

pragostroj

industrial solution for FDM manufacturing

PRAGOSTROJ KINARB HB/HC 3D PRINTER USER MANUAL

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1. Introduction to the Pragostroj Kinarb HB/HC User Manual

This user manual provides the essential information required for the safe, reliable, and efficient operation of your Pragostroj Kinarb 3D printer. Please read the entire manual before use. Failure to do so may result in personal injury, damage to property—including damage to the printer—or poor print quality.

DISCLAIMER:

Although maximum effort has been made to ensure the accuracy and completeness of this manual, the information is intended as a general guide rather than a fully exhaustive reference. The manufacturer assumes no liability for any injury, property damage, or non-material loss connected with handling, operation, storage, or disposal of the printer, especially when performed under conditions beyond the manufacturer's control or contrary to the procedures described herein

ABOUT THE PRAGOSTROJ KINARB HB/HC PRINTER:

The Pragostroj Kinarb is a professional FDM (Fused Deposition Modeling) 3D printer designed for producing prototypes, molds, and functional models intended for further casting into full-value materials.

The printer uses a CoreXY mechanical architecture for precise, vibration-free movement of the print head. Two chamber configurations are available: HB – Heated Bed; HC – Heated Chamber capable of up to 80 °C.

PRINTER DESCRIPTION AND TECHNICAL SPECIFICATIONS

The system supports high-precision printing using 1.75 mm filament with 0.3–0.8 mm nozzles, as well as high-volume printing using 2.85 mm filament with 0.8–1.2 mm nozzles.

A new modular print-head concept allows seamless use of both filament diameters while keeping operating costs low.

NABÍZENÉ VARIANTY TISKÁRNÝ:

- Pragostroj Kinarb HB (Heated Bed) – available in single-, dual-, or triple-head configurations.
- Pragostroj Kinarb HC (Heated Chamber) – chamber up to 80 °C in a dual-head configuration.

MECHANICAL DESIGN ADVANTAGES:

The mechanical concept provides an excellent strength-to-weight ratio, highly accurate vibration-free printing, and an innovative patented DBW system. Critical components are produced with high-end manufacturing, linear guides are used on all axes, and perpendicularity of the frame is calibrated with special assembly fixtures.

The robust construction and simple control electronics support long-duration, high-precision prints, large fast prints, and fine-resolution parts approaching photopolymer quality.

DIMENSIONS AND HANDLING:

The Kinarb offers a large internal build volume with relatively compact external dimensions and is designed to pass through standard 80 cm door frame. Rear transport wheels and leveling feet allow a single person to maneuver the printer for minor adjustments.

Drying cabinets/spool holders and filtration units are supplied separately and mounted after installation.

PRINTER COMPONENTS:

Main assemblies include the Kinarb printer, an optional drying cabinet, and an optional filtration and extraction unit.

SUPPORTED FILAMENTS:

Use Pragostroj-authorized materials. Third-party filaments may have different tolerances or diameters, which can lead to inaccuracies or malfunction.

Supported categories:

- Standard (PLA, PETG, ABS, HIPS, TPU),
- Industrial (Polymax, Moldlay, Polycast, PC-ABS, PC, PP),
- Experimental.

PRINT SURFACES:

- PEI plate – standard print surface;
- PP plate – for polypropylene printing

2. Support and Safety

PRAGOSTROJ CUSTOMER SUPPORT:

Pragostroj provides technical support for installation, maintenance, and troubleshooting (contact information is to find on official website).

OCCUPATIONAL SAFETY:

Operate the printer only after proper training and only by qualified personnel aged 18+. The device contains moving parts and hot components—exercise caution. Use protective gloves when working in the heated chamber or with the extruder (hotend parts can reach up to 300 °C). The motors that raise the build plate are disabled when the doors are open. Power: 1000 W (HB) / 2050 W (HC); connect only to 230 V 50 Hz.

Do not use damaged power cords or open the power supply. Supervision is required during operation.

Use indoors in a dry, well-ventilated environment (max. 80% humidity), at least 15 cm from other objects, on a flat stable surface. Do not touch connectors or fuses on the Electrobox during printing.

The printer is an electrical device with moving parts and high temperature. Use with caution. Wrong usage can cause an injury.

SAFETY RULES FOR USE:

- Read the manual and follow all instructions.
- Keep safety labels legible and safety devices functional.
- Before each use, inspect moving parts and check for wear or damage;
- Switch off and contact service if unusual behavior occurs (e.g., hotend embedded in filament).
- Avoid contact with water;

- clean using compressed air or a vacuum.
- Perform maintenance only when unplugged and cooled;
- only competent, trained personnel may intervene.
- Relocate the printer only after disconnecting from electricity;
- replace consumables only when powered off and unplugged.

DISPOSAL AND RECYCLING

- Dispose of packaging at municipal collection points.
- At end-of-life, hand the printer over to designated collection sites. Proper disposal conserves resources and protects health and the environment.

SAFETY LABELS

Safety labels are located on the upper frame, extruder assembly, inside the chamber, on the heated bed and on the Electrobox.

SAFETY RISKS

Risks include

- electric shock;
- mechanical hazards in the upper CoreXY assembly and during vertical bed movement. Electric motors are very strong and may cause injury
- burn hazards on the extruder, heated bed, and in the heated chamber.

Always allow hot parts to cool and wear protective gloves, printing head can get as hot as 300°C.

When operating in printing area or in Core XY assembly, pay increased attention.

DOOR INTERLOCKS

During printing, upper and lower doors are locked electrically. Opening the doors disables motion and heating; opening the lid during printing immediately cancel the printing job without an option of continuing.

WARNING

Surfaces and the printed object remain hot for at least 60 minutes after shutdown or emergency opening.



Risk of mechanical injury in the form of pinching, pinching or abrasion by moving parts of the Printer.



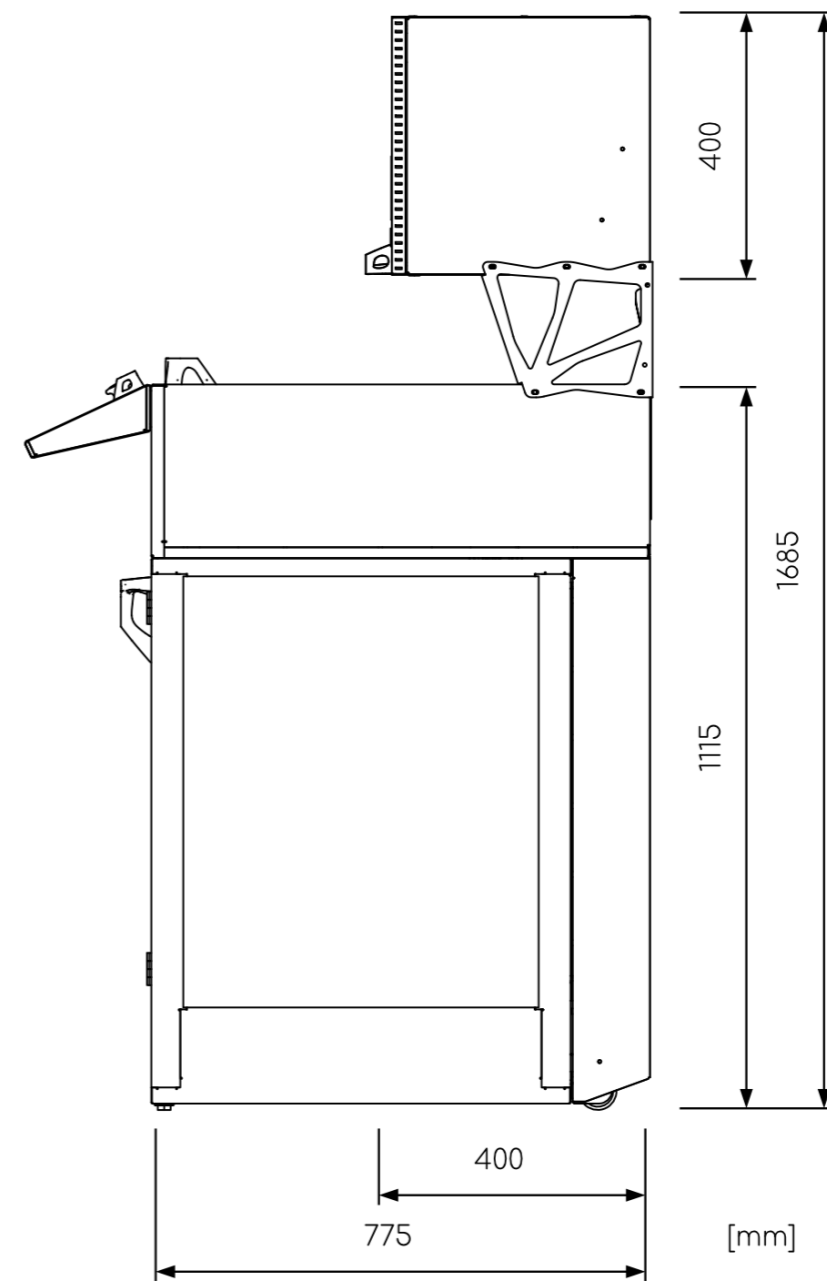
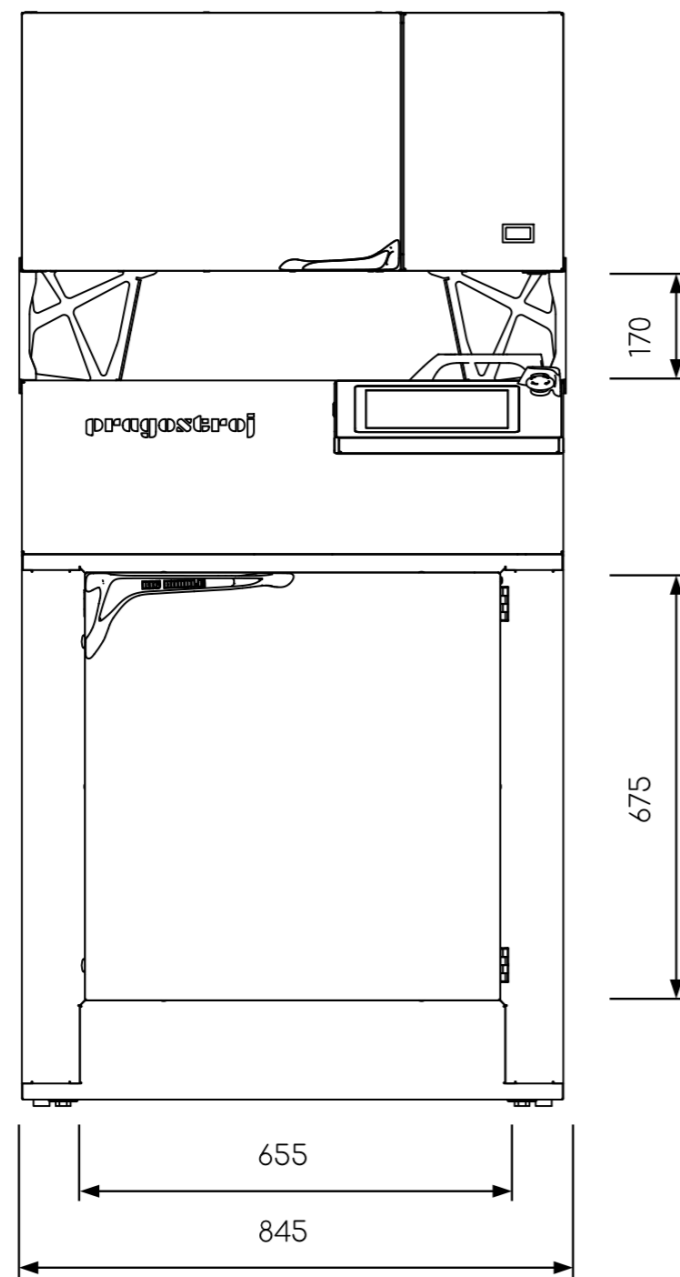
Risk of burns, surfaces in the vicinity of the printer may reach high temperatures.

