

SOFTOWER



ECOPERLA



# ECOPERLA SOFTOWER

WATER SOFTENER

original product of EcoPerla

USER MANUAL

KEEP THE USER MANUAL, AS IT CONTAINS WARRANTY AND A SERVICE CARD

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# 1. INTRODUCTION

## 1.1. SAFETY MEASURES

- Please read this User Manual before installation and follow it carefully during installation and operation. It contains all the necessary information about precautions during installation, operation and maintenance of the device.
- Proper installation and operation of the device in accordance with the User Manual ensures failure-free, effective and long operating life.
- The device is designed to reduce water hardness and may only be used for this purpose.
- The device should be installed by a qualified person.
- The device should be transported vertically. Do not place it on the side because it may cause damage.
- Keep this User Manual.
- The device was manufactured according to the latest applicable safety requirements.

## 1.2. WATER SOFTENING

According to the currently binding Regulation of the Minister of Health on the quality of water intended for human consumption, total hardness of water in Poland should be between 60 and 500 mg CaCO<sub>3</sub>/dm<sup>3</sup> of water. Water with hardness not exceeding 75 mg CaCO<sub>3</sub>/dm<sup>3</sup> is considered to be very soft. Water of general hardness from 300 to over 500 mg CaCO<sub>3</sub>/dm<sup>3</sup> is considered to be hard and very hard.

There are two types of water hardness, which together form so-called overall hardness. The first type is carbonate hardness: it comes from carbonates and calcium and magnesium bicarbonates. These compounds form sediment when precipitated from water. This type of hardness may be removed during thermal water treatment. Carbonate hardness is also known as transient hardness. The second type is non-carbonate hardness, also called non-transient hardness. It is caused by presence of substances such as: chlorides, nitrates, sulphates, soluble salts, including calcium and magnesium.

A high degree of hardness in potable water greatly influences life and environment of its users. Hardness has large impact on water surface tension. The greater the tension, the more difficult it becomes to moisten different types of surfaces. It is therefore more difficult to clean bathroom and kitchen fittings. Consumption of detergents and even cosmetics, such as soap, hair shampoo, etc. increases. It, in turn, results in higher costs and has a negative impact on the environment.

In addition, sediment precipitated during thermal water treatment may lead to faster wear and tear of household appliances that come into contact with water, such as: washing machines, dishwashers, kettles. By using hard water, washed fabrics lose their original colour and become rough. Beverages and dishes prepared on the basis of hard water may lose their value.

Hard water can have direct, adverse effect on a human body. Individuals susceptible to kidney stones should pay particular attention to high water hardness. Besides, hard water has negative effect on skin and hair condition. People with hypersensitive skin will be particularly affected by the issue.

Water with hardness exceeding 200 mg/CaCO<sub>3</sub>/dm<sup>3</sup> causes limestone build-up in water supply and heating systems. It results in significant energy losses. Hard water may also adversely affect plants grown in the household: they may look unattractive or even die.

Table 1. Conversion of water hardness units

	mmol/l	mval/	mg CaCO <sub>3</sub> (ppm)	German Degree °d	French Degree °f	English Degree °e
mmol/l	1	2	100	5,6	10	7
mval/l	0,5	1	50	2,8	5	3,5
mg CaCO <sub>3</sub> (ppm)	0,01	0,02	1	0,056	0,1	0,07
German Degree °d	0,179	0,357	17,9	1	1,79	1,25
French Degree °f	0,1	0,2	10	0,56	1	0,70
English Degree °e	0,143	0,29	14,3	0,8	1,43	1

### 1.3. DESCRIPTION OF OPERATION

Ecoperla Softower uses ion exchange resin to remove calcium (Ca<sup>2+</sup>) and magnesium (Mg<sup>2+</sup>) ions, which cause water hardness. The device can completely remove hardness from water, yet this is not recommended.

Calcium Ca<sup>2+</sup> and magnesium Mg<sup>2+</sup> ions are removed when water flows through the ion exchange medium in a softener tank. Ion exchange resin contains a lot of so-called active centres, which attract positive calcium and magnesium ions (cations). Attracted cations are replaced by sodium cations, which do not cause hardness.

When all active centres are replaced by calcium and magnesium ions, ion exchange resin must undergo a regeneration process. It consists in removing Ca<sup>2+</sup> + and Mg<sup>2+</sup> ions from the resin by flushing it with brine solution from a separate tank. After regeneration, the medium regains full water softening efficiency. After rinsing, the whole water is directed to the sewage system.

### 1.4. OPERATION AND MAINTENANCE

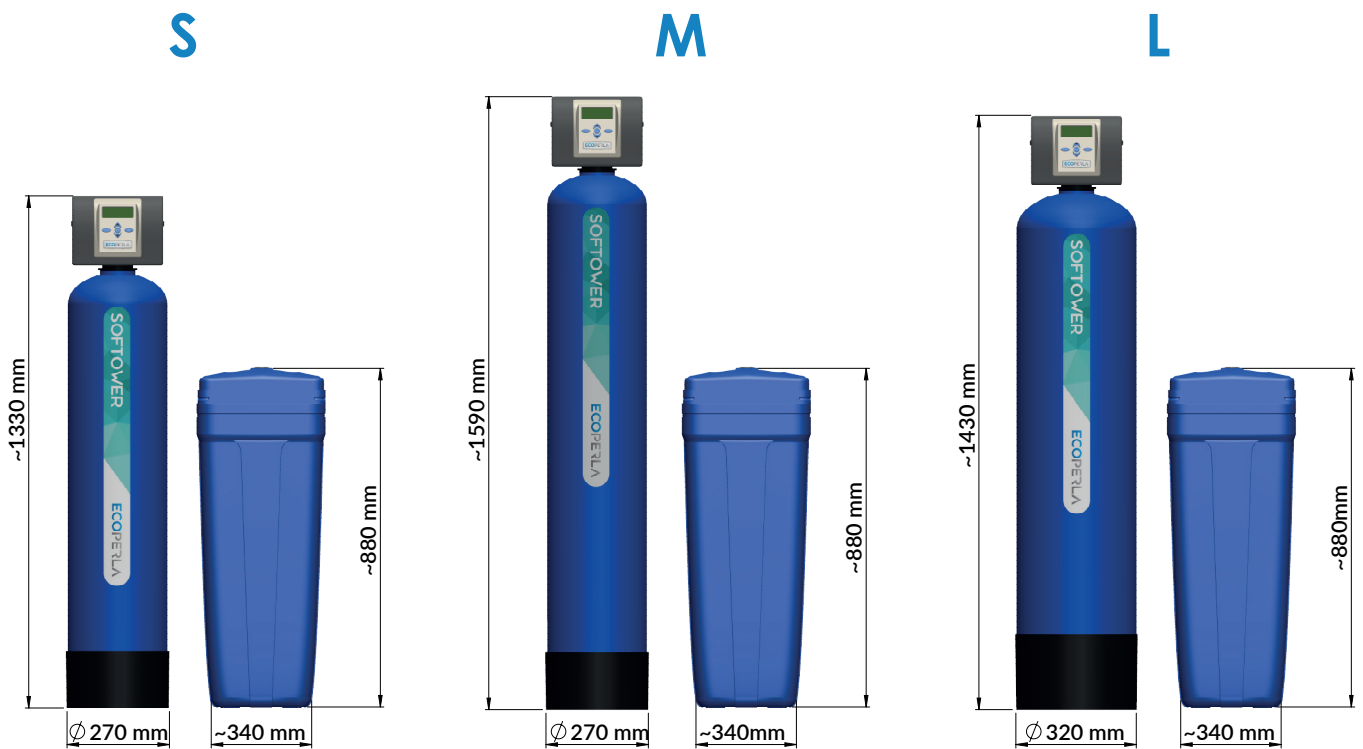
For proper operation of the device, a user must regularly replenish salt tablets in the salt container. Frequency and the amount of salt to be refilled depends on water parameters and the size of intake. An average user uses a 25-kilogram salt bag per month. In order to prevent noticeable pressure drops, a pre-filter must be replaced regularly.

NOTE: We recommend using the Ecoperla Antidotum medium cleaner every 6 months alternately with the Ecoperla Antibacter disinfectant. Such a combination is the best method of maintaining a filtering medium.

