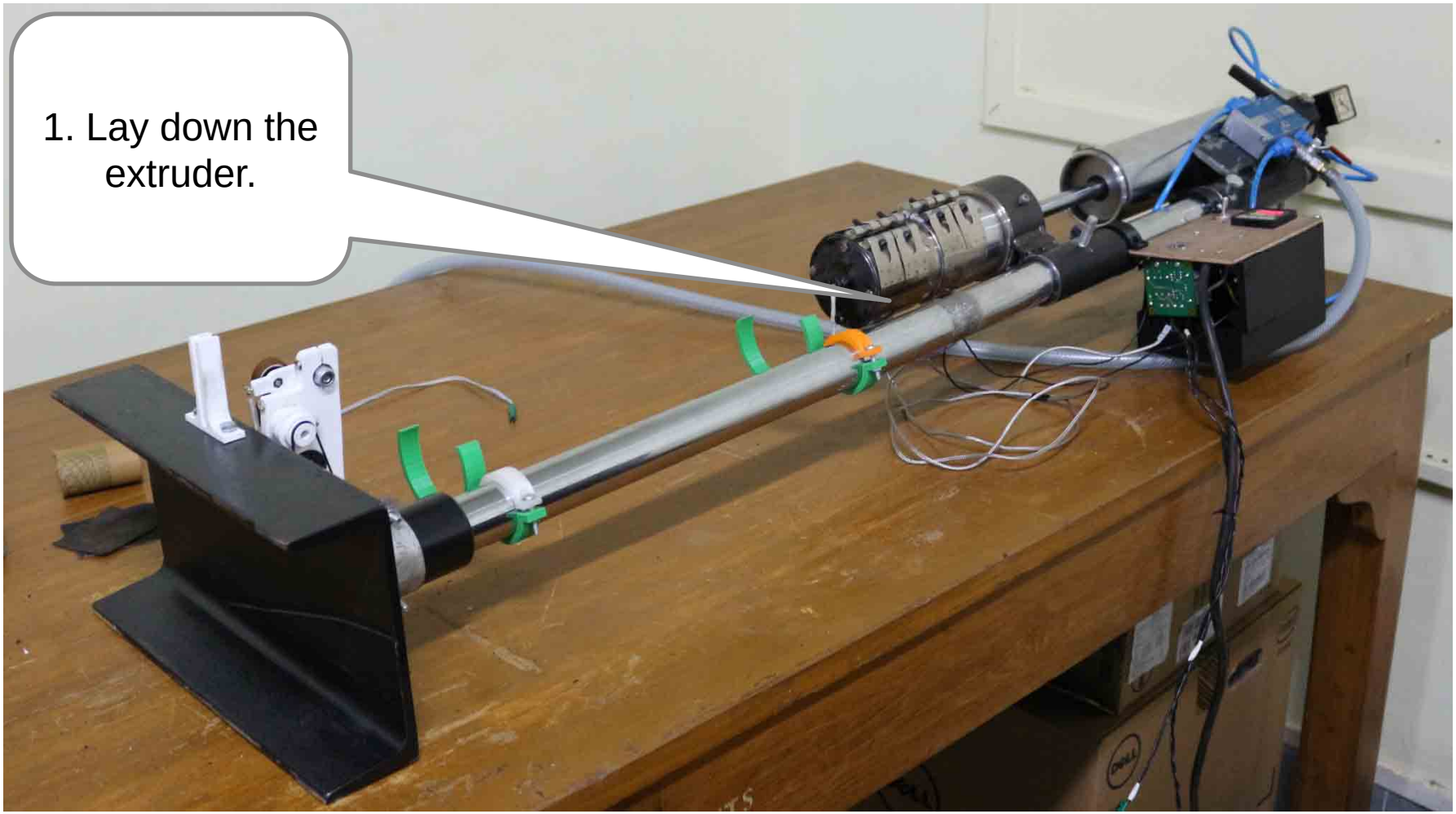
1. Push the compressed air lever **gently** to the left. The piston will move down.

