USER MANUAL · REVO OS 1.4.53

REVON

Belt 350 · 600×600×400 · 600×600×600 · 1200×600×500



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INTRODUCTION

Thank you for choosing a **Revon** printer. This manual covers all work with the machine: safety and installation, daily operation in **Revo OS**, maintenance, troubleshooting and service. It applies to all models – Revon 600, Revon 600 Z600, Revon 1200 and Revon Belt – as they differ only in size.

Who it is for: operators and managers working with the machine. Read Part 0 – Safety before the first start.

How to read it: screen texts are shown in *italics*, exactly as on the machine.

> **Note** – red boxes concern safety. Always follow them.

Version: Revo OS 1.4.33, edition 11/2026. Latest manual: revotech3d.com/downloads. Help: +48 512 960 411, biuro@revo3d.pl, or on the screen *Menu → Report a problem*.

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PART 0

The machine

Safety, technical data, machine overview and installation



A. SAFETY – READ BEFORE USE

Revon is intended for 3D printing with thermoplastic filaments indoors, operated by trained adults. Any other use is not intended use.



Electrical voltage
230 V in the electronics bay. Do not open the housing.



Hot surface
Nozzle up to 320 °C, bed up to 100 °C.



Moving parts
Belts and pulleys of the XY gantry. Keep the door closed.



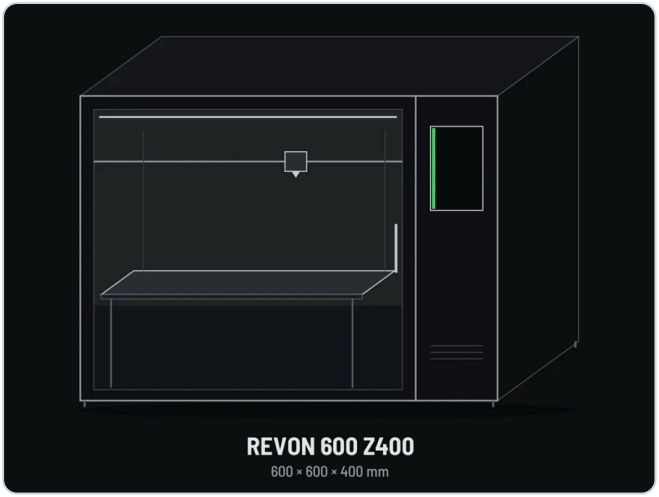
General warning
Read the manual before use.

HAZARD	HOW TO PROTECT YOURSELF
Hot surfaces – nozzle up to 300 °C, bed up to 100 °C	Do not touch the toolhead or bed during printing and for 15 min afterwards. Change the nozzle only with gloves.
Moving parts – XY gantry, Z axis, belt (Belt)	Keep the chamber door closed during operation; keep hands, hair and clothing away from the mechanism. E-STOP held for 1 s stops all motion.
230 V mains voltage	Earthed socket only, B16 circuit. Do not open the electronics housing – work on the electronics is done by Revotech service with the power disconnected.
Fumes and particles (ABS, ASA, PA, PC)	Ventilated room; do not print these materials in living spaces without extraction.
Fire	Do not leave the machine unattended. Keep an extinguisher nearby. Revo OS switches heating off on anomalies.
Sharp tools (scraper, pliers)	Remove prints pushing away from yourself, on a cold bed.
Machine weight 50–70 kg	Carry with 2–4 people, holding the frame from below.

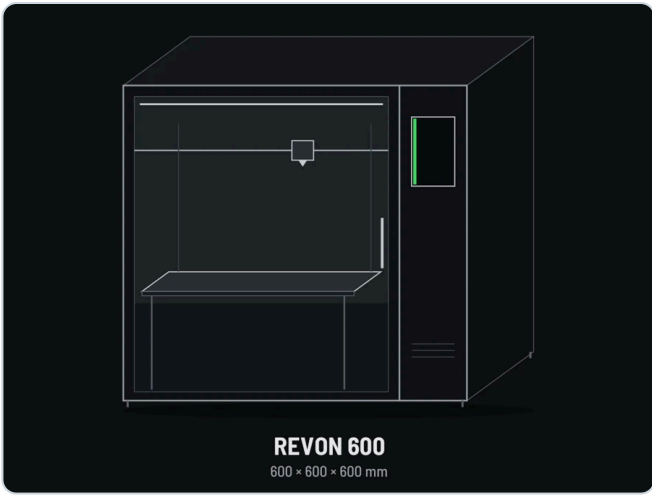
E-STOP – on the motion screen, during printing, on the lock screen and in Revo Panel. Hold for 1 second: motors and heating stop immediately. In danger, also switch off the main switch on the side of the housing.

B. MODELS AND TECHNICAL DATA

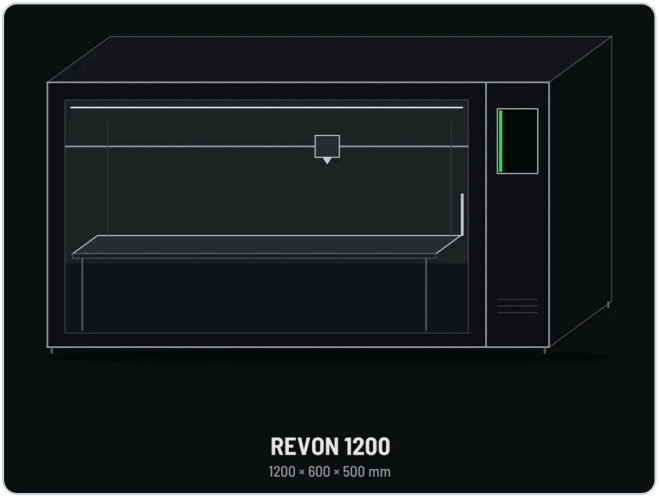
All Revon printers share one configuration – they differ only in size.



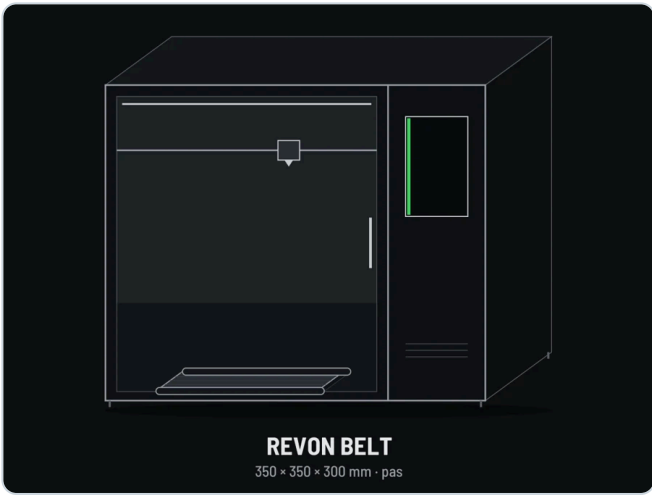
Revon 600 · 600×600×400



Revon 600 Z600 · 600×600×600



Revon 1200 · 1200×600×500



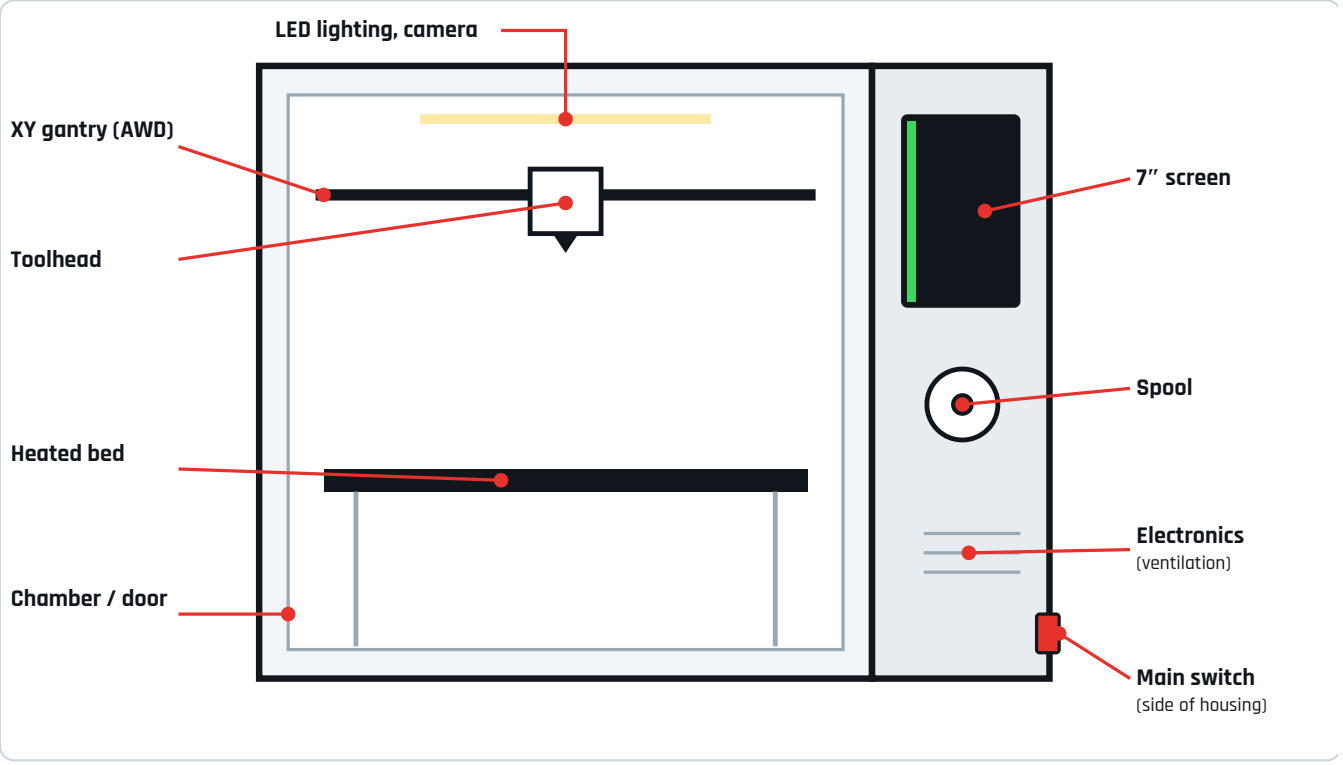
Revon Belt · 350×350×300

MODEL	BUILD VOLUME (MM)	EXTERNÁL DIMENSIONS (MM)	WEIGHT
Revon 600	600 × 600 × 400	1260 × 860 × 1100	50 kg
Revon 600 Z600	600 × 600 × 600	1260 × 860 × 1300	55 kg
Revon 1200	1200 × 600 × 500	1860 × 860 × 1100	70 kg
Revon Belt	350 × 350 × 300 (Y = belt)	on request	on request

PARAMETER	VALUE
Technology	FFF / FDM, 1.75 mm filament on spool
Motion system	MGN9 and MGN12 rails, GT2 9 mm belts, XY AWD drive (4 motors)
Electronics	BTT Kraken, 24 V + 48 V supply; toolhead with BTT electronics
Extruder and hotend	Single Orbiter-type geared extruder, reinforced for CF and GF; High Flow hotend
Nozzles	0.4 mm standard; 0.6 / 0.8 / 1.0 / 1.2 mm optional
Layer / wall (0.4 nozzle)	0.09–0.39 mm / min. 0.45 mm

PARAMETER	VALUE
Max. temperatures	Nozzle 300 °C, bed 100 °C, chamber 60 °C (0.6 kW heating)
Speed / acceleration	Up to 350 mm/s printing, 500 mm/s travel, 5000 mm/s²; input shaper calibrated at commissioning
Control	Revo OS (Klipper / Kalico), 7″ touchscreen, Revo Panel, camera, Ethernet, Wi-Fi
Power	230 V ~ 50/60 Hz, 13 A, max. 2.4 kW, IEC C14 inlet, B16 breaker
Ambient	Operation 20–30 °C; storage 5–35 °C

C. MACHINE OVERVIEW



Revon overview – front view (schematic; spool holder and main switch are actually on the side).

