

MANUAL BUILDER

Version 3.02

“We all become builders”



Website link

SPECIFICATIONS

BUILDER

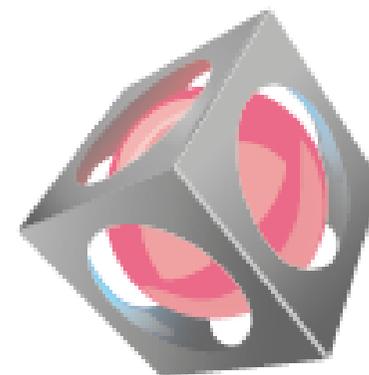
PRINTING		PRINTER	
Print technology	FDM / FFF Fused Deposition Method	Dimensions printer (LxWxH):	Solo/Dual: 385x370x400 mm (15.16x14.57x15.75 inch) Big Builder:385x370x900 mm (15.16x14.57x35.43 inch)
Buildvolume (LxWxH):	Solo: 210x220x175 mm (8.27x8.66x6.89 inch) Dual: 210x220x164 mm (8.27x8.66x6.46 inch) Big: 210x220x664 mm (8.27x8.66x26.14 inch)	Weight:	Solo / Dual Printer: 15 kg Transport: 18 kg Big Builder Printer: 25 kg Transport: 32 kg
Resolution:	Low quality: 0.3 - 0.2mm Normal quality: 0.2 - 0.1 mm High quality: 0.1 - 0.05 mm	Color frame:	Red / black
Printspeed:	Solo: 10 - 200 mm/s Dual: 10 - 80 mm/s	Print platform:	Glass bed, option heated bed
Travelspeed:	Solo: 10 - 350 mm/s Dual: 10 - 200 mm/s	Certificate:	CE certificate
Position accuracy	X: 10 micron Y: 12.5 micron Z: 2.5 micron		
Nozzle diameter:	0.4 mm	TEMPERATURE	
Filament	1.75 mm PLA/ PVA / Wood-Bronzfill	Operating - temp. printer:	15 - 32° C
Operating temp. nozzle	Solo: 180 - 250° C Dual: 180 - 250° C	Storage - temp. printer:	0 - 35° C
ELECTRONICS		SOFTWARE	
AC input:	100 - 240V 3A 50/60Hz	Software	Opensource Repetier (Cura / Kisslicer)
Power:	120 W	Operating systems	Windows, MAC
Connections:	USB, Display Standalone SD card (including)	File types	STL / OBJ / AMF / DAE



CAUTION:

The Builder warranty is only valid when Builder approved material is used.

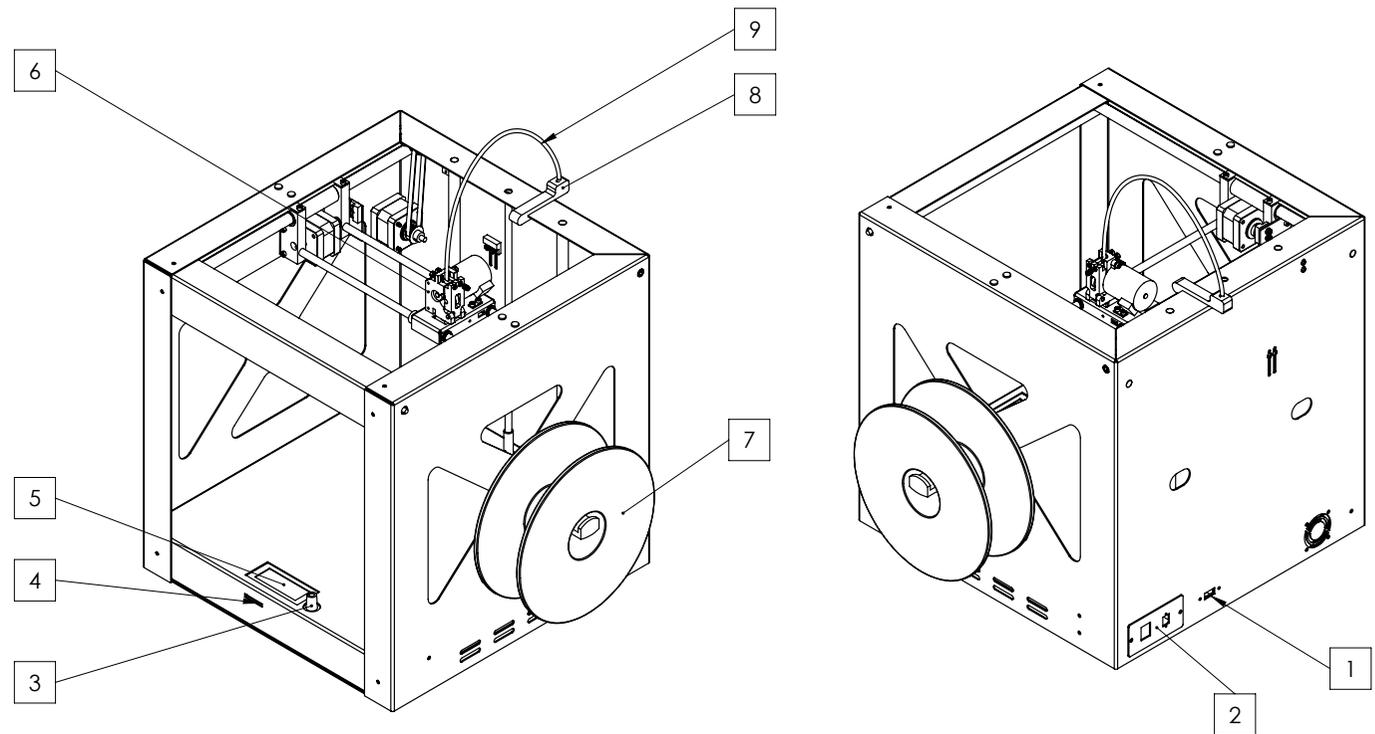
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HARDWARE

Onderdelen:

1. USB socket
2. Power socket
3. Control button
4. SD-card slot
5. LCD display
6. Print head
7. Spool holder
8. Clip filament guide
9. Filament guide tube