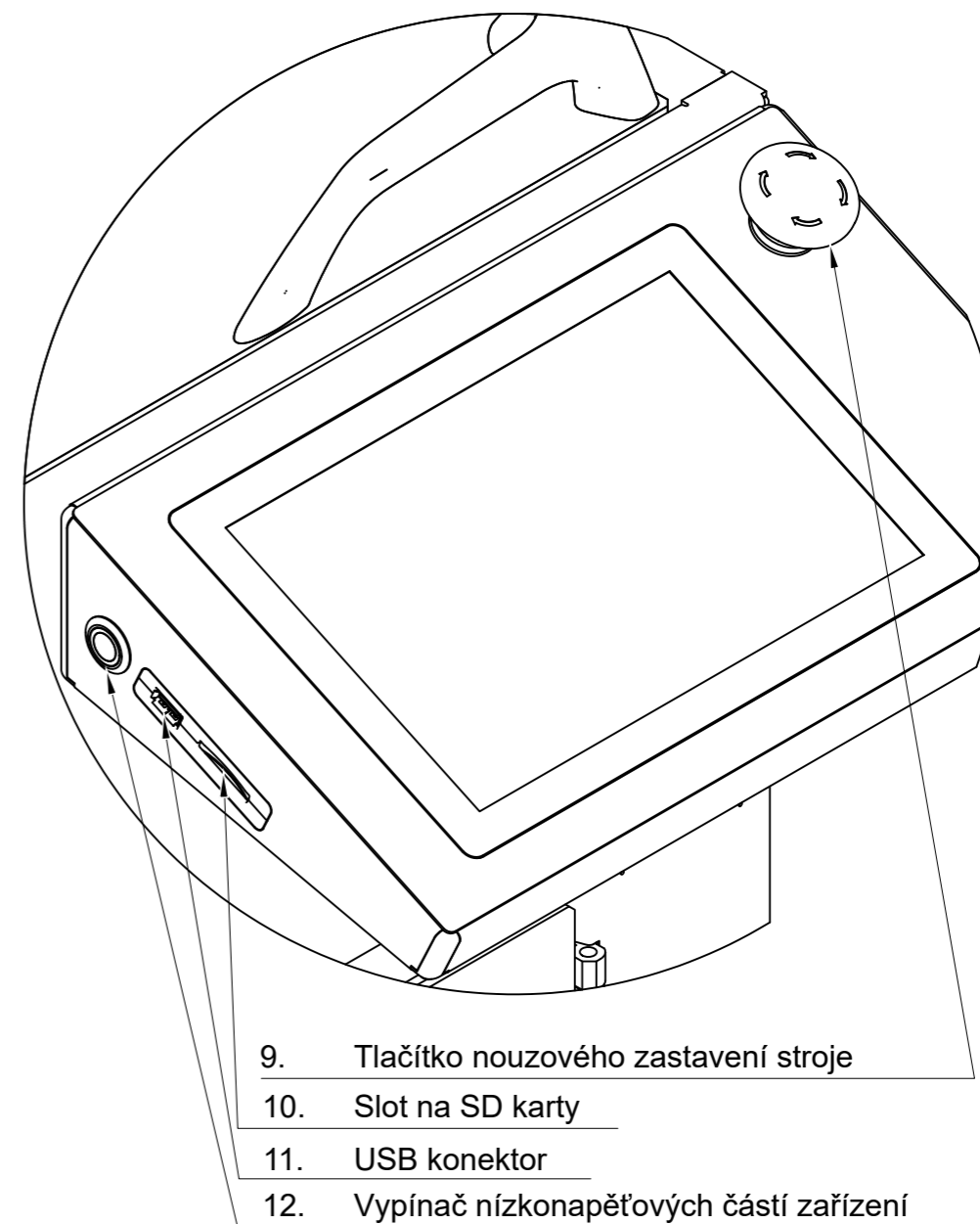
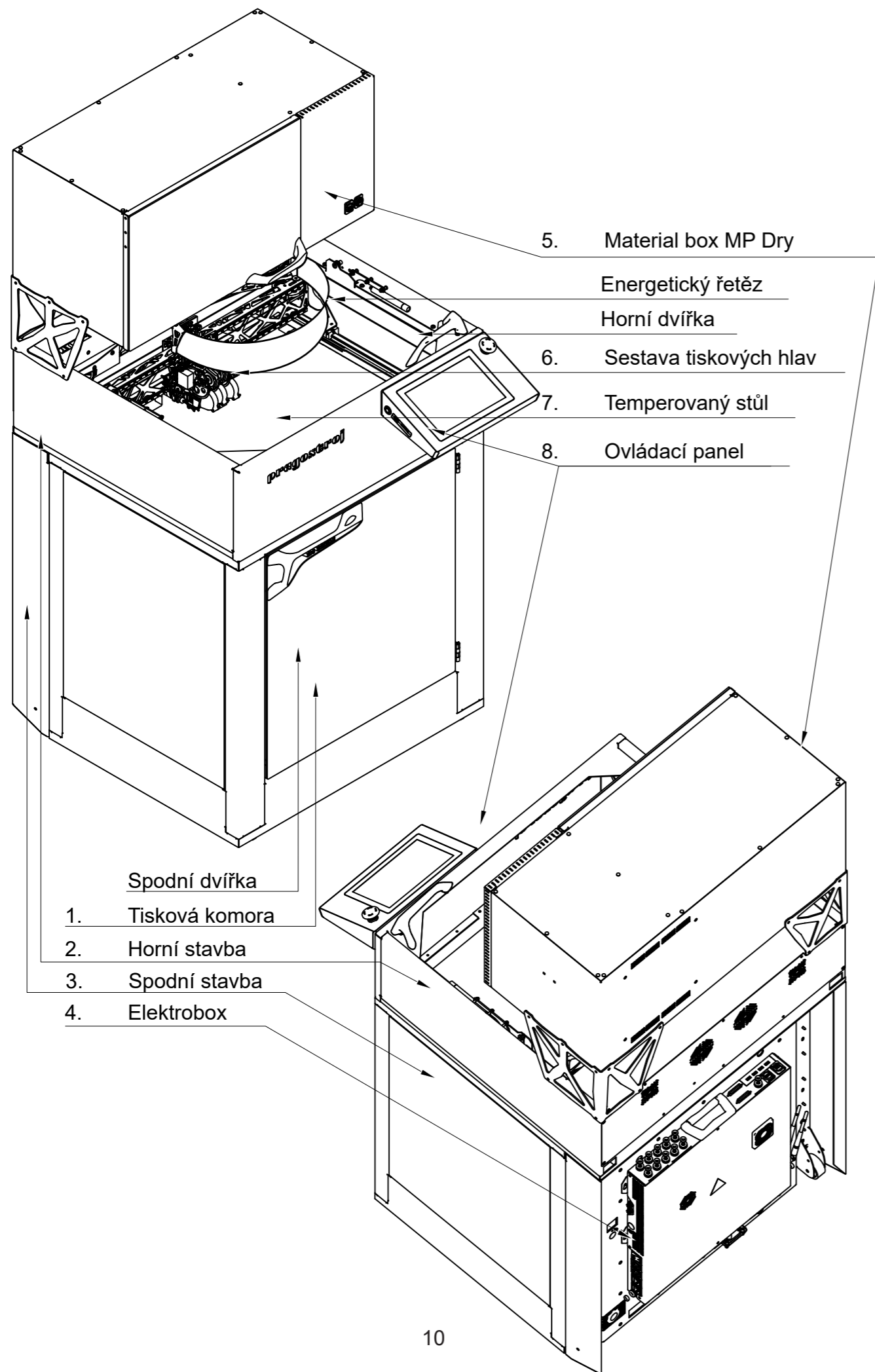