ASSEMBLY	DESCRIPTION
Frame and enclosure	Aluminium profiles, aluminium-composite and polymer panels, thermally insulated chamber, glazed front door.
Side panel	7″ touchscreen with the dual-ventilated electronics bay below.
XY gantry	AWD drive (4 motors), MGN rails, GT2 9 mm belts.
Z axis and bed	Heated bed with a removable plate (smooth or textured), automatically levelled to the gantry. Belt: conveyor belt instead of a bed.
Toolhead	Orbiter-type geared extruder, High Flow hotend, hotend fan and radial part-cooling fan, probe.
Chamber	Active 0.6 kW heating, LED lighting, camera.
Spool	Spool holder and mechanical filament sensor.
Connections	IEC C14 power inlet, Ethernet; main switch on the side of the housing.

D. TRANSPORT AND INSTALLATION

Revotech installs and commissions the machine on site: positioning, machine test, vibration calibration and training. The customer prepares the location and power supply.

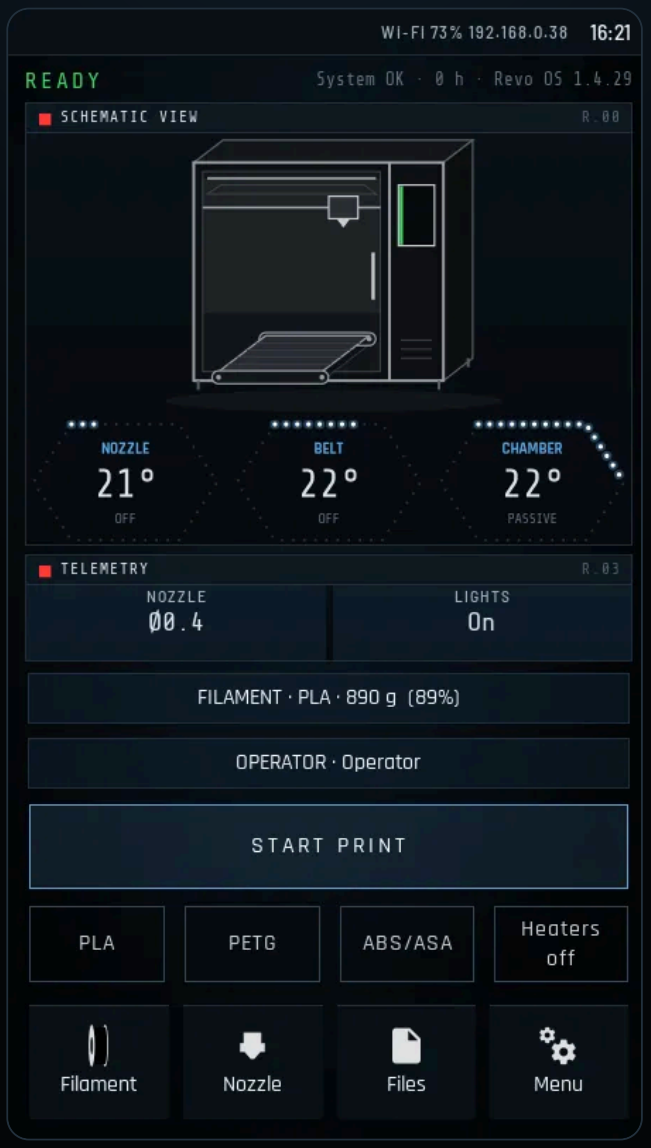
1. **Location** – a stable, level table or floor rated for at least 100 kg; about 30 cm free space at the back and side for electronics ventilation; the door must open fully.
2. **Power** – a dedicated earthed 230 V socket on a B16 circuit, no extension leads or splitters. The buyer is responsible for the electrical installation.
3. **Network** – an Ethernet socket (recommended) or Wi-Fi coverage.
4. **Carrying** – 2 people (Revon 600), 3–4 people (Revon 1200). Hold the frame from below, never by the door, screen panel or gantry. Do not tilt more than 15°.
5. **Transport** – only in the original packaging, with the toolhead locked and the spool removed. Run the machine test after every transport.
6. **Unpacking** – remove the transport locks of the toolhead and bed (colour-marked) and check that nothing moves loosely.

Switching on – main switch on the side of the housing; Revo OS starts in about 1 minute. **Switching off** – first ⏻ on the screen → *SHUT DOWN MACHINE*, wait 30 s, only then the main switch.

PART I

Basics

Revo OS, colours, windows and first start



■ 1. WHAT REVO OS IS

Revo OS is the control system of Revon printers. Underneath runs **Klipper** (the Kalico edition) – the software that drives the motors and heaters. On top of it Revotech built everything the operator touches:

- the **machine touchscreen** with the **OrionUI** look – status, temperatures, printing, filament, nozzle, machine test,
- **Revo Panel** – the same machine in a browser on a computer, tablet or phone, with camera, history and costs,
- the **Revo agent** – watches heater safety, counts filament and part wear, runs self-diagnostics and (with your consent) sends notifications to service,
- **Revo Library** – guides, a materials table, a glossary and test models, available straight from the screen.

You prepare print files in **Orca Slicer** – with your own profiles or the ready-made Revotech profiles. The machine prints only files from [r]evo Slicer and Orca Slicer.

■ 2. SAFETY

- **E-STOP** (emergency stop) – on the motion screen, during printing, on the lock screen and in Revo Panel. Hold it for 1 second: the machine stops motors and heating immediately. Afterwards restart it with the button on the screen or by cycling the power.
- The nozzle heats up to 300°C, the bed/belt up to 100°C. Do not touch the toolhead or the bed during and right after printing.
- Keep the chamber door closed while printing. With ABS and ASA, ventilate the room. With PLA and PETG the machine tells you when to open the door (chapter 10).
- Do not leave the machine unattended during the first print with a new material. Revo OS watches heating (an alarm when the bed heats by itself or overheats) and the chamber temperature.
- Work inside the electronics is done only by Revotech service, with the power disconnected.

■ 3. HOW TO READ THE SCREEN

Colours

COLOUR	MEANING
green	*READY* – the machine is ready, everything is fine.
orange	*HEATING*, calibration, warning – wait or check the message.
red	*ERROR*, alarm, E-STOP – read the message; if in doubt, call service.
blue	active or selected button, progress, heating in the hexagons.

Windows and hexagons

The screen is made of windows with a title bar (a red square ■ and a name, e.g. *SCHEMATIC VIEW* – the machine drawing, *TELEMETRY* – readings). Temperatures are shown as hexagons made of dots: the more dots light up,

the closer the target temperature. The vertical bar on the left edge has the colour of the machine state – visible from across the room.

Bottom bar

Every screen has at the bottom: ⟲ (*back*), ▦ (*home screen*) and ⏻ (*power* – shut down or restart, confirmed with a second tap). Buttons that change something in the machine usually need a second tap too.

■ 4. FIRST START

The first start takes about fifteen minutes (plus about 20 minutes for the machine test).

1. **Wizard** – on first start the screen guides you step by step (*STEP 1 / 5*): *WELCOME*, network, consents, installed nozzle and machine test. *LET'S START* begins, *NEXT* moves on.
2. **Network** – a LAN cable is the most reliable. Set up Wi-Fi in *Menu* → *More* → *Network*: pick the network from the list and enter the password. The machine IP address is shown on the top bar of the screen.
3. **License** – you get the license number (`REVO-XXXX-…`) from Revotech with the machine. Enter it once in *Menu* → *More* → *License* and tap *ACTIVATE*. It works without internet too.
4. **Consents** – the machine asks whether to send error notifications to Revotech (recommended – help comes faster) and work statistics. Machine state and working hours are always sent. Change consents in Revo Panel → *Service*.
5. **Nozzle** – select the installed nozzle: *DIAMETER* and material (*Brass*, *Hardened steel*, *Tungsten*).
6. **Manager account in Revo Panel** – on the screen open *Menu* → *More* → *Operator*: a 6-digit code valid for 10 minutes appears. In the browser enter the machine address (e.g. `http://192.168.0.38`), choose *CODE FROM SCREEN*, enter the code and create the manager account (name, login, 4–8 digit PIN).
7. **Machine test** – finally run the full test (chapter 16). We do it at handover and after every transport.