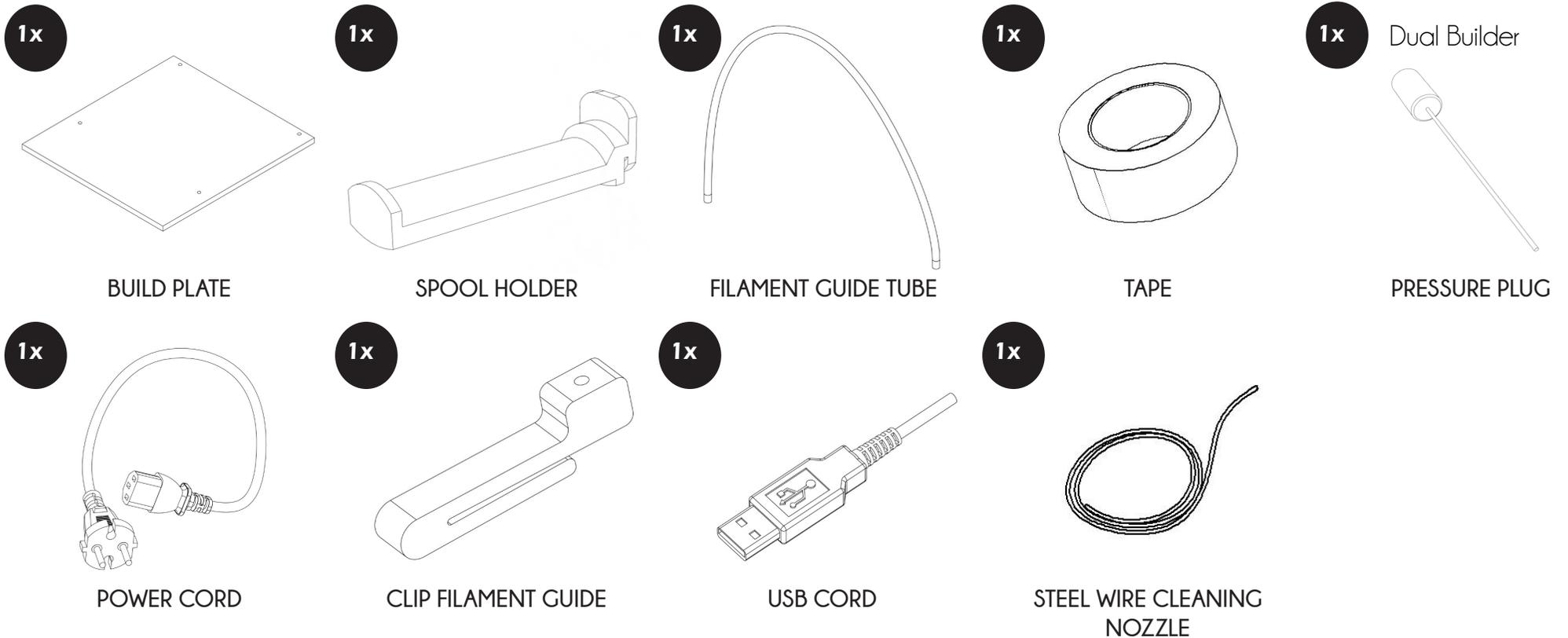


ACCESSOIRES

BUILDER

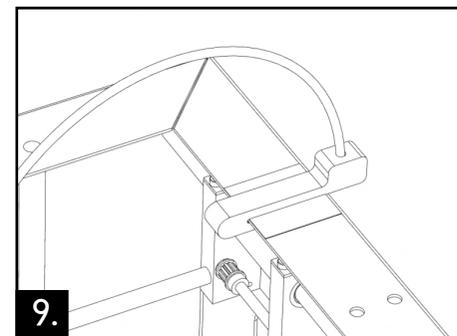
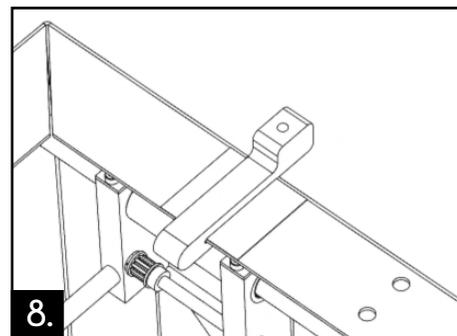
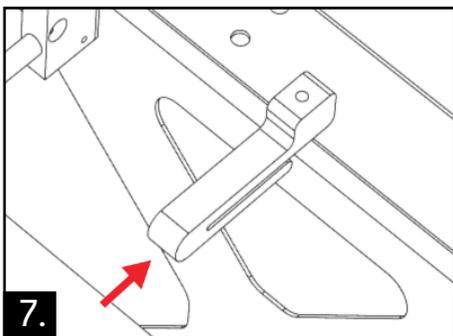
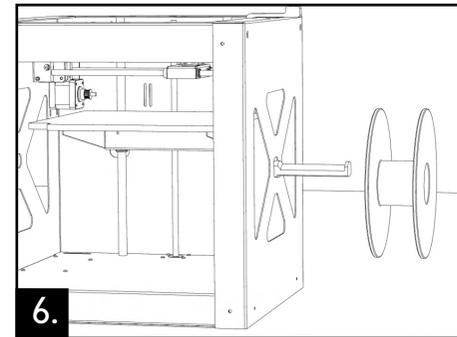
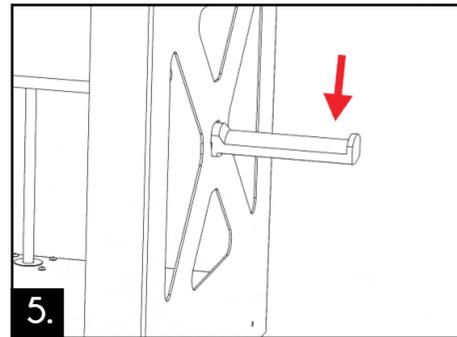
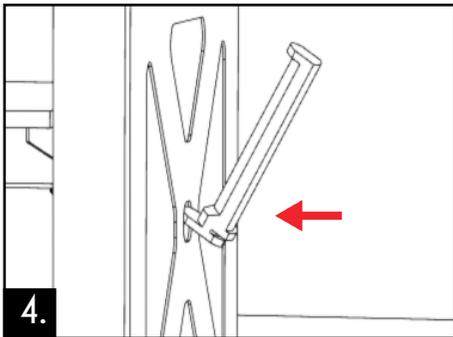
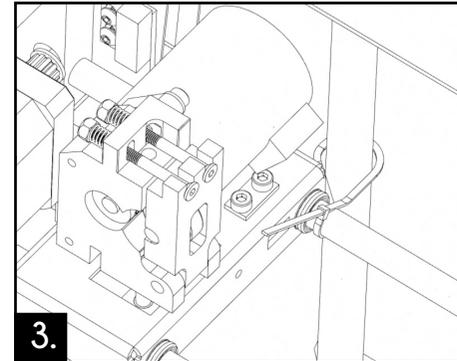
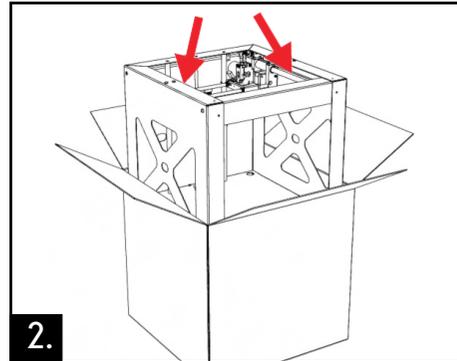
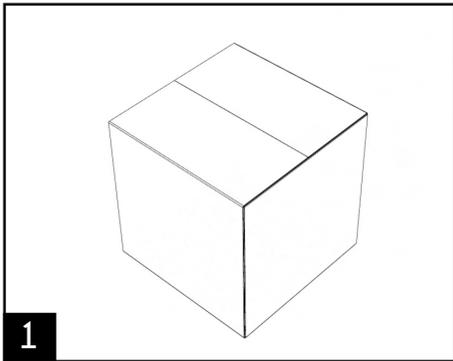
The following parts are included with your Builder 3D printer. Please check if the items below are inside the box.

Note: No filament is included. Filament is available in different colors and can be found in our webshop. www.3dprinter4u.nl/webshop/.