## 2. TECHNICAL SPECIFICATIONS

Table 2. Technical data

	<b>S</b>	<b>M</b>	<b>L</b>
<b>Control valve</b>	Clack Pallas UF	Clack Pallas UF	Clack Pallas UF
<b>Connection</b>	1"	1"	1"
<b>Amount of medium [l]</b>	30	40	60
<b>Medium</b>	Monosphere ion exchange resin	Monosphere ion exchange resin	Monosphere ion exchange resin
<b>Nominal flow rate [m<sup>3</sup>/h]</b>	1,5	1,6	2,2
<b>Maximum flow rate [m<sup>3</sup>/h]</b>	3,0	3,2	4,4
<b>Flushing flow rate [m<sup>3</sup>/h]</b>	0,6	0,6	0,75
<b>Working pressure [bar]</b>	2,0-6,0	2,0-6,0	2,0-6,0
<b>Salt consumption per regeneration [kg]</b>	3,0	4,0	6,0
<b>Water consumption per flushing [l]</b>	160	160	210
<b>Cylinder dimensions [inch]</b>	10 x 44	10 x 54	12 x 48
<b>Column width [mm]</b>	270	270	320
<b>Column height [mm]</b>	1330	1590	1430
<b>Column depth [mm]</b>	300	300	320
<b>Brine tank volume [l]</b>	70	70	70
<b>Brine tank Width [mm]</b>	335	335	335
<b>Brine tank height [mm]</b>	880	880	880
<b>Brine tank depth [mm]</b>	335	335	335
<b>Electrical connection [V/Hz]</b>	230/50	230/50	230/50
<b>Amount of water between regenerations for hardness equalling 10 dH [m<sup>3</sup>].</b>	7,6	10,1	15,2



### 3. COMPONENTS OF THE SYSTEM

Components of the system:

- Pressure cylinder
- Control valve
- Ion exchange resin
- Brine tank
- Connections to the softener
- Power supply
- User Manual

### 4. INSTALLATION AND START-UP

#### 4.1. REQUIREMENTS

Trouble-free operation of the device requires proper working conditions:

- Working pressure should be between 2.0 and 6.0 bar,
- Pressure in the device cannot exceed maximum operating pressure or drop below 0 bar of the atmospheric pressure (vacuum) – it may result in its damage,
- Operating temperature should be between 4÷38°C,
- The device should be protected against weather conditions (sunshine, precipitation, too low or high temperatures),
- High humidity in the room may cause condensation of water on the device and piping, which in extreme cases may lead to damage to the electronic board,
- A pre-filter must be installed before the machine, A pre-filter must be installed before the machine,
- The device should be placed vertically on a hard flat surface,
- The device should also be transported in a vertical position,
- The control valve needs to be connected to 230V, 50Hz power supply, according to national standards,

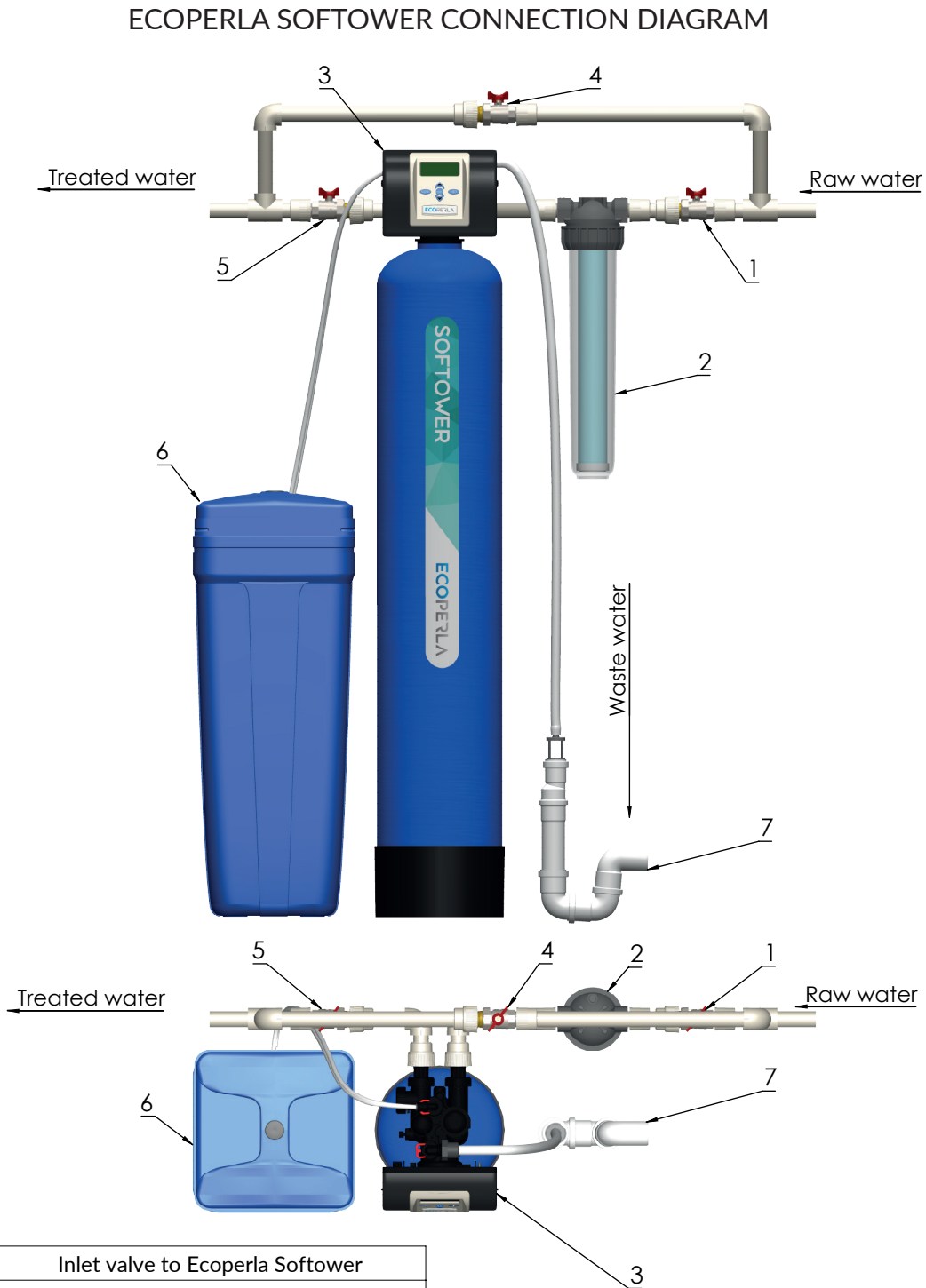


- The quality of the feed water, in particular in terms of iron content, manganese content, turbidity, pH value, chlorides and microbial content, should comply with the quality standards for drinking water.

## 4.2. INSTALLATION DIAGRAM

The diagram below shows the correct order of connecting devices in the system.

Diagram 1.



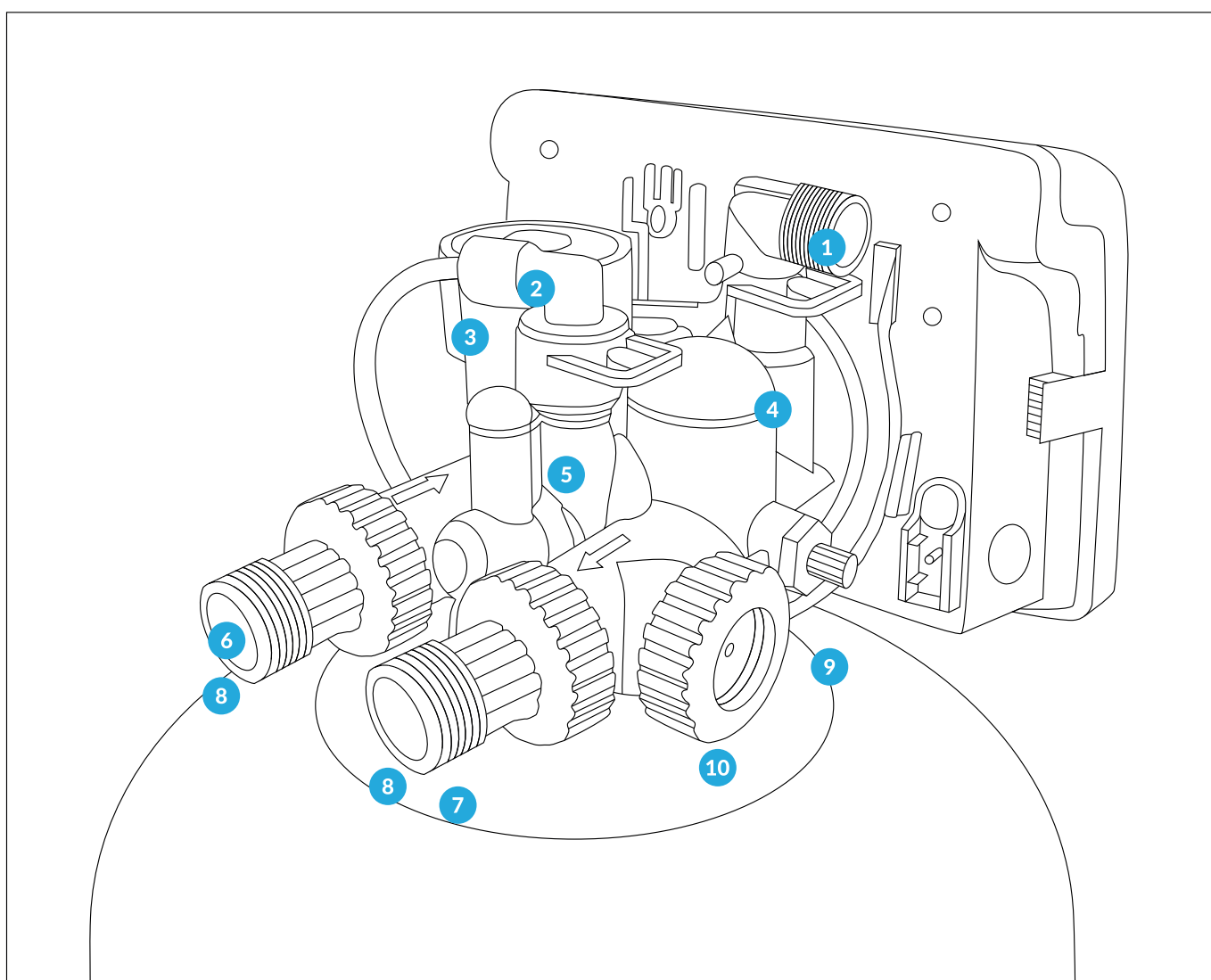
### 4.3. CONTROL VALVE

A control valve on the installed display informs a user about a current operation mode. A panel with the display is used to easily operate of the device. The valve is mounted on an ion cylinder.

