PRUSA RESEARCH
by JOSEF PRUSA

ENG

3D PRINTING HANDBOOK

FOR THE **PRUSA CORE ONE** 3D PRINTER

ORIGINAL INSTRUCTIONS

Prusa CORE One: Official Instructions

Handbook version 1.01 - February 14th, 2025

If you need to download this handbook in other languages, such as **Deutsch, Français, Italiano, Español, Čeština, and Polski,** visit https://prusa.io/core-one or scan the QR code on the right. This link will also take you to a hub containing the latest downloads (firmware, handbook, drivers, PrusaSlicer) and help articles.

In this handbook, you will learn everything you need to set up your printer, use it, perform routine maintenance, and more. Assembly instructions, along with other useful information, can be found at prusa.io/core-one.

Quick Guide to the First Print

1. Read the Safety Instructions carefully **(page 8).**
2. Install the anti-vibration bars. **(page 12)**
3. Attach and connect the display to the printer and plug in the power cable. (**pages 13-15)**
4. Calibrate the printer using the Selftest Wizard. **(page 20)**
5. Insert the USB drive that came with your printer and print your first object. **(page 24)**

Tips, advice or important information that will help you when working with the printer.

This part of the text is very important, please read it carefully! It is directly related to the correct operation of the printer and its safe operation.

This information applies to the Prusa CORE One 3D printer assembly kit.

How to contact Prusa Research technical support:

First, check the last sections of this manual that deal with common problems, or go to prusa.io/core-one (you can also scan the QR code at the top of the page) for a complete list of the most common problems and solutions. If your problem is not listed here, or the solution does not work, please send an email to info@prusa3d.com and/or use our chat at prusa3d.com. Try to describe your problem as accurately as possible and include pictures or videos.

About the Author

Josef Průša (*23. 2. 1990) became interested in 3D printing when he began studying at the University of Economics in 2009 - it started off as a hobby, a new technology open to modifications and improvements. The hobby quickly became his passion, and Josef became one of the main developers of the international open-source (all works are freely available for any use) RepRap project by Adrian Bowyer. Today, Prusa's design in various versions can be seen all over the world; it is one of the most used printer designs. The goal is to increase public awareness of 3D printing technology.

In the spirit of the RepRap project, certain parts of your machine are 3D-printed on Prusa 3D printers, making them easier to maintain and customize. The Prusa product range is constantly being expanded with new models and improvements.

His main goal is to make 3D printing technology more understandable and easier for ordinary users. Josef Průša also holds workshops for the public, participates in professional conferences, and promotes 3D printing. He has lectured at TEDx conferences in Prague and Vienna, at the World Maker Faire in New York, at the Maker Faire in Rome, and at the Open Hardware Summit at MIT. He has also taught the Arduino course at Charles University and was a lecturer at the Academy of Arts, Architecture and Design in Prague.

In his own words, he envisions a not-so-distant future where 3D printers will be available in every household. If anything is needed, you can easily print it out. The boundaries in this field are being pushed every day... We are glad you are part of it!

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Product Information

Name:	Prusa CORE One
Manufacturer:	Prusa Research a.s., Partyzánská 188/7a, Holešovice, 170 00 Praha 7, Česká republika
Contacts:	Phone: +420 222 263 718, e-mail: info@prusa3d.com
EEE Category:	3 (IT / Telecommunications Equipment)
Power Supply:	100-240 VAC, 2.8 A max., 50-60 Hz
Frequency Bands:	WLAN: 2400,0-2483,5 MHz
	NFC: 13,553-13,567 MHz
Maximum Radiated Radio Frequency Performance (WLAN):	< 100 mW e.i.r.p.
Maximum Magnetic Field Strength (NFC):	< 60 dBuA/m at a distance of 10 m
WLAN standard:	IEEE 802.11 b/g/n
Operating Temperature Range:	18 °C - 38 °C
Maximum Air Humidity:	85%, non-condensing
Printer Dimensions:	Width: 415 mm
	Depth (with closed door): 555 mm
	Height: 555 mm
Build Volume (Width × Depth × Height):	220×250×270 mm
Installed Nozzle Diameter:	CHT 0.4 mm
Supported Filament Diameter:	1.75 mm
Weight (With Packaging / Without Packaging):	25 kg / 22.5 kg

The serial number of the Prusa CORE One product is printed on the nameplate located on the printer frame and also on the packaging. The Prusa CORE One is a device intended for use only in indoor environments, where it is protected from external influences.

Operating conditions in accordance with the General Authorization of the Czech Telecommunication Office No. VO-R/10 and No. VO-R/12.

Simplified Declaration of Conformity

The manufacturer, Prusa Research a.s., hereby declares that the product Prusa CORE One is in conformity with Directive 2014/53/EU applicable in the European Union and with Statutory Instruments 2017 No. 1206 applicable in the United Kingdom. The full texts of the Declaration of Conformity are available at the website: prusa3d.com.

Prusa CORE One Warranty Information

Prusa CORE One Assembled 3D printers are covered by a 24-month warranty for end customers in the EU, and a 12-month warranty for business customers and end customers in the rest of the world. Consumables and parts subject to wear and tear are excluded from this warranty. The warranty period starts on the day the customer receives the goods.

The seller is not liable for any damage caused by improper handling of the purchased product, or damage caused by handling in violation of the information and recommendations given in the official manuals and instructions. The warranty also expires in the event of unskilled interventions and the use of unofficial hardware and software modifications.

Safety Symbols and Their Meanings

Caution: strong magnetic fields. Do not place objects sensitive to magnetic fields on the marked areas, as they could be irreversibly damaged.

Attention: moving mechanical parts. Be careful not to injure your hands when you are in close proximity to equipment with mechanical parts.

Information on function, operation and service can be found in this manual or online at help.prusa3d.com.

Before any servicing, read the instructions and disconnect the product from the power supply.

Take extra care when handling or touching parts marked with this symbol and avoid other hazards listed for specific symbols, such as hot surface hazards - burns may occur.

Warning: hot surface! The marked object may be hot and extra care must be taken when touching it to avoid burns.

Attention: moving parts. Unprotected moving mechanical parts can cause injury, so take extra care.

Do not print directly on this surface!

This product is made up of components that must be disposed of in accordance with the Waste Electrical and Electronic Equipment Directive, so take it to an e-waste collection point.

Safety Instructions and Disclaimer

Non-compliance with the information in this manual or assembly instructions can result in injuries, poor print results, or damage to the 3D printer. Ensure that anyone working with the printer understands and comprehends the contents of this manual. Since we cannot control the conditions in which you assemble the Prusa CORE One printer, we do not accept responsibility for any losses, injuries, damages, or expenses arising from or associated with the assembly, handling, storage, use, or disposal of the product. Information in this manual is provided without any express or implied warranty.

Handling the 3D Printer

Exercise caution when handling the 3D printer. It is an electrical device with moving and heated parts.

Placement and Basic Use

- Ensure the printer is placed and operated in a suitable location to avoid potential risks.
- This device is intended for indoor use only. Do not expose it to water or snow. Contact with water and other liquids can damage electronics, cause short circuits, and other types of damage. Always operate the printer in a dry environment.
- Place the printer in a secure, dry location. The surface must be level and stable—ideally, a workbench. Ensure there is at least 30 cm of space around the printer. Obstructions near the printer can affect its operation or cause excessive wear on cable sheaths or the cables themselves. Worn cables can pose a risk (electric shock, fire).
- Ensure that no vents/fans are blocked. The printer has built-in fan speed monitoring, but in some cases (incorrect assembly, component damage, unofficial firmware), the monitoring may not work correctly. Insufficient cooling can lead to overheating and severe printer damage (risk of electronic damage, fire).
- Ensure the printer is placed to prevent tipping or falling. If the printer has suffered physical damage, do not use it—damaged parts can pose a safety risk.
- Power adapters and cords must be placed to avoid tripping, stepping on, or otherwise damaging them. Make sure the cables are not damaged. If they are, stop using the device immediately and replace the cables. Damaged cables are a safety risk - risk of electric shock.
- Do not leave the printer unattended while it is on! The printer is equipped with temperature control and several smart safety features, but misuse or unexpected component failure can pose a fire hazard.
- Never interfere with the print area when the printer is in operation. Also, prevent foreign objects from entering the print area and the area around the printer to avoid collisions.

Electrical Safety

- The printer can only be powered through a standard 230 VAC, 50 Hz or 110 VAC, 60 Hz power outlet. Never use alternative sources, they may cause problems or even damage the printer.
- Do not use the printer if the power cable is damaged—damaged cables can lead to electric shock.
- Never disassemble the printer's power supply as it contains no user-serviceable parts. Always have the printer serviced by a qualified technician. Improper handling of the power supply can lead to printer damage and increased risk of electric shock.
- You can disconnect the device from the electrical grid by pulling out the plug. The electrical outlet must be easily accessible.
- When disconnecting the power cord from the outlet, pull the plug, not the cord. This will reduce the risk of damage to the plug or the power outlet.
- Never, under no circumstances, disconnect electrical parts while the Prusa CORE One printer is on — this includes disconnecting the Nextruder from the motherboard, disconnecting the heated bed, disconnecting the LCD, and others. Always turn off the printer before disconnecting electrical parts.

The printer is equipped with a replaceable fuse located in the fuse holder near the connecting connector of the power source and it protects the entire printer. Before replacing the fuse, switch off the printer and disconnect the power supply by pulling out the power cord from the outlet. Push the fuse holder out using a flat screwdriver, remove the fuse and insert a new one. Push the fuse holder back in place. Always make sure the new fuse has the same value as stated on the label. If the fuse blows repeatedly, contact the tech support.

Mechanical Risk

Moving mechanical parts of the printer can cause injury.

- Never interfere with the internal components of the printer when it is connected to power or in operation—risk of injury from mechanical parts or electric shock.
- Prevent unauthorized persons, including children, from handling the printer, even when it is not printing.

Burn Risk

- Do not touch heated parts of the printer – heatbed, print plate, and parts of the printhead. There is a risk of burns.
- Warning! During printing, parts of the print head and the print bed can heat to very high temperatures! Do not touch them until the print has finished and the printer has cooled down — there is a risk of burns.

Proper Use of Double-Sided Print Sheets

Each type of print sheet requires slightly different maintenance. Improper handling and use can damage the print sheet, heated bed, or other parts of the printer. Print sheets are consumables and subject to wear.

The surface of the textured and satin print sheet must not be cleaned with acetone!

- Please refer to the Flexible Print Sheets chapter for maintenance instructions.
- Use highly concentrated isopropyl alcohol (90% or more) to degrease the sheet surface.
- Do not use products that contain IPA as one of the components (e.g. hand sanitizers) - these products usually contain other additives that may negatively affect the properties of the printing plate.
- Do not wash under running water, as the sheet may corrode.
- Do not remove the PEI film from the plate surface.
- Before printing, clean the print sheet surface with a cloth moistened with isopropyl alcohol.
- Printing sheets are held firmly on the heated bed with strong magnets - be careful when placing the sheet on the heatbed to avoid injury.
- Do not move (drag) the sheet when it is magnetically attached to the heated bed. Friction can damage the heated bed.

Working with Filaments

When handled correctly, working with filaments is simple and safe. Please read the following recommendations.

- Always use the recommended temperatures for the selected material.
- Beware of molten plastic! It can cause burns! If molten plastic hangs from the nozzle, do not remove it by hand. Use pliers or another tool.
- Some materials may emit a strong odor when printing - regularly ventilate the room.
- Handle the filament according to the instructions on the following pages of the handbook.
- Always ensure the end of the filament is properly secured - either inserted into the extruder or threaded through the spool hole. If you accidentally release the end of the filament, it can easily tangle and knot.

1. Introduction

Thank you for purchasing the Prusa CORE One 3D printer from Prusa Research! Your support allows us to invest in further development of 3D printers and other 3D printing products, such as **PrusaSlicer,** our amazing slicing software. We also have our own in-house line of resins and filaments (Prusament), operate Printables.com and partake in many other awesome activities - check it out on our Blog at blog.prusa3d.com!

The **Prusa CORE One** is our first fully enclosed CoreXY 3D printer. Despite its compact size, it offers a large print volume and features exceptional strength and robustness, thanks to its smart exoskeleton frame design.

With an enclosed chamber allowing the internal temperature to reach up to **55 °C**, the CORE One supports printing with advanced materials requiring elevated temperatures. Its active airflow control also allows printing with PLA and PETG with the door closed.

The Prusa CORE One combines the **best features** of our previous printers, including the Nextruder with LoadCell technology and 360° cooling, enabling high-speed printing optimized for superior quality and durability.

2. Unpacking and Package Contents

If you purchased an assembled printer, remove it from the box using the handles on the paper packaging, and place the printer on a suitable surface. When moving the Prusa CORE One printer, use the handles on each side. Never lift it by any cables, filament holder, or doors.

The Prusa CORE One requires approximately **415×555 mm of space, with at least 360 mm of clearance in front to fully open the door**.

If you purchased the assembly kit, head on over to **help.prusa3d.com** to learn how to assemble it!