UNBOXING

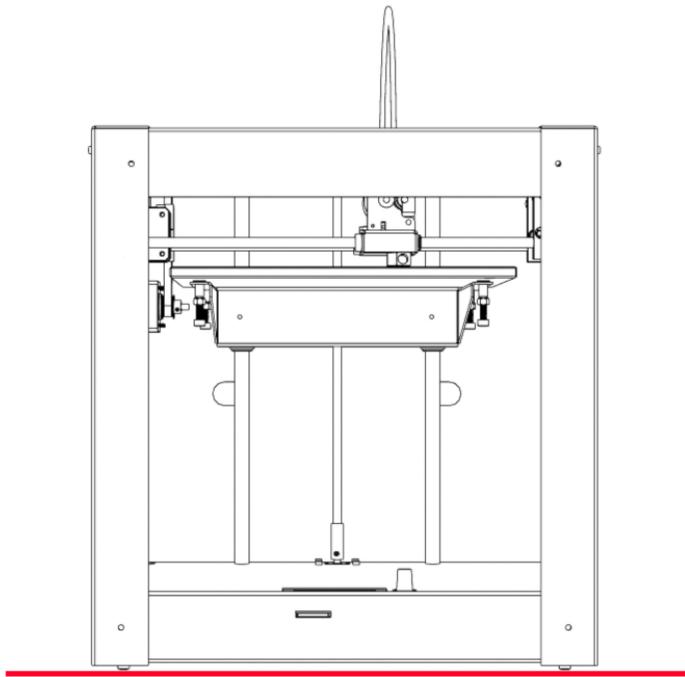
BUILDER



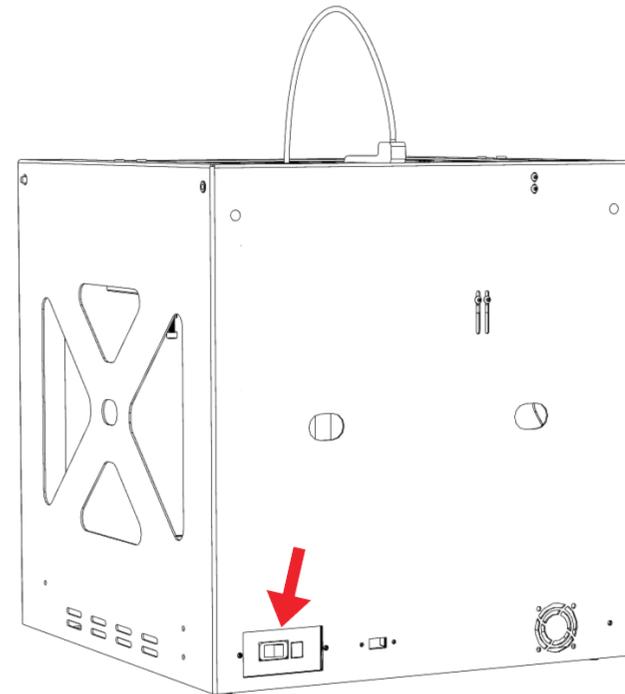
The product images may be different than the actual product

1. Place the box on a flat surface
2. Open the box and lift up the Builder printer with both hands. While lifting or moving do not grab belts, rods or the extruder.
3. Uncut and remove the plastic tie-wrap that strap the axes together. Now remove the foam by rotating the z-axis (the spindle).
4. Attach the spool holder to the frame of the Builder by inserting the top of the spool holder into the frame hole
5. Now press down the spool holder until it snaps into place.
6. Mount the filament spool onto the spool holder.
7. Place a piece of tape underneath the clip filament guide this will prevent the clip from sliding during printing.
8. Attach the clip filament guide on top of the Builder.
9. Push the filament guide tube inside the clip filament guide.
10. Now you can switch on the Builder by pressing the on/off button which is located at the back of the printer.

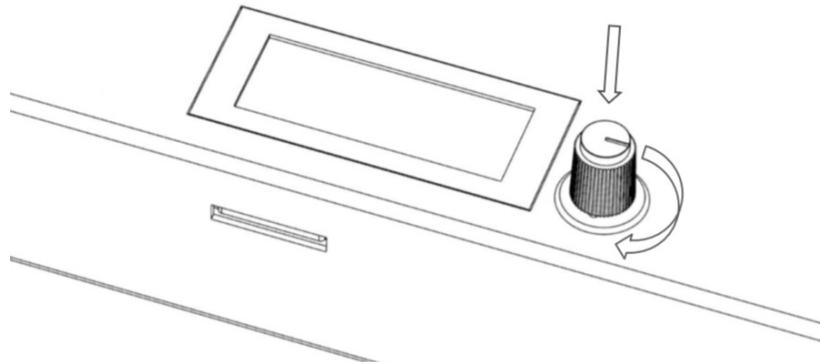
Note: The Builder can be switched off at any time, it is recommended to only turn off the Builder when it's not in use



Place the Builder on a stable surface.



Make sure the power switch is in the Off position. Plug the power cord into the power input of the Builder. Now plug the power cord of your printer into a grounded outlet.



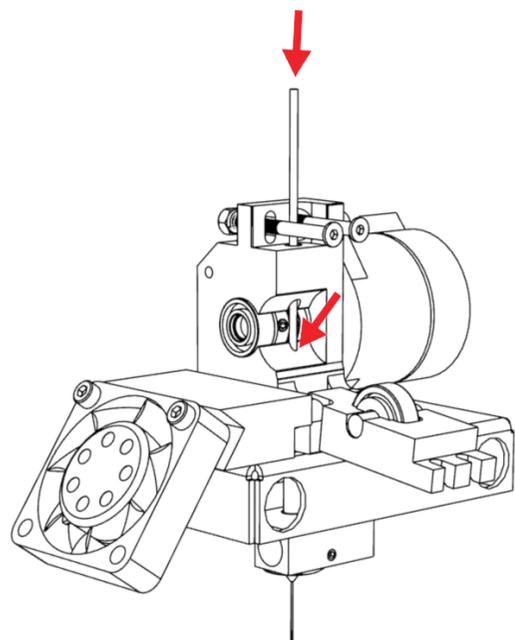
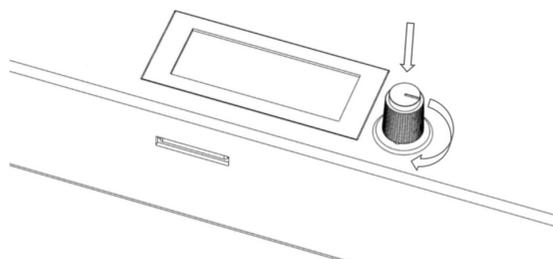
Control

Recommended is to use the printer stand alone.

Navigate through the display menu by pressing or rotating the button. Located in the front is the SD-card slot for stand alone printing. Push the SD-card to eject it.

The display provides information about the printer and object as shown in the image.





Note: If inserting the filament is difficult, bend it gently until it's straight or cut the filament at an angle

General

The Builder Mono extruder is simple, easy-to-maintain and a easy to use printer. This printer is specially designed for beginners. For tutorials about the Builder Mono extruder check out the YouTube channel of "Builder 3D Printers".