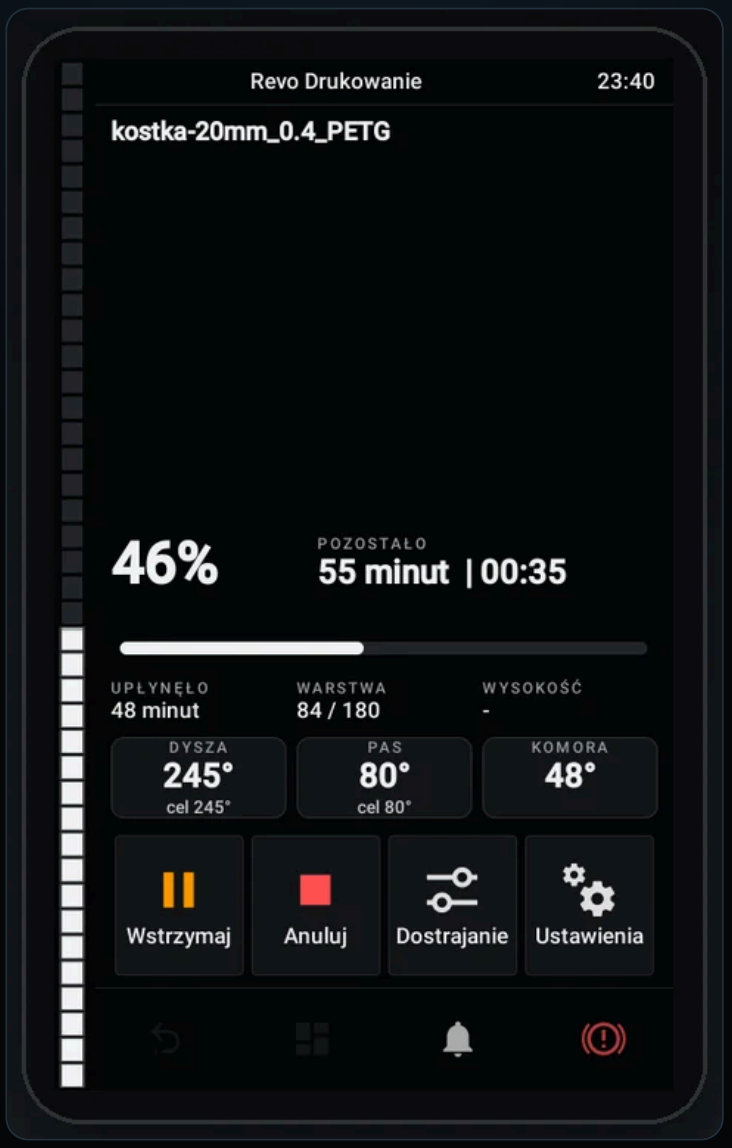
Panel on phone – *Menu* → *More* → *Panel on phone* shows a QR code. Scan it with a phone on the same network and Revo Panel opens.

II

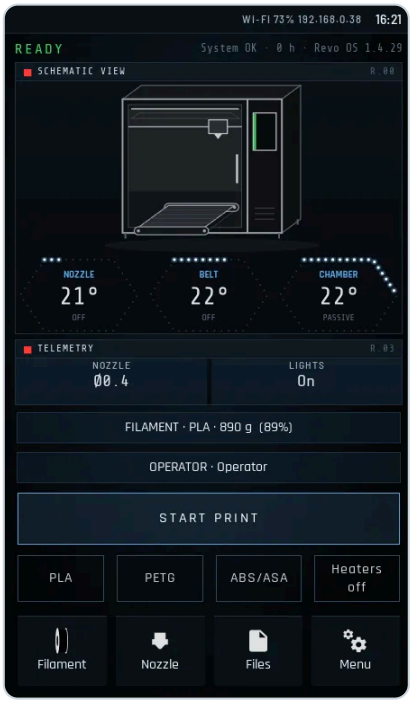
PART II

Daily work

Screen, filament, nozzle, files and printing



5. HOME SCREEN



Home screen – state, machine schematic, temperatures, spool, print start.



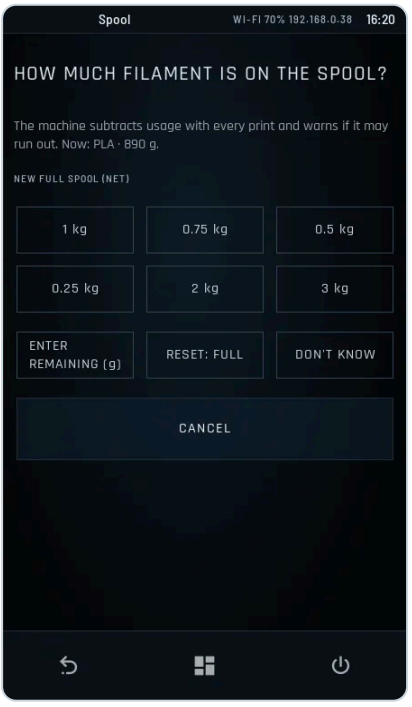
Temperatures – tap a hexagon, pick a preset or set a target.

- **Top bar**: state (*READY*, *PRINTING*, *PAUSED*…), connection (LAN / Wi-Fi with signal strength and IP address), clock. Below it "System OK", working hours (h) and the Revo OS version.
- **SCHEMATIC VIEW** – a drawing of the machine with three hexagons below: *NOZZLE*, *BELT/BED* and *CHAMBER*. *SET 215°* is the target temperature, *OFF* – heating off, *PASSIVE* – chamber without a heater. Tap the nozzle or belt/bed to set the temperature.
- **TELEMETRY** – diameter of the installed nozzle (e.g. Ø0.4) and *LIGHTS On/Off* (tap to toggle).
- **FILAMENT** – material and how much is left on the spool (grams, %). Tap to set a new spool.
- **OPERATOR** – who is working on the machine.
- **START PRINT** – the file list.
- **PLA / PETG / ABS/ASA** – heat the nozzle and belt/bed with one tap; **Heaters off**.
- **Bottom menu**: *Filament*, *Nozzle*, *Files*, *Menu*.
- **Message bars**: *SERVICE DUE*, a running test, the red remote service bar.
- **Screensaver** – after 5 minutes of inactivity: a large clock, machine state, a dimmed schematic and temperatures. *TOUCH TO WAKE* – tap anywhere to return.
- **Messages** appear as a bubble at the top of the screen and disappear by themselves.

6. FILAMENT AND SPOOL



Filament – load, unload, extrude.



Spool – new spool or remaining amount.

Step-by-step filament change

The easiest way: *Filament* → *FILAMENT CHANGE – STEP BY STEP*. The machine guides you through choosing the material, heating, unloading the old filament, loading the new one and setting the spool.

Load manually

1. Heat the nozzle – a material preset or the temperature in the *NOZZLE TEMPERATURE* tile. The nozzle must be at least 180°C.
2. Cut the filament end at an angle. A blunt, squashed end often does not enter the extruder.
3. Push the filament into the toolhead until you feel the gears, then tap *LOAD FILAMENT*. The machine feeds 100 mm and purges the nozzle.
4. An even strand in the new colour should come out of the nozzle. Remove the excess with pliers – do not touch the nozzle.

Unload

UNLOAD FILAMENT: the machine heats the nozzle, pushes out a little material and retracts the filament. Pull it out gently and secure the spool end.

Extrusion

EXTRUDE feeds filament at the selected flow (*FLOW*, in mm³/s) for the selected time (*TIME*). Values above the nozzle capacity (*nozzle limit*) are blocked. *RETRACT 5 mm* pulls the filament back.

Spool

The machine subtracts usage after every print and warns before the start if filament may run out. After mounting a new spool choose its weight (*NEW FULL SPOOL* – 1 kg, 0.75 kg…) or *ENTER REMAINING (g)*.

When something goes wrong

- **Filament does not go in** – check that the end is cut at an angle and has no bulge.
- **Nothing comes out of the nozzle** – wait until the nozzle reaches temperature. If still nothing, run the machine test and report the result.
- **The extruder clicks** – temperature too low or a clogged nozzle. Do not force it.

NFC spool tags (being rolled out) – we are preparing our own NFC stickers and clips that attach to the edge of any spool from any manufacturer. Holding the spool to the machine will set the material and spool status, and Revo OS will keep a filament inventory from it.

■ 7. NOZZLE

Extruder and hotend

Every Revon has the same toolhead set:

- **LDO Orbiter 2.5 extruder** – a light geared direct-drive extruder for 1.75 mm filament. It grips and retracts precisely, including flexible filament (TPU). Leave the factory settings (`rotation_distance` 4.637) unchanged.
- **DropEffect neXtG UHF hotend** (in the slicer: *Standard*) – an extended melt zone for fast printing, ceramic heater, 104NT thermistor. V6-system nozzles, changed with a 7 mm wrench. Maximum operating temperature: **300 °C**.

How much plastic per second each nozzle passes (the limit for *EXTRUDE* on the screen and in the Panel):

NOZZLE	MAX. FLOW
0.4 mm	25 mm³/s
0.6 mm	35 mm³/s
0.8 / 1.0 / 1.2 mm	45 mm³/s

Which nozzle for what

NOZZLE	USE
Brass	PLA, PETG, ABS, ASA, TPU without additives. Best heat conduction, wears fastest.
Hardened steel	Fibre-filled materials: CF (carbon), GF (glass), glow-in-the-dark, metal-filled.
Tungsten	Abrasive materials at high volumes; durable and conducts heat well.

Diameter: **0.4** for most parts, **0.6–0.8** for large, strong parts and fast printing, **0.25** for fine detail. Print fibre-filled materials with at least 0.4, preferably 0.6.

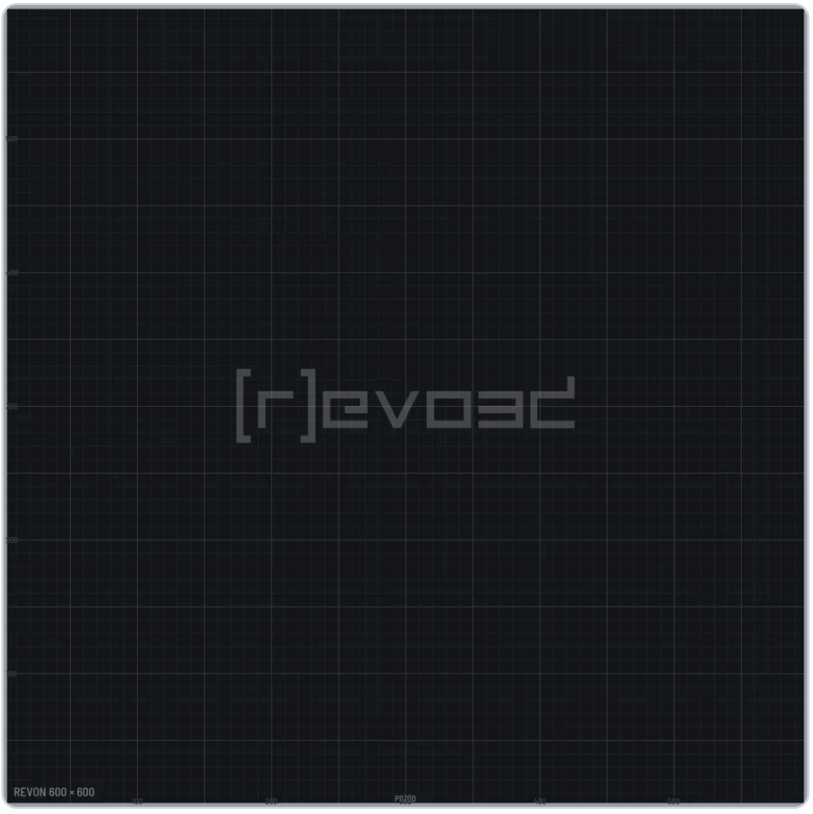
Set the installed nozzle

Bottom menu *Nozzle* → *INSTALLED NOZZLE*: diameter and material → *Save*. Before every print the machine compares it with the nozzle stored in the file and asks if they differ.