2. Heat the extruder to 200°C.

3. Maintain 200°C for approx. 1h (depending on material).



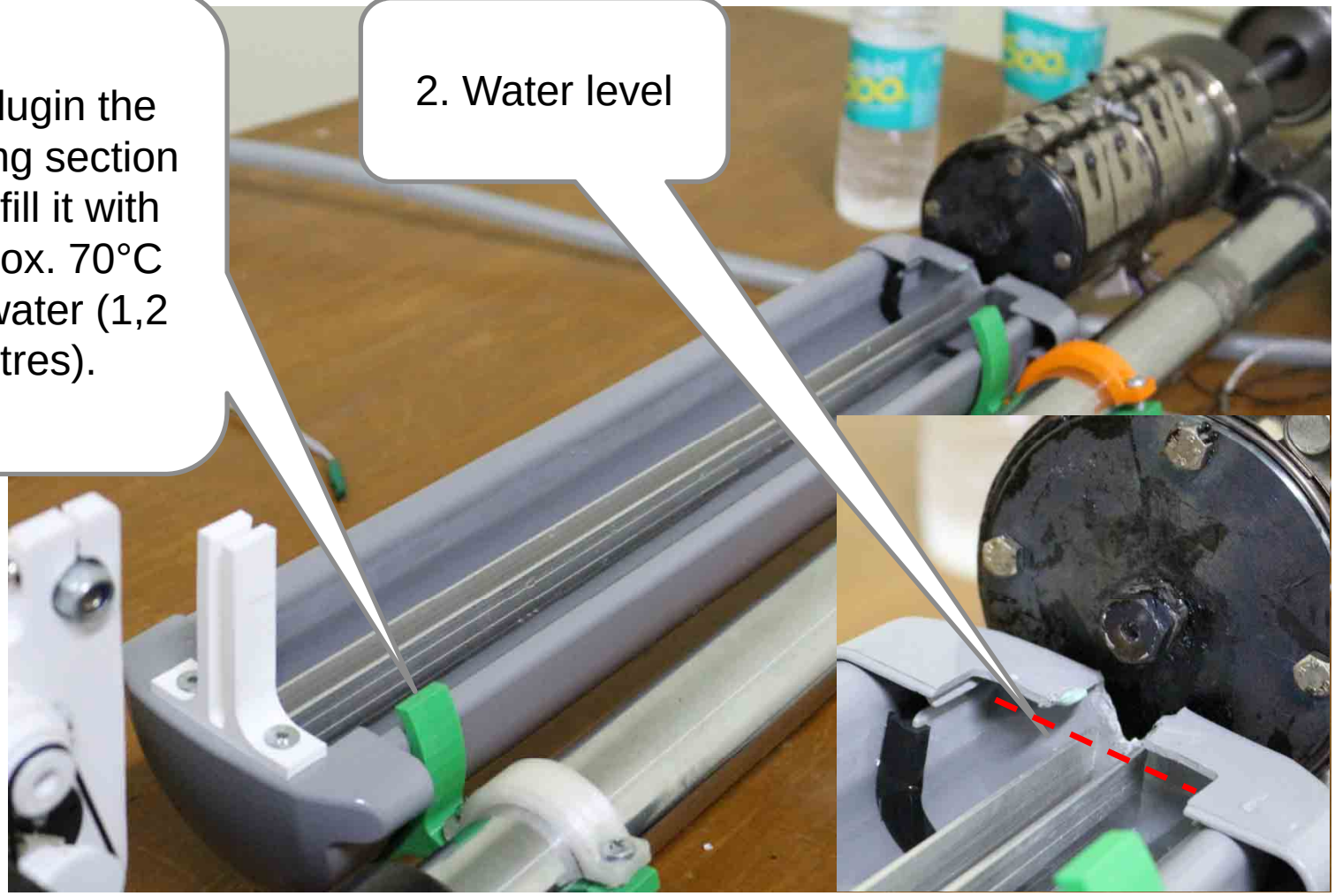
Extrude