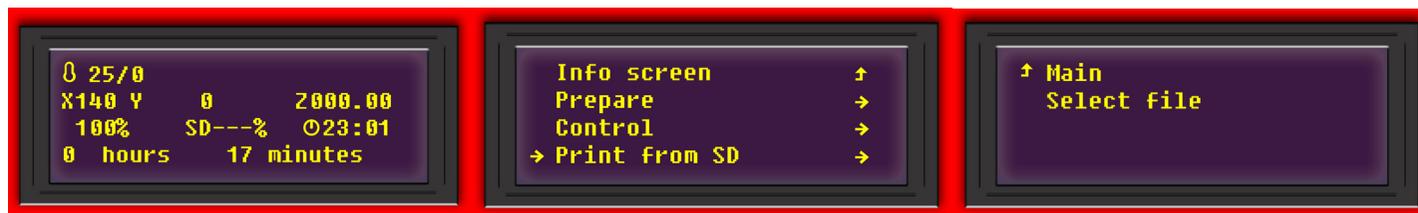
Installing filaments

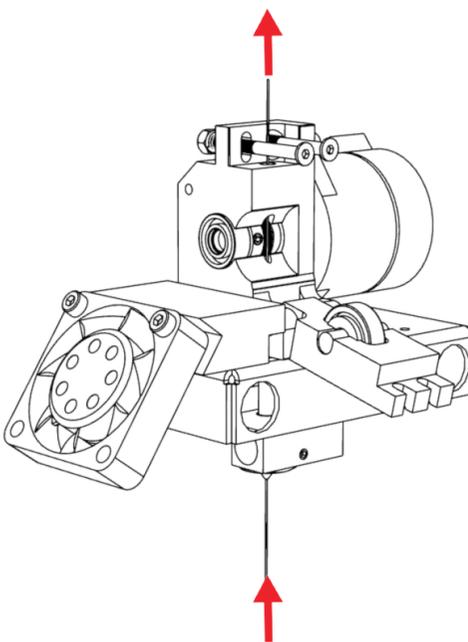
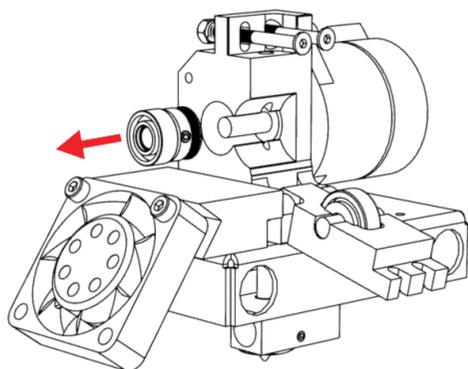
Insert filament material by following the steps below

- Go to "prepare" and heat up the printhead of your Builder Mono extruder by clicking "preheat 210"
- Open the printhead and insert the filament
- Push down the filament until some comes out of the nozzle
- Close the extruderhead. The filament material is installed correctly and the Builder Mono extruder is ready to print.

Start printing

Select a print file on the SD-card and press the button to start printing.





Maintain printhead

Maintaining your Builder 3D printer is important to achieve the best result. After a lot of printing, the filament material feeding wheel can contain small plastic parts. For cleaning, follow the next steps.

- Open the printhead of your Builder Mono extruder
- Check the feeding wheel for stuck printing material. Remove this by using a simple brush or compressed air.
- When cleaning the feeding wheel is hard, you can choose to remove the feeding wheel from the extruder motor. Remove only when needed!
- When assembling the feeding wheel, be sure the groove is above the hotend entrance

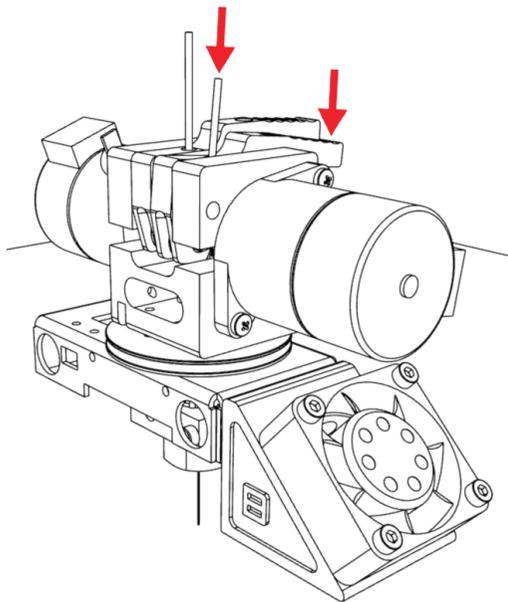
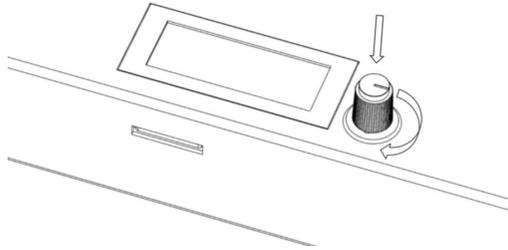
Cleaning wire

When not enough material is released from the nozzle, something could be blocking the nozzle. Cleaning the nozzle is recommended.

- Heat up the printhead of your Builder Mono extruder (preheat 210)
- Open the printhead of your Builder Mono extruder
- Insert the supplied wire from the bottom, upwards through the nozzle
- Remove the wire which comes out of the top of the printhead

Printing other materials

After printing with other materials it's wise to extrude some PLA to prevent jamming. Push down the filament until it comes out.



Attention: Make sure that both filaments are installed inside the Dual-Feed system

General

With the Dual-Feed system from Builder 3D printers, it's not needed to calibrate anymore. Besides, it's possible to mix colors. Check chapter "Colormixing" for how to mix colors with the Dual-Feed system. For tutorials about the Dual-Feed system check out the YouTube channel of "Builder 3D Printers".

Installing filaments

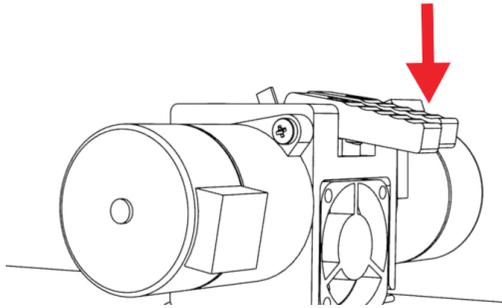
Insert filament material by following the steps below

- Heat up the printhead of your Builder Dual-Feed extruder
- Load the filaments by pushing the levers of your Builder Dual-Feed system.
- Keep pushing the levers, then push down the filament until it comes out of the nozzle. Do this with both filaments.
- Release the pressure of the levers. The filaments are installed correctly and the Builder is ready to print.

Start Printen

Select a print file on the SD-card and press the button to start printing.