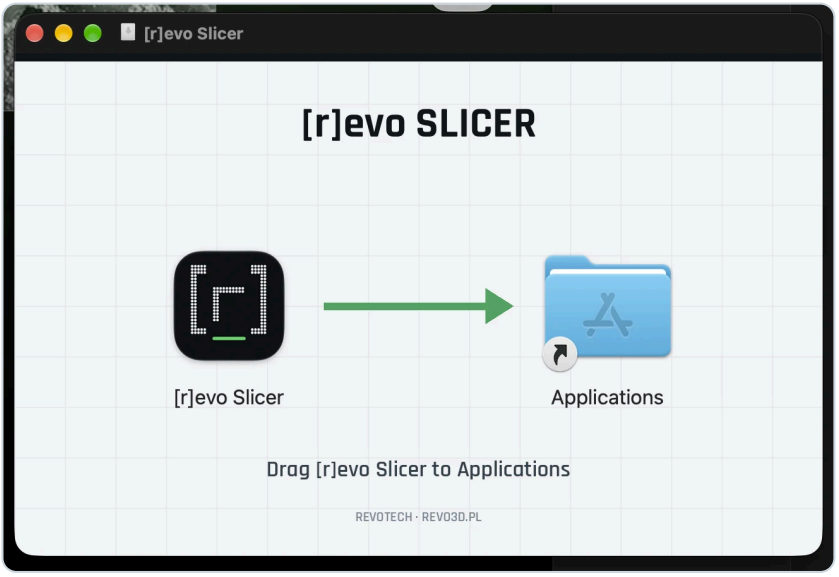
Nozzle change

Replace nozzle (in the nozzle window) or *Menu → More → Nozzle change* starts a guided change in 6 steps: choose the new nozzle, unload filament, heat to 250°C, unscrew the old one, screw in the new one and save. The nozzle is changed hot, with gloves, using a 7 mm wrench. The nozzle wear counter resets after Revotech approves it. If you are not experienced with this, call service.

8. PREPARING FILES – [R]EVO SLICER



Revon bed in [r]evo Slicer – model and logo built in.



Installing on macOS – drag [r]evo Slicer onto the Applications folder.

Prepare print files in **[r]evo Slicer** – the Revotech slicer built on Orca Slicer and made only for Revon printers. Download it for Windows or macOS from the Software section.

1. **Installation** – the installers are not yet signed by Apple and Microsoft, so the system shows a warning on first launch.
   macOS: open the .dmg file and drag [r]evo Slicer onto the Applications folder (picture), then right-click the app → *Open* → *Open*.
   Windows: in the blue window "Windows protected your PC" click *More info* → *Run anyway*.
2. **First launch** – no account or sign-in. Revon printers, nozzles 0.4–1.2 mm, Standard and High Flow hotends, smooth and textured plates and Revotech filaments are built in. Choose your machine and nozzle in the wizard.
3. **Filaments** – 358 filament profiles from 40 manufacturers are built in (list: revo3d.pl/filamenty). Profiles made from the manufacturer's documentation need tuning to your spool; profiles marked "✓ Revotech" were calibrated by us on a Revon.
4. **Connecting to the machine** – click *Connect to printer*. The slicer finds the Revon printers in your local network and shows a thumbnail, serial number, state, IP and nozzle; with several machines, pick yours from the list. Click *Connect* – no login needed: the slicer gets the access key and sets the machine profile with the fitted nozzle. Enter the manager's login and PIN only if the manager turned on the login requirement (Revo Panel → *SLICER LINK*).
5. **Sending** – the *Print* button uploads the file to the machine (and can start printing straight away). The *Device* tab shows Revo Panel.
6. The profiles' start G-code contains the nozzle check and PRINT_START – do not remove these lines.

Orca Slicer instead – close Orca and install the Revotech profiles once (Revo Sync):
Windows (PowerShell): `irm https://revo3d.pl/orca/revo-sync.ps1 | iex`
macOS (Terminal): `curl -fsSL https://revo3d.pl/orca/revo-sync.sh | bash`
Then a manager copies the connect command from Revo Panel → *Service* → *SHOW CONNECT COMMANDS* and runs it on the computer.

The machine accepts files only from [r]evo Slicer and Orca Slicer. Files from other slicers are removed right after upload – the screen shows *File from another slicer removed*.



File list – thumbnail, time, material.



Live print – camera, progress, time, temperatures.

Start

1. Send the file from Orca or upload it in Revo Panel (drag the file onto the *Files* tab).
2. On the screen: *START PRINT* → choose the file (thumbnail, time, material, filament needed) → *Print*. You can enable *timelapse* and – on the Belt – the number of copies (series).
3. Before printing the machine checks the **nozzle** (installed versus file – if they differ it asks: *Print* prints anyway, *Cancel* cancels) and the **filament on the spool**.
4. PRINT_START: bed heating, gantry leveling, bed mesh, nozzle heating – then printing.

During printing

- Progress, time left (*REMAINING*) and finish time, time since start (*ELAPSED*), *LAYER*, temperatures.
- Camera view on the screen and in Revo Panel.
- *Pause / Resume*, *Cancel* (with confirmation), *Fine Tuning* (speed, flow, Z).
- After the first layer the camera takes a photo (visible in Revo Panel). On a sudden image change (e.g. a detached print) the machine warns: *Camera: sudden image change*.

After printing

- **Belt**: hold *EJECT (hold)* and the belt pushes the print out the front. In a series the belt ejects each copy by itself.
- **Rigid bed**: remove the print; with a print queue confirm *BED CLEAR – PRINT NEXT*.
- History, time, filament and cost – Revo Panel → *History*.

Power loss – the machine does not resume a print after a power cut. The available print-recovery systems do not meet our expectations: during a longer break the nozzle, bed and chamber cool down and the part detaches or cracks. The recommended solution is an **external UPS of adequate power** – an online (double-conversion) UPS is a good direction, power estimated from the UPS manufacturer's guidance (roughly 6 kVA). This is a

suggestion, not a guarantee: Revotech is not liable for the effects of a power outage. Our own backup module is in preparation.

10. Materials and the chamber door

Values are indicative. The Orca profiles for your machine are binding.

Material	Nozzle °C	Bed °C	Chamber / door	Nozzle	Drying
PLA	200–220	55–65	door open	brass	45–50°C, 4–6 h, when damp
PETG	230–250	70–85	ajar for long prints	brass	60–65°C, 4–6 h
ABS / ASA	240–265	95–110	closed, warm	brass	70–80°C, 4 h
TPU	220–240	40–60	door open	brass, slow	50–55°C, 6 h
PA (nylon)	260–290	80–100	closed, warm	steel / tungsten	70–80°C, 8–12 h, always
PA-CF / PA-GF	270–300	80–100	closed, warm	hardened steel / tungsten	80°C, 8–12 h, always
PC	270–300	90–100	closed, warm	steel / tungsten	80°C, 8 h

Why the door matters

- **PLA, TPU** – above about 40°C in the chamber PLA softens in the cold zone of the toolhead and clogs the nozzle. The machine reminds you at the start: “Printing PLA – we recommend an open door”.
- **PETG** – tolerates more heat, but above about 50°C the risk of clogging grows.
- **ABS, ASA, PA, PC** – a warm, closed chamber limits shrinkage and layer cracking.
- *Chamber too hot* – above 70°C with any material. Printing continues and the event goes into the service report. The machine does not stop a print because of the chamber – the decision is yours.

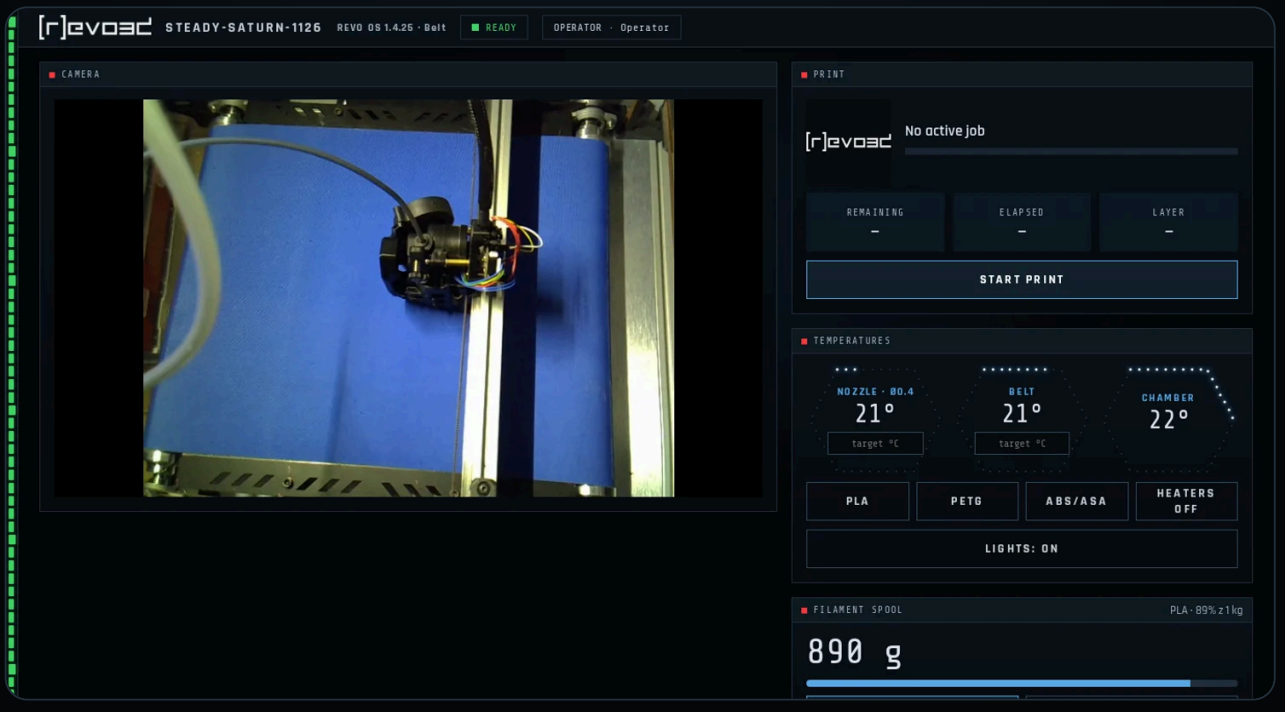
Fibre-filled composites wear the nozzle and extruder several times faster – the machine counts their wear separately. Nylon and PC absorb moisture within hours – print from a dryer.