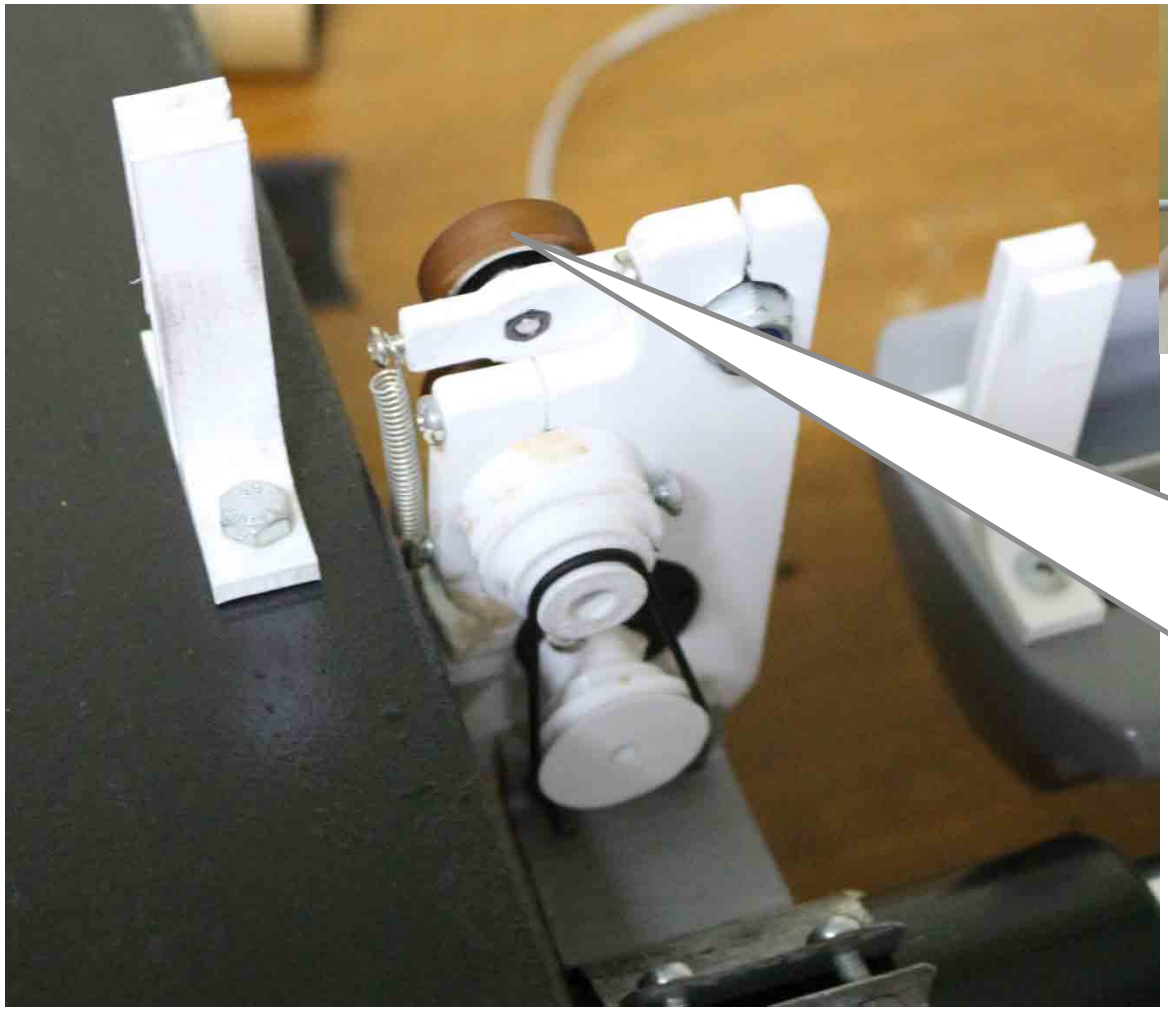
Extrude

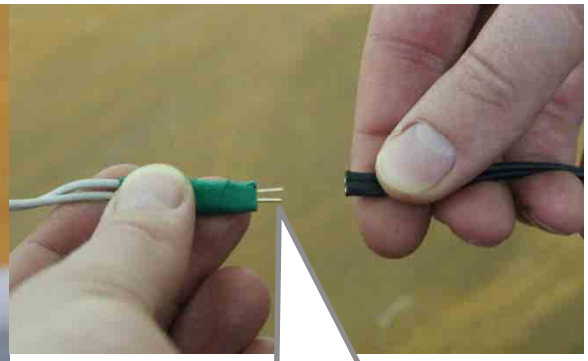
1. Plugin the cooling section and fill it with approx. 70°C hot water (1,2 litres).

