Prenta

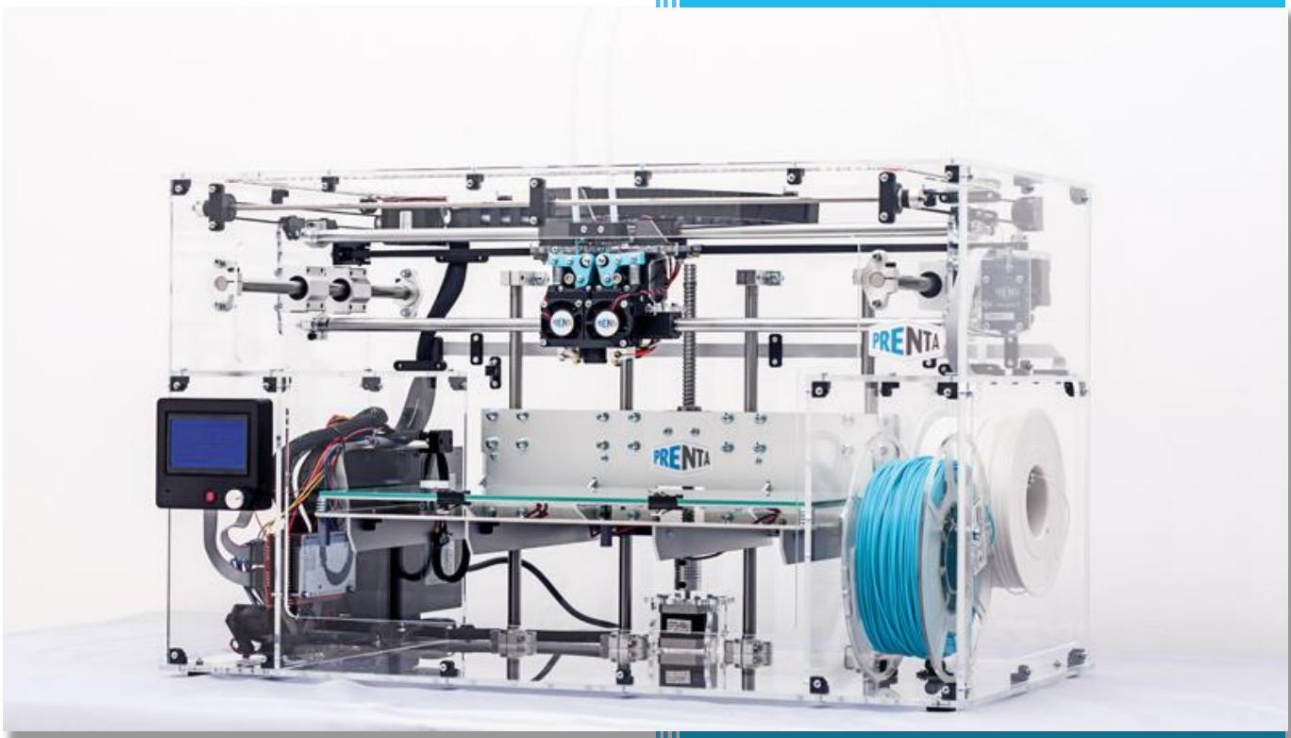
Duo

Duo XL

Duo XL SE

Duo XL SE+

Manual



PRENTA

MADE IN FINLAND

Table of contents

1 Introduction

Thank you for choosing the Finnish Prenta 3D printer!

You are now using a 3D printer manufactured in Finland by the Finnish Prenta Oy. Read this manual carefully before using the device to ensure safe and correct use.

The user manual discusses the use of the Prenta Duo series 3D printers, the software and possible options error situations and their solutions. Keep this manual easily accessible near the device. Instructions for use the images may differ from the device you own, because the images are generic for all Duo series For 3D printers.

Prenta Oy reserves the right to make changes to this manual and the device presented in it without notice separate notification.

If you are unsure about the use or operation of the device or find inconsistencies user manual, contact the device manufacturer for more information.

Contact information:

Prenta Oy
Aakkulantie 32
36220 Kangasala
tel. 050 310 1100
myynti@prenta.fi
www.prenta.fi
www.prenta.fi/shop

1.1 Warnings

The following warning signs are in use:

Electric shock hazard

Crushing hazard

The hot part

Duo series 3D printers have hot nozzles and print bed that can cause serious damage if used carelessly. The device has a horizontally moving print carriage and vertically movable printing table. The moving parts of the device may cause noise during use risk of crushing.

The device is designed for the production of plastic-based 3D pieces by extrusion (FFF technique). The device must not be used for any other purpose. Do not use the device for health or property to manufacture harmful products. The use of 3D printed products for proto- and end products are the user's own responsibility.

Changes made to the device by a person other than Prenta Oy's authorization limit the device guarantee. Do not place anything extra inside the 3D printer. Do not cover the device while it is in operation and do not block the front or top opening of the print chamber. The increased temperature of the closed chamber can damage the plastic parts of the device. Only the Duo XL SE model made of aluminum composite sheet is designed to be closed. The manufacturer can be installed in the front opening of the Duo and Duo XL models supplied finger guard.

1.2 Restriction of use

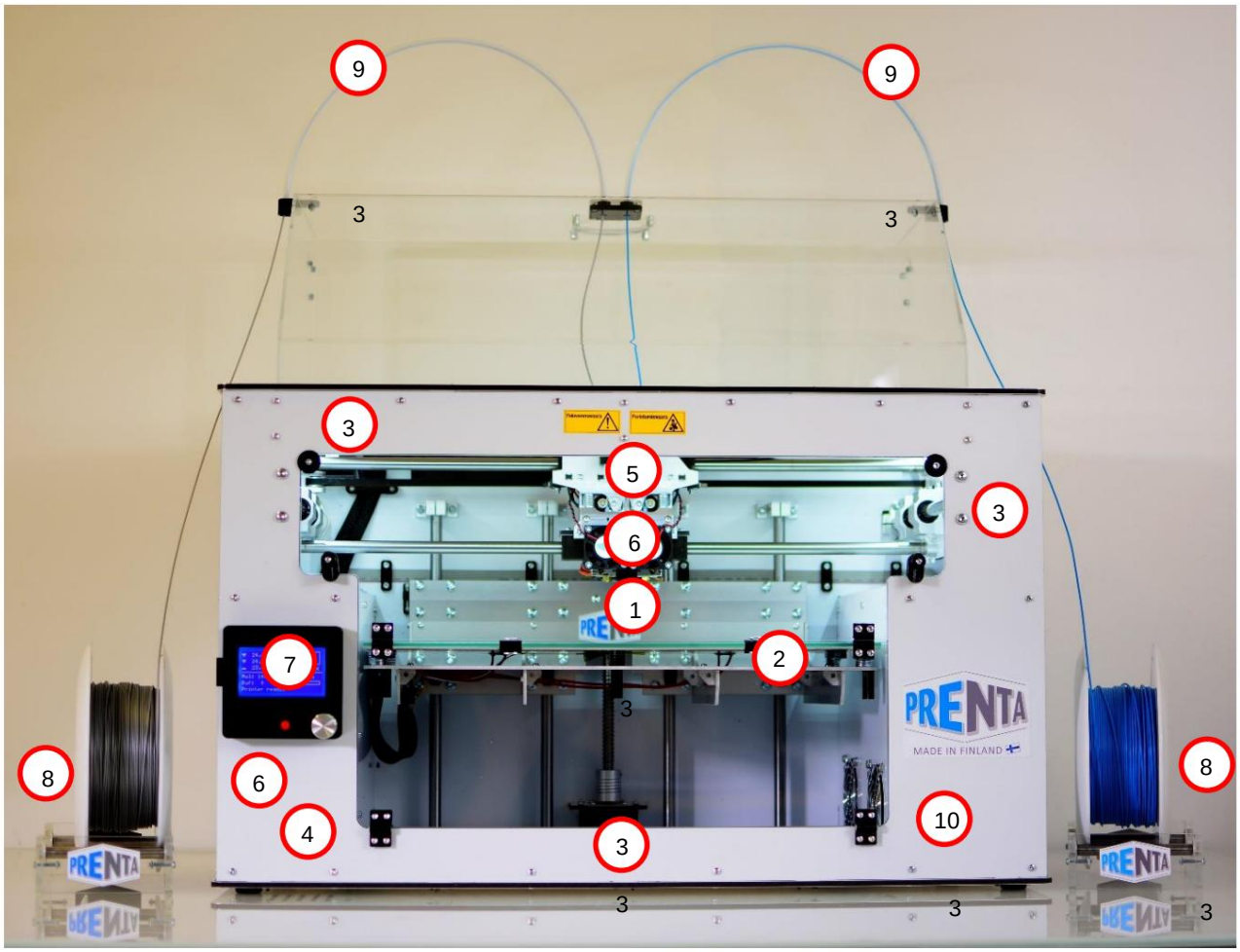
The device is not recommended for use by children under the age of 16 without an adult familiar with the device person's presence. The device should not be used under the influence of intoxicating substances or with functional capacity otherwise reduced.