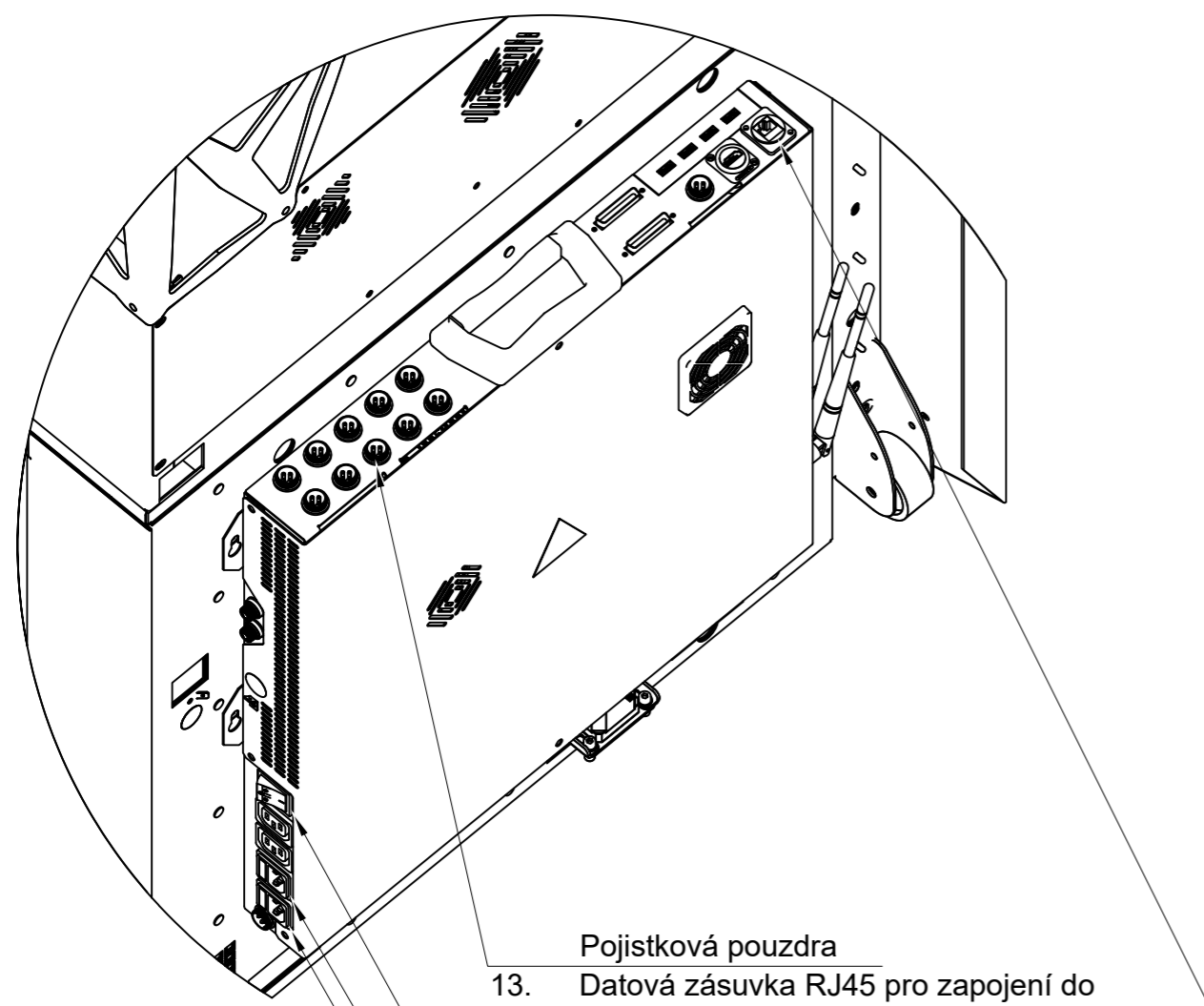
Caution, dangerous mains voltage. Avoid any contact with exposed electrical circuits.

3. Printer Description and Components

This chapter introduces the key assemblies and user-accessible controls of the Pragostroj Kinarb printer and summarizes the structural layout, access points, and labeled interfaces

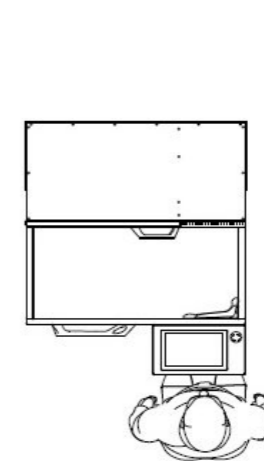
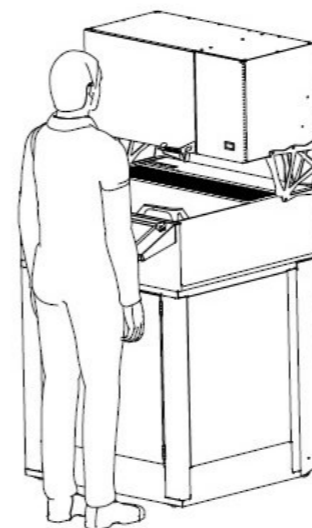
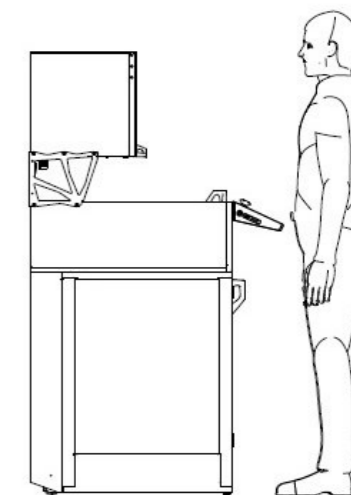
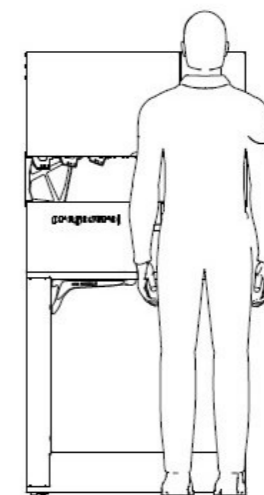
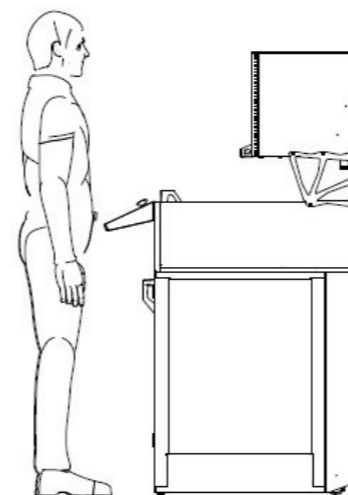






Pojistková pouzdra

- 13. Datová zásuvka RJ45 pro zapojení do počítačové sítě
- 14. Hlavní vypínač zapojení do elektrické sítě
- 15. Zapojení vyhřívané podložky a vyhřívané komory do elektrické sítě
- 16. Zapojení řídicí jednotky s možností záložního zdroje do elektrické sítě



MAIN ASSEMBLIES

- Print Chamber (enclosed build space);
- Upper Frame/Gantry (rigid motion system);
- Lower Frame/Base (supports chamber, heated bed, electronics);
- Electrobox (control electronics and power distribution);
- Drying Material Box (optional drying cabinet);
- Printhead Assembly (modular extruders and hotends);
- Heated Bed (temperature-controlled build plate);
- Control Panel (front operator interface).
- Additional elements: Upper and Lower doors, and the cable carrier/energy chain.

PARTS LIST

1. Printing chamber
2. Top assembly with Core XY assembly
3. Lower assembly
4. Electrobox
5. Material box
6. Printing heads assembly
7. Heated bed
8. Control panel
9. Emergency stop button
10. SD card slot
11. USB port
12. Device switch
13. Ethernet connector
14. Main switch
15. Heated bed and heated chamber power supply
16. Control unit power supply

4. Unpacking, Connection, and Commissioning

IMPORTANT INSTALLATION NOTICE

Installation and connection to the electrical supply must be performed by a qualified Pragostroj technician or an authorized, properly trained third party. Incorrect installation may cause damage, injury, death, or fire.

Unauthorized installation voids the warranty.

LOCATION FOR INSTALLATION AND OPERATION

Electronic devices emit heat; sensitive surfaces may discolor under prolonged radiant heat.

Ensure regular air exchange in the room where the printer is in operation.

For materials such as ABS or Nylon, provide suitable extraction or a fan unit connected to controlled ventilation.

Protect the printer from mechanical damage, place it on a stable, flat, durable surface, compensate minor unevenness using adjustable feet, and level the machine precisely for operation.

CONNECTING TO THE ELECTRICAL MAINS

For proper operation the printer requires 230 V, 50 Hz, minimum 10 A (recommend 16 A breaker for Kinarb HC).

