

X400 PRO V3 3D Printer Manual

rev.Nr: 0.0.1



 X400 3D-Drucker

Congratulations on your personal

X400 PRO V3 3D printer

The X400 PRO V3 is a 3D printer with extra large printing space and dual extruder. A lot of different synthetic materials can be printed. With a layer thickness down to 0,1 mm and a printing area with 390x400x320 mm, precise model up to a volume of approx. 56 l can be printed. The X400 PRO V3 3D printer consists of high-quality components like backlash drives, which are used at mechanical engineering as well.

This manual will give you a good guidance exploring the world of 3D printing with your new X400 PRO V3.

Technical terms

Model	X400 PRO V3
Printing area (X - Y - Z)	390 x 400 x 320 mm

X400 PRO V3 3D Printer Manual

Printing speed	10 - 150 mm/s
Movement speed	10 - 300 mm/s
Positioning accuracy (X/Y)	+/- 0,1 mm
Layer thickness(minimum)	0,1 mm
Filament/ nozzle-diameter (standard)	1,75 mm / 0,4 mm
Material	ABS, PLA, PS, PVA, TPU93, Carbon20, Laywood, Laybrick, PP, Bendlay, Soft-PLA, SmartABS
Extruder-typ	DD3 Dual
Extruder temperature (maximum)	290° C
Printing bed-technology	heatable
File transfer	LCD Display with SD card reader, USB, Wlan u. Ethernet (optional)
Software-configuration	Simplify3D Software
Power consumption	600 W
Operating voltage*	115 / 230 V
Ambient temperature	15 - 26° C
Outer dimension ca. (B x T x H)	700 x 700 x 700 mm
Weight approx.	55 kg
Marking	DIN 10218-2
Option	base cabinet, approx. 3.3 feet height (shortable)
Available nozzle	0,25 / 0,3 / 0,35 / 0,5 / 0,6 / 0,8
Available nozzle-material	brass, hardened steel
Technology	FFF (Fused Filament Fabrication)

Scope of supply

Your X400 PRO V3 will be delivered with the following components :

- Fully mounted X400 3D printer
- Acrylic box
- LCD Display + turning knob
- SD-card reader (incl. SD card)
- 2x DD3 extruder with E3D hotend and 0,4/1,75mm brass nozzle
- heated bed

The scope of X400 PRO V3 consists:

- Simplify3D full version
- 1x Set [carry handles](#)
- 2x [dispenser for spools](#)
- 2x [brass nozzle 0,25/1,75mm](#)
- 2x [brass nozzle 0,40/1,75mm](#)
- 2x cold-device plugs
- 3x PET band 400×400 mm ([printing bed coating](#))
- 1x USB A-B cable

In addition to the standard configuration following additional options are bookable:

[base cabinet](#)

[basic teaching course](#)

Unpacking and placement

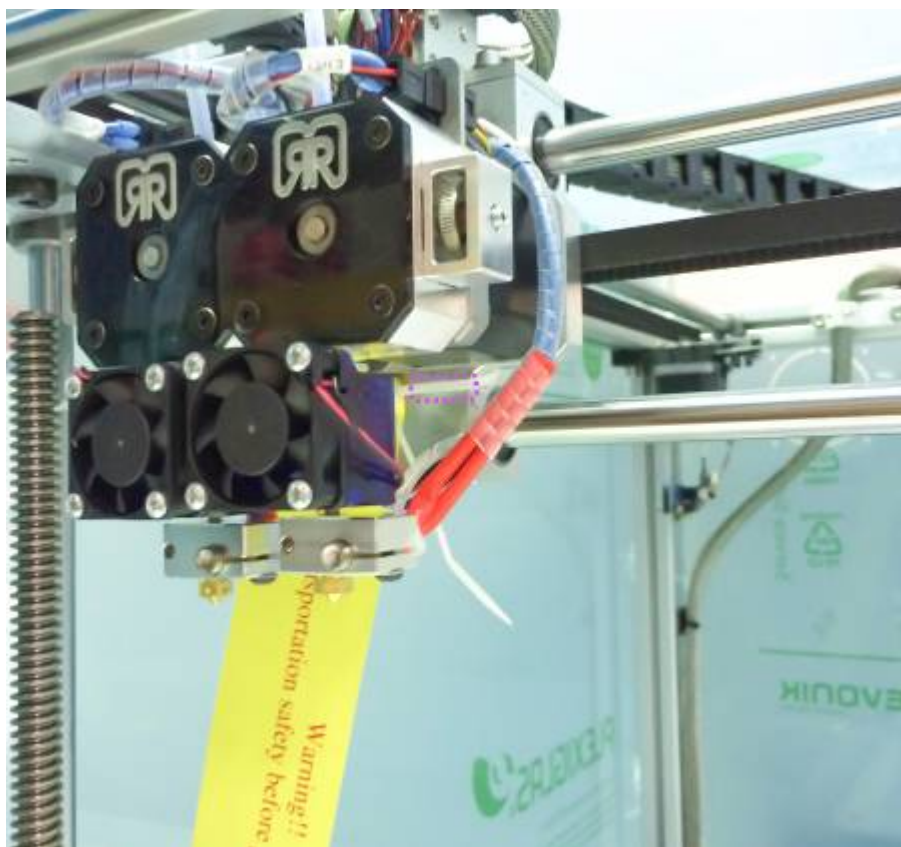
Unpacking

While unpacking your X400 PRO V3 3D-printer please make sure, that no components of your printer gets damaged by e.g. a sharp knife.

If you notice any damage at your X400 PRO V3, please contact your [reseller](#) immediately.

Transport locks & test print

The axes of your X400 are fixed with cable ties for the transport. Please remove the cable ties, they are marked with yellow flags.

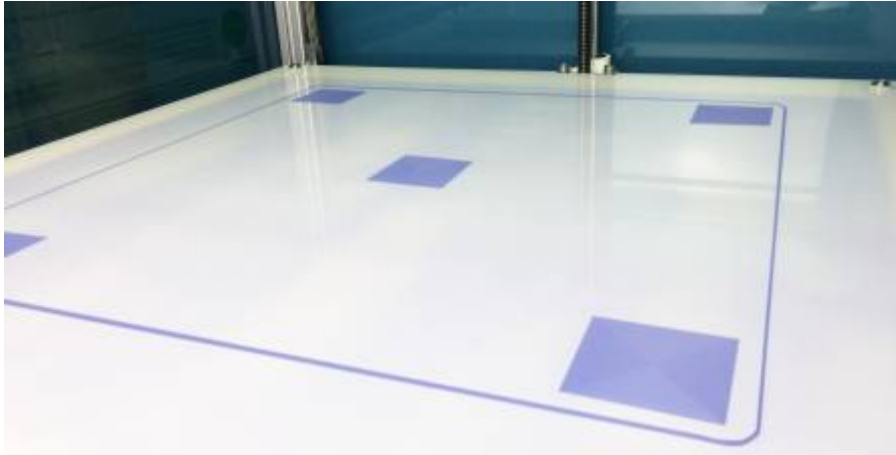


Transport locks

After removing the transport locks please make sure that the tool slide can be moved easily in x- and y-direction.

Every X400 that leaves our facilities has a test print on it's printing plate. The test print consists of 5

individual squares. Please remove all test objects with a spatula before placing the [printing bed coating](#).



Remove test print

Installation site

Every electronic device develops heat. The heating of the device is within the permitted range though. Sensitive surfaces may discolor over time due to heat exposure. Moreover, the rubber feet of the device may cause color changes on furniture surfaces. If applicable, please place the device on a solid, appropriate and plane base!

Please mind the practicability when choosing the installation site (sufficient working height).

- The stability is important, so you avoid any movement of your printer!
- The placing must be flat and steady.
- Unsuitable for soft and moving surfaces.

Adjustment



Adjustment X400

After placing the printer it has to be aligned.

An uncorrectly adjustment of the X400 PRO V3 may cause more noise, vibration and movement of the printer as usual.

All four machine foot need to stand firmly on the floor. The printer musn't shake while printing. The adjustment can be prooved with a level.

After adjusting the printer, use the nuts to lock all four machine feet.

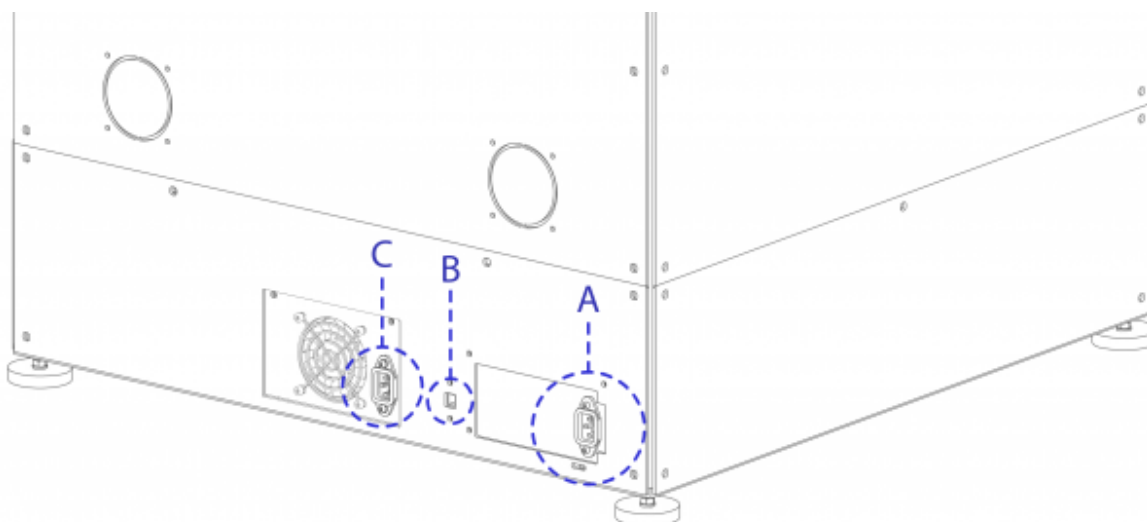
Startup

Before you start your first 3D print, it's necessary to check if everything is fully functional. The first test can be made with help of your LCD Display.

If you ordered a printer with base cabin and handels please check [following chapter](#) in this manual.

Mounting

For starting your X400 PRO V3, connect both cold-device plugs on the back of the printer with an outlet. On the back aswell you find an USB-socket (B).



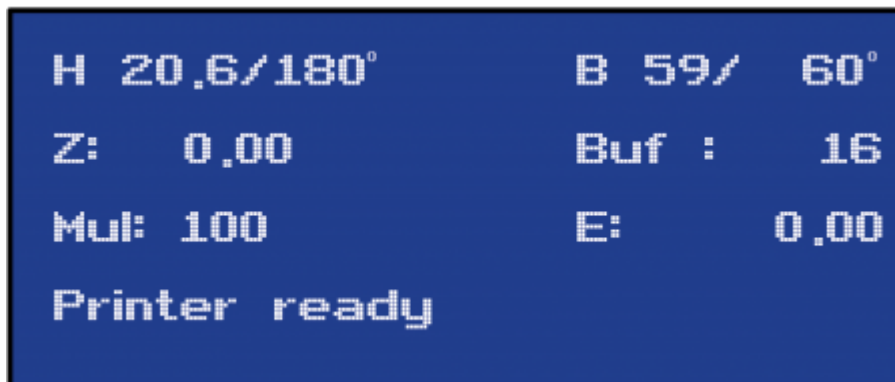
back X400

Please make sure that both cold-device plugs are connected. One is for the power (A), the other for the heated bed (C).

We recommend to connect the X400 PRO V3 with an uninterruptible power supply (UPS-System).

