SERVA Blue*Line*

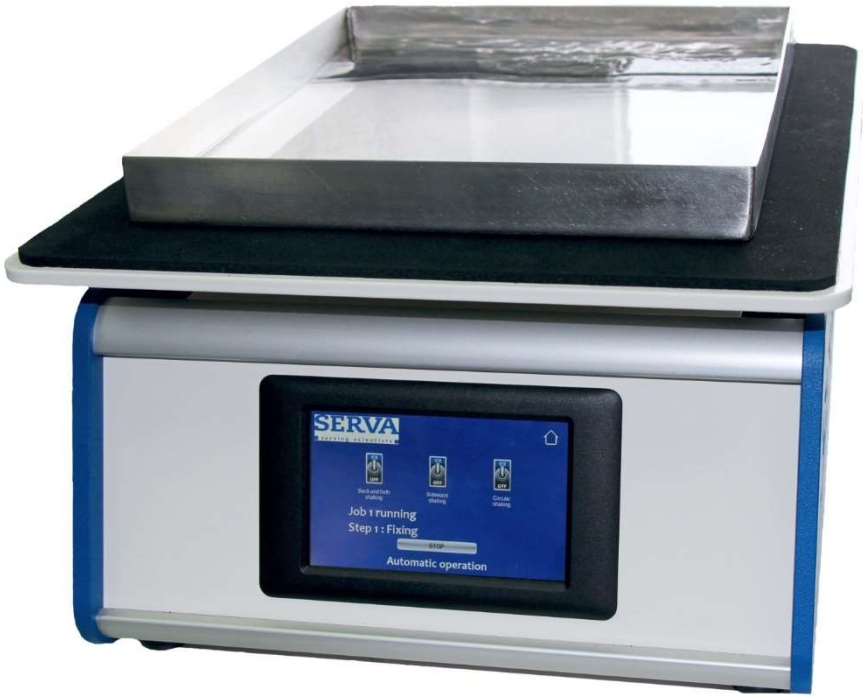
Instruments for Electrophoresis

SERVA BlueStain

Automatic Gel Stainer

Instruction manual

Cat. No. BST-01



SERVA

General information

Keep the instruction manual close at hand nearby your device. We structured this document in a way that you can refer to the desired information via the index. We recommend reading all the chapters to obtain detailed explanations and operations notes. Aim of this instruction manual is to make the operation accessible to you with a language easy to understand. Get in touch with our technical service should any questions arise or explanations being unclear (contact details, see rear page).

By using the packing list, please check after unpacking, if all parts of the device are complete and the device is undamaged. If this is the case, please inform SERVA Electrophoresis GmbH at once.

The warranty period is 12 months and starts at delivery. We ask for setting the packing material aside until warranty period is expired.

Transport and important data

- There are no specific requirements during transport
- Note catalog and serial number here in advance:

  Catalog number:

  Serial number:

Our target group

The SERVA Blue*Line* devices are intended for laboratory use. English is considered as the global language of science. The target group of this instruction manual is skilled laboratory staff. Among them count workers-in-training (e.g. trainee, apprentice, diplomate and postgraduate) after briefing as well. Local safety regulations (e.g. biological, chemical, radioactive and medical risk- und security level) cannot be considered in this manual. The liability in these issues lies with the user.

Security definitions

ATTENTION	Light to heavy injuries are possible.
CAUTION	Light to heavy injuries are certain.
WARNING	Irreversible to fatal injuries are possible.
DANGER	Irreversible to fatal injuries are certain.

Security symbols

	**Attention, Danger!** The symbol is a sign of a common injury risk for human. It refers to both transport, operation and maintenance of the device. The security definitions above bespeak the degree of the endangerment. The accompanying text explains and indicates to possible preventions.
	**Attention, Electric Shock!** The symbol is a sign of an injury risk for human caused by electrical shock. It refers to both transport, operation and maintenance of the device. The security definitions above bespeak the degree of the endangerment. The accompanying text explains and indicates to possible preventions.

SERVA assistance

Assistance	Contact
Sales Team (Germany)	Contact your local sales representative to receive product information, to arrange demonstrations or to inquire quotations and product samples.
Distributor (International)	Outside Germany, please contact your local distributor for product information, pricing and inquiries. The contact details of our worldwide distributors are listed on our website.
Customer Care	Our sales department is informing you about prices, inquiries and shipment. The contact details are listed on the rear page of the manual.
Technical Service	Our Technical Service is your contact point for technical and scientific questions about our products.
Product Specialist	Our Product Specialists for individual applications are glad to assist you with improving your method and solve problems. Ask our Technical Service for the contact.
Download Center	In our Download Center you find all Manuals, ApplicationNotes and TechNotes regarding our products. Downloadable are brochures, the online catalog and various certificates as well. Additionally, on the single product pages in the online shop, MSDS and the specifications are deposited.
Webinar Archives	Inform yourself about our future webinar dates under Events on our website. Recorded videos of previous webinars can be downloaded from our Webinar Archives.

General lab safety information

- In the lab, wear gloves, lab coat and safety goggles. Do **not** wear jewelry or watches.
- Avoid contact with mouth, nose and eyes by hand before having your hands washed. Treat and dress small wounds sufficiently.
- Before leaving the lab, take your safety equipment off and wash your hands thoroughly with soap.
- Change the gloves frequently and remove them before using a telephone, a light switch or a writing utensil.
- Clean your equipment, lab bench and devices frequently and directly after contamination with a mild soap and disinfectant.

Hazards

If the user follows the safety regulations as described below, the SERVA Blue*Line* devices are designed in a way that safe working is ensured. Any warranty claim will be voided if the device or its spares are changed and modified by an unauthorized person. Working contrary to regulations will void warranty claim additionally.

