



renkforce

Ⓓ **Bedienungsanleitung**
FDM 3D Drucker Pro 6+
Best.-Nr. 2583518

ⒼⒷ **Operating Instructions**
FDM 3D Printer Pro 6+
Item No. 2583518



- Ⓓ Lesen Sie vor dem Gebrauch die Sicherheitshinweise die dem Produkt beiliegen
- ⒼⒷ Read the safety instructions supplied with the product before using
- ⒼⒷ
- ⒼⒷ



- Ⓓ Befolgen Sie diese Anleitungen, um eine sichere und ordnungsgemäße Verwendung zu gewährleisten.
- ⒼⒷ For safe and proper use, follow these instructions
- ⒼⒷ
- ⒼⒷ

CE

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2 Introduction

Dear customer,

Thank you for purchasing this product.

If there are any technical questions, please contact: www.conrad.com/contact

3 Up-to-date operating instructions

Download the latest operating instructions at www.conrad.com/downloads or scan the QR code shown. Follow the instructions on the website.



4 Intended use

The product is a 3D printer.

The product is not designed for use in the food and medical industries.

The product is intended for indoor use only. Do not use it outdoors. Contact with moisture must be avoided under all circumstances.

If you use the product for purposes other than those described, the product may be damaged. Improper use can result in short circuits, fires, electric shocks or other hazards.

The product complies with the statutory national and European requirements. For safety and approval purposes, you must not rebuild and/or modify the product.

Read the operating instructions carefully and store them in a safe place. Make this product available to third parties only together with the operating instructions.

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5 Delivery content

- Printer
- Housing
- Magnetic mat
- Spool holder
- Filament tube
- Ejector rod
- Mains cable
- USB memory stick
- USB cable
- Z-sensor calibration tool
- Hex wrench
- Pair of tweezers
- Side cutter
- 2x Small needle
- 4x Hex key (1.5mm / 2mm / 2.5mm / 3mm)
- Safety instructions
- Quick start guide
- Operating instructions
- Housing assembly instructions

6 Description of symbols

The following symbols are on the product/appliance or are used in the text:



For safe and proper use, follow these instructions. Keep them for future reference.



The symbol warns of hazards that can lead to personal injury.



The symbol warns of dangerous voltage that can lead to personal injury by electric shock.



The symbol warns of hot surfaces that can result in severe burns when touched. Read the information carefully.



The symbol warns of rotating gears that can crush hands and fingers.



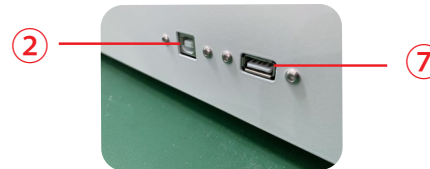
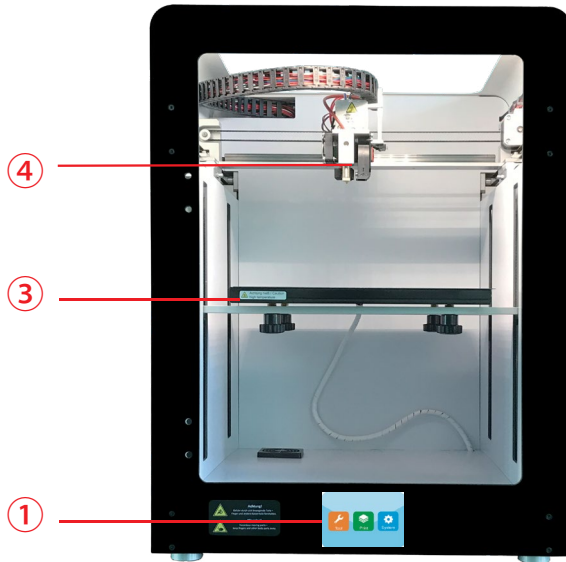
The symbol warns of closing mechanical parts that can crush hands and fingers.



This product must only be used in dry, enclosed indoor areas. It must not become damp or wet.

7 Operating elements

7.1 Printer

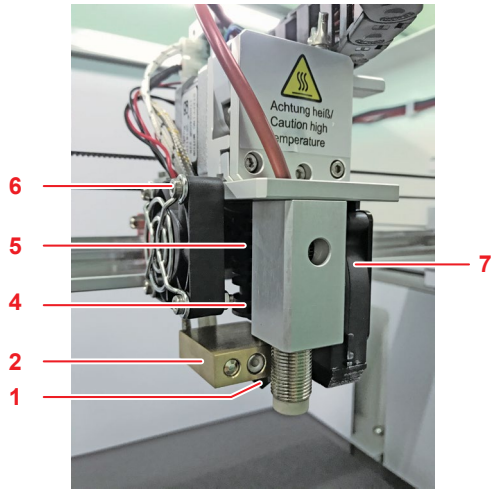


- 1 Touch screen
- 2 USB-B port
- 3 Print bed

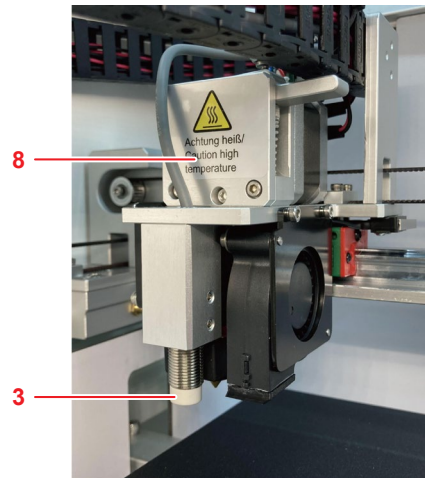
- 4 Print head
- 5 Cooling fan
- 6 Power inlet with power switch

