

YSOFT

BE3D

DEERED

3D PRINTER

USER MANUAL

INSTALLATION AND SERVICE INSTRUCTIONS,
WARRANTY TERMS AND CONDITIONS



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Meet **DeeRed**, a professional 3D printer whose print volume and quality meets the requirements of every demanding designer, manufacturer, or project architect. With two extruders, a large build volume, and a user-friendly interface, not to mention high print quality, **DeeRed** is one of a kind.

The printer's build volume is one of the largest available in printers using the Fused **Filament Fabrication (FFF)** technology, allowing **DeeRed** to print models up to the dimensions of **400 x 600 x 800 mm**. The printer's two extruders enable printing using two different materials or two different colors.

User control is as simple as ever with a large touchscreen and the **DeeControl** software, an application that prepares project files for 3D layering. **DeeControl**, developed by **be3D**, is available for both Macs and PCs running Windows.

Connect DeeRed to your network via an Ethernet port and monitor the printing process remotely using the included webcam. Print with a wide array of polymers, including **PLA** (polylactic acid), **ABS** (acrylonitrile butadiene styrene), and **PVA** (polyvinyl alcohol). Finally, do not worry about electricity requirements – all the **DeeRed** 3D printer needs is a standard power socket.

1. SPECIFICATIONS

Print technology	FFF
Build volume (X, Y, Z)	600 × 400 × 800 mm
Extruders	2
Print bed	heated glass bed
Print accuracy	0.1 mm
Nozzle diameter	0.6 mm
Layer thickness	0.1 / 0.2 / 0.3 mm
Maximum print speed	100 mm/s
Maximum movement speed	200 mm/s
User interface	7" touchscreen
Internal lighting	LED
Power supply	100–240 VAC / 50–60 Hz
Input power	120 V / 1.3 kW; 240 V / 2.6 kW
Full dimensions	1150 × 750 × 1950 mm
Weight	250 kg
Connectors	LAN, USB (mass storage)

2. CERTIFICATION



§ 15.105 Information to user

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.

3. SAFETY PRECAUTIONS

3.1 Classifications Used



Caution

Use heightened caution when working with this device.



Read the manual

Read the User Manual before using this device. Follow the included instructions.



Unplug the device

Unplug the device from the power source before moving it or using it in any other way than indicated in the User Manual.



Danger of injury

This device includes moving parts that may cause injury.



Hot components

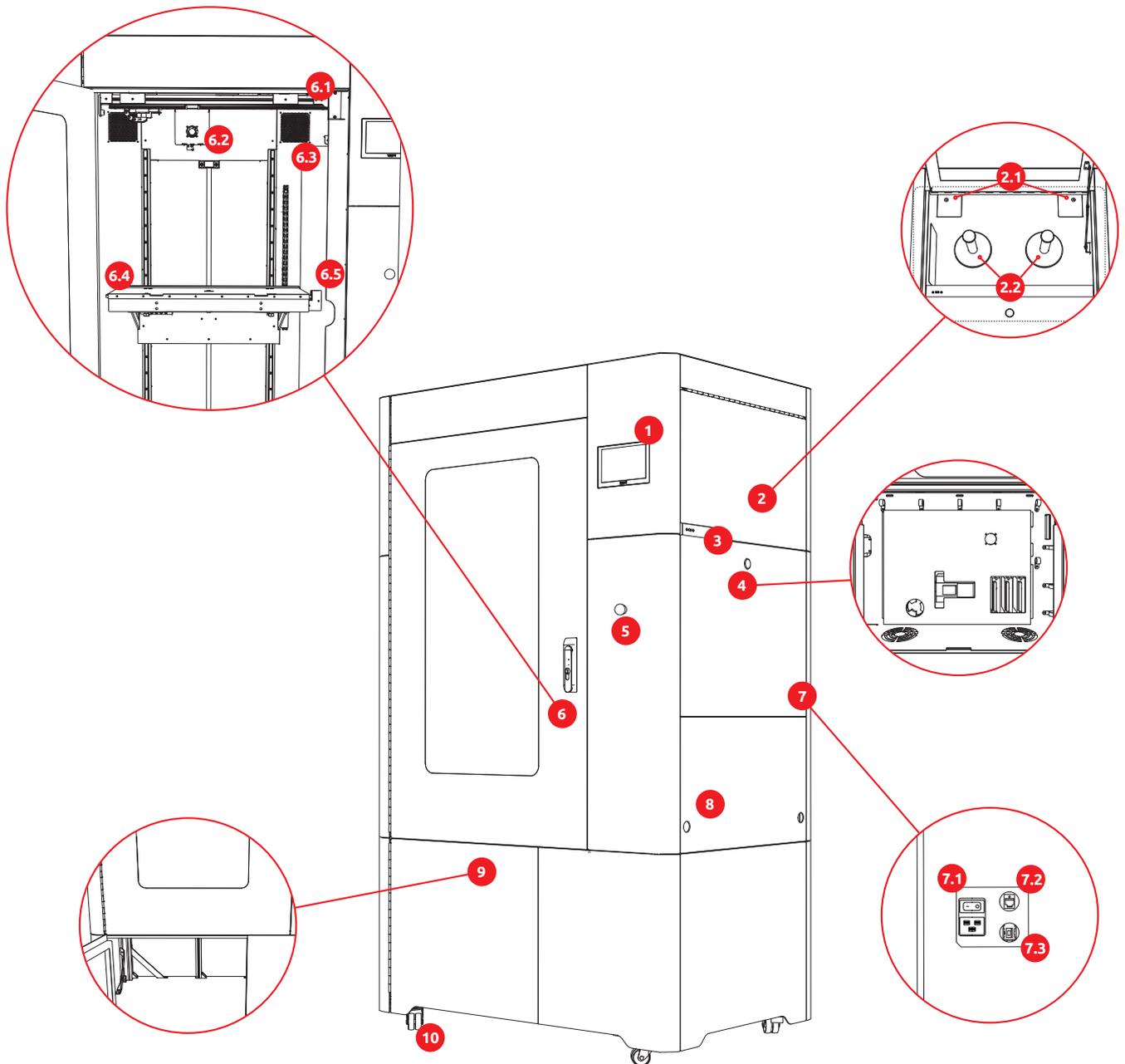
This device contains components that may be hot and cause injury.

3.2 Safety Precautions

- No part of the printer, its accessories, the consumables it uses, or the models it produces are intended for consumption.
- Some accessories are sharp, please use heightened caution.
- The user is responsible for any damage to the printer caused by improper manipulation or use that is in conflict with the User Manual.
- The printer should not be used by children. It should be used by persons aged 18 and over; in all other cases, the supervision of adults is required.
- Do not leave the printer unattended when in use.
- Some parts of the printer may operate at temperatures higher than 60 °C. There is danger of burning; avoid contact with hot parts.
- Persons with a physical disability that are unable to use the printer to its full extent by themselves, can only use it under adult supervision.
- Make sure the printer is complete and does not show any signs of damage before use.
- Incorrect use may lead to electrical injury.
- The printer is heavy. Do not drop it; failure to observe this may injure the user or damage the printer.
- The printer must be disposed of in accordance with environmental law.
- The printer must be kept away from any flammable substances.
- The printer generates an electromagnetic field that can influence the functionality of cardiac pacemakers, cochlear implants, and pumps.

4. OVERVIEW

4.1 Description of Printer Components



1. Display

The display is the main component used for interacting with the printer. It carries out the user's instructions and reports on the status of the printer and the processes that are taking place.

2. Filament Storage Area

Open the doors of the printer by pushing on the lower part of the frame. This area is used for storing filament spools. Only use filaments authorized by the printer's manufacturer.

2.1. Filament Entry Points

The filament storage area contains two filament entry points, each for a different type (or color) of filament. Both entry points contain a sensor that detects whether filament has been fed into the feeder tube, as well as detecting whether filament has run out during printing. If this occurs, the printing process is paused and the user is prompted to end the printing job or to replace the filament.

The left filament entry point is considered primary. The right filament entry point is considered secondary.

2.2. Spool Holders

The filament storage area contains two spool holders. The spool holders have been constructed to carry a maximum of 2 spools weighing up to 10 kg. Only one spool may be placed on each spool holder.

3. USB Connector

The USB connector is used for connecting external USB devices to the printer, such as USB flash drives, external USB power supplies, or memory card readers. Please check with the supplier/manufacturer the compatibility of any USB device not part of the delivery.

4. Electrical Installation

The electrical installation components are located behind a locked door. The printer's power supply, output electronics, and communication bus system are covered by a metal plate. The visible, uncovered section, contains motor control units, fuses, and circuit breakers. Do not handle the motor control units when using the printer.