1.3 Limitation of liability

Prenta Oy is not responsible for damages caused by using the device against the instructions or by the user negligence. The operating device must not be left unattended.

1.4 3D printer parts

A few parts that require special attention have been introduced in this paragraph.



1. Nozzles

2. Printing table

3. Engines

4. Electronics

5. Nozzle carriage

6. Fans

7. Operation panel

8. Reel racks

9. Filament feed tubes

10. Active carbon filters (only Duo XL SE and SE+)

1. Nozzles

The temperature of the nozzles is over 200 °C during the printing process. Do not touch the nozzles if they are not completely cooled. 0.4 mm nozzles are installed in the printer, but if desired, the device can also be factory installed with nozzles of different sizes. Ask more at myynti@prenta.fi.

A hot nozzle can cause burns!

2. Printing table

The temperature of the printing table during the printing process is 30 – 100 °C. Do not touch the print table unless it is not completely cooled.

A hot printing table can cause burns!

3. Engines

The device's motors may heat up a little while the device is in operation. Engines move belts. Do not touch the motors or belts during the printing process. Here's how to avoid risk of crushing. Engines can make a whining sound at different frequencies when they are running. This is totally normal.

Risk of crushing! Fingers caught between the belt and the pulley can cause serious injuries!

4. Electronics

The device's electronics should not be touched when the device is connected to the electrical network. The device maintenance and repair of electronics must be carried out at a service shop approved by Prenta Oy.

Electronics contain components that heat up!

5. Nozzle carriage

The nozzle carriage must not be touched while the device is in operation. Note the hot nozzles!

Risk of crushing! Risk of burns!

6. Fans

Do not prevent the free rotation of the fans due to the risk of breakage. The ones on the front side of the nozzle carriage fans cool the nozzle components. The fan starts when the nozzle is inserted to warm up or the nozzle is over 50 degrees. Do not turn off the device until the nozzles are cooled below 50 degrees and the fans have stopped! Do not use the printer if the fans don't work! The result may be nozzle blockage and damage to the machine.

The fan behind the nozzle slide is a piece cooler that cools the extruded material and helps in printing difficult shapes. The operation of the unit cooler is controlled with the print program settings. Consider the limitations of different print media in use of the body cooler.

The electronic fan is located in the electronics compartment of the device and runs whenever the device is switched on. The fans of the active carbon filters of the XL SE and XL SE+ models also always rotate when the power is on connected.

7. Operation panel

The user panel is presented in chapter 2.2.1.

8. Reel racks

Reel stands are sold separately. Ask more at myynti@prenta.fi.

9. Filament feed tubes

10. Filters

Filters are standard equipment only in the XL SE and XL SE+ models. Filters are recommended to be replaced approximately every three months.

1.5 Connecting to the power grid

The device is connected to the electrical network in a grounded socket with the supplied mains cable.

1.6 Placing the device

Place the device on a stable and flat surface. Control electronics cooling air inlets are located at the bottom of the device on the left front edge. The rubber feet on the bottom hold the device the bottom a few millimeters off the base. Make sure that the cooling air can get in unhindered to flow under the device. Leave 30 cm of space behind the device for cooling air to escape.

The device should be stored and used at normal room temperature (around +22°C). Do not place the device direct sunlight and not a ventilation window, heater or humidifier in the immediate vicinity. Do not place the device in a place where there is or where a lot of dust is generated. Printer when placing it, it is good to take into account that it produces some noise when it is in operation.

2 Setting up the device

2.1 Unpacking

The Prenta 3D printer is packed in a cardboard box using transport supports. Before lifting the device visually check that no damage has occurred during transport. Remove the transport supports first from the top corners of the package and lift the printer according to the instruction picture provided in the package attachment points out of their transport box. **Do not lift the device from its roof plate or heating table.** Duo and Duo XL models, the lifting points are the center of the device's front opening and the rear edge lifting opening, In the Duo XL SE and Duo XL SE+ models, the lifting openings are at the ends of the device. Place the device on a flat surface and on a sturdy base and remove the band (bundle) used during transport from the right side of the nozzle carriage. Check the movements of the nozzle carriage (XY carriage) manually by moving the carriage in the lateral and depth directions. Ensure unhindered movement and you should hear the click of the limit switch in each extreme position.

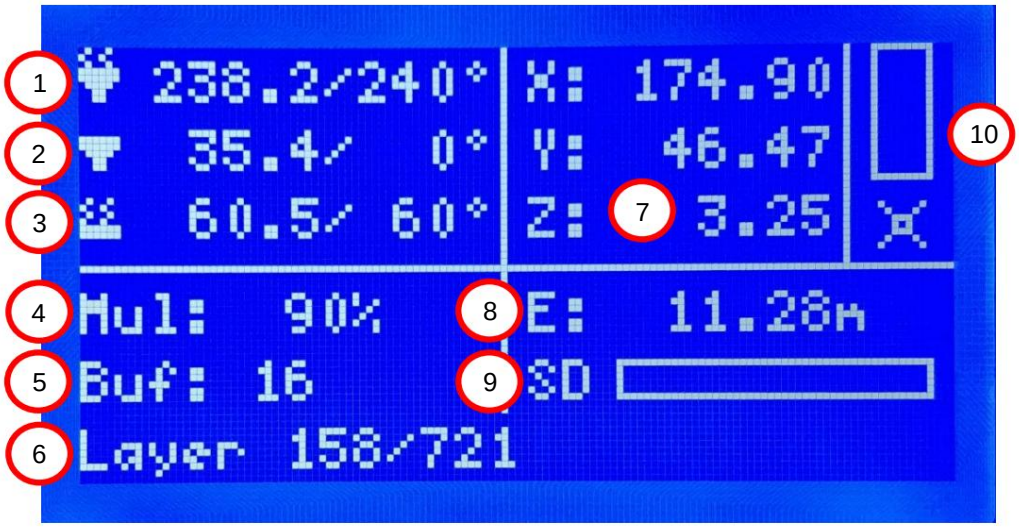
2.2 Preliminary preparations

Make sure the printer is on a flat and stable surface. Check that there is no inside the printer packaging materials or other extra items. Connect the power cable to the ATX on the back of the device to the power supply connection and the 230 V socket. Press the printer's main power switch to the ON position from the power source. Your printer will now light up and the control panel will start.

2.2.1 Operation panel

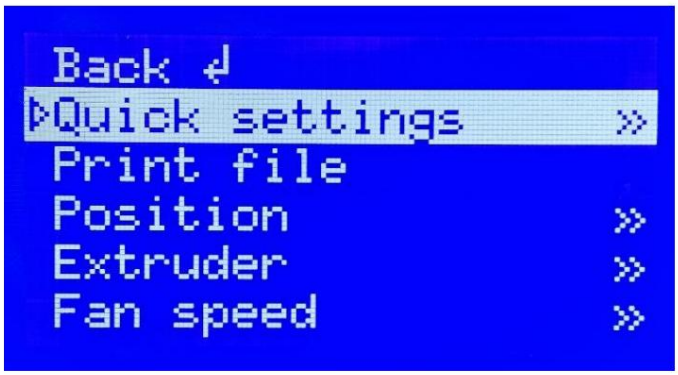
The functions of the printer are controlled with the control knob on the control panel. Rotating moves the selection up or down in the directory structure and pressing the button makes a selection. The red button is RESET button that restarts the printer and turns off all functions. Use this only if you are sure you want to restart the printer and thus interrupt the possible running existing print job. The place for the memory card is located on the left side of the control panel.

2.2.1.1 Basic screen



1. 1-nozzle temperature 2. 2-nozzle temperature 3. Printing table temperature 4. Driving speed factor (25-500%)
5. The commands in the printer's buffer 6. A line telling about the printer's status
7. Position of the printer head X-, Y- and Z-directions
8. Amount of filament used in the work
9. SD memory card status
10. Track cooler fan rotation speed

2.2.1.2 Directory structure of the user panel



In the basic display mode, turning the control knob switches the screen to the operating hours view, from which can see the time run and used on the printer amount of print media. To the main menu you can from basic display mode by pressing adjustment knob once. In the menu structure is moved by turning the knob clockwise or counterclockwise. The selection is confirmed by pressing the control knob.

Back = return to the previous menu view.