- 7 USB-A port

7.2 Print head

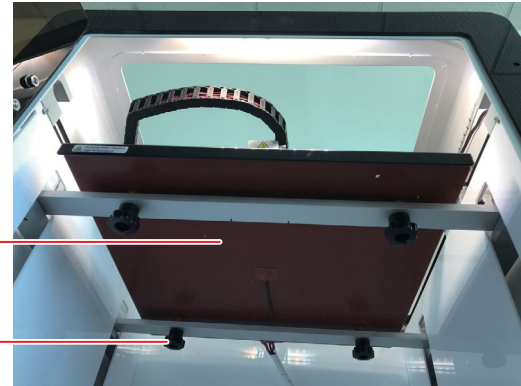
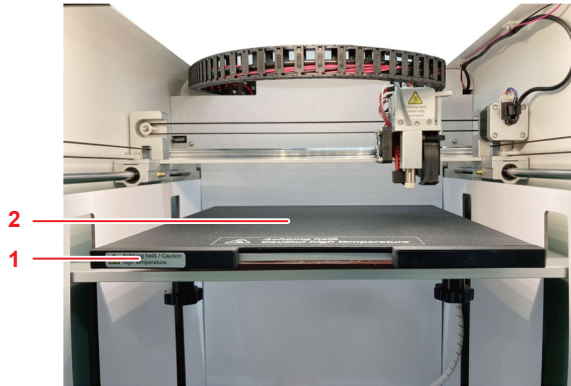


- 1 Nozzle
- 2 Heat block of hotend
- 3 Heater and NTC
- 4 Filament feed tube
- 5 Heatsink



- 6 Object fan
- 7 Extruder fan
- 8 Cover of extruder

7.3 Print bed



- 1 Print bed
- 2 Magnetic mat

- 3 Leveling screw
- 4 Heating panel

8 Touch screen menus



The touch screen is on when the power supply is connected. Do not touch the screen with sharp objects.

8.1 System menu

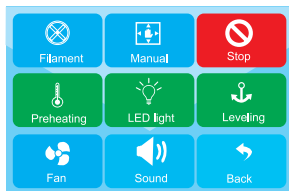


In the menu **System** you can view information about the printer system settings.

8.2 Tools menu



In the menu **Tools** you can make parameter adjustments and control the printer.



8.2.1 Emergency stop

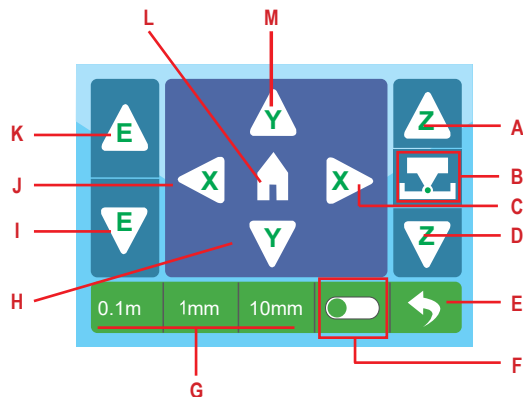


Touch the button **Stop** to switch all motors off.

8.2.2 Manual interface



In the menu **Manual** you can manually steer the print head along the X, Y, and Z-axis.

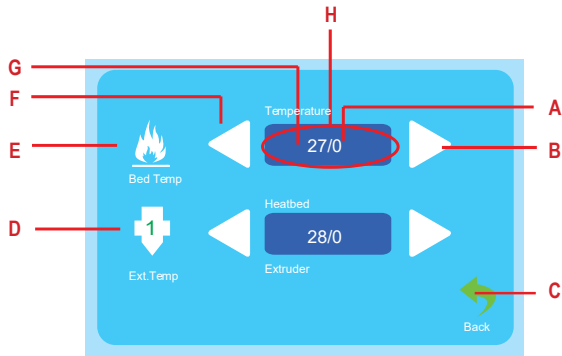


- A Move print bed up
- B Calibrate Z-offset
- C Move to right on X-axis
- D Move print bed down
- E Return to previous menu item
- F Toggle Z-offset on and off
- G Select distance increment
- H Move print bed forward on Y-axis
- I Load filament
- J Move to left on X-axis
- K Unload filament
- L Move print head into zero position
- M Move print bed backward on Y-axis

8.2.3 Preheating



In the menu **Preheat** you can set print bed and extruder temperatures.

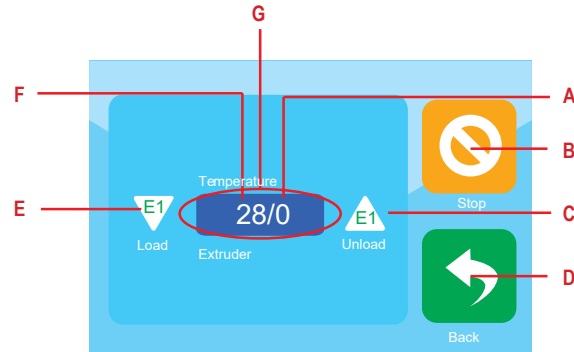


- | | |
|--------------------------------|--------------------------|
| A Target temperature | E Print bed temperature |
| B Increase temperature | F Decrease temperature |
| C Return to previous menu item | G Current temperature |
| D Extruder temperature | H Touch to start heating |

8.2.4 Filament



In the menu **Filament** you can control the loading and unloading of filaments.