First steps

Please make sure that the power supply of the X400 is turned on and the door of the printer is closed, then the following display will show up:




 Start LCD Display

Please note: The temperature displayed can differ from the display on the picture, here the heating is already on.

If you can't see anything on the display, please check the power supply is turned on and safety switch is pressed down, like shown in the picture.



 door-safety switch (closed)

LCD Display | Preparation

Please familiarize yourself with the [LCD Display and it's manual](#) before you start your X400 PRO V3.

For commissioning it's recommended to lower the movement speed of the whole system. Thereby the axes move slower and it's easier to intervene if any problem may appear.

Navigate to the menu item:

```
menu/ quick settings /speed Mul.
```

and change the factor of the speed multiplier from 100% to approx. 50%, by a click and turning the knob.



adjust speed multiply


Movement and machine zero point


After reducing the speed of your X400 PRO V3, please navigate to the point:

```
Menu/ Position
```

please move one axis after another using the following command:

```
X/Y/Z pos.fast
```

 If your printer makes any strange sound or clicking noise while performing the next command -Home all-, shut down the voltage immediately and follow this [instruction](#). To cut the power supply just

 open the door of the X400.

If all axes moved successfully, let them reach the zero point with following command:

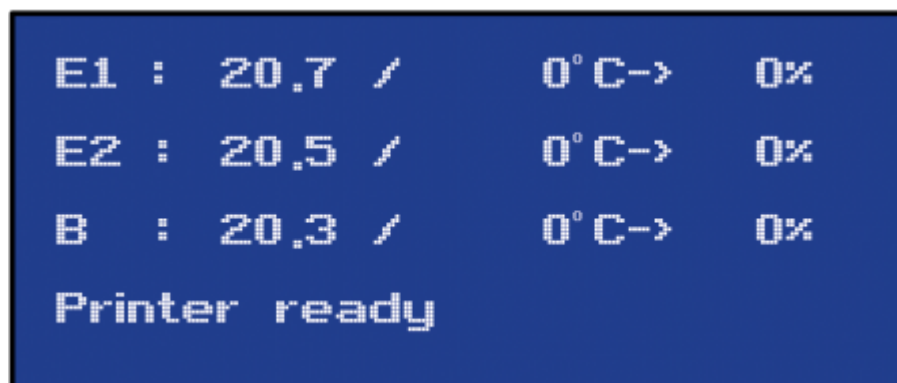
```
Home all
```

Extruder and heated bed


To check if all heating elements of your X400 are in a proper condition, navigate to the third overview window of your LCD-Display.

By turning the knob you can switch between the different overview windows.

Check, if for Extruder 1 & 2 aswell as for the heated bed, the present temperature is displayed.



```
E1 : 20,7 /      0° C->  0%  
E2 : 20,5 /      0° C->  0%  
B  : 20,3 /      0° C->  0%  
Printer ready
```


 overview window #3

For the next step navigate to the menu item:

```
Menu/ quick settings
```

and confirm the command *Preheat PLA*. Thereby both extruder aswell as the heated bed get heat up to the working temperature, needed for processing PLA-filament.



 preheat PLA

It's normal, that during the preheat melted material drops out of the nozzle. There is still material inside the extruder which was used to produce the test print.

The overview window #3 should display the current rising temperature and the required temperature for all heating elements.

Important: Please shut down the heating elements after checking the rising temperature. You needn't wait till the required temperatures have been reached.

To shut down the heating elements, navigate to the menu item:

Menu/ quick settings

and confirm the command *cooldown*. Thereby all heating elements will be shut down.

Z-axis adjustment & printing surface

Z-axis adjustment

Your X400 V3 already got calibrated and a test print was performed, but the printing bed needs to be adjusted again.

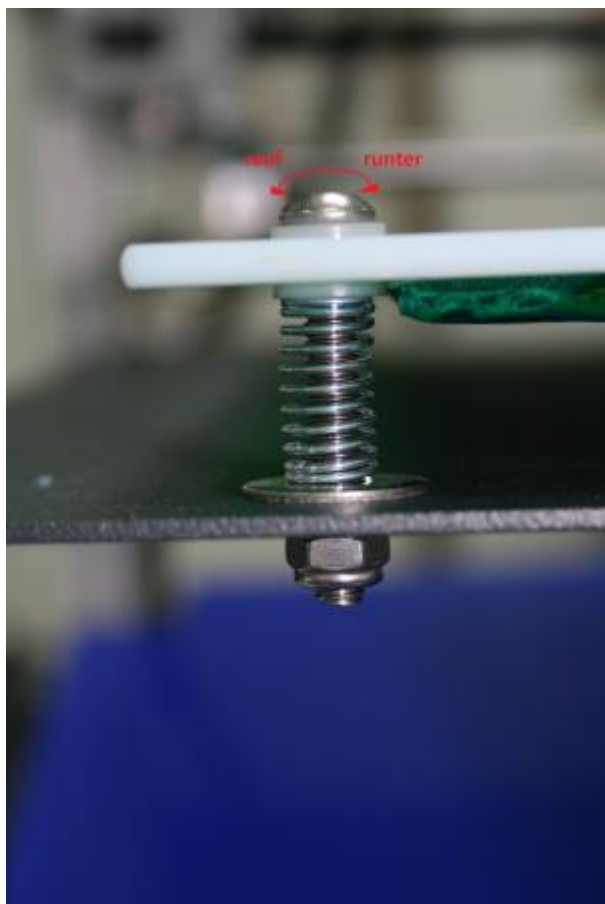
The printing bed gets adjusted by the four screws in the corner of the ceramic plate. By loosening a screw, you raise the printing bed in this corner and reduce the distance between extruder and printing plate. By tightening a screw the opposite happens.

Since the printing bed has already been adjusted, small modifications should be enough (1/4 - 1/2 turn of screws).

To prevent bad printing results, don't loosen the ceramic plate to much, it should always be a little prestressed!

To calibrate the printing bed, if haven't been done already, move [the machine to it's zero point](#). Make sure that the nozzle isn't resting on the printing plate while in home-position. If so, the whole printing plate needs to be lowered before you start the calibration.

Please remove the [test print](#) if not done yet.



Z-axis adjustment

When the machine reached the home position, open the door of your X400, so the voltage gets disconnected and you can easily move the slide with the tool head. Move the tool head in each of the four corners and in the middle of the plate, thereby check the distance between hotend and printing bed. The distance should be 0,05 mm. If necessary adjust the distance by loosen or thighten the printing bed screws, like shown in the picture.



This step should be ideally repeated with a hot printing bed.

Therefore close the door of the X400 and navigate to the following menu item:

Menu/Extruder/Bed Temp.

Raise the temperature to 60°C and wait till the the chosen temperature is reached and repeat the process of calibration.

Attention: Risk of burns. Please be careful adjusting while the heated bed is still hot!

Printing surface

There are different [printing bed coatings](#) for different materials. The scope of supply includes three PET foils. These are ideal for materials like PLA and ABS.

For a bubble-free glueing of the PET-foil, read the following [instruction](#).

If you work with different printing bed surfaces it might be necessary to adjust the z-endstop, e.g. because a PP printing plate is several mm thick. Read the instruction of how the [opto-endstop](#) works before making any changes.

It isn't necessary to glue a PET-foil *under* or *on* alternativ printing bed surfaces, for example: Carbon or PP-mat.

If you often change nozzles and/or the printing bed surface, it might be helpful to adjust the distance between printing bed and extruder directly using the LCD-display by following command:

Menu/quick settings/Z babysteps

By a click on the menu item Z babysteps you reach it's submenu. Here you can raise oder lower the whole printing plate by turning the knob. You can use this function after the start of a 3D print to manually adjust the height of the printing plate.

Extruder und filament supply

The X400 V3 will be standard delivered with two extruders. Thereby the left/first extruder is positioned lower than the right/second extruder. This is intended, because we advice all our customers to make their first 3D prints with only one extruder.

How to put the second extruder in operation, you see [here](#).

Before you start to change filament or guide the filament into the extruder for the first time, please move the tool head to the following position: *X:200mm Y:350mm Z:50mm*

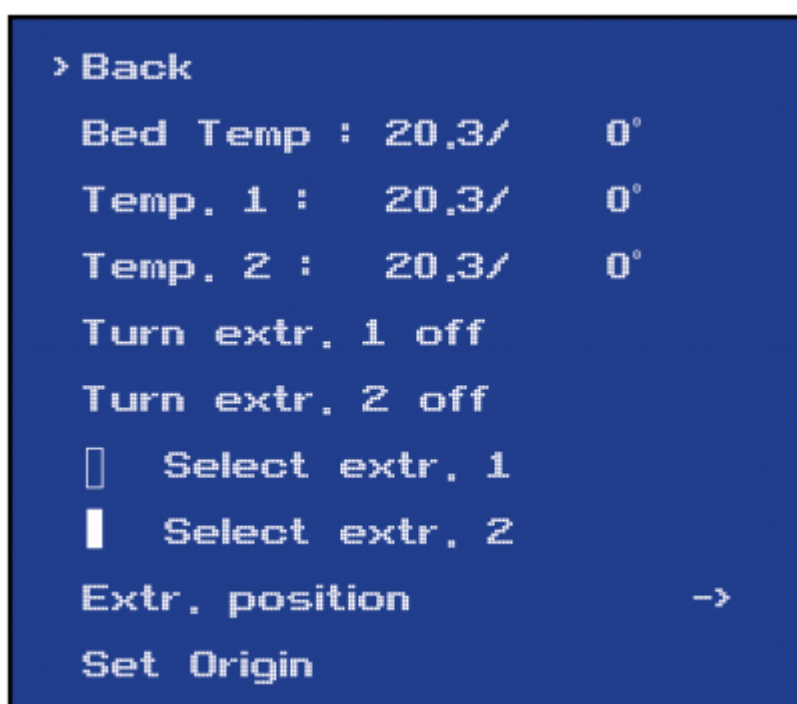
To guide the filament into the extruder, the extruder needs to be heated to the material specific temperature. We recommend to use PLA for the first 3D prints. It's an easy to handle and biocompatible material.

There is a remaining piece PLA filament from the test print inside your extruders, this will be removed during the next step.

From the LCD menu navigate to the following menu item:

Menu/extruder

Click on *Temp. 1* and turn the knob so you can adjust the temperature of the *first* or better *left* extruder.



Menu item extruder

For **PLA** please choose a temperature of approx. **200°C**.

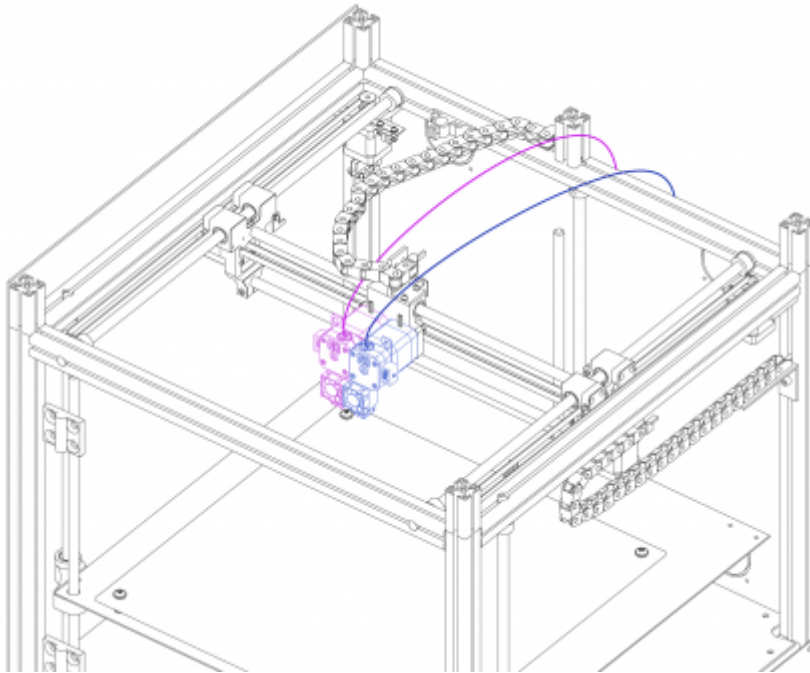
It's normal that during the heating process molten material drops out of the nozzle.