4.1. Fuses

The fuses protect the low-current circuit of the printer. If a power surge (the excessive consumption of electric current) occurs, the fuses will blow – this will generally happen during an overload or in the case of a short circuit. In order for the printer to become functional again, the fuses must be replaced (see chapter 9.7 "Replacing the Fuses", on page 34).

4.2. Circuit Breakers

The printer's wiring is protected by circuit breakers. If a power surge (the excessive consumption of electric current) occurs, the circuit breakers will be switched off – this will generally happen during an overload or in the case of a short circuit. In order for the printer to become functional again, the circuit breakers must be reset (see chapter 9.8, "Resetting the Circuit Breakers", on page 35).

5. Emergency Power Switch

The emergency power switch is located on the front part of the printer, right under the display. When switched off, it will immediately turn off the printer. It is primarily meant to be used in situations that could lead to injury or printer damage.

6. Main Doors/Inside the Printer

The printing area (print chamber) can be accessed through the printer's main doors. The doors can be locked; open them by pulling out the lower part of the handle and turning it 90° clockwise. The doors contain a sensor that detects whether they are open or closed.

The printing process takes place in the printing area (print chamber). This area may be hot, so please use caution when opening the main doors. It also contains many of the printer's key components.

6.1. Magnetic Locks

The upper and the lower corners of the doorframe contain a magnetic lock, which stops the door from opening during the printing process and protects the user from potential injury.

6.2. Print Head

The print head is located on mechanical rails in the upper part of the printing area. One of the printer's key components, it is used for layering the filament onto the print bed and then, later, onto the already printed parts of the model. The print head contains tubing that guides the filament into the nozzle, which is located in the lower part of the print head.

6.3. Waste Chute

The waste chute is located in the right back corner of the printing area and leads to a wastebasket placed in the printer's storage area. It has been designed to capture any waste material produced during the printing process – a spatula, placed on the edge of the chute, scrapes the nozzle clean every time it passes over it on its way to the print bed. The removed filament then falls through the chute straight into the wastebasket.

6.4. Print Table

The print table ensures vertical movement during the printing process. The heated print bed is placed on the upper part on the table; the first layer of the model is glued to it. The print bed is heated from below and can reach high temperatures (up to 120 °C), so please use heightened caution when working or coming into contact with its surface.

To remove the glass bed, loosen the two clips on the front part of the table. Use caution whenever you come into contact with the print bed.

6.5. Offset Sensor

The offset sensor calibrates the printer before the start of each print job.

7. Connectors

The connectors are located on a separate panel on the back of the printer, towards the right side. When plugging in cables, make sure there is enough space around the printer for them to drop down naturally – they must not be bent by force. For safety reasons, the user must have access to the panel with the connectors as well as to the socket to which the power cable is connected.

7.1. Power Connector with Master Switch

Plug the power cable into the connector to connect the printer to the electricity network. The connector includes a two-stage switch that can switch the power off if necessary.

7.2. LAN Connector

The LAN connector enables the user to connect the printer to the local network by means of an Ethernet cable.

7.3. USB Connector

This connector is identical to the one placed behind the doors to the filament storage area.

8. Grip Insertion Cavities

Insert the provided grips into these threaded cavities to lift and carry the printer. If the original grips are used, the cavities are able to hold the printer's weight.

Do not use other grips than those provided by the manufacturer!

9. General Storage Area

The general storage area contains the wastebasket, which catches the waste material produced during the printing process (the waste falls into the basket through the waste chute located in the right back corner of the printing area). Check the wastebasket regularly and empty it when necessary to prevent it from filling up and jamming the waste chute.

The general storage area can also be used for storing tools, materials and printed models.

10. Rollers/Stands

By default, the printer is delivered with screw-on stands. In the installation process, however, the stands can be replaced by a set of rollers (the rollers are delivered together with the printer).

4.2 Safety Components

4.2.1 Open Door Sensor

The sensor detects whether the doors to the printing area are open or closed. If they are open, the printer will not proceed with a print job or start a new one.

4.2.2 Handle with Lock

The handle on the doors to the printing area contains a mechanical lock, which can only be opened by a key. The key may be used to lock the doors, so that unauthorized persons cannot access the printing area.

4.2.3 Emergency Power Switch

The emergency power switch is located on the front part of the printer, right under the display. When switched off, it will immediately turn the printer off. Use it only in situations that could lead to injury or printer damage.

4.2.4 Print Bed Heating Thermostat

The print bed thermostat is located inside the print table and protects the printer from overheating and damage. If the print bed temperature exceeds 120 °C, the thermostat will disconnect the heating unit from the power supply. As soon as the temperature drops, the thermostat will reconnect the power supply and the heating unit will start heating up again.

4.2.5 Magnetic Locks

Both the upper and the lower corners of the doorframe contain magnetic locks, which seal off the printing area until the mechanisms inside have stopped moving and the temperature of the heated components has dropped to a safe level.

4.2.6 Fuses

The fuses protect the printer's electronic circuits and will blow in case of a power surge. In order for the printer to become functional again, the fuses must be replaced (see chapter 9.7, "Replacing the Fuses", on page 34).

4.2.7 Circuit Breakers

The printer's wiring is protected by circuit breakers. If a power surge (the excessive consumption of electric current) occurs, the circuit breakers will be switched off. In order for the printer to become functional again, the circuit breakers must be reset (see chapter 9.8, "Resetting the Circuit Breakers", on page 35).

4.3 Accessories

4.3.1 List of User's Accessories

Basic Tools

- Set of Allen keys
- be3D tool

Model Processing Tools

- Spatula
- Snipping pliers for small electronics
- Small lineman's pliers
- Set of scalpels
- Utility knife with a snap-off blade
- Set of small files
- Safety glasses
- Safety work gloves

Basic Accessories

- Flash drive (16 GB)
- DeeRed/be3D/Y Soft stickers
- Manuals
- Quick Step poster
- Cards describing service tasks

Consumables

- Filament spools (2.5 kg + 2.5 kg; PLA + PVA)
- Set of spare nozzles (5 pieces + inner tubing)
- Spare set of tubing
- Spare set of fuses: "glass tube fuses"; "fast-blow fuses" 5 A; 6.3 A; 3.15 A
- Glue sticks (10 pieces)

4.3.2 List of DeeRed's Accessories

- Trash bin
- Shackle (4 pieces)
- Grips (4 pieces)
- Adjustable wheels (4 pieces)
- Adjustable feet (4 pieces)
- Power cable

5. MATERIAL DESCRIPTION AND SELECTION

5.1 Material Properties

The DeeRed printer supports printing with four basic types of filament material. The properties of each of these filaments vary considerably.

5.1.1 PLA (Polylactic Acid)

PLA is a basic building material, the firmest of the supported types. It is characterized by a lower thermal resistance, but also produces highly stable prints in maximal sizes.

PLA is suitable for view models, large models, and models requiring firmness.



5.1.2 ABS (Acrylonitrile Butadiene Styrene)

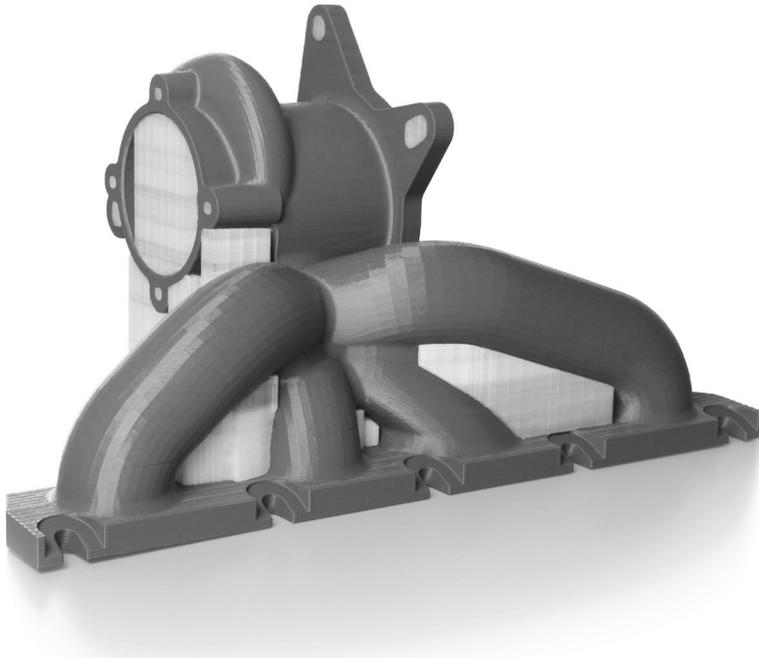
ABS is an industrial plastic material known for being highly resilient and easy to process. Due to its high level of shrinkage, though, it is not recommended for large models.



ABS is suitable for models that will be subjected to mechanical stress, models with a higher heat resistance, and models that require easy surface processing.