Cleaning and disinfection

Clean the SERVA Blue*Line* devices before first start-up and then frequently with a mild detergent (0.1% SDS solution) followed by distilled water as follows:

First, disconnect the device from the grid before start cleaning. Use lintless cloth soaked in water only. To remove tenacious dirt, lintless cloth soaked in 0.1% SDS solution can be used before. Never use aggressive cleaner or solvents. Let everything dry before reconnecting and start working. Parts of the device that were in contact with other liquids than water must be cleaned after each usage to avoid salting-out and encrusting. Perform program no5 (Cleaning Program) after each staining job to remove chemicals from all hoses.

If contaminated, choose the disinfection method fitting your local regulations and guidelines. First, disconnect the device from the grid and let the device cool down before start disinfecting. After disinfection clean as described before.

If the device needs to be shipped back to SERVA, perform cleaning and disinfect if necessary. Document this on the Decontamination Certificate (Download Center on www.serva.de) and enclose it in the shipping box.

CE Certification

Important: This SERVA product is designed and certified to comply the safety guideline IEC 61010-1 + Corr.

CE certified products are safe in use if utilized as described in the manual. The device has not to be modified. After any modification, warranty and CE certification becomes null and void. Additionally, these modifications may represent a potential source of danger.

SERVA is not responsible for any harm or injury that was caused by device modification, improper use or unspecified applications.

Imprint

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1 Introduction

SERVA BlueStain is an automatic gel stainer for accurate, reproducible and user-friendly staining of polyacrylamide and film-backed polyacrylamide gels up to a format of 30 x 25 cm.

The device is characterized by a sturdy, long lasting construction: Built on an aluminum housing, equipped with robust, precisely running motors, sophisticated electronics and high-quality 10-valve pump technology. If necessary, the gels can be fixed with magnets. The movement of the table can be controlled manually in all directions at a freely adjustable speed. For a gentle staining process, the angle of inclination of the table is 4°. The generously dimensioned touch screen is waterproof and, like the entire device, easy to clean. The built-in mechanism is maintenance-free.

The SERVA BlueStain is suitable for the whole range of currently applied staining methods. The simple operation, the robust mechanics and the results achieved with the device make it an indispensable tool in your laboratory. Programs are pre-installed on delivery, e.g. different methods of Coomassie® and silver staining.

Due to flexible programming you can create your own logs or modify existing or pre-installed programs at any time. You can also intervene in a program that is already running, i.e. cancel a step and go to the next step.

2 Installation

2.1 Packing list

- Main Unit
- Mains cable
- Staining Tray
- Hoses for Valve
- Hose for Pump
- Plastic Tubes

2.2 Operation conditions

Use the BlueStain only in closed laboratories; maximum relative humidity up to 80% (at a temperature up to 31 °C), decreasing linearly to 50% relative humidity (at a temperature up to 40 °C), with a maximum altitude of 2000 m (NN).

2.3 Specifications

Power connection	240V, max. 150W
Max gel size	300 x 250 mm
Size touch screen	5''
Number of programs	12
Inclination of table	4°
Dimensions (W x D x H)	175 x 410 x 390 mm

Moveable parts

WARNING

The device works with a moving rocker table able to cause finger or hand injuries

- Do not insert finger or hand in between the rocker table and the base during run.

2.4 Set up / hose renewal

Do not lift the device at the shaking table! Place the device on the lab bench and unpack the spares.

2.4.1 Pump setup

For easy renewal of the pump hose, the SERVA BlueStain obtains a lever to open and close the pump.

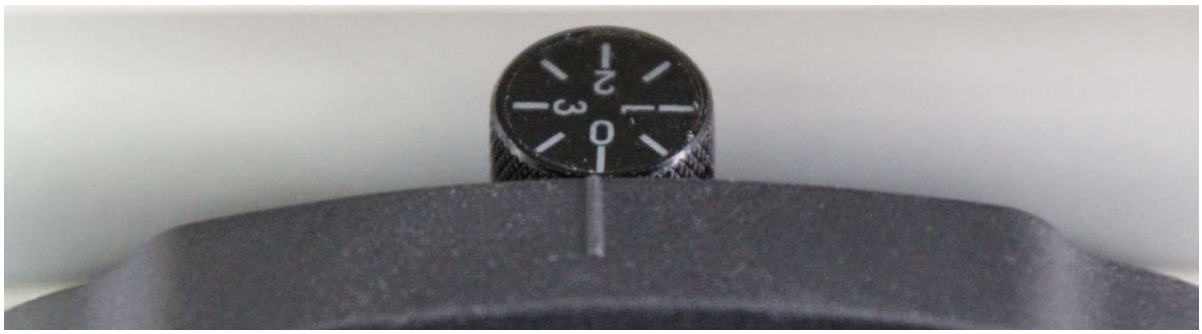
Move the lever to the left to open the pump. Remove both reducer on each side of the pump hose. Pull out the old pump hose and insert a new one of same length centrically. Take care that it runs through the V-shaped sides and over the pump rolls. Mount the reducer on each side and fix them with a zip tie. Move the lever to the right to close the pump.

WARNING

Other cables or hoses on the back can be pinched

- Do not force closing of the pump head if the resistance is too strong. The moving rollers can, for example, cause a pinched power cable to strip and causing an electric shock.