When the extruder reached the desired temperature, the old filament gets removed from the extruder by the following command: *Extr. position* in the menu item

Menu/Extruder/Extr. position

By a cclick and turning the knob counterclockwise the filament can be pulled out of the extruder. Pull

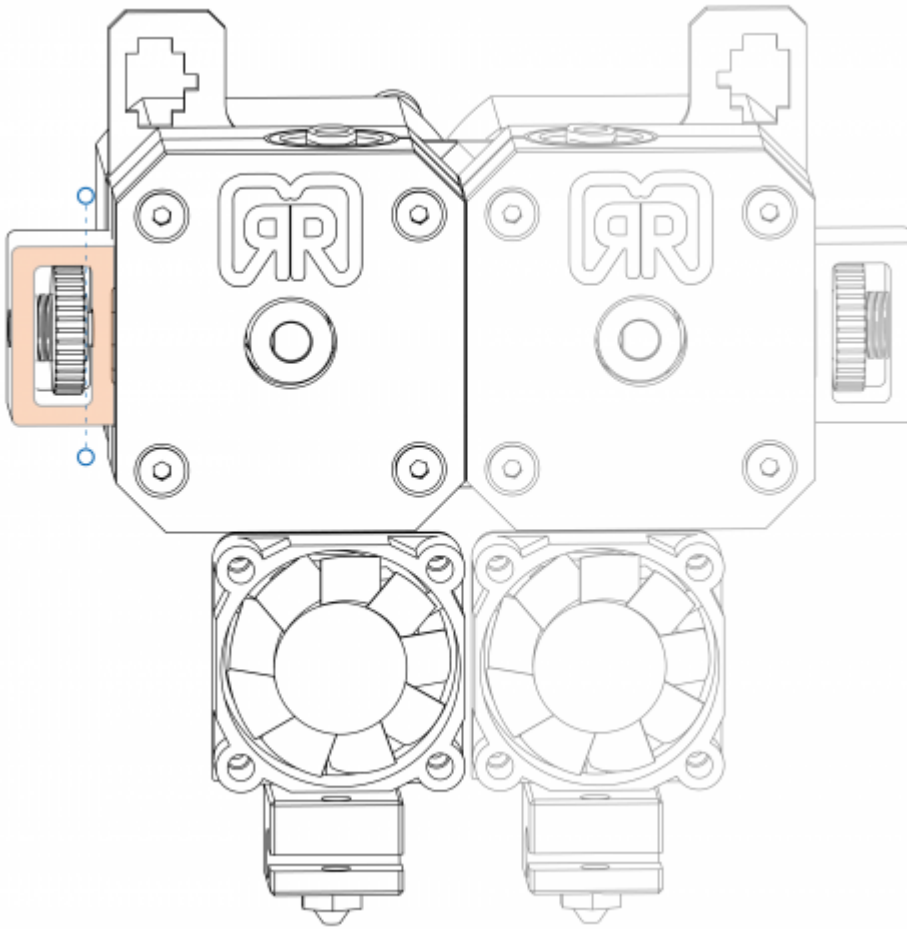
at least 60 mm filament out of the extruder. (Turning the knob clockwise will extrude material).



Filament-guidance X400

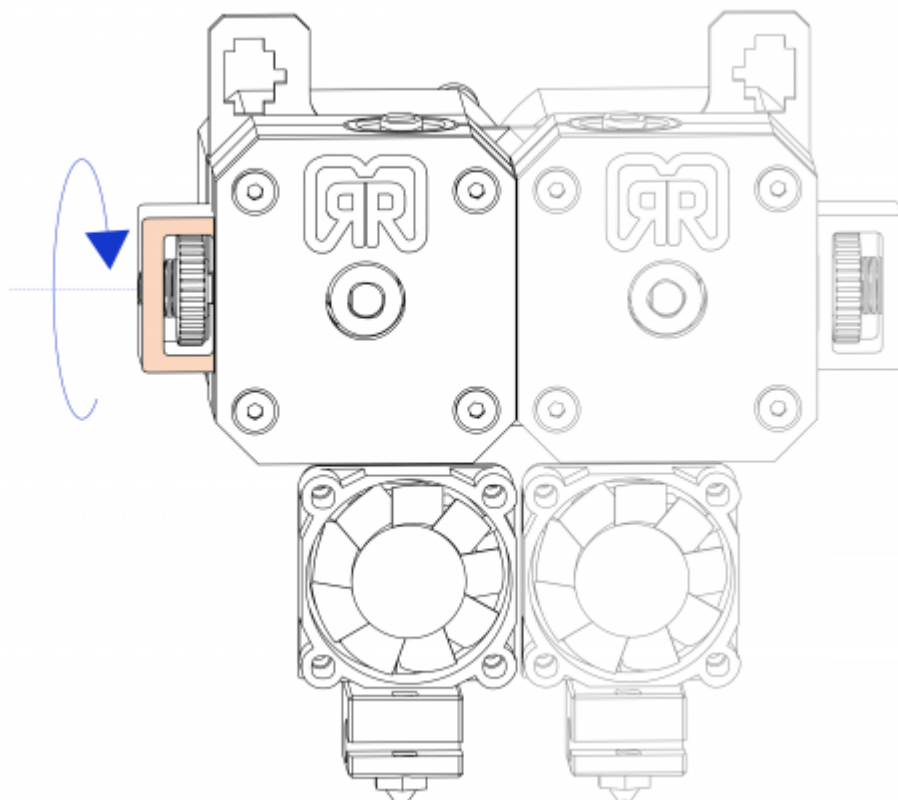
Guide the new filament into the extruder like shown in the picture.

After that, open the door of the X400 and mark the current position of the knurled screw with a file, like shown in the picture, in case there is no marking on your DD3 extruder.



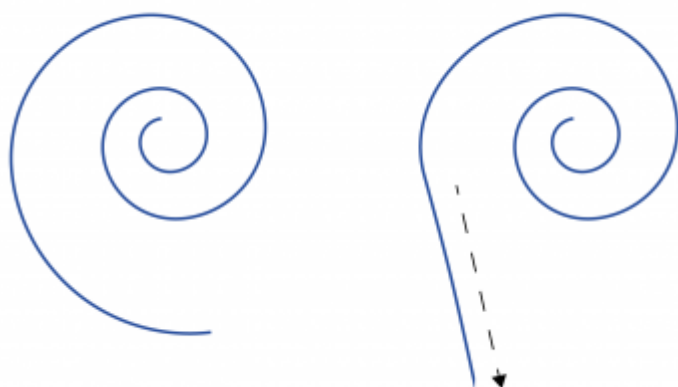
Marking DD3 Extruder

Open the door of the printer and turn the knurled screw, like shown in the picture, to reduce the tension of the filament screw. Only when the knurled screw arrived at the shown position, the filament can be pulled out easily.



Loosen the extruder tension

Pull out the old filament to guide the new one into the extruder. This works best when you cut the end of the filament diagonally and smooth the last 5cm.



Filament smoothing


Guide the filament into the extruder until melted filament drops out at the end of the extruder. Move the knurled screw to its former position and close the door of the X400.

Navigate to the menu item extruder again (shown on the diagram above: menu item extruder):

Menu/extruder

Heat the extruder to the material specific temperature.

If the extruder reached the desired temperature, material can be extruded using the command: *Extr. position* .

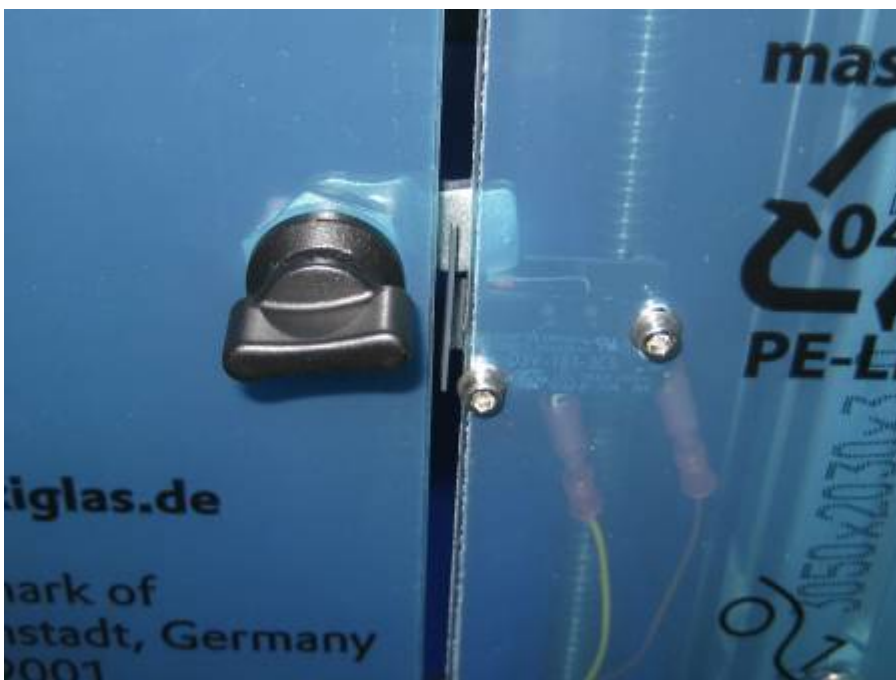
 By a change of material let at least 100-200mm material extrude to clean the nozzle from the old material.

If you, for example, want to change from a PLA filament to a ABS filament, you need to heat up the extruder to the higher material temperature, to avoid any extrusion problems.

Attention: If you want to use different filaments in succession with only one hotend, clean the nozzle thoroughly. Let at least 500mm material extrude to make sure there are no unwanted connection between different material inside the hotend, which might block the nozzle.

Door safety switch

For the working safety the door-safety switch of the X400 is an important aspect. If the printer is in the printing process you can't reach movable or hot parts through to the case. When you open the door, the 230V voltage of the machine will be disconnected so the axes stop moving and all heaters shut down.



door-safety switch (closed)

WARNING : It takes a while till all components have cooled down. So you still need to be careful while handling the hot components of the X400.

When the door is closed you can see information on the lighted display. If the door is open the display turns off, except the printer is connected with USB to a PC or a 3D printbox.

Attention : When you open the door during a printing process you have started over a PC or printbox, the voltage gets turned off but commands will still be sent to the printer. The print is irrevocable cancelled and needs to be started again.

Stop the printing process aswell on your PC or printbox!

If you won't stop the printing process in this situation and close the door again it will cause step loss and a block in the cooled nozzle.

Software installation

There are two software packages provided for your X400:

- [Repetier Host](#) (free of charge)
- [Simplify 3D](#) (fee-based)

No matter which software you choose you can control your printer:

- using a direct connection to your PC
- using the LCD display and a SD card
- using the web interface, only in combination with the [3D printbox](#)

We recommend starting a 3D print always using an SD card or printbox to avoid any interruption between PC and printer.

Simplify3D™



 Simplify3D™ Logo

Simplify3D™ Software contains everything you need to begin making parts on your new 3D printer. Import and manipulate geometry, repair models, generate G-Code instructions, verify toolpaths, manually control your machine, and print parts all from the same program!