5.1.3 PVA (Polyvinyl Alcohol)

A water-soluble filament, PVA is used for supports, which can then easily be removed in a water bath or under a stream of water. PVA's properties (heat and others) make it compatible with PLA.



5.1.4 HIPS (High Impact Polystyrene)

HIPS has similar properties to ABS. It is also soluble in a solvent known as "limonene/lemonade". So apart from being used as a stand-alone printing material, it is often used for supports in ABS models.

6. PRINTER SETUP

Before the printer is used for the first time, it has to undergo installation. This is the responsibility of the supplier. As DeeRed offers high-quality printing, in order for this service not to be compromised, the user is not allowed to move, lift, or tip the printer without the assistance of authorized technical support.

6.1 Operating Requirements

- Operating temperature: 15–25 °C
- Maximum humidity: 80 %
- Dust-free environment
- Firm and stable floor (prevents vibration transfer from the surrounding area)
- Power requirements: 230 V / 2.6 kW or 120 V / 1.3 A
- Minimal fusing current: 16 A / type B or 15 A
- The printer must be placed 2 m or more from any heat source
- Minimal ceiling height: 2.5 m
- Manipulation and service area around the printer:
 - Left: 50–80 cm
 - Right: 50–80 cm
 - Front: 80–120 cm
 - Back: 30–70 cm
- Installation space: 1510 × 1505 × 1950 mm
- The printer must be placed in a well-ventilated area.

6.2 Printer Installation

Printer installation is carried out by a service technician appointed by the supplier.

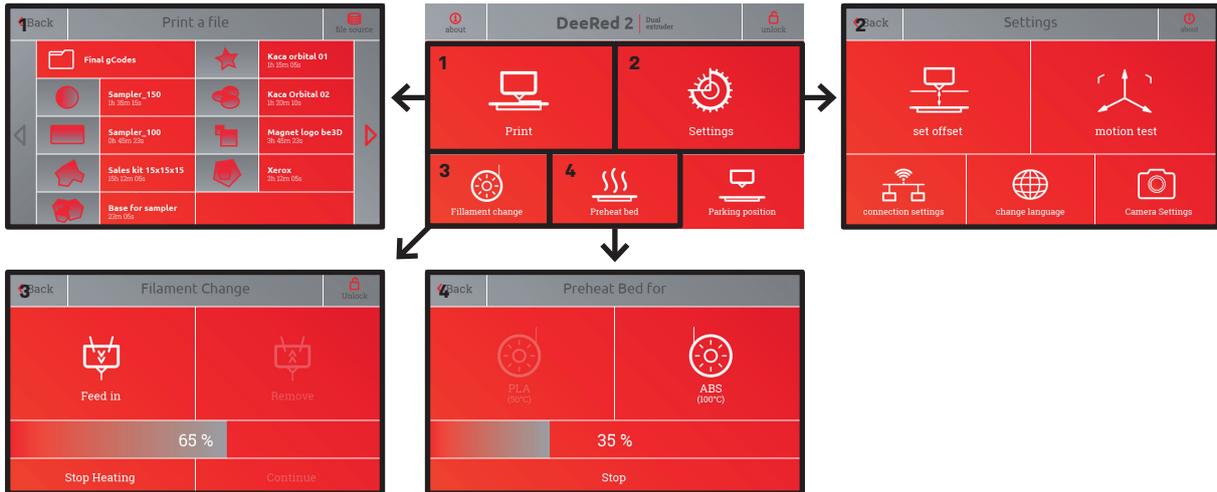
6.3 Connecting the Printer to the Network

If the user wants to take advantage of the printer's network functions, they must connect it to the network via Ethernet – an Ethernet connector can be found on the back of the printer (see chapter 4, "Overview", on page 9). After the printer has been connected to the network, users can use the DeeControl software to send print jobs. The software will also display the status of the printer – whether it is waiting for a print job to load, printing, or otherwise occupied (e.g., updating its firmware).

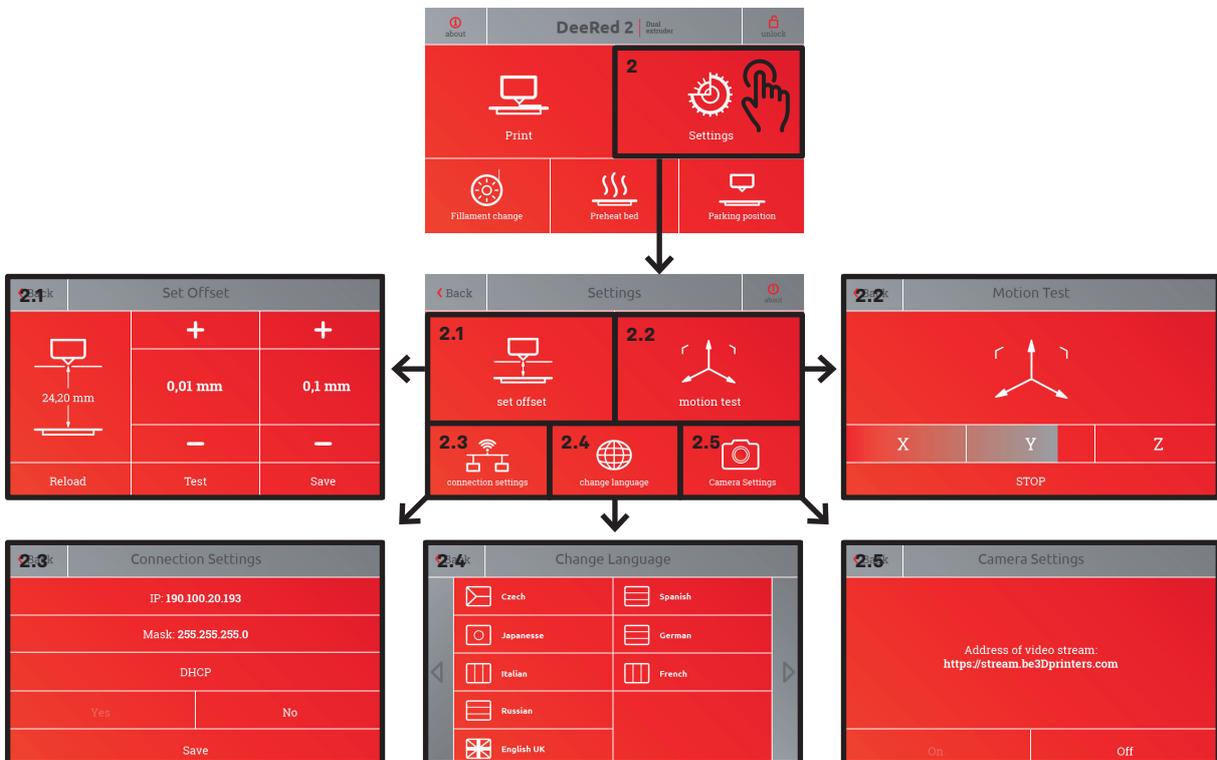
The printer can be automatically configured through a DHCP server. In the main menu, this option is selected as default (see chapter 7.2, "Working with the Printer Touchscreen – General Settings", section "Connection Settings", page 18). If a DHCP server is not available, the network connection settings can also be configured manually.