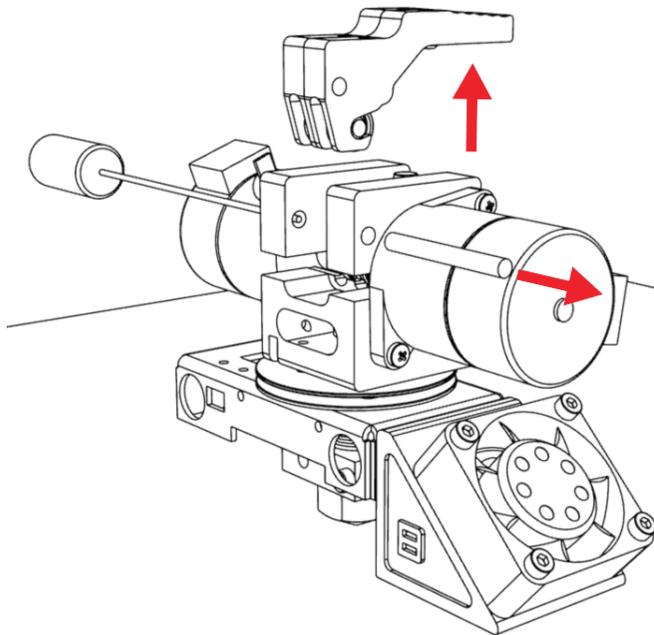


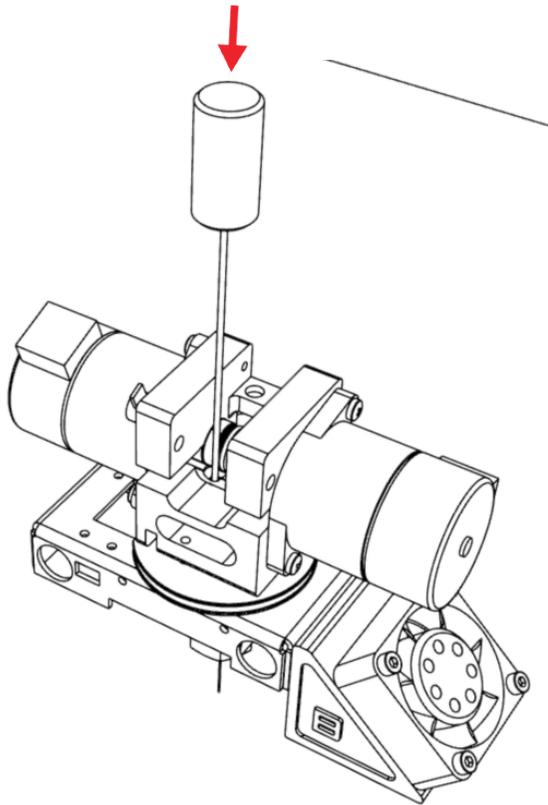


Maintain printhead

Maintaining your Builder 3D printer is important to achieve the best result. After a lot of printing, the filament material feeding wheel can contain small plastic parts. For cleaning this follow the next steps.

- Press down both levers of the Dual-Feed system
- Use the pressure plug to remove the shaft that is holding both levers in place.
- Take both levers out of the extruderhead
- Check the feeding wheel for stuck printing material. Remove this by using a simple brush or compressed air.
- When cleaning the feeding wheel is hard, you can choose to remove the feeding wheel from the extruder motor. Remove only when needed!
- When assembling the feeding wheel be sure that the groove is above the hotend entrance
- After cleaning, assemble both levers in place by pushing the shaft through





Pressure plug

In case the filament material gets jammed, you can choose to use the pressure plug. Only use the pressure plug when there is no other option.

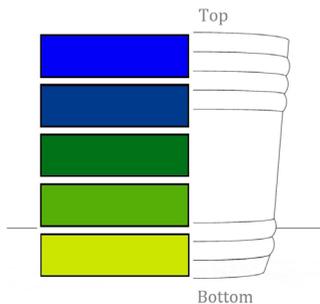
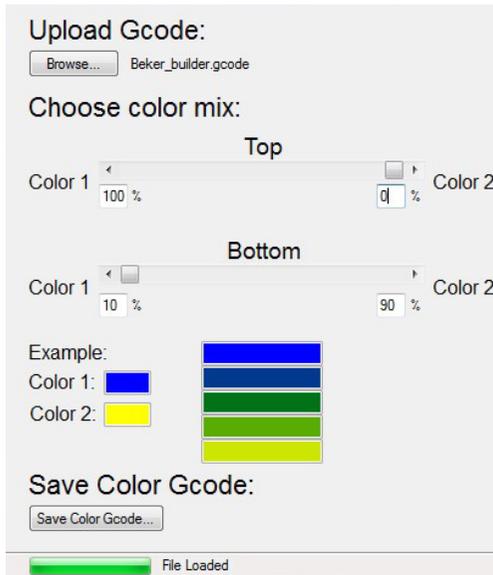
- Heat up the printhead of your Builder Dual-Feed extruder
- Press down both levers of the Dual-Feed system
- Use the pressure plug to remove the shaft that is holding both levers in place.
- Take both levers out of the extruderhead
- Place the pressure plug into the jammed hole
- Add some pressure to the pressure plug until the jammed material comes out of the nozzle.
- After cleaning, assemble both levers in place by pushing the shaft through

Printing other materials

After printing with other materials it's wise to extrude some PLA to prevent jamming. Push down the filament until it comes out.



Caution: When using the pressure plug do not slide it along the feeding wheels. This can damage the printer feeding wheel serious.



Colormixing

Besides printing two colors or support material with the Dual-Feed extruder system, it's possible to mix two colors. When using the colormixing tool, a color gradient can be made. Also manually a color gradient can be made during printing.

Colormixing Tool:

- Activate the colormix application with the received activation code (starts with BP)
- Upload the Gcode file you want to colorize. Click browse to upload.
- Choose the gradient by sliding the bars. The colors are an example of how the product should look like.
- Color in the middle is a mix of the top color and bottom color. In the example blue and yellow makes green.
- Save the colored Gcode when you are satisfied with the settings.

Color mixing manually

For a manual colormixing object, navigate through the LCD menu as shown below. During printing, the flow percentage of each (front/rear) extruder can be set. Select the extruder you want and set the amount of flow you want.





Filament

Builder 3D printers delivers many different types of filament. Every filament that is for sale is tested on our printers. The following types are available in our web shop

- Woodfill, wooden look
- Bronzefill, a bronze appearance after polishing
- PVA, material which dissolves when it makes contact with water
- PLA

Printing other materials

After printing with other materials it's wise to extrude some PLA to prevent jamming. Push down the filament until it comes out.



PRINT SOFTWARE



Cura (Windows, MAC, Linux)

Cura is a open source program which prepares your object into a file (gcode) that can be read by the Builder 3D printer.

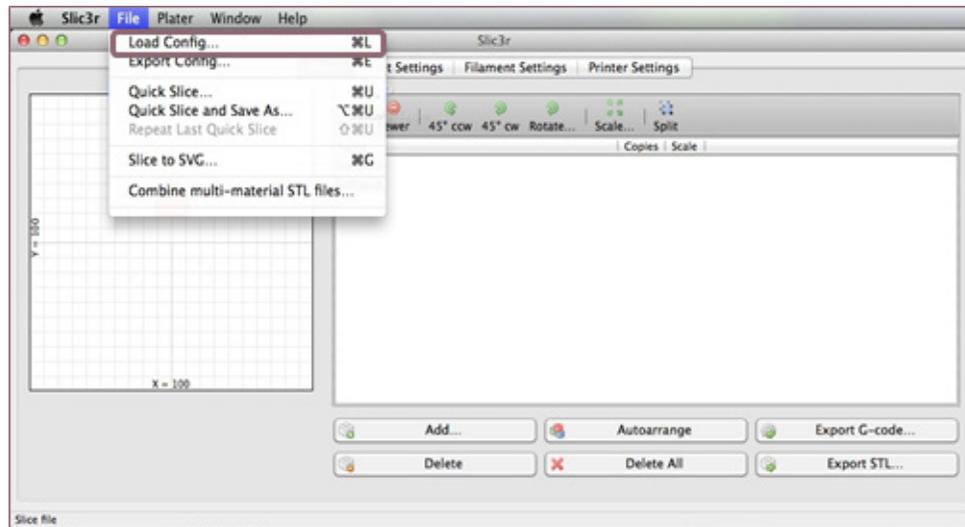
- [Download Cura](#) software
- After installing Cura, select Custom machine and enter the sizes of your Builder
- Download the INI-files for your Builder 3D printer
- Load the INI-files in Cura by using the option “open profile”
- Enter the number of extruders in the “Machine settings” menu
- Reopen this menu and set the extruders offset (X-Y) values to zero.
- For more information about Cura, [check the manual](#).