2. Water level



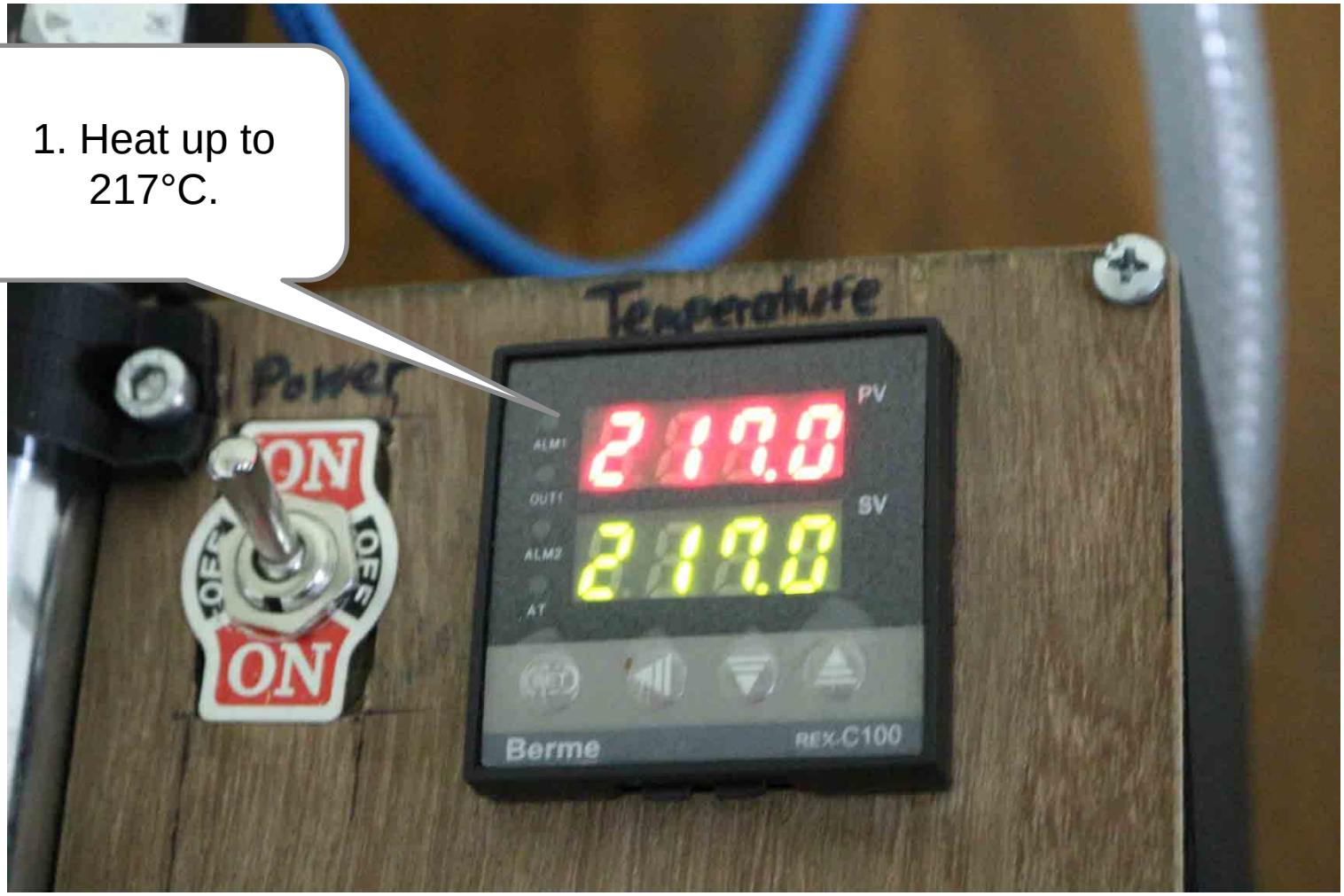
Extrude



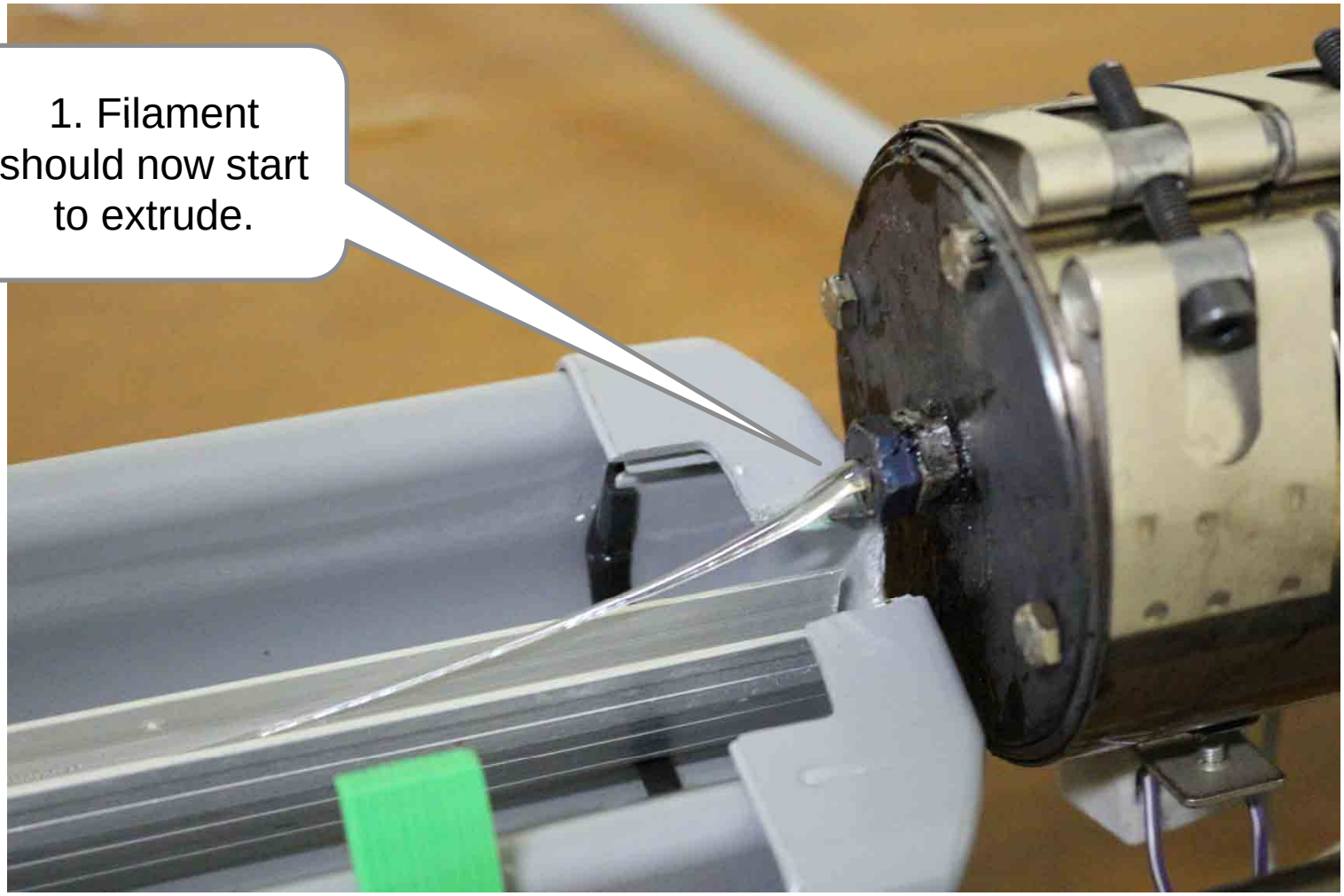


1. Plugin the pulling unit and ensure the wheels are rotating in the right direction.