2.1. Contents of the Package and Accessories

Your Prusa CORE One printer package includes:

- Documentation
- Display (requires manual installation)
- USB drive with sample prints (G-codes)
- CORE One Toolset
- Alcohol-saturated wipe (for initial calibration), acupuncture needle
- Double-sided Smooth PEI Print Sheet
- 1kg spool of Prusament (only with an assembled printer)
- Spare parts
- Prusa lubricant for bearings
- A pack of Haribo gummy bears
- Anti-vibration pads (requires manual installation)

These are the basic tools and accessories necessary for assembly and basic maintenance. **We recommend purchasing a few extra accessories,** such as:

- **Cutting pliers** for cutting the end of filaments or removing supports from printed objects
- **Isopropyl alcohol** (90% or more) for cleaning the print sheet
- **Paper wipes** for cleaning the print sheet
- **Plastic spatula** for removing plastic from the print sheet - you can actually print one!
- **Brass brush** for nozzle cleaning

3. Printer Setup

Installing the anti-vibration bars is mandatory. They ensure a quieter operation and prevent the metal base from scratching sensitive surfaces.

As you pull the printer from the box, keep it flat on the side. Then install both bars on the bottom as depicted in the photo. Then place the printer upright.

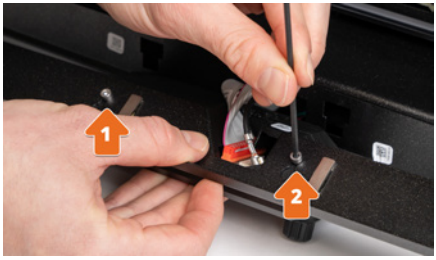
3.1. Mounting the display

The printer is shipped with the display unmounted to reduce the risk of damage during transport. To mount the display, follow the image guide below.

1. **Open the door and remove the front bezel from the printer by lifting the right side** - it's held firmly in place by several magnets. **Slide it upwards on the right side and then you can remove it**. Then, connect the flat grey cable to the orange connector. Mind the correct orientation, the pink stripe should be closer to the edge of the display frame. See the illustration on the next page if you have trouble connecting it.

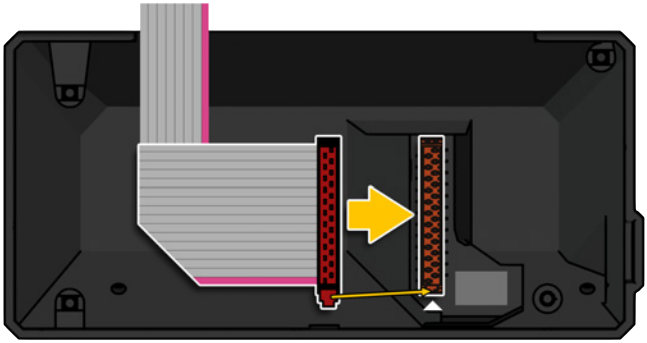
2. Attach the black wire with a silver plug to the terminal. See the illustration on the next page if you have trouble connecting it.

3. Secure the display to the bezel with TWO screws and attach the bezel with the mounted display back to the printer. First, insert the left side, then the right side and carefully slide it down.



3.2. Connecting the LCD - Schematics

For a better overview of the correct connection of both cables, see the illustrations below.



3.3. Reversing the Door Orientation

If needed, you can reverse the door orientation by swapping the positions of the hinges and magnets, allowing the door to open in the opposite direction. A full guide on how to do so is available at prusa.io/core-one-door-reversal.

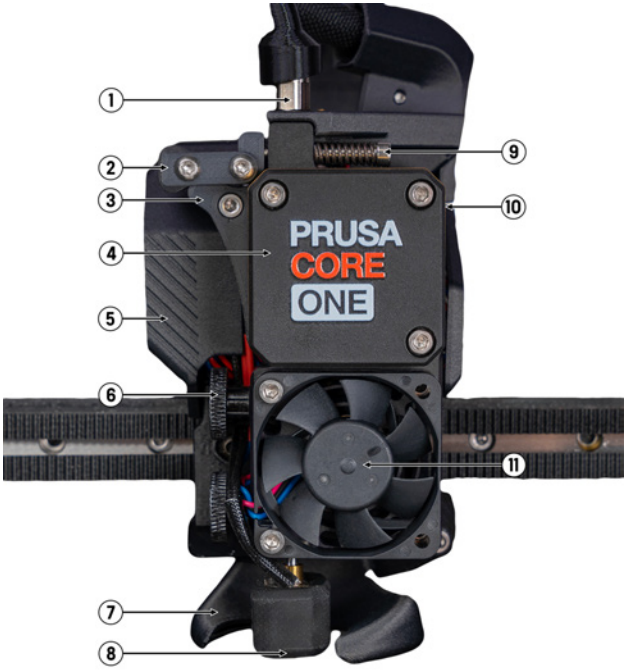
3.4. Connecting and Disconnecting the Power Cable

Always pull the connector, do not pull on the cable itself! Incorrect handling can lead to damage to the connector or cable.

The power supply port is located on the rear side of the printer. Before you plug or unplug the cable, turn the printer off using the physical switch on the power supply unit next to the power supply port. See the picture below to learn how to correctly disconnect the power plug from the power supply.

4. Prusa CORE One Overview and Glossary

1. **Ventilation grille (on the top)** - to maintain airflow when printing with materials such as PLA or PETG
2. **Frame** - an exoskeleton design for maximum strength and robustness
3. **Nextruder** - our next-generation extruder with a planetary gearbox and LoadCell sensor
4. **XY-carriage** - a horizontal assembly consisting of motors, belts, linear rails, pulleys, and plastic parts; moves the Nextruder left and right, and forward and backward
5. **Handle** - located on both sides, used for lifting and moving the printer
6. **PTFE tube** - insertion point for filament
7. **Z-Axis** - a vertical assembly consisting of smooth and threaded rods and three motors; moves the heatbed up and down
8. **Door Handle** - used to open the door
9. **Spoolholder and Filament Spool** - the Prusa CORE One is compatible with 1.75mm filaments
10. **Print sheet** - easy to maintain; held in place with strong magnets embedded in the heatbed
11. **Heatbed** - the proven Prusa MK52 heatbed
12. **LED indicator light** - indicates the printer's current status using different colors
13. **USB port and USB drive** - used to print G-Codes (print files) and flash firmware from the USB drive
14. **LCD** - used for control and configuration of the printer
15. **Rotary knob** - the main control device with the reset button directly below it



1. **Filament Insertion Point** – As you insert the filament into the PTFE tube on the side of the printer (next to the spoolholder), this is the point where it feeds into the Nextruder.
2. **Idler lock (swivel)** - flip upwards to unlock the idler door
3. **Idler** - maintains pressure on the filament strand which is moved further into the extruder by the extruder gear
4. **Planetary gearbox and extruder motor**
5. **Electronics cover** - covers the break-out board
6. **Thumbscrews** - you can detach the nozzle by unscrewing the thumbscrews
7. **Print Fan shroud** - directs the air from the high-performance turbine print fan towards the printed object
8. **Heaterblock with Nozzle** - by default, a CHT 0.4 mm nozzle is installed
9. **Idler screws** - these screws are used to adjust the pressure of the idler
10. **Print fan (back side)** - high-performance turbine for cooling the printed object
11. **Heatsink fan** - cools the aluminum heatsink behind it

DO NOT remove the cover of the gearbox unless you have a gearbox alignment tool that comes with the assembly kit. If you have a factory-assembled machine, the gearbox is precisely aligned and calibrated. There is no need to access it. You could misalign the gearbox by removing the cover.

5. Your First Print

To get your printer up and running, please pay attention to the information in the following chapters. We will go through the basics together - you'll be printing in no time! If you encounter any problems during your first print, refer to **the Basic Troubleshooting** chapter at the end of the handbook.

In this chapter you will learn how to:

- Control the printer
- Prepare the print sheet for the first print
- Perform initial calibration
- Insert filament
- Start the first print
- Remove the print

Door Sensor Information

The Prusa CORE One is equipped with a door safety sensor that immediately stops the printer when the door is opened to prevent user injury. Keep the door closed while the printer is in operation. **The door sensor can be turned off in the Settings menu.**

5.1. Basic controls

1. Rotary Knob: Turn to navigate and press to confirm selections.

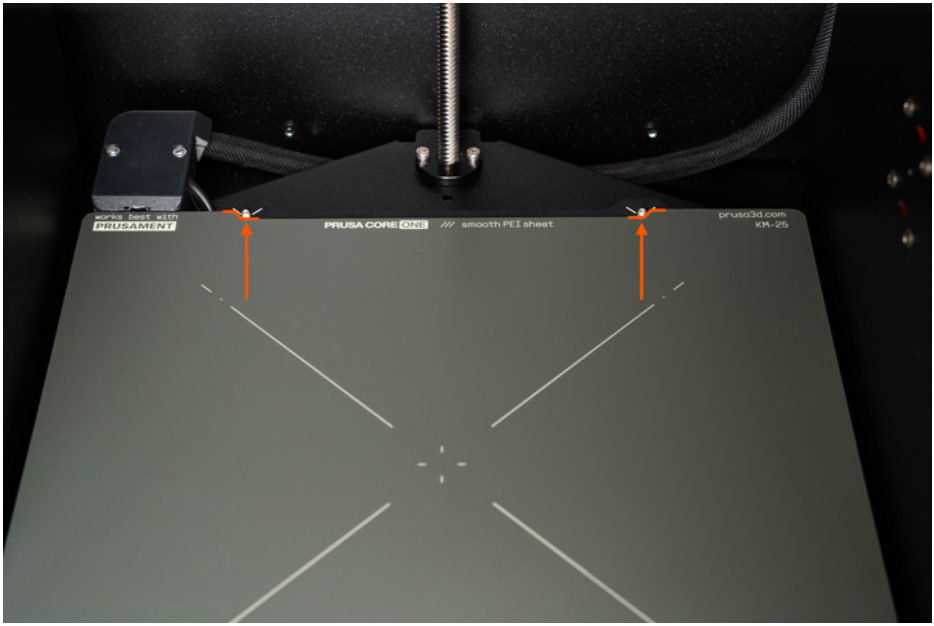
2. Touchscreen: Tap and swipe to navigate and select items in the menu.

3. Reset Button: Instantly restarts the printer. Useful when an immediate stop is needed.

5.2. Preparing Flexible Print Sheets

If you have a pre-assembled printer, remove the test print from the sheet installed on the printer by carefully bending the sheet on both sides. Then rotate it by 90° and repeat until the print separates from the sheet. Then, place the sheet back on the printer.

1. The Prusa CORE One comes with a double-sided smooth PEI print sheet. Learn about all print sheet types in the **Regular Maintenance chapter**.
2. Before you place the print sheet, **the heatbed must be free of any debris** - it could affect the calibration or damage the printer. **Never print directly on the heated bed!**
3. To move the print sheet on the magnetic heatbed, lift it up by grabbing the front two corners, adjust the position, align the print sheet with two pins on the heatbed that fit into the cutout of the print sheet and slowly place it back. **Never drag it on the heatbed!** Watch your fingers!
4. **Wipe the bed using the supplied cleaning wipes soaked with isopropyl alcohol.** Do not touch the surface of the sheet afterward.



5.3. Selftest (Calibration Wizard)

The print sheet must be installed onto the heatbed before the calibration!

When you first power on the Prusa CORE One, the Selftest (Calibration Wizard) will start. **The wizard will guide you** through the initial calibration and all necessary tests to start printing, providing text descriptions and illustrations.

All steps are mandatory, except for the internet setup configuration. The printer will be completely functional even in fully offline mode.

You can find more information about network connection and other features in the **Advanced User Guide**.

The purpose of the Selftest is to check the condition of your printer, identifying any issues that may have occurred during assembly or shipping (if you ordered a pre-assembled printer). It's a one time process, but you can run it repeatedly if you encounter any issues.

5.4. Running the Selftest

During the Printer Selftest, do not manipulate or touch the printer unless the calibration asks you to. If the printer is placed on an unstable surface or if there is another running 3D printer next to it, it may affect the accuracy of the calibration.

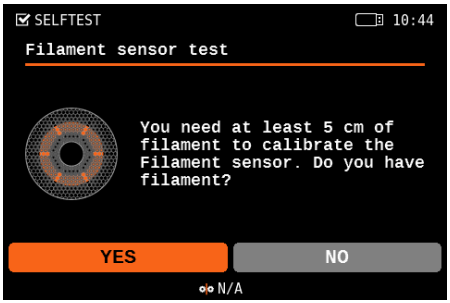
The Selftest is a set of **various tests that serve as a diagnostic tool.** With their help, you can detect the most common problems, such as **incorrect wiring of cables.** The progress and results of each test will be displayed on the LCD. If the Selftest detects an error, the testing will be interrupted and the cause of the error will be displayed on the screen.