Repetier

Repetier Host prepares your object into a file (gcode) that can be read by the Builder 3D printer.

- Download Repetier Host from our website <http://3dprinter4u.nl/3d-printer-installatie/>.
- Repetier Host is adjusted to the settings of the Builder 3D printer
- For more information about Repetier Host, check chapter “Repetier Host”



Repetier for MAC

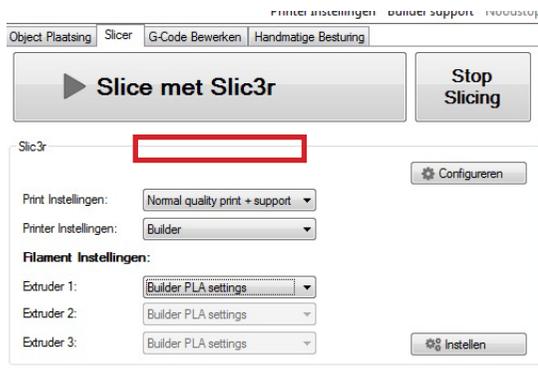
The following steps should be taken to be able using the settings of builder in Slic3r.

1. Use the following link <http://3dprinter4u.com/3d-printer-installation>. Go ahead to step 2 and download the Ini-files
2. Start Repetier-Host
3. Open the tab Slic3r
4. Press "Configure" to activate Slic3r.
5. Choose "Load Config" in the file menu.

Slicer

Before the Builder is able to print STL-files they need to be converted to a G-code. This can be done with Slicer. Builder 3D Printers has pre-installed a few settings for you.

Print settings:



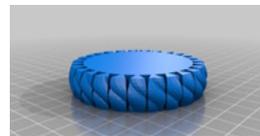
- High quality print: this option can be used to print an object in high quality. The layer height of this option is 0.1 mm. the minimum layer height of the Builder is 50 micron.

- Normal quality print: this is the most used option. The normal quality print can be used to print faster with a high quality result. The layer height of this option is 0.2 mm.

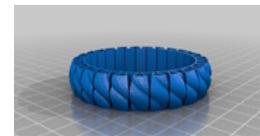
- Normal quality print + support: when printing an object with overhangs, support material is needed. With this option the object will be printed with support material which you can remove by

breaking it of the actual object after the print is finished.

- Single wall print (vase): This option can be used when printing a cup or vase. The software will build up the object like a spiral. This will create a single wall. Make sure the object (STL file) is solid. Slicer will create the single wall in the software.



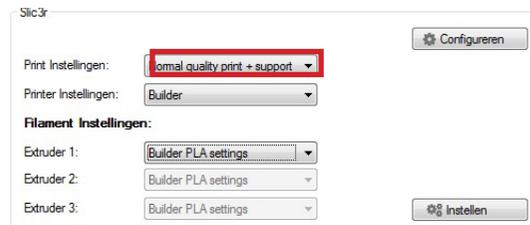
Solid



single wall

Extruder 1:

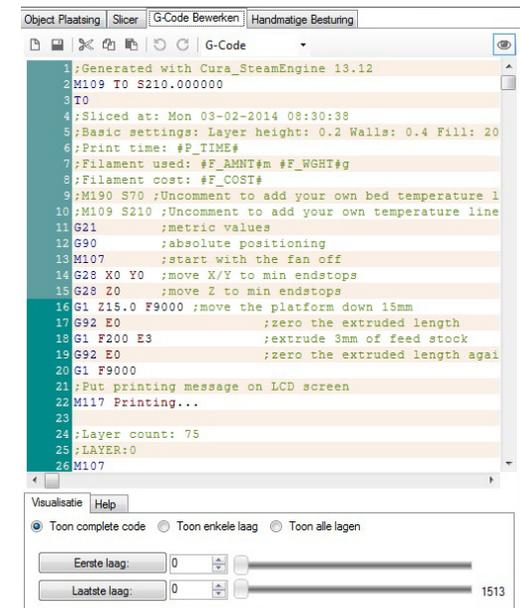
- Builder PLA settings: These settings represent the filament diameter and the print temperature of the PLA/filament.



- Extra cooling: When printing a very small object you might need the extra cooling option. This option makes sure the print speed per layer is on its lowest to provide the object with the required cooling.

G-code editing

With this tab it's possible to edit the G-code. Editing new commando's like pause the print, using the other extruder or to recognize any mistakes that are in the G-code.



Manual control

After the Builder has been connected to the pc or laptop the Builder is able to be controlled with Repetier Host. The following options are available.

The screenshot shows the Repetier Host Manual Control interface. It is divided into several sections:

- Section 1 (Movement):** A central area with directional arrows for X, Y, Z, and their respective home positions. A '50 mm' label is visible between the X and Y arrows.
- Section 2 (Speed Multiply):** Two sliders for 'Feedrate' and 'Flowrate', both currently set to 100.
- Section 3 (Extruder):** Settings for 'Heat Extruder' including 'Extruder 1' (27.70°C / 200), 'Speed [mm/min]' (120), 'Extrude [mm]' (19), and 'Retract [mm]' (10).

1. Section manual control:

The arrows allow you to move the print head to the x, y and z directions. When clicking on the cross the print head will move to its home position.

2. Section speed multiply:

Feedrate: This setting will change the printing speed. The flowrate will automatically increase with the speed

Flowrate: This number affects the amount extruded material. Changing this will affect the wall thickness.

3. Section extruder:

Preheat the extruder for inserting the filament.

Extrude: Number of mm's that is manual extruded by pressing the button.

Retraction: Number of mm's that is retracted during printing (max 8 mm).



PRINTING



LCD screen

The LCD screen shows the most important information. From this information screen a few settings can be changed while printing. The most commonly used functions are explained in this chapter.



Restore Failsafe

With the Restore Failsafe function, the Builder can be reset to his factory settings.



Warning: Changing parameters in the control menu, except the functions explained below, may change the object drastically. We take no responsibility for the quality of the print when the parameters have been changed.



Disable Steppers

The function “Disable Steppers” can be used to disable the stepper motors. Now it’s possible to move the extruder head by hand. To check the bed leveling for example



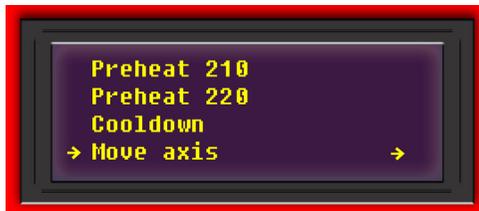
Auto home

The “Auto home” functions moves the extruderhead to his 0 position.