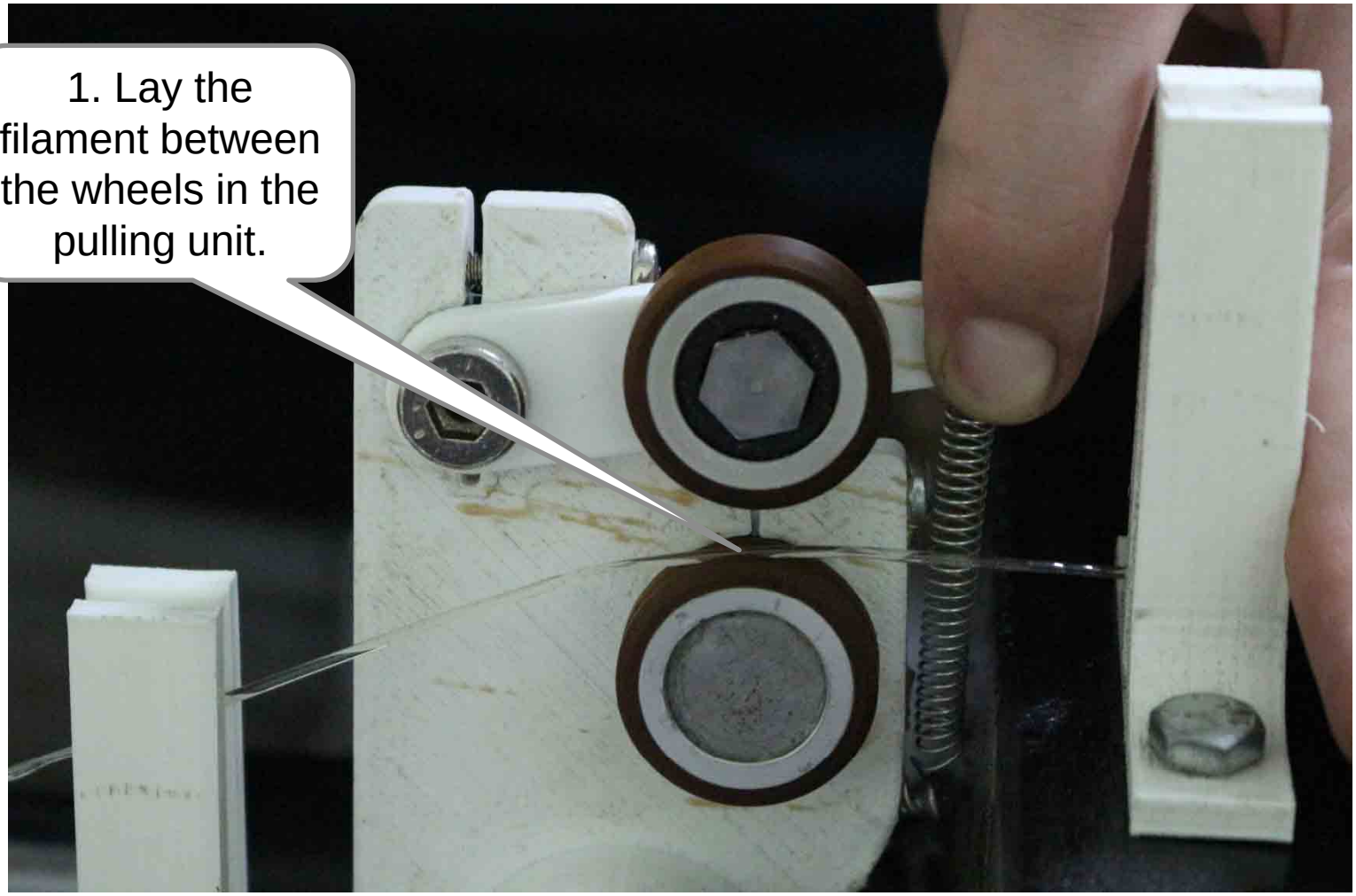
Extrude


1. Heat up to 217°C.
Temperature
Power
ON
OFF
OFF
ON
PV
SV
217.0
217.0
ALM1
OUT1
ALM2
AT
Berme
REX-C100

Extrude

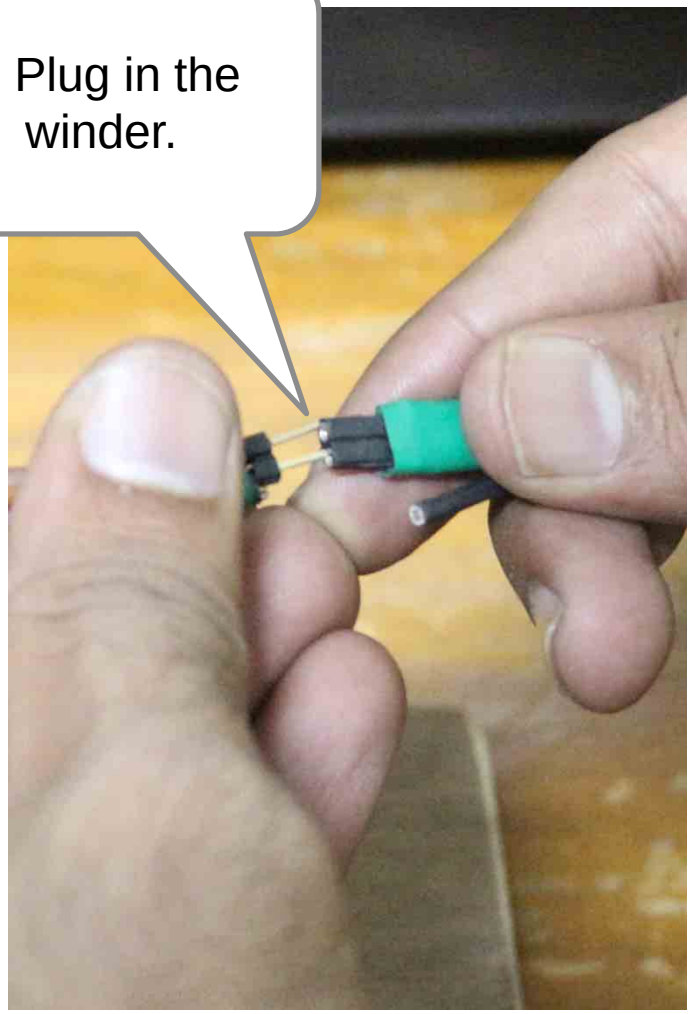


Extrude