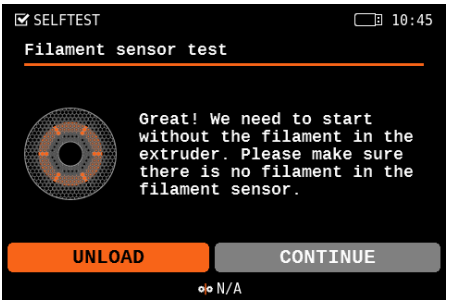
The following tasks will be performed:

- Test of heatsink fan and print fan
- Test of the X, Y, and Z axis
- Gearbox alignment
- Heater tests
- LoadCell test
- Network connection (optional, explained in the Advanced User Guide)
- Setting up the filament sensor - more info below:

At one point, the Selftest will ask you to **calibrate the filament sensor** by inserting a piece of filament through the PTFE tube into the extruder. **We suggest preparing an entire spool of PLA filament,** so you can start printing once the Selftest finishes.

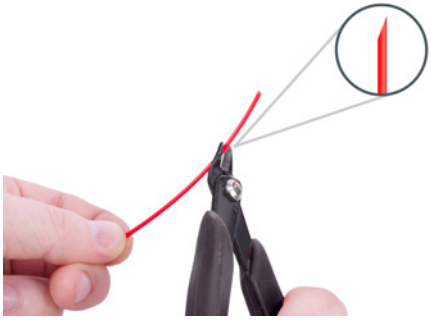
Continue to the next chapter (Inserting filament) to learn how to properly attach a filament spool and prepare the material.

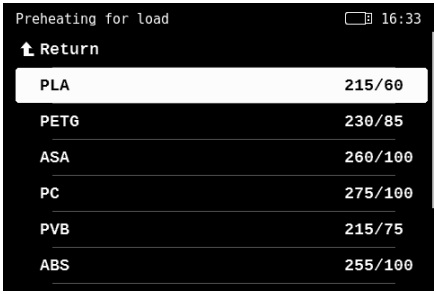


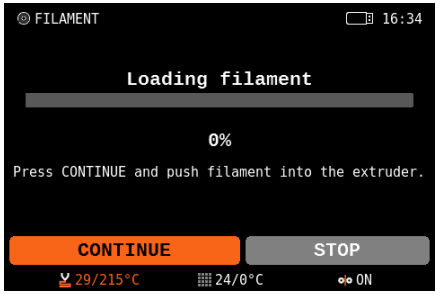


5.5. Inserting (Loading) filament

- Prepare a spool of filament (PLA is recommended), place it on the spoolholder on the side of the printer, and unhook the filament end carefully to avoid tangling.
- Cut the filament to a sharp point and push it through the PTFE tube all the way to the Nextruder. Once it reaches the filament sensor in the print head, the loading process will begin automatically.
- When the Preheat menu appears, select the filament material and wait for the nozzle to reach the desired temperature. Once it heats up fully, it will push out a bit of material from the nozzle.
- **The printer will ask if the color of the extruded filament is okay.** Check if there is filament extruded from the nozzle, and select one of the options:
    - Filament extruded, correct color: **YES**
    - Filament not extruded or wrong color: **PURGE MORE** (repeatable)
    - Filament not extruded and PURGE MORE doesn't help: **RETRY** (restart loading).





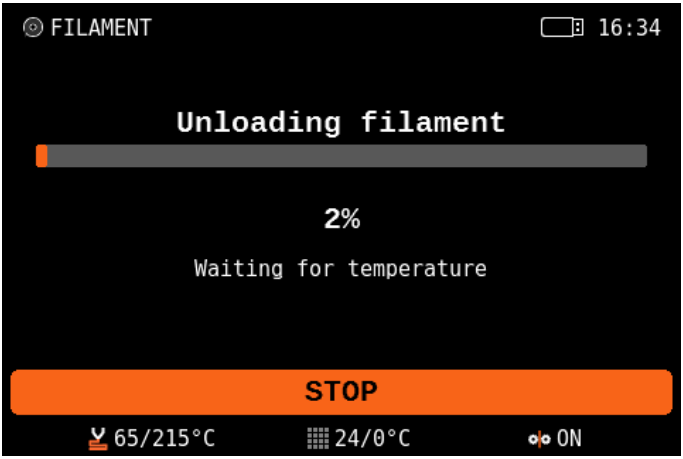


The printer remembers which filament is inserted into it even when you turn it off. The type of filament is displayed in the lower section of the LCD menu.

For the next step (Starting the First Print), you can leave the filament inserted in the printer. If you need to change it, the procedure is described on the next page.

5.6. Unloading (Removing) Filament

1. Select *LCD Menu - Filament - Unload Filament*
2. The printer will preheat automatically. As soon as it reaches the right temperature, the filament will be unloaded from the extruder in a few seconds.
3. Once the extruder stops unloading the filament, remove it by hand from the PTFE tube. The filament needs to be wound up on the spool and secured carefully so that it does not tangle up.



Tangled filament? Let's fix it!

If you accidentally let go of the filament end and it retracts onto the spool, it may tangle, posing a risk during printing—a knot could form, leading to a failed print. To fix this, remove the spool, unwind the strand until you locate the crossed section, correct it, and rewind the filament.

5.7. Starting the First Print

If you haven't done it already, clean the print sheet with the enclosed wipe saturated with isopropyl alcohol or spray a bit of isopropyl alcohol onto the sheet and wipe it clean with a paper towel. Please note that the enclosed wipe has limited use as IPA evaporates quickly.

When printing with materials such as PLA or PETG, slide open the ventilation grille on the top of the printer. The CORE One will then maintain internal airflow and the correct temperature in the chamber using fans, allowing you to print with these materials with the door closed.

Insert the USB drive that came with your printer and select one of the test objects from the Print menu (we recommend **the Keychain**). Confirm the selection by pressing the rotary knob.

The printer will handle everything **automatically**, so you can just observe your first print, which will proceed in the following order:

1. The nozzle will preheat to 170°C (independent of the selected filament - the temperature is lower to prevent the filament from dripping from the nozzle).
2. The printer performs **Mesh Bed Leveling** - the nozzle will check the distance to the print sheet in several places to create a virtual surface height map. This allows the printer to lay down a perfect first layer every time.
3. The nozzle will heat to the desired temperature, and the printing of the first object will start.
4. Carefully observe the quality of the first layer. The Prusa CORE One is equipped with very accurate LoadCell technology, which measures the distance between the nozzle and the bed with perfect accuracy. However, it may happen that **due to, e.g., traces of grease, the print may not hold well.**

Optionally, **if you have more than one color of PLA filament,** you can also select **the Dual-Color Keychain.** It's a great demonstration of multi-colored print using only one extruder. During the print, the machine will ask you to change the filament. Simply **follow the instructions on the screen** to achieve the effect visible in the photo below.

If you find that the plastic is peeling off the bed, **stop the print by selecting the Stop print icon on the screen.** Clean the bed and try again.

If the first print fails repeatedly, go to the **First Print Troubleshooting chapter (Chapter 12.3),** where you will find useful tips and tricks.

5.8. Removing a Printed Object from the Print Sheet

Once the print job is finished, wait until the print sheet cools down. The print plate and heated bed may exceed 100 °C, depending on the settings - contact with unprotected skin can cause burns, so check the heatbed temperature in the footer of the LCD screen!

Depending on the type of material, it may happen that the print will separate from the print sheet automatically by itself after cooling. If not, remove the print plate and carefully bend it on both sides. Then turn it by 90° and repeat the bending. **Be sure to remove all pieces of plastic** - don't forget the priming line next to the print.

If there are plastic remnants on the plate, do not remove them with your nails, you could get injured. Use a plastic spatula to remove the remaining plastic.

Try to avoid touching the print surface with your fingers more than necessary, as fingerprints are greasy and can reduce adhesion.

Now that you've successfully completed your first print, look forward to **Chapter 8**, where you'll find a simple guide to obtaining, slicing, and printing your own model.

6. Additional Advice and Tips

After completing your first print, here are a few additional things to know for using your printer.

6.1. Active Chamber Temperature Management

The Prusa CORE One's compact enclosure is designed to heat up to 55 °C using only the heatbed, without any additional heating elements. This efficient heating design ensures optimal printing conditions, even for challenging materials.

When printing with materials such as PLA or PETG, slide open the ventilation grille on the top of the printer. The CORE One will then maintain internal airflow and the correct temperature in the chamber using fans, allowing you to print with these materials with the door closed.

The chamber takes some time to reach the required temperature. However, you don't need to wait—the first layers are close enough to the heatbed to keep the correct ambient temperature. By the time the nozzle moves to higher layers, the chamber will already be properly heated.

6.2. LED Light

The CORE One features an internal LED light located on the inner side of the XY carriage frame. The LED intensity can be adjusted in the printer settings menu.

6.3. Updating the Firmware

The Prusa CORE One is ready to print once assembled and powered on. To make sure you have the most up-to-date version of the firmware with the latest features and settings, we recommend checking prusa3d.com/drivers. You can perform the firmware update after you complete the initial Selftest. To check your firmware version, navigate to *LCD Menu - Info - Version info.*

You can update your printer's firmware either using Prusa Connect, our network remote management system, or using a USB drive. To learn more about Prusa Connect, see the **Advanced User Guide** section.

To update your printer's firmware using a USB drive, follow these instructions:

1. Download the correct version of the firmware from prusa3d.com/drivers and unzip the file.
2. Copy the .BBF file to a USB drive formatted with FAT32 - you can use the USB drive that comes with your Prusa CORE One printer.
3. Insert the USB drive into the printer.
4. Restart the device using the reset button (located under the rotary knob).
5. The update process should begin automatically. Confirm flashing by selecting FLASH and pressing the knob.
6. Wait until the process is completed.

We publish new firmware versions all the time, bringing useful new features. Check our social media channels or GitHub (github.com/prusa3d) often to get the latest news!

To force a firmware installation (e.g., to load an older version), insert a USB drive containing the desired .BBF file, restart the printer, wait for the logo to appear, and press and release the control button. The firmware installation screen will then appear.

6.4. Sample Models

The USB drive that came with your Prusa CORE One 3D printer contains a number of **sample files** (G-codes). We recommend keeping them on the flash drive.

These files have been prepared (sliced) and thoroughly tested by us. **If you encounter issues with print quality at any time, try loading and printing one of the sample files** - especially the Prusa Logo Keychain. These sample files are designed to test the basic functionality of your Prusa CORE One.

If your own custom print fails and the sample files are printed correctly, it means there's probably an issue with the way your files are sliced. Try reslicing them again with the default PrusaSlicer settings and check for the basic issues:

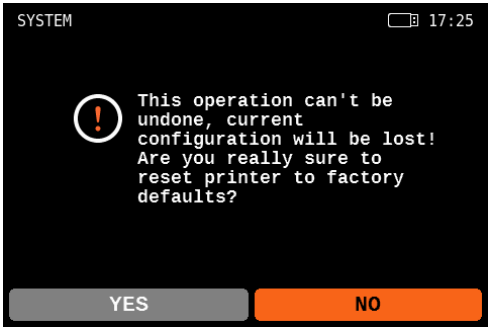
- Incorrect printer/nozzle profile (the Prusa CORE One is equipped with a CHT 0.4mm nozzle by default)
- Incorrect material settings
- Missing supports
- Incorrectly configured infill
- The model is not in contact with the print sheet

If the sample files are not printed correctly, check the Troubleshooting section, our Knowledge Base at help.prusa3d.com or contact our tech support.

6.5. Factory Reset

If you feel like you changed settings that have negatively affected your 3D printer, you can always revert to factory default values and try again. Factory Reset can be done via *LCD Menu - Settings - System - Factory Reset*. Here you find two options:

- **Reset Settings & Calibrations** - Deletes all changes done by the user and reverts the system to its original state (including statistics).
- **Hard Reset (USB with FW needed)** – Completely deletes all settings. Requires a USB drive with firmware to restore the system.

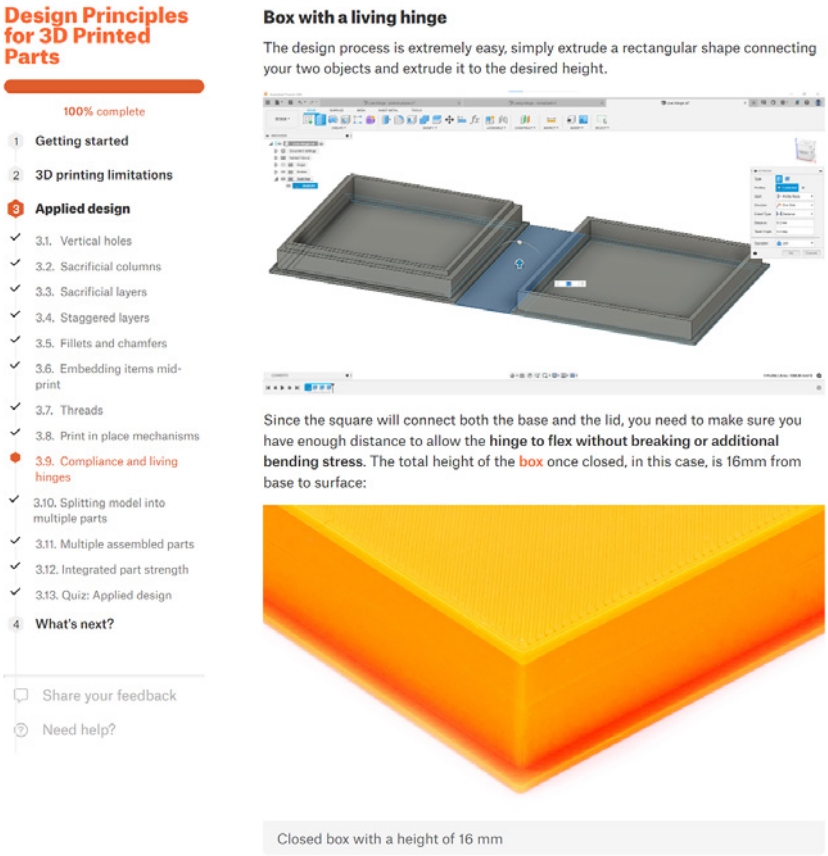


7. Advanced User Guide

This part of the handbook covers everything you need to know once you manage to successfully print your first sample object. Network connection, printing your own models, slicing - all this (and more) is covered on the following pages.