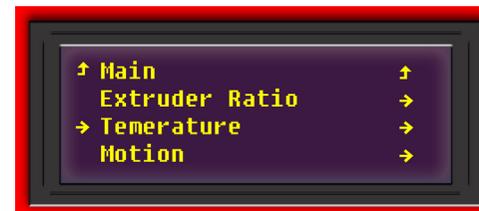
Preheat 210

The function “Preheat 210” heats up the extruder head to 210 degrees Celsius. This may be necessary for inserting filament.



Move axis

Use the function “Move axis” for moving de X-Y and Z axis. Move after selecting, the axis by rotating the button of your LCD screen. Extruder some material by using the options “Move 1mm” and “Move 0,1mm”.



Temperature

The options “Nozzle” and “Fan speed” are shown in the “Temperature” menu.

Temperature: the print temperature can be adjusted here
Fan speed: The speed of the fan can be adjusted here

Bed leveling

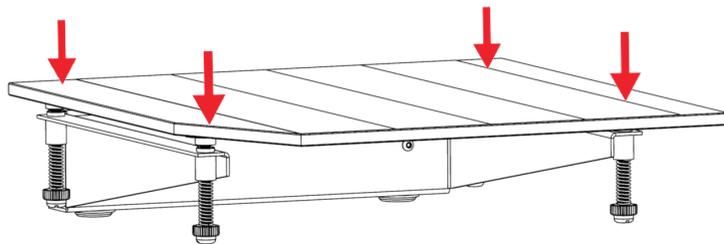
Leveling the print bed is extremely important for a good quality print. From Builder 3D printers the print bed is leveled correctly. It's possible that during shipment the height of the print bed has changed. We recommend to check the height before printing by following these steps



Apply the adhesion layer

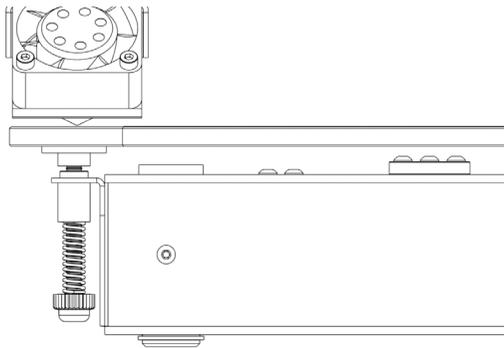
Apply a adhesion layer to the print bed. We recommend you to use:

- Tape (included)
- Glue stick
- Woodworkers glue



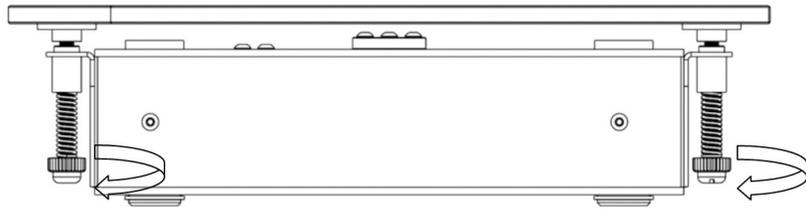
Place the print bed

Make sure the four screws fit perfectly in the print bed. If necessary, push on the print bed to make sure it's stable. Do not turn the screws.



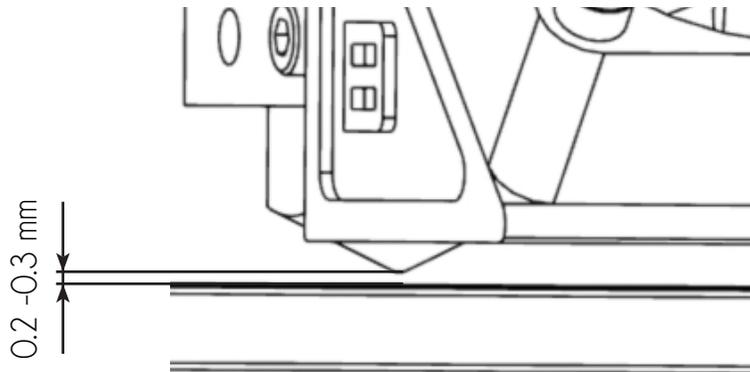
Home position

Move the extruder head to his home position. After this proceed with leveling the print bed.



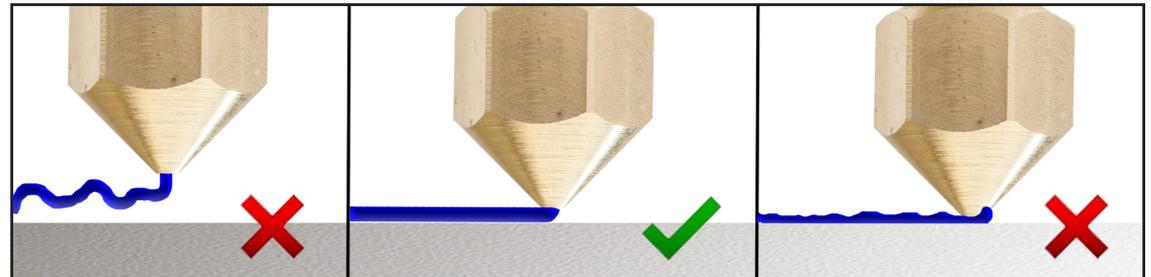
Set height

- Clean the nozzle
- Prevent the print bed against wobbling, by rotating the screws.
- Make sure the space between the head and bed is 0.2 - 0.3 mm. Check this by moving the extruderhead across the printbed manually.
- Adjust when necessary, the bed height by turning two screws at the same time.



Control

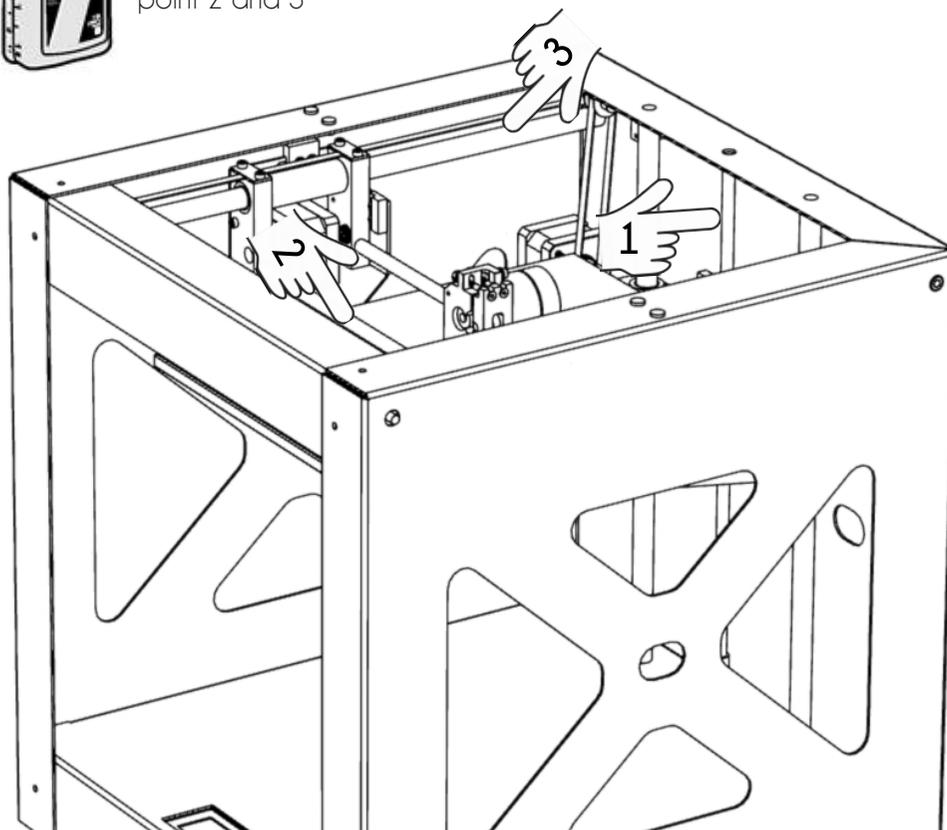
Check the space between the nozzle and print bed by running the “bed levelling” from the SD-card. The first layer of this prints job has to stick to the platform as shown in the image below. During printing it is possible to optimize the height by rotating the screws of the print bed.