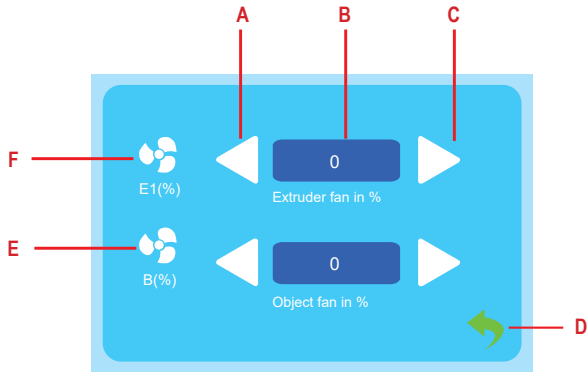


- | | |
|--------------------------------------|-------------------------------|
| A Target temperature | E Load filament |
| B Stop loading/unloading of filament | F Current temperature display |
| C Unload filament | G Touch to start heating |
| D Return to previous menu item | |

8.2.5 Fan control



In the menu **Fan** you can adjust fan parameters.



A Decrease air flow

B Touch to switch fan on and off

C Increase air flow

D Return to previous menu item

E Object fan display

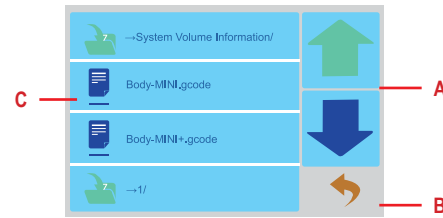
F Extruder fan display

8.3 Print menu



In the menu **Print** you select print files for printing.

8.3.1 Print file selection

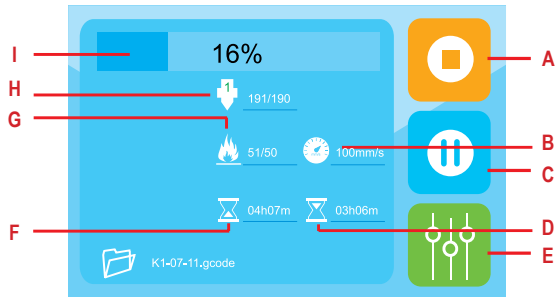


A Navigate menu

B Return to previous menu item

C Print files

8.3.2 Print control

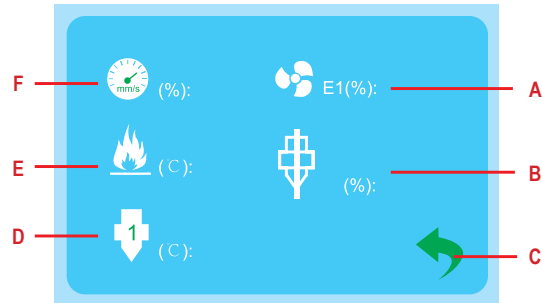


- A Stop printing
- B Print speed
- C Pause printing
- D Remaining time
- E Adjust print parameters
- F Elapsed time
- G Print bed temperature
- H Nozzle temperature
- I Print job progress bar

8.3.3 Print parameters



In the print parameters menu you can set parameters for print jobs.



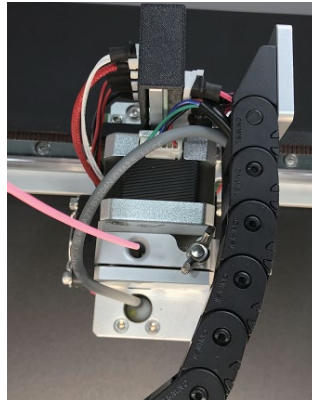
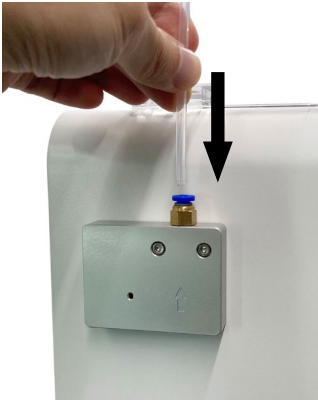
- A Set object fan parameters
- B Set flow compensation
- C Return to previous menu item
- D Set nozzle temperature
- E Set print bed temperature
- F Set print speed

9 Installation

9.3.1 Installing the spool holder



9.3.2 Installing the filament tube



1. Insert the filament tube in the feeder.
2. Insert the filament tube into the extruder.

10 Power supply

10.1 Connecting to power

1. Connect the mains cable to the power inlet on the printer.
2. Connect the mains cable to a suitable mains outlet.

10.2 Switching on/off

1. Flip the power switch into the position **I** to switch on.
→ The power control light of the switch lights up.
2. Flip the power switch into the position **0** to switch off.

Note:

Switch the printer off after use to prevent accidental starting.

11 Before printing

Before you can print you must

- calibrate the print bed
- load the filament

11.1 Calibrating the print bed

Calibrate the print bed before you use the printer for the first time, after transporting the printer, and whenever you get poor print results that you suspect are related to an incorrectly levelled print bed.

Three calibration procedures can be applied to the print bed.