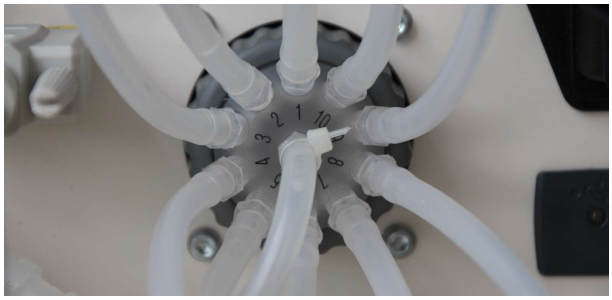
Use the screw to set the appropriate contact pressure for the hose. If the contact pressure is too weak or too strong, the solution delivery will be interrupted.



2.4.2 Tray setup

Place the tray onto the shaking table with the out-/inlet facing to the rear right side. Use thin hose to connect table out-/inlet to reducer.

2.4.3 Valve setup



Fix thin hose at right reducer with a zip tie. Connect thin hose to valve inlet port (unnumbered position in the middle) and fix it with a zip tie. Connect 10 thin hoses to each numbered port. Please note: The longer the hoses 1-10, the higher the dead volume… Keep it short!

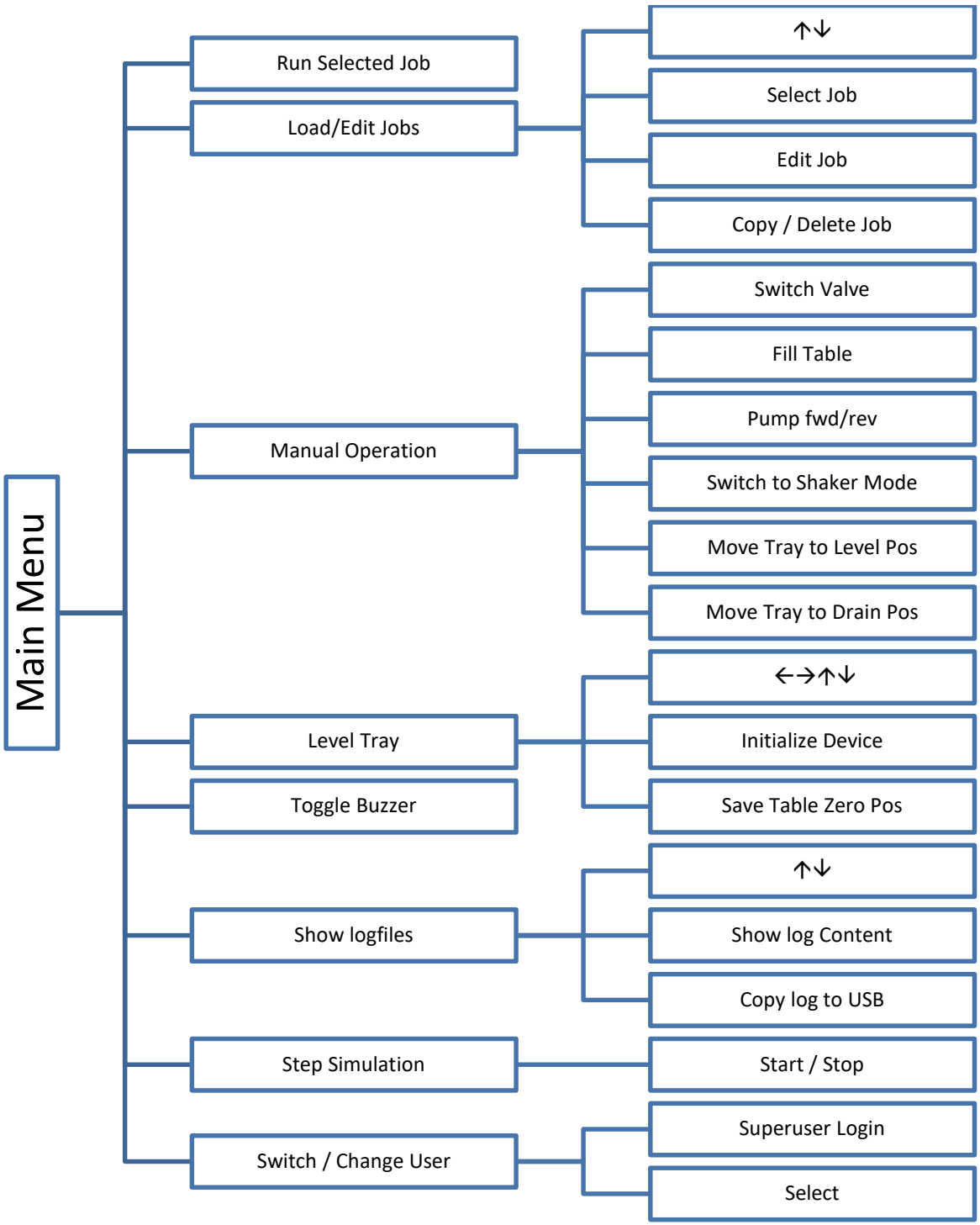
Insert one white tube at each end of the hoses 1-10 and number them using the numbered clamps according to the number the hose is installed to.

3 Operation

Important Information: Always wear powder free disposable gloves when handling gels and staining solutions.

3.1 User Interface

In this section, the user interface is explained and displayed using images. In the following sections, the operation modi are explained and referred to this section.



3.2 Modi of the Main Menu

After booting, main menu is displayed.

In the upper left corner, the last selected job with information is displayed. In the lower left corner, the current logged-in user is shown. Date and time are in the lower right corner.