III

PART III

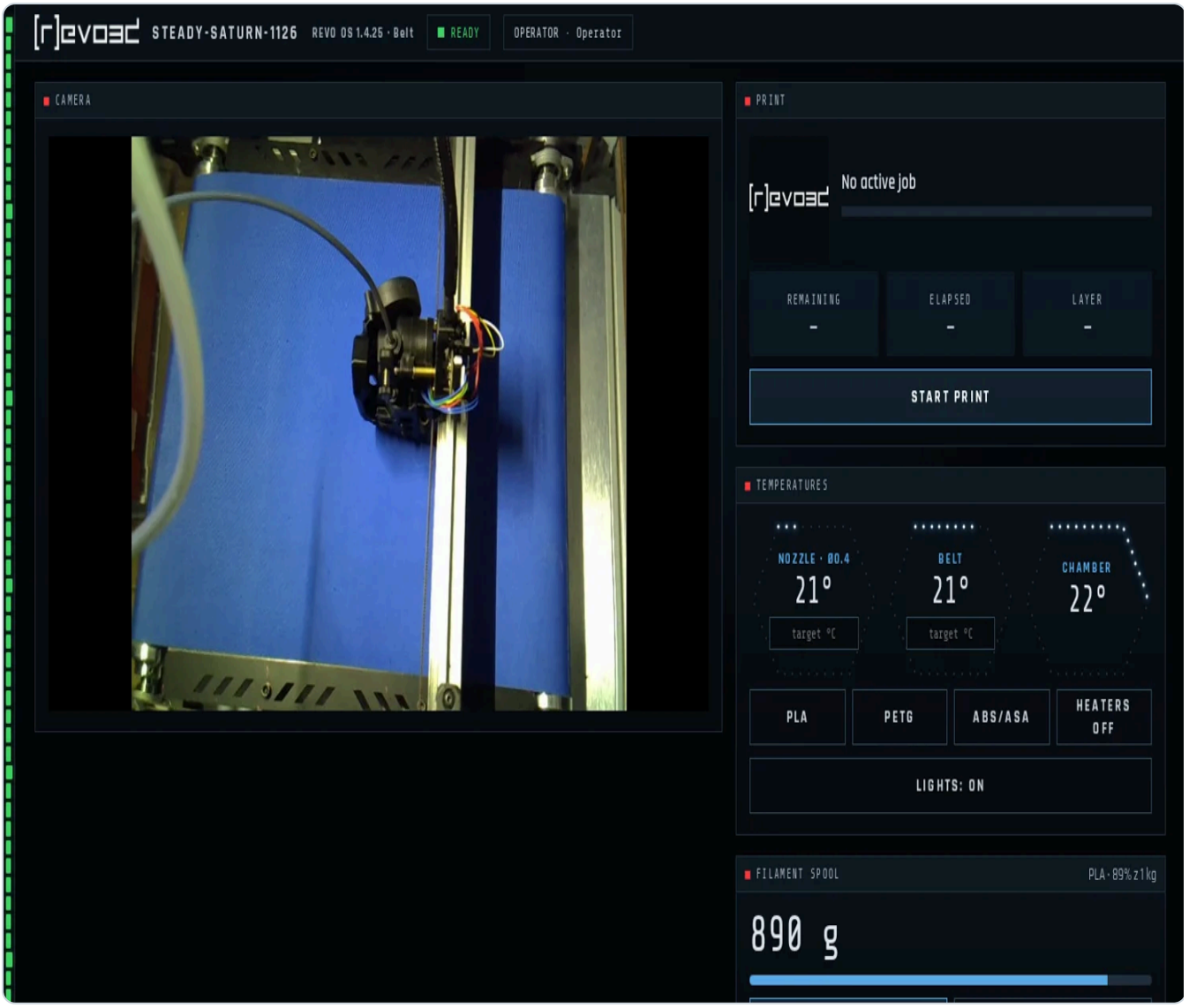
Revo Panel and your team

Revo Panel, operators and costs



11. REVO PANEL IN THE BROWSER

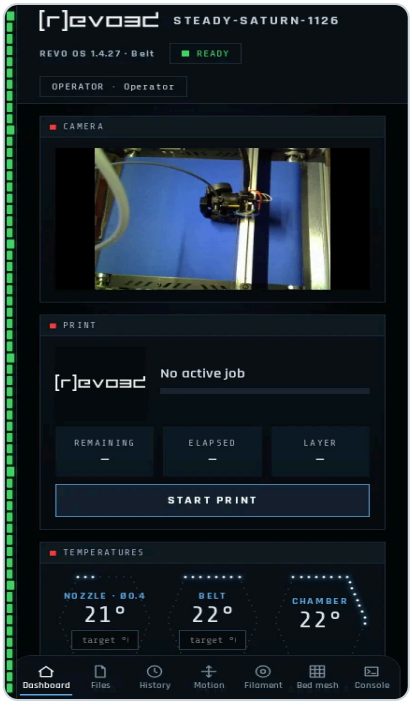
Enter the machine address in a browser (e.g. `http://192.168.0.38/` – the address is shown on the screen next to the clock) or scan the QR code. It works on a computer, tablet and phone on the same network. Sign-in is required (*SIGN IN*): operator + PIN, the shared *Operator* account without a PIN, "Revotech service" or the code from the screen (first sign-in).



Revo Panel – Dashboard tab.

TAB	CONTENTS
Dashboard	Camera, state, progress, temperature hexagons, presets, spool, working hours, recent messages.
Files	Files with thumbnails, upload (drag onto the page), start, delete, print queue.
History	12-month statistics, print cost, history with *PRINT AGAIN*, timelapses, camera photos.
Motion	Homing, axes, belt (Belt), E-STOP.
Filament	Loading, extrusion in mm³/s, nozzle.

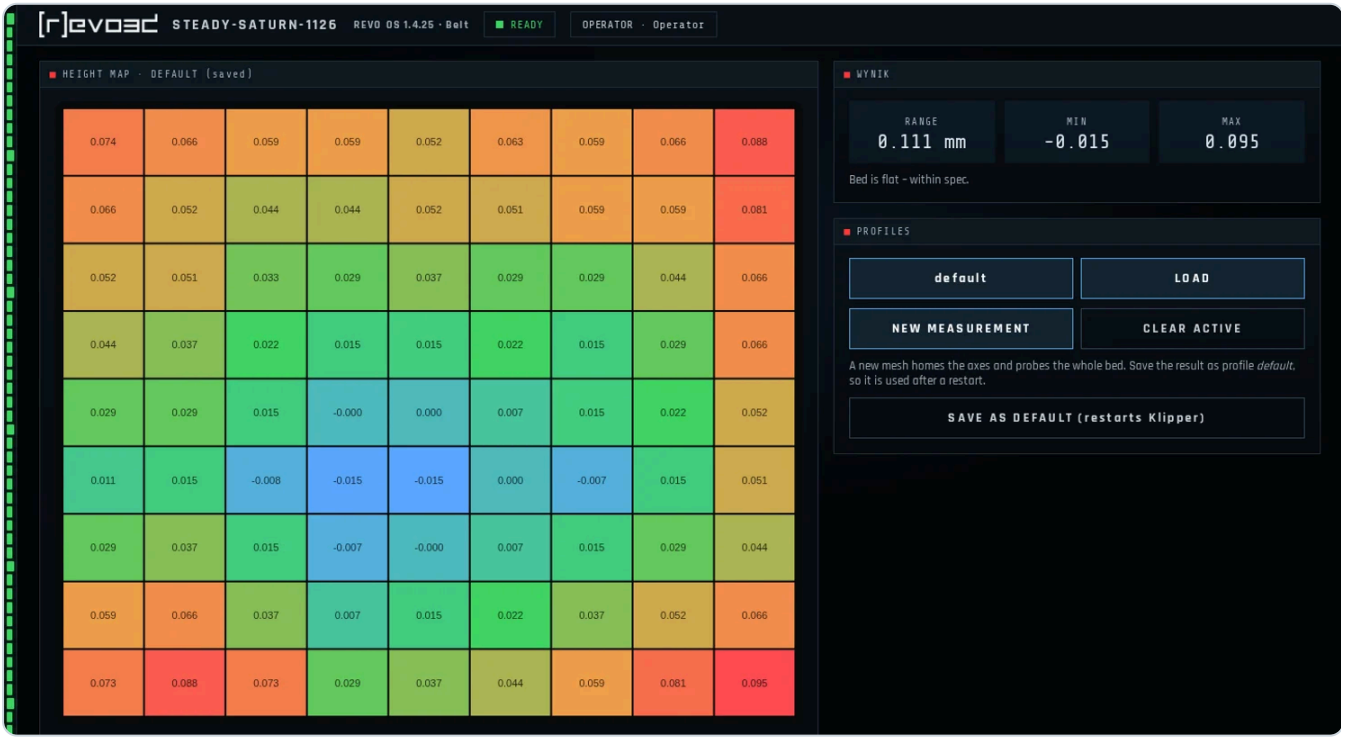
TAB	CONTENTS
Bed mesh	Colour flatness map, new measurement, profiles.
Console	Machine commands as buttons and Klipper replies (advanced).
Library	Revo Library, including the glossary.
Service	Contact and *REPORT ISSUE*, consents, maintenance, machine test, Orca connect commands, operators, license, SYSTEM (versions, self-diagnostics).



Revo Panel on a phone.



QR code for the Panel on the machine screen.



Bed mesh in Revo Panel – colours show flatness deviation.

The administrator panel (Mainsail) runs on port 8088 and is intended for Revotech service.

Settings backup

In the Revo Panel, the *Service* tab has a *BACKUP* tile. Only the manager and service can see it.

- **DOWNLOAD BACKUP** – saves one file `revon-<ID>-YYYYMMDD.tar.gz` on your computer: calibrations (bed mesh, input shaper, MPC), machine settings, part counters, operators, costs and spool status. Download a backup after the machine is handed over and after every calibration.
- **RESTORE…** – choose a backup file. The Panel shows which machine it comes from and when it was made, and asks you to confirm. Before restoring, the machine saves a copy of its current state. Then Klipper restarts and everyone signs in again. You can restore only when the machine is not printing.

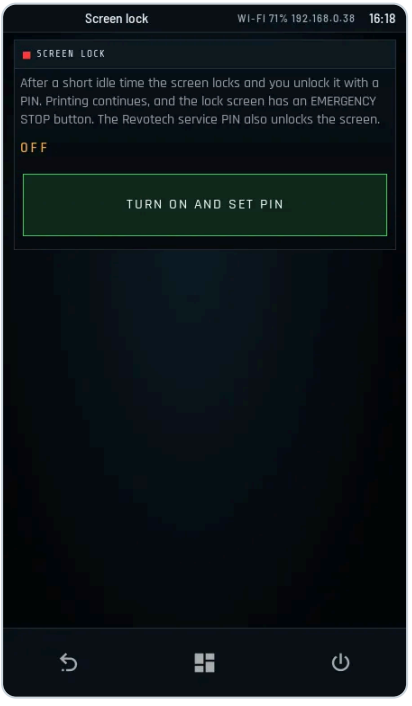
A backup never changes the license, the machine ID or the Revo OS macros – those come with updates.