Automated print bed levelling – “Auto-levelling”

Use “Auto-levelling” to level the print bed automatically. “Auto-levelling” will attempt to level the print bed with high precision and is only useful for making fine adjustments to the print bed.

Z-offset calibration

By calibrating the Z-offset you set the distance between the nozzle and the print bed. Z-offset calibration is followed by “Auto-levelling”.

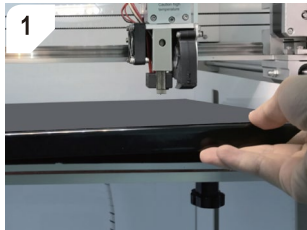
Manual print bed levelling

You level the print bed manually to prepare it for “Auto-levelling”. Manual levelling must always be followed by Z-offset calibration and “Auto-levelling”.

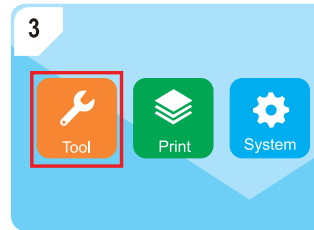
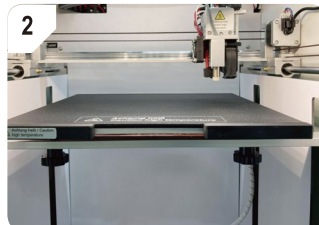
11.1.1 Using “Auto-levelling” to level the print bed

Use “Auto-levelling” to level the print bed automatically.

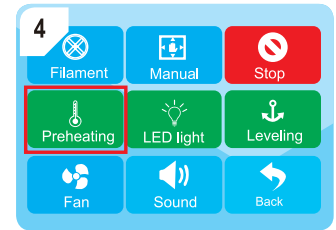
“Auto-levelling” will attempt to level the print bed with high precision and is only useful for making fine adjustments to the print bed.



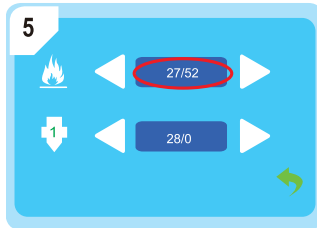
1 Insert the print bed and magnetic mat.



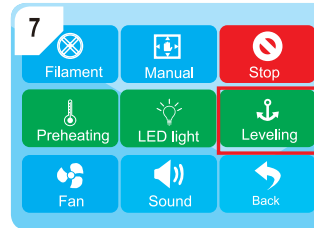
3 Open the menu **Tools**.



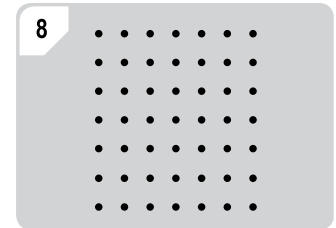
4 Touch the button **Preheating** to start the preheating process.



5 Wait until the preheat temperature has been reached.



7 Touch button **Leveling** to start “Auto-levelling”.



8 Wait for “Auto-levelling” to finish.

11.1.2 Calibrating the Z-offset

By calibrating the Z-offset you set the distance between the nozzle and the print bed.
Z-offset calibration is followed by "Auto-levelling".

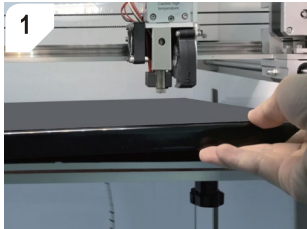


CAUTION

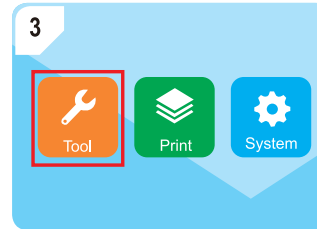
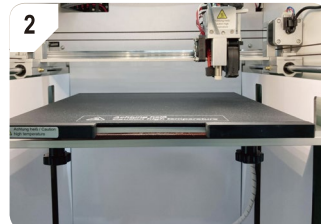
Hot print bed

Touching hot print bed can cause burns

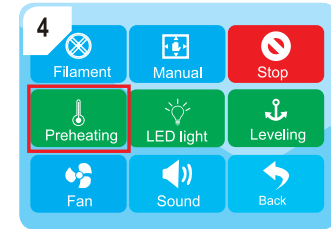
- Let cool down before touching



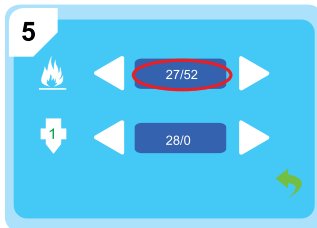
Insert the print bed and magnetic mat.



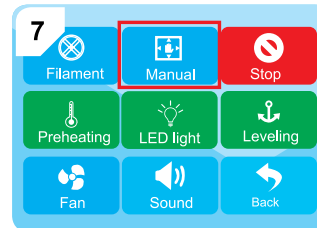
Open the menu **Tools**.



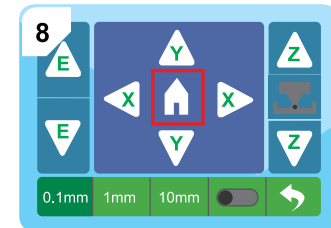
Touch the button **Preheating** to start the preheating process.