7. WORKING WITH THE PRINTER

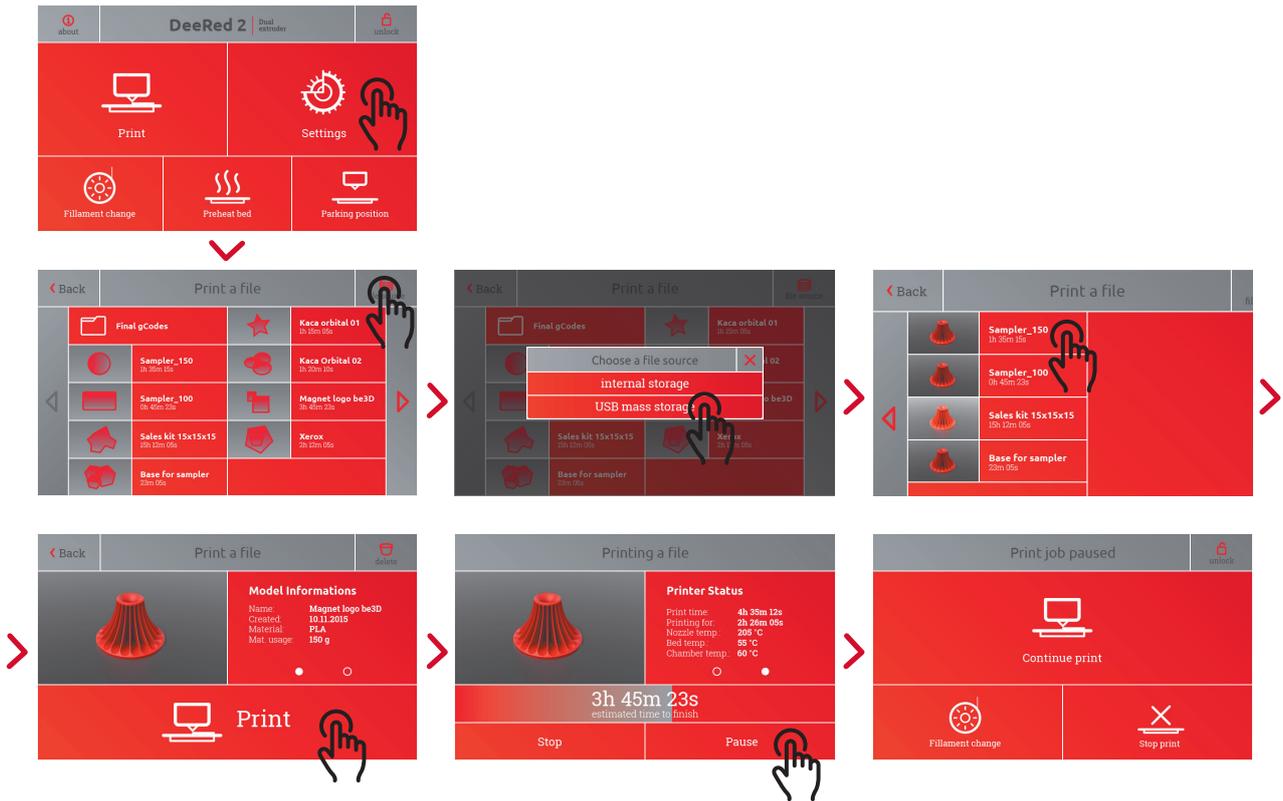
7.1 Working with the Printer Touchscreen – Main Menu Options



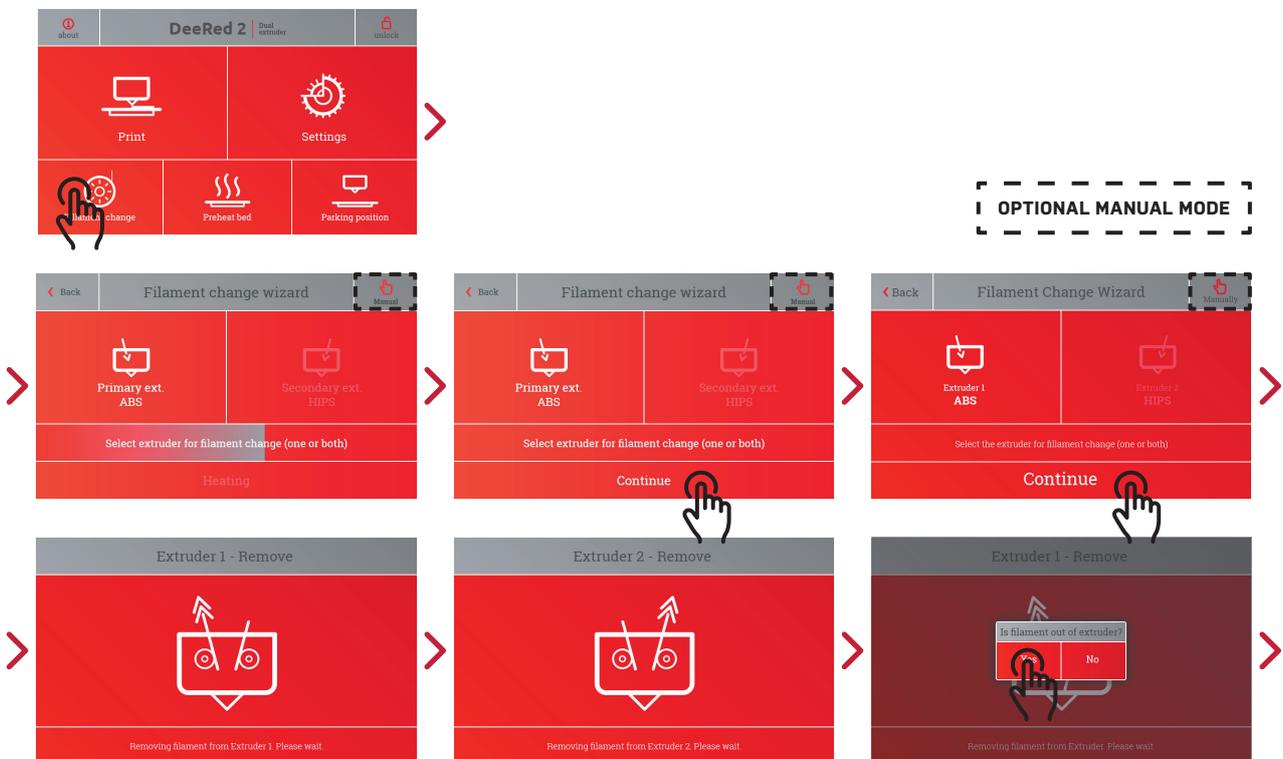
7.2 Working with the Printer Touchscreen – General Settings

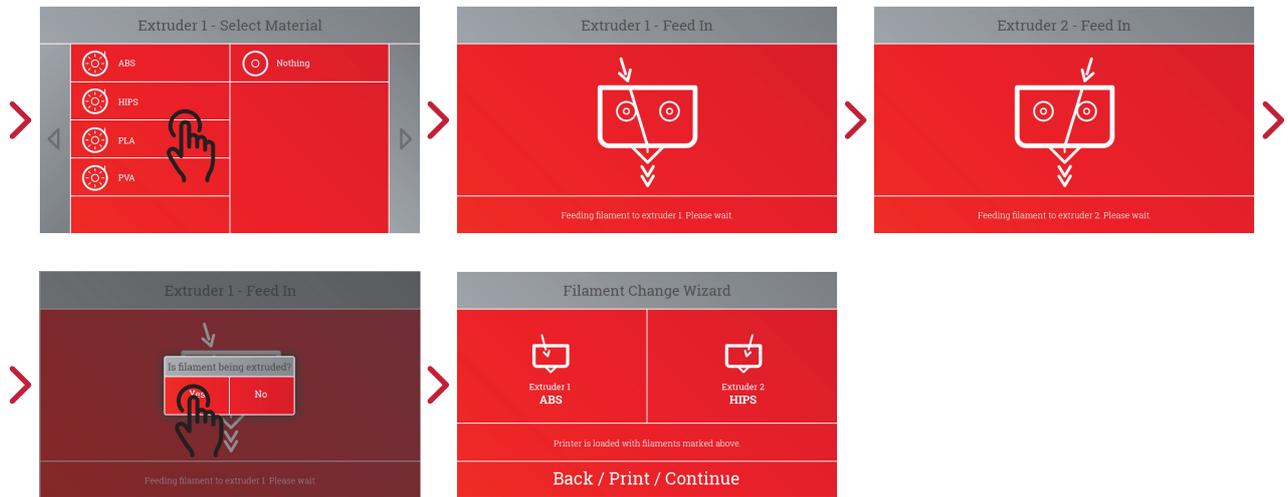


7.3 Working with the Printer Touchscreen – Assigning Print Jobs

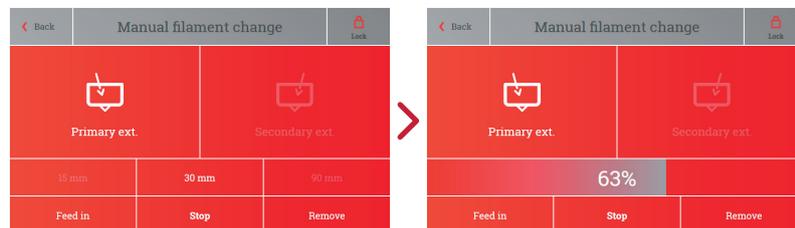


7.4 Working with the Printer Touchscreen – Replacing the Filament





OPTIONAL MANUAL MODE



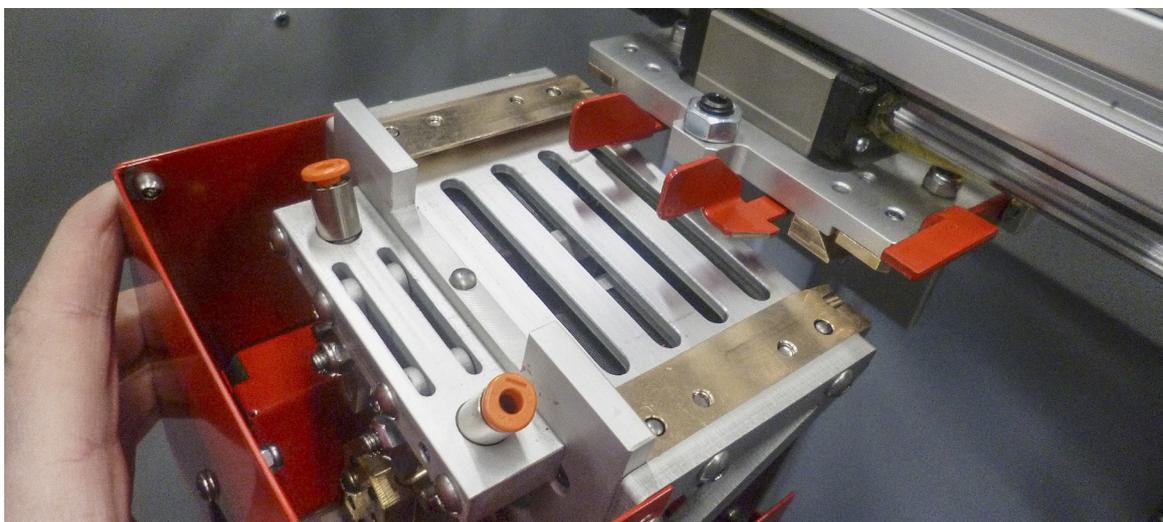
7.5 Removing and Inserting the Filament

Attention:

To ensure the print head functions correctly during printing it is necessary to insert both filaments even though the print job requires only one filament.