7.1. Prusa Academy Courses

Become an expert in 3D printing! Our Prusa Academy offers **comprehensive online courses on various 3D printing-related topics.** Each course features easy-to-read texts with many pictures and short videos, links for inspiration and further study, quizzes for testing your knowledge, a certificate of completion and more! With our online courses, you can quickly learn how to model your own models and master advanced 3D printing techniques. Visit academy.prusa3d.com to join!



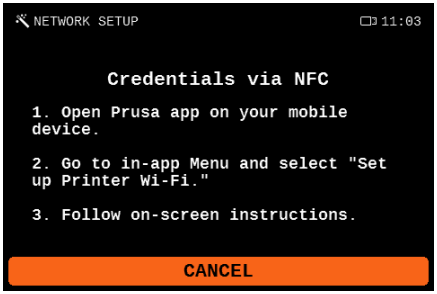
7.2. Network Connection

Prusa CORE One has an onboard Ethernet (RJ45) interface and a detachable Wi-Fi module for connecting to the network.

7.2.1. Wi-Fi Connection

To connect your printer to the wireless network, choose one of four options:

- **Entering credentials using the touchscreen:** You can manually enter the Wi-Fi SSID and password via the touchscreen. Due to the limited space on the screen, the touch keyboard has a layout well-known from phones with hardware keyboards. Each button is assigned a certain number of characters. You select each character by pressing the button a certain number of times.
- **Network scan:** Similar to entering all your credentials via the touchscreen, except here you can select the Wi-Fi SSID from the list of detected wireless networks and then use the touchscreen to enter just the password.
- **NFC & Prusa mobile application:** If you have a mobile device with NFC and the Prusa app installed, you can enter your Wi-Fi credentials into the application and share them with the printer by holding your phone up to the NFC sensor. For more information about the Prusa mobile application, see the following section.



- **Setup file with network credentials:** To connect the printer to a wireless network, via the **credentials file** please navigate to the *Network* menu and select *Wi-Fi* and look for the *Load credentials from a file* menu option. To generate setup file:

1. Start PrusaSlicer 2.8.0 or newer.
2. Insert a USB drive into your computer.
3. In PrusaSlicer, navigate to: *Menu - Configuration - Wi-Fi configuration file.*
4. Enter login credentials for your Wi-Fi.
5. Select "Write" and save the file to the USB drive.
6. Save the file.
7. Insert the USB drive into your printer and choose Load Credentials from File in the printer's menu.
8. You should be connected to Wi-Fi in a couple of seconds.

7.2.2. Prusa Account

You can log in to all Prusa services, including Connect, mobile application, Printables, and PrusaSlicer, with a single Prusa Account, which can be created at account.prusa3d.com. This integration of all our services allows you to easily slice and send models directly from Printables or PrusaSlicer to the printer, without needing to transfer them to a USB drive. Additionally, with your Prusa Account, you can access the mobile app using the same credentials as for Prusa Connect.

7.2.3. PrusaLink & Prusa Connect

You can use two options to access your Prusa CORE One over the network:

- **PrusaLink:** A lightweight web interface with limited functionality, accessible within your local network via the printer's IP address. By default, DHCP is enabled on the printer. You can find the assigned IP address in the LCD Menu - *Settings - Network*. Log in to PrusaLink using the credentials located in the LCD Menu - *Settings - Network - PrusaLink*.
- **Prusa Connect:** A comprehensive remote printer management system, accessible over the internet, allowing you to control your printer from anywhere. With Prusa Connect, you can remotely manage all your printers at once. Visit connect.prusa3d.com and log in using your Prusa Account. To add your printer to Prusa Connect, go to *LCD Menu - Settings - Network - Prusa Connect*.
  You can also access your connected printers in Prusa Connect via the Prusa mobile application. To download the Prusa mobile app for iOS and Android use the QR codes below.

App Store

Google Play

For more information about connecting to Wi-Fi networks and activating Prusa Connect online features, please check our website **help.prusa3d.com**.

7.3. Cancel Object

When printing multiple objects at once, if any of them becomes detached or fails to print for any reason, you don't have to stop and discard the entire print. Instead, you can easily cancel the printing of that single object using the *Tune menu - Cancel Object*, while the rest will continue unchanged, saving you a lot of potentially wasted filament.

If you are unsure which object to select (for example, you have individual instances-copies instead of names), you can wait for the nozzle to move to the failed object and then select the Cancel Current Object option. If you have selected an incorrect object to skip, you can use the menu actions to resume printing it.

7.4. Stealth Mode

With Stealth Mode enabled, the firmware limits acceleration, feed rate, and jerk values, reducing printer noise but also leading to longer print times. You can switch between Normal and Stealth Mode anytime, even during printing. After enabling, Stealth Mode will be activated once several G-code commands in the buffer (printer memory) are processed. You can enable the Stealth Mode option in Settings -> Stealth Mode.

7.5. Multi-Material Upgrade 3

The CORE One is fully compatible with the latest generation of our **Multi-Material Upgrade 3 add-on,** or MMU3 for short. The MMU3 vastly expands your 3D printing possibilities by giving you the option to **print with up to 5 colors at the same time.** However, you can also mix different materials, e.g. standard filaments (PLA) with **water-soluble filaments.** You can learn more about the MMU3 at prusa3d.com!

7.6. Additional Accessories

The CORE One can be equipped with additional accessories such as a USB-C camera, an Advanced Filtration System, GPIO Hackerboard, or a Drybox, which fits the recess with the spool holder. You can also print custom accessories, such as Allen key holders, and add magnets to them, allowing you to attach them to the steel surface of the exoskeleton frame. Find out more info about accessories at prusa3d.com.

7.7. Using Nozzles with Various Diameters

The Prusa CORE One comes equipped with a **CHT 0.4mm nozzle** by default. This nozzle offers a good quality-speed ratio. However, for some projects, a nozzle of a different diameter might be more suitable.

The Prusa CORE One uses **special nozzles with a metal filament guide,** making them easy to swap and highly reliable. We offer a wide range of nozzles of various diameters on our e-shop, ranging from 0.25mm to 0.8mm nozzles. You can set the diameter of your nozzle from 0.25mm to 1.0mm in increments of 0.05mm in Menu -> Settings -> Hardware -> Nozzle Diameter.

To give you even more options for your 3D printing projects, we developed a **Nextruder to V6 nozzle adapter.** When you install it, you can easily use any type of V6-compatible nozzles, including high-flow models. More information on alternative nozzles and their installation can be found at prusa3d.com and help.prusa3d.com.

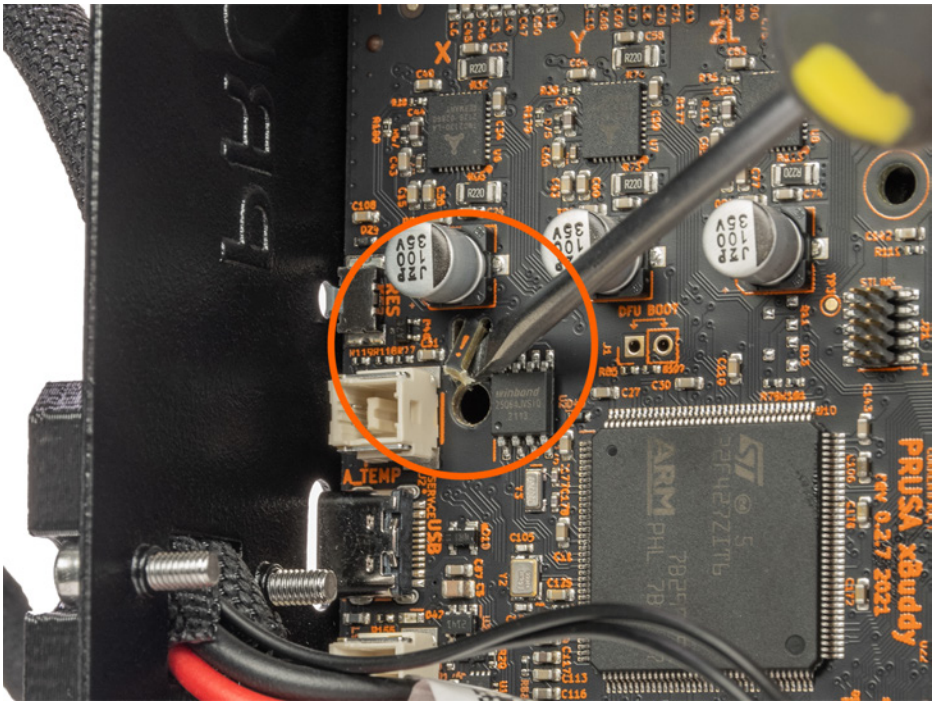
7.8. Flashing an Unofficial (Unsigned) Firmware:

We take security seriously. Before each firmware update, we rigorously test it to ensure that all of its security features are working correctly. **If any of the sensors detect an unexpected reading, the heater will be immediately disconnected to prevent any damage to the printer or its surroundings.** We cannot guarantee the same level of security with unofficial (community) firmware.

Official firmware is signed with a private key and the printer verifies the key before updating.

To flash your own (or unofficial) firmware to the printer, you must first **break the seal** on the mainboard and place a jumper in the correct position. To break the seal, you must open the electronics box and locate a safety fuse. Then, take a small flathead screwdriver or very thin sharp pliers and break off the thin middle part of the fuse. **Before attempting this procedure, carefully review the photo in this chapter!** Breaking the seal is recommended only for very experienced users.

Breaking the seal on the mainboard of the Prusa CORE One is IRREVERSIBLE. While this will not void the warranty on electronic parts of the printer, if you break the seal, we disclaim any responsibility for any damage to the printer and/or its surroundings (e.g. in case of a fire).



8. Printing Your Own Models

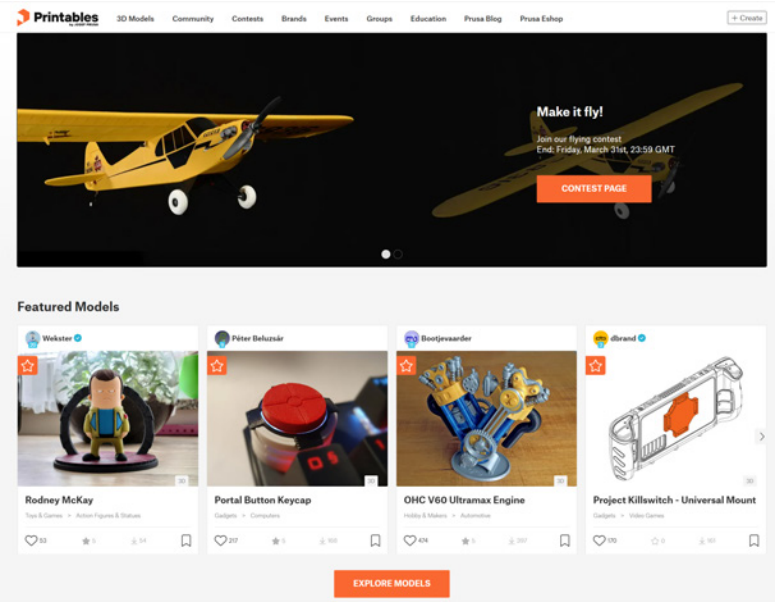
Your Prusa CORE One should be now fully calibrated and the first print was a success. And now, you want to print your own model.

3D models can't be printed **directly**—they need to be prepared using **a process called "slicing".** This process provides the printer with instructions on how to print the model, including details like infill and other settings. We'll go through the process with you. You can find more information about slicing and our PrusaSlicer software in the **PrusaSlicer chapter**.

8.1. Obtaining Printable Models

The easiest way to start 3D printing is by **downloading** models in .3mf, .stl, or .obj formats. Thanks to many enthusiasts, a large number of these models are available for **free**, ranging from simple dice to detailed figures, mechanical parts, household items, and even complex projects.

One of the best places for free 3D models is Printables.com, a large online library **of high-quality 3D models** managed by Prusa Research. Its main goal is to bring together a large community of designers, creators, and 3D printing enthusiasts - regardless of the brand of 3D printer they prefer. There are also regular community contests with great prizes, as well as a reward system offering both physical and virtual goods.