Features

All-In-One Software Suite

- One integrated software suite contains everything you need to print high quality parts.
- Customizable settings and advanced processes put the controls into your hands.
- Support for dual-extruders, multi-part printing and even multiple processes within one part.

Quick Start Guide

Installing Simplify3D™ Software

After buying your Simplify3D license you receive a code so you can create an account on:

<https://www.simplify3d.com/redeem/>

In the next step you receive an email for the verification of your account. After that you can manage your license online and download software packages.

Please check your spam-folder if you haven't received any email.

Windows Unzip and double-click the .exe file to install. You may need to right-click and choose Run as administrator depending on your permissions and trust settings. The Windows installation requires Microsoft Visual C++ 2010 Redistributable, which should be automatically detected and installed if necessary.

Mac OS X 10.6.8+ Unzip and double-click the .app bundle to install. Enter your administrator password and follow the on-screen prompts.

Linux The Linux installer comes with both 32 and 64-bit options. After choosing the appropriate version for your operating system, unzip the file and launch the .run installation package. It is recommended to launch this program as super-user by opening Terminal cd'ing to the directory where you unzipped the file, and then typing:

```
sudo ./Simplify3D*installer.run
```

and entering the administrator password.

Launching the Software

The installer will guide you through the installation steps. The last step is a prompt to open and launch your Simplify3D™ Software for the first time.

Activation

The software must be activated through an Internet connection after installation. You can deactivate a specific machine at any time by going to **Help > Deactivate Product**.

The Configuration Assistant

When you open Simplify3D™ for the first time, you will be greeted by the Configuration Assistant. Select your printer from the numerous printers listed in the drop down menu and the Assistant will automatically configure all of your settings.



Configuration Assistant

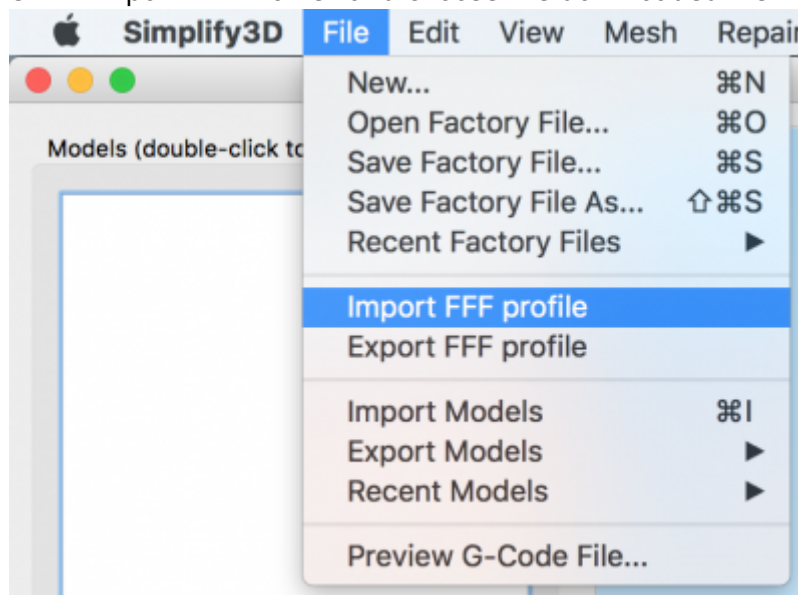
If you want to access the Configuration Assistant after installation to change your settings to a different printer, it can be located in the horizontal Menu Bar under **Help > Configuration Assistant**.

Profile manuell importieren

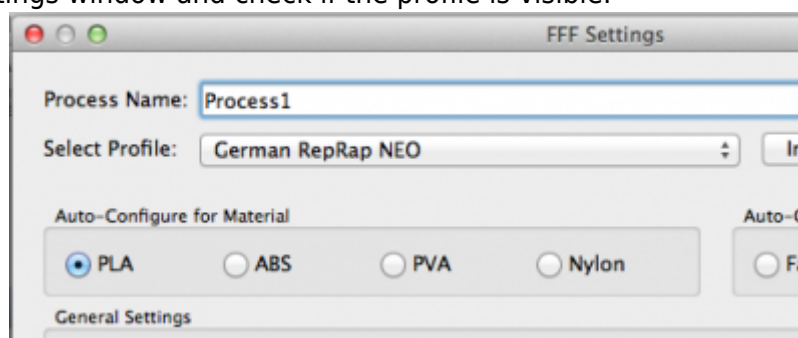
Furthermore our profiles are available directly to [download](#).

To import the downloaded profile, follow these steps:

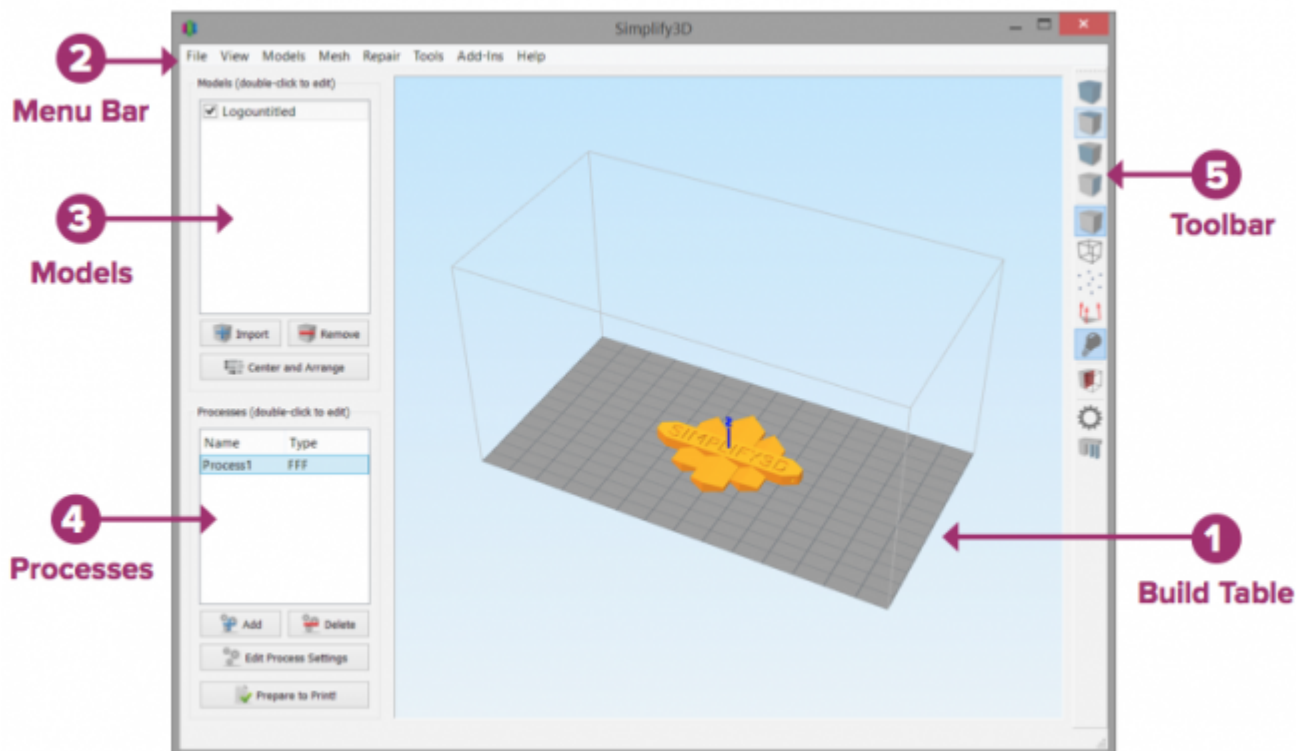
- Click on menu “File” → “Import FFF-Profile” and choose the downloaded file.



- Open the FFF settings window and check if the profile is visible.



The Interface Layout



 Interface Layout

1. Build Table

This is the interactive 3D environment where you will be viewing and working with your 3D content before printing. This is the “main stage” and primary viewing area. The gray grid is scaled proportionally to the size of your build volume and is determined based on your printer selection with the Configuration Assistant.

Use these mouse shortcuts for different views:

- Rotate View – Left-click and drag
- Pan View – Right-click and drag
- Zoom – Scrolling or gesture zoom (or Shift-left-click and drag up and down)

2. Menu Bar

Primary navigation to all aspects of Simplify3D™ Software.

3. Models

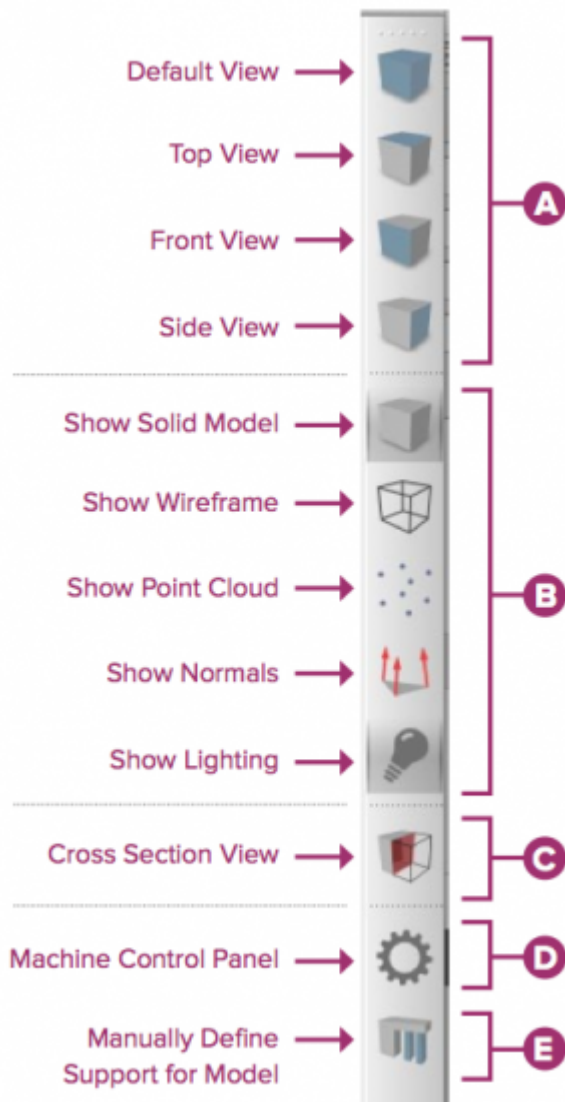
When you import 3D models, they are listed in this section above the buttons/commands that enable you to work with your models.

4. Processes

The build operations to create your 3D print are listed here, along with buttons/commands enabling you to work with process functions.

5. Toolbar

This toolbar contains quick access buttons for frequently used tools. You can move the toolbar anywhere you wish by clicking and dragging the top dotted line.



 Toolbar

A. View

The first four buttons are preset viewing positions, allowing you to quickly change to the default, top, front, or side view.

B. Model Render

These tools control how you view the attributes of your 3D models. You can add a wireframe or a point cloud to your model, enable or disable the lighting and the solid rendering of the model, or display the surface normals of the model.

C. Cross Section Tool

The Cross Section tool gives you the ability to cut a model in half to look inside it. The tool allows you to cut your model from all three axes and can also be accessed in the Preview Mode.

D. Machine Control Panel

Simplify3D™ Software can connect to virtually any printer through the Machine Control Panel (MCP). Another way to access the MCP is through the top menu bar under Tools > Machine Control Panel. The MCP allows you to view your extruder and build plate temperatures, preheat your nozzles, jog your machine's motors, and access the software-printer communication log.

E: Support

The Manually Define Support tool provides the freedom to customize your support structure under or inside any part of a model.