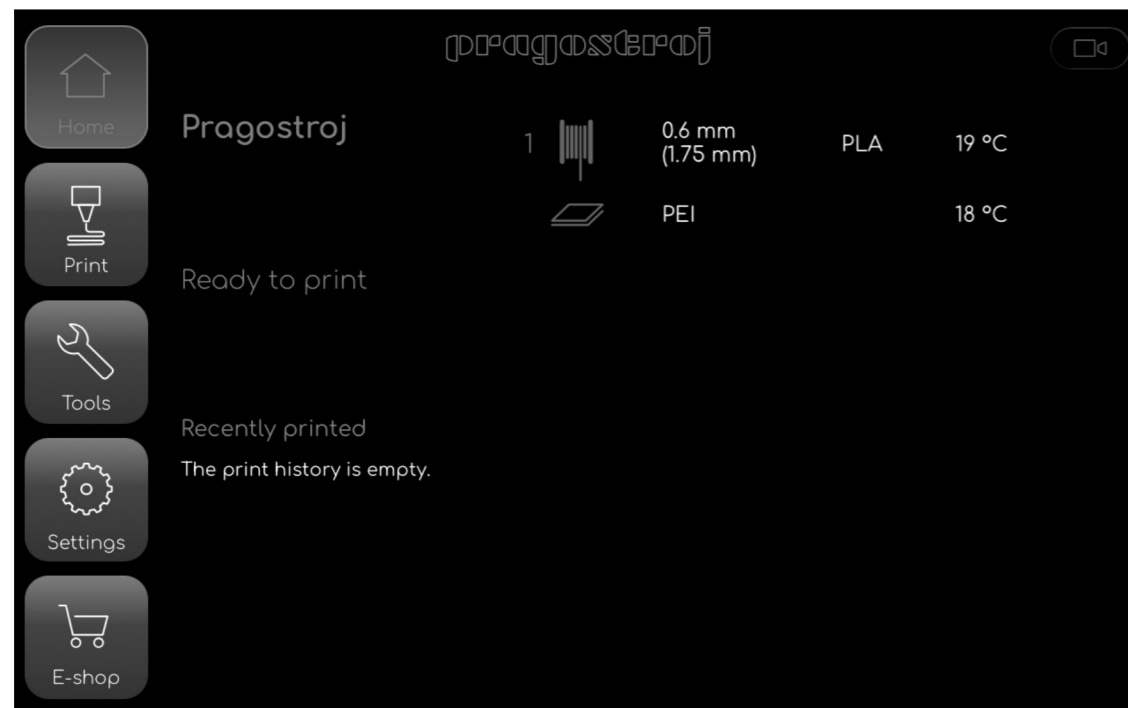
Consider a dedicated circuit with RCD. Connect power to the main inlet. UPS of at least 1500 VA with surge protection is recommended for short-term operation of extruders and electronics (without chamber heating) and should be connected to the dedicated UPS socket. Installation must be performed by qualified personnel.

POWERING ON AND OFF (BASIC PROCEDURE)

During the pre-start check, ensure:

- connection to power
- that lids/doors are closed
- the rear main switch is On,

then switch the device switch on. This chapter shows only the screens necessary for commissioning; the Home screen provides quick access to functions. If the touchscreen is black, check power and lid status. After initialization, the Home screen appears.



CONNECTING TO THE NETWORK

The printer supports Wi-Fi and Ethernet (RJ45) for remote service, mobile-app access, remotemanagement, and network file transfer.

Network setup should be performed by authorized technicians.

To ensure proper function setting IP address and network mask is required. This can be done either automatically by DHCP server or manually in the printer interface.

Configure or show IP via DHCP or assign a static IP in the graphic interface of the printer in Settings sections of the menu and WLAN/Ethernet submenu option.



5. First-Time Setup

This chapter covers first-time setup: controlled power on/off, verifying heating elements, homing to machine zero, loading filament, and launching a first test print.

Powering On

Ensure power is connected and both lids/doors are closed. Set the rear main switch to On and press the device switch. The Home screen should appear after initialization; if not, verify mains and lid status.



Note: after first start Recently printed list will be empty.

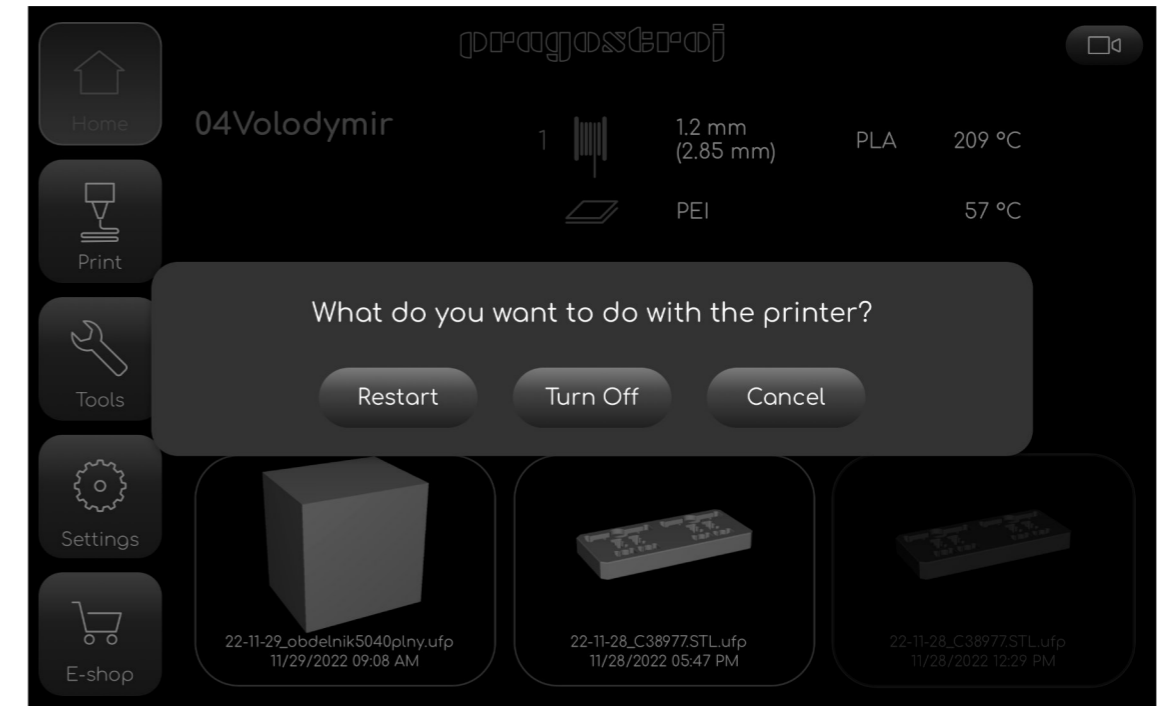
Home screen offers all the functions you need for using the printer.

CONTROLLED SHUTDOWN

To power off, press the device switch and confirm the prompt to perform controlled shutdown.

Do not use the main switch to turn off—abrupt loss of power can damage electronics or data and is not covered by warranty.

Heated parts remain hot; allow at least one hour to cool. Printing cannot be resumed after shutdown. For extended non-use periods, perform controlled shutdown, then switch off the main switch to eliminate standby consumption.

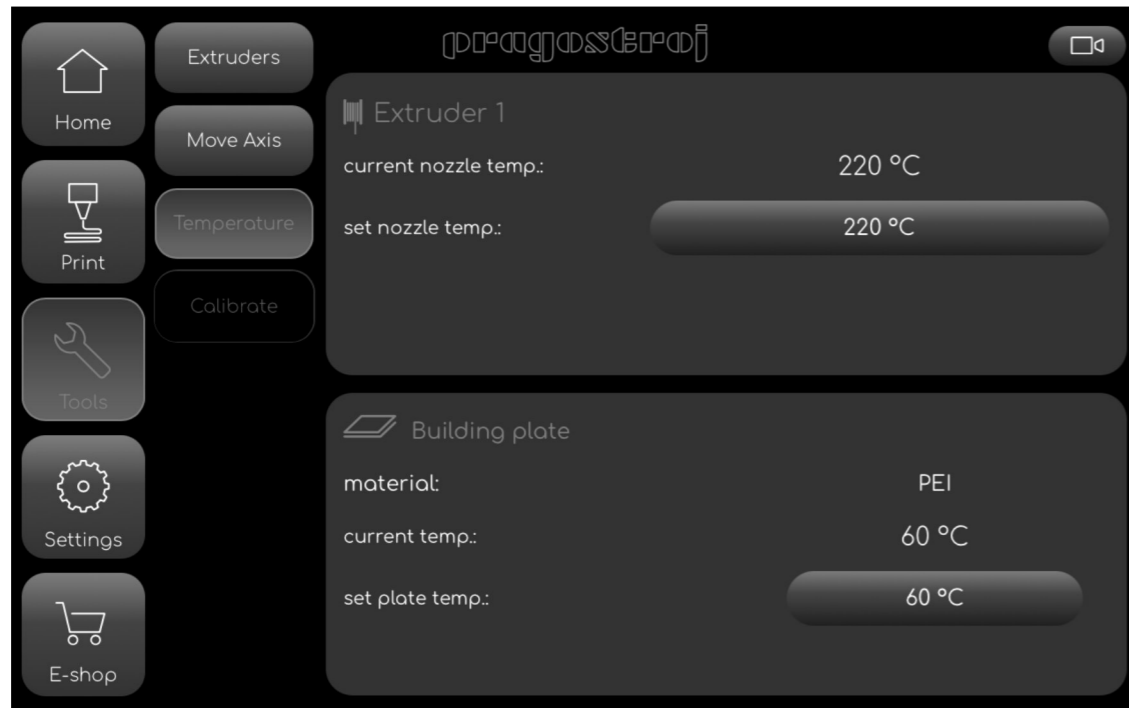


VERIFYING HEATING ELEMENTS

Each time you power on, verification of heaters is recommended.