Quick settings

Home All = All axes are driven to the home position (left front corner, first X, then Y and finally Z)
Z babystep = Fine adjustment of the Z axis, adjustment while driving
Speed Multiplier = Print speed multiplier
Flow Multiplier = Yarn feed multiplier
Change filament = Change of filament in the middle of a ride
Preheat PLA = Preheating for both nozzles 190°C, table 60°C
Preheat ABS = Preheat for both nozzles 240°C, table 110°C
Cooldown = Cooling mode, turns off both nozzles and the table
Disable stepper = Turns off the motors, after which you can manually move the print head

Print File

Print File = Opens the contents of the memory card. Select the .gcode file to print. Printing starts by pressing the adjustment knob.

Position

Home All = All axes to home position
Home X = X axis to home position
Home Y = Y axis to home position
Home Z = Z axis to home position
X Pos. Fast = Moving the nozzles parallel to the X-axis by 1 mm to 10 mm at a time
X position = Moving the nozzles along the X-axis 0.1 mm at a time
Y Pos. Fast = Moving the nozzles parallel to the Y axis by 1 mm to 10 mm at a time
Y position = Moving the nozzles parallel to the Y axis by 0.1 mm at a time
Z Pos. Fast = Raising or lowering the printing table 1 mm to 10 mm at a time
Z position = Raise or lower the printing table 0.1 mm at a time
Extr. Position = Filament motor drive (only works when the nozzle is warm)

Extruder

Bed temp. = Print table temperature
Temp. 1 = 1 nozzle temperature
Temp. 2 = 2 nozzle temperature
Turn extr. 1 off = Turn off 1 nozzle
Turn extr. 2 off = Turn off the 2-nozzle
Select extr. 1 = Select 1-nozzle as active Select
extr. 2 = Select 2-nozzle as active
Extr. Position = Filament motor drive (only works when the nozzle temperature is over 150°C)

Fan speed

Fan speed = Speed of the piece cooler (fan behind the nozzle slide)
Set Fan 25% = Unit cooler speed, power 25% of maximum
Set Fan 50% = Unit cooler speed, power 50% of maximum
Set Fan 75% = Unit cooler speed, power 75% of maximum
Set Fan Full = Unit cooler power at maximum
Ignore M106 cmd = Ignore the piece cooler

SD Card

Print file = Printing the song (the file must be in .gcode format and pre-processed with a slicing
program (repetier host / Simplify 3D)
Delete file = Deleting a file
Pause print = Pause printing, resume printing Stop print =
Interruption of printing

Debugging

No need to adjust while the device is working, contains Duo firmware information

Configuration

Device parameter adjustments; no need to adjust while the device is working

2.2.2 Calibration of the printing table after transport and relocation

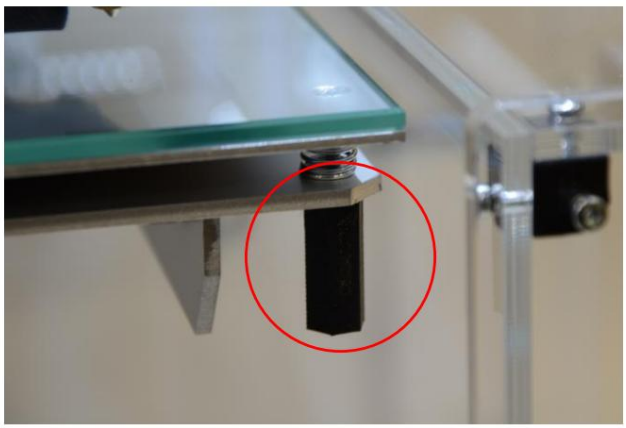
It is very important to ensure successful printing that the calibration of the device is checked

after transport and moving the device. Check that the print tray is empty and the print table

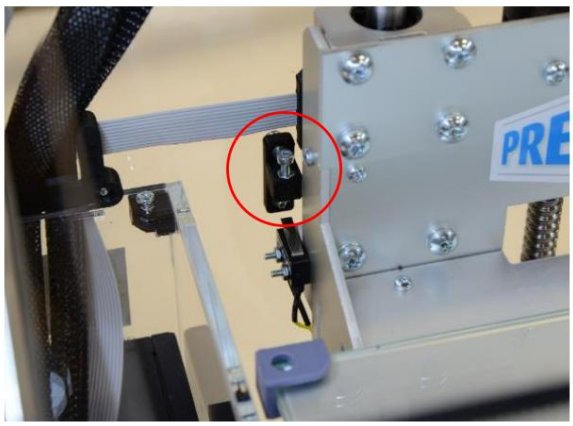
the glass plate is securely in place. There are two steps to calibrating the height of the print table: the table

point-like fine adjustment and main table height adjustment. Spot fine-tuning straightens

the distance of the printing platform from the nozzles is adjusted with the main adjustment screw.



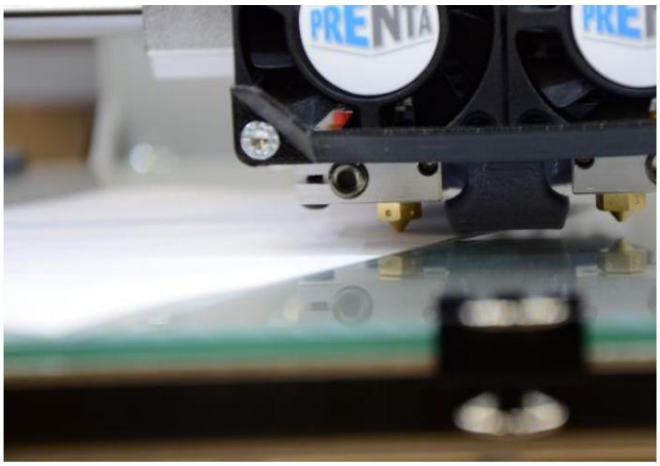
Point fine adjustment screw.
Duo 3 pcs
Duo XL, XL SE and XL SE+ 5 pcs



Main adjustment screw

Press the drive's selection wheel once and scroll to the *Position menu by turning.* Select an action by pressing the scroll wheel. Scroll to *Home Z* and press the scroll wheel. Now the printing table rises up towards its home position and stops after reaching its Z-min limit.

Place a piece of paper between the nozzle and the table that you can move by hand (e.g. half of A4). With the table in the Z-min position, the paper should move between the nozzle and the table "skinny". Under the table are print table adjustment screws (Duo 3 pcs; Duo XL, XL SE and XL SE+ 5 pcs), which by rotating the corners of the table rise and fall. Move nozzle slide to the adjustment screw and try on paper, whether the nozzle is at the correct height.



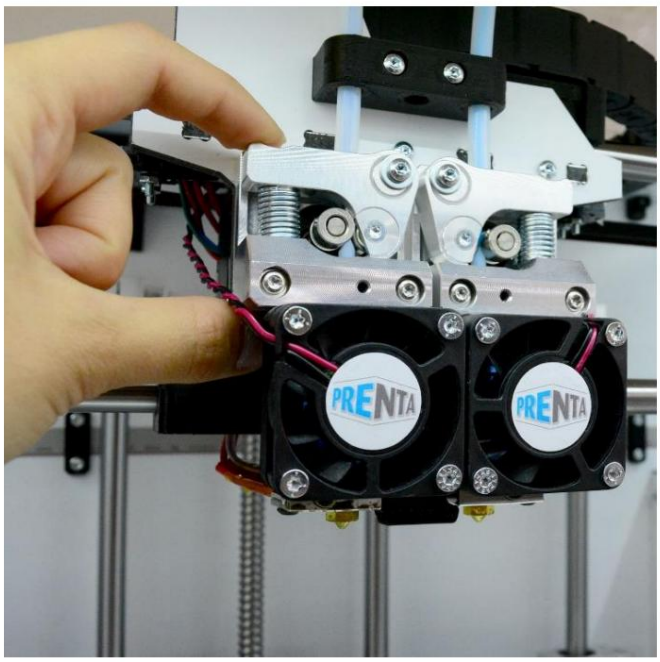
If the paper moves between the nozzle and the table without a response, the nozzle is too far from the printing table. If the paper is completely jammed between the nozzle and the table, the nozzle is too close printing table. Adjust the same response feel for each adjustment screw. **After adjusting all the screws do another check round for each adjustment screw.**

If you want to adjust the height of the entire table with the main adjustment screw, do it only after first adjusting the table fine adjustment screws. The main Z-min adjustment screw of the printing table is located on the back wall of the printer

on the left side of the print table. By tightening the screw clockwise, the level of the printing table moves lower, i.e. away from the nozzles, by opening the screw counterclockwise, the level of the printing table moves upwards towards the nozzles. Do this adjustment only when you are sure that the table is point-like calibration has been completed and the feel of the paper is the same at each adjustment point.