1. Press the "Filament Change" button in the main menu on the printer display.
2. The print head will move into the servicing position.
3. The filament replacement wizard will appear on the display.
4. For easier use, disconnect the tubing from the print head (see chapter 9.4 "Repalcing the tubing", page 30)
5. Replacing the Print Head
6. The print head is replaced whenever it needs to be serviced, a replacement is being claimed for, or when it is being replaced with a different piece or type.
7. Use the screen of the printer (see chapter 7.4, "Working with the Printer Touchscreen – Replacing the Filament", page 19) to remove both filaments from the printer.

8. Select the "Service Position" button in the "Settings" menu and hold it until a message asks you to turn the printer off.
9. Disconnect the tubing from the print head. Press the plastic ring on the mouth of the print head and, at the same time, pull out the tubing. Repeat the process for each individual tube.



10. Hold the print head with one hand and pull the security clamps towards you. Pulling the security clamps will release the print head. Then bring the print head towards you to release the anchoring mechanism.

Attention:

Take care not to drop the print head after the anchoring mechanism has been released!

11. When replacing the print head, follow the steps in reverse order.
12. The print head will be secure only when it has been placed on the two dovetail skids and pushed back as far as possible. The security clamps must face away from each other.
13. Remember to reconnect the tubing to the mouth of the print head. Take care to insert the tubing into the correct opening.
14. Replacing the Tubing

Filament Replacement Wizard

1. It is possible to exit the wizard and insert the filament manually (press the button in the top left corner of the screen to activate manual mode). If you opt to replace the filaments in manual mode, you risk damaging the print head.

2. Remove the filament
 - a. On the first screen of the wizard, select the extruder (or extruders) where you want the filament replaced. If a print job has already been activated, or if the filament is being replaced mid-print, one of the options may already be selected by default.
 - b. The selected extruders will now eject the filament. Make sure the filament in the print head has been loosened and can be removed completely. To do this, remove the spool (either empty, or with the remaining filament) from the filament storage area and, if necessary, remove the remaining filament from the filament entry points.
3. Select the filament to be inserted
4. A message will appear on the screen of the printer asking you to select the filament to be inserted into the selected extruder. If a print job has already been activated, or if the filament is being replaced mid-print, one of the options may already be selected by default.
5. Insert the filament
6. Following the instructions on the screen, insert the required filament into the corresponding extruders.
7. To insert the filament, place the filament spool on the spool holder and feed the filament into the corresponding entry point. Push the filament with your fingers until its end passes through the tubing and enters the print head. Once in the print head, the filament will be picked up by the extruder.
8. Let the filament pass through the printer until the nozzle ejects molten plastic in the correct color.
9. Confirm and exit the wizard
10. The screen will indicate the type of filament that has been fed into each extruder. If you have inserted a type of filament other than indicated, the entire filament replacement process will have to be repeated.

Manual Mode

Attention:

Be extremely cautious when working in manual mode. Inserting the filament incorrectly or selecting an incorrect filament type may cause damage to the printer or its components.

1. Removing the filament
 - a. Wait for the nozzle to heat up.
 - b. Select the extruder where you want to replace the filament and press "80 mm".
 - c. Press "Remove".
 - d. The material may be extracted sooner. You can stop the process at any time by pressing "Stop".
 - e. Repeat steps b) to d) with the other extruder.
2. Inserting the filament
 - a. Feed the filaments from the spools in the filament storage area into the respective filament entry points, so that each filament is inserted into the corresponding extruder.
 - b. Select the extruder where you want to replace the filament and press "30 mm".
 - c. While gently pushing the filament that is being fed into the print head, press "Feed In".
 - d. Keep your hand on the material to make sure it is being fed into the extruder (the material will be steadily drawn into the print head).
 - e. To ensure the filament has been inserted into the extruder correctly, do not insert the filament by more than 30 mm (from the point when it's completely loose).
 - f. Repeat steps b) to e) for the other extruder.

Attention:

- Feed both filaments into the corresponding extruders even if only one of them will be used. Printing will be more reliable.
- Be careful when changing the filament. You can burn yourself by touching the nozzle or print bed by accident.
- Do not touch the molten plastic that is coming out of the nozzle. Remove it using appropriate equipment, such as a spatula or a pair of pincers.

7.6 Preparing the Print Bed

The print bed can be prepared in various ways, according to different print requirements, the main difference being the adhesives used for different materials. Considering the fact that a thoroughly prepared print bed will last throughout several printing cycles, users that switch between printing materials on a regular basis may benefit from having several print beds at hand, each prepared for a different type of material.

ABS and HIPS

The recommended "ABS" solution for these materials is made of concentrated acetone and ABS granules. Using a brush, spread the solution in a thin layer over the print bed (do not heat it up!). For maximal adhesion, degrease the print bed beforehand.

Apply the layers evenly, one by one. When preparing for repeat printing, apply several thin layers, waiting for each layer to fully dry before applying a new one. If a layer gets damaged, add a new one to the relevant area.

PLA and PVA

To prepare the print bed for these two materials, apply a layer (or, ideally, a double layer) of PVA-based glue (paper glue) to the glass bed. Use a regular glue stick and apply the glue to the print bed in one direction, line by line, creating a thin, even layer. After it has dried, apply a second layer, this time applying the glue stick in a different direction. When the second layer has also dried, the print bed is ready for printing. The glue is water-soluble, so do not wash the print bed unless you want to prepare it for a different type of material

8. PRINTING

8.1 Checking and Preparing the Printer

Use the following list to check the printer before printing, especially if you are not the last person to work with it.

1. Briefly look the printer over. Make sure it appears complete and is not out of order (e.g., due to maintenance).
2. Check that the printer is connected to a power source.
3. Check that the emergency power switch is not set to "Off".
4. Check that there are no objects in the printing area that are obviously not part of the printer.
5. Check that the print bed is locked in place.
6. Check that no models or model parts have been left on the print bed.
7. Check that the print head is connected to the printer and secured against becoming loose.
8. Check that there are no error messages on the printer display.

8.2 Checking and Preparing the Filament

Before starting a print job, always make sure that the filament that is being fed into the printer corresponds to the filament for which the print job has been designed (see chapter 7.3., "Working with the Printer Touchscreen – Assigning Print Jobs", section "Model Information", page 19).

The printer itself cannot determine the type of filament that has been fed into it. Check the filament type by looking into the filament storage area.

Press "Print" on the display and select the print job you want to print. Display its details and locate the filament type it works with.

If the print job has been designed for a different type of filament than the one inserted in the printer, it is necessary to replace it (see chapter 7.4., "Working with the Printer Touchscreen – Replacing the Filament, page 19). Alternately, the print job can also be altered to work with the filament that is available.

8.3 Checking the Print Bed

Always check the print bed before printing.

Remove all objects from the bed, both finished models and unfinished model parts.

Then check whether the print bed has been prepared using the correct adhesive (see chapter 7.6., "Preparing the Print Bed", page 24).

8.4 Selecting the Print Job

Use the printer display to select the desired print job (see chapter 7.3, "Working with the Printer Touchscreen – Assigning Print Jobs", page 19). Press "Print", found in the main menu. You can use the "File Source" icon in the upper right corner of the display to select the source of the print job – locate it based on name, parameters, job details, or model preview.

The print jobs sent to the printer through the network have been saved in the printer's internal storage (select "Internal Storage" – see chapter 7.3., "Working with the Printer Touchscreen – Assigning Print Jobs", page 19).

8.5 Starting the Printing Process

Before starting the printing process, make sure that the doors of the printer are closed. Then press "Print" to confirm the specific print job – the printer will now start printing.