Set Extruder 1 (and 2/3 if present) to 220 °C; set the heated bed to 50 °C; on HC variants set the chamber to 50 °C. Residual filament may ooze during heating. In Printer Status, confirm temperatures rise and stabilize at setpoints. If values do not match or 'HEATER FAULT' appears, switch off and contact service. After the check, set all heaters to OFF and observe temperatures decreasing.

WARNING: Not switching heaters off may cause an injury.

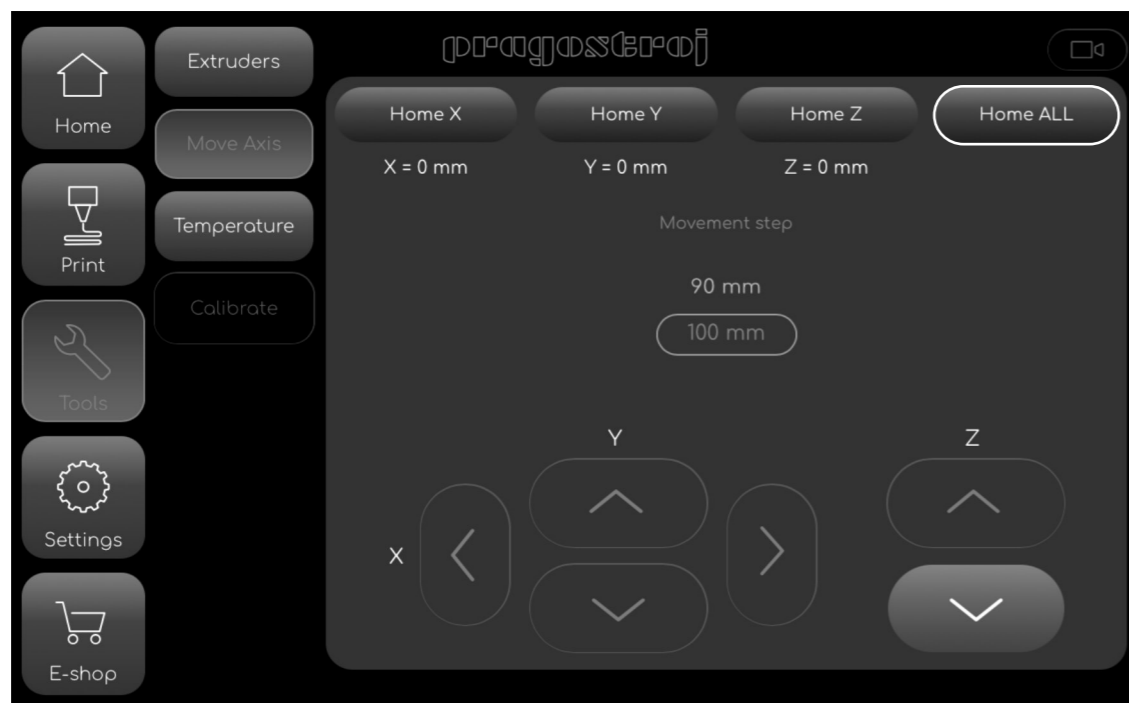


HOMING TO MACHINE ZERO

Each time you power on, homing to machine zero is recommended. It is the position required for starting the printing.

Check free movement of X, Y, Z using Tools → Move Axis. Then execute Home-All (Tools/Move Axis) to move the printhead to machine zero—the starting position for all prints.

If unusual sounds occur, hit Emergency Stop and contact service.



LOADING FILAMENT

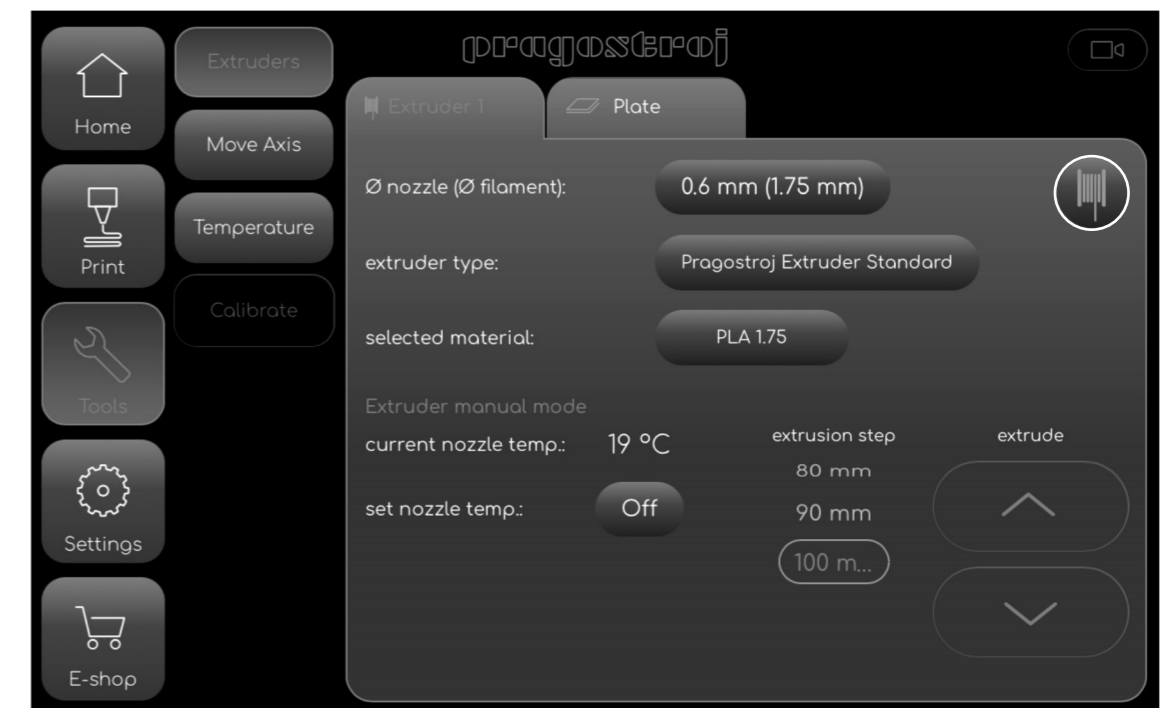
Use only Pragostrój-authorized spooled filaments; maximum spool weight 8 kg. Using non-authorized filament is at your own risk and may cause poor results or damage not covered by warranty.

Trim the filament tip at 45°. Open Tools → Filament Change; perform changes only when chamber heating is off and the chamber is cool. Follow on-screen instructions and confirm each step. Minor oozing is normal.

Pay attention and do not touch hot bottom part of the printing head.

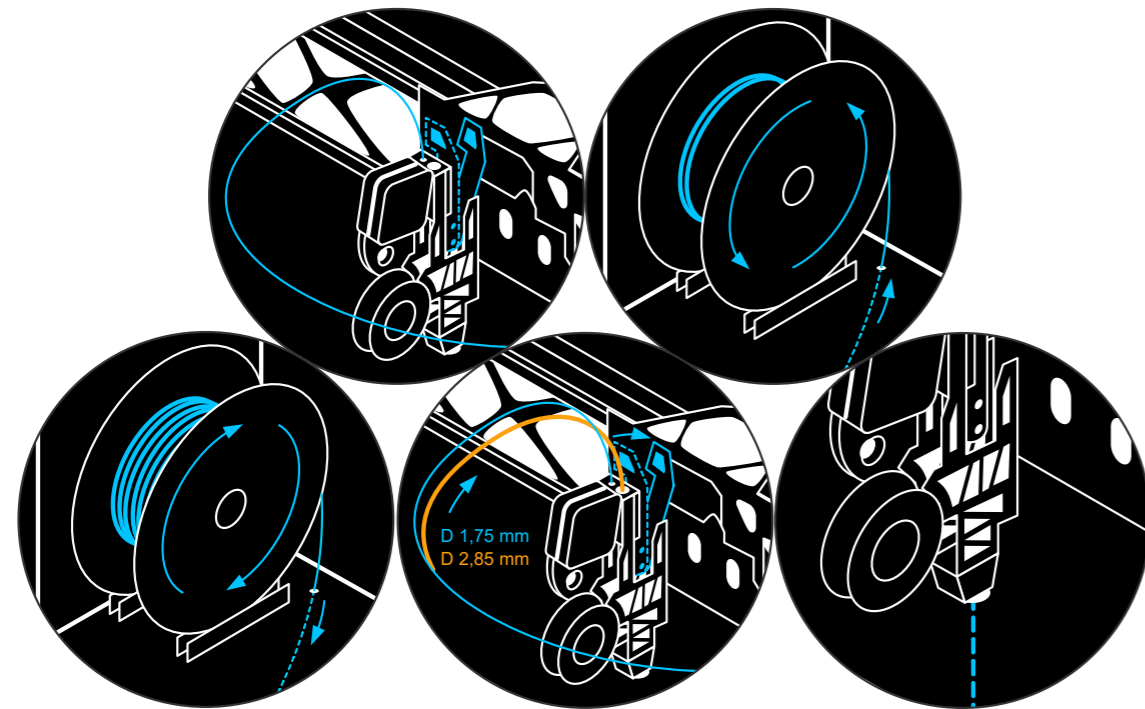
Usage of safety gloves is recommended.

Always insert the silicone guide tube into the top opening of the extruder after loading. Ensure the spool unwinds smoothly, is properly wound, and that no knot has formed; if a knot exists, unwind and secure the filament end through the side holes in the spool.



STARTING THE FIRST PRINT

Ensure the build plate is correctly installed and the chamber is empty and clean.



If requirements are not met, please follow procedure as described in chapter Cleaning & Maintenance.

Warning: Make sure the heated chamber, extruders and heated bed are all cooled down.