You can also find more 3D models to download on these websites:

- www.thingiverse.com
- www.myminifactory.com
- www.cults3d.com

8.2. What is a G-code File?

3D models you have created or downloaded from the internet need to be converted from their original format (.stl, .obj, .3mf, etc.) into a file containing specific instructions for the printer - the G-code. This is the format that 3D printers can understand. This file contains instructions about the movement of the nozzle, temperature settings and more. There are many different slicers available, each with its advantages and disadvantages. We suggest using our PrusaSlicer.

8.3. Create Your Own Model

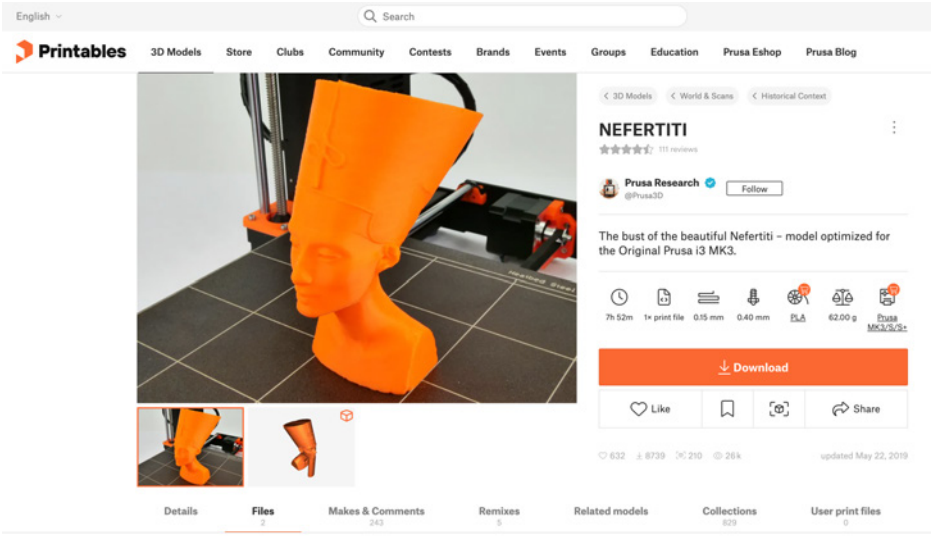
To create your own 3D model, you'll need a 3D editor. Many programs are available to suit different needs. For beginners, Tinkercad (www.tinkercad.com) is an excellent choice—it's free, runs in your browser without installation, and is ideal for creating larger, less detailed mechanical parts for FFF/FDM printing. It also offers plenty of online tutorials.

Another popular option is Autodesk Fusion 360 (www.autodesk.com/products/fusion-360), available for PC, Mac, and iPad. It includes detailed guides and video tutorials, making it suitable for both beginners and professionals. For more beginner tutorials, check out Prusa Academy at prusa3d.com/category/prusa-academy!

8.4. Step by step example

In this section, we will demonstrate how to download and prepare a 3D model for printing step by step. You will print a model of Nefertiti, the queen of Egypt.

1. Download the 3D model from Printables: www.printables.com/model/3112-nefertiti. Make sure you download the **.3mf** file as it contains pre-painted positions where the supports should be placed.



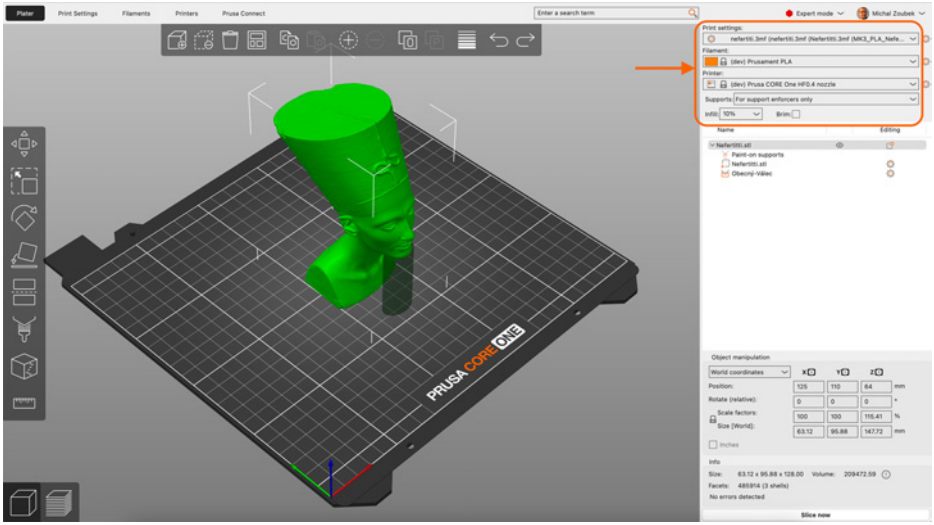
2. Import the 3D model into PrusaSlicer - if you don't have it yet, download it from www.prusaslicer.com. You can either drag and drop it into the PrusaSlicer window, click the Add button on the top menu bar, or use the *File - Import* menu. If the pop-up window appears, select the **Import 3D models only** option.

3. In the menu on the right side of the screen, you can adjust various print settings, such as filament type, support settings, or model fill density. We'll explain all these settings in detail in the following PrusaSlicer chapter. For now, we'll just set everything up quickly.

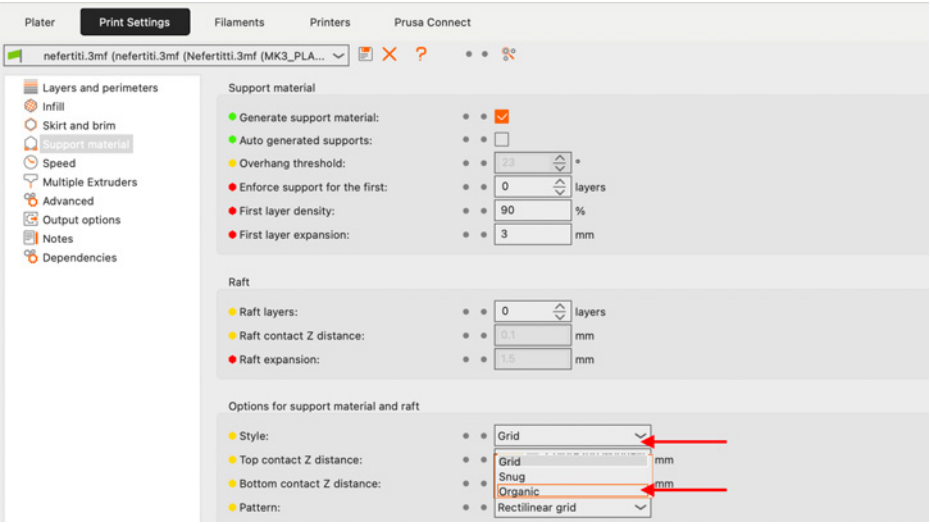
4. First, set the filament type to **Prusament PLA**. Then, set the infill value to 10% - a higher value increases the model's strength but also raises filament consumption and extends printing time. Ensure the corresponding filament type is loaded in the printer.

5. Finally, configure where the supports will be generated. You can choose from four options: None, Support on build plate only, For support enforcers only, or Everywhere. For this project, we will choose **For support enforcers only**, as it generates supports only in positions marked by the support paint tool - it's the semi-transparent ellipse under Nefertiti's chin. This is only possible because our model already has support enforcers. Otherwise, you would select Everywhere.

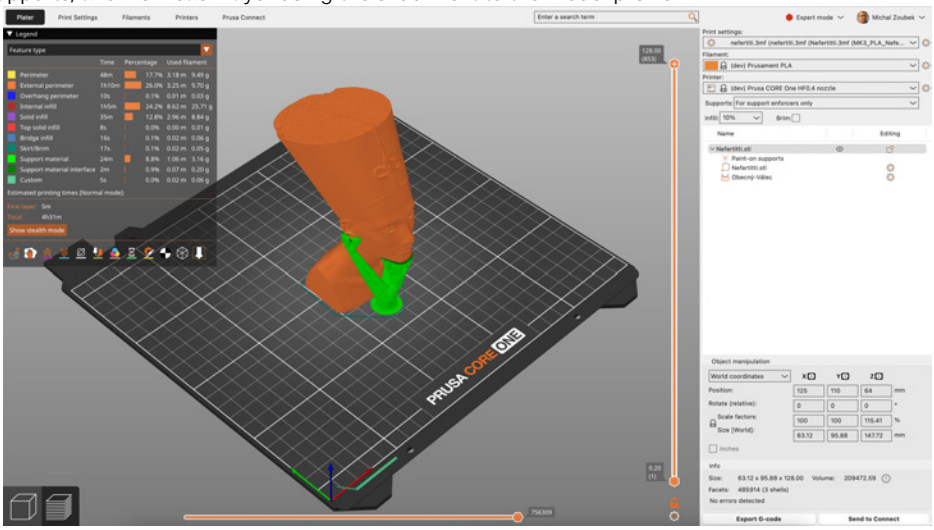
You will learn more about supports and the paint tool in the following PrusaSlicer chapter.



6. Now, let's adjust the style of supports to a more suitable type: Navigate to the **Print Settings** menu in the top bar, select **Support Material** from the left menu, and change the **Style** option to **Organic**.



7. Click the **Slice now** button. Once sliced, you can inspect the Nefertiti model with its generated supports, and view each layer using the slider next to the model preview.



8. Export the sliced G-code:

- Use the **Export G-code** button to generate a **.bgcode file** (G-code in binary format) that can be saved to a USB flash drive and inserted into the printer.
- Alternatively, if you are logged in to PrusaSlicer with your Prusa Account linked to Prusa Connect, you can send the sliced G-code directly to the printer by clicking the **Send to Connect** button.

This is a very general guide on slicing downloaded objects. Please keep in mind that more complex projects might require slightly adjusted approach. It all comes with experience, so keep experimenting!

In the following chapter, we'll introduce you to PrusaSlicer and its advanced features in more detail.

9. PrusaSlicer

As the name suggests, PrusaSlicer (prusaslicer.com) is our own in-house developed slicer software based on the open-source project Slic3r. **PrusaSlicer is an open-source, feature-rich, frequently updated tool** that contains everything you need to export the perfect print files for (not only) your Prusa CORE One.

Thanks to the strong community and a dedicated team of developers in Prusa Research, PrusaSlicer is **constantly evolving** with new features and improvements based on community feedback.

From print quality improvements to reducing print time and minimizing filament usage, even small updates can have a significant impact on your 3D printing experience. Best of all, **PrusaSlicer is completely free for everyone** (it even includes profiles for 3rd party printers) and is frequently considered the best slicer on the market by independent reviewers.

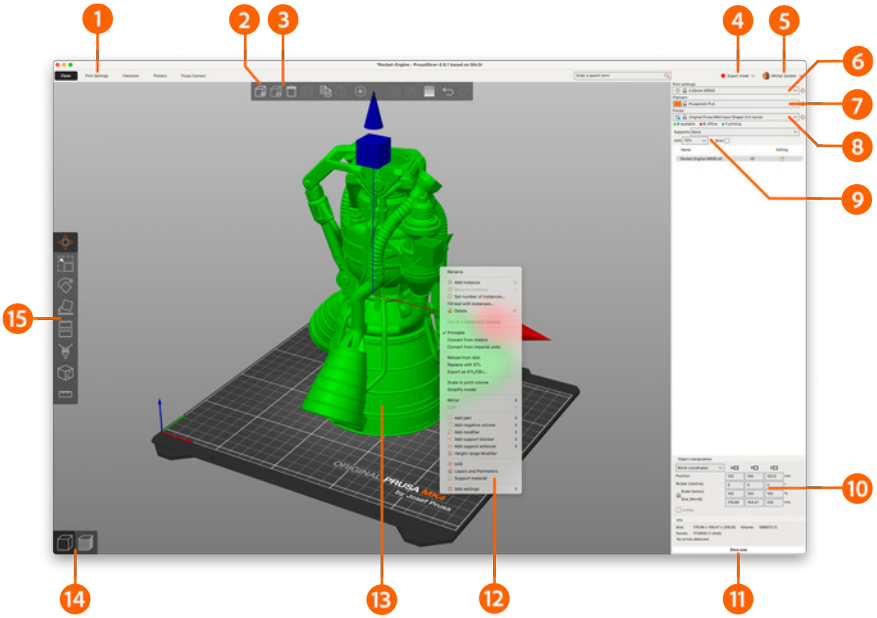
PrusaSlicer comes with a G-code Viewer, a lightweight application, which you can use to quickly preview G-codes from all popular slicers. Its behavior is identical to the preview in PrusaSlicer (the same code is used), however, you can load an external G-code file.

We currently parse, and up to some level interpret, G-code from PrusaSlicer, Slic3r, Slic3r PE, CURA, ideaMaker, Simplify3D, Craftware and KISSSlicer.

Download PrusaSlicer now!

The latest stable version is always available at **prusaslicer.com**. Development alpha/beta versions can be downloaded from **github.com/prusa3d/PrusaSlicer** - these are unstable builds with the latest features.