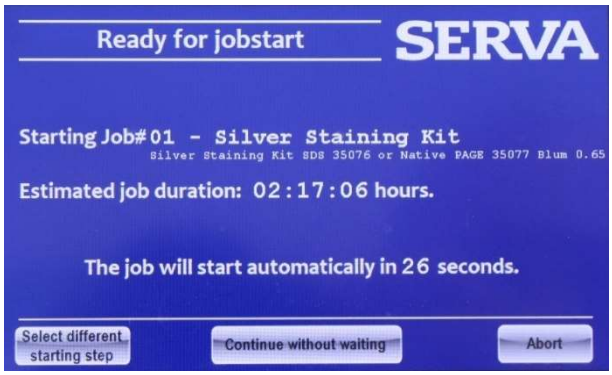
In the middle, eight icons show the possible modi that can be activated by pressing the icons on the screen:

Modus	Usage	See chapter
Run selected Job	Run the selected job shown in the upper left corner of the main menu.	**3.2.1**
Load / edit Job	Load or edit a job	**3.2.2**
Manual operation	Use the stainer without a program	**3.2.3**
Level tray	Level or reset the tray/table	**3.2.4**
Toggle buzzer	(Un-)Mute Alarm	**3.2.5**
Show logfiles	Watch, export logged data	**3.2.6**
Step simulation	Simulate a program step	**3.2.7**
Switch / change user	Edit / Login as (super-)user	**3.2.8**

3.2.1 Run Selected job

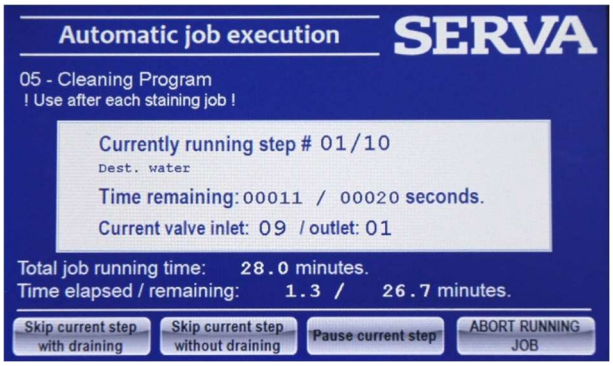
Prior to running a job, prepare your staining solutions in the right volume and allocate them in beakers beside the stainer. Insert the numbered inlet ports in the correspondent solution and fix them using a clamp or tape. Avoid bending of the hose. If needed, close the beaker using Parafilm™ or darken it using alumina foil. Volume and port numbers are programmed in advance (see chapter 3.2.2). Place the outlet ports in a waste bottle. The outlet ports are programmed in advance (see chapter 3.2.2).

After electrophoresis, place the gel inside the tray and close the lid.



By pressing the “Run selected job” button of the main menu, the selected job is initializing (appr. 5 sec). The device pauses 30 seconds. The screens shows the job, the job duration and the 30 second countdown. During this, is possible to abort, continue to stop the countdown and proceed or to select a different step than Step1:

After the countdown or by pressing continue, the job is directly beginning to pump the volume of step 1 into the tray.



After finishing pumping, this screen is shown.

It displays (from top to bottom) the name of the running job with information, the current step with information, the remaining time, the current valve inlet and outlet port, the total time and the remaining total time.

After time is counted down, the solution is pumped out to the waste and the job is proceeding with the next step automatically.

Four buttons are present that allows you to skip or pause the current step or abort the running job. The button “Skip without draining” is especially designed to stop developing immediately without draining to avoid overstaining. **PLEASE NOTE: If you decide to stop manually with this option, double the draining volume of the developer step or use a concentrated stop solution (40ml of a 5% stop solution).**

If the following step was programmed with a pause/alarm, the actual step will be finished, if buzzer is activated an alarm will sound, and a button appears that indicates “continue” to proceed with the next step. To activate the buzzer, press “Toggle Buzzer” in the main menu.

After finishing the job, a screen is shown, indicating the job, the job duration and the exit status. You can print (if printer is installed) or copy the log to USB directly. To end the procedure, press “Back to main menu”.
After finishing pumping, this screen is shown.

3.2.2 Load / Edit Job

The SERVA BlueStain is delivered with pre-programmed staining protocols for the most common SERVA staining kits.

Please note: It is not possible to delete one single step. To program a new job it is always better to use an empty job and copy it to the desired place later.

Select Job

To load a job, any user can enter this mode. Select the programmed job using the up/down arrows and press the button “Select job”. The selected job is activated, visible in the main menu and ready to get started by “Run selected job” (see chapter 3.2.1).

To edit, copy or delete job number 1 to 5, the Superuser must be logged in (see chapter 3.2.8). Job numbers 5+ can also be edited by any user.

Edit Job

To edit a job, select a job and press “Edit Job”.

First, enter a name and description by pressing the white field behind name or description, respectively. Enter the desired name and description and press the ↵ button.

When using the default tray, mark 1 Tray and L Tray size. Save the changes. To edit the steps of the job, press “Edit steps”.

Select the step to be edited by pressing the up and down arrows.

Enter a description, the duration in seconds, the amount of solution to be pumped in, the inlet and outlet port by pressing the white field behind / below the parameter.

Choose a shake pattern. You can choose between a classical rocking option (forward / backward shaking), a sideways option (left / right rocking), a circular (rotation around center) or a 3D (forward / backward shaking with stepwise left / right rocking) movement.

It is possible to enter a holding step. When the step is paused, it is also possible to apply an alarm. Shaking speed and amplitude can be adjusted using the sliders with 5 positions.

Press “Save changes” to save the step. Please note: Each step must be saved separately.

To change an already present program, steps can be added or deleted by using the “Delete step” and “Insert step” buttons.

Copy / Delete Job

To copy or delete a job press the button “Copy / Delete Job”. Please note that the Superuser must be logged in to copy or delete programs 1-5.

Enter the program number to be deleted and press “Delete complete job”. After confirmation, the program is reset, and all steps are empty.