Remove the plate to clean and apply adhesion aids to avoid aerosol deposition on mechanics. Scrape coarse residue, then wipe with isopropanol or an equivalent solvent. Reinstall the plate using locating pins and ensure the correct filament is loaded.

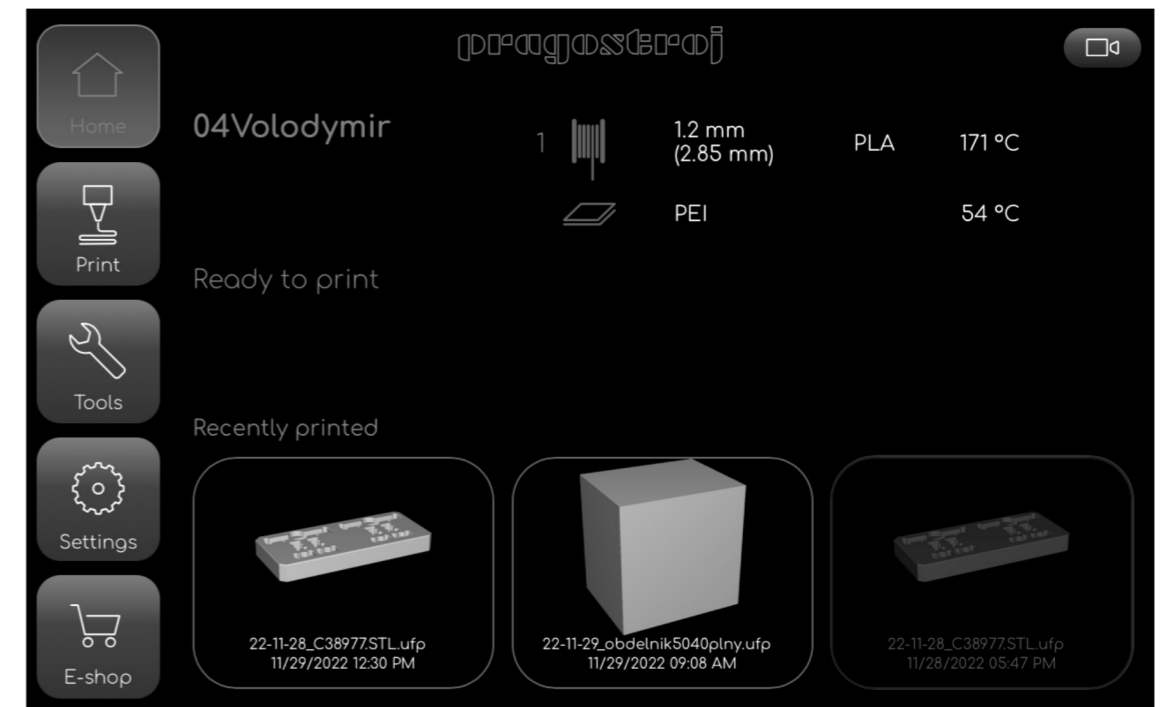
Recommended first job: the factory test model stored in Machine memory.

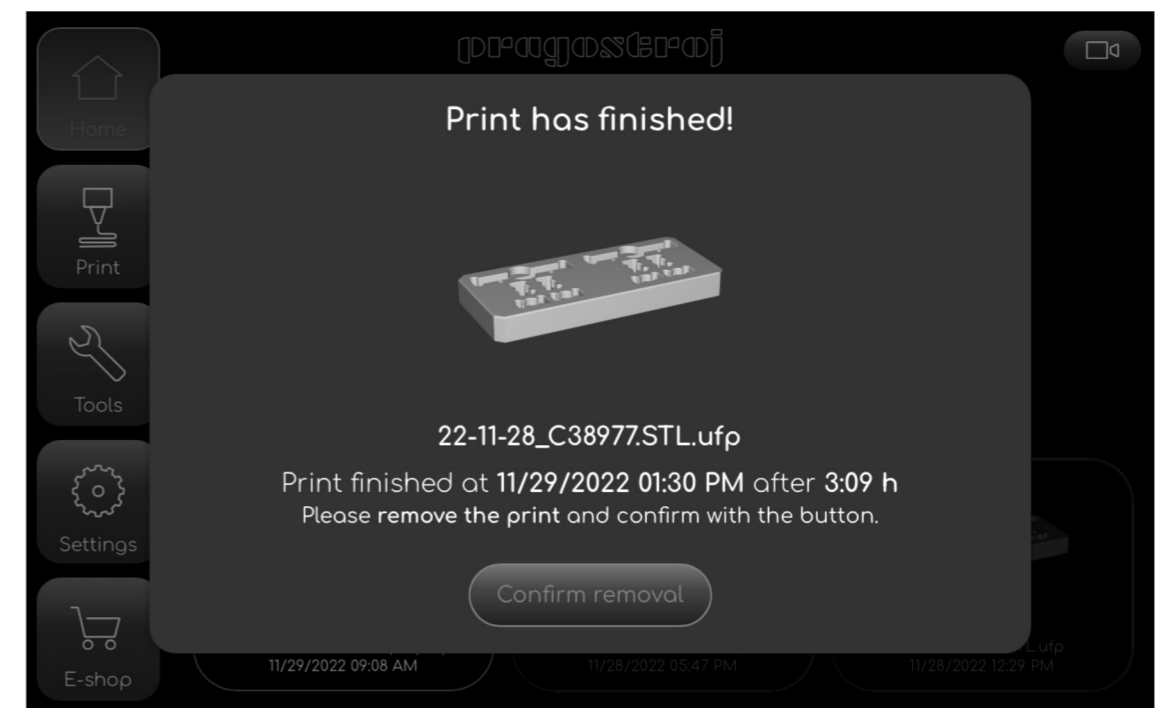
Alternatively, use a properly prepared G-code file.

Following images represent printing procedure: Home → Print → select file (thumbnail preview may be shown) → Print. The printer proceeds through Homing & Heating → Printing → End of Print.

Bezpečnostní upozornění: Před každým tiskem se vždy ujistěte, že v tiskovém prostoru není zapomenutý vytisknutý předmět či jiné předměty jako nářadí a tisková podložka je zcela čistá!

Pro první tisk po instalaci Tiskárny doporučuje Výrobce použít zkušební





6. Workflow & Operation

END-TO-END WORKFLOW

Easy end-to-end workflow contains following steps:

1. Create a 3D CAD model.
2. Export to STL.
3. Validate and repair STL if needed.
4. Generate a UFP package (with G-code) using Pragostroj Slicer.
5. Start the job over the network or from SD/USB.

PRAGOSTROJ SLICER – PREPARATION & SLICING

Install the free Pragostroj slicer software included with every Pragostroj printer.

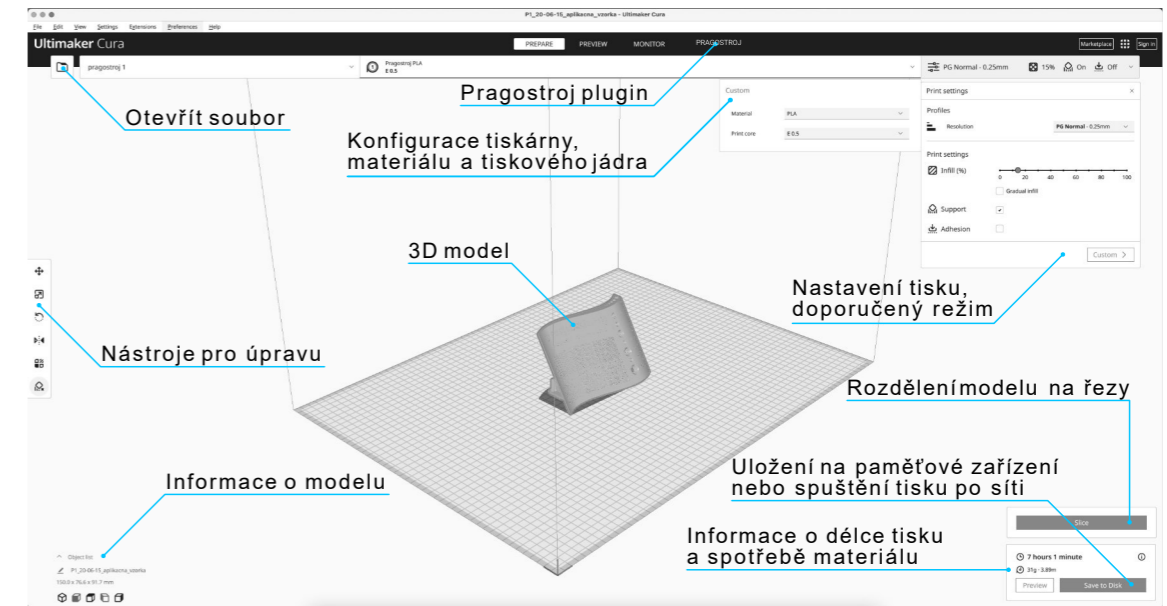
Supported platforms:

- Windows Vista or newer (64-bit),
- macOS 10.7 or newer (64-bit),
- Linux distributions (Ubuntu 14.04, Fedora 23, OpenSuse13.2, ArchLinux or newer, 64-bit).

System requirements:

- GPU supporting OpenGL 2,
- Intel Core 2 or AMD Athlon 64 or newer CPU, 64-bit processor
- at least 4 GB RAM (8+ GB recommended), .

On first launch, select the Pragostroj Kinarb variant or add it via Settings → Printer → Add printer. Pragostroj Slicer then enables direct network connection and exposes the main interface.