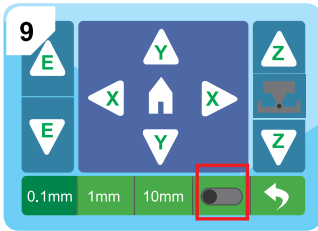
Wait until the preheat temperature has been reached.



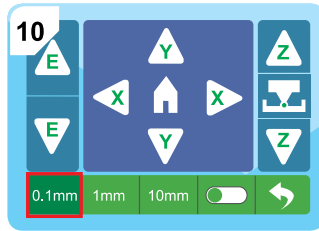
Open the menu **Manual**.



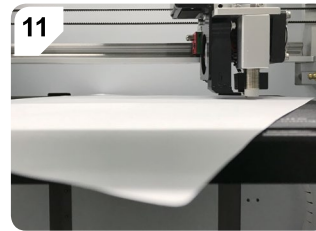
Touch  to move the extruder to its zero position.



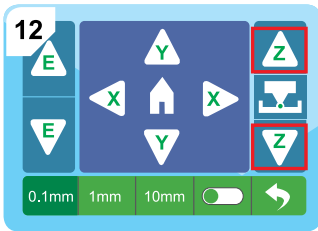
9 Activate the Z-offset calibration with the slider.



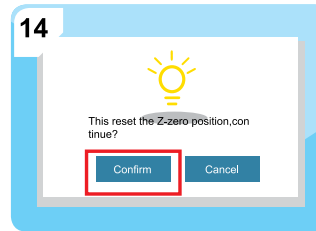
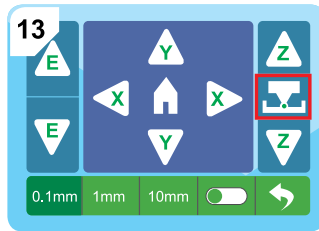
10 Touch the distance increment 0.1 mm to activate it.



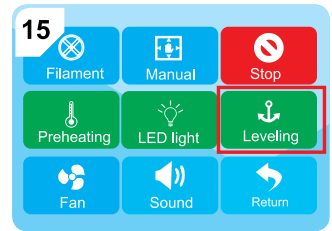
11 Slide one sheet of A4 paper (80 g) between the nozzle and the print bed.



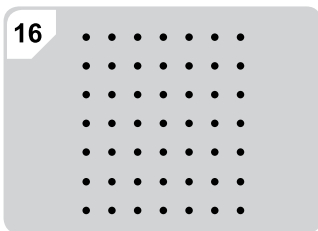
12 Slide the paper back and forth while repeatedly touching the button ▲ or ▼ to lift or lower the print bed. If you notice slight resistance between nozzle, paper, and print bed, touch the button 🖨️ to finish the calibration.



14 Confirm the Z-offset calibration.



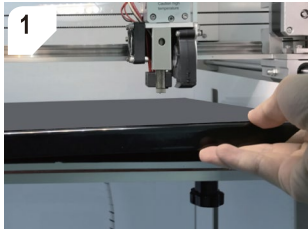
15 Touch the button **Leveling** to start "Auto-levelling".



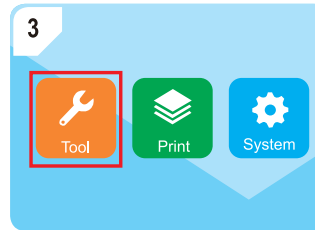
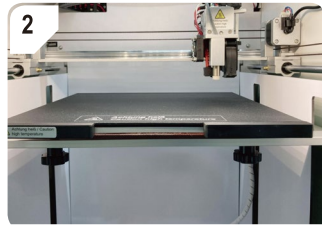
16 Wait for "Auto-levelling" to finish.

11.1.3 Levelling the print bed manually

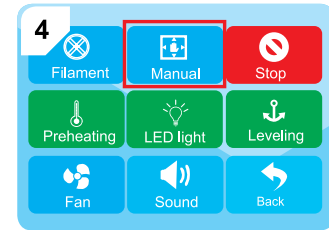
You level the print bed manually to prepare it for “Auto-levelling”. Manual levelling must always be followed by Z-offset calibration and “Auto-levelling”.



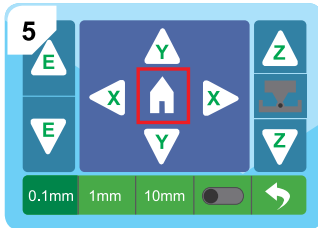
Insert the print bed and magnetic mat.




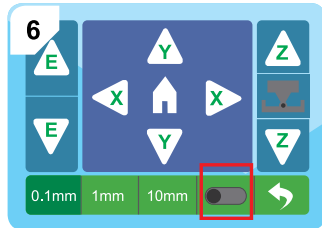
Open the menu **Tools**.



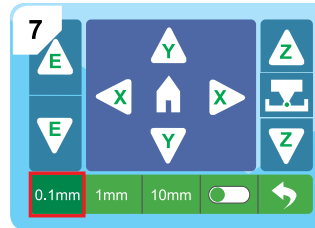
Open the menu **Manual**.



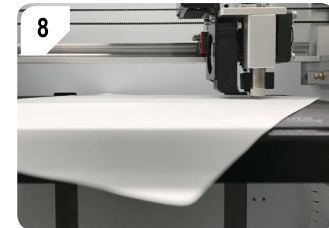
Touch  to move the extruder to its zero position.