Enter the program number to be copied and the designated program number and press “Copy Compete Job”. After confirmation, the job is copied completely.

3.2.3 Manual Operation

By pressing the “Manual operation” button of the main menu, you can actuate the stainer without using a program.

Enter the position number and press “Switch valve” to move the valve to the right In-/Outlet. Enter the volume and press “Fill table” to pump the calibrated volume in.

Continuous pumping-in and -out can be performed using the “Pump fwd.” and ”Pump rev.” buttons.

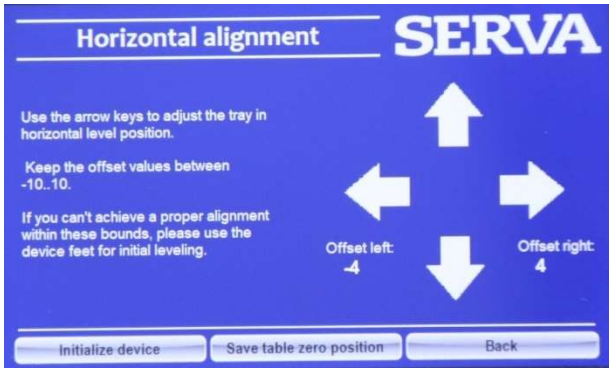
The tray can be moved to the level or drain position by pressing the buttons “Move tray to level pos.” or ”Move tray to drain pos.”.

By pressing “Switch to Shaker mode”, the option menu for manual shaking is opened.

In Shaker mode, you can enter a timer from 1 to 300 minutes or a continuous operation using the slider. It is possible to activate a beep alarm. Choose a shake pattern. You can choose between a classical rocking option (forward / backward shaking), a sideways option (left / right rocking), a circular (rotation around center) or a 3D movement. Shaking speed and amplitude can be adjusted using the sliders with 5 positions.
By pressing the “Start shaking” button to begin shaking.

3.2.4 Level tray

By pressing the “Level tray” button of the main menu, you can level the tray.



First press “Initialize device” to start the initializing procedure that is ending in the saved zero position.
Place a water level into the mid of the tray. Tilt the tray using the arrow buttons until the tray is levelled. Press button “Save table zero position” to save the current position as zero position.

If the surface is more uneven, use the device feet additionally. They can be screwed or unscrewed to level the device.

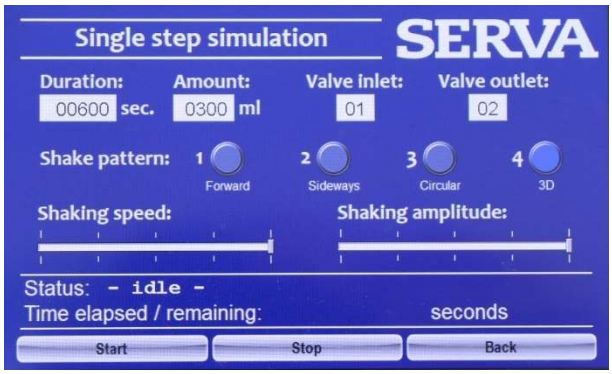
3.2.5 Toggle Buzzer

By pressing the “Toggle Buzzer” button of the main menu, the alarm is muted or unmuted. If it is muted, the icon is marked by a cross-out line.

3.2.6 Show logfiles

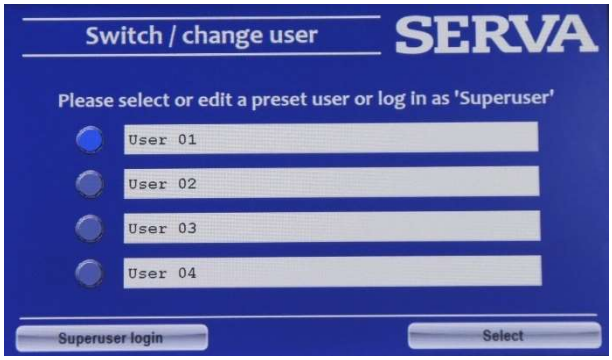
Every program is data logged automatically. To view the logs, press the “Show logfiles” button of the main menu.

3.2.7 Step simulation



Prior to programming it is useful to simulate the steps. To enter this mode, press the “Step simulation” button and program one single step as explained in chapter 3.2.2.

3.2.8 Switch / change user

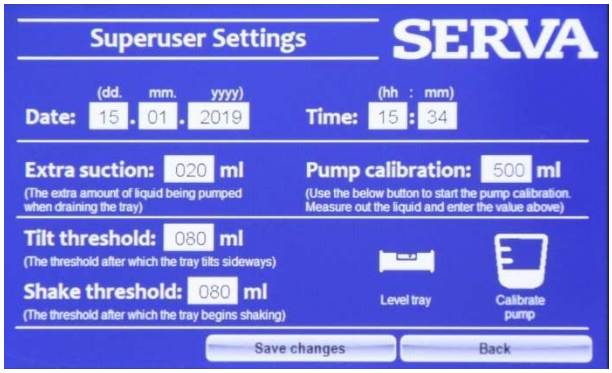


To enter this mode, press the “Switch / change user” button. To change the name of the user, press the name and enter a new one. By switching the user, the name given will be shown in the logged data. The preset user can work with the device and change the jobs 5+. Choose a user and press “select” to activate the user

Press the “Superuser login” button to enter the superuser mode. The Superuser is password secured. It is **12321** by default.

The Superuser can edit the jobs 1-5 and has more possibilities to change the settings.

As logged in Superuser, the main menu changes and reveals the icon “Settings” instead of “Level tray”.



To enter the Superuser Setting, press the “Settings” Butten when logged in as Superuser.

