

## INSTRUCTION MANUAL

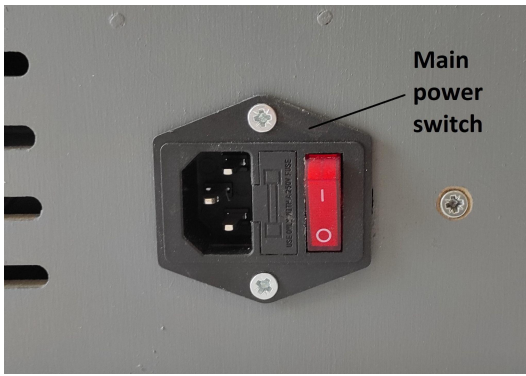
(translation of the original instructions)



## SAFETY WARNINGS AND SAFETY INSTRUCTIONS

For successful plastic recycling, FIXstruder MINI operates at high temperature, high pressure, and high torque. At the same time, some processed polymers can be potentially toxic during thermal decomposition. Therefore, when working with FIXstruder MINI, follow the safety rules:

- Work in a ventilated area.
- Install smoke and carbon monoxide sensors.
- Wear protective glasses, gloves, and clothing.
- Do not open the working FIXstruder MINI.
- Do not touch the rotating parts of the working FIXstruder MINI.
- Always turn off the power supply if you need to check the internal parts of the FIXstruder MINI.
- **Do not leave the working FIXstruder MINI unattended!**
- Learn the basics of working with the materials that you recycle.
- **Always use a grounded socket!**
- Don't change the settings of the PID controller! By doing this, the safety of the extruder is not guaranteed.



## OPERATING INSTRUCTIONS

If you are going to extrude a rod without using a winder, then place FIXstruder MINI so that the nozzle is about 1.5 meters from the floor. Fixtruder MINI is not equipped with built-in filament cooling. This may require the use of a custom cooling device.

1. Turn on the Main power switch.
2. Set the desired temperature on the PID controller.
  - \* Approximate temperatures are: ABS - 210-240°C, PLA - 210°C (add transparent PLA pellets packed in vacuum packaging to shredded PLA plastic at a ratio of about 50/50)
  - \* When switching from one type of plastic to another, remove the remaining plastic from the barrel, clean the nozzle, and change the mesh.
3. Avoid high temperatures. Select the temperature individually for each type of plastic.
4. After the nozzle reaches the desired temperature, wait for about 5-10 minutes for the plastic remaining inside the nozzle to completely melt.
5. Fill the plastic into the hopper.
6. Turn on the motor.
7. In case of blockages, jamming, short-term blocking, try to fix it by adjusting the motor power with the adjusting power knob (see a front panel foto)
8. At the end of the work, try to empty the nozzle tube from the plastic as much as possible by allowing FIXstruder MINI to work empty for about 20 minutes, and then turn it off.
  - \* power knob = jamming knob. Changes the frequency of the motor. Helps with jamming. During normal operation, it is set to the maximum frequency.

## PRECAUTIONS FOR OPERATING THE MOTOR

1. Attention! Turn on the motor when the plastic is completely melted, avoiding overloads. In this case, we are not responsible for damage.
2. Do not run the engine for a long time with an idle load. This may cause the motor to overheat. The temperature range of the motor is from 0 to 70 °C.
3. Do not open the extruder during operation! High voltage! Life threatening!
4. Temperature range can operate between -10°C and 70°C.
5. Motor features: The motor is a permanent magnet synchronous motor with metal gears, offering low speed and low noise (30dB). It supports continuous 24-hour operation with a lifespan of 5,000 hours.