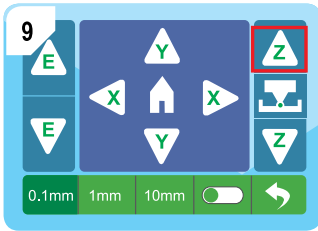
Activate the Z-offset calibration.




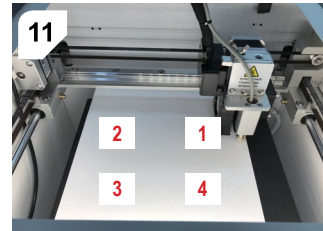
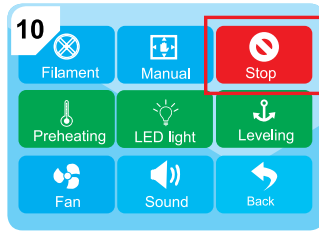
Touch the distance increment **0.1 mm** to activate it.



Slide one sheet of A4 paper (80 g) between the nozzle and the print bed.



Slide the paper back and forth while repeatedly touching the button  to lift the print bed up. As soon as you notice slight resistance between nozzle, paper, and print bed touch the button **Stop** interrupt.



Level each of the four indicated calibration points individually.

Touch the buttons     to navigate the extruder to each calibration point.

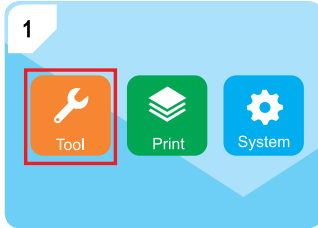
For each calibration point, slide the paper back and forth while turning the calibration screw under the print bed. Stop turning the screw as soon as you notice slight resistance between nozzle, paper, and print bed.

After calibration

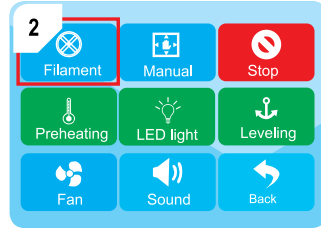
After you have calibrated each of the 4 calibration points:

1. Calibrate the Z-offset. Follow the instructions in [[▶ 11.1.2 Calibrating the Z-offset](#)].
2. Level the print bed using "Auto-levelling". Follow the instructions in [[▶ 11.1.1 Using "Auto-levelling" to level the print bed](#)].

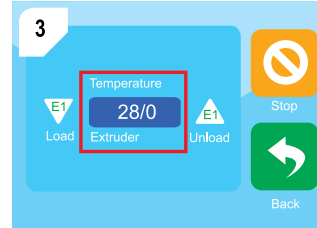
11.2 Loading filament



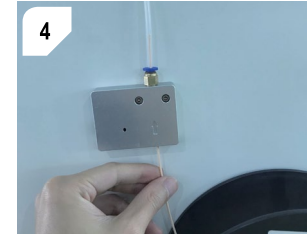
Open the menu **Tools**.



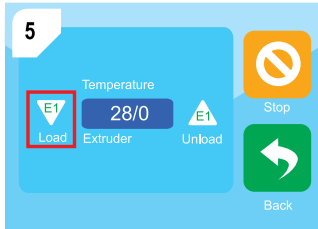
Open the menu **Filament**.



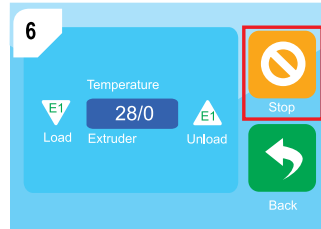
Touch the temperature display to preheat the extruder.



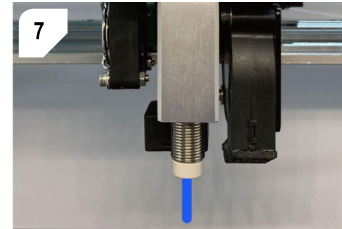
Cut the filament at an angle and then feed it into the feeder.



Touch the button **E1 Load** to load the filament into the extruder.



Touch the button **Stop** as soon as molten filament flows from the nozzle.



12 Printing

12.1 Printing from USB memory stick

1. Save the print file that contains the model to the supplied USB memory stick.
2. Connect the USB memory stick to the USB-A port on the printer.
3. Select the print file from the print menu.
4. Print the file.
 - The printer will sound an alarm after printing is complete.
5. After printing is complete, flip the power switch into the position **0**.
6. Let the printer cool down to room temperature.

12.2 Printing from computer via USB cable

After connecting the computer to the printer via USB cable, you can print 3D models directly from the slicing software (example: Ultimate Cura).

1. Connect the USB cable to the USB-B port on the printer.
2. Connect the USB cable to a USB port on the computer.
3. Start the print job in the slicing software.
 - The printer will sound an alarm after printing is complete.
4. After printing is complete, flip the power switch into the position **0**.
5. Let the printer cool down to room temperature.

12.3 Printing from computer via Wi-Fi connection

After connecting the printer to the Wi-Fi network, you can print 3D models directly from the slicing software (example: Ultimate Cura).

1. Setup the desired Wi-Fi connection by following the software instructions on the supplied USB memory stick.
2. Start the print job in the slicing software.
 - The printer will sound an alarm after printing is complete.
3. After printing is complete, flip the power switch into the position **0**.
4. Let the printer cool down to room temperature.