**Intlet and outlet of the valve:** connection ends of the valve are made of plastic, 1" male thread. The connections are easily detached from the valve, so there is no need for additional screw connections. Nie zaleca się montowania na sztywno przewodów do przewodów ze stali, miedzi lub tworzywa klejonego. Preferreably, you should connect the system to welded or twisted plastic pipes or inch-screw flexible metal hoses. Additional rigid fittings may be used on valve connections, e.g. steel pipe fittings between a valve connection and a flexible hose.

**Sewage outlet:** a connection end to the sewerage system on the valve is made of plastic, 1 1/4" external thread. An outlet to the sewerage system should be preferably made of plastic (pipes: 25 mm or 32 mm) or alternatively, connected to a 3/4 or 1" garden hose adapter and led through a garden hose to the sewerage system (the entrance to the sewerage system should not be further than a few metres from or more than 1 metre above the valve).

Intensity of water discharge into the sewerage system during flushing is similar to the nominal capacity of the device.



- 1. 3/4" departure from the sewerage system
- 2. Injector
- 3. Brine hose inlet

- 4. DLFC
- 5. BLFC
- 6. Water intlet

- 7. Water outlet
- 8. Connections 1"
- 9. Mixer
- 10. Flow meter

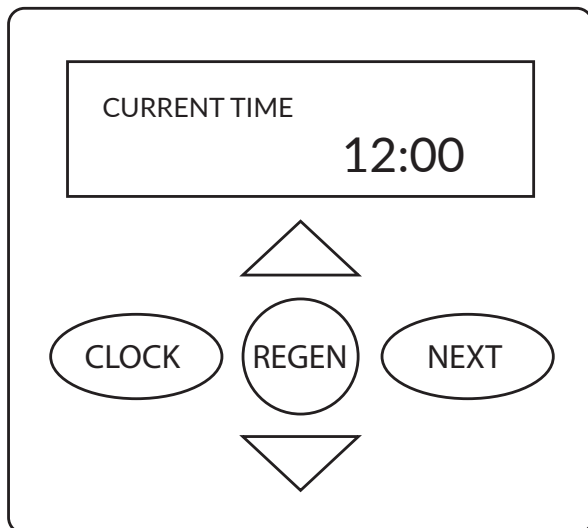
## 4.4. INSTALLATION AND START-UP

- Prepare the place for device installation (according to point 4.1 of the requirements).
- Cut off water supply to the installation.
- Perform water bypass according to the diagram.
- Install a pre-filter with a filtering cartridge.
- Connect water inlet to the device.
- Connect water outlet of the device.
- Connect the outlet to the sewage drain.
- Connect an overflow elbow located on the brine tank to the sewage system.
- Connect a brine hose to the control valve.
- Start the first regeneration by pressing the REGEN button for 5 seconds.
- In order to avoid a hydraulic impact, gently open the valve by introducing water into the device.
- During the first stage of regeneration (backwash), water is directed to the sewage system.
- During the regeneration, check system tightness.
- After the regeneration, the brine tank should contain water.
- Pour salt into the brine tank.

**NOTE:** The device is ready for work. The only thing you need to do is set hardness and the current time. If you wish to set an individual work programme, follow the steps in point 5.3.

## 5. PROGRAMMING

### 5.1. INFORMATION DISPLAYED DURING OPERATION MODE

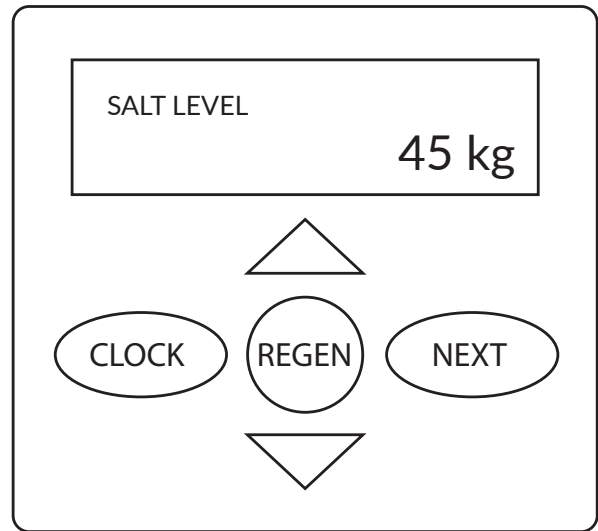
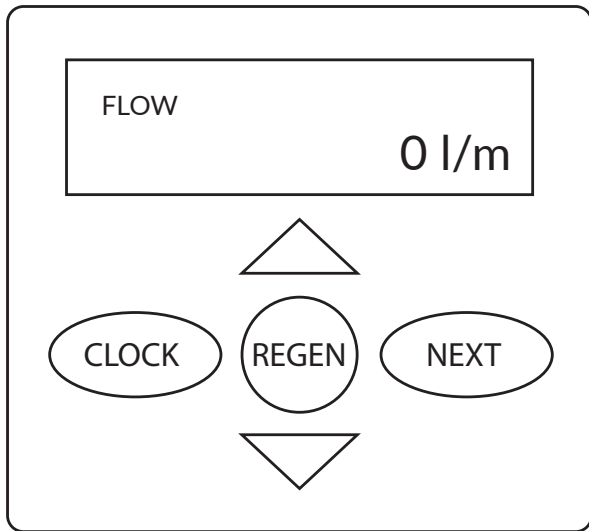
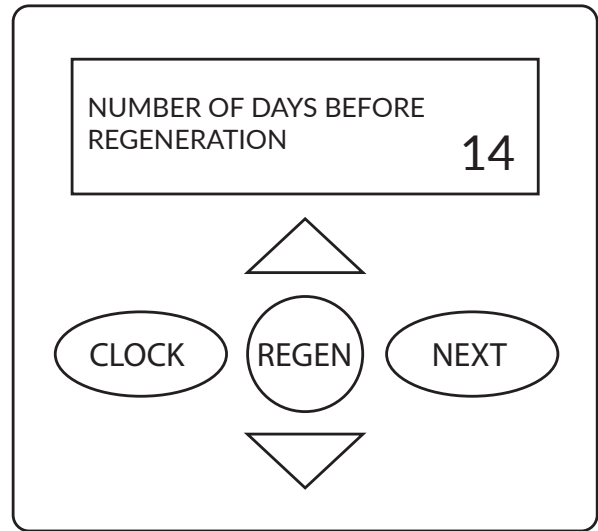
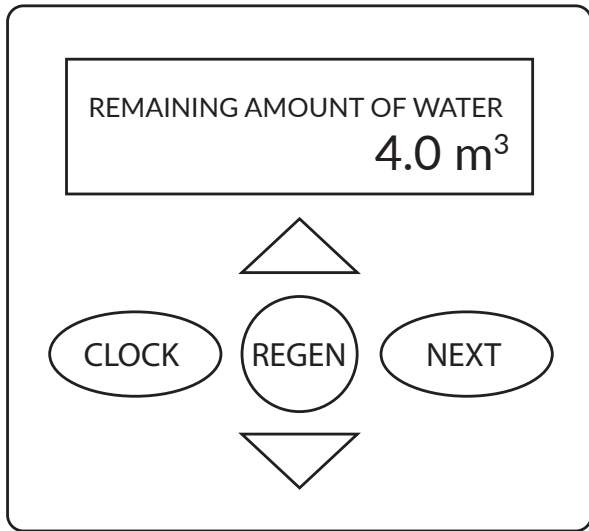


In the operation mode, you can preview the following values on the valve panel:

- Time
- Remaining amount of water before regeneration (m<sup>3</sup>)
- Days remaining before regeneration
- Current flow rate (l/min)
- Salt level

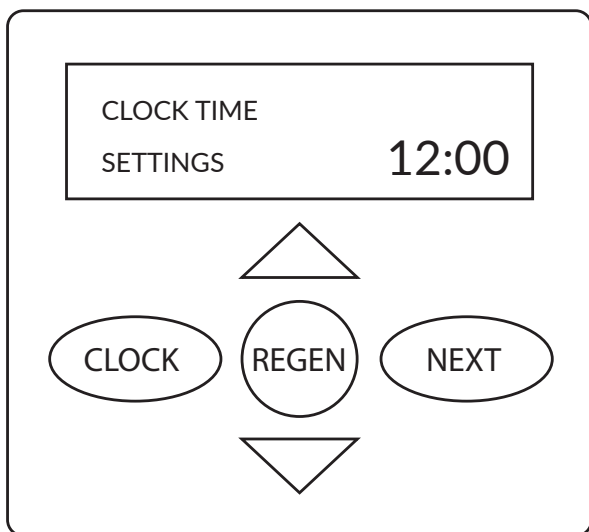
Navigate between the values on the display, by using the NEXT button.

**NOTE:** The low salt alarm sets off based on the data entered in the programmer. There may be a discrepancy with the actual amount of salt in the tank.



## 5.2. INITIAL SETTINGS

### 5.2.1. Time setting



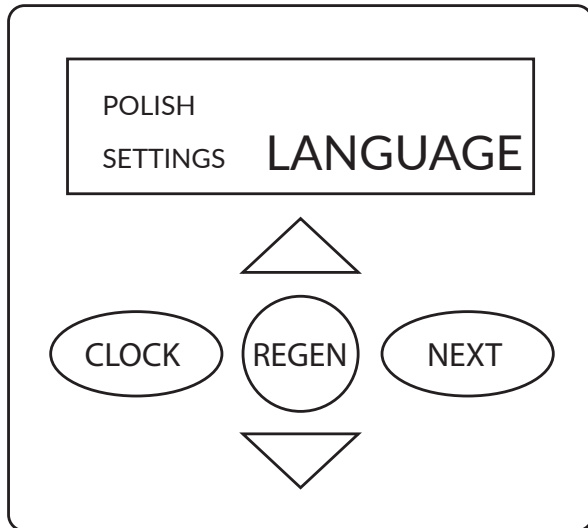
You can set a time at the time display in the operation mode (point 5.1) By pressing the CLOCK button, you can change a time on the display: changed value starts flashing. Use the "Up" and "Down" buttons to set the current time.