3D Printing Workflow



 3D Printing Workflow

Import and Manipulate Your 3D Model

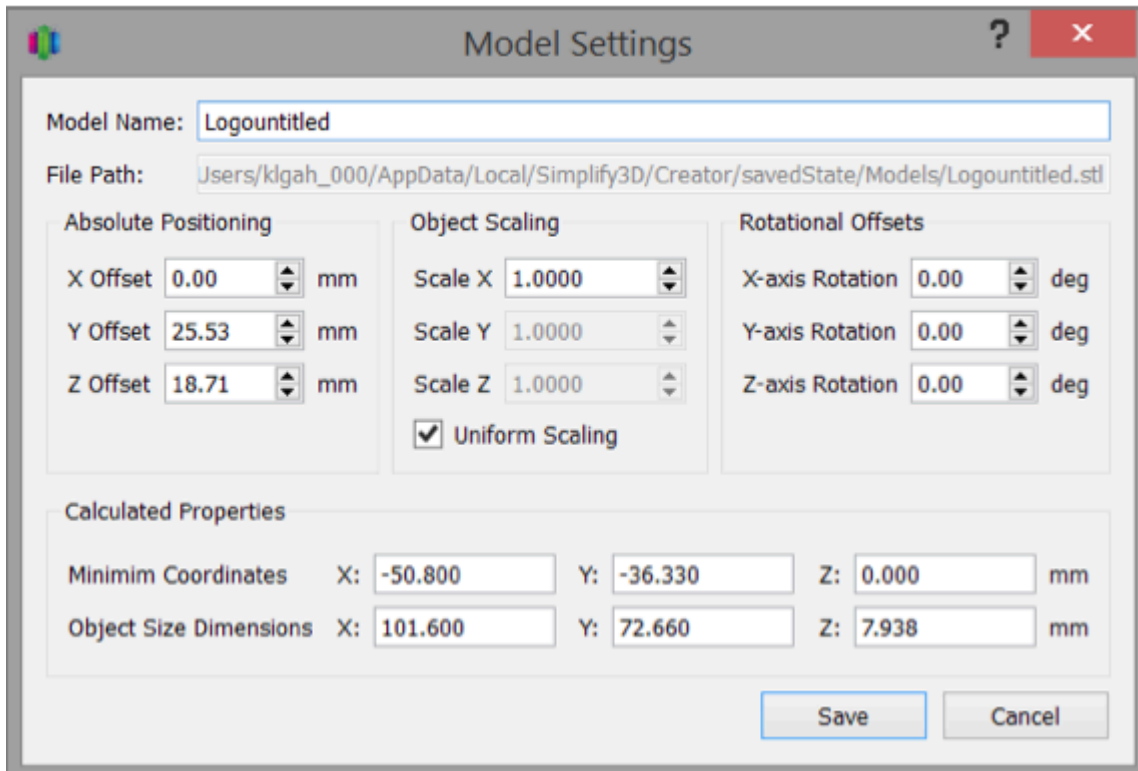
The first step in the 3D printing process is to import the model you want to build. You can obtain 3D models from <http://www.thingiverse.com>¹¹ or you can make a model yourself using a CAD package like SketchUp or AUTOCAD®. Save the 3D model file on your computer or storage device as an .stl or .obj file.

Click Import in the Models section and navigate to the folder where you saved your file. You can also drag-and-drop file(s) onto the Build Table. The software will automatically position and center your imported model on the Build Table.

Helpful mouse and keyboard shortcuts to move, scale, or rotate your model:

- Move Model – Ctrl-left-click and drag (or Command-left-click on Mac)
- Scale Model – Ctrl-right-click and drag up or down (or Command-right-click on Mac)
- Rotate Model – Alt-left-click and drag right or left (or Option-Left Click on Mac)

Advanced model settings: Double click on any model (either in the Models list or on the Build Table) to bring up the Model Settings box. Enter numbers or use the up-down arrows to adjust the positioning, scaling, or rotation of your model. A helpful feature is that you can see your model change in real time on the Build Table.



Model Settings

Model Name: Logountitled

File Path: Users/klgah_000/AppData/Local/Simplify3D/Creator/savedState/Models/Logountitled.stl

Absolute Positioning

X Offset: 0.00 mm

Y Offset: 25.53 mm

Z Offset: 18.71 mm

Object Scaling

Scale X: 1.0000

Scale Y: 1.0000

Scale Z: 1.0000

Uniform Scaling

Rotational Offsets

X-axis Rotation: 0.00 deg

Y-axis Rotation: 0.00 deg

Z-axis Rotation: 0.00 deg

Calculated Properties

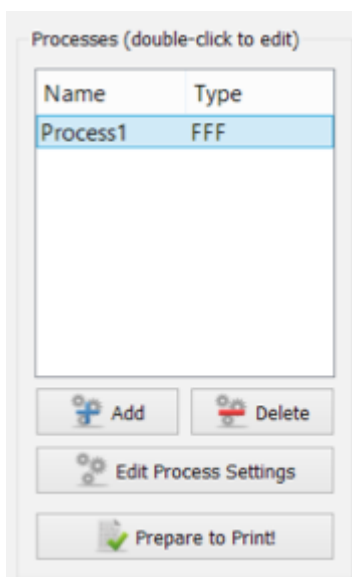
Minimum Coordinates X: -50.800 Y: -36.330 Z: 0.000 mm

Object Size Dimensions X: 101.600 Y: 72.660 Z: 7.938 mm

Save Cancel

Model Settings

Settings and Processes for 3D Printing



Processes (double-click to edit)

Name	Type
Process1	FFF

Add Delete

Edit Process Settings

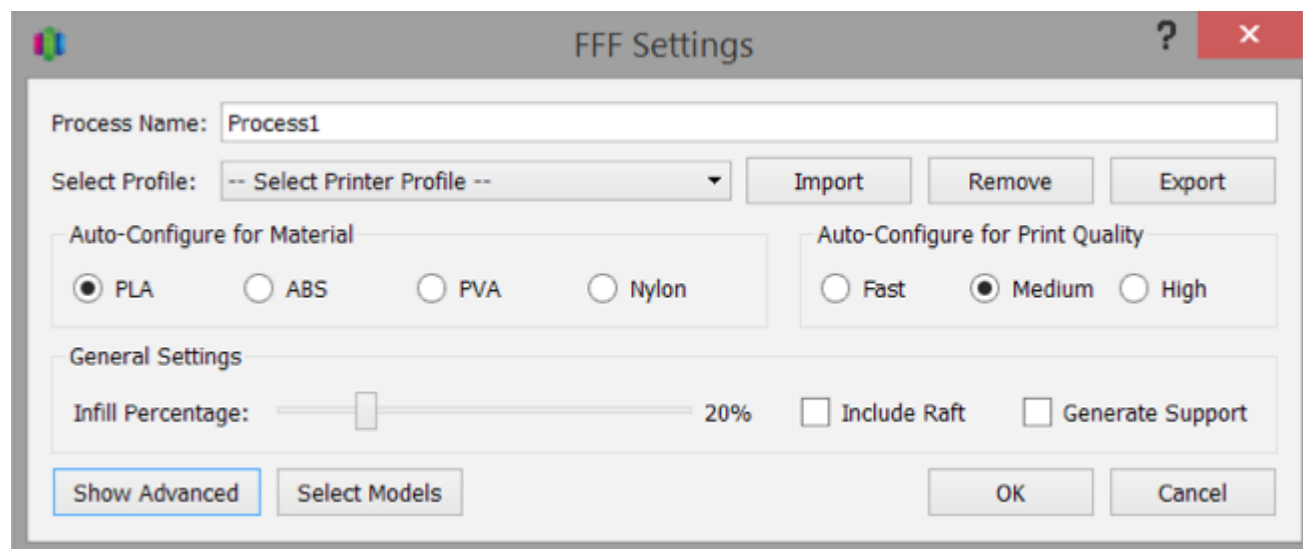
Prepare to Print!

Processes

In the first step of the workflow, you imported a model. The next step is to define a **Process** that specifies how your model will be constructed. A Process is a collection of settings including speed, size, support material, quality levels, etc. Some models are built with one process, while more complicated models may involve multiple processes throughout the build sequence.

The first Process will be configured automatically based on the printer selected in the Configuration Assistant. You're free to make any adjustments you desire, but it's a great starting point!

To make adjustments to your Process, double-click on the Process or click Edit Process Settings. This will open the [FFF \(Fused Filament Fabrication\)](#) Settings window.



FFF Settings

The [FFF \(Fused Filament Fabrication\)](#) Settings window contains all the Processes that specify how your model will be constructed:

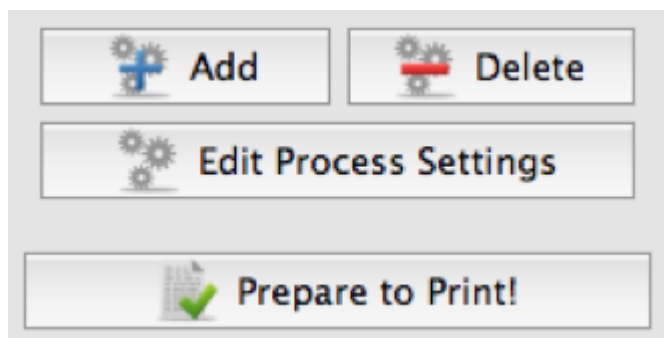
1. **Select Profile** - Allows you to choose a pre-configured printer profile.
2. **Auto-Configure for Material** - Allows you to select the material you will be printing with.
3. **Auto-Configure for Print Quality** - Allows you to select a pre-configured print quality.
4. **Infill Percentage** - Changes the interior solidity of your 3D print. 0% is completely hollow and 100% is completely solid. A value in the range of 20-50% is a good place to start.
5. **Include Raft** - Generates a raft structure underneath your part. Rafts are used to improve the bond to your build platform and may help reduce warping on large models.
6. **Generate Support** - Turns on support material for your 3D print. Support structures are similar to scaffolding, in that they help support steep overhangs and unsupported areas during the construction process. Typically, a 45° or greater overhang will benefit from support material underneath it. Simplify3D™ provides a unique ability to customize your supports, with add and delete support buttons. Simplify3D™ support structures break away cleanly and easily, minimizing difficult post-production cleaning and insuring the highest quality final print.

Click **OK** when you have finished configuring your settings in the FFF Settings window. At any time, you can modify the settings by double-clicking on the Process in the list, or by clicking Edit Process Settings.

Click **Show Advanced** at the bottom of the FFF Settings window to view additional options and settings that are available within Simplify3D™ Software.

Previewing G-Code Files

“Slicing” is the term used to describe the process of translating a digital model into line-by-line printer instructions called “G-code.” The software slices the model into G-Code based on the variables you have selected in the [FFF \(Fused Filament Fabrication\)](#) Settings window.

