

3D printer

LABOTRIX FORGE F1

PRODUCT PASSPORT

Kyiv

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1. Basic product information

- 1.1. Product name — 3D printer.
- 1.2. Trademark — Labotrix.
- 1.3. Model — Forge F1; full trade name — LABOTRIX FORGE F1.
- 1.4. Manufacturer — Labotrix Group Limited, China.
- 1.5. Intended use: The 3D printer is designed for use in technology classrooms and STEM laboratories of secondary education institutions while studying the basics of additive technologies, computer-aided design and three-dimensional modeling. The printer allows students to create three-dimensional plastic objects from digital models and is used to produce prototypes, demonstration models, educational materials and functional parts in technology, computer science and STEM lessons.
- 1.6. Design features: The printer is built using FDM (fused deposition modeling) technology with a motor-controlled extruder and a work platform with a special coating for better adhesion of the first layer. The working chamber is completely enclosed by a housing with a built-in air filtration system that traps fine particles and some of the volatile compounds released during printing with ABS, nylon, and similar materials. The printer is controlled via a 4.5-inch capacitive touch display with an intuitive menu. The built-in temperature control system heats the extruder up to 330 °C and ensures stable print quality with all compatible filament types, including refractory ones. Control files are transferred via a USB cable or Wi-Fi wireless network; before printing, the user manually checks and, if necessary, adjusts the distance between the nozzle and the platform.

2. Technical specifications

- Brand — Labotrix
- Model — Forge F1
- The article is LTX-FORGE-F1
- Product type — closed-type desktop 3D printer
- 3D printing method - molten plastic deposition (FDM, FFF)
- Product construction area format (mm) — 220 × 220 × 250
- Maximum product size (mm) — 220 × 220 × 250
- Extruder nozzle diameter (millimeter) — 0.4
- Layer resolution (millimeter) — from 0.05
- Print speed (millimeter per second) - up to 600
- Dimensional accuracy (mm) — ±0.3
- Filament diameter (mm) — 1.75
- Compatible filament types — PLA, TPU, carbon fiber, ABS, nylon, nylon carbon fiber
- Maximum extruder operating temperature (degrees Celsius) — 330
- Filament loading system - manual or automatic (optional)
- Cooling ventilation - built-in fan for extruder and platform

- Housing - closed, with built-in air filtration system
- Control interface — capacitive touch display, 4.5 inch diagonal
- Supported formats — G-code, STL, OBJ
- Data transfer - USB cable, Wi-Fi wireless network
- Power supply type — 220 V, single phase
- Power consumption (watt) — 500
- Power frequency (hertz) — 50
- Supply voltage (volts) — 220
- Overall dimensions (millimeters) — 402 × 420 × 543
- Language of marking and operating documentation — Ukrainian
- Product marking — trademark, model and a space for the inventory number
- Packaging for delivery — individual box of corrugated cardboard with the contents secured inside
- Operating conditions — premises of an educational institution, air temperature from +5 to +40 °C, relative humidity from 40 to 60 % without condensate
- Installation method - on a flat, stable surface of a table or laboratory rack, away from drafts
- Print status indication - job progress and temperature are shown on the printer display
- User requirements - the work is organized by a teacher or laboratory assistant, students work under supervision
- Service life (year) — 5
- Warranty period (month) — 12

3. Equipment

- The main design of the printer with a closed housing, air filtration system and a 4.5-inch capacitive touch display, assembled - 1 pc.
- Working platform with coating — 1 pc.
- Extruder with a nozzle diameter of 0.4 mm — 1 pc.
- Filament for printing: PLA, TPU, carbon fiber, ABS, nylon, nylon carbon fiber 1.75 mm - 10 kg (including starter kit for the first print)
- Cleaning and maintenance tools (spatula, brush, scraper, wrenches) — 1 set
- 220 V power cable — 1 pc.
- USB cable for connecting to a computer — 1 pc.
- Software for slicing (cutting the model) and printer control - 1 set
- Methodological materials for use in the educational process and recommendations for the teacher - 1 set
- Product Passport and Warranty Card — 1 pcs
- Individual transport packaging — 1 pcs

The printer comes partially assembled. Requires extruder, platform, and calibration before first use. All necessary parts and fasteners are included.

4. Safety measures

4.1. General requirements

- Before first use, read this passport and undergo occupational health and safety training.
- The printer is operated by trained operators who understand the dangers of molten plastic and hot parts of the equipment.
- Students may only use the printer under the supervision of a teacher or specialist.
- Regularly monitor the technical condition of the printer: integrity of the power cable, placement and condition of the nozzle.
- When printing with ABS, nylon, and nylon with carbon fiber, the built-in air filtration system operates—do not block its air intakes and case vents.
- Ventilate the room where the printer is installed: when printing refractory materials, volatile compounds and fine particles may enter the air.