After entering the appropriate time, use the CLOCK or NEXT button to confirm the time. This is the last step in adjusting the control valve settings.

## 5.2.2. Language selection

Press and hold the  $\triangle$  and NEXT buttons at the same time (until the message on the display changes) to move to the basic settings. The language selection screen is displayed first.

## 5.2.3. Entering the basic settings

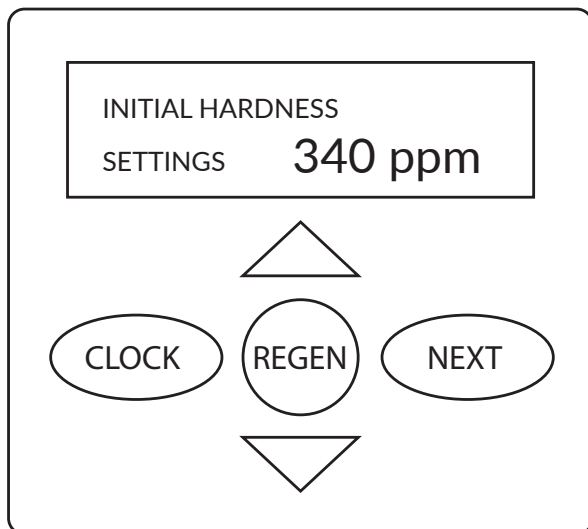


You can choose the following languages:

- Poland
- Turkish
- German
- Spanish
- French
- English
- Italian

After selecting the language, press NEXT to move on to the next stage.

## 5.2.4. Initial hardness



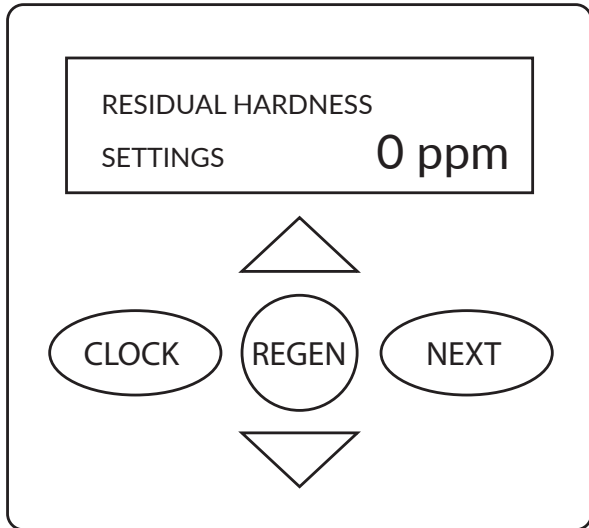
Use the  $\nabla$   $\triangle$  buttons to enter initial hardness\*.

Use the NEXT button to move on to the next stage.

Use the REGEN button to return to the previous stage.

\* In Softower, water hardness units are entered in ppm. A table with the conversion factor for water hardness units can be found on page 3.

### 5.2.5. Residual hardness



Use the  $\nabla$   $\triangle$  buttons enter the residual hardness\*.

Use the NEXT button to move on to the next stage.

Use the REGEN button to return to the previous stage.

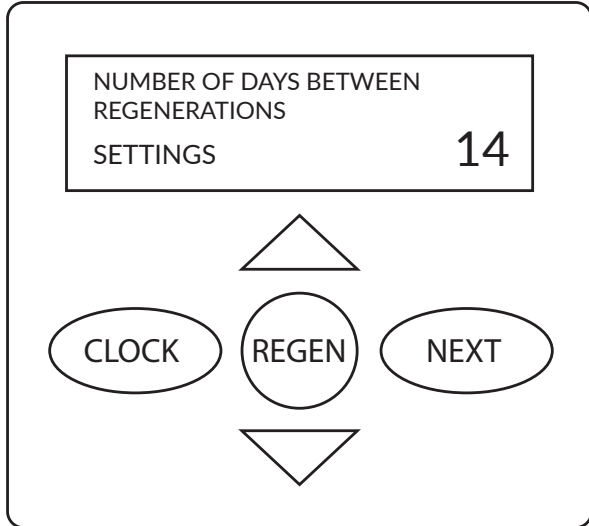
\* Residual hardness is hardness of water that flows out of the device. Residual hardness is a degree of water hardness that remains after filtration. This is the final hardness of water after softening.

If you do not install a mixer or do not wish to use it (mixer knob completely screwed in), enter 0 ppm.

When using a mixer, enter the measured value of water hardness expressed in ppm (mg CaCO<sub>3</sub>/l).

In Ecoperla Softower, water hardness is entered in ppm. If you measure water hardness in other units, convert them to ppm. A table with the conversion factor for water hardness units can be found on page 3.

### 5.2.6. Days between regenerations



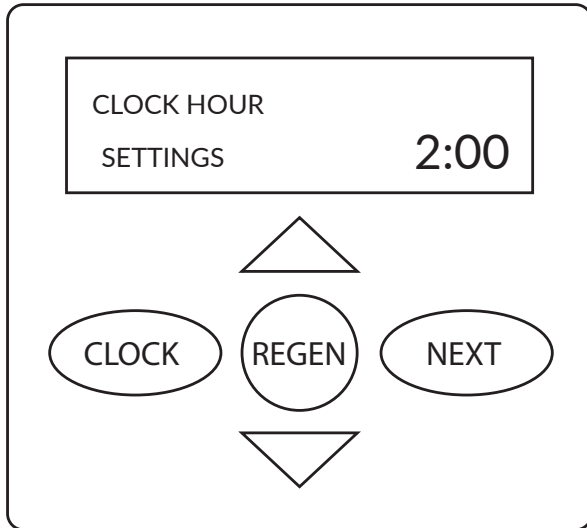
Use the  $\nabla$   $\triangle$  buttons to enter a number of days between regenerations.

In the case of using Softower, our recommendation is 14 days.

Use the NEXT button to move on to the next stage.

Use the REGEN button to return to the previous stage.

### 5.2.7. Setting regeneration time

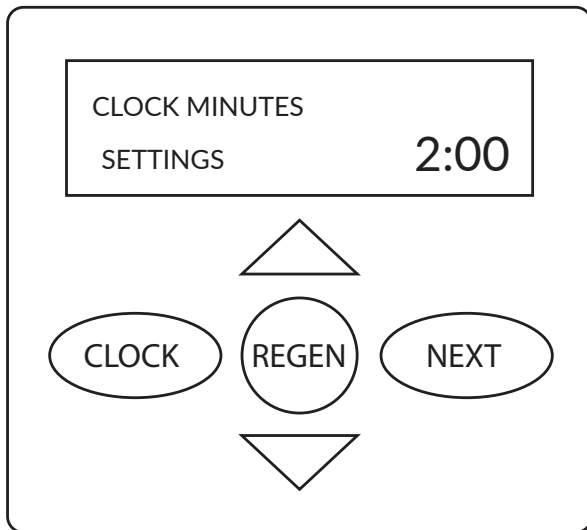


Use the  $\nabla$   $\blacktriangle$  buttons to enter the time at which regeneration should start.

Press the NEXT button twice to go to the end of the valve settings.

Use the REGEN button to return to the previous stage.

In the case of using Softower, our recommendation is 2 AM due to the lowest water demand at this time.



### 5.3. INDIVIDUAL MODE SETTING

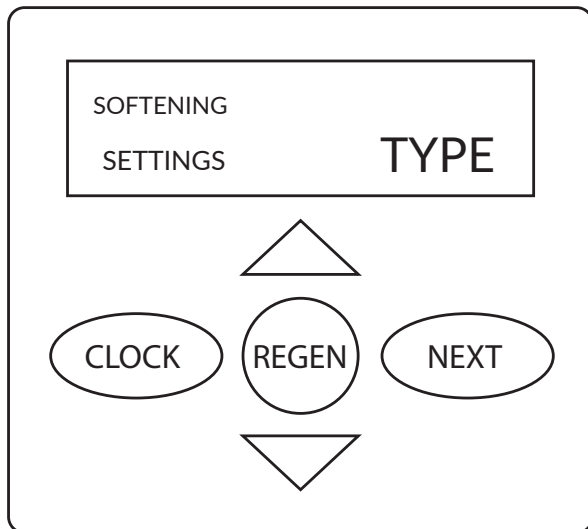
The control valve has been pre-programmed. Please do not change the settings yourself. Improper settings may affect device efficiency.