Backup on the Revotech server: the machine sends changed configuration files to Revotech by itself. After an SD card or Raspberry Pi replacement, Revotech service restores them remotely, also from an old machine to a new one. Counters and operators can be restored only from a file downloaded in the Panel.

12. OPERATORS AND ACCESS



Operator sign-in and first-access code.



Screen lock with a PIN.

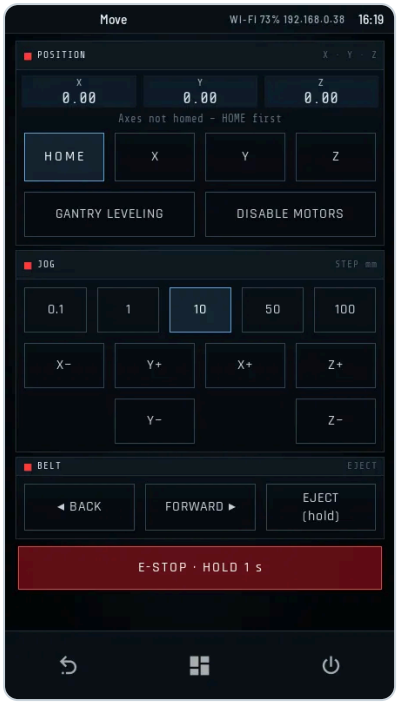
- The **manager** (*MANAGER*) adds and removes operators, resets PINs and sees the Orca API key. An **operator** runs the machine and prints.
- **Two ways of working**: named operators (the manager adds them in Revo Panel → *Service*: name, login, PIN) – the history shows the actual person; or the shared **Operator** account without a PIN – for companies that do not want to create accounts.
- Signing in on the screen: *Menu* → *More* → *Operator* → choose yourself → PIN. In the browser: login + PIN. A browser session lasts up to 12 h. After 5 wrong attempts – a 15-minute lockout.

- **Forgotten PIN**: the manager clicks *RESET PIN* next to the operator. The manager's PIN is reset remotely by Revotech service. After a reset the PIN is **0000**, and a new one must be set at the first sign-in.
- Without signing in nobody on the network can control the machine, download files or see the camera. Orca sends files only with the API key.
- **Screen lock** – optional: *Menu → More → Screen lock → TURN ON AND SET PIN*. The screen locks after inactivity, printing continues and E-STOP always works.

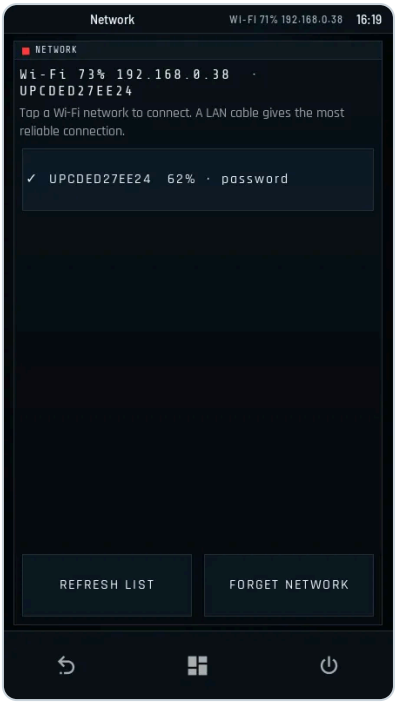
13. PRINT COST

Revo OS estimates the cost of every print: *filament* (usage × price per kg) + *electricity* (measured heater work + electronics × price per kWh). Set prices in Revo Panel → *History* → *CHANGE POWER AND FILAMENT PRICES*. You see the last print, the 30-day total and a list of prints with the operator.

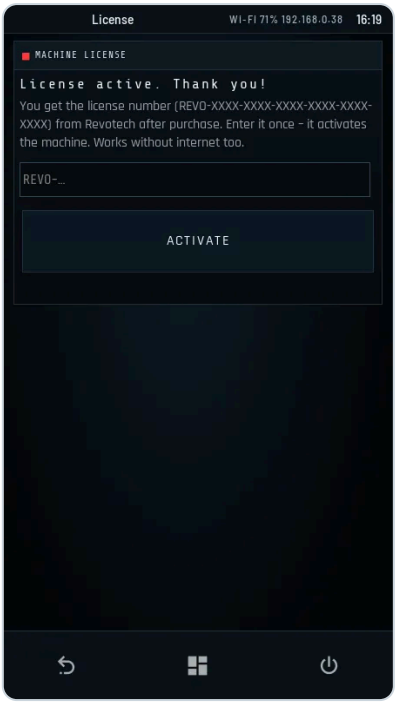
14. MENU → MORE



Move – axis motion and E-STOP.



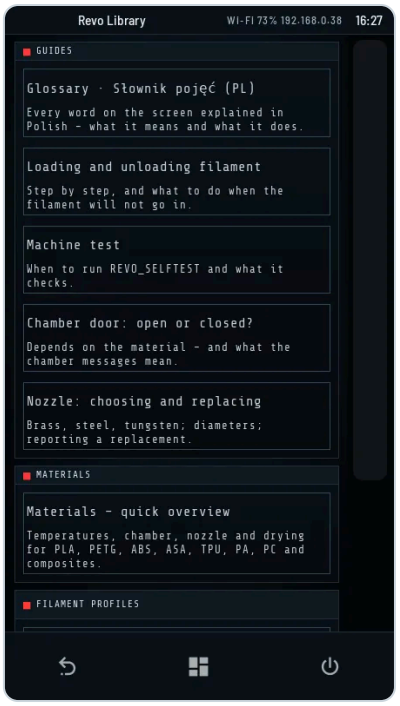
Network – LAN and Wi-Fi.



License – licence number.



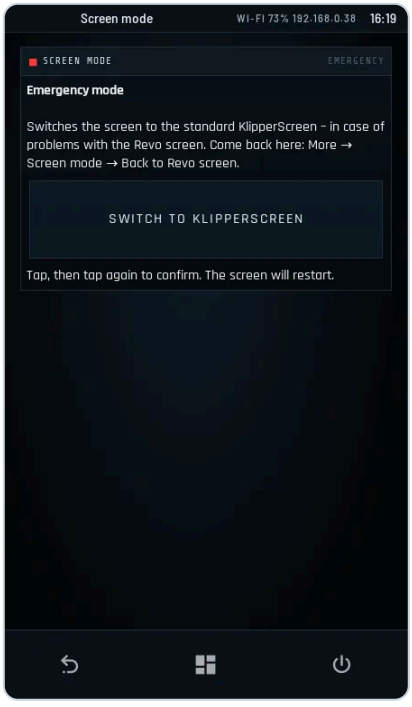
About system – versions and self-diagnostics.



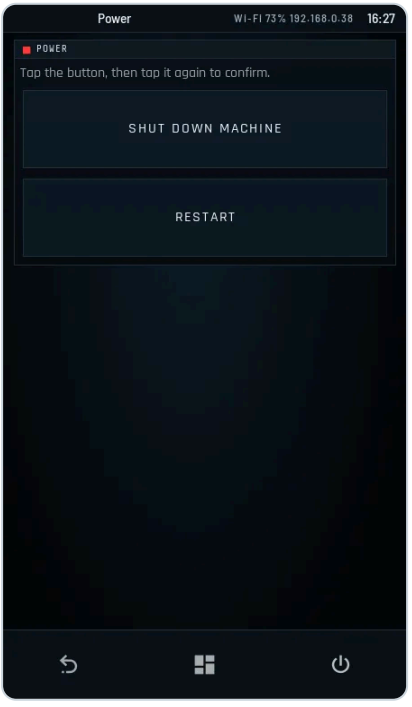
Revo Library – guides and glossary.



Report a problem – service request.



Screen mode – emergency screen.



Power – shut down and restart.

ON THE SCREEN	PURPOSE
Move	Homing (*HOME*), moving axes with the chosen step, belt (Belt), E-STOP.
Temperature	Temperatures and material presets.
Report a problem	A service request (type, description, phone) – with the last error, log and camera photo.
Revo Library	Glossary, guides, materials, profiles, test models.
Service mode	For Revotech service (service PIN). Every entry is reported.
About system	Component versions, machine ID, network address, self-diagnostics result.
Panel on phone	QR code with the Revo Panel address.
Nozzle change	Guided nozzle change.

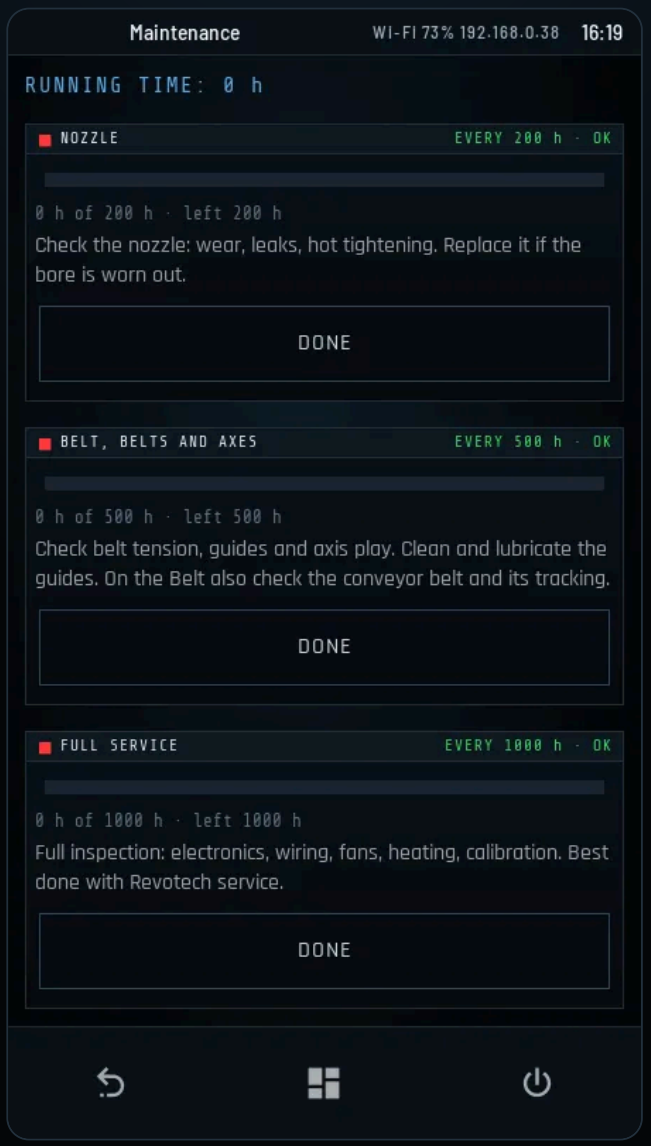
ON THE SCREEN	PURPOSE
Operator	Sign in and *SIGN OUT*, code for the first browser sign-in.
Screen lock	PIN lock after inactivity.
Maintenance	Maintenance due dates, confirming completion (*DONE*).
Machine test	Full test with step pictures.
Network	LAN / Wi-Fi with IP address, network list, password, *FORGET NETWORK*.
License	License number – entered once, works without internet.
Screen mode	Emergency switch to standard KlipperScreen and back – in case of screen problems.
⏻ (power)	*SHUT DOWN MACHINE* or *RESTART* – confirmed with a second tap, unavailable while printing. Wait 30 s before cutting the power.