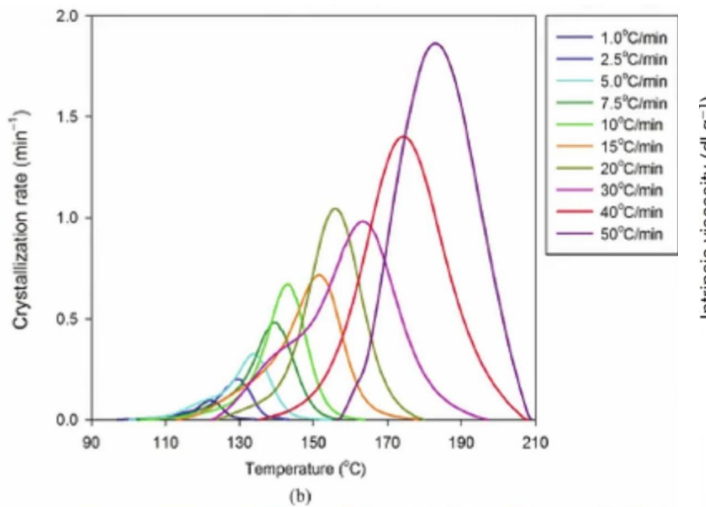
front view



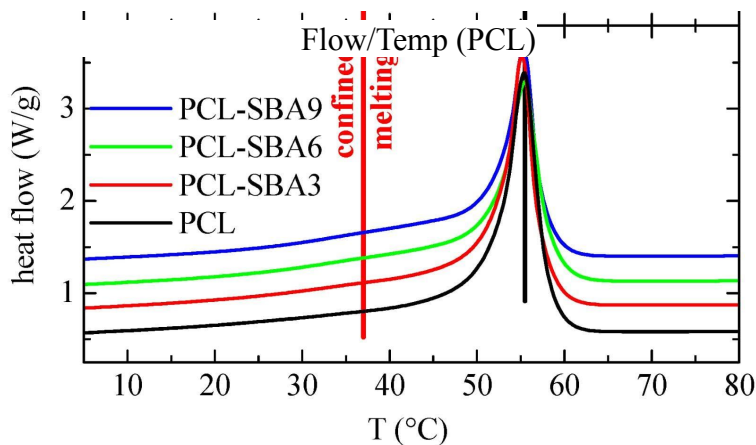
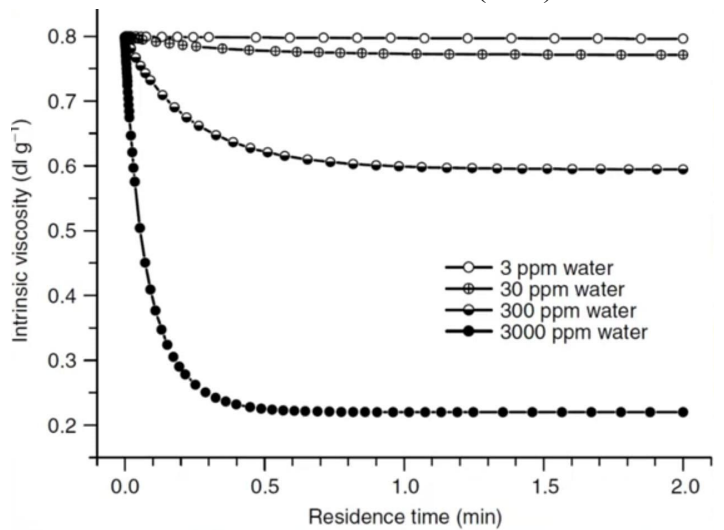
## EXTRUSION OF LOW-TEMPERATURE PLASTICS

Plastics must be thoroughly dried to prevent the formation of crystallization due to water content, which can result in brittleness and high fluidity. Please refer to the graphs for melting points and water content of specific plastics.

Crystallization/Temp (PET)



Visc/Time/Water (PET)



## CHANGING THE NOZZLE

To replace the nozzle, follow these steps:

1. Wait until it heats up, and then, using a wrench, unscrew the outer nut.
2. Pull out the filter mesh.
3. Unscrew the nozzle.
4. Clean the channel.
5. When extruding PLA plastic, it is recommended to use 2 washers so that the mesh is not pushed inward.