### 5.3.1. Setting table

Softower	S	M	L
<b>Ion exchange capacity</b>	1,35	1,8	2,25
<b>Filling</b>	3	4	5
<b>Brining</b>	75	75	75
<b>Backwashing</b>	4	4	4
<b>Rinsing</b>	6	6	6
<b>Language</b>	Polish	Polish	Polish
<b>Initial hardness</b>	According to the mixer settings	According to the mixer settings	According to the mixer settings
<b>Number of days between regenerations</b>	14	14	14
<b>Regeneration time</b>	02:00	02:00	02:00
<b>Filtration type</b>	Softening	Softening	Softening
<b>Volume between regenerations</b>	AUTO	AUTO	AUTO
<b>Type of regeneration</b>	Mixed	Mixed	Mixed
<b>Output signal 1</b>	OFF	OFF	OFF
<b>Output signal 2</b>	OFF	OFF	OFF
<b>Service alert</b>	Time	Time	Time
<b>Scheduled service</b>	1 year	1 year	1 year
<b>Salt level alarm</b>	5 kg	5 kg	5 kg



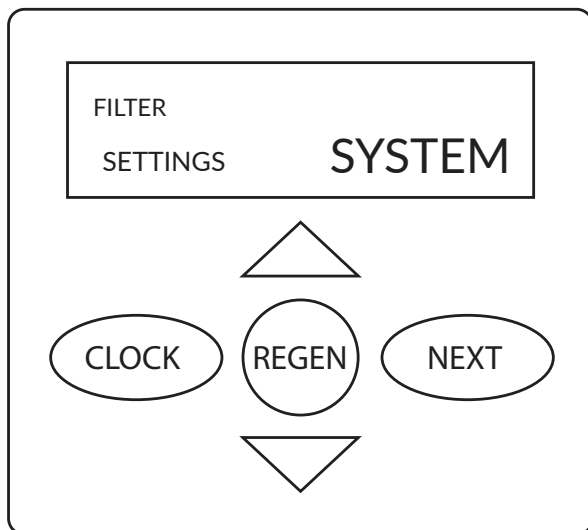
### 5.3.2. Type of filtration



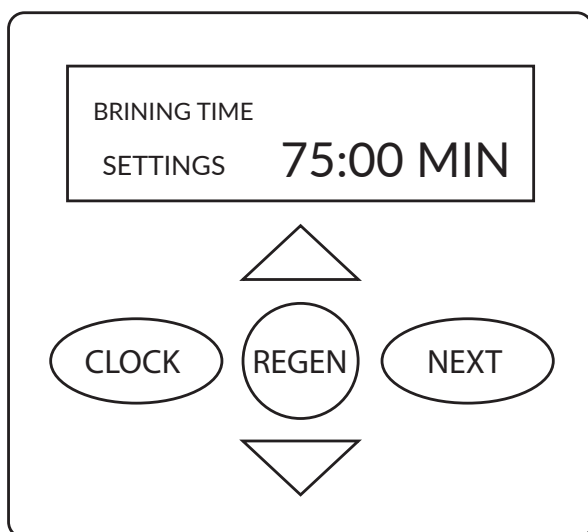
Use the  $\nabla$   $\triangle$  buttons to select "Softener" or "Filter".

For a softener, choose "Softener".

The screen shows a flashing sign SOFTENER. If the "Softener" sign is flashing, use the NEXT button to move on to the next stage.



### 5.3.3. Brining time

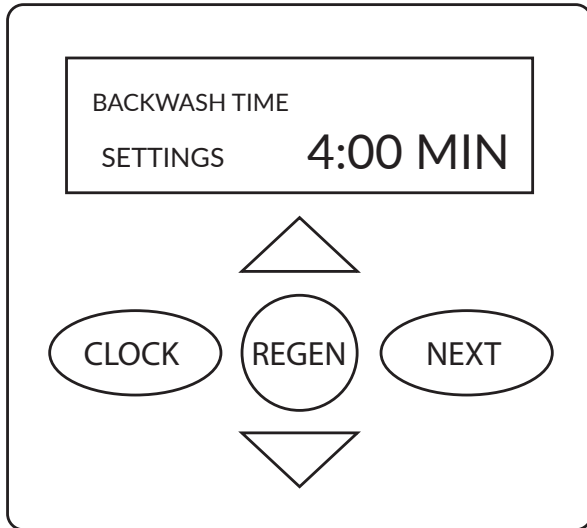


Use the  $\nabla$   $\triangle$  buttons to enter the brining time in minutes.

Use the NEXT button to move on to the next stage.

Use the REGEN button to return to the previous stage.

### 5.3.4. Backwash time

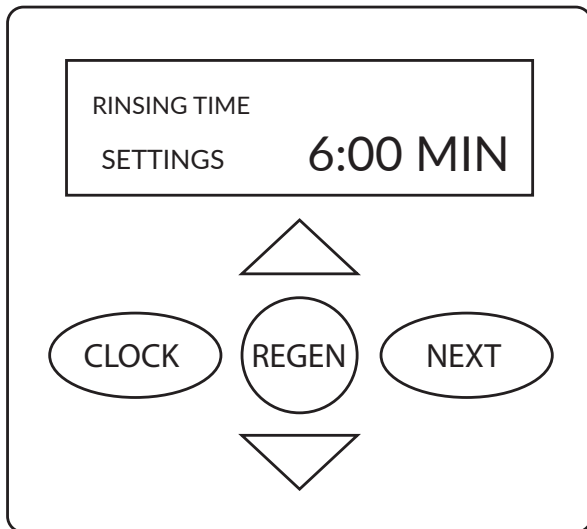


Use the  $\nabla$   $\triangle$  buttons to enter the brining time in minutes.

Use the NEXT button to move on to the next stage.

Use the REGEN button to return to the previous stage.

### 5.3.5. Rinsing time

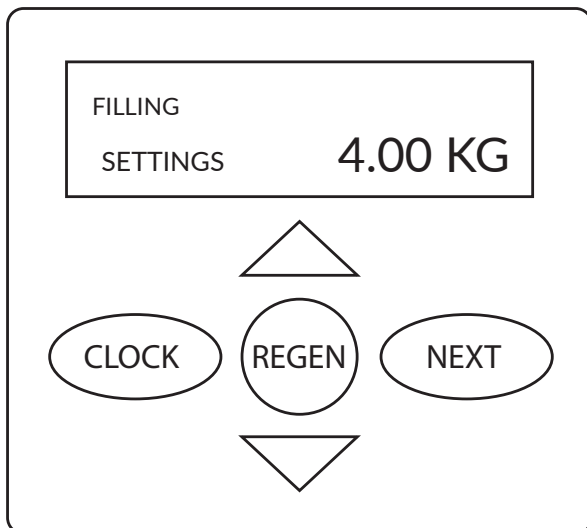


Use the  $\nabla$   $\triangle$  buttons to enter the rinsing time in minutes.

Use the NEXT button to move on to the next stage.

Use the REGEN button to return to the previous stage.

### 5.3.6. Amount of salt

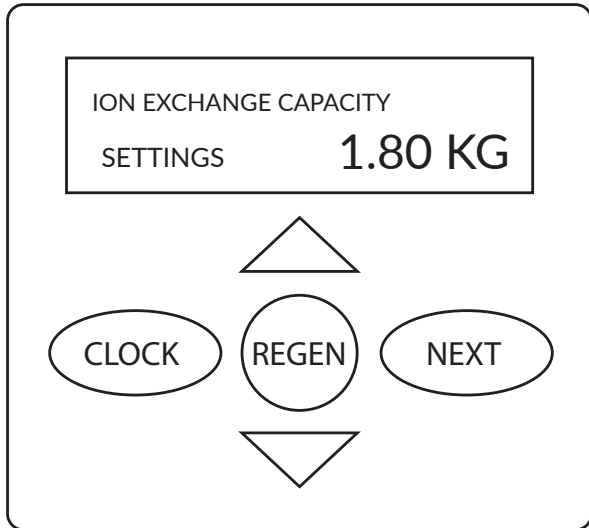


Use the  $\nabla$   $\triangle$  buttons to enter the rinsing time in minutes.

Use the NEXT button to move on to the next stage.

Use the REGEN button to return to the previous stage.

### 5.3.7. Capacity

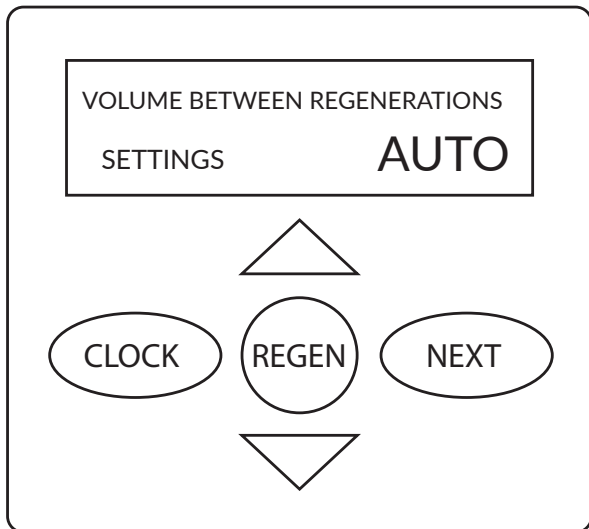


Use the  $\nabla$   $\triangle$  buttons to enter the capacity in kilograms.

Use the NEXT button to move on to the next stage.

Use the REGEN button to return to the previous stage.

### 5.3.8. Selection of regeneration frequency



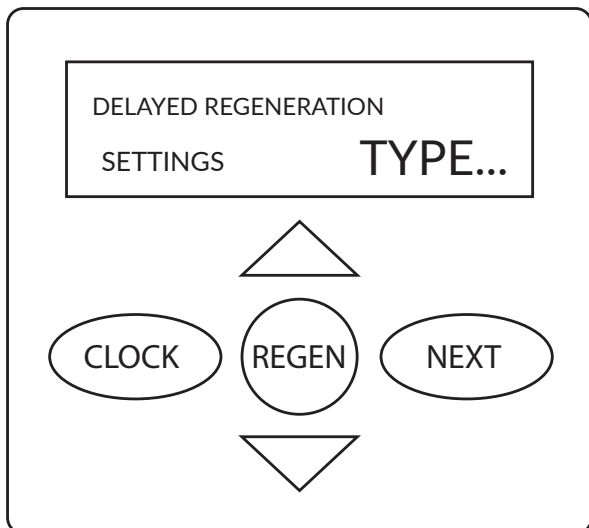
Use the  $\nabla$   $\triangle$  buttons to select regeneration frequency. It can be set automatically – then select AUTO. If you enter the frequency yourself, select OFF or set desired regeneration volume.