SLICING PROCEDURE IN CURA

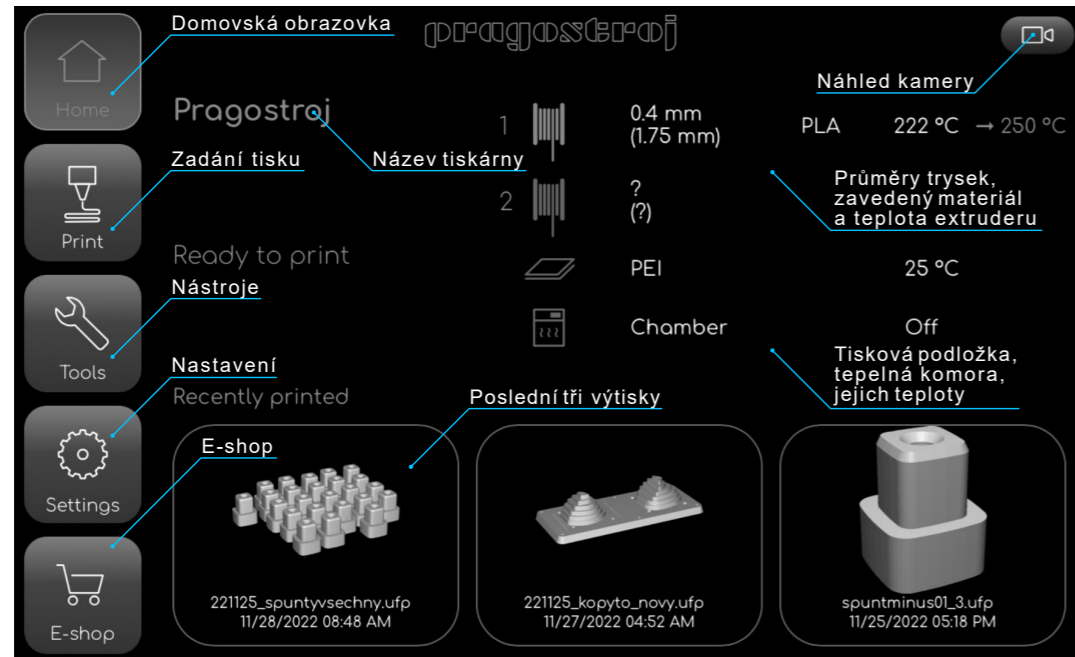
- Load models using the Open File icon. Verify materials and print cores match the printer configuration.
- Use Adjustment Tools to position, scale, and rotate. In Print Settings choose profiles/parameters (layer height, speed, infill, supports, bed adhesion).
- When using supports, you can select the extruder for support material (e.g., PVA, Breakaway, another engineering material).
- Preview with Layer view. Transfer via Print over network, Save to file, or Save to USB.

PRINTING VIA USB

If network printing is unavailable: insert a USB flash drive, slice in Cura, ensure configuration matches the printer, save as GCODE/gcode.gz/UFP via Save to removable drive, safely eject, insert into printer USB port, then select the file in Status overview and start printing.

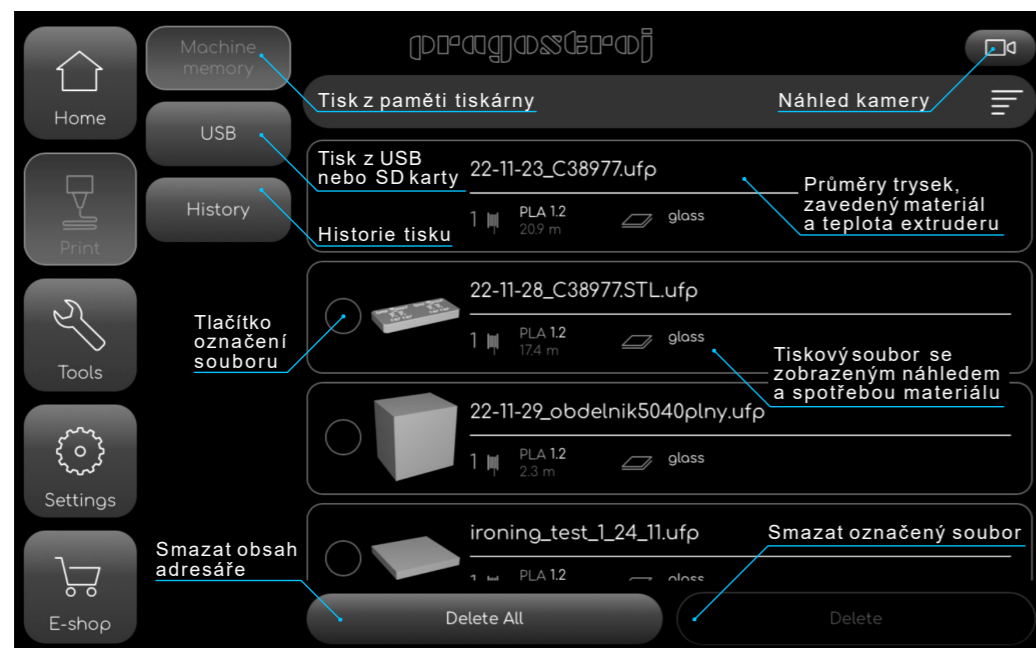
7. User Interface

Homescreen



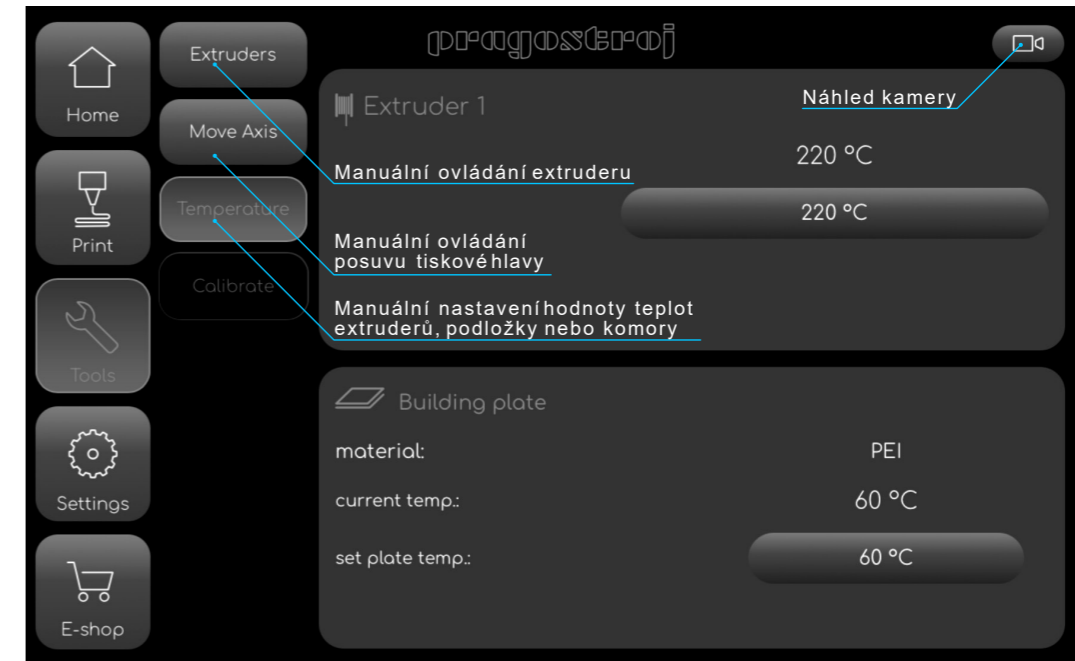
Home returns to the main dashboard showing the last three prints; temperatures of the heated bed and, if present, the heated chamber; nozzle diameters, loaded material, and extruder temperature; primary actions (Print, Tools, Settings, E-shop); the printer name; and a camera preview. Swipe to reveal additional icons if available

Print screen



Choose a job source and start a print. Sources include Machine memory, USB/SD, and Print history. Select a file (compatible files show a thumbnail and material usage). Maintenance actions allow deleting selected files or directory contents. A status strip repeats key extruder info and shows a camera preview.

Tools screen



Manual controls for extrusion/retraction, motion along axes, and temperature settings for extruders, bed, and chamber, plus a live camera preview. Related procedures such as Home-All, Move Axis, Temperature, and Filament Change are accessed here.