2.2.3 Loading print material

NOTE! print media should always be loaded and removed while the nozzle is hot. Duo and Duo XL - models, lift the end of the filament feed tube out of the nozzle carriage. Place the material spool in the spool holder and push the print material along the filament supply tubes up to the nozzle without feeding yet material into the nozzle. In the Duo XL SE and SE+ models, open the printer cover. Heat nozzle 1 (left nozzle) from the drive menu. If the nozzle temperature is incorrect



to the material you are using, the nozzle will clog easily. Press the scroll wheel once to enter to the menu structure. Roll the scroll wheel to move to *Extruder* and press the scroll wheel to select. Select *Temp. 1* and adjust its temperature to the printing temperature of the material (check appropriate temperature from the material package). Press the roller to confirm the temperature setting. The operating device returns to the main display for 20 seconds after, but you can also go back to the main screen by selecting Back. Wait for 1- the nozzle heats up to the set temperature. After this, you can feed the print material into the nozzle. Press the feeder lever down with your finger to ensure a clear path for the print material. **NOTE! Be careful not to touch the hot nozzle or the heating element when you press the feeder lever!** Make sure the nozzle is full pushing the filament by hand through the nozzle a few centimeters. In Duo and Duo XL models insert the filament supply tube into the nozzle carriage, in XL SE and SE+ models, close the printer cover.

After loading the printing material, turn off the heat from the nozzles, because keeping the nozzle warm is important causes the print material to bleed. The heating can be turned off from the menu on the control panel from *Extruder -> Turn Extruder 1 off.* The nozzle fan rotates and cools the nozzle until its temperature drops below 50 °C. **Do not stop the fan from spinning, try to stop it manually or turn off the main power of the device before the fan has stopped!**

The heating can also be turned off with the red RESET button. The button stops all functions and deletes all unsaved settings.

2.2.4 Removing the print material from the nozzle

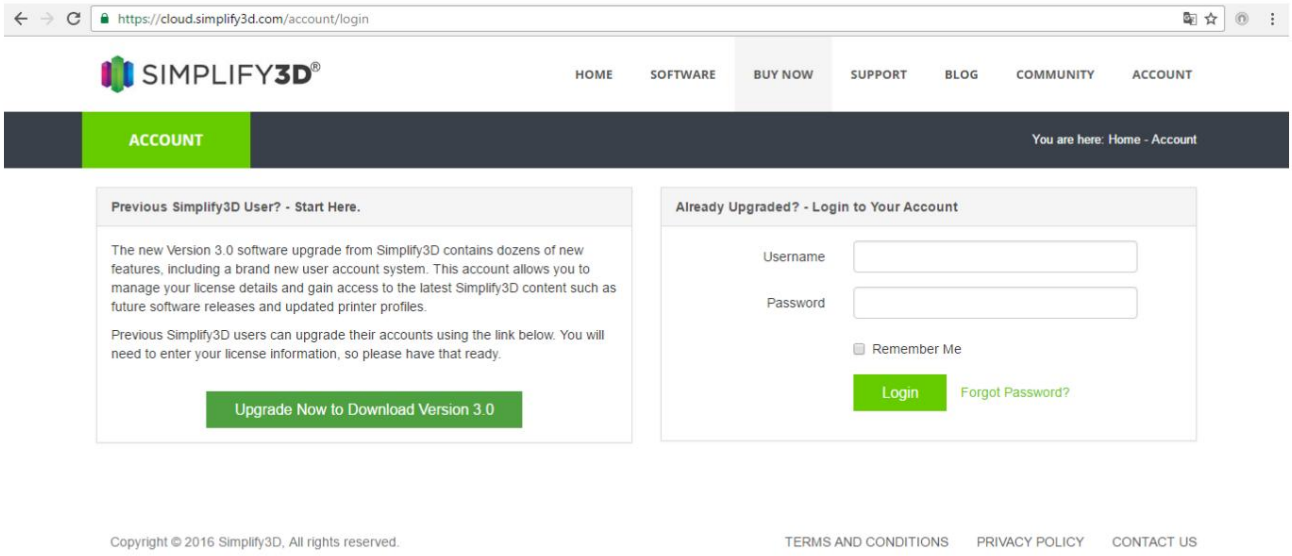
Heat the selected nozzle to the temperature required by the material. In the Duo and Duo XL models, lift the filament up the transfer tube to access the media, on XL SE and XL SE+ models, opens the printer cover. Press down on the lever of the feeder and press the filament downwards by hand so that the nozzle flows material. After that, with the lever of the feeder pressed down, quickly pull up the print thread from the nozzle. **NOTE! If you slowly lift the molten filament upwards from the nozzle, the print material stretches and the nozzle tube can become blocked.** Take care that there are no residues of the material ("hair") into the nozzle channel when removing the material. The printing temperature required by the material can be found on the material roll or packaging.

2.3 Installation of the Simplify3D printing program

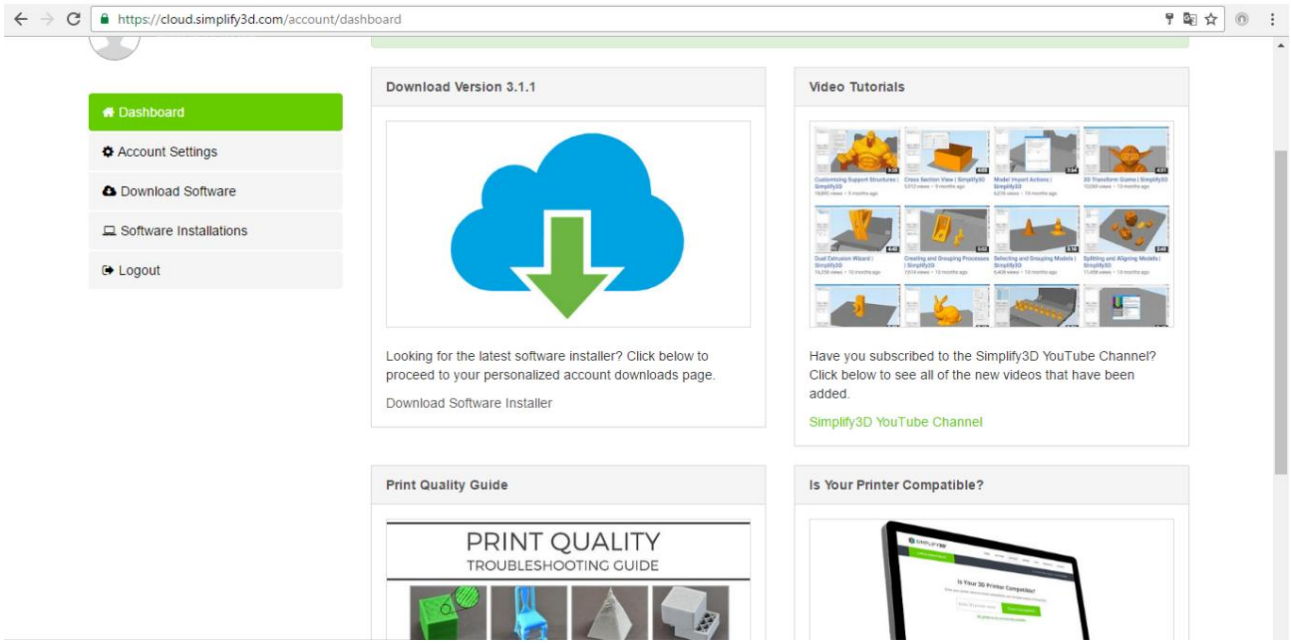
To guarantee the best print quality and ease of use, Prenta Oy recommends Simplify3D - using the print program. You can buy the software through us at myynti@prenta.fi, when Prenta Oy supplies print setting profiles that work with the device.

This guide describes the installation process of the Simplify3D control application for Windows to the operating system. The installation process may differ from that shown in different operating system versions.