Regeneration frequency can be set within the range 0.02 - 5700 m3.

Use the NEXT button to move on to the next stage.

Use the REGEN button to return to the previous stage.

### 5.3.9. Choice of regeneration type



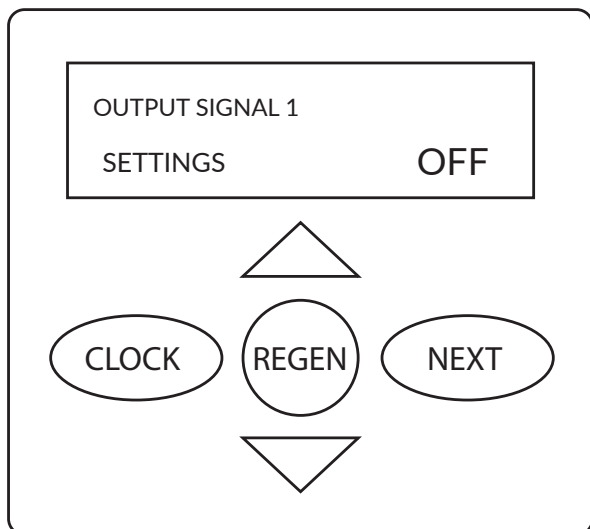
You can choose from three types of regeneration:

- Delayed regeneration (a regeneration process starts at a specified time)
- Mixed regeneration
- Instant regeneration (a regeneration process starts immediately)

Use the NEXT button to move on to the next stage. When SIGNAL 1 appears, press NEXT – SIGNAL 2 appears.

Omit all other stages by pressing NEXT at each subsequent message until the time is displayed.

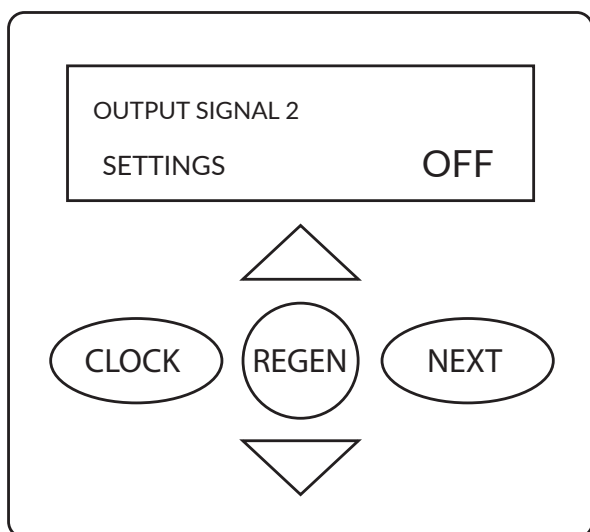
### 5.3.10. Output signal settings 1



Thanks to this option, you can pull the signal from the valve. If you want to use this option, you should consult your dealer.

Use the NEXT button to move on to the next stage.

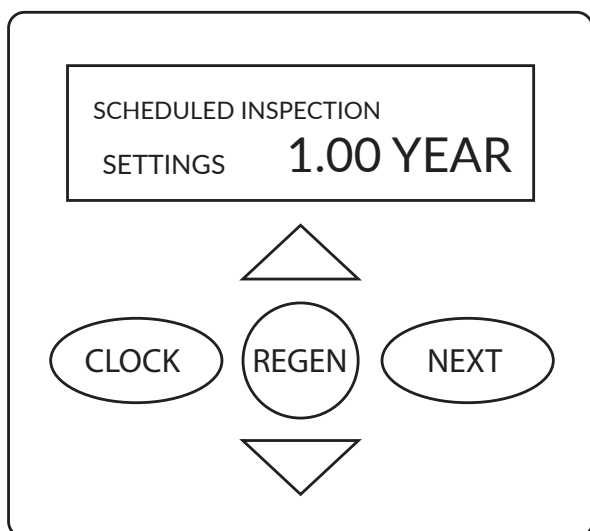
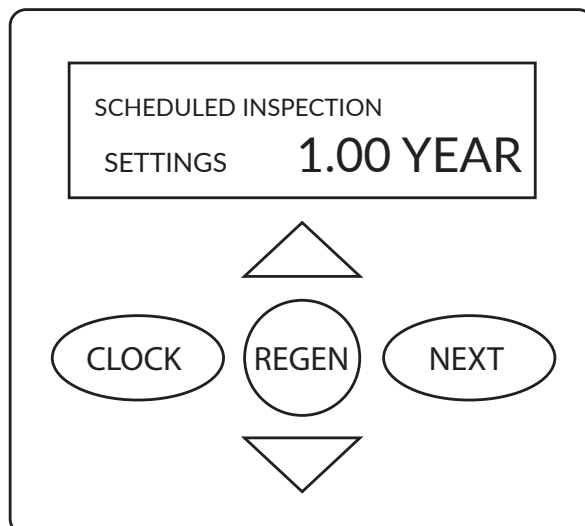
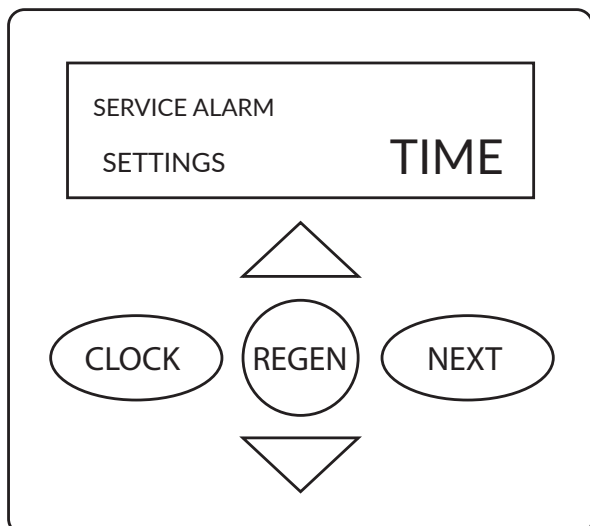
### 5.3.11. Output signal settings 2



Thanks to this option, you can pull the signal from the valve. If you want to use this option, you should consult your dealer.

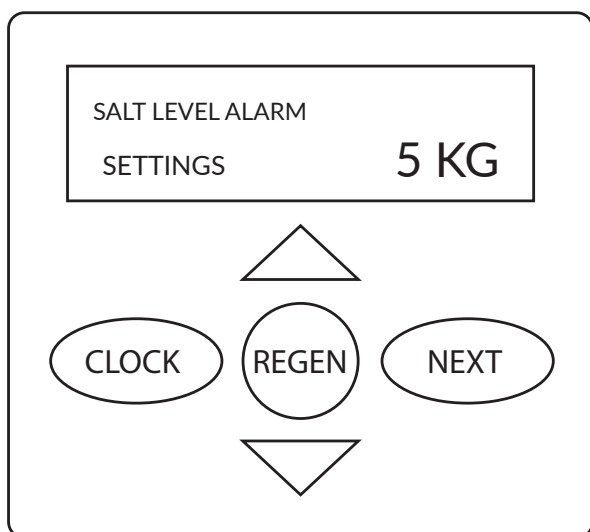
Use the NEXT button to move on to the next stage.

### 5.3.12. Service alarm



Use the  $\nabla$   $\triangle$  buttons to choose the function of a reminder about periodic maintenance service and change the frequency of maintenance service activities. Moreover, the display shows additional information about a number of days remaining before the next scheduled service.

### 5.3.13. Salt level alarm



Use the  $\nabla$   $\triangle$  buttons to enter the salt alarm value.

Use the NEXT button to finish programming

### 5.3.14. Regeneration setting table

Capacity	Type of regeneration	Number of days	Result
AUTO	DELAYED	OFF	Reserve volume is calculated automatically. Regeneration starts at a specified time when the device capacity falls below the established reserve volume.
AUTO	DELAYED	NUMBER	Reserve volume is calculated automatically. Regeneration starts at a specified time when the device capacity falls below the established reserve volume or the established interval between regenerations is not observed.
LICZBA	DELAYED	OFF	Reserve volume is not calculated automatically. Regeneration starts at a specified time when the softener capacity is exhausted.
OFF	DELAYED	NUMBER	Reserve volume is not calculated automatically. Regeneration starts at a specified time.
LICZBA	DELAYED	NUMBER	Reserve volume is not calculated automatically. Regeneration starts at a specified time when the softener capacity is exhausted or specified time between regenerations is not observed.
AUTO	NATIONALS	OFF	Reserve volume is not calculated automatically. Regeneration starts as soon as the softener capacity is exhausted. A message about the possibility of setting a regeneration time.
NUMBER	INSTANT	OFF	Reserve volume is not calculated automatically. Regeneration starts as soon as the softener capacity is exhausted. A message about the possibility of setting a regeneration time.

AUTO	MIXED	OFF	Reserve volume is calculated automatically. Regeneration starts at a specified time if the device capacity falls below the established reserve volume or after 10 minutes without water flow.
AUTO	MIXED	NUMBER	Reserve volume is calculated automatically. Regeneration starts at a specified time if the device capacity falls below the established reserve volume or the established interval between regenerations is not observed, or after 10 minutes without water flow.
NUMBER	MIXED	NUMBER	No automatic calculation of reserve value. Regeneration starts at a specified time if the specified time between regenerations is not observed or after 10 minutes without water flow.