4.2. Electrical safety

- Connect the printer only to a grounded outlet using a surge protector.
- Unplug the printer before any maintenance or cleaning.
- Do not allow moisture to come into contact with the printer's electrical parts.
- Leave at least 10 cm of free space around the printer for ventilation and heat dissipation.

4.3. Burns and hot surfaces

- Do not touch the extruder nozzle during printing and immediately after printing.
- Wear protective gloves when working with hot filament and the extruder nozzle.
- Allow the extruder to cool for at least 30 minutes after printing is complete before touching its parts.
- Remove a freshly printed product from the platform carefully: its surface may remain warm for some time.

4.4. It is strictly forbidden

- Leave the printer unattended while printing.
- Use the printer near flammable materials and paper.
- Throwing objects or materials into the printer's print chamber while printing.
- Change print speed or temperature without stopping work.
- Opening the printer housing while printing with ABS, nylon, or carbon fiber nylon will disrupt the air filtration system.
- Disassembling or repairing the printer yourself may cause permanent damage.

5. Preparation for work

- 5.1. Unpack the printer and place it on a flat, stable surface such as a table or workbench, away from moisture and direct sunlight.

- 5.2. Place the extruder in the appropriate holder and secure the platform. Make sure all screws are tight, but not overtightened.
- 5.3. Connect the printer to a 220 V power supply through a surge protector. Make sure the power indicator is on.
- 5.4. Perform the platform calibration as instructed by the printer menu: check the gap between the nozzle and the platform at several points and adjust it manually if necessary. Allow the printer to perform diagnostic movements on all axes.
- 5.5. Place the filament spool in the holder and feed the filament into the extruder. Wait for the plastic to come out of the nozzle.
- 5.6. Install the software on your computer and download the first test file (for example, a test cube).

6. Procedure

6.1. Model preparation

Open the 3D model in a slicing program, set the printing parameters (layer height, infill, speed), build the models on the platform, and export the G-code file.

6.2. Uploading a file

- Connect a flash drive to the printer's USB port, transfer the file via a USB cable from your computer, or send it wirelessly via Wi-Fi.
- Select the desired file to print on the printer's touch screen.

6.3. Setting parameters

- Set the required extruder temperature depending on the filament type (see filament packaging).
- Allow the extruder to warm up to the desired temperature — the indicator on the display should show readiness.

6.4. Starting printing

- Press the start print button on the printer's touch screen.
- Watch the first layers of the print to make sure the model is properly adhered to the platform.
- If necessary, stop printing, clean the platform, and try again.

6.5. Completion of work

- Wait for the print to finish - the printer should automatically stop heating the extruder.
- Leave the printed product on the platform for 3-5 minutes to cool.
- Remove the finished object using a spatula, carefully separating it from the platform.

7. Care, maintenance and possible malfunctions

7.1. Cleaning

- Remove any remaining plastic from the platform after each print using a spatula.
- Wipe the platform with a slightly damp cloth, then wipe dry.
- Clean the nozzle from dried plastic with a special nozzle cleaning needle heated to the working temperature of the filament or with a soft brush after cooling; do not use water to clean the nozzle.
- Remove dust and filament residue from the ventilation holes with a soft brush.

7.2. Periodic control

- Check the tension of the XY belts monthly - they should be neither too loose nor too tight.
- Monitor the condition of the platform cover and replace it if there is visible damage or signs of wear.
- Repairs to electrical components, spindles and sensors should only be carried out by an authorised service centre.

7.3. Possible malfunctions and ways to eliminate them

Symptom	Possible cause	User actions
The printer does not turn on	Power cord not plugged in; outlet faulty; fuse blown	Check the connection; try another outlet; contact service.
Filament is not loading into the extruder	Nozzle clogged with dried plastic; filament twisted; extruder pressure insufficient	Clean the heated nozzle with a cleaning needle; straighten the filament; check the extruder feed tension
The model does not stick to the platform	Platform not heated enough; coating is dirty; platform is not calibrated properly	Check temperature; clean platform; repeat calibration
The print is uneven or skewed	The platform is deformed or dirty; filament pressure changes; the nozzle scratches the surface	Calibrate the platform; clean the surface; adjust the nozzle height
The nozzle emits smoke or a smell of burning plastic	Nozzle overheated; wrong temperature for filament type; filament is degrading	Lower the temperature; check the program settings; replace the filament

Symptom	Possible cause	User actions
The printer gives an error signal when starting up	Temperature sensor is faulty; motors are not functioning; there is a mechanical conflict	Restart the printer; check for mechanical obstructions; contact service
The model leaves thin filaments or filament when removed	Nozzle too low; print speed too high; temperature too low	Raise the nozzle by 0.1 mm; reduce the speed; increase the temperature

8. Storage and transportation conditions

- Store the printer in a dry, indoor location at temperatures between +5 °C and +40 °C and relative humidity up to 80% without condensation.
- Protect the printer from direct sunlight, vibration, and mechanical shock.
- Before long-term storage (more than a month), remove the filament from the extruder and cover the printer with packing material.
- Transport the printer in its original rigid packaging with cushioning materials.
- Keep the printer upright when transporting.
- Do not place heavy objects on top of the printer packaging.
- The storage period before commissioning is unlimited provided that the stated requirements are observed.