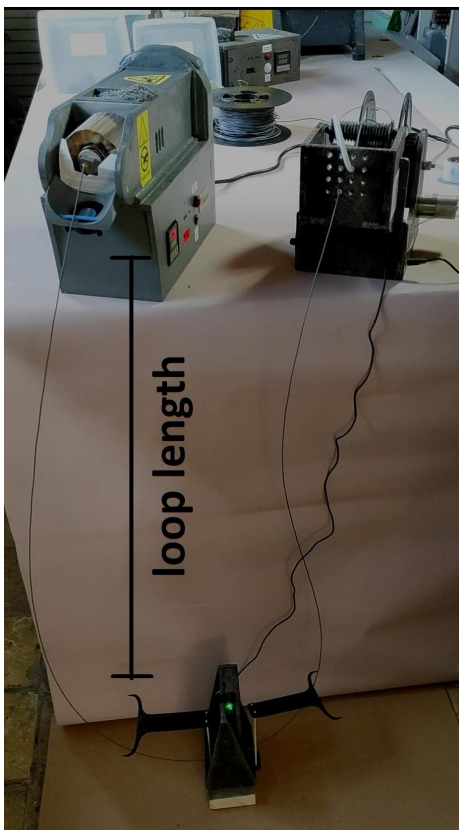
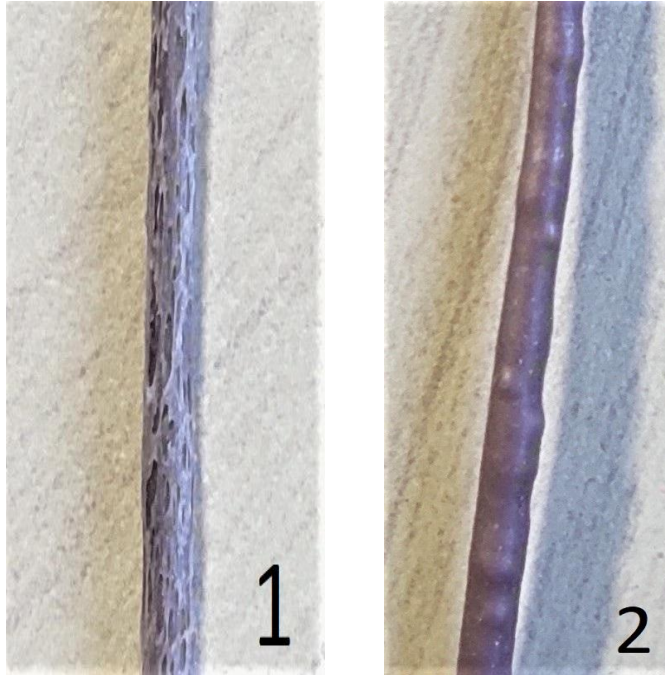
Filter mesh

## SPECIFICATIONS

1. Size 45\*20\*15 cm
2. Attention! The heater operates at 220V
3. Heater power 70W
4. Maximum peak power consumption 100W (with heater)

## TROUBLESHOOTING

- The speed and quality of the extruded rod can be affected by the uniformity of the crushed material spilling into the hopper. If the extruded rod is thin and has a sponge-like texture, and if the extrusion speed has decreased (as shown in photo 1), it may indicate that the material is stuck in the hopper.
- A blockage in the nozzle can also cause a similar extrusion defect. In such cases, replacing the metal mesh filter may be necessary.
- Defects in the rod at the beginning of extrusion (photo 2) can result from air accumulating inside the extruder barrel during the melting of the material.
- Increasing temperature due to the boiling of the plastic can also cause this problem. In such cases, it is recommended to lower the temperature.



- The diameter of the extruded rod is determined by the relationship between the temperature of the melted material and the tension of the loop length being fed into the winder.
- For automatic production, the extruder and winding machine should be set up in their default placement.