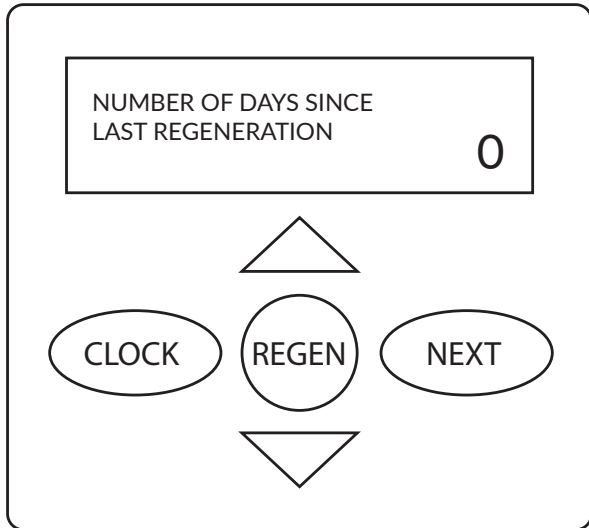
## 5.4. WORK HISTORY

If you want to run the available basic history, press the “up” and “down” buttons at the same time and hold them down for 5 seconds until the display changes. To enter the extended history, again press the “up” and “down” buttons at the same time until the message on the display changes. If no message specified in 5.4.1 appear on the display, access lock is active.

To deactivate the lock, press in sequence: “down”, NEXT, “up”, CLOCK. Use the same combination of buttons to activate the lock.

Use the NEXT button to move on to the next option. Use the REGEN button to return to the previous display.

### 5.4.1. Number of days since last regeneration (basic history)

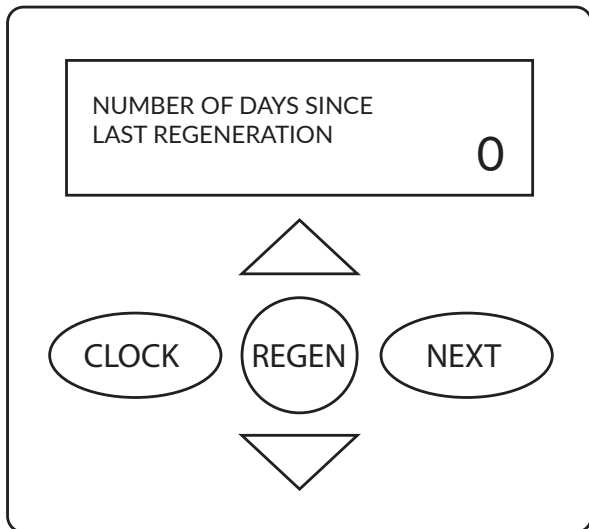


Information on the display about a current software version.

Use the NEXT button to move on to the next stage.

Use the REGEN button to return to the previous stage.

### 5.4.2. Water amount since last regeneration (basic history)

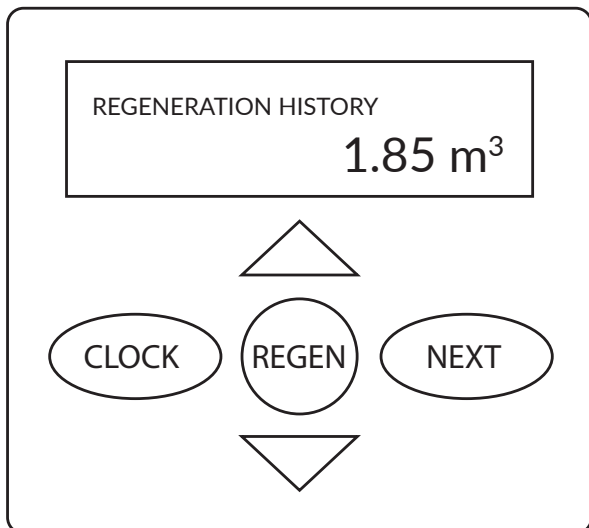


The screen displays a total number of operation days.

Use the NEXT button to move on to the next stage.

Use the REGEN button to return to the previous stage.

### 5.4.3. History of regeneration (basic history)



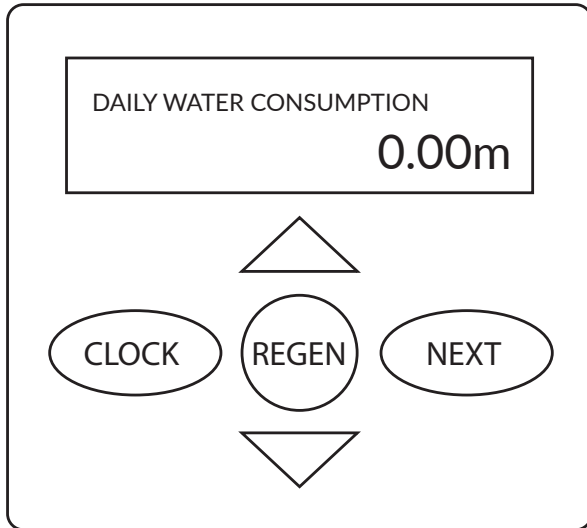
The screen displays total volume of treated water since device commissioning.

Use the NEXT button to move on to the next stage.

Use the REGEN button to return to the previous stage.



#### 5.4.4. Daily water consumption (basic history)

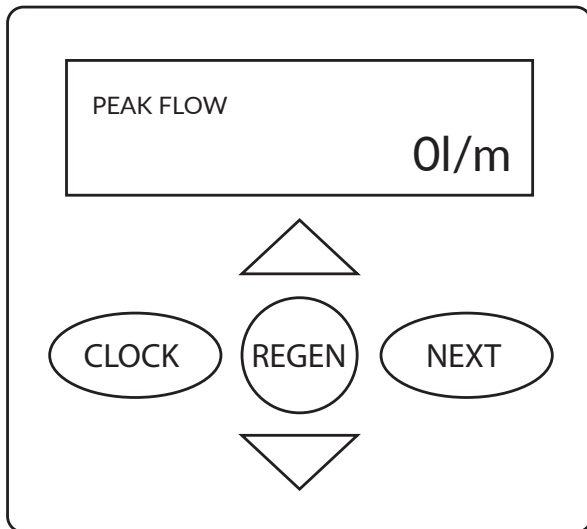


The screen displays flow from today (use the  $\nabla$   $\triangle$  buttons to display previous 63 days).

Use the NEXT button to move to peak flow.

Use the REGEN button to return to the previous stage.

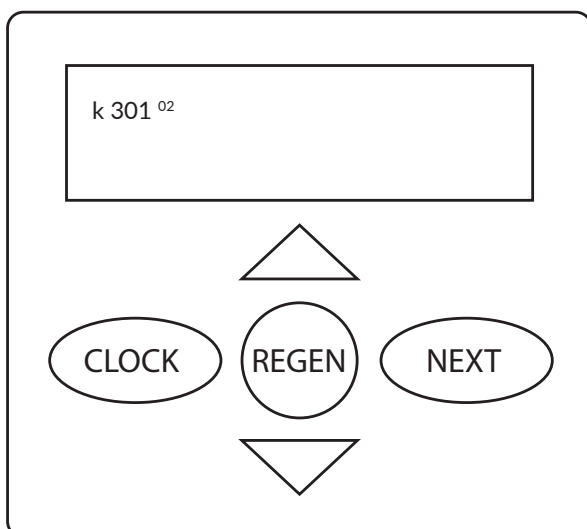
#### 5.4.5. Peak flow (basic history)



Use the NEXT button to move on to the next stage.

Use the REGEN button to return to the previous stage.

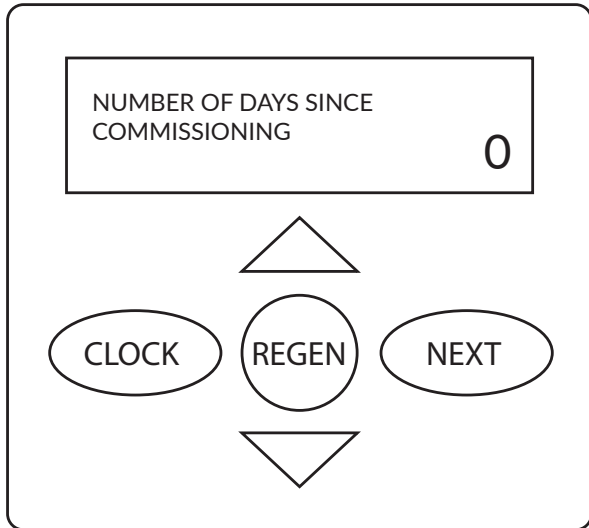
#### 5.4.6. Software version (extended history)



Use the NEXT button to move on to the next stage.

Use the REGEN button to return to the previous stage.

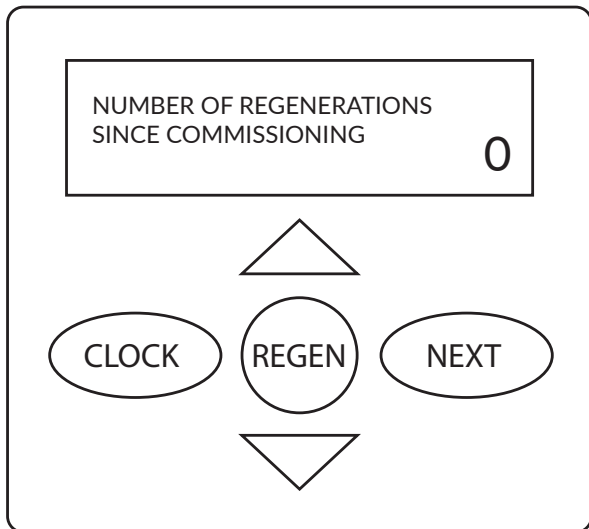
### 5.4.7. Total number of days (extended history)



Use the NEXT button to move on to the next stage.