IV

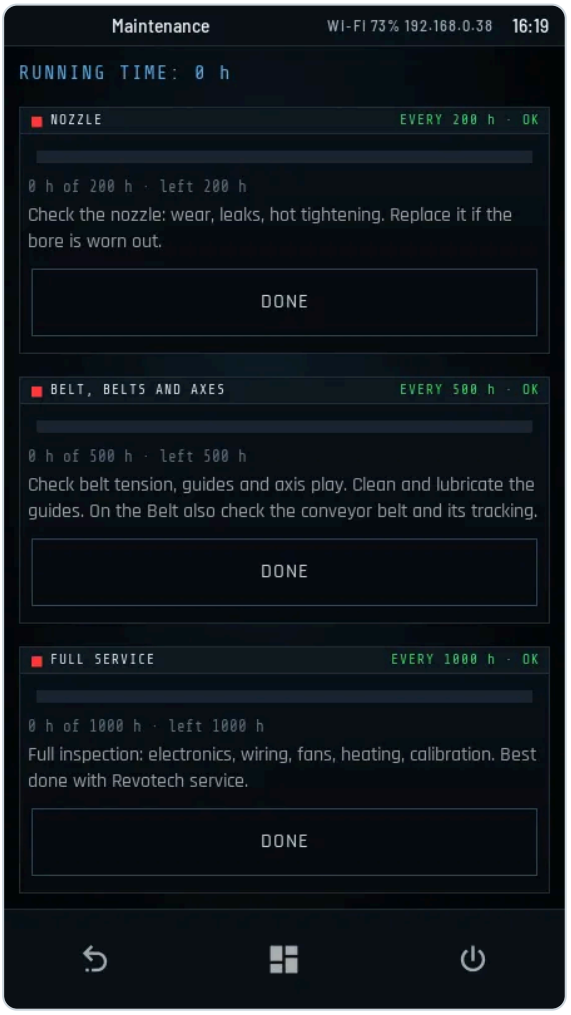
PART IV

Maintenance and service

Maintenance, machine test and updates



15. MAINTENANCE AND COUNTERS



Maintenance – due dates and DONE confirmation.

MAINTENANCE	EVERY	WHAT TO DO
Nozzle	200 h	Wear, leaks, hot tightening. Replace if the orifice is worn out.
Belt, belts and axes	500 h	Belt tension, rails, axis play; clean and lubricate the rails. On the Belt also the conveyor belt and its guidance.
Full service	1000 h	Electronics, cables, fans, heating, calibration – preferably with Revotech service.

The machine counts hours and reminds you about maintenance on the screen (*SERVICE DUE*), in Revo Panel and (with consent) by e-mail. When done, tap *DONE* in *Menu* → *More* → *Maintenance*. Parts have their own counters too: nozzle, extruder, belts, bearings, CAN board – after a replacement the counter resets once Revotech approves it.

16. MACHINE TEST AND SELF-DIAGNOSTICS

Full machine test

Menu → More → Machine test → START TEST. It takes 15–25 minutes. Run it after installation, after transport, after replacing parts and when prints suddenly go bad. Remove prints and load filament.

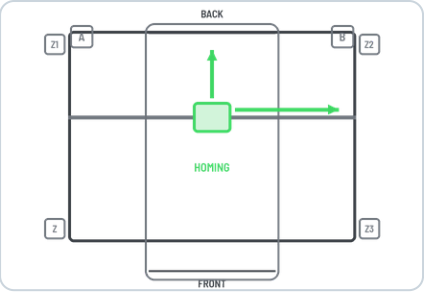
1. **Electronics link** – the mainboard and toolhead respond.
2. **Thermistors** – temperature readings are plausible.
3. **Motors** – each motor twitches 10 times; you confirm only that one moved.
4. **Belt drive** (Belt) – the belt moves and returns.
5. **Endstops / homing** – endstops and axis homing.
6. **Axis move** – each axis moves in the right direction by the right distance.
7. **Gantry leveling, probe repeatability**.
8. **Nozzle / bed heating** – nozzle to 200°C and belt/bed to 60°C.
9. **Fans, extrude, filament sensor, lights, touchscreen**.

You answer questions with *WORKS* or *PROBLEM*. For endstops, hold the endstop with a finger and tap *CHECK*. Heating can be skipped – *SKIP*: the step gets a yellow flag but does not fail the test. "Problem" is not a failure, just information for service. You can stop the test at any time (*ABORT*) – the machine turns heating off. The result goes to Revotech.

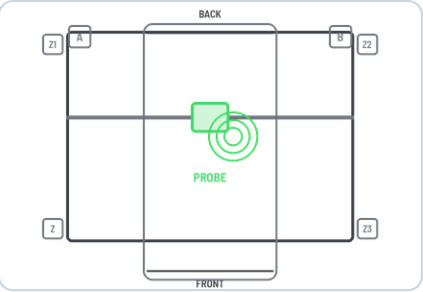


Machine test – progress and WORKS / PROBLEM answers.

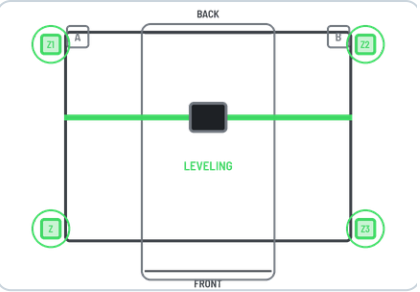
Each test step shows a drawing of what the machine checks. Examples:



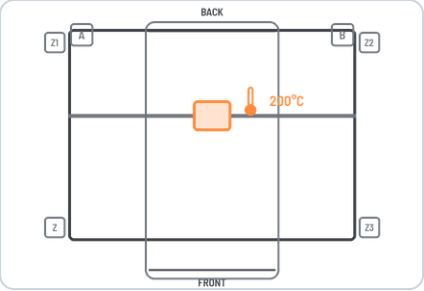
Homing X, Y, Z.



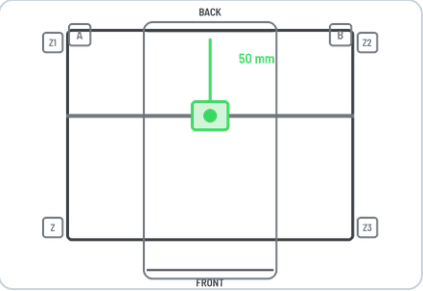
Probe repeatability.



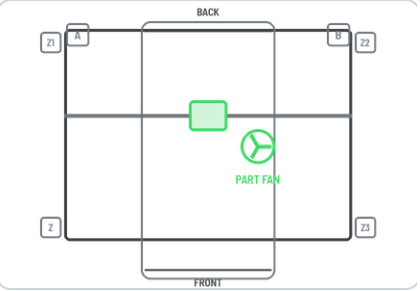
Gantry leveling (4 Z motors).



Nozzle heating to 200 °C.



Extruding 50 mm of filament.



Part cooling fan.

Daily self-diagnostics

Once a day, when the machine is not printing, Revo OS runs a short check without moving the axes: motor drivers, communication with the boards, temperature sensor noise, heating rate (compared with previous days), fans and the control computer. Result: *OK*, *ATTENTION* (plan a service) or *NEEDS SERVICE* (report a problem). It is shown in *About system* and in Revo Panel → *Service* → *SYSTEM*.

17. REMOTE SERVICE

Revotech service works remotely. When we need access, the screen shows the request *Revotech requests remote service* (camera and screen view plus service commands for 30 min). You answer *ALLOW* or *DECLINE* – without your consent we have no access. During the session a red bar is shown on the screen; tapping it ends the session immediately. Every command is digitally signed and written to the machine log.

18. UPDATES

Revo OS updates come only from Revotech servers – first to our test machines, then to customers. The machine installs them when it is not printing: the screen shows *Revo OS update …: The machine will be unavailable for about 2–5 min. Do not switch off the power*. Update commands are signed and verified. Version history: revo3d.pl/revo-os.

PART V

Advanced

Filament calibration and commands



19. FILAMENT CALIBRATION

Revotech filaments come with ready, tested settings. Calibrate your own filament in Orca Slicer (the *Calibration* menu). Start with dry filament and a suitable temperature, run the tests in this order and save each result in the filament profile.

1. **Temperature** – *Calibration → Temperature*: a temperature tower. Pick the segment with the best bridges, overhangs and surface, without strings.
2. **Flow rate** – *Pass 1*, optionally *Pass 2*. Pick the smoothest block. New flow = current × (100 + correction) / 100.
3. **Pressure advance** – line method (fast) or tower (more accurate). Pick the line with the most even width. Typical for direct drive: PLA 0.02–0.06, PETG 0.04–0.10, TPU 0.08–0.30. Each material has its own value.
4. **Retraction** – the smallest value at which strings disappear. If strings stay despite large retraction, dry the filament and lower the temperature by 5°C.
5. **Max flowrate** – read where the surface starts to break down and enter 10–20% less. The neXtG UHF hotend passes up to about 45 mm³/s (0.8–1.2 nozzles).

Input shaper (frame vibration) is set by Revotech service at handover – no need to repeat it. Want a ready profile for your material? We will set it up for you.