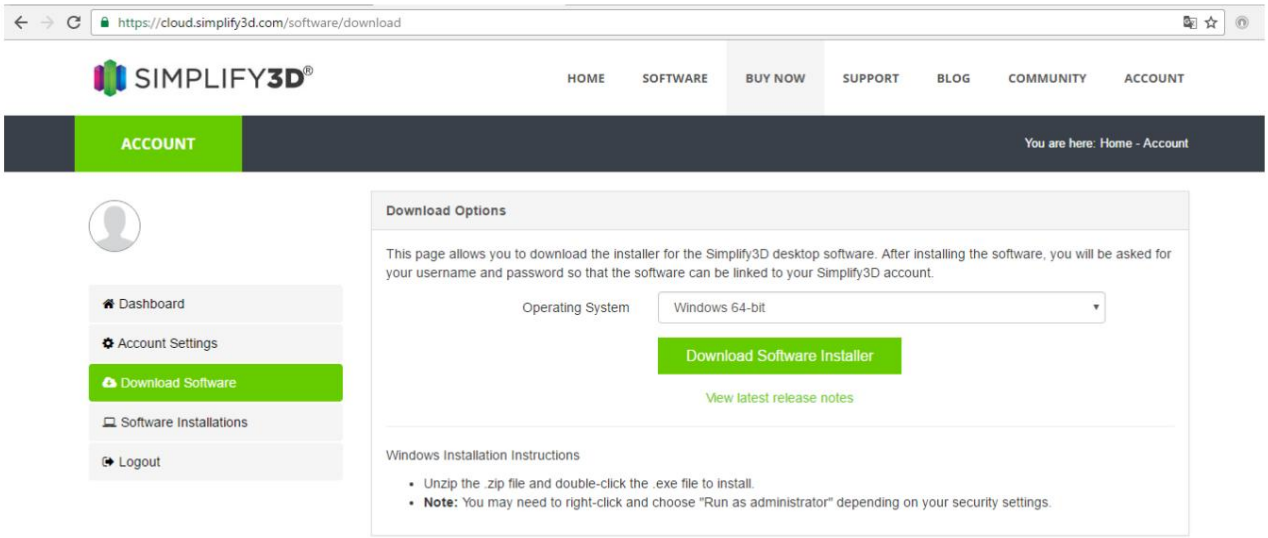
Open the Simplify3D application activation link sent to your email and follow the installation instructions.

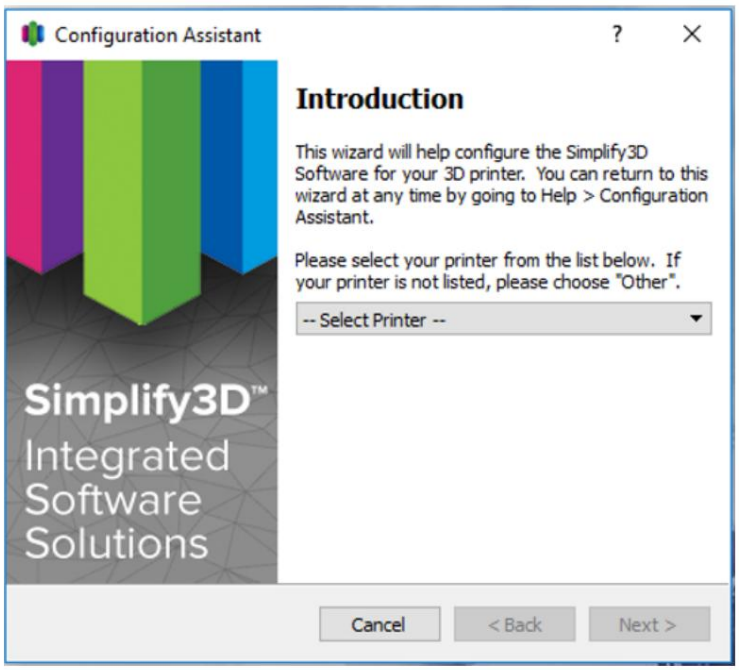


Create a username according to the instructions sent by Simplify3D. The email comes from noreply@simplify3d.com, this can sometimes get lost in the spam folder.



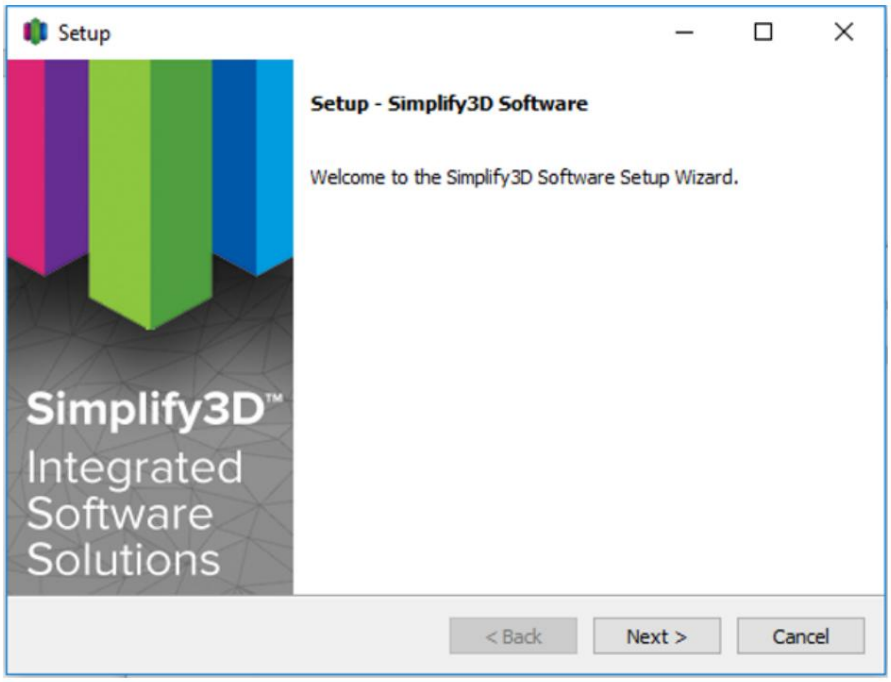
Download the latest version of Simplify3D to your computer.





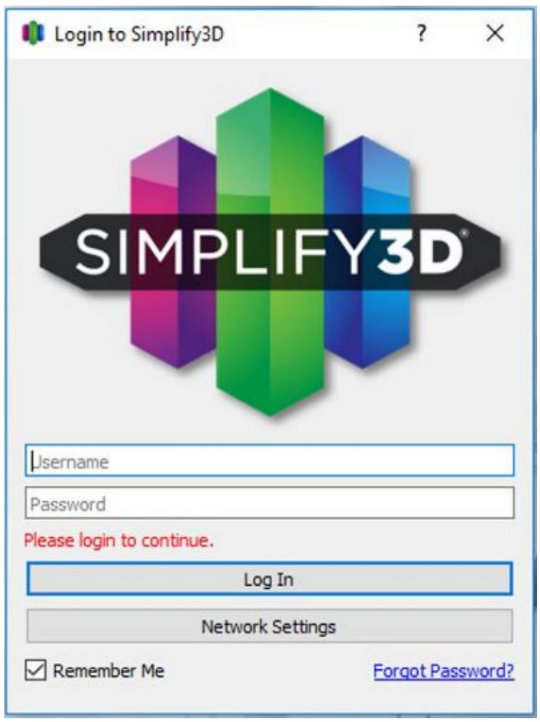
Select your operating system first loading.

After downloading, launch installer.



Continue the installation process

until the end with default values.



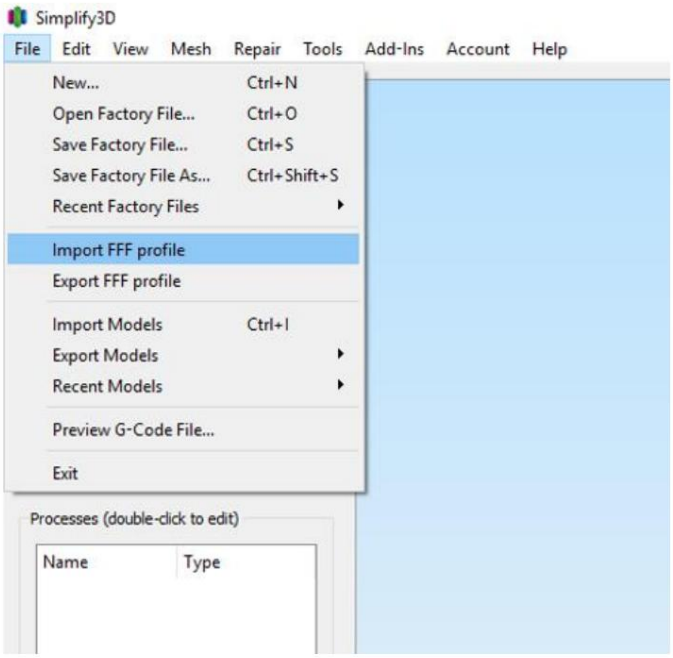
After the installation is finished, log in with the credentials you created earlier.

The program automatically starts a new printer

addition. Select the printer you are using from the list,

Duo or Duo XL. The Duo XL device profile is suitable

also for use in XL SE and XL SE+ models.



FFF file (print settings file)

can also be imported into the program manually.