9.1. PrusaSlicer Interface Explained



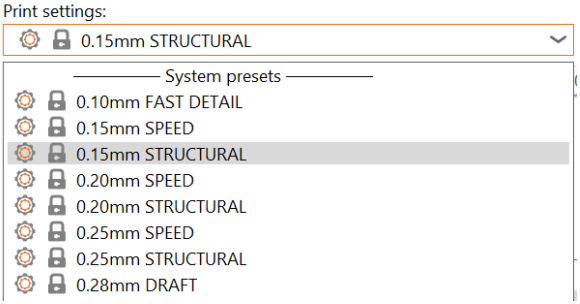
1. Opens detailed Print, Filament and Printer settings
2. The Add button is used to import a 3D model into the scene
3. The Delete and Delete All buttons remove the model(s) from PrusaSlicer
4. Switching between Simple, Advanced and Expert modes
5. Logged-in Prusa Account - you can send sliced models directly to the printer. For more details about Prusa Account, see **chapter 7.2.2.**
6. Settings for printing speed and quality
7. Material selection
8. Printer selection
9. Quick settings for Infill density, Supports and Brim
10. Information about model size / printing time (after slicing)
11. Slice / Export button
12. Right-click the model to open a context menu
13. Model preview in 3D
14. Switch between 3D editor and Preview mode
15. Move, Scale, Rotate, Cut, Paint-on Supports, Seam Painting tools

9.1.1. Initial Setup and General Workflow

Upon launching PrusaSlicer, select Prusa CORE One from the Printer drop-down menu on the right (No. 6 in the PrusaSlicer overview on the previous page). If you don't see the Prusa CORE One in the list, **you need to add it either by using Add Printer-Add Presets menu item** (in the same menu), **or by using Configuration - Configuration Wizard** from the top menu bar.

Then select the layer height, infill and the material you intend to use. **If you are not sure about the layer height, stick with 0.15mm profiles as they give generally good results.**

Recommended infill values are between 5-20 % but it heavily depends on the model and how durable it needs to be. More infill means a more durable model, however, it will take longer to print and more material will be consumed. For general use, there is no point in going above 40% infill, unless your project really requires it.



Please note that the default profiles have a tested specific setting for each type of filament. If you choose a different profile, it may affect the print quality negatively.

PrusaSlicer allows you to import objects in STL, OBJ, AMF, STEP and 3MF formats - these are the most common types of 3D files you can find on the internet.

You can either drag them directly into the 3D editor window or use the Add... button from the top bar. **To modify the model, use the tools on the left sidebar, i.e. Move, Scale and Rotate.** If an object is blue, it means it does not fit into the print bed and it needs to be moved or scaled down.

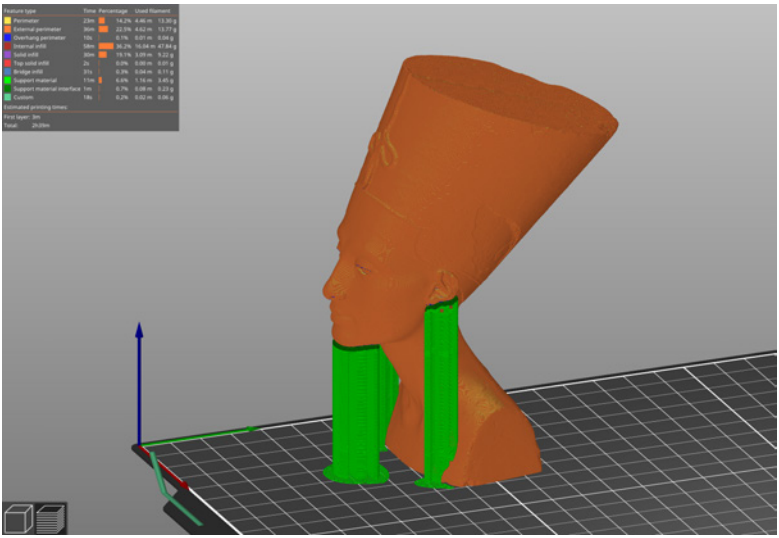
There is no universal way to place the model on the bed, it always depends on the specific shape. However, a general rule is that the bigger the flat surface of the model that touches the bed, the better it will hold - so try to **position the largest flat surface of the model downwards.** You can use the Place on Face (F key) function to do it quickly.

9.1.2. Using Supports

Supports are printed structures resembling scaffolding. They are used for printing complex objects. After printing, they can be easily separated from the output.

You can find a large number of objects that can be printed without supports - just place them in the right orientation on the bed, slice them and you can print. **Not all objects, however, can be printed without supports.**

If you are printing an object with walls that rise at an angle less than 45°, these overhangs will cause issues with print quality. **Also, keep in mind that the printer cannot start printing mid-air.** In such cases, supports are necessary.



How to tell whether an object needs supports?

The shortest answer is: it comes with experience. With your first prints, stick to the default PrusaSlicer values ("Supports Everywhere"). Once you feel comfortable with printing complex shapes using default support settings, try playing around with the Overhang threshold option in the settings. We have an extensive list of detailed tutorials available at help.prusa3d.com/category/prusaslicer_204 if you need guidance.

You have three options to choose from when selecting support generation:

- **Support on Build Plate Only** - generates supports only in the space between the object and the print bed.
- **For Support Enforcers Only** - generates supports only where enforced by placed modifiers.
- **Everywhere** - generates supports everywhere.

The default support pattern usually works correctly, but **if you need to modify the places where the supports will be generated,** just go to the **Print Settings** tab and select **Support Material.**

- Check the Generate Support Material box.
- The Overhang Threshold allows you to set the minimum angle for printing the support material. Setting the value to zero will enable an automatic calculation. Try generating supports with different angle settings to see which value works best for your object.
- Enforce Supports is an option mainly used for small models or models with a small base to prevent them from being broken or detached from the print bed during the printing process.
- Wherever the supports touch the model, they are usually associated with a lower surface quality. Try to reduce or even avoid the need for supports by rotating or shifting the model accordingly.

9.1.3. Speed vs Print Quality

A small object can be printed in a few minutes but printing bigger models can take a lot of time - sometimes even dozens of hours.

The printing speed is affected by several factors. Primarily, it depends on the layer height. This can be set in PrusaSlicer in the Print Settings drop-down menu in the upper right corner. 0.15mm STRUCTURAL is pre-set, but you can speed up the printing by choosing e.g. 0.20mm SPEED. Models printed like this will have less detail and more visible layers.

If you care more about quality than speed, choose 0.10mm (FAST DETAIL). The appearance of the models will improve, at the cost of a decreased printing speed.

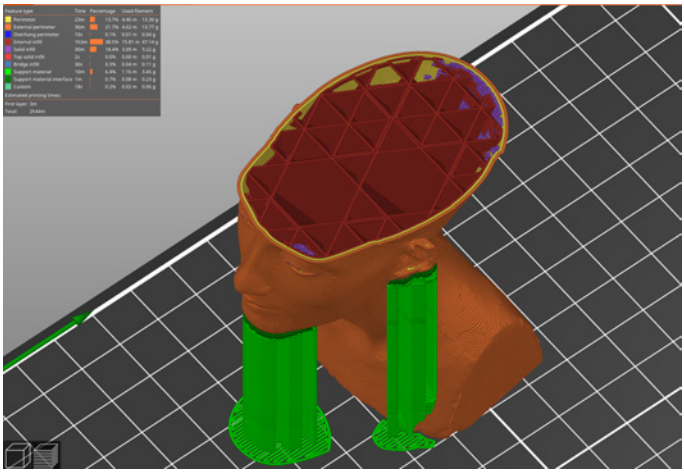
Some profiles may have two variants.

- **Structural** - slower perimeter and infill printing, improves the surface quality and structural integrity
- **Speed** - faster perimeter and infill printing, without too much impact on the surface quality, top speed while keeping good quality and accuracy

The speed can be adjusted during printing, via the *LCD Menu - Tune - Speed.* Then use the knob to adjust the speed up or down. Observe the effect of the speed change on the print quality and choose the settings that suit you best. Remember that **this setting does not affect the acceleration of the printer,** so the printing time will not be shortened proportionally to the speed setting change.

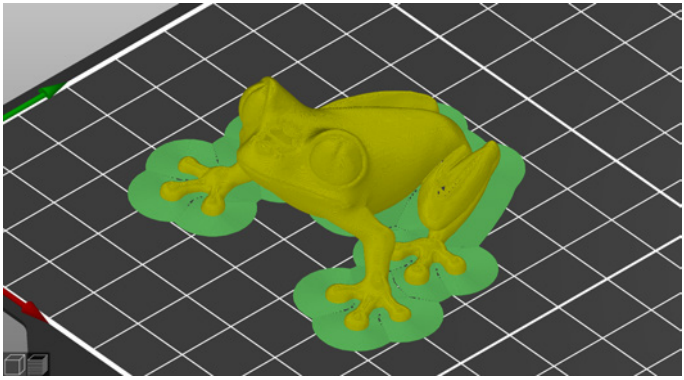
9.1.4. Infill

Another parameter that affects the properties of the printed object is Infill. It affects the printing speed, strength and appearance of the object. Objects printed with the FFF/FDM method usually do not have 100% density. Instead, they contain a certain geometric structure inside. It can take various forms, from simple square grids or hexagons to more complex patterns. The purpose of the infill is to stiffen the object from the inside. Most models are printed with 10-15% infill, but if you need a really solid structure, you can choose a higher density.



9.1.5. Brim

The brim serves to **increase adhesion to the bed,** reducing the risk of warping. A wider first layer is printed around the model. This makes sense especially if the model only touches the bed in a small area. This function can be enabled in PrusaSlicer by checking the "Brim" box in the menu in the right column. After the printing is finished, **the brim can usually be removed easily by hand,** or you can use a knife or scalpel.

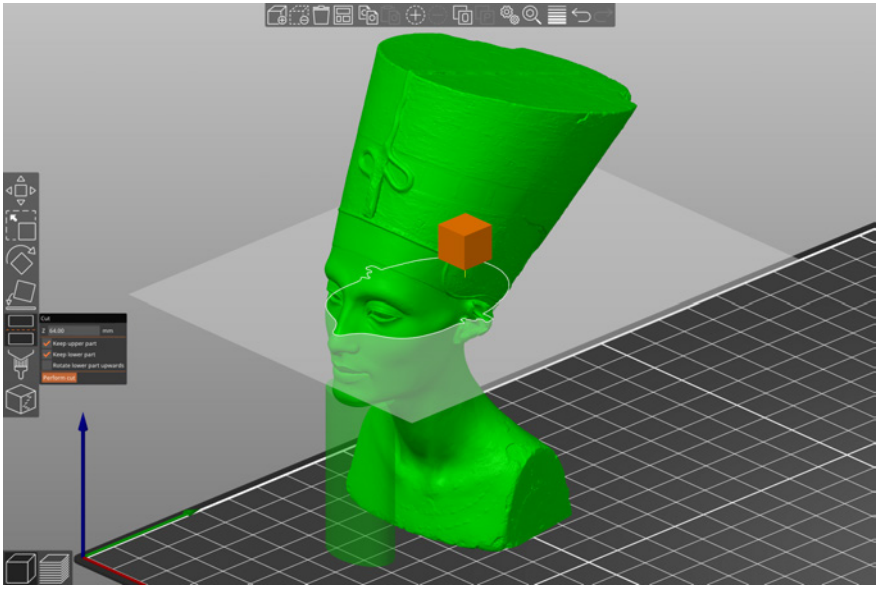


9.1.6. Printing Objects Larger than the Print Volume

The Prusa CORE One printer has a print volume of 250 × 210 × 220 mm. If this is not enough for your project, you can use PrusaSlicer's built-in tools to find a solution.

Don't let the size of the print bed be a limitation – at **blog.prusa3d.com** you can find tips on how to assemble large models from several smaller parts.

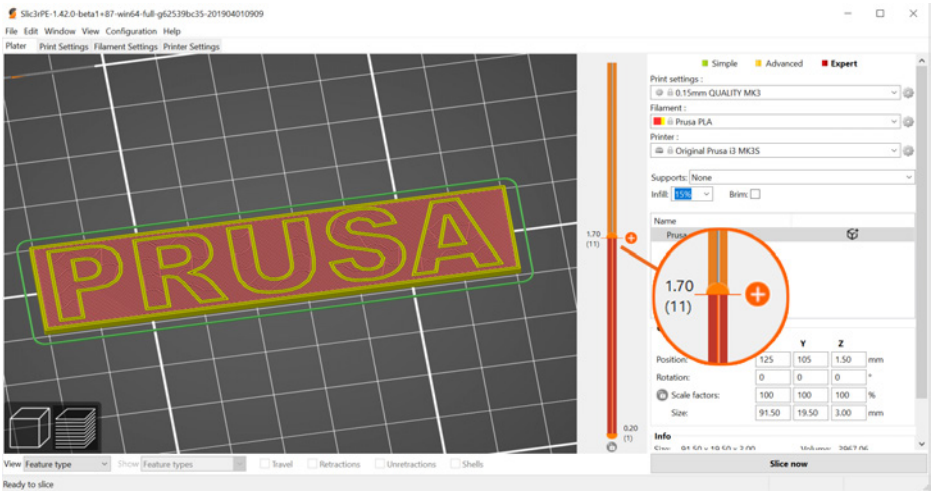
Of course, you can also resize the imported model to fit the bed. The **Scale tool** is there to help you with that. If you want to print an object which is too large in its original size for the print bed, you can **cut it into several smaller parts.** Use the **Cut tool** from the left menu (or press the letter C). Either place the cutting plane manually or set an exact height using the Cut tool dialog. Choose whether you want to keep only the part above the cut, below it, or both.