20. COMMANDS (G-CODE / MACROS)

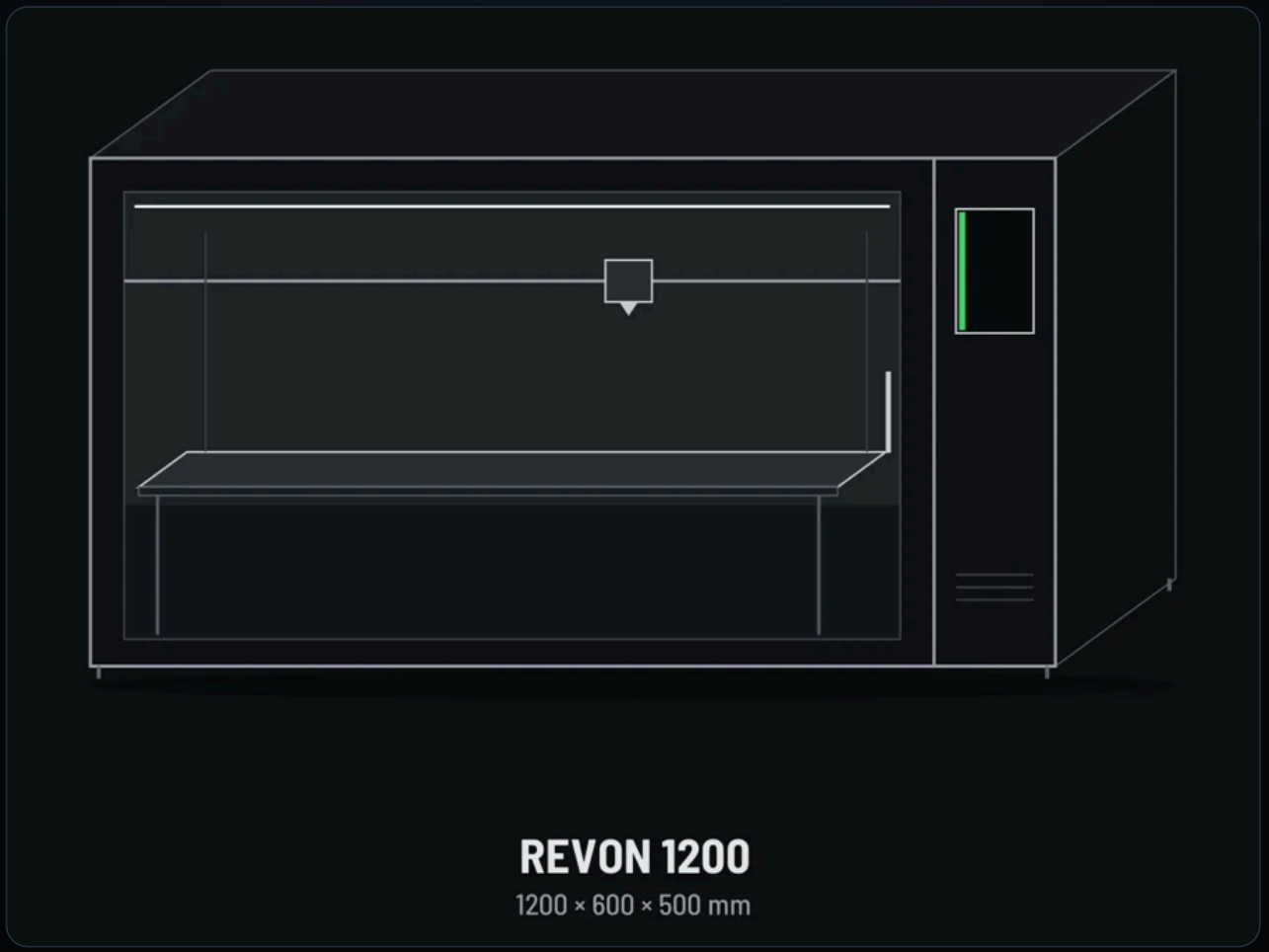
COMMAND	ACTION
`PRINT_START BED= EXTRUDER= CHAMBER= MATERIAL=`	Print preparation (heating, gantry leveling, bed mesh). Called from the Orca profile.
`PRINT_END`	End of print: retraction, heaters off, toolhead parked.
`REVO_CHECK_NOZZLE NOZZLE=0.4`	Nozzle check before printing (in the start G-code).
`REVO_SET_NOZZLE`	Stores the installed nozzle (the screen does this for you).
`LOAD_FILAMENT` / `UNLOAD_FILAMENT`	Load / unload filament (nozzle at least 180°C).
`REVO_SELFTEST`	Full machine test.
`REVO_SERIA_PRZERWA`	Between queued prints: the Belt ejects the print, a rigid bed waits for confirmation.
`CLEAR_BELT` / `CLEAR_BELT_200`	Belt: moves the belt by 100 / 500 mm.
`REVO_POZYCJA_SERWISOWA`	Toolhead to the nozzle change position.
`PAUSE` / `RESUME` / `CANCEL_PRINT`	Pause, resume, cancel the print.
`M600`	Filament change during a print (pause).
`G28` , `QUAD_GANTRY_LEVEL` , `BED_MESH_CALIBRATE`	Homing, gantry leveling, bed mesh.
`MPC_CALIBRATE HEATER=extruder`	Heater model calibration (service).
`SHAPER_CALIBRATE` , `PROBE_ACCURACY`	Input shaper, probe repeatability (service).

VI

PART VI

Hardware maintenance and warranty

Hardware maintenance and warranty



E. MAINTENANCE AND CONSUMABLES

WHAT	WHEN	WHO
Clean the build plate with isopropyl alcohol	before every print	operator
Vacuum filament debris from the chamber	weekly	operator
Nozzle – wear, leaks, hot tightening	every 200 h	operator
Belts, rails, axis play; clean and lubricate the rails	every 500 h	operator
Full service: electronics, cables, fans, heating, calibration	every 1000 h	Revotech
Mandatory warranty service (charged per price list)	every 6 months or 3000 h	Revotech

Consumables (not covered by the warranty, only from Revotech or agreed in writing): nozzles, belts, bearings, heaters, thermistors, moving cable harness, fans, build plates, conveyor belt (Belt).

F. WARRANTY, DISPOSAL, RATING PLATE

- **Warranty** – 12 months from handover; full terms in the warranty card (revo3d.pl/do-pobrania).
- **Rating plate** – model, serial number (Machine ID), year of manufacture, power supply, CE mark.
- **Disposal** – do not dispose of the machine with household waste (WEEE). Revotech takes back used machines for recycling.

VII

PART VII

Help

Messages, troubleshooting and contact



21. MESSAGES AND TROUBLESHOOTING

Every known message and problem has a **REVO-xxxx** code – you see it on the screen and in Revo Panel, and quoting it is enough when reporting to service. Full list with fixes: revo3d.pl/kody-bledow.

MESSAGE	WHAT TO DO
REVO-0101 File prepared for nozzle …	Install the nozzle from the file or slice the file for the installed nozzle. *Print* prints anyway, *Cancel* cancels.
REVO-0102 File from another slicer removed	Slice the file in [r]evo Slicer or Orca Slicer.
REVO-0201 Filament may run out	Prepare a new spool or set the correct spool level.
REVO-0301 Axes are not homed	Tap *HOME ALL*.
REVO-0202 Heat the nozzle to at least 180°C…	Loading and unloading need a hot nozzle – choose a material preset.
REVO-0501 Chamber door is open	Close the door and start the print again.
REVO-0502 Chamber too hot	Open the chamber door; keep it open for PLA and PETG.
REVO-0401 Bed heats by itself / Bed too hot	Switch the machine off with the main switch and call service.
REVO-0402 Bed not reaching temperature	Close the door; if it happens again – *Report a problem*.
REVO-0403 Heating error / Heater … not heating at expected rate	Check the heater and thermistor cables; *Report a problem*. Restart: ⏻ on the bottom bar.
REVO-0503 Camera: sudden image change	Check whether the print has detached or shifted.
REVO-0601 Self-diagnostics: worth checking	The result went to Revotech – we will contact you. You can send *Report a problem*.
REVO-0602 The PIN was reset	Sign in with PIN 0000 and set a new one.
REVO-0603 License locked / Trial – days left	Enter the license number in *Menu* → *More* → *License* or contact Revotech.
REVO-0604 The screen does not respond or looks wrong	*Menu* → *More* → *Screen mode* → *SWITCH TO KLIPPERSCREEN* (emergency screen), then call service.

Most common machine setup problems

PROBLEM	CAUSE	WHAT TO DO
REVO-0701 First layer too thin, transparent, the nozzle scratches the bed	nozzle too low (Z offset)	During the first layer use *Fine Tuning* → raise Z by 0.02–0.05 mm; save the value.
REVO-0702 First layer round "spaghetti", does not stick	nozzle too high or a dirty bed	Lower Z by 0.02–0.05 mm in *Fine Tuning*; clean the bed (no fingerprints).
REVO-0703 Good layer only on part of the bed	old bed mesh or a skewed gantry	Revo Panel → *Bed mesh* → *NEW MEASUREMENT*; *Move* → *GANTRY LEVELING*.

PROBLEM	CAUSE	WHAT TO DO
REVO-0704 Print corners lift (warping)	bed too cold or open chamber with ABS/ASA	Raise the bed temperature by 5–10°C, close the door for ABS/ASA/PA, use glue or a release agent.
REVO-0705 PETG tears pieces out of the plate	adhesion too strong	Glue stick as a separator, bed 70–75°C.
REVO-0706 Strings and "hairs" between features	damp filament, too hot	Dry the filament, lower the temperature by 5°C, check retraction.
REVO-0707 PLA clogs the nozzle mid-print	chamber too warm	Print PLA with the chamber door open.
REVO-0708 The machine asks about the nozzle before every print	file sliced for a different nozzle than set	Set the installed nozzle in *Nozzle* or slice the file for the right nozzle.
REVO-0709 The file disappears right after upload	file from another slicer	Slice in [r]evo Slicer or Orca Slicer.
REVO-0710 Orca does not see the printer / does not send	no connection or a different network	Computer on the same network as the machine; run the command from Revo Panel → *Service* → *SHOW CONNECT COMMANDS* again.
REVO-0711 No Revon printers in Orca	Orca was open during the Revo Sync install	Close Orca completely and start it again.
REVO-0712 Wi-Fi does not connect	wrong password or a corporate network (802.1X)	*FORGET NETWORK* and connect again; on a corporate network use a LAN cable.
REVO-0713 Revo Panel does not open in the browser	wrong address or a different network	The address is on the screen next to the clock; phone/computer on the same network; QR code: *Panel on phone*.
REVO-0714 Filament does not go into the toolhead	cold nozzle, squashed end	Nozzle at least 180°C, cut the end at an angle, push until the gears grip.
REVO-0715 Belt: the print does not slide off the belt	adhesion too strong, belt still warm	Wait until the belt cools, then hold *EJECT*.
REVO-0716 The extruder clicks, weak layers	temperature too low or flow too high	Raise the temperature by 5–10°C or slow the print down; check the nozzle flow limit.

Nothing helps? Run the *Machine test* and send *Report a problem*.

Print problems

- **The print does not stick** – clean bed without fingerprints; check the bed temperature and the first layer; use a release agent for PETG.
- **Strings** – dry the filament, lower the temperature by 5°C, check retraction (chapter 19).
- **Weak, delaminating prints** – temperature too low or flow too high; close the chamber for ABS/ASA.
- **Nothing helps** – run the machine test and send *Report a problem*.

22. DATA AND PRIVACY

- Always: machine state, working hours, system version, self-diagnostics result, maintenance.
- With consent: error notifications, work statistics, part counters, e-mail reminders. Statistics history is kept on the machine and, if you consent later, is sent to Revotech in full.
- Only at your request: *Report a problem* requests (with log and photo), remote service.

23. CONTACT

Revotech service: **+48 512 960 411**, biuro@revo3d.pl, Mon–Fri 9:00–17:00 (CET). We reply in English. Fastest: screen → *Menu* → *Report a problem* – the request automatically includes machine data, the last error and a camera photo.