In the setting, you can change date and time or perform a levelling as described in chapter 3.2.4.

You can enter three volumes that will be used in each job, manual operation, and step simulation.

Enter the volume of extra suction. This is the extra amount pumped out when draining the liquid. It is needed because it takes time for the liquid to flow to the draining position. As the pump is calibrated and pumps the same amount in than out, the extra suction is essential to remove most of the liquid.

Enter the tilt threshold. From the drain position (upper right corner), the tray is tilting to the right-side position before beginning to shake. Depending on how big the gel is, this value needs to be adjusted. With a big gel and a high tilt threshold, it may occur that one corner of the gel is already in contact with the liquid and may stain earlier though.

Enter the shake threshold. This is the value at which shaking begins starting from the right-side position. Depending on how big the gel is, this value needs to be adjusted. With a big gel and a high shake threshold, it may occur that one side of the gel is already in contact with the liquid and may stain earlier though.

In the Superuser settings it is also possible to calibrate the pump. Enter 500 ml as volume first. Press the button “Calibrate pump”. Insert hose from valve port 1 into a beaker with 600 ml water and start calibration. After pumping in 500ml, the pump stops. Measure out the true volume of water inside the tray using a graduated flask. Enter the true value then in the settings and save.

3.3 Pre-Programmed Staining Jobs

PLEASE NOTE

Automated staining protocols differ from manual staining protocols described in the manuals of staining kits. Pumping 250ml in or out will last approximately 90 seconds. When programming your own staining protocol, pay regard on this fact and adjust the time for each step. All pre-programmed staining jobs are optimized for 0.65mm film-backed gels, programmed with maximum shaking speed/amplitude and using the 3D movement option. When using thinner (e.g. SERVA PRECOTES™) or thicker (e.g. 2DGel DALT) gels, times need to be adjusted. Lower shaking speed and amplitude when using non-film-backed gels to avoid gel fractures.

Recommendation: Use the same port for one chemical (SERVA default: Silver solution Port5 ; Developer Port6 ; Stop solution Port7 ; water Port9 ; waste Port10) as residues in the hoses can interfere or inhibit other solutions.

Always fix the hose at the beaker using a clamp or tape. Avoid bending. Close all beakers with alumina foil or Parafilm™. Secure silver solution from light by wrapping it completely in alumina foil.

3.3.1 Program No1 Silver Staining Kit

SERVA Silver Staining Kit SDS (35076) or Native PAGE (35077) acc.Blum 0.65mm

Preparation

Step 1	For SDS gels use the Fixing Solution. For native gels use 20% Trichloroacetic acid. Both are ready to use and 5x reusable. Fill 250ml into a beaker. Insert pipe no1. Beaker size 250ml.
Step 2/3	Prepare 500ml 30% (v/v) Ethanol solution (not included). Insert pipe no2. Beaker size 500ml.
Step 4	Dissolve three 30mg aliquots Sodium Thiosulfate in 300ml dest. water. Insert pipe no3. Beaker size 500ml.
Step 5/6/8/9/11	Fill 1.250ml dest. water into a beaker. Insert pipe no9. Beaker size 2.000ml.
Step 7	Prepare 300ml 1X silver solution (30ml silver solution + 270ml dest. water). Insert pipe no5. Beaker size 1.000ml. Dispose silver solution expertly!
Step 10	Prepare 300ml 1X sodium carbonate solution (60ml sodium carbonate solution + 240ml dest water). Add 150 µl Formaldehyde 37%. Insert pipe no6. Beaker size 500ml.
Step 12	Prepare 300ml stop solution (3 spoons + 300ml dest. water). Insert pipe no7. Beaker size 500ml.
Step 13	Prepare250ml 2% (w/v) Glycerol solution (not included). Insert pipe no8. Beaker size 250ml.

Program (duration: 2h 17min)

Step	Solution	Duration (s)	Volume (ml)	Port IN	Port OUT
1	Fixing solution	1800	250	1	1
2	30% Ethanol	600	250	2	10*
3	30% Ethanol	600	250	2	10*
4	Sodium Thiosulfate	60	250	3	10*
5	Dest. water	20	250	9	10*
6	Dest. water	20	250	9	10*
7	Silver solution	1200	250	5	5
8	Dest. water	20	250	9	5
9	Dest. water	20	250	9	10*
Pause / Buzzer					
10	Developer	120	250	6	10*
11	Dest. water	20	250	9	10*
12	Stop solution	300	250	7	10*
13	Storage solution	600	250	8	10*

*Port10 is the pipe for hazard-free waste. Discard to sink or use a >2.500 ml waste bottle

3.3.2 Program No2 CSF Silver Staining Kit

SERVA CSF Silver Staining Kit (43398) alkaline 0.65mm

Preparation

Step 1	Fill 250ml Fixing solution I into a beaker. Insert pipe no1. Beaker size 250ml.
Step 2/3	Prepare 500ml 30% (v/v) Ethanol solution. Insert pipe no2. Beaker size 500ml.
Step 4/5/7/8	Prepare 1.000ml 5% (v/v) Ethanol solution. Insert pipe no3. Beaker size 1.000ml.
Step 6	Fill 250ml Fixing solution III into a beaker. Insert pipe no4. Beaker size 500ml.
Step 9/10/11/ 13/14/17	Fill 1.500ml dest. water into a beaker. Insert pipe no9. Beaker size 2.000ml.
Step 12	Prepare 250ml silver solution (25ml SolutionA + 25ml SolutionB + 200ml dest. water). Insert pipe no5. Beaker size 500ml. Dispose silver solution expertly!
Step 15	Prepare 300ml developer (300ml dest. water + 75µl SolutionC + 300µl SolutionD). Insert pipe no6. Beaker size 500ml.
Step16	Prepare 300ml stop solution (2 spoons or 3g SolutionE + 300ml dest. water). Insert pipe no7. Beaker size 500ml.
Step18	Prepare 250ml 2% (w/v) Glycerol solution (not included). Insert pipe no8. Beaker size 250ml.