12.4 Removing printed models



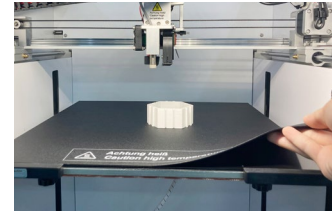
CAUTION

Hot print bed

Touching hot print bed can cause burns

- Let cool down before touching

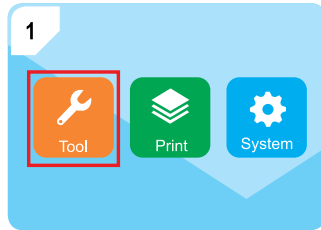
1. Flip the power switch into the position **0**.
2. Let the printer cool down to room temperature.
3. Remove the magnetic mat with the printed object.



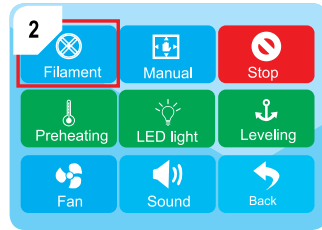
13 Filaments

13.1 Changing filaments

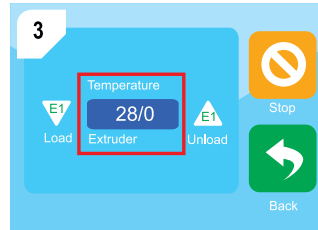
If you want to use a different filament, you must first unload the current filament and then load the new filament.



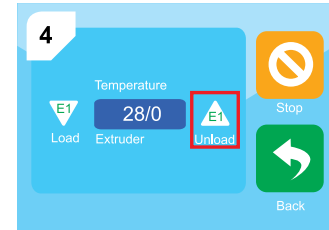
Open the menu **Tools**.



Open the menu **Filament**.



Touch the temperature display to preheat the extruder.

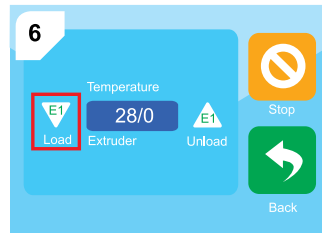


Touch the button **E1 Unload** to unload the current filament.

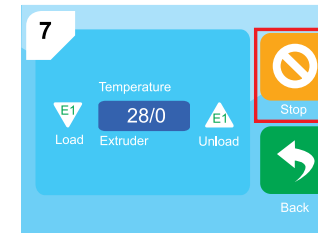


Touch the button **Stop**  as soon as the current filament has been completely retracted from the feeder.

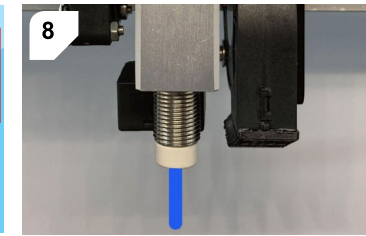
Cut the new filament at an angle and feed it into the feeder.



Touch the button **E1 Load** to load the filament into the extruder.



Touch the button **Stop** as soon as molten filament flows from the nozzle.



14 Cleaning

14.1 Cleaning the printer

Important:

- Do not use aggressive cleaning agents, rubbing alcohol or other chemical solutions. They damage the housing and can cause the product to malfunction.
- Do not immerse the product in water.

1. Disconnect the printer from the power supply.
2. Let the printer cool down to room temperature.
3. Clean the printer with a dry, fibre-free cloth.

14.2 Cleaning the magnetic mat

- Gently scrape off filament residue from the magnetic mat with a blunt knife.

14.3 Cleaning the nozzle

1. Let the nozzle cool down to room temperature.
2. Carefully wipe the nozzle after each print with a soft cloth.

Removing residual filament

1. Heat the extruder for a few minutes, then stop heating.
2. Wear heat-resistant gloves.
3. Add a few drops of anhydrous alcohol to a soft cloth and remove the residual filament from the nozzle.

14.4 Cleaning the inside of the nozzle

Clean the inside of the nozzle if residue obstructs the filament flow.



CAUTION

Hot nozzle and molten filament

Touching hot nozzle or molten filament can cause burns

- Wear heat-resistant gloves before touching



1. Wear heat-resistant gloves.
2. Heat the extruder.
3. Unload the filament. Follow the instructions in [[▶ 13.1 Changing filaments](#)].
4. Repeatedly push the small needle into the nozzle to remove residue.
5. Load the filament again. Follow the instructions in [[▶ 13.1 Changing filaments](#)].

14.5 Cleaning the extruder



CAUTION

Hot nozzle and molten filament

Touching hot nozzle or molten filament can cause burns

- Wear heat-resistant gloves before touching



1. Unload the filament. Follow the instructions in [[▶ 13.1 Changing filaments](#)].
2. Heat the extruder.
3. Wear heat-resistant gloves.
4. Insert the ejector rod through the filament inlet into extruder. See Fig. 1.
5. Move the ejector rod up and down repeatedly to loosen residue.
→ Residue will fall out.
6. Load the filament again. Follow the instructions in [[▶ 13.1 Changing filaments](#)].



Fig. 1

15 Maintenance

15.1 Calibrating the Z-sensor

Calibrate the Z-sensor after replacing the nozzle or the hotend. The calibration of the Z-sensor directly affects the precision of the “Auto-levelling” function.