9.1.7. Printing Multicolored Objects (without MMU3)

If you want to have a print with layers in different colors, it can be easily set up directly in PrusaSlicer - follow the instructions below.

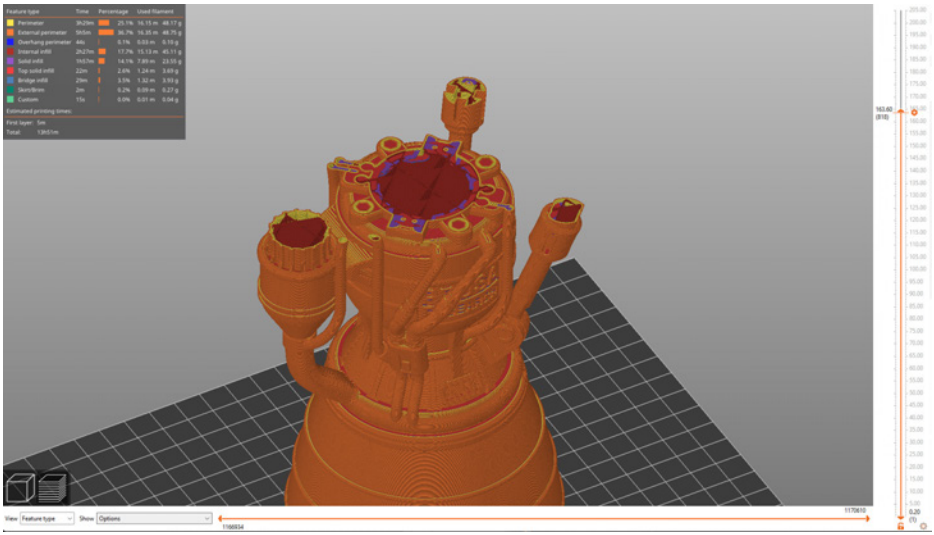
1. Switch to the layer view (Preview) using the button in the left bottom corner.
2. Use the slider on the right to select the layer in which you want to change the color.
3. Click on the orange icon with the plus sign.
4. An immediate preview will appear. You can undo the color change by clicking on the gray cross which will appear instead of the orange plus sign.
5. Export the G-code and you can start printing!



Once the printer reaches the layer, where the color change should happen, **the printer will pause and display a prompt on the screen.** Follow the instructions on the screen to finish the filament change.

9.1.8. Slicing and Exporting

One of the most important phases of the slicing process is the final check of the sliced object in the Preview. Using the slider on the right, you can **review all the print layers** of the object one by one. This will help you **identify problematic spots** - for example, if the bottom of the object doesn't stick well to the bed or if some of the parts are missing supports and are "hanging in the air".



Before you export the model as G-code and upload it to the USB drive, always check it in the Preview first. It's the best way to avoid mistakes during printing.

10. Material Guide

A full table of materials is available online! Due to limited space within this guide, we can only provide a brief overview of popular materials here. Visit help.prusa3d.com/materials to find a **full overview of a wide range of printing materials.** The Prusa CORE One 3D printer is compatible with almost all filaments available. Individual materials may differ not only in color but also in mechanical and optical properties, or even in printing difficulty.

Name	Advantages	Disadvantages	Typical Uses
PLA	Easy to print, Suitable for small detailed models, Wide range of colors	Brittle and inflexible, Low temperature resistance, Difficult post-processing	Prototypes, toys, jewelry, small detailed models
PETG	Easy to print, High temperature resistance, Durable and tough	Not suitable for small detailed models, Problematic bridging and overhangs, Tendency to stringing (small strands of filament on the model)	Mechanical parts, holders, waterproof prints
ASA	High impact and wear resistance, Very good thermal resistance, Suitable for outdoor use (UV stable)	Difficult printing, Tendency to warp (enclosed chamber recommended), Strong odor when printing	Spare parts, covers and protective cases, parts for exterior use
PC / PC Blend	High temperature resistance, High strength and tension resistance, Clear polycarbonate is transparent	High nozzle and bed temperatures, Strong warping (enclosed chamber recommended), Recommended separating layer application	Technical components requiring high wear, tear and temperature resistance
PVB	Transparent, Chemical smoothing with IPA, Similar printing settings to PLA	Lower adhesion between layers, Hygroscopic material, Higher price	Transparent models - jewelry, vases, lamp shades etc.
Flexible materials	Flexibility and elasticity, Excellent adhesion between layers, Great resistance to wear	Requires special procedure for inserting, Requires lower print speed, Poor bridging and overhangs	Housing, covers, RC components
PA / PA11CF	Great temperature resistance (up to 192 °C), Resistance to a range of chemicals, Excellent layer adhesion	Not suitable for small detailed models, PA is prone to warping (enclosed chamber recommended), Difficult to remove supports	Mechanical parts, holders, electrical insulation parts, movable parts

Prusament (**prusament.com**) is our in-house made line of **high-quality filaments.** We were not satisfied with the quality of filaments on the market, so we decided to make our own! **The whole manufacturing process is closely monitored** and every spool is thoroughly tested for string diameter, color consistency, and mechanical properties.

We are the only manufacturer that gives customers the option to **fully inspect the parameters of every filament spool.** Just scan a QR code on the spool to see all details online. We offer a wide range of various materials at **prusa3d.com** and it keeps growing every day!

11. Regular Maintenance

The Prusa CORE One was designed from the beginning as a true print "workhorse". Despite its high reliability, it is still a device with mechanical components that require more or less regular maintenance. Follow the instructions below to keep your printer in perfect condition for as long as possible.

11.1. Flexible Print Sheets

To achieve the best adhesion of the print surface, it needs to be kept clean. Choose the right cleaning agent depending on the type of print sheet (see below). Drop a small amount of the agent onto a clean paper towel and wipe the print surface. Best results will be achieved when the print sheet is cold, otherwise, you may burn yourself on the nozzle or heated bed. Also, the alcohol will evaporate before it has a chance to clean anything. Details can be found in the chapter **Your First Print** in this manual.

The effect of various print sheets on the first layer can be seen below. **From left to right: smooth, satin and textured powder-coated print sheet.**

The print surface does not need to be cleaned before every print, just be aware of not touching it with your fingers.

Recommended cleaning agents differ slightly depending on the type of print sheet. Instructions for the use of specific materials (e.g. the need to use a separation layer to avoid damaging the surface) can also be found in the previous chapter.

	Correct usage:	Risks and dangers:
Print sheet with smooth PEI surface	• Isopropyl alcohol 90%+ (IPA) is the best option for degreasing. Do not use dermatological hand products which may contain isopropyl alcohol - they contain other additives (ointments, hydrating ingredients). • Warm water with a few drops of dish soap (in case IPA does not remove residues like sugar from the bed) • Acetone - occasionally for thorough cleaning of the print sheet • When printing with Flex material you need to apply glue stick (Kores / PVA gluestick)	• Prints from PETG would stick too strongly to the sheet cleaned with isopropyl alcohol (IPA) and removing it could damage the surface. Materials such as PETG, ASA, ABS, PC, CPE, PP and FLEX should only be printed with a separating layer (glue stick).
Print sheet with a textured powder-coated surface	• Isopropyl alcohol 90%+ (IPA) - best for degreasing	• **Do not use acetone**
Satin print sheet	• Suitable for PLA and PETG • 90% isopropyl alcohol (IPA) is the best degreaser • For printing flexible filaments you need a separating layer of glue (Kores) • Broad spectrum of supported materials; including advanced materials such as PC Blend and others	• **Never use acetone!** • For printing ASA and PC Blend you need to add a brim, outline or shield around the print • Do not use sharp objects to remove the print from the bed!

Consumable materials such as print sheets are not covered by our warranty unless they arrive damaged or incorrectly manufactured. Print sheets are consumables and the warranty only applies to defects that appear immediately after unpacking.

All original print sheets made in Prusa Research are double-sided.

11.1.1. Double-Sided TEXTURED Print Sheet

- Surface resistant to damage and scratches
- The texture on the surface of the sheet is transferred to the bottom side of the printed object
- Simpler Z-axis calibration
- FLEX does not require glue (Kores / PVA gluestick) application to the print bed
- After the print sheet cools down, the print usually detaches itself
- PLA prints with a small contact area may require a brim
- Large PLA prints may warp
- **Never clean with acetone**

The textured powder-coated surface applied directly to metal allows us to create a print sheet that is highly resistant to damage. If a heated nozzle hits it, the metal is able to quickly dissipate heat. **The textured powder coating also gives the bottom surface of the print a unique, interesting texture.** The textured surface is able to mask most scratches and similar types of damage caused by various tools. One can only scratch the highest points of the texture, yet this type of damage will not be visible on the print.

Never clean the textured powder surface with acetone! This will cause micro-cracks in the PEI layer, which will eventually lead to a significant deterioration of the surface quality.

11.1.2. Double-Sided SMOOTH Print Sheet

- Excellent for PLA
- Great adhesion to almost all materials
- Smooth bottom layer of prints
- Even small prints will hold well
- Occasionally clean with acetone

For printing materials such as PETG, ASA, ABS, PC, CPE, PP, Flex and others, it is necessary to apply a glue separation layer. More information can be found in the Materials Guide.

The industrial adhesive used to attach the PEI layer to the print sheet tends to soften at temperatures above 110°C. The adhesive can then move beneath the surface, creating small bumps.

If you notice small bubbles appearing beneath the PEI layer on the flexible print sheet, just flip it over and print on the other side. After a few days or weeks, the bubbles should disappear. The bubbles have no effect on the print quality.

11.1.3. Double-Sided SATIN Print Sheet

- Suitable for PLA and PETG
- Soft texture on the bottom part of the print
- **Only use quality isopropyl alcohol (90+ %) to clean**
- FLEX requires the use of a glue separation layer (Kores / PVA glue stick) on the print sheet
- Wide range of supported materials, including advanced materials such as PC Blend and more
- Easy maintenance and good adhesion
- **Do not use acetone! Acetone will damage the surface of the print sheet!**
- When printing with ASA and PC Blend, a brim or a raft may be required around the print, depending on the model height
- **Do not use sharp metal objects to remove prints from the sheet (e.g. a metal spatula)**

11.1.4. Improving the Adhesion

In certain special cases, such as printing a very tall object that touches the print sheet with a very small area, it may be necessary to **improve the adhesion.** PEI is fortunately a chemically very resistant polymer, so it is possible to **apply various substances to improve adhesion without risking damage to the surface.** This also applies to various materials whose adhesion to PEI would be very weak under normal circumstances. More information can be found on the website help.prusa3d.com/materials.

Before applying anything to the print sheet, consider using the Brim feature in PrusaSlicer to increase the area of the first layer.

11.2. Keeping the Printer Clean

After several hours of printing, various kinds of debris may start to accumulate around the printer parts or under the heatbed - pieces of filament, dust, scraps, broken supports, etc. Always make sure that the parts of the printer are clean. You can use a brush, a small broom or a vacuum to remove debris.

Warning: Do not clean the transparent panels with alcohol-based cleaning solutions. This can damage the transparent panels, resulting in cracked surfaces.

11.3. Bearings

Every couple hundred hours, the smooth rods should be cleaned with a paper towel. Then look for the white tube in the package and apply a little bit of the included lubricant on the smooth rods and move the axis back and forth a couple of times. This cleans the dirt and increases longevity. For a detailed maintenance guide, please head to help.prusa3d.com

If you feel the axis is not running smoothly anymore, bearings can be taken out and greased on the

inside (they need to be removed from the axis because the plastic lip will prevent most of the grease from getting inside). It's a good practice to apply the lubricant onto the linear rail every 3-6 months.

11.4. Fans

The RPM (revolutions per minute) of both fans is constantly measured. This means that the printer will **report an error if the fan suddenly slows down,** for example, due to a piece of filament stuck in it. In such a case, check and remove any dirt from the relevant fan. Do not try to bypass the RPM check - this could damage the printer! Both fans should be checked and cleaned every few hundred hours of printing. Dust can be removed with compressed air in a spray can, small plastic threads can be removed with tweezers. **Do not blow compressed air on the running fan.**

11.5. Extruder Feeding Gear

The feeding gear in the extruder does not need any lubricant. Over time, **a filament powder deposit may form in the grooves,** causing poor extrusion of filament. Remove the debris using compressed air in a spray, small plastic threads can be removed with tweezers. Use the access opening on the side of the extruder. Clean as much as possible, then turn the wheel (LCD Menu - Control - Axis) and continue.

Warning: Never, under any circumstances, open the gearbox itself unless you have the gearbox alignment tool that comes with the CORE One assembly kit. There is no need to open the gearbox cover.

11.6. Electronics

It is a good practice to check and optionally reconnect the electrical connectors on the xBuddy board and electronics board in the Nextruder every 600-800 hours of printing.