As a first step, the printer will calibrate itself. It will locate all of its mechanical components and set them to their basic positions, where they will then heat up to the required printing temperature.

This process can take several minutes.

8.6 The Printing Process

In this step, the printer prints the model. The printing process itself works as follows: at first, the printer stretches the filament that has been fed into it (in controlled conditions) and proceeds to melt it. The molten filament is then pushed through the nozzle and onto the print bed; then, as the model gradually builds up, it is layered onto the layers printed previously.

8.7 Removing the Model

When the print job is finished, remove the model from the printer. If the model is not very tall, the print bed will be in the upper part of the printing area – use the "Parking Position" function to lower it. Then wait for the printer to release the magnetic locks in the doors and allow access to the printing area. If the print bed and model are both prepared correctly, the model should be firmly glued to the bed.

Wait until the print bed has cooled down to room temperature, then remove the model using the spatula. Use the tool to gently lift the model's edges and then push it underneath the model itself. Pull the spatula out and push it under the model from a different direction. Repeat the process until you are able to remove the model from the print bed in one piece easily.



Attention:

Depending on the settings of the print job, the inside of the printing chamber can be hot. Take care when opening the printer's doors and entering the printing area.

9. USER SERVICING AND MAINTENANCE

9.1 Maintenance

Keeping the printer clean in order to work long term without malfunctioning is crucial. It is important to observe the following instructions:

1. Keep the printing area clean. Clean it regularly using a brush and a cloth, removing model fragments, dust and dirt from its floor. Do not use sharp objects that could scratch the surface of the printer.
2. Keep the nozzle clean. If you notice the mouth of the nozzle is clogged, its surface is dirty, or that it is covered by a layer of printing material, it will be necessary to clean it. Select the "Service Position" button in the "Settings" menu and hold it until a message asks you to turn the printer off. Clean the nozzle with a snap-off knife or another sharp metal tool, moving it downwards along the surface of the nozzle. Remove any remnants clogging the nozzle's mouth with pliers or something similar.

3. Regularly check the amount of waste in the wastebasket placed in the printer's storage area. If the basket starts filling up, remove it and empty it. Do not forget to return it to its place so that any waste produced by the printer will not fall into the general storage area.

Attention:

Always turn the printer off before carrying out any type of hardware user maintenance.

9.2 Replacing the Nozzle

If the printer is unable to push the molten filament evenly and continuously through the nozzle, the nozzle must be replaced. First of all, carry out the following steps:

1. Use the screen of the printer (see chapter 7.4, "Working with the Printer Touchscreen – Replacing the Filament", page 19) to remove both filaments from the printer.
2. Select the "Service Position" button in the "Settings" menu and hold it until a message asks you to turn the printer off.
3. Disconnect the tubing from the print head. Press the plastic ring on the mouth of the print head and, at the same time, pull the tubing out. Repeat the process for each individual tube.
4. If the nozzle is hot, wait for it to cool down.
5. Using a small knife or another sharp object, remove the silicon gasket from the nozzle.
6. Remove the nozzle using the "be3D tool" wrench.



7. Insert the screw of the "be3D tool" into the opening where the nozzle had been placed and screw it in.

8. Drag the "be3D tool" downwards – this will remove the tubing from the opening;



9. Insert new tubing into the original opening and push it completely in.

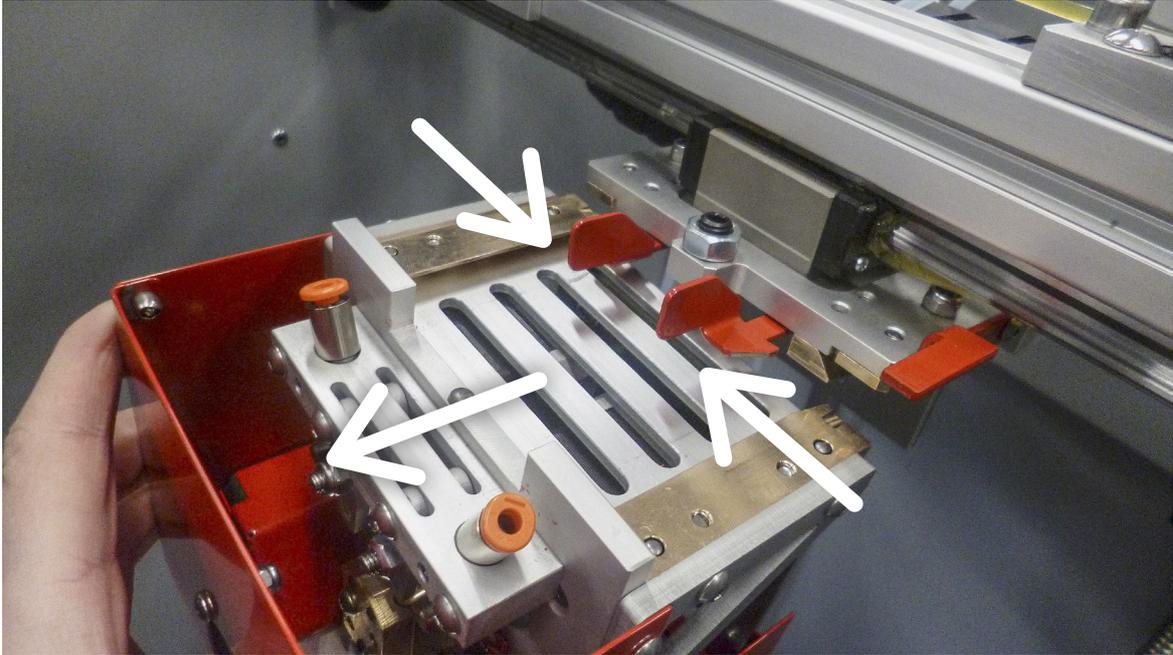


10. Screw the new nozzle on and tighten it using the wrench.
11. Place the silicon gasket on the nozzle so that its lower rim does not extend beyond the nozzle's edge. The gasket must fill the space between the nozzle and the metal cover of the print head.

9.3 Replacing the Print Head

The print head is replaced whenever it needs to be serviced, a replacement is being claimed for, or when it is being replaced with a different piece or type.

1. Use the screen of the printer (see chapter 7.4, "Working with the Printer Touchscreen – Replacing the Filament", page 19) to remove both filaments from the printer.
2. Select the "Service Position" button in the "Settings" menu and hold it until a message asks you to turn the printer off.
3. Disconnect the tubing from the print head. Press the plastic ring on the mouth of the print head and, at the same time, pull out the tubing. Repeat the process for each individual tube.



4. Hold the print head with one hand and pull the security clamps towards you. Pulling the security clamps will release the print head. Then bring the print head towards you to release the anchoring mechanism.

Attention:

Take care not to drop the print head after the anchoring mechanism has been released!

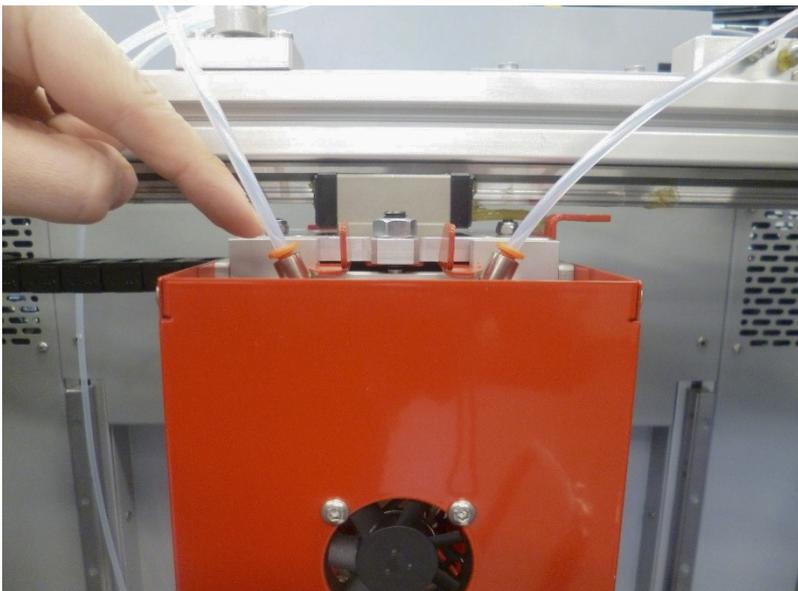
5. When replacing the print head, follow the steps in reverse order.
6. The print head will be secure only when it has been placed on the two dovetail skids and pushed back as far as possible. The security clamps must face away from each other.
7. Remember to reconnect the tubing to the mouth of the print head. Take care to insert the tubing into the correct opening.

9.4 Replacing the Tubing

If the printer is unable to evenly and continuously push the molten filament through the tubing, the tubing must be replaced. Carry out the following steps:

1. Use the screen of the printer (see chapter 7.4, "Working with the Printer Touchscreen – Replacing the Filament", page 19) to remove both filaments from the printer.