Use the REGEN button to return to the previous stage.

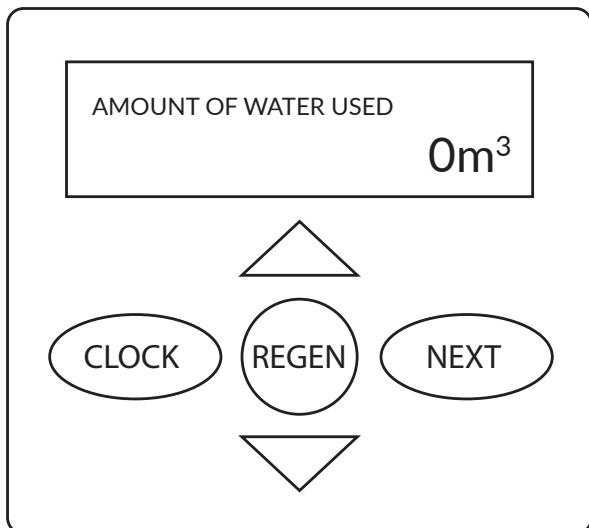
### 5.4.8. Total number of regenerations (extended history)



Use the NEXT button to move on to the next stage.

Use the REGEN button to return to the previous stage.

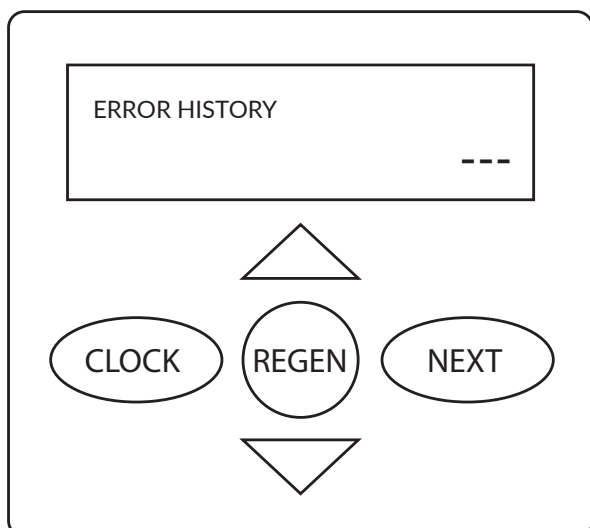
### 5.4.9. Total volume (extended history)



Use the NEXT button to move on to the next stage.

Use the REGEN button to return to the previous stage.

## 5.4.10. History of errors (extended history)



Recent 10 errors of the control valve are displayed on the screen (use the “up” and “down” buttons to display the recent errors).

Use the NEXT button to exit the history.

Use the REGEN button to return to the previous stage.

## 6. OPERATION

### 6.1. OPERATION OF THE WATER SOFTENER

The water softening system requires adding salt tablets to the brine tank. Demand for salt depends on total hardness of raw water and also on average water consumption.

The system requires systematic, periodic regeneration. This requires appropriate volume of water for medium washing or brining. Depending on the device size, these values will vary.

**NOTE:** Any modifications made by the User or the Installer not authorised by the manufacturer, will result in the loss of the warranty and often cause malfunctioning.

### 6.2. GENERAL INFORMATION

In order to ensure long-term and trouble-free operation of the system, maintenance must be carried out at regular intervals and a record of the performed activities must be kept.

In the case of signing a service contract with the supplier, the supplier takes over responsibility for carrying out regular system maintenance.

### 6.3. LIST OF REQUIREMENTS FOR PROPER FUNCTIONING

Proper work of the device depends on:

- Correct connection of the device according to the User Manual,
- Use of a pre-filter,
- Appropriate quality of feed water, in particular in terms of iron content, manganese content, turbidity, pH value, chlorides and microbial content,
- Appropriate working conditions of the device – working pressure within required limits, temperature within required limits, low humidity in the room, protection against atmospheric factors (sunlight, precipitation, etc.),
- Pressure in the device should not rise above the maximum operating pressure or drop below 0 bar atmospheric pressure (vacuum),
- Supplying electrical power with the correct voltage and frequency according to national standards,
- Ensuring adequate passability and throughput for removing washings into the sewage system,
- Commissioning the device according to the User Manual,
- Entering a value of hardness of raw water in the device controller,
- Correct use according to the User Manual,
- Closing the emergency bypass of the device,
- Regular salt refills and replacement of cartridges in a mechanical water filter.

### 6.4. USER OPERATING ACTIVITIES

The user must perform the following operating activities:

- Regular replacement of a pre-filter cartridge (depending on a degree of soiling, but not less frequently than every 6 months),
- Replenishment of salt tablets in the salt container,
- Monitoring malfunctions (e.g. alarm display on the controller, large amount of water in the salt container, no salt consumption, leaks, poor quality of treated water).

## 6.5. MEDIUM DISINFECTION AND CLEANING

We recommend using Ecoperla Antibacter and Ecoperla Antidotum for disinfection and maintenance. The alternate use of both agents every six months will help to maintain mechanical cleanliness and bacteriological purity of the medium. These products should be used in accordance with their instructions for use.

## 6.6. INTERRUPTIONS IN SYSTEM OPERATION

If the softener is not used for a month or more, it should be disinfected with Ecoperla Antibacter and Ecoperla Antidotum. Please contact Clarsan Service Department.

## 6.7. CONSUMABLES

List of consumables:

- Salt tablets (usually packed in 25-kilogram bags) – depending on water hardness and consumption,
- Pre-cartridges in a required mechanical water filter - usually replaced every 2-6 months,
- Injector – replaced every 2-5 years,
- Piston guide and piston – may need to be replaced in the case of very high hardness or other contaminations (every 2-5 years),
- Ecoperla Antibacter – recommended medium disinfectant – every 1 year according to the User Manual,
- Ecoperla Antidotum - recommended agent removing sediment from the medium – every 1 year according to the User Manual,
- Medium – replaced every 5-10 years.

## 6.8. WARRANTY LOSS

The device must be installed and operated in accordance with its intended use and User Manual. It must work under appropriate conditions.

Certain negligence or irregularities in this respect may result in warranty loss.

Factors that may cause warranty loss include:

- Raw water of poor quality (in particular, with exceedances of iron, manganese, turbidity, pH, chlorides and microorganisms),
- No pre-filter, no cartridge in a pre-filter,
- Incorrect hydraulic connection (e.g. input instead of output),
- No removal of washings into the sewage system or sewage system obstruction,
- No venting of the device at start-up or significant amounts of air in the device,
- Poor quality salt tablets (contaminated or in bulk form or without a certificate of the National Institute of Hygiene),
- Pressure above the maximum allowable limit for the device,
- System pressure below 0 bar (vacuum),
- Hydraulic impacts in the system,
- Temperature too low or too high,
- Changing controller settings or disassemble of the device, or its modification without consulting the technical department,
- Use of chemical agents which have a negative impact on the medium or device,
- Acts of vandalism or other mechanical damage.

If any of the above irregularities are found, the guarantor may make a decision about warranty loss. Since not always the above irregularities in connection or operation cause damage, the guarantor may decide to maintain the warranty of the device.

## 7. SERVICE

### 7.1. SERVICE TECHNICIAN'S ACTIVITIES

A prerequisite for long-term and trouble-free operation of the device and maintaining a 10-year warranty period is maintenance service performed annually.

Basic service activities performed by the service technician during the inspection:

- Checking water hardness,
- Checking brine suction,
- Checking/cleaning/replacing the injector,
- Checking the flow meter,
- Checking a level of salt in the brine tank,
- Checking a pre-filter cartridge,
- Checking correct functioning of the device,
- Tightness check,
- Issuing a protocol.

Additional activities performed by the service technician (may be charged extra):

- Replacement of a pre-filter cartridge,
- Salt replenishment,
- Supply of consumables,
- Inspection/change of controller settings,
- Mixer adjustment,
- Cleaning of the valve (piston, guides, etc.).

### 7.2. ILLEGITIMATE WARRANTY SERVICE CALLS

In the case of malfunctions, before calling the service centre check whether they do not result from improper operation. In the case of an illegitimate service call, the user will be charged with travel and service costs.

An illegitimate call includes the following cases:

- All cases listed under "Warranty loss",
- No salt in the salt container,
- Unscrewed bypass valve (raw water bypasses the device),
- Wrong water hardness value introduced,
- Too low pressure of feed water,
- Significant change in the quality of feed water, which has negative impact on device work,
- Failure to replace consumables according to the User Manual.

## 8. TROUBLESHOOTING

PROBLEM	POSSIBLE CAUSE	SOLUTION
No display on the screen.	a. No power at the outlet	a. Repair a damaged outlet or use another non-defective one
	b. Power supply unit not plugged into the outlet or to the PC board	b. Plug the power supply unit into the outlet or the PC board
	c. Incorrect power supply voltage	c. Connect to the power source with the correct voltage
	d. Defective power supply	d. Replace the power supply
	e. Defective PC board	e. Sweep the PC board
A displayed time is incorrect.	a. Power supply is plugged into an outlet which is switched on with the button	a. Use an outlet with constant power
	b. Switch or fuse is off.	b. Turn on the switch or fuse
	c. Power failure	c. Set the correct time
	d. Defective PC board	d. Replace the PC board
The display does not indicate water flow. Please refer to the instructions on how the flow is indicated.	a. Shut-off/bypass valve closed	a. Open the shut-off/bypass valve
	b. Water meter is connected to the incorrect connector on the PC board	b