1. Disconnect the power supply.
2. Let the nozzle cool down to room temperature.
3. Remove the silicon cover of the extruder.
4. On the right side of the Z-sensor, loosen the two screws. Check that the Z-sensor can be moved up and down.
5. Place the Z-sensor calibration tool under the Z-sensor and the nozzle. See Fig. 2.
6. Move the Z-sensor up or down until the Z-sensor and the nozzle align with the top of the Z-sensor calibration tool. See Fig. 3.
7. Tighten the screws on the Z-sensor.
8. Calibrate the print bed.

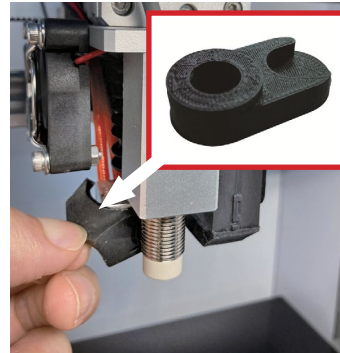


Fig. 2

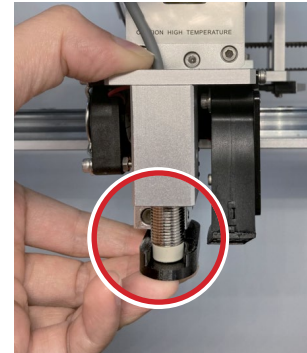


Fig. 3

15.2 Replacing the fuse

1. Remove the mains cable from the power inlet on the printer.
2. Pry open the fuse box. See Fig. 4.
3. Remove the blown fuse.
4. Insert a new fuse of the same specifications.
5. Close the fuse box.
6. Connect the mains cable to the power inlet on the printer.



Fig. 4

16 Storage

1. Disconnect the power supply.
2. Unload the filament.
3. Clean the printer.
4. Let the printer cool down to room temperature.
5. Store the printer in a dry, dust-free location out of the reach of children.

Note:

PLA filaments will over time absorb moisture and dust when exposed to the open air, which can affect the printing quality. Seal the filament in an air-tight container when not in use.

17 Troubleshooting

Problem	Possible solution
No power supply.	Check mains connection.
Display does not switch on.	Check fuse. Replace fuse if blown.
Filament snaps.	Check that filament spool turns freely.
	Check if filament is trapped on the way from spool to extruder.
Too little filament is extruded.	Clean the inside of the nozzle.
	Clean the extruder.
Nozzle touches print bed.	Calibrate the print bed.
Printed object has defects.	Check that set temperature matches temperature requirements of the filament in use.
	Remove residual filament from nozzle.

18 Disposal



This symbol must appear on any electrical and electronic equipment placed on the EU market. This symbol indicates that this device should not be disposed of as unsorted municipal waste at the end of its service life.

Owners of WEEE (Waste from Electrical and Electronic Equipment) shall dispose of it separately from unsorted municipal waste. Spent batteries and accumulators, which are not enclosed by the WEEE, as well as lamps that can be removed from the WEEE in a non-destructive manner, must be removed by end users from the WEEE in a non-destructive manner before it is handed over to a collection point.

Distributors of electrical and electronic equipment are legally obliged to provide free take-back of waste. Conrad provides the following return options **free of charge** (more details on our website):

- in our Conrad offices
- at the Conrad collection points
- at the collection points of public waste management authorities or the collection points set up by manufacturers or distributors within the meaning of the ElektroG

End users are responsible for deleting personal data from the WEEE to be disposed of.

It should be noted that different obligations about the return or recycling of WEEE may apply in countries outside of Germany.

19 Declaration of Conformity (DOC)

Conrad Electronic SE, Klaus-Conrad-Straße 1, D-92240 Hirschau hereby declares that this product conforms to the 2014/53/EU directive.

- Click on the following link to read the full text of the EU declaration of conformity:
www.conrad.com/downloads

Enter the product item number in the search box. You can then download the EU declaration of conformity in the available languages.

20 Technical data

20.1 Power supply

Input voltage	100 – 240 V/AC, 50 – 60 Hz
Power consumption	500 W
Fuse.....	F10AL, 250 V

20.2 Printing

Supported file format	AMF / STL / OBJ / gcode
Printing technology	FDM
Build volume	280 x 280 x 300 mm
Supported filament diameter Ø.....	1.75 mm
Supported filament type.....	PLA, PLA Compound, PETG, ABS, ASA, PC, PP, PA, TPU 95A, TPU 87A, TPE 83A, Carbon fiber, PEEK, PEI
Nozzle diameter.....	0.4 mm
Print layer thickness	min. 0.05 mm / max. 0.3 mm
Extruder temperature.....	max. 260 °C
Print bed temperature.....	max. 120 °C
Print speed	20 – 300 mm/s
Building accuracy	+/-100 µm

20.3 Software

Software compatibility.....	Windows® 7 and higher
Supported slicing software	Ultimaker Cura, Slic3r

20.4 Wi-Fi module

Wi-Fi frequency range	2412 - 2472 MHz (802.11b/g/n20)
Wi-Fi transmission power	802.11b : 10.91 dBm 802.11g : 11.98 dBm 802.11n-HT20: 13.04 dBm
Transmission distance.....	50 m

20.5 Environment

Operating conditions.....	+5 to +35 °C, 30 - 90% relative humidity (non-condensing)
Storage conditions.....	+5 to +45 °C, 30 - 90% relative humidity (non-condensing)

20.6 Others

Dimension without spool.....	480 x 480 x 640 mm
Weight	35 kg

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