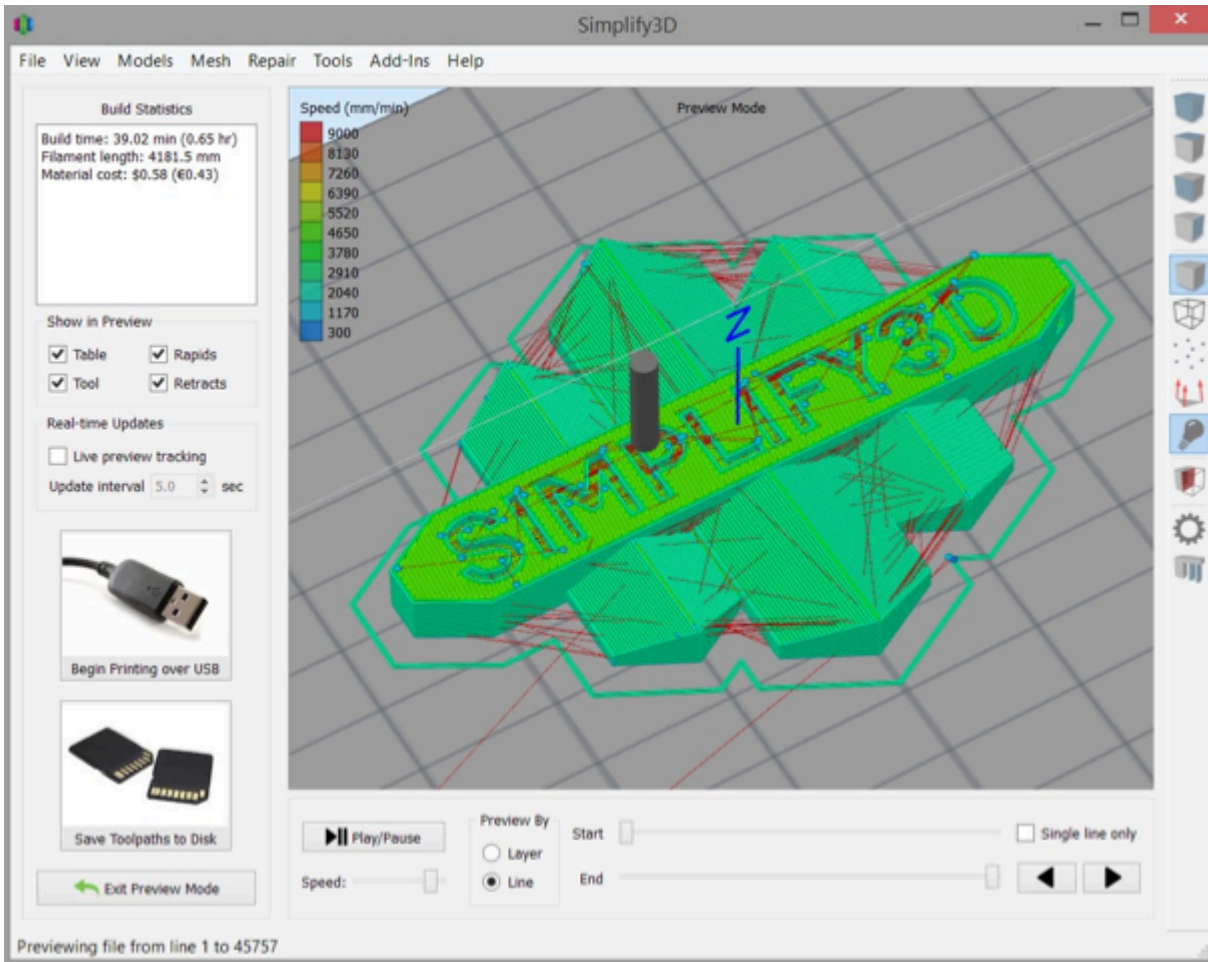


Prepare to print

After you have finalized your Process settings, click **Prepare to Print!** to trigger the preparation of G-Code. Simple models will be sliced in seconds, while complex models may take several minutes.

When your G-Code has been created, the software window will transition automatically to Preview Mode.

The animated **Preview Mode** in the Simplify3D™ Software allows you to inspect all aspects of your print operation prior to execution. The software takes your generated G-Code and virtually displays line by line how your model will be constructed.



Preview

Build Statistics are located in the top left corner of the Preview window and include three estimates:

1. Build Time (how long it would take for your print to finish).
2. Filament Length (how much filament it will take to build your model).
3. Material Cost (an approximation of how much it will cost to make your part).

The Preview provides interactive buttons for precise playback control:

- **Play/Pause button** animates the preview line by line.
- **Start and End Slider Bars** allow you to move through the preview manually. (*Hint*: leave the Start button positioned at left and drag the End button to the right side to see the entire build). The preview can be illustrated by Line or by Layer by clicking on either selection.

A useful setting is to select Preview by Layer and also place a checkmark in Single Layer Only. Together, these selections will allow you to view a single layer at a time.

Printing on Your Machine

When you are happy with the preview, there are two options to begin your print:

Begin Printing over USB – if you are using a USB connection, you have the option to view the build sequence real-time on your monitor by selecting Live Preview Tracking. For additional information on

USB communication, access the Machine Control Panel to view a broad range of information that is transmitted via USB.

Save Toolpaths to Disk – This saves your print file to a user-defined location, such as a folder on your computer or an SD card.

If you want to make adjustments to your model or process before printing, click **Exit Preview Mode**.

Congratulations! You have now completed your first 3D print using Simplify3D™ Software. You'll soon be ready to explore other options and create many exciting models.

Resources within the software

You will learn so much about your printer by making your first part! Once you feel comfortable with the basics and are ready for more options, advanced settings can be found by clicking **Show Advanced** in the bottom left corner of the FFF Settings window. This reveals the all of the detailed settings that Simplify3D™ Software is implementing behind the scenes, as well as providing customization options for many settings you may want to adjust. If you want more information about any particular setting, hover the mouse cursor over that element to display a tooltip describing the functionality.

Simplify3D offers a lot of learning support:

[General Support](#)

[Tutorials](#)

[Video tutorials](#)

[printing quality troubleshooting](#)

[Forum](#)

Mobile-Storage-Device

The Mobile-Storage-Device gives you possibility to store and later start print jobs from an SD-card. The SD-card which needs to have Fat-32 formatting.



 Mobile-Storage-Device with SD-card

Use the *Save Toolpaths to disk* button in the *GCode-Preview* in Simplify 3D to save GCode-files onto your SD-card.

We recommend to start a 3D print from the SD-card or the 3D printbox to avoid any kind of errors occurring from the connection between 3D printer and PC.

We also recommend to use an SD-card with a memory size of max. 8GB for the Mobile-Storage-Device.

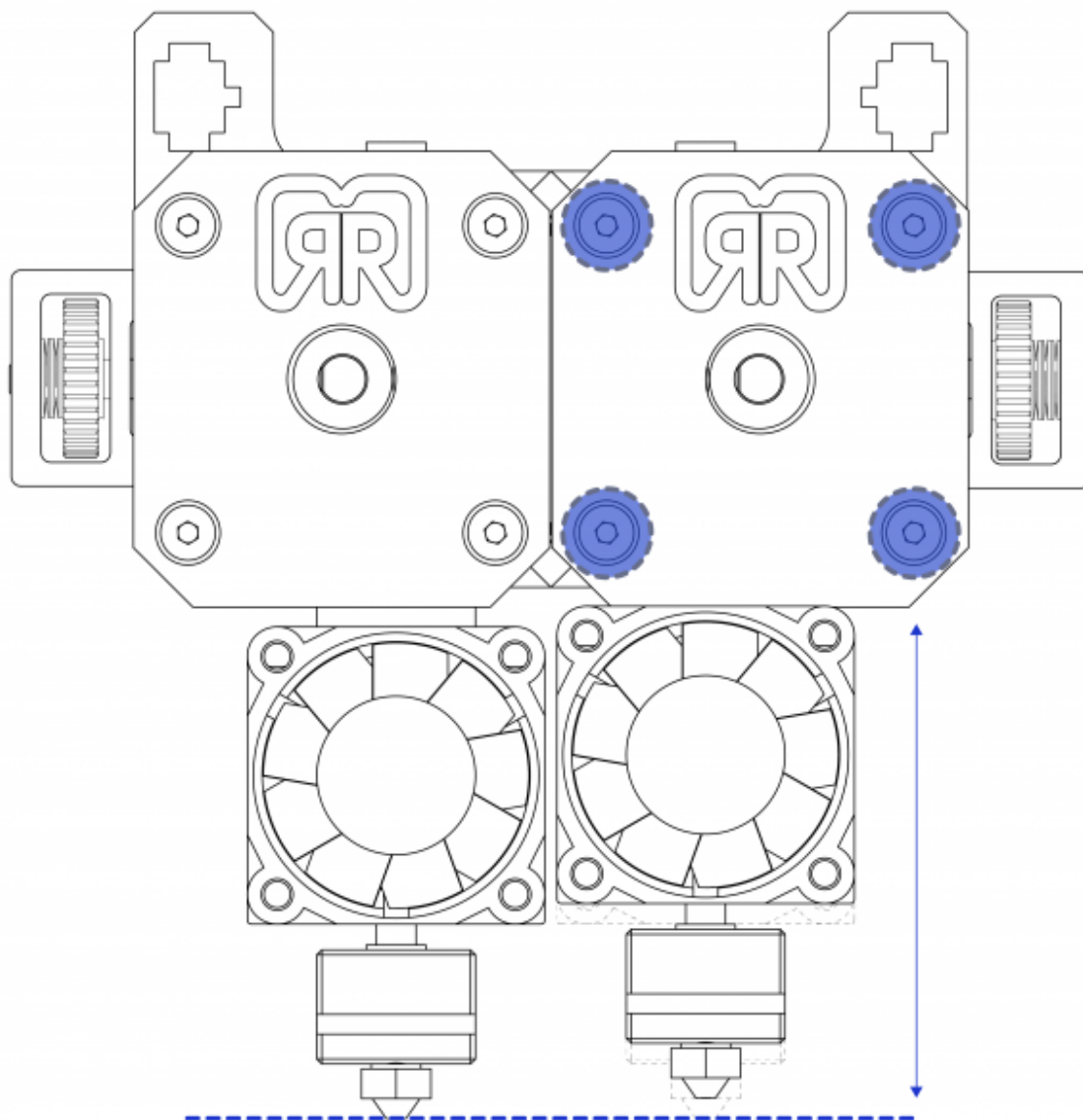
Commissioning second extruder

The X400 V3 will be standard delivered with two extruder. Thereby the left/first extruder is positioned lower than the right/second extruder. This is intended, because we advice all our customers to make their first 3D prints with only one extruder.

Before you start adjusting your second print head, please note following steps: Heat both nozzles to the material specific temperature, then remove the filament from the extruder and clean the lower surface of both brass nozzles, e.g. using a brass brush. Lower the printing plate about 100mm with help of the display, so you have enough space for the next work step.

Even small impurities make it impossible to adjust the nozzles correctly to another. If you have problems with dropping filament, let the hotend cool down after removing the filament.

The left extruder is already fixed at working height, so it's the reference point for the calibration of the second extruder.



DD3 dual extruder

To bring both nozzles to the same level loosen the four marked screws in the picture, without removing them completely. They are important for fixing the extruder at the slide. In the next step pull the right nozzle carefully with a pliers downwards till it's 1-2mm lower than the left nozzle.

Move the printing plate carefully in z-home direction using the command "z babysteps". Move with the z-babysteps to the height of the left extruder, the lower right hotend will be pushed by the plate back into the extruder block.

Make sure that the right hotend gets pushed upwards into the extruder block and not the printing surface gets lowered (or the 4 springs holding the heated bed get compressed)! If so, lower the printing bed again and check if the hotend can be moved easily and is not jammed inside the extruder block.

When both nozzles have the same level, the four loosend screws have to be tightened again.

Troubleshooting & FAQ

If you have questions regarding the commissioning or operation or in case of a problem, please contact your stockist or the support of the company German RepRap GmbH via our support (<https://support.germanreprap.com>).

Glue on of the PET-foil bubble-free

To attach the PET-foil bubble-free on the printing bed we advise the following:

- moiste the printing bed with water oder window cleaner (**silicone-free!**)
- apply the [PET \(Polyethylenterephthalat\)](#)-Foil on the dampish surface (remove carrier foil from the [PET \(Polyethylenterephthalat\)](#)-foil)
- displace and absorb the excess fluid (with such as squeegee or check card)
- heat up the bed at 30°C until all the fluid is not longer present.

Change display language

To change the language of your display navigate to the following item:

```
main menu >configuration >language
```

Choose a language, the display will restart and show the first overview window.