2. Select the "Service Position" button in the "Settings" menu and hold it until a message asks you to turn the printer off.



3. Disconnect the tubing from the print head. Press the plastic ring on the mouth of the print head and, at the same time, pull the tubing out. Repeat the process for each individual tube.
4. If the nozzle is hot, wait for it to cool down.
5. Detach the tubing from the entry point to the filament storage area by pressing the plastic ring on the opening of the coupling component (connecting piece).



6. Loosen the screw on the rotating holder using a size 2.5 Allen key and remove both pieces of tubing.
7. Insert the new tubing into the rotating holder – insert the both tubes into the left and right openings. Adjust the tubes so that their loose length from the holder to the print head is 42 cm; then secure them by tightening the screw on the rotating holder.
8. Insert the loose ends of the tubing into the mouth of the print head so that the left tube is inserted into the left mouth and the right tube into the right

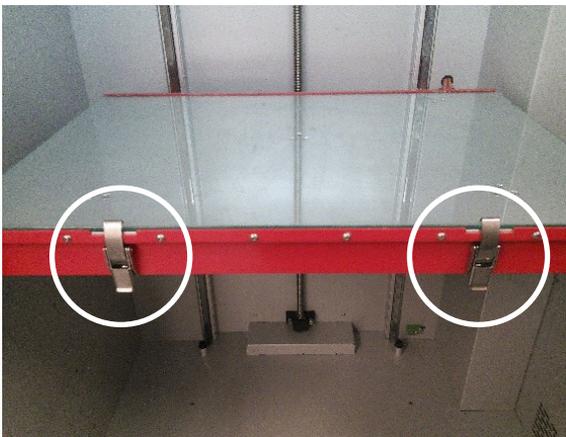
one. Gently push the tubing until it settles into each connecting piece. A tube that has been inserted correctly cannot be removed unless the plastic ring is pressed.

9. Push the loose ends of the tubing trailing behind the holder through the duct in the body of the printer and then connect the tubes to the connecting pieces in the upper right section of the printing area. Connect the tubing in such a way that the left tube is connected to the front connecting piece and the right tube is connected to the back connecting piece. Gently pull the ends of the tubes to make sure that the tubes have been properly inserted into the connecting pieces and cannot be pulled free.



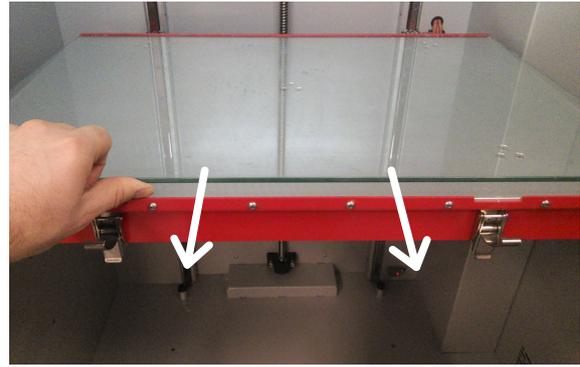
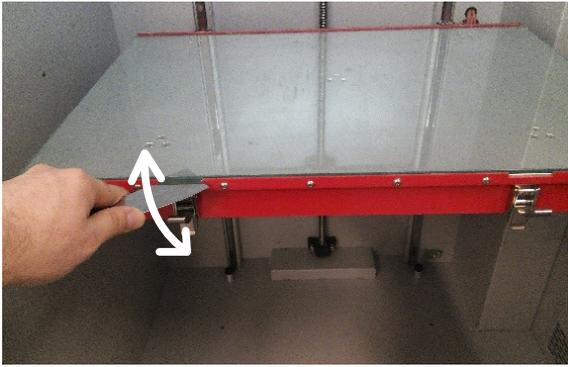
9.5 Replacing the Glass Print Bed

1. Use the screen of the printer (see chapter 7.4, "Working with the Printer Touchscreen – Replacing the Filament", page 19) to remove both filaments from the printer.
2. Select the "Service Position" button in the "Settings" menu and hold it until a message asks you to turn the printer off.



3. The glass bed is kept in place by two clips on the front of the printing table.

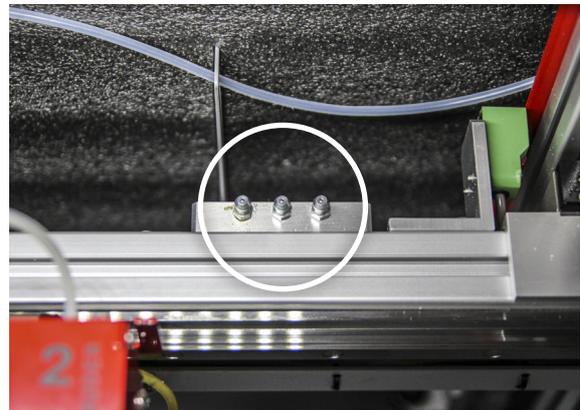
4. Unclamp them.



5. Insert a clean spatula underneath the edge of the glass bed and gently push it forward in order to let air in between the print bed and the table's surface.
6. Lift the front edge of the print bed and pull it towards you to loosen the back.
7. Before replacing the print bed, make sure the printing table is clean.
8. To install a different print bed, follow the steps in reverse direction.

9.6 Refilling the Lubricant

1. Lubricate using only recommended accessories (a grease gun).
2. Use only recommended lubricating grease. If a different type of lubricant is used, the moving components of the printer can become irreparably damaged.



3. Insert the fitting of the grease gun into all grease cups placed under the print table and the load-bearing section of axis X.
4. Press the trigger of the grease gun to lubricate the grease cups. The amount of lubricant inserted into each grease cup should correspond to one press of the gun's trigger. Do not, under any circumstances, insert more lubricant into the grease cups than indicated above (do not press the trigger several times), as this could damage the sealing of the carriages of the linear travel.

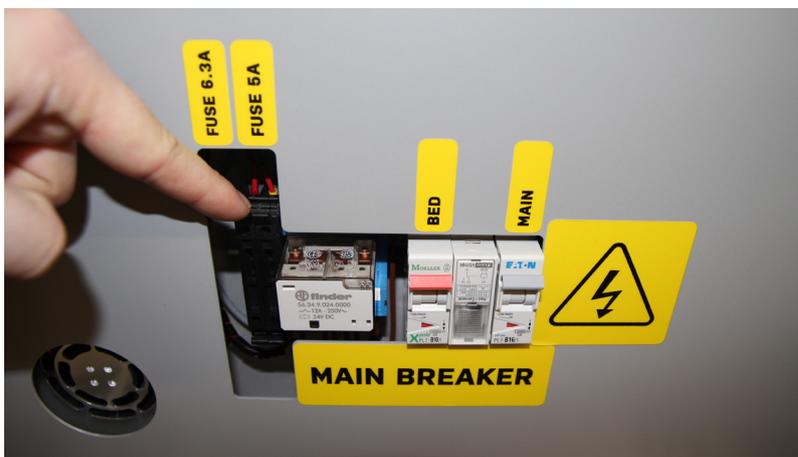
Recommended lubricant: Lubrication grease HIWIN G0, Cartridge 400 g

Recommended grease gun: GROZ grease gun, one-handed fillable G5F/PRO/M

9.7 Replacing the Fuses

Only replace the fuses if the following has occurred:

1. The printer should be working; however, the light in the printing area is off, the fans in the back of the printer are not moving, and the display is dark and unresponsive.
2. Check the following:
 - I. The emergency power switch is set to "On".
 - II. The switch of the power cable connector is set to "On".
 - III. The power cable is connected both to the printer and to a power source.
 - IV. The circuit breakers next to the fuses are set to "On" (see chapter 9.8., "Resetting the Circuit Breakers", page 35).
 - V. The power socket to which the printer is connected works.
 - VI. After checking/amending the steps above, the printer still appears not to be working.
3. Turn the printer off.
4. Use the key that came with the printer to open the printer's electrical installation area.
5. Remove the cover of the electrical installation area.