Select File / Import FFF Profile. To the screen

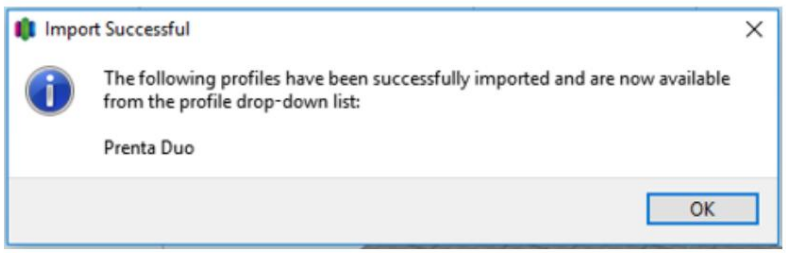
a file browsing view opens. Search

.fff file suitable for your printer.

You can download the file to your computer

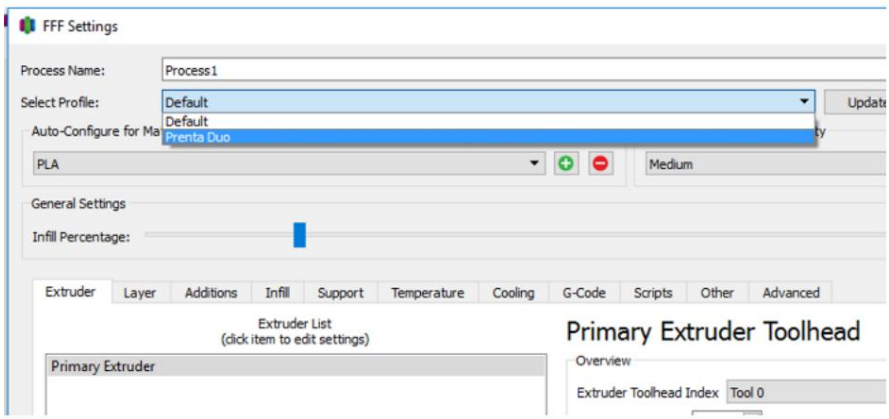
from www.prenta.fi/foorumi

from the section *3D printers -> Prenta Duo / Duo XL -> Downloadable files.*

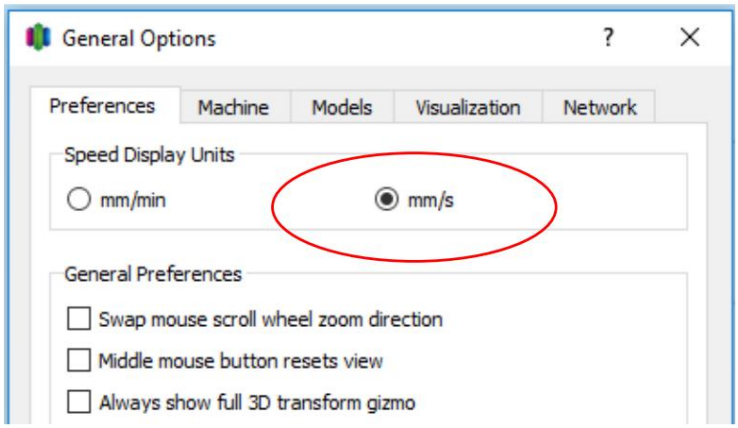


The printer settings are now loaded

to the program. Press OK.



Note Remember care about in the process view (Edit Process Settings) to become active as a profile you use printer profile.



By default, the feed rate unit is mm/min, but Prenta Oy recommends to use mm/s as unit. You can change this from the settings view *“Tools -> Options”.*

The installation is now complete.

3 Use and printing

The steps related to printing are described below.

3.1 Solid

NOTE! Before printing, make sure that the printing surface is suitable for the material to be used solid matter! If the fixative is not used, the piece may detach from the print base and may causes the nozzles and their surrounding parts to break!

A fixative is used in the print bed so that the print attaches to it tightly enough. This is the aim to avoid the print coming off in the middle of printing and highly heat-changing materials such as ABS and nylon, deformation during printing. These materials may bend upwards from the print bed ("warp") if they don't attach properly.

In terms of the final result, the success of the first layer of the print is important, because it creates the bottom of the print and attaches the print to the base. The first layer should look smooth and the lines must be flat, compressed, and there must be no gaps between them.

Prenta Oy recommends hairspray as a fixative for PLA printing. There are big differences in strikes, and the best has been found to be L'Oréal Studio Line Fix&Style Spray strength 8. Other fixatives for PLA are a glue stick, Kapton tape and wood glue.

Fasteners that work with ABS include ABS acetone solution, a spray fixer called 3DLac, and a separate BuildTak adhesive base to be glued to the glass. Wood glue is used as a fastening material for nylon.

Remove the glass plate from the printing table and apply or spray the fixative on the glass while it is off the printer. If the fixative is applied or sprayed while the glass plate is on the printing table, the fixative may spread to other parts of the printer and thus cause the printer to malfunction.

3.2 Printing from a memory card

The Duo series is designed for use with a memory card. A memory card is recommended as a minimum class 10 SD memory card or class 10 microSD memory card with an adapter. Slower cards may slow down the operation of the control panel. It can be found on the memory card supplied with the device a few ready-made printable files (gcode). Prenta Oy has produced the test prints With Simplify3D. The test files have been prepared to be suitable for PLA materials.

Insert the SD memory card into the operating device contact strips of the memory card facing you.

Press the card into the bottom, and into the control panel the file structure of the memory card opens.

If the file structure does not open automatically, browse the drive menu to *SD Card* and select it under *Print File.*

NOTE! The memory card contains the STL files containing the original geometry and printable gcode files. Only the gcode file can be printed from the memory card.

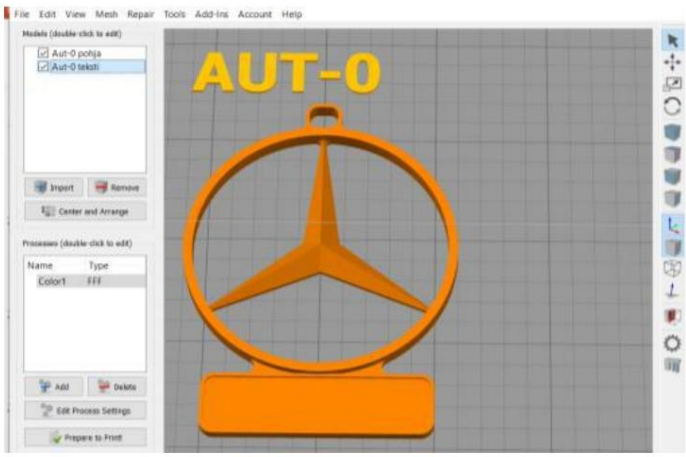
Select the desired file to print by pressing the scroll wheel. The printer drives itself to the home position and start the heating of the nozzle and the printing table. Printing starts after the temperature of the nozzle rises to the set target temperature (the temperature of the printing table rises possibly still during work towards the target temperature.) After the printing is finished, the printer drives the X-axis to the home position and automatically turns off the heating of the nozzle and the printing table.

3.3 Using the printer with external software

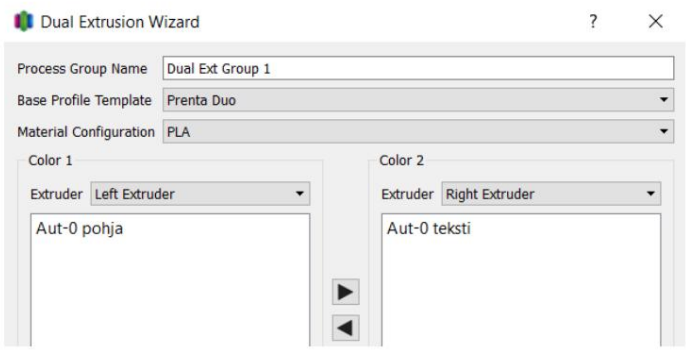
In addition to its own control panel, the printer can be used on a computer with the Simplify3D software, Repetier With Host software and others that support direct control of 3D printers. On the computer when controlling, Prenta Oy recommends acquiring a separate PrentaServer accessory device. PrintServer enables multiple printers to be controlled via a wireless network. ask more myynti@prenta.fi.

3.4 Making a two-color printout

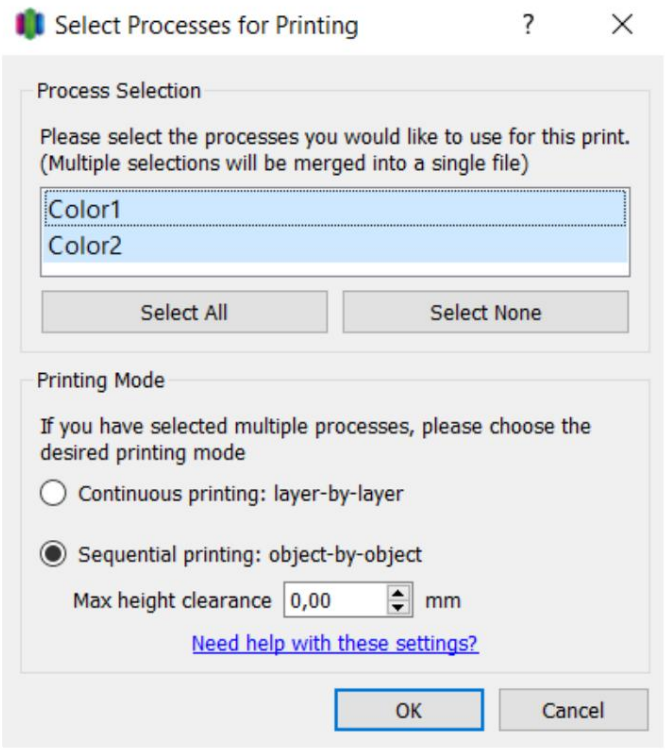
NOTE! For two-color prints to be successful, it is important that the height adjustment of the printing table and stabilization, nozzle height adjustment and nozzle XY calibration are done!