11.7. Extruder is Clogged or Jammed

Clogged extruders can cause issues when printing or when loading a new filament. On the top of the extruder, there is a pair of screws directly next to the filament insertion point. You can adjust the idler pressure by loosening or tightening these screws. By unlocking the top clip, you can open the idler and check the filament track for any blockages. **When you open the idler, you can easily clean the feed gear of all filament remnants. We recommend regularly cleaning the gear.** You'll get better access to the extruder when you remove the top cover.

11.8. Cleaning the Nozzle

Do not touch the nozzle during this procedure - it is hot and there is a risk of burning yourself! To better access the extruder during cleaning, raise the extruder to the top of the Z-axis in the LCD menu - Control - Movement - Z Axis.

11.8.1. The filament does not come out of the nozzle.

If the filament does not pass through the extruder and no plastic is being extruded, check the following:

- Open the idler on the side of the extruder to see if the filament strand reached the extruder gear and continues down into the nozzle
- See if the temperatures are set correctly (215 °C for PLA, 260 °C for ASA, etc.)
- Check if the fan on the side of the extruder is spinning

If the filament strand is not visible (does not reach the extruder wheel), the problem is likely near the filament entry point or the filament sensor. Inspect the path of the filament and see if the filament sensor isn't stuck.

11.8.2. The filament does not come out of the nozzle or only a small amount comes out

In this case:

1. Heat the nozzle to the appropriate temperature for the filament material you are printing with or slightly above. First, feed the filament, then insert an acupuncture needle (included in the package) or thin wire (0.3-0.35 mm) into the nozzle from the bottom to a depth of about 1-2 cm. Use protective gloves in case material suddenly starts to come out of the nozzle.
2. Select the Load Filament option from the LCD menu and check that the nozzle is actually extruding the filament.
3. Again insert the wire or acupuncture needle into the nozzle and repeat the whole procedure several times. If the filament is being extruded correctly, the nozzle is clean.

If the filament still doesn't come out and the nozzle is clogged, you can perform a cold pull method to clean the insides of the nozzle. You can find the Cold Pull wizard in the printer's LCD Menu.

11.9. Troubleshooting Faulty Sensor Readings and Removing Errors

If you encounter problems with the filament sensor, such as incorrect (or random) readings, make sure that everything in the Nextruder is correctly wired and that there is no debris in the filament path inside the extruder. If this doesn't help, please contact our tech support.

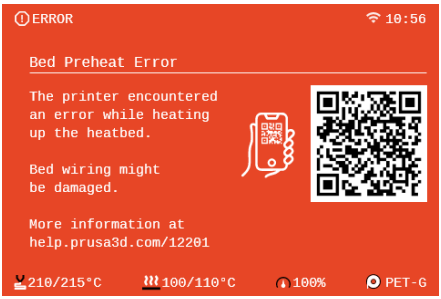
11.10. Filament Sensor

The filament sensor is calibrated during the initial Selftest and can be also re-calibrated from the printer's Control menu. If you encounter random readings, unload the filament, turn the printer off and remove debris from the Nextruder - either using tweezers or a can of compressed air.

12. FAQ - Frequently Asked Questions and Basic Troubleshooting

12.1. Error Screens

If the printer encounters a critical error, **an error screen will be displayed with a description of the error.** The information on the screen is intended to facilitate easy identification, diagnosis and resolution of the error. **Pay special attention to the text on the screen.** Most error messages are supplemented with a QR code - scanning it (e.g. using a camera on a mobile phone) will take you to a relevant online article with instructions on how to proceed.



This is a sample QR error code serving as an example of an error message.

12.2. Selftest Troubleshooting

If you built the printer using the assembly kit, it's possible you missed a step in the walkthrough or you forgot to connect something. No worries, fixing an issue is actually pretty straightforward. Just follow the instructions on the screen.

The Selftest identifies all common and even less common issues with your printer with great accuracy. The firmware can recognize whether the fans, heating elements, sensors and other components of the printer do not respond as they should and raises an error when it happens.

If you see a heating-related error during the Selftest, make sure that the print sheet is placed on the heatbed as described in the previous chapters.

If you need to check the connection or disassemble any part of the printer, please follow the link on the error screen or simply visit help.prusa3d.com and look for a relevant help article.

12.3. First Print Troubleshooting

The calibration and pre-print setup of the Prusa CORE One are fully automated - the filament is automatically inserted, axes checked and the first layer precisely measured. If a printing issue does occur, it usually falls into one of the following scenarios:

12.3.1. LoadCell calibration fails

Solution: This usually happens when you tap the nozzle too briefly or with insufficient force. Repeat the calibration and push the nozzle a bit harder.

12.3.2. First layer peeling off from the bed

Solution: The most common cause is grease on the bed or an unsuitable combination of material and print surface (e.g. PLA and textured sheet).

Make sure that the sheet is sufficiently **degreased using isopropyl alcohol** - more information can be found in the **Regular Maintenance chapter.** In the **Materials chapter,** you can find information on how to properly print specific filament types. Water with a bit of dish soap is also an option if you don't have access to IPA - **make sure to clean and dry the sheet thoroughly to prevent rusting.**

12.3.3. Nozzle moves too high/low, or extrudes plastic outside the print area

Solution: Make sure that the print sheet is properly installed and that nothing is blocking the X/Y/Z axes.

If the print sheet is not installed properly (e.g., it's not aligned with the heatbed), it may cause various printing issues. **Make sure that nothing is obstructing the movement of the axes** and that all packaging material and transport fixations have been removed from the printer. Run the Auto Home calibration from the menu to test all three axes.

Another possibility is that the LoadCell sensor is not performing as expected. Make sure the LoadCell sensor cable is properly connected and repeat the LoadCell Test from the Control menu.

If you built the printer using the assembly kit, double-check the parts on the X (horizontal) and Z (vertical) axes and compare them with the official assembly manual. It's possible that you might have overlooked a small detail. Make sure the screws securing the motors are tightened correctly.

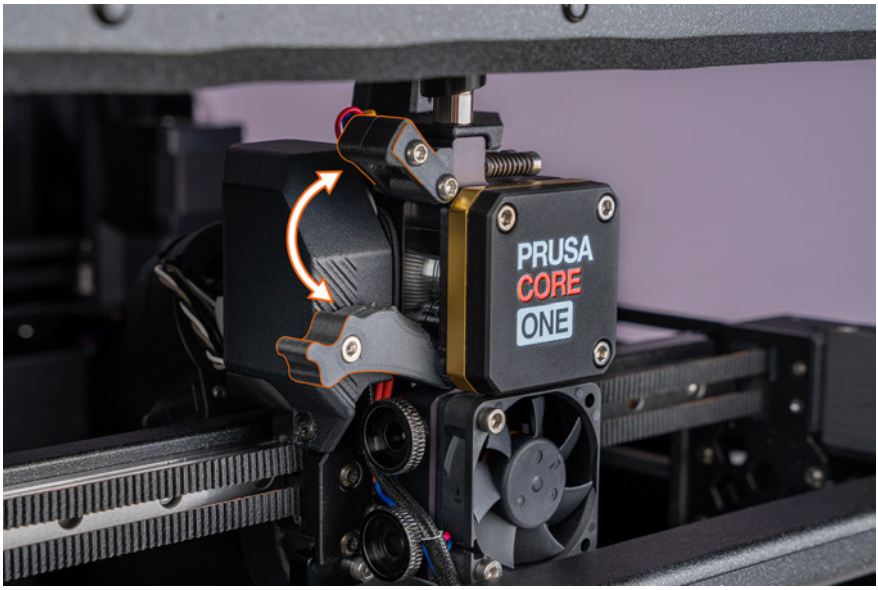
12.3.4. After a few hours of printing, the nozzle stops extruding filament

Solution: First, check if the filament isn't tangled. If it's not the case, unload it, wait for the printer to cool down and then remove the hotend from the extruder (see help.prusa3d.com for exact instructions) and check if the steel filament guide isn't deformed. This might happen when you overtighten the thumbscrews. Another possibility is that the nozzle is clogged or blocked. Check the Troubleshooting section of this handbook or look for detailed instructions at help.prusa3d.com.

12.3.5. The nozzle does not start extruding, even after multiple attempts

Solution: Make sure that the filament can reach the extruder gear inside the Nextruder and that the nozzle is not clogged.

First of all, **load the filament exactly as described in the Loading the Filament chapter.** Once the loading procedure is completed, unlock the idler door on the extruder by lifting the small clamp, then flip the door open and see if the filament strand reached the large extruder gear. If it didn't, it means that something is blocking the movement of the filament. If the filament appears completely loaded (it goes across the extruder gear towards the nozzle), it means the nozzle might be blocked. This won't happen with a new printer, but if you have been using it for a while, it might be a possibility. If you hear the extruder gear clicking during Purging, it may be a sign the nozzle is blocked. Head to the Troubleshooting chapters of this handbook or look for a detailed solution at help.prusa3d.com.



If you built the printer using the assembly kit, it's possible you might have over-tightened the screws on top of the extruder and the idler is so tight, filament won't pass through it. Open the idler on the side of the extruder and double-check that the filament can reach the gear. You can decrease the pressure of the idler by loosening the two screws on top of the Nextruder.

12.4. Mesh Bed Leveling Fails

In case the automatic first layer calibration (Mesh Bed Leveling) fails, the cause is likely to be either the Load cell sensor or a misaligned X/Z axis. Run the Auto Home and Z-axis calibration from the Control menu and see if the issue goes away. Make sure the print sheet is correctly placed and re-run the Load cell calibration again. Then start the print again.

If you built the assembly kit and you're seeing errors related to either homing or Mesh Bed Levelling, there might be an issue related to incorrect assembly. Closely inspect all axes. Make sure all screws are tight. You can turn off the printer and move the Nextruder left and right, and back and forth to ensure the movement is smooth.

12.5. Printer Does Not Recognize the Inserted USB Drive

If the printer does not recognize the USB drive, try restarting the printer first. In case the error "Error mounting USB drive" appears, the most probable cause is an incompatible file system (e.g. exFAT). Use a smaller USB drive (4-16GB) formatted with the FAT32 file system. More information on formatting and using USB drives can be found on our Knowledge base at help.prusa3d.com. Once the USB drive is inserted, one of two situations may occur:

Cannot access the Print menu after inserting the USB drive

1. Restart the printer first
2. Use a USB drive formatted to FAT32 with a single partition
3. Try using a different USB drive

If you have tried multiple USB drives and none of them can be read, there may be a problem with the mainboard. Contact our technical support.

USB drive is recognized but no files are visible in the file browser:

1. Make sure you are using compatible G-code
2. Make sure the file is correctly written to the drive (in Windows use the "Safely remove" function before ejecting the drive)
3. Try a different USB drive and a different G-code file
4. Try renaming the file to something simpler, e.g. model.gcode

12.6. Loose Belts

Check both belts to make sure they are properly tensioned. Loose belts can cause printing errors or prevent the printer from starting up. The easiest way to check the belt tension is to print a circular object. If the result is not perfectly round, you need to adjust the belt tension. Instructions can be found at help.prusa3d.com.

12.7. Homing Failed

This issue is usually caused by a blockage in one or more axes. Perform the Auto Home calibration from the LCD Menu and observe the movements of the printer.

12.8. Heating Error

If the printer stops and the screen is red with a heating-related error, please check the connections of the heating element and thermistors. Detailed descriptions can be found at help.prusa3d.com.

12.9. Fan Error

If your printer stops and displays a fan-related error message, check both fans on the print head. It is possible that they are not spinning because they got clogged up. If the problem is elsewhere (e.g. cable connection) visit help.prusa3d.com for more information.

12.10. Reverting to an Older Firmware

Sometimes it is necessary to reinstall an older version of firmware. Upload a file containing the older firmware onto a USB drive formatted with the FAT32 system. Insert the drive into the printer, press the restart button and once the Prusa CORE One logo appears on the screen, press and hold the knob. This will activate the firmware update screen. Select “Flash” to reinstall the current firmware with the version from the USB drive.

12.11. Nozzle Hitting the Sheet / Other Z-axis Issues

This issue is usually related to the assembly kit - the assembled printers coming from the factory are thoroughly tested before we ship them out.

If you are having issues with first-layer calibration or Mesh Bed Leveling procedure, first make sure everything is properly wired - check the connectors on the electronics board in the Nextruder. Next, perform Auto Home calibration on all axes to ensure everything is properly aligned, such as the correct placement of the print sheet. Then, rerun the Load Cell sensor calibration.

13. Advanced Hardware Troubleshooting

Due to the length of the articles, it is not possible to include detailed troubleshooting guides in this handbook. However, the Prusa CORE One will display an error screen with a short recommendation on how to proceed further if it runs into a problem. This screen will also contain a link to a detailed article in our Knowledge Base at help.prusa3d.com. Additionally, there is a **QR code that you can scan with your mobile phone** for quicker access to the link. Troubleshooting guides for component replacements and advanced hardware issues can be found online at help.prusa3d.com.

14. Troubleshooting Print Quality Issues

If prints are not quite up to your expectations or even have major flaws (shifted layers, ghosting, under-extrusion), it is necessary to find the cause of the issue and address it. On our website help.prusa3d.com you will find troubleshooting guides for 3D printing quality issues, including pictures and specific advice for different types of printers (some of which may still be in English only).

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