Use grease to lubricate point 1

Use oil to lubricate point 2 and 3



Maintenance

To achieve the best results and lifetime, maintenance of your Builder 3D printer is very important.

Lubricate

Lubrication of the rotating and sliding parts is important for a nice print surface. Lubricate the axis (X-Y) 2 and 3 with oil when the printed objects shows some signs of vibrations. Lubricate the Z axis when those feel dry.

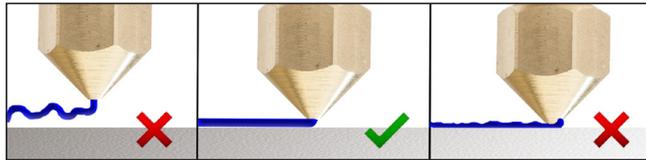
Feeder wheels

After a lot of printing, the filament material feeding wheel can contain small plastic parts. For cleaning, use a tooth brush or compressed air. Please go to the chapter Dual-Feed or Mono Extruder for further instructions.

Nozzle

During printing, print material can stick to the nozzle. This stuck material can pollute the object while printing. Clean the nozzle before printing.

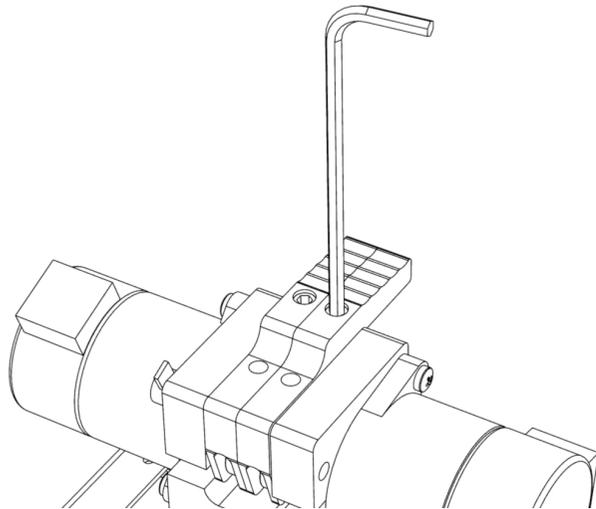
Warning: the nozzle is hot, 210 degrees Celsius. Cleaning the nozzle can be done by using a thick towel. Do not use any sharp objects to clean the nozzle, this can damage the nozzle.



The first layer does not stick to the print bed

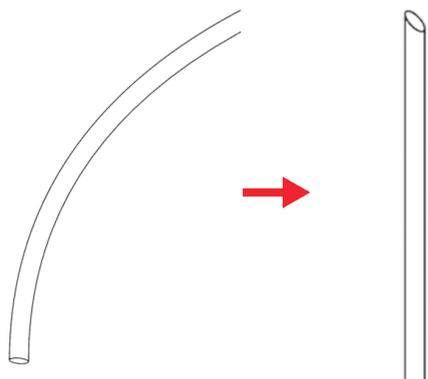
This problem is well known in the 3D printing world. The color substances added to the filament may influence the melting point of the filament. To optimize the adhesion of first layer make sure that:

- The space between the nozzle and print bed is not correct. This should be 0.2 – 0.3 mm.
- Clean the print bed, replace the tape or use Pritt or wood workers glue.
- Increase the "first layer thickness" for a better adhesion.
- Place a "skirt" around the object. The skirt is a line drawn around the object at the first layer. This helps prime your extruder.
- Extrude material before printing.



Under extrusion

- Make sure the extruder wheels are clean. After a lot of printing these wheels can be full of dust and/or filament. Clean them with a brush or compressed air.
- There is not enough pressure on the filament. Increase the pressure by tightening the lever screws
- The extrusion speed is too high. Decrease the print speed.
- The nozzle got jammed. Clean the nozzle with the tools provided by Builder 3D Printers.
- Increase the temperature (250C) for a short time (max 5 min). The Builder will melt the old material and extrude this through the nozzle.
- The filament specs are different from the filament delivered by Builder 3D Printers. Every filament has its own specs. Contact the filament supplier for more info.
- The thermal protection is activated as the extruder head got too hot. Cool down the extruder head. After cooling down the Builder is ready to print again.
- Value E steps/mm are incorrect. Check the G-code and/or reset the Builder to the fabric settings with LCD menu (restore failsafe).

**No connection with the Builder:**

The Builder 3D Printers are stand-alone printers. Simply use the SD-card for the G-codes. If the Builder is connected to the pc or laptop but the software is unable to identify the printer this might be the problem:

- Is the driver installed correctly? Use administrator rights.
- Check to which COM port the Builder is connected. Use “device management”.

Difficulty with inserting the filament

- Bend the filament straight and cut the filament at an angle. This makes it easier to insert the filament in the extruder head.
- Broken filament in the extruder head. Preheat to 210 and remove the broken filament. If the filament is too short, use the pressure plug.
- Extruder screws are too tight. Turn them a bit looser.

The 3D printed object doesn't look good.

- Not enough cooling. Increase the “minimum layer height”
- Check the tension on the timing belts. Increase the tension if needed. Check our official YouTube channel: <https://www.youtube.com/user/builder3dprinters>
- The filament specs are different from the filament delivered by Builder 3D Printers. Every filament has its own specs. Contact the filament supplier for more info.



Warning: If you do not follow these next instructions, it will lead to fire, electric shocks or other injuries or damage to the Builder or other properties. Read all safety information below before you start using the Builder.

- Do NOT use water or fluid liquids, the bottom contains electric components.
- Minimum age for use of the Builder is age 14.
- Use the Builder in a bright area and preferably in 20 degrees Celsius.
- Do NOT enter the printing area with your hands when the printer is in use.
- Make sure the Builder is placed in a ventilated room.
- When cleaning the nozzle, use a piece of cloth, but beware(!) the nozzle is still hot after printing.
- After a 30 hour print, clean the round conduction with a piece of cloth and provide the printer with new grease/oil if necessary.
- Turn the Builder off with the main switch on the back of the Builder when the printer needs maintenance.
- The Builder has been extensively tested, but if a failure occurs please contact helpdesk@3dprinter4u.nl.
- Do NOT open the bottom side, but leave this to our certified workers.
- If you decide to leave the Builder unattended to print, make sure to remove flammable objects near the printer.



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