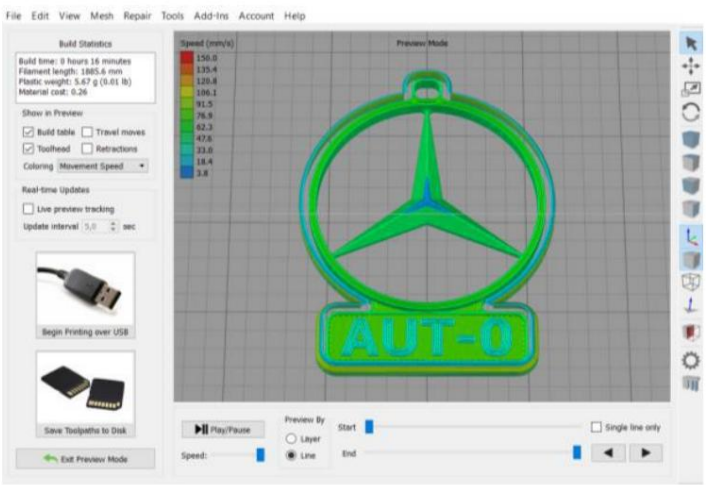
For a two-color print job, you need two .stl files with the parts modeled on the same as the original to the location. Open files Simplify3D - in the program, and go to the top menu *Tools -> Dual Extrusion Wizard.*



Specify the nozzles, that is, choose which one the nozzle prints which file.

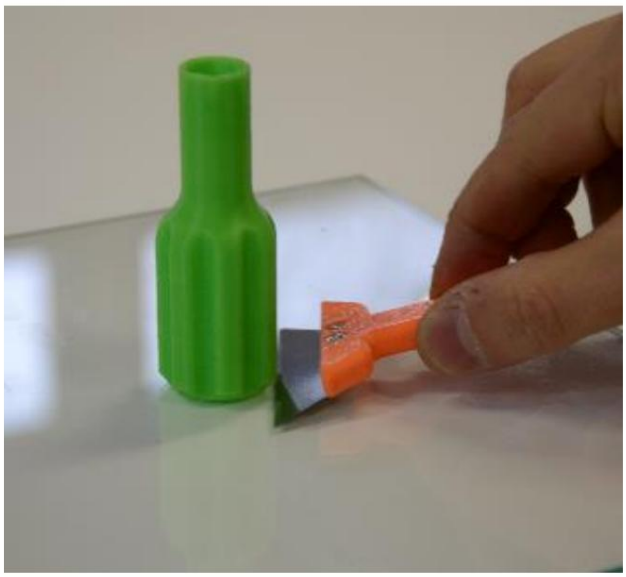


Click *Prepare to print* and select the processes used. Under *Printing Mode* select *Sequential printing.*



Check the printing process, make the necessary preparations and print.

3.5 Removing the piece from the printing table after the job is finished



Remove the cooled glass plate from the printing table removing the clips holding it in place and pull the glass plate out of the printer. The song is easiest to remove by pressing a sharp knife or other blade between the glass and the piece. The second option to remove a piece from the glass, you have to tap piece with a small hammer or other object.

Be careful not to break the glass when removing the piece in connection with. It is good to add a fixing agent on the glass plate before the next printing.

4 Maintaining the printer

This chapter describes the most common maintenance procedures required by the printer.

4.1 Glass printing platform

Cleaning the glass when the glass is very dirty or
when changing fixative between printing different materials. Hairspray is removed by washing with water,
ABS solution with acetone and wood glue by soaking and/or scraping. A printing glass can be placed under the mount
to protect it, put e.g. heat-resistant Kapton tape or PLA when printing as well
painter's tape, which may be sufficient on its own for a PLA print. Thus
it is easier to clean the print bed after printing jobs.

4.2 Adjusting / stabilizing the printing table

The stabilization of the printing table and the vertical zero level (Z-axis) should be checked from time to time
and especially after transport, so that printing can be done well. The printing table is adjusted
from the main adjustment screw located at the back of the device and from those located under the printing table
fine adjustment screws. The main adjustment screw is used to set the Z home position to the correct height and
fine adjustment screws adjust the straightness of the printing table. The procedure is described in more detail
in section 2.2.2.

Height adjustment of the printing table:

- Turn on the power of the device, and drive the printing table to the home position from the menu *Position -> Home Z.*
- Place a piece of paper, such as A4 copy paper, between the print table and the nozzle.
- Adjust the height of the printing table to the one located behind the table on the left adjustment screw. Turn the adjusting screw until the paper moves between the table and the nozzle, but you still feel a little resistance. Drive the printing table to the home position between adjustments.

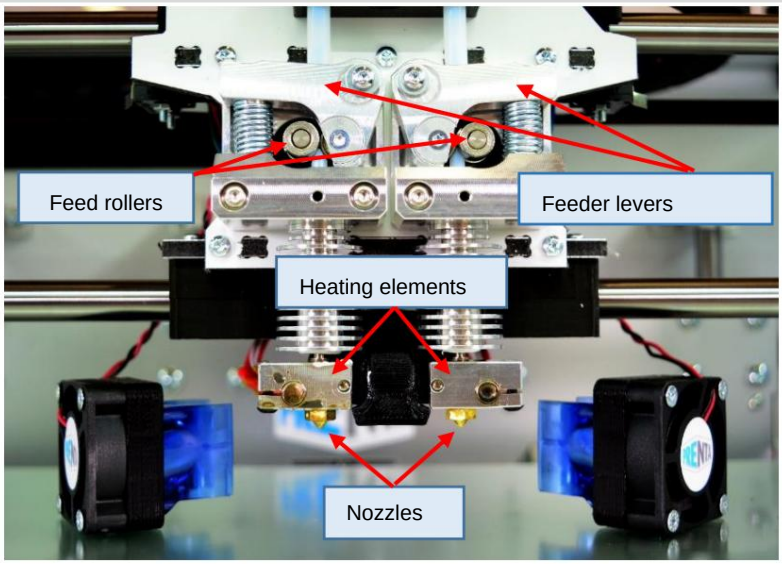
Stabilizing the printing table:

- Turn on the device, lower the printing table and heat the nozzles to the extrusion temperature. The temperature depends on the filament in use.
- Press the feeder lever down with your finger and push the filament through the nozzle a few times millimeters until material flows from the nozzle.
- Jerk the filament out of the nozzle with a steady, swift movement. Remove the spilled filament and clean the tips of the nozzles with, for example, paper towels. **Beware of hot nozzles and heating elements!**
- Turn off the heating, clean the printing table of possible impurities and drive print table to the home position from the menu *Position -> Home Z.*
- Depending on the device model, there are three or five adjustment screws below the printing table. Export the nozzle slide by hand by pushing it against a screw and place a piece of paper, for example A4-copy paper, between the printing table and the nozzle. Turn the adjusting screw until the paper moves between the table and the nozzle, but you still feel a small resistance. Export nozzle slide alternately to each adjustment screw and adjust the distance to the same as at the first screw. Do another review round!

4.3 Maintenance of conductors/axes

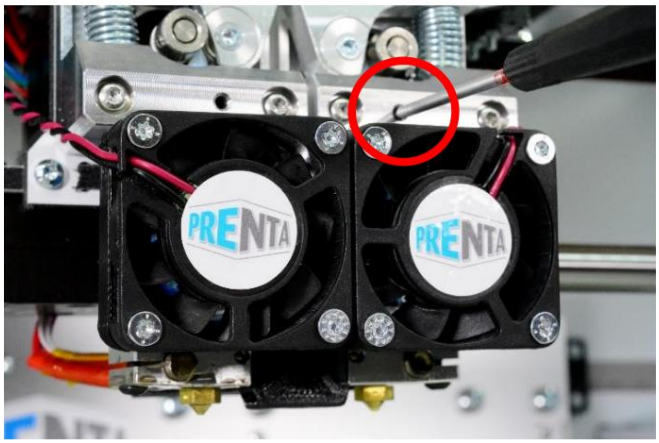
The printer's shafts should be kept smooth so that the movements of the printer carriage are accurate and unhindered. A significant symptom of too dry axes is the displacement of the print levels during printing. Use it silicone spray to lubricate the axles. Apply the spray with a soft cloth or paper towel, do not spray spray inside the device! Wiping dust from the device prevents malfunctions of the printer in axles and bearings.