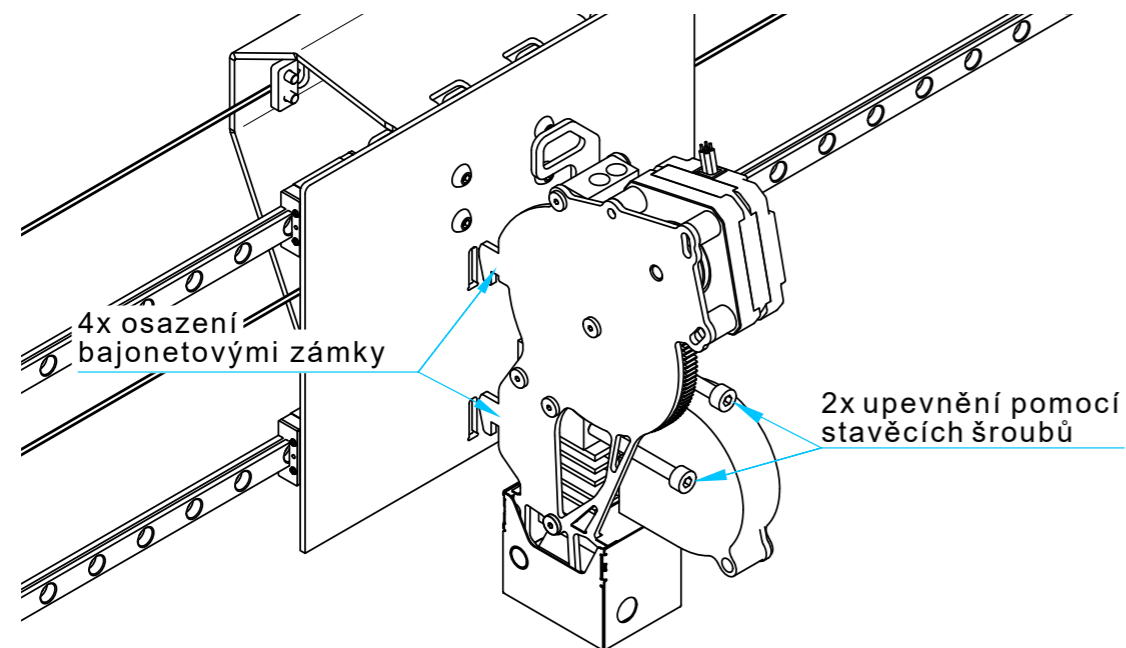
Settings Screen



8. Print Heads & Accessories

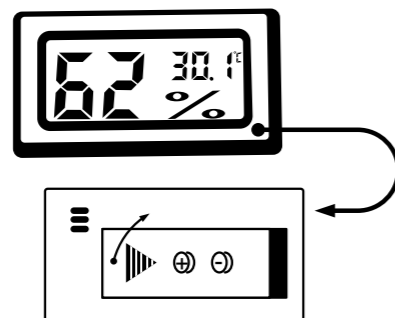
PRINT HEADS

The source indicates this section will describe the print head, its replacement, adjustment, and babystepping. Detailed text is not included on the provided pages.



DRYING CABINETS – BASIC VERSION

A simple drying cabinet removes moisture by absorbing humidity; a digital hygrometer on the front shows humidity. Keep the door open only briefly and close it immediately. If the hygrometer shows low battery, replace with 2× LR44. When humidity rises toward ambient, regenerate the desiccant: heat a safe oven or kiln with exhaust to 160 °C, place the desiccant bag inside for two hours, then (with protective gloves) return it to the cabinet and close the door. Mounting notes: 2× fastening with set screws; 4× mounted with bayonet locks.



MP DRY BOX (AUTOMATIC)

An MP Dry variant with automatic regulation, regeneration, and heating is listed; detailed instructions are not present on the provided pages.

EXTRACTION UNIT

Connection to an existing Pragostroj printer and adjusting extraction settings; detailed steps are not present on the provided pages.

9. Troubleshooting & Faults

ERROR MESSAGES:

Heater fault on heater 0 (bed): check bed heater/thermistor cables; try manual control; replace power-inlet fuse if rear rocker backlight is off; replace heated bed assembly.

Heater fault on heater 1/2/3 (Extruder 1/2/3): check cabling; replace PT1000 sensor; replace extruder assembly.

Extruder 1/2/3 out of material: replace filament.

Doors are open: close the doors.

ADDITIONAL ERROR CONDITIONS & RECOVERY

Unexpected shutdown: check the rear rocker switch; if lit, restart with the side On/Off button. Remove any interrupted print from the bed—it cannot be resumed.

System freeze: hold the On/Off for ~5 seconds until it blinks and the printer performs an emergency shutdown, then press again to restart; remove interrupted prints as they cannot be resumed.

EXAMPLES OF INCORRECT USE

- Do not operate in dusty or humid environments;
- place the printer only on a flat surface;
- do not place objects on the build plate or printer frame;
- never print without the build plate;
- do not store items under the plate;
- always print with doors closed;
- do not feed material into a head without a nozzle;

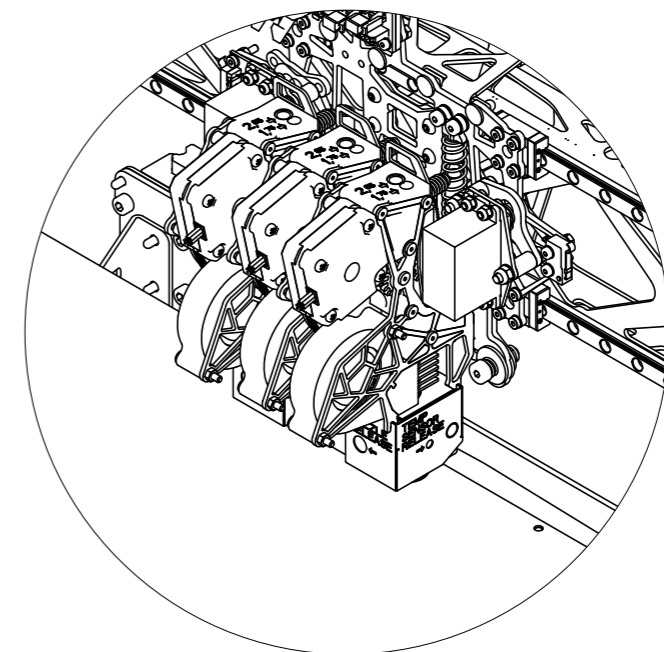
- use only original Pragostroj nozzles;
- verify filament diameter and use the correct inlet (1.75 mm or 2.85 mm);
- do not move the printer during a print;
- avoid locations near machines causing vibrations;
- do not allow operation by untrained personnel;
- do not leave unattended;
- do not disconnect Electrobox cables or tamper with harnesses;
- do not disassemble parts;
- do not press Emergency Stop without cause (but press it immediately if behavior is abnormal);
- do not force doors against locks;
- do not cover top ventilation openings;
- do not unplug mains when powered on;
- keep linear guides clean;
- do not cut drive cables; do not use the printer if cables are off the pulleys;
- keep out of reach of children and pets.

10. Cleaning & Maintenance

CLEANING THE PRINTER

Before any cleaning, ensure the chamber and print head are cool and all heaters are off.

- Clean glass surfaces (doors and touchscreen) with a dry microfiber cloth; slightly damp if needed.
- After each print, remove filament debris and degrease the build plate with a lint-free cloth and isopropanol or an appropriate solvent.
- Remove the build plate when cleaning or applying adhesion aids to avoid aerosol deposition on mechanics; reinstall using locating pins.
- Inspect and clean extruder fans regularly—accumulated particles can block airflow.
- High-temperature filaments (CPE+, PC, ABS) tend to clog the hotend fan; a clogged part-cooling fan worsens fast prints with PLA/PETG.
- After powering off and unplugging, check and clean the Electrobox fan filter.
- Inspect all fans monthly and clean as needed; replace seized fans via authorized service.



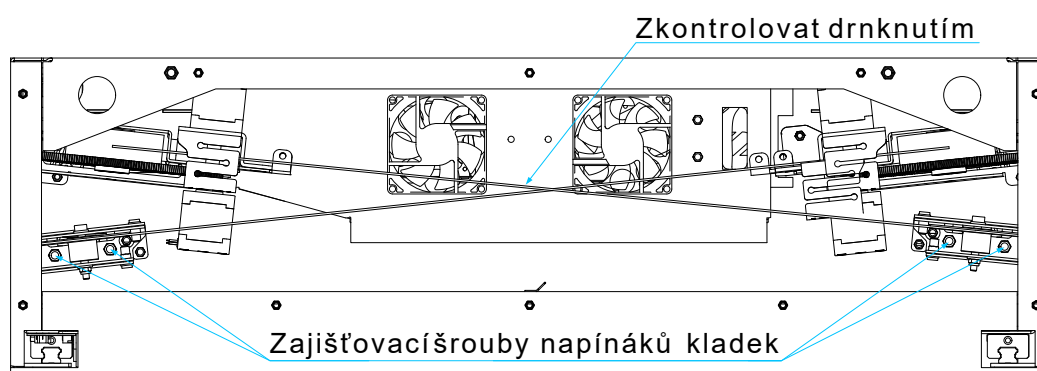
Malfunction	Cause	Resolution
Printhead not extruding	Jammed filament on spool	Unwind and reinstall filament
	Faulty PT1000 sensor	Check cabling, replace sensor
	Faulty heater cartridge	Check cabling, replace extruder assembly
	Filament stuck in guide tube	Inspect/clean guide tube
	Filament jammed in extruder or motor skipping	Replace extruder assembly
Heated bed not heating	Faulty sensor	Check cabling, replace bed assembly
	Faulty bed heater	Check cabling, replace bed assembly
	Blown safety fuse	Replace bed assembly
	blown power-connector fuse	Replace power-connector fuse
Heated chamber not heating	details not provided—contact authorized service for diagnosis.	

ROUTINE MAINTENANCE

For the HC variant, lubricate every two weeks: drive cables, linear-guide carriages, Z-axis ball-screw nuts, gear mesh between the XY motor pinion and gearbox gears, and the extruder pinion, using the recommended heat-resistant lubricant (HYWIN). To maintain accuracy, check drive-cable tension annually and adjust pre-tension as needed, either via authorized service or a qualified user. For inspections/adjustments, the printer must be powered off, unplugged, and cool.

DRIVE-CABLE PRE-TENSION – INSPECTION & ADJUSTMENT

Remove the rear cover panel. Check cable tension by plucking—correctly pre-tensioned cables must not sag, should spring back, and emit a ‘guitar-string’ tone. If slack, increase pre-tension by tightening the tensioner holders of the drive pulleys under the drive drum: first loosen the tensioner locking screws, then tighten the pre-tension screws, and finally re-tighten the locking screws. Verify tension again by plucking and manually move the print head across the full motion range; resistance should be constant. Repeat until the cable twangs like a guitar string.



REPLACEMENT OF WEAR COMPONENTS

After 5,000 operating hours or one year (whichever comes first), replace motion-system wear parts—stainless drive cables, idler/drive pulleys, and drive drums—via qualified Pragostroj service. The manufacturer accepts no responsibility for malfunctions or degraded print quality if replacements are performed by unauthorized service.