Program (duration: 4h 05min)

Step	Solution	Duration (s)	Volume (ml)	Port IN	Port OUT
1	Fixing solution I	1200	250	1	1
2	Fixing solution II	600	250	2	10*
3	Fixing solution II	600	250	2	10*
4	Wash solution	600	250	3	10*
5	Wash solution	600	250	3	10*
6	Fixing solution III	1200	250	4	4
7	Wash solution	600	250	3	4
8	Wash solution	600	250	3	10*
9	Dest. water	600	250	9	10*
10	Dest. water	600	250	9	10*
11	Dest. water	600	250	9	10*
12	Staining solution	1800	250	5	5
13	Dest. water	60	250	9	5
14	Dest. water	120	250	9	10*
Pause / Buzzer					
15	Developer	300	250	6	10*
16	Stop solution	300	250	7	10*
17	Dest. water	60	250	9	10*
18	Preservation solution	300	250	8	10*

*Port10 is the pipe for hazard-free waste. Discard to sink or use a >3.500 ml waste bottle

3.3.3 Program No3 HPE™ Silver Staining Kit

SERVA HPE™ Silver Staining Kit (43395) MS compatible 0.65mm

Preparation

Step 1	Prepare 250ml Solution 1 (37.5ml Ethanol (not included) + 2.5g citric acid + 212.5ml dest. water). Insert pipe no1. Beaker size 250ml.
Step 2-5/7-10/ 12-14	Fill 2.750ml dest. water into a beaker. Insert pipe no9. Beaker size 3.000ml.
Step 6	Prepare 250ml Solution 2 (25ml Solution A + 25ml Solution B + 81mg Sodiumthiosulfate + 79ml Ethanol (not included) + 121ml dest. water). Insert pipe no4. Beaker size 250ml.
Step 11	Prepare 250ml Solution 3 (5ml Solution C + 25ml Solution B + 325µl Formaldehyde + 220ml dest. water). Insert pipe no5. Beaker size 500ml. Dispose silver solution expertly!
Step 15	Prepare 250ml Solution 4 (25ml Solution D + 325µl Formaldehyde + 250µl Solution E + 225ml dest. water). Insert pipe no6. Beaker size 250ml.
Step 16	Prepare 250ml Solution 5 (2.5g Glycine + 250ml dest. water). Insert pipe no7. Beaker size 250ml.
Step	Prepare 250ml Solution 6 (15ml Glycerol (not included) + 235ml dest. water). Insert pipe no8. Beaker size 250ml.

Program (duration: 4h 29min)

Step	Solution	Duration (s)	Volume (ml)	Port IN	Port OUT
1	Solution 1	2700	250	1	10*
2	Dest. water	300	250	9	10*
3	Dest. water	300	250	9	10*
4	Dest. water	300	250	9	10*
5	Dest. water	300	250	9	10*
6	Solution 2	1800	250	4	4
7	Dest. water	300	250	9	10*
8	Dest. water	300	250	9	10*
9	Dest. water	300	250	9	10*
10	Dest. water	300	250	9	10*
11	Solution 3	2700	250	5	5
12	Dest. water	60	250	9	5
13	Dest. water	60	250	9	10*
14	Dest. water	60	250	9	10*
Pause / Buzzer					
15	Solution 4	240	250	6	10*
16	Solution 5	1800	250	7	10*
17	Solution 6	600	250	8	10*

*Port10 is the pipe for hazard-free waste. Discard to sink or use a >2.500 ml waste bottle

MODIFICATION

The staining can be modified to a much higher sensitivity but loses MS compatibility. The program is the same, but the following steps are adjusted as follows (differences in bold):

Step 1	Prepare 250ml Solution 1 (37.5ml Ethanol (not included) + **1.25g** citric acid + 212.5ml dest. water). Insert pipe no1. Beaker size 250ml.
Step 6	Prepare 250ml Solution 2 (25ml Solution A + 25ml Solution B + 81mg Sodiumthiosulfate **+ 25ml Glutaraldehyde** + 79ml Ethanol (not included) + **96ml** dest. water). Insert pipe no4. Beaker size 250ml.

3.3.4 Program No4 Your Own Program

Manual Protocol Adjustment Service: Inquire info@serva.de

3.3.5 Program No5 Cleaning Program

! Use after each staining job !

Preparation

Step 1-9	Fill 2.500ml dest. water into a beaker. Insert pipe no9. Place pipes no1 to no8 and no10 into the sink or a >2.500 ml waste bottle.

Program (duration: 39min)

Step	Solution	Duration (s)	Volume (ml)	Port IN	Port OUT
1	Dest. water	20	250	9	1
2	Dest. water	20	250	9	2
3	Dest. water	20	250	9	3
4	Dest. water	20	250	9	4
5	Dest. water	20	250	9	5
6	Dest. water	20	250	9	6
7	Dest. water	20	250	9	7
8	Dest. water	20	250	9	8
9	Dest. water	20	250	9	10
10	Dest. water	20	250	9	9

4 Pharma Upgrade Kit

4.1 Introduction

With the pharma upgrade kit, the SERVA BlueStain is FDA CFR Part11 ready. When ordering, the SERVA BlueStain will be upgraded with a new firmware prior to shipping and a thermal printer will be included in the shipping for documentation printouts.