4.4 Filament feeder and nozzle



Filament feeder and nozzle are relatively maintenance-free, when used correctly. Keep it care that the temperature of the nozzle is suitable for filament. Take too into consideration that if print speed is high, the filament does not have time to heat up enough, though temperature would be high enough. This manifests as 'jumping' of the feeder when the cool filament does not enter the nozzle as quickly as the feeder tries to push it. In this case, the temperature of the nozzle must be increased and possibly clean the dirty feeder roller.

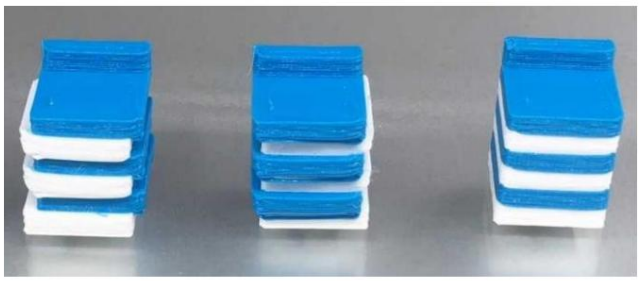
4.5 Nozzle height adjustment



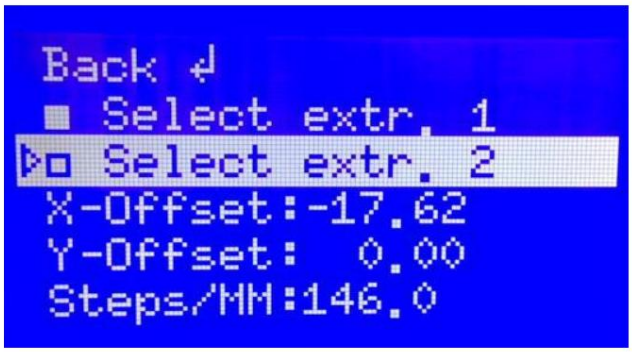
To adjust the height of the nozzles, you need Allen key (in Duo and Duo XL models 2.5 mm, in Duo XL SE and SE+ models 1.5 mm)6. Before adjusting the height of the nozzle, remove filament from the nozzle and clean the nozzle according to the instructions in section 4.8. Loosen up nozzle clamping screw above the fan from the existing hole. Raise the nozzle to the upper position and drive the print table to the home position from the menu *Position -> Home* Z. Carefully lower the nozzle against the table, adjust to the desired height slightly off the surface of the table and tighten the screw. Do the same for someone else to the nozzle. After adjusting the height of the nozzles, it may be necessary to complete the printing table calibration according to the instructions in chapter 2.2.2 and XY calibration according to the instructions in the next chapter.

4.6 Calibration of nozzles in the XY direction

To calibrate the nozzles in the XY direction, print from the memory card supplied with the device file sandwich_2color.gcode. Measure the difference between the geometries on your printed piece in millimeters with a caliper.



In the first piece, the 2-nozzle is **-1 mm** in a different position for both the X and Y axes parallel to the current offset. In the second piece, the 2-nozzle is **+1 mm** different in position parallel to both the X and Y axes compared to the current offset. In the third paragraph, nozzles 1 and 2 are calibrated correctly, ie nozzles are so-called in the same coordinates.



Scroll from the menu to *Quick settings -> Configuration -> Extruder.* Choose to be active 2-nozzle by pressing *Select extr. 2.* Adjust *the X-Offset* and *Y-Offset* according to your measurements. (Hint! Write record your adjustments to yourself.) Print sandwich_2color-gcode again and if needed repeat measurements and nozzle adjustments.

When the correct settings for the nozzles have been found, save them in the menu *Configuration -> Store to EEPROM.*

NOTE! If the settings are not saved, the position data of the nozzles are not saved and the settings are not saved are reset if the Reset button is pressed!

4.7 Cleaning a clogged nozzle

The nozzle may become blocked if, for example, impurities are carried into the nozzle along with the filament or if printing at an inappropriate nozzle temperature. If the filament no longer runs smoothly through the nozzle, try cleaning the nozzle as follows:

1. Heat the nozzle until hot, about 250 °C. Press the thread feed lever (see chapter 4.4) to the filament can move freely. Feed the filament into the nozzle manually by pressing. If you feel the thread flowing normally through the nozzle, the blockage may have already been cleared with this method. If you still have problems printing, continue to point 2.
2. Heat the nozzle to 250°C. Feed the nylon filament through the nozzle and turn off the nozzle heating. Allow the nozzle to cool and when it is around 100 °C, jerk the filament strongly out of the nozzle. After the nozzle has cooled, check if you can see a small hole through the nozzle. The light reflects through the hole when looking directly at the nozzle from above. If the nozzle still seems clogged, repeat the process.

If the cleaning operation is successful, even a nozzle can be seen at the end of the removed filament the shape of the tip and the narrow spike from the part that came out of the nozzle hole.

5 The most common problems and their resolution (trouble shooting)

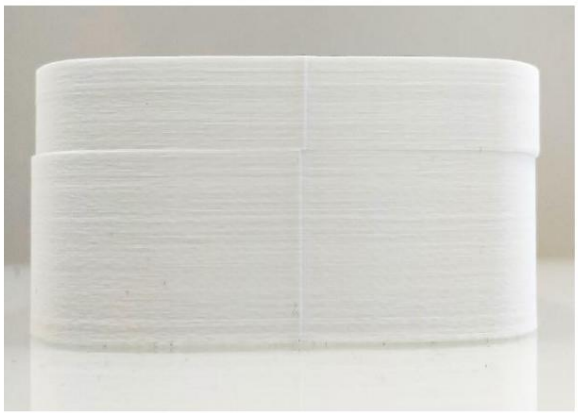
5.1 Filament feeder problems

Filament feeder problems are most often related to wrong print temperature or clogged filament feed roller. Check the correct printing temperature and clean the dirty feed roller. Too low print height of the first print layer can also affect the feeder problem if the nozzle is stuck in the glass and the filament cannot get out of the nozzle. In this case, do calibration of the printing platform according to the instructions in section 2.2.2.

5.2 Print adhesion problems

Most of the time, problems with the print sticking to the printing table are caused by the wrong printing table temperature or wrong or too little solids. Each material has its own suitable solid substance, which are discussed in chapter 3.1 of the user manual. In addition to the fixative, the printing table the right height and temperature are important factors in keeping the piece stuck. The printing table being too high, the first layer will not print correctly, and the nozzle too close to the table may push the printout off the table. The height adjustment of the printing table has been discussed in more detail in chapter 2.2.2.

5.3 Layer shift



To be printed to the song appearing a layer shift in the X or Y direction often refers to the rise of the edges of the piece in the middle of the work, i.e for "warping". When the print head collides with the substrate detached to the edge of the piece, the nozzle freezes possibly stuck and either moves the glass plate or moves itself to the wrong positioning coordinate. Warping to prevent it, you should check the printing temperatures and possibly confirm the piece clings to the print platform with e.g. Simplify3D's brim or raft function, which adds to the print "auxiliary layer" with which the piece is attached to the printing table from a larger area.

5.4 “Def / Dec”

The message "Heater decoupled" (dec) on the display of the control panel and the warning sound always indicate to the heating element problem. Most often, the fault is that the nozzles do not reach the target temperature or able to maintain it. The problem can be caused by, for example:

- from a broken heating element
- insufficient heat rise within a certain time
- trying to print at too high a temperature while the part cooler is running
- the main power of the device is not on, but the operating panel receives power via the USB cable (e.g. from the computer) and try to turn on the heat.

Stop printing, for example, by pressing the red RESET button, make sure that the nozzles warm up and start printing again. When printing filaments that require high temperatures it makes the most sense to make sure already when slicing the piece into gcode format that the piece cooler either doesn't start at all or that its powers are low enough.

The message "def" usually means that the device's thermostat cable is damaged. Here in this case, deliver the device to an authorized Prenta service center.

5.5 General problems related to print quality

Comprehensive solutions to various print quality problems can be found at:

https://www.simplify3d.com/support/print-quality-troubleshooting/

5.6 Simplify3D software support

Simplify3D software's own support and tutorials can be found at www.simplify3d.com

5.7 Contact information and user support

You can get help and instructions by e-mail at support@prenta.fi

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