6. Locate the fuse panel.
7. Press the upper lever next to the first fuse slot and flip it open.

8. Remove the fuse and check it.



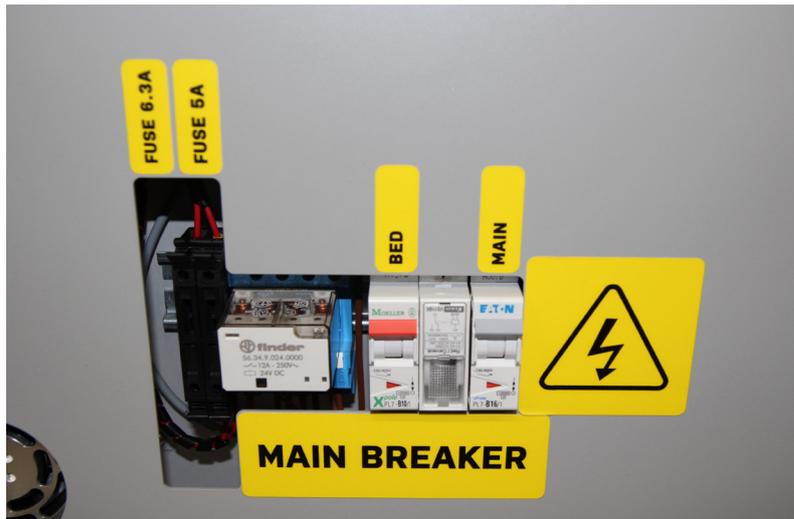
9. If it has blown, replace it with a fuse that came with the printer. Place the new fuse into the slot and place it back into place. Make sure the slot is settled firmly in place.
10. Repeat steps f) to h) until all blown fuses have been replaced.
11. Replace the cover of the printer's electrical installation area and lock it.

9.8 Resetting the Circuit Breakers

Only replace the fuses if the following has occurred:

1. The printer should be working; however, the light in the printing area is off, the fans in the back of the printer are not moving, and the display is dark and unresponsive.
2. Check the following:
 - I. The emergency power switch is set to "On".
 - II. The switch of the power cable connector is set to "On".
 - III. The power cable is connected both to the printer and to a power source.
 - IV. After checking/amending the steps above, the printer still appears not to be working.
3. Turn the printer off.
4. Use the key that came with the printer to open the printer's electrical installation area.

5. Remove the cover of the electrical installation area.



6. Locate the panel with the circuit breakers.
7. Check which circuit breakers have been tripped (the lever of the circuit breaker will be in the lower position).
8. Reset the tripped circuit breakers (the lever of the circuit breaker should now be in the upper position).
9. When all circuit breakers have been reset, replace the cover of the printer's electrical installation area and lock it.
10. If you turn the printer on and the fuses blow again, contact an authorized service technician.

9.9 Connecting Peripherals

Camera

1. Turn the printer off.
2. Unpack the camera.
3. Place the camera on the holder in the upper front right corner of the printing area and secure it using two M4x8 screws.
4. Connect the enclosed cable to the camera.
5. Insert the other end of the cable into the corresponding opening in the wall of the printer and push the entire length of the cable outside the printing area.
6. Attach the cable to the printer using the USB connector in the printer's electrical installation area.

9.10 Periodic proactive maintenance

DeeRed requires periodic proactive maintenance which should be performed by authorized technicians. This maintenance must be done every 6 months after the initial maintenance, which must be done 2 months after the installation. This maintenance prevents the potential risk of technical issues.

Periodic proactive maintenance tasks:

- Checking and calibration of mechanical parts
- Maintenance and lubrication of mechanical parts
- Cleaning and calibration of print head
- Replacing of nozzle and tube
- Replacing of drive gear
- Replacing the tubing
- Checking all electrical circuits that are under mechanical stress
- Firmware update

10. TROUBLESHOOTING

10.1 What to Do If the Printer Runs Out of Filament While Printing and Stops

1. If one or both extruders run out of filament during the printing process, DeeRed will pause the process and display a notification. The message will say which extruder needs its filament replaced (see chapter 7.4, "Working with the Printer Touchscreen – Replacing the Filament", page 19).
2. Press "Filament Change" to activate the filament replacement tool.
3. Press "Remove" and select the extruder that has run out of filament.
4. Press "80 mm" and wait until the rest of the filament is pushed out of the extruder.
5. Pull out the free end of the filament in the filament storage area.
6. Press "Back" on the display and then select "Feed In".
7. Insert the new filament (it must be the same type as the one that has run out). Then, using the "15 mm", "30 mm" and "80 mm" buttons, let the filament flow through the nozzle into the waste chute. Gently push the filament towards the filament entry point for as long as it is fed into the printer head.
8. Make sure the door of the printing chamber is closed.
9. Press "Back" to return to the screen displaying the notification.
10. Press "Continue" to renew the printing process.

10.2 Removing Supports

Removing the supports from a model printed on a 3D printer is definitely one of the least interesting tasks that need to be done after printing. Supports are needed for printing overhangs and bridges – as this particular print technology does not allow printing onto open space, any parts of the model not directly connected to the print bed must be supported. Supports can be divided into two groups based on the way they can be removed – they are either soluble or insoluble.

10.2.1 Insoluble Supports:

Supports that have been printed using the same type of material as the model itself must be removed manually. This can be done with the help of the enclosed accessories, but requires some skill. Follow these instructions:

1. Use your hands, a pair of snipping pliers, or other suitable tools to remove as many supports as you can without damaging the model.
2. Then, use a small knife, scalpel or chisel to remove the smaller supports left over from the first step.
3. Finally, use a file or sandpaper to completely remove the last remnants of the supports.

10.2.2 Soluble Supports:

The main advantage of soluble supports is that they do not have to be removed manually. To remove soluble supports, follow these instructions:

1. Use your hands, a pair of snipping pliers, or other suitable tools to remove as many supports as you can without damaging the model.
2. Immerse the model and the rest of the supports in the dissolving agent.
 - I. If your model has been printed using **PVA**, place it into a warm water bath* (40 °C maximum) and, based on the number of the remaining supports, leave it there for two to five hours. After this time has passed, remove the model from the water bath. The remaining supports will be softened; wash them off under a stream of warm water (40 °C maximum). Use a shower head, a hose, or a high-pressure water gun for rinsing.
 - II. If the supports have been printed using **HIPS**, use "limonene/lemonade", the acidic solvent recommended by the supplier, to dissolve them. Immerse the model in the solvent and, based on the number of the remaining supports, leave it immersed for two hours or more. You can speed up the dissolving process significantly by ensuring that there is circulation in the bath (stirring, a pump, a wave generator, etc.).
3. Rinse the model thoroughly in warm water.

*A water bath that includes dissolved PVA can be tipped down the drain.

11. SUPPORT

11.1 Ordering Consumable Materials (Contact and Instructions)

Contact your supplier or local distributor. If, for any reason, that is not possible, please contact us directly at www.ysoft.com/3d-printing.

11.2 Ordering Consumable Components (Contact and Instructions)

Contact your supplier or local distributor. If, for any reason, that is not possible, please contact us directly at www.ysoft.com/3d-printing.

11.3 Support and Maintenance in Case You Need Help (Contact and Instructions)

Contact your supplier or local distributor. If, for any reason, that is not possible, please contact us directly at www.ysoft.com/3d-printing.

12. WARRANTY TERMS AND CONDITIONS

12.1 The Directive on Liability for Defective Products

This Directive is in accordance with the most recent Czech laws addressing the liability for defective products. It does not guarantee quality.

The mechanical components of the printer are under warranty for a period of 12 months after purchase, with the warranty covering any unintentional mechanical malfunction or defect caused by the manufacturing process or deficiencies discovered during assembly. The warranty does not cover incorrect or inappropriate use, incorrect manipulation, or use and installation that are against the instructions set forth in this User Manual.

12.2 Terms and Conditions

- The manufacturer is responsible for the complete functioning of the supplied software and device in accordance with this User Manual.
- Any and all malfunctions or defects that have occurred during the manufacturing or assembly process are covered by the manufacturer in accordance with the warranty.
- If a deficiency within the obligations of the manufacturer occurs, the legitimate owner is entitled to a repair, free of charge. The deficiencies will be amended within 30 days of being reported.

12.3 Not Covered by the Warranty

The warranty does not cover malfunctions or defects caused by:

- Using a non-recommended filament;
- Installation that is in contradiction to the instructions in this User Manual, effective laws, and directives;
- Using the printer in an unsuitable environment;
- Improper use;
- Mechanical usage and wearing out over time.

12.4 User Obligations

The user is obliged to settle the costs and expenses of the technician if a malfunction was not reported accurately or if they require:

- The printer to be repaired due to a malfunction caused by the user;
- The printer to be repaired due to unauthorized changes carried out by the user;
- The printer to be cleaned and checked;
- The printer to be repaired due to a power failure.

12.5 Cases in Which the Warranty is Forfeited

- The user has altered the configuration of the printer.
- Instructions set forth in the User Manual were not followed.
- Filaments not recommended by the manufacturer were used.
- The user has altered the electronics of the printer.
- The user/owner has a financial commitment towards the manufacturer or supplier.
- The printer was damaged by improper use or shifting during transport or by being placed in an environment with unsuitable conditions, especially unsuitable temperature and humidity.
- The electronics and control units of the printer have been damaged due to atmospheric events such as storms, power supply fluctuations, mechanical, chemical or thermal contamination or damage, or repairs or adjustments carried out by the user or by an unauthorized service center.

13. CONTACT US

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