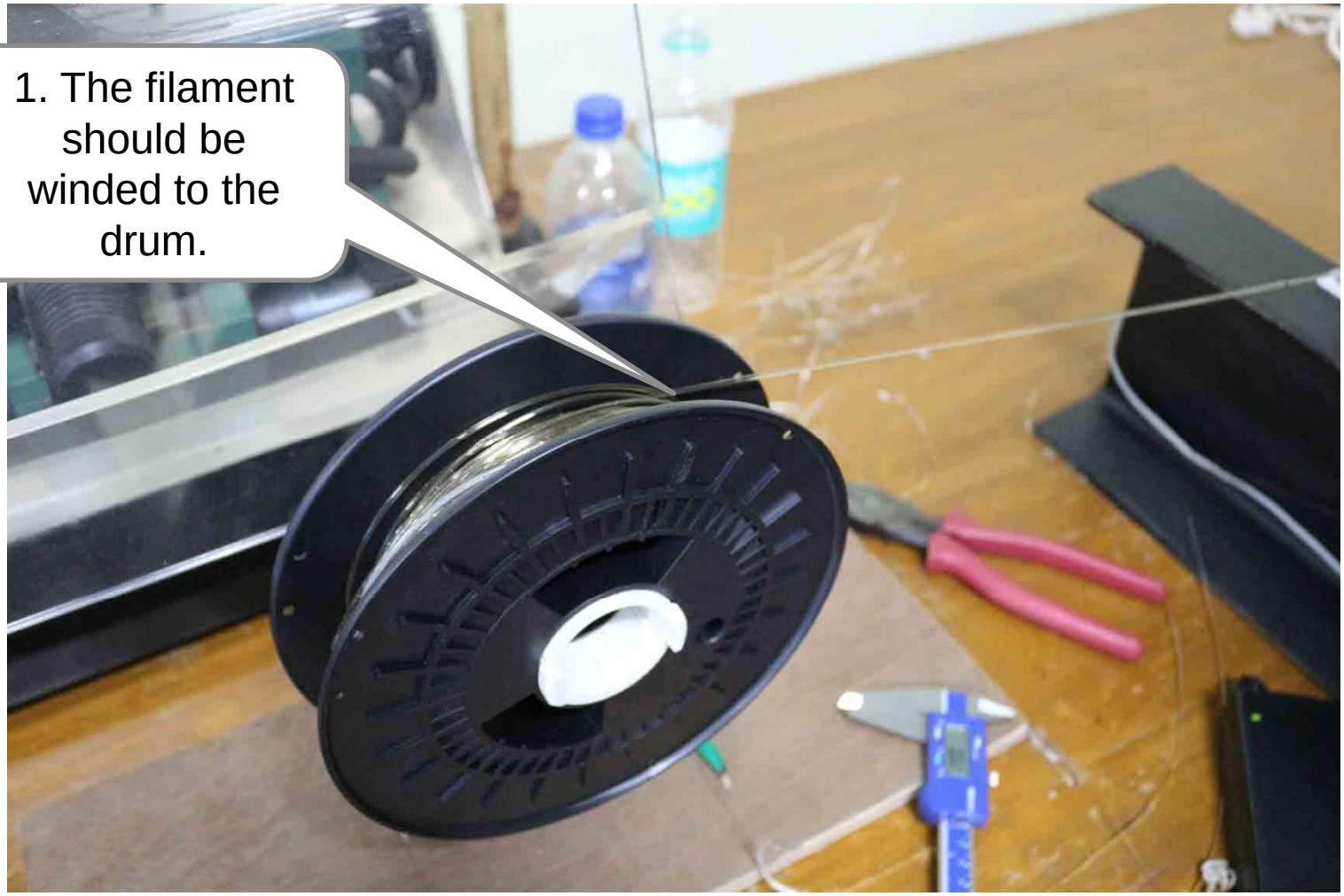
Winding

1. Plug in the winder.

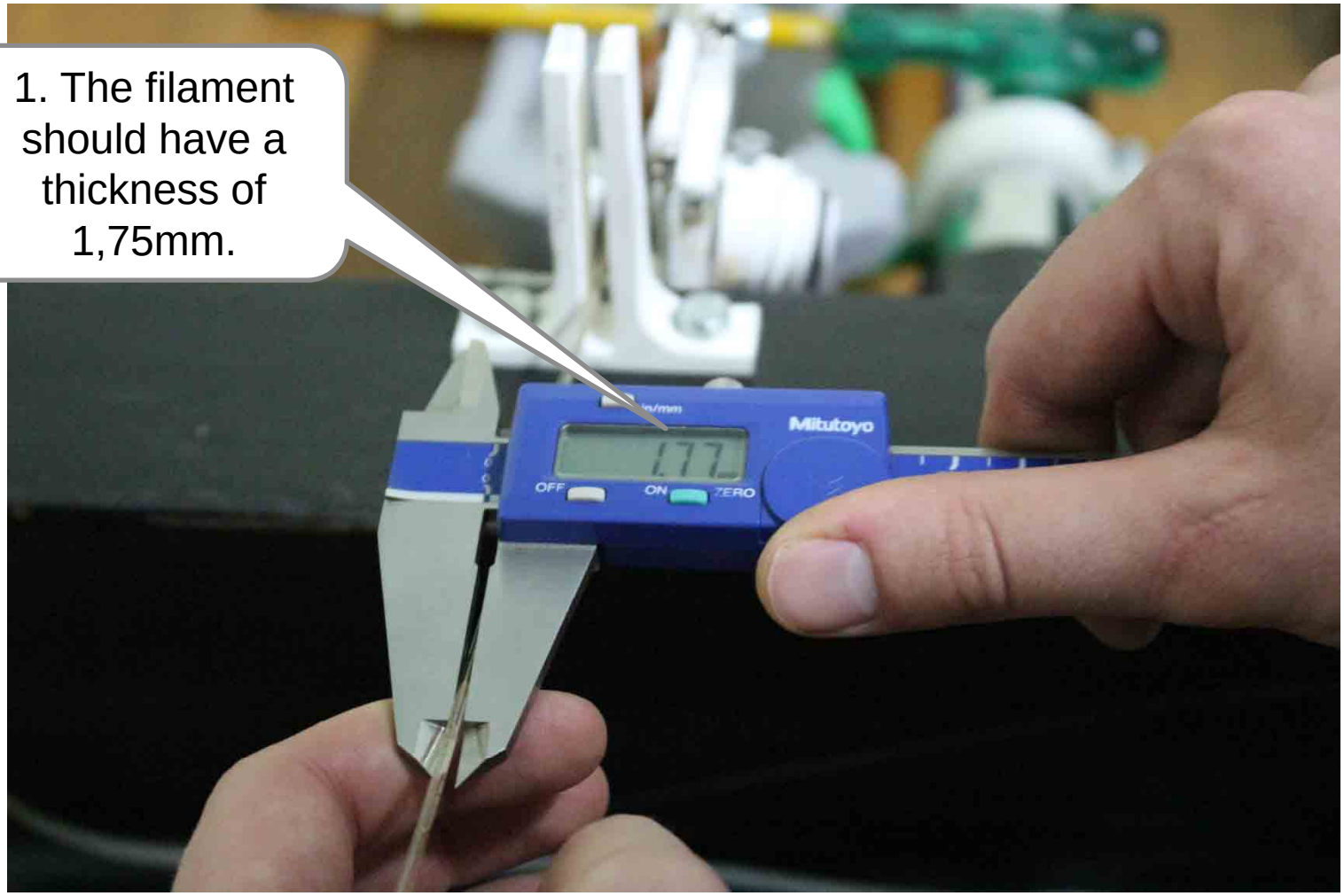


2. Mount the filament into the winder.

Winding

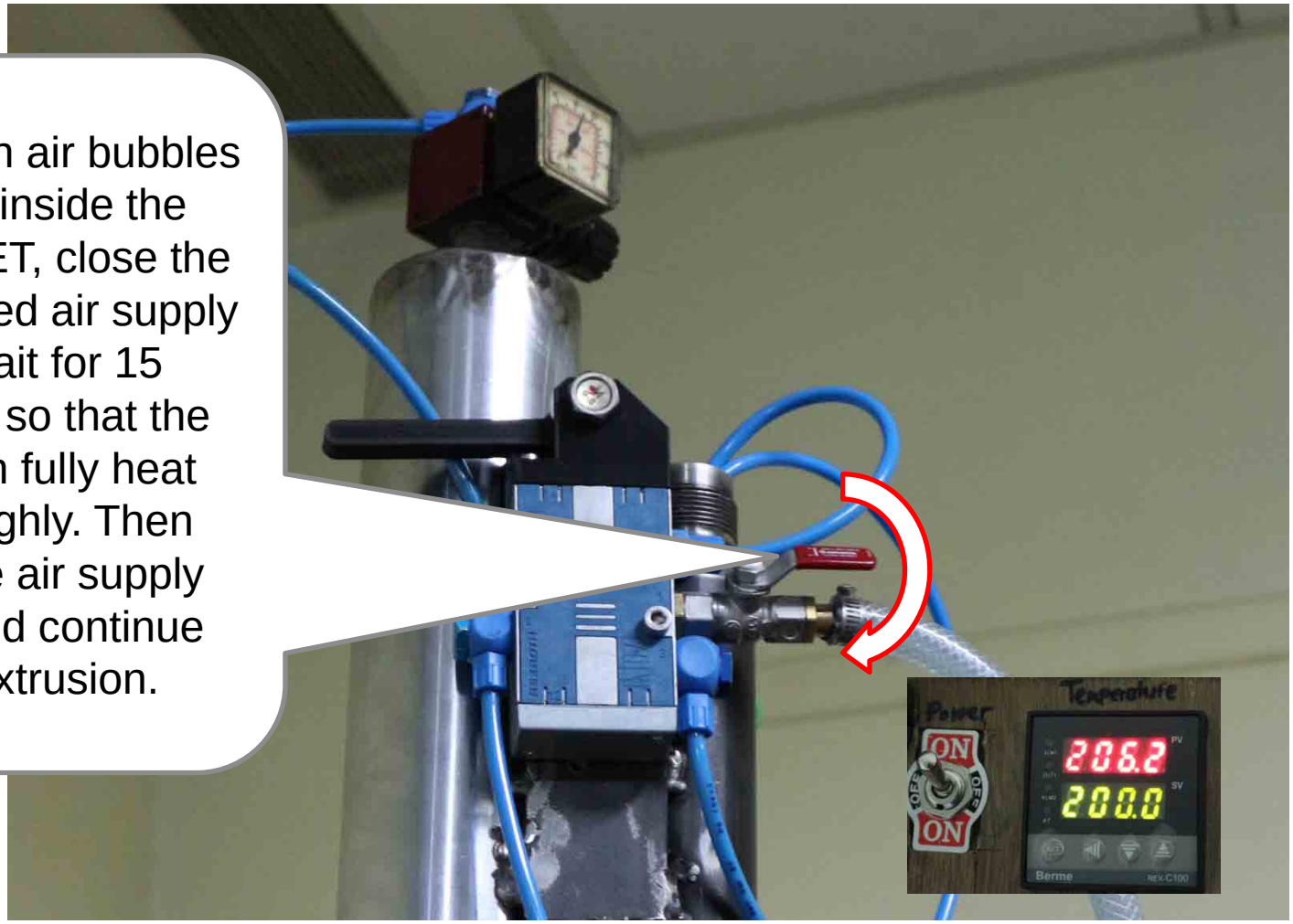


Winding


1. The filament should have a thickness of 1,75mm.
Mitutoyo
1.77
OFF
ON
ZERO

Troubleshooting

If too much air bubbles appear inside the melted PET, close the compressed air supply and wait for 15 minutes, so that the PET can fully heat thouroughly. Then open the air supply again and continue with extrusion.



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Thank you!

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