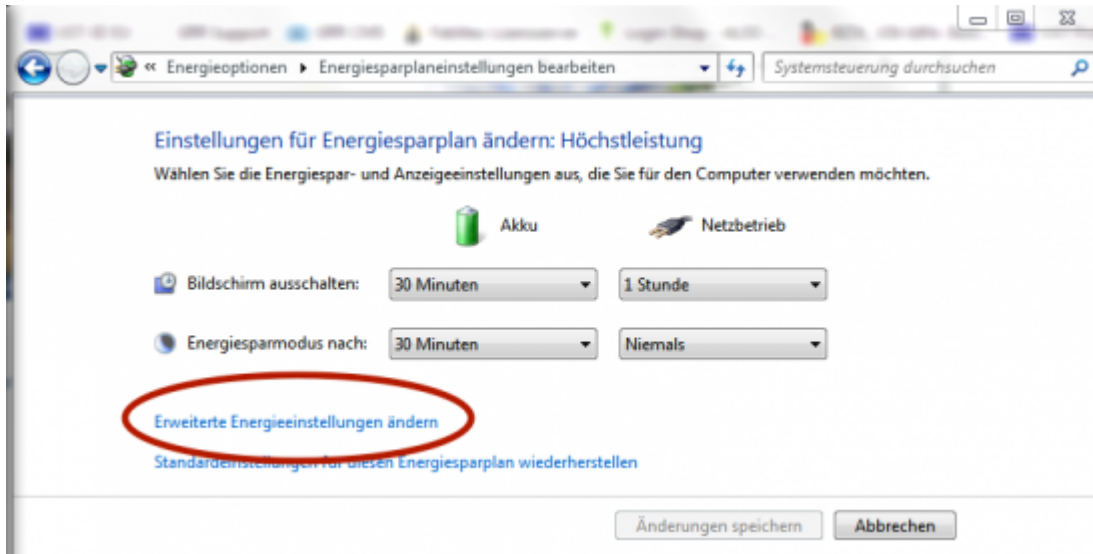
Print stops with windows

If your 3D-Printer is operated with Windows and get the printdata via USB the following problem may occure.

Your 3D-Printer usddenly stop printing without any obviously reason. This may result of a wrong energy saving setting which is defined by default at Windows. Please check the following settings:

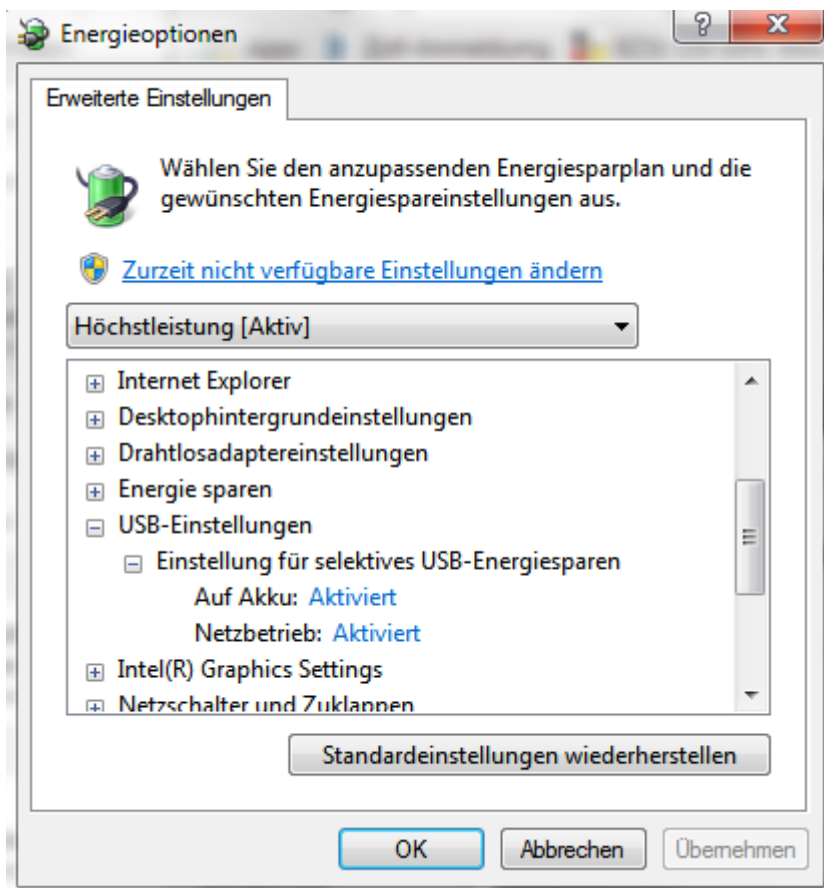
Go to your energy settings: *Start* → *Systemsettings* → *Energy saving* → *Energy saving plan*

Setup your energy saving mode to *Never*



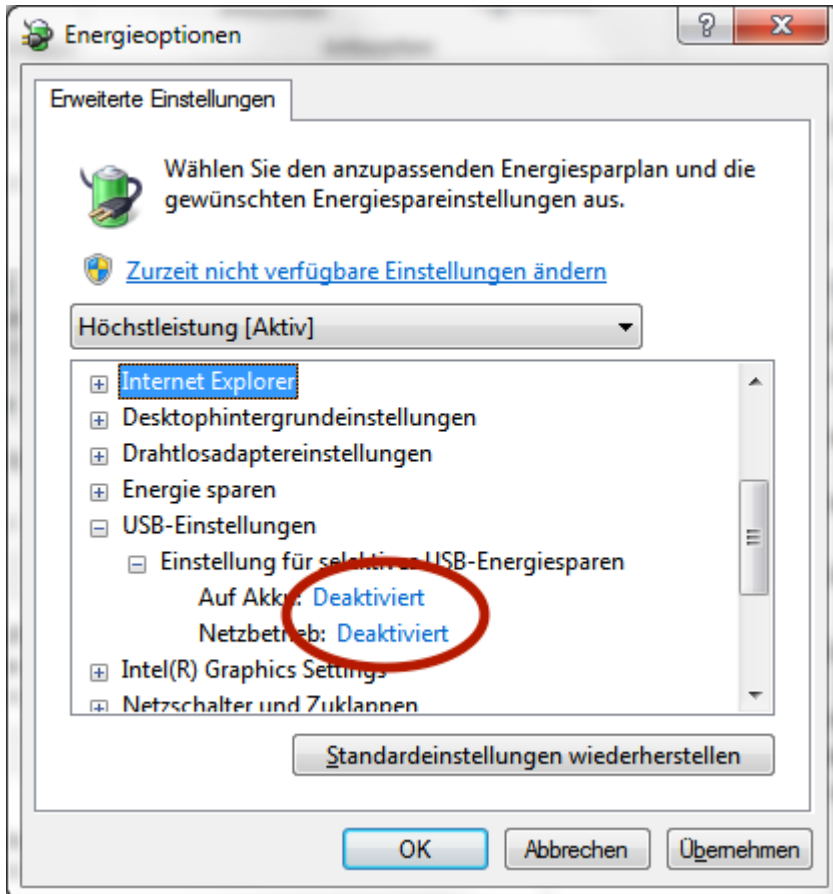
Energy saving plan

Go to: *Change extended energy saving*



Extended energy saving

Deactivate *Instructions for selective USB- energy saving*



Extended energy saving

Confirm all changed settings.

The printed object peels of the printing bed

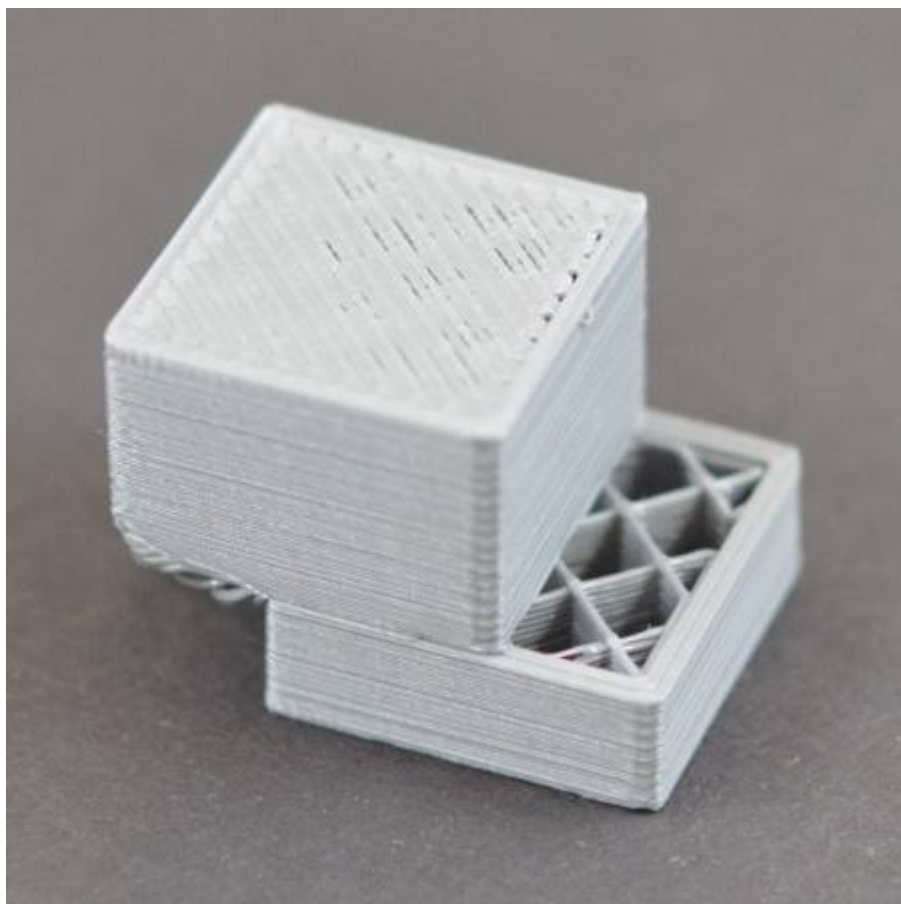
If printed objects peel off the printing bed check following steps:

- Clean the printing surface before every print
- Check the distance between nozzle and printing bed. The first layer should always be pressed on the printing surface.
- Check if you have chosen the right working temperature for your material.
 - Here you find an [overview](#) for the common 3D print materials and their conditions.

Layershift within the printing objects

There are different reasons which cause bad print results like shown on the picture below. One is that the toolhead collisions with a already printed part because of his warping (deformation caused by the cool down).

The Steppermotor stops for a short time because of the collision. When the nozzle melts the printed material the axis can move freely again. The electronics can't diagnose this and move along the GCode, which causes the offset within the printing object.



Layer shifting *Quelle: Simplify3d.com*

- Start Simplify3D and go to *Edit process settings / Extruder* and activate *Retraction vertical lift* by entering a height of e.g.: *0.2mm*.

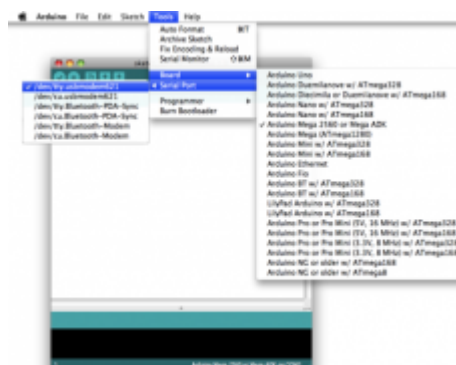
Now the printing bed gets lowered 0.2mm during all travel movements and lifted up again when extruding material.

If you still have this problem please contact our support.

Firmware

The firmware on your X400 is already installed. Changes should only be made after consultation of support.

In the [manual](#) you get information about the firmware installation.