9. Warranty obligations

- 9.1. The warranty period of the product is 12 months from the date of sale specified in the warranty card.
- 9.2. The manufacturer guarantees that the product complies with the declared technical characteristics, provided that the rules for transportation, storage and operation set out in this passport are followed.
- 9.3. During the warranty period, product defects that have arisen due to the manufacturer's fault will be eliminated free of charge. The method of elimination (repair, component replacement or product replacement) is determined by the service center.
- 9.4. Warranty service is provided upon receipt of a correctly and completely filled out warranty card and a document confirming the fact and date of purchase.
- 9.5. The warranty does not apply to cases where the malfunction is caused by:
 - mechanical damage, in particular cracks, chips and deformation of the housing and of the components of the product;
 - violation of the operating, storage or transportation rules set out in this passport;

- ingress of liquid or foreign objects into the product, and also the action of insects and animals;
- independent disassembly, repair or modification of the product, in particular repair at unauthorized workshops;
- use of the product other than for its intended purpose;
- force majeure circumstances (fire, flood, earthquake, etc.).

9.6. The warranty does not apply to natural wear and tear of the coating and appearance of the product, as well as to consumables.

10. Product disposal

- The product must not be disposed of together with unsorted municipal waste. This is indicated by the marking in the form of a crossed-out container on the product or its packaging.
- After the end of the service life, hand the product over to a collection point for the corresponding waste or to an organization holding the appropriate permit.
- Hand over the packaging elements (cardboard, polymer materials) to the corresponding streams of recyclable materials.

Contacts

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Conditions of use and storage of the product

The product is intended for educational work in general secondary education institutions and is used only under the control and supervision of a teaching staff member; the recommended age of students — from 10 years, that is, students of grade 5 and of higher grades. Keep the product in a dry, clean and ventilated room at a temperature from +5 to +40 °C and relative air humidity up to 80 % without condensation, separately from heat sources and out of direct sunlight, moisture and dust. Use the product exclusively for its intended purpose and do not allow drops, impacts or other mechanical damage. If you notice damage, a crack or any malfunction, stop working with the product immediately and inform the teacher or the responsible person of the educational institution; repairing the product on your own is prohibited.

WARRANTY CARD

Product name:	3D printer
Product model:	LABOTRIX FORGE F1
Serial number:	
Date of sale:	
Warranty period:	12 months from the date of sale
Trading organization:	
Signature of the seller:	

The goods have been received in working order, without visible damage, complete, and have been checked in my presence. I have no claims regarding the quality of the goods; I have read and agree to the operating and warranty service conditions.

Full name of the buyer

Buyer's phone number Buyer's signature

Dear Customer!

Thank you for choosing Labotrix products. After-sales service of this product is provided in accordance with the regulations of the company and the legislation of the country of sale. So that we can serve you quickly and without unnecessary formalities, check that this warranty card is filled in correctly at the moment of purchase and keep it together with the payment document throughout the entire warranty period. When applying for repair, hand the product over to the seller or to the service center together with the filled-in card.

Procedure for applying

1. The right to free warranty service for the product is valid for 12 months from the date of sale specified in the warranty card. Within this period, components that have failed due to a manufacturing defect are repaired or replaced without payment from the buyer.
2. Before contacting, make sure that the malfunction is not caused by the reasons listed in section 9 of this passport, and if possible, use the table of possible malfunctions in section 7.3.
3. After the 12-month warranty period, repairs are carried out for a fee; the cost of work and spare parts is determined depending on the nature of the malfunction.

Grounds for refusal of warranty service

The company reserves the right to refuse free service or to perform the work on a paid basis if at least one of the following circumstances is established:

- absence of the warranty card, its incomplete or corrected completion, and also the absence of a document confirming the purchase;
- non-conformity of the serial number of the product with the number specified in the card, or damage to the factory marking;
- traces of independent disassembly, repair or modification of the product;
- damage caused by violation of the operating rules, connection to an unsuitable power source or external mechanical impact;
- damage as a result of force majeure circumstances.

Service Records

Date of entry	Description of the malfunction	Work performed	Position, signature, full name of the responsible person