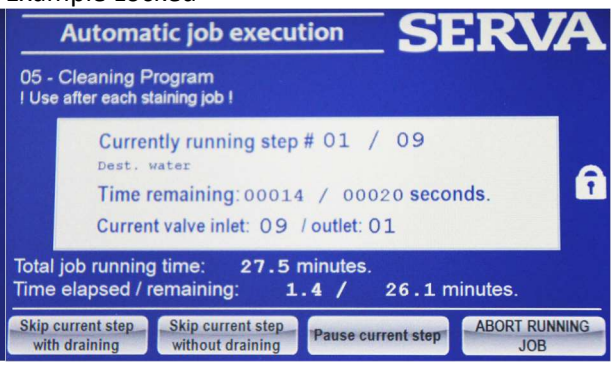
4.2 Firmware Upgrades

4.2.1 Lock/Unlock Screen

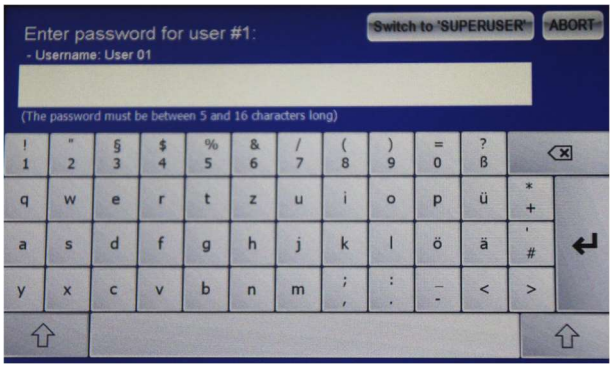
The “Lock Button” allows to lock/unlock the home screen and job execution screens by pressing the lock symbol.

Example Unlocked

Example Locked



The Superuser can set an automatic time after which the software goes into the locked state (See next chapter). During locked state it is not possible to execute any button. By pressing the “Lock Button” again, the software expects entering a password to unlock.



Type in the password and press Enter. Anytime, the superuser can force unlocking by pressing “Switch to SUPERUSER” and type in his own password.

4.2.2 Installing printer

Place the printer next to the SERVA BlueStain.

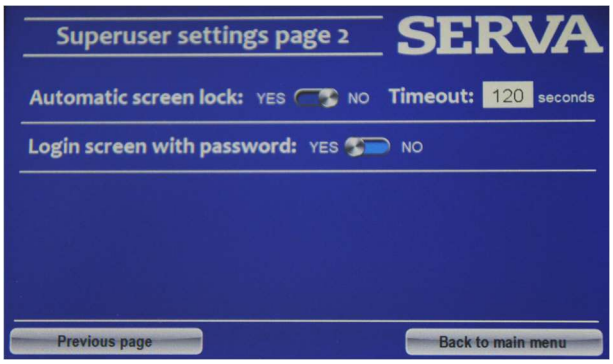
Connect the data cable on the backside of the stainer.

Connect the data cable on the backside of the printer and connect it with the mains.

After power-on, the printer is ready.

4.2.3 Additional SUPERUSER options

A second setting page is available in the pharma upgrade. Enter the Superuser settings (see 3.2.8.) and press “Next Page”.



The automatic screen lock with the desired time after that the lock will be activated can be activated. Additionally, the Login screen can be activated. When active, the password of the last logged-in user needs to be entered after booting the device. If not active, the device boots with the last logged-in user without password entry.
The superuser can force unlocking of the screen.

When logged in as Superuser, users are editable in the “Switch/Change user” section of the main menu.
By pressing “Edit user(s)”, the users can be renamed, a password can be entered for each user, the superuser password can be changed and usage of printer and USB port can be restricted. Despite of the superuser, the password requirement can be deactivated.

4.2.4 Printing and USB export

In the “Job finished” screen and in the “Job logfiles overview”, the audit trailed files can be printed or exported to an USB device by pressing the corresponding buttons. The printer has to be connected an on, the USB device has to be plugged in at the rear side of the stainer.

Example USB Export

```
Executed job: 03
Silber
----------------------------------------
Date (YYYY.MM.DD): 2020.06.04
Start time: 11:21
User:       User 01
Status:     success
----------------------------------------
Log content:
Step: 01 – Fixation
Shaking start: 11:22:51
Status:  -passed through
(Amount: 0200 ml - valve in/out: 02/10
- scheduled duration: 01200 sec.
- actual duration:    01201 sec.)
Step: 02 - Fixation
Silber InShaking start: 11:44:58
Status:  -passed through
(Amount: 0200 ml - valve in/out: 02/10
- scheduled duration: 01200 sec.
- actual duration:    01200 sec.)
Step: 03 – Washing
Shaking start: 12:07:04
Status:  -passed through
(Amount: 0200 ml - valve in/out: 09/10
- scheduled duration: 00480 sec.
- actual duration:    00481 sec.)
```

Example Printout


SERVA

Executed job:
05 - Cleaning Program

Date (YYYY.MM.DD): 2020.06.04
Start time (hh:mm): 09:19
User: SUPERUSER
Status: success

Log content:

Step: 01 - Dest. water
Status: passed through
(Shaking start: 09:20:38 - Amount: 0250 ml - valve in/out: 09/01
- actual/scheduled shaking duration: 00022/00020 sec.)

Step: 02 - Dest. water
Status: passed through
(Shaking start: 09:23:36 - Amount: 0250 ml - valve in/out: 09/02
- actual/scheduled shaking duration: 00022/00020 sec.)

Step: 03 - Dest. water
Status: passed through
(Shaking start: 09:26:33 - Amount: 0250 ml - valve in/out: 09/03
- actual/scheduled shaking duration: 00022/00020 sec.)

SERVA

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