Firmware installation

Supplies X400 PRO V3


Following explanation shows how to mount the carry handles and the base cabinet.

Mounting carry handles


Amount	Description
2	Carry handles
4	M6x20 countersunk screws

Remove the screws marked on the picture and mount the carry handles using the new (longer) countersunk screws.



 Screws to remove



 mounted handles

Base cabinet

This section has to be performed only when the X400 is assembled **with** the base cabinet!



Base cabinet view


Number	Description
2	acrylic glass, shelf
4	1000 mm profile
4	M6 threaded bolt
16	mounting angle
80	M6 T slot nut
64	M6 x 12 cylinder head screw
16	Profile connectors
8	M6x22 cylinder head screw

Sticking connections are used for the base cabin so it's easy to mount, like shown in the picture.



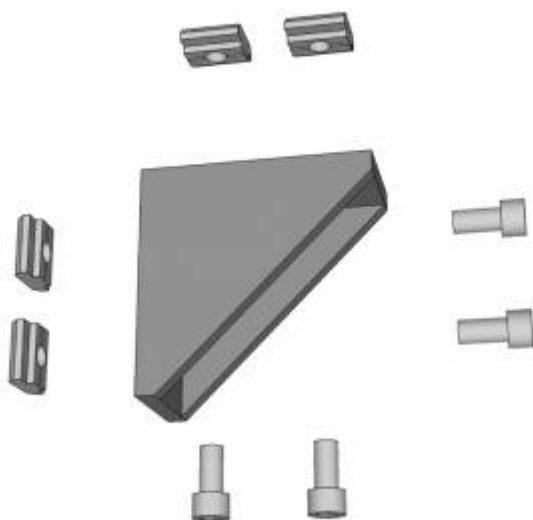
Detail aluminium-profile




 Detail e.g. adjusting

When screwing the two profiles consider the following two steps: The sides of the profiles have to lay plain to another and the profile connections need to be upside. A bracket makes it easier to assemble the base cabinet.

The base cabinet is intended to be screwed together with the device. First, the long profiles are screwed and aligned to the lower part of the frame with the threaded bolts. After that, the struts and angles are mounted.

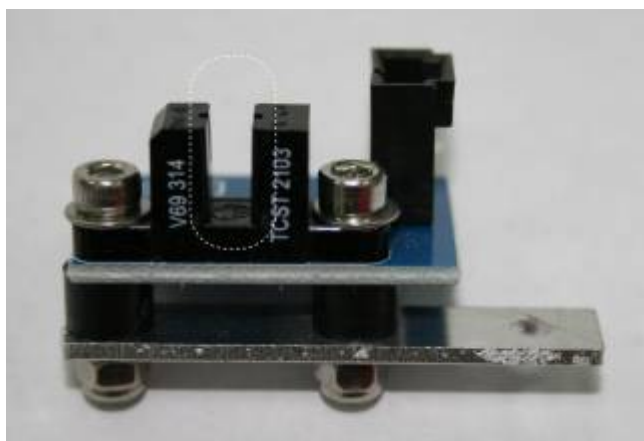


 Base cabinet angle mounting

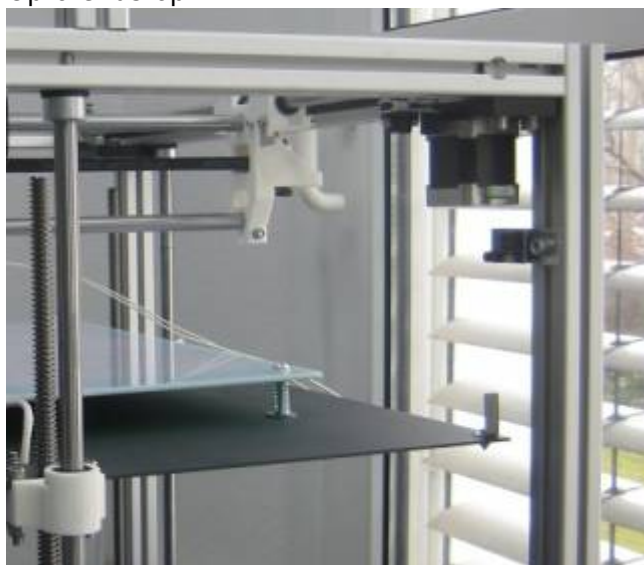


A simplified mounting is possible by drilling out the upper threads in the long profiles to 7mm, to make the threaded bolts pluggable. In that case, the base cabinet may be mounted separately and the device can simply be put on top afterwards.

Opto-Endstops



Opto-endstop



example Z-axes endstop (right at profile, under the stepper motor)

X400 includes three opto-endstops, each for one axis. They define the zero-point of the machine.

Please make sure that the little plates which are used to trigger opto-endstop move into marked area. (Picture on the right)

The power supply of the USB is enough to provide the endstop with voltage. This can be used to check if all endstops are working correctly. (LED goes off when endstop is triggered)

Don't make any changes at the opto endstops, this might cause damages to your printer! If you have to adjust the endstop of z-axis because of alternative printing surfaces, it's recommended to check the function manually first without voltage.

Helpful links

- **Shop:** <https://shop.germanreprap.com>
- **Wiki:** <http://wiki.germanreprap.com>
- **Forum:** <https://forum.germanreprap.com>
- **Downloads:** <http://wiki.germanreprap.com/download>



Support

For support please contact the dealer of your machine. Furthermore we offer all customers different assistance and documentations for the devices.

Documentation

You'll find all the documentation online at <http://wiki.germanreprap.com> . Please register with the site at wiki.germanreprap.com in order to be able to automatically send notifications and changes of documents you are interested in via email.

Telephone

Our hotline is staffed from Monday to Friday (excluding public holidays) between 10:30 - 16:00 and can be reached at  [+49 9001 RepRap](tel:+499001737727) ( [+49 9001 737727](tel:+499001737727)) ²⁾. We answer your technical questions and provide consulting for more complex setups.

0.99 € per minute from a landline in Germany, prices may vary depending on your landline telephone, VOIP or mobile phone provider

Support tickets / E-mail



Please use our support pages at <https://support.germanreprap.com> to lodge a new ticket and check the status of an old one, all free of charge.

Alternatively you can send an email to support@germanreprap.com which generates a ticket, also free of charge.

Forum (Community)



At <https://forum.germanreprap.com> you can interact with our 3D printing community in different languages and exchange tips and tricks.

Important notes

Return / Original wrapping

Please retain this documentation and the original package of this printer in case you need to ship it for repairs or to a new address. 3D printers are inherently sensitive to bumping or knocking and are best protected in their original box. Returns that are not properly packaged cannot be repaired under warranty.

Operation

Do not cut the power while the printer is active. This can lead to the loss of data as well as damage some electronic components.

Other matters

All information in this guide is current at the time of printing. We reserve the right to amend the hardware, software or the documentation without prior notice. The latest information will always be available at <http://www.germanreprap.com>.

Toxic fumes

Depending on the plastic being used there is a danger of toxic fumes developing if the printer is running too hot for that filament. Always make sure to set the correct temperature for the plastic used. The maximum temperature is generally printed on the filament spool and can also be looked up on our website. (<http://www.germanreprap.com>).

Safety cut-off

The device has a thermal protection mechanism built-in. If the temperature exceeds the safe working limit the printer turn itself off after issuing a warning message.

Maintenance

Every 12 months the printer has to be serviced by trained personnel. This includes checking the safety devices as well as all mechanical components. German RepRap offers this as a service. Please

contact us via info@germanreprap.com for more details.

Work on a mains power supply should only be carried out by trained specialists. It is essential to note the safety regulations. Property or personal damage may be caused by improper installation, which the installer bears liability for.

Proper handling of the chemicals necessary for maintenance and care is obligatory, as well as complying with the regulations and operation notes regarding the chemicals. Directions of the manufacturer must be followed at all times and appropriate protective clothing has to be worn. Property or personal damage may be caused by improper use of the chemicals, which the operator alone bears liability for.

Safety notes

Power supply

Always ensure that the power lead has not been damaged. Disconnect the device immediately if the power lead shows any sign of damage. Have the power supply inspected by an authorised electrician. Only use the power supply that came with the printer. An electric shock from a faulty power lead can be fatal!

Only use the power supply if your mains voltage is 100-110V or 220-240V AC. Only use the correct power lead for your mains socket.

Cleaning

Pull the power plug before cleaning the device. Use a dry cloth and only clean the surface.

Handling the chemicals necessary for maintenance and servicing has to take place properly and under adherence to of for this valid regulations and application notes to the chemicals. To the specifications of the manufacturers absolutely for this is to be responded, it is appropriate protective clothing to be carried, and the dosage regulations are to be kept exactly. Special and personal injury can be caused by inappropriate handling chemicals, for which alone the operator is responsible.

Playing children

Touching the internal parts of the power supply can cause an electric shock!

Mains voltage

Only operate the device with the indicated supply voltage (visible on the backside of the device or on the external power supply) The device must not be connected to the mains until all connections were double checked.

There is a fire hazard if the mains voltage is too high!

Humidity, solar radiation, heat, open fire

Protect the device from extreme humidity, dripping and splash water (do not place any liquid-filled containers such as beverages on it). Do not place the device near a heater, do not expose it to extended direct sunlight and do not operate it in damp rooms. Only use the device in a moderate, not a tropical climate. Do not put any open flames such as candles on the device!

Ventilation

The heat arising in the device is sufficiently discharged. Nevertheless do not install the device in a closet or in a shelf with insufficient ventilation. Never cover the ventilation slots of the device, if there are any.

Do not place any object on the device. To allow heat to dissipate, please allow at least 30cm above, 20cm to each side and 30cm behind the device unobstructed.

The device only complies the declaration of conformity if the transparent case is assembled and the door closed while operating.

Long absence, thunderstorms, accessibility of the power plug

To completely disconnect the device from mains power just pull the power plug out of the mains socket. Make sure this socket is accessible. In case of longer absence and possible thunderstorms, switch off the device with the power switch and then disconnect it from the mains. This also applies for USB appliances connected to the device.

Installation site

Every electronic device develops heat. The heating of the device is within the permitted range though. Sensitive surfaces may discolor over time due to heat exposure. Moreover, the rubber feet of the device may cause color changes on furniture surfaces. If applicable, please place the device on a solid, appropriate and plane base!

Please mind the practicability when choosing the installation site (sufficient working height).

Disposal

Electronic equipment may not be disposed in the domestic waste - in accordance with Directive 2002/96/EG of the European Parliament and the Council of 27th of January 2003 about electric and

electronic equipment it has to be professionally disposed. At the end of its use please dispose this device at one of the public collection point intended for this.

Legal disclaimer

Software-Changes / Use of applications

Modifications to the software or using software not supplied by German RepRap GmbH void the warranty of the device. Shipping costs as well as costs for repairs caused by using unsupported software are billed to the customer.

Only use the software packages provided by German RepRap GmbH through their website as well as the original CD-ROM that came with the device.

German RepRap GmbH cannot be held liable for the loss of data on any internal or external storage medium.

The device has been pre-installed with software and works as can be reasonably expected. It cannot be guaranteed that the software is error-free. As long as it is possible to use the printer as designed an error in the software does not constitute a faulty device and hence provides no grounds to a warranty claim. The warranty only covers faults in the software that would prevent the normal use of the printer.

Limitations of the software caused by hardware faults, the environment the printer is being used in, operating error or similar reasons are not considered software faults.

Contact

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¹⁾ Thingiverse is owned and operated by MakerBot® Industries, LLC

²⁾ 0.99€/minute from a landline in Germany, prices may vary depending on your landline telephone, VOIP or mobile phone provider

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Last update: **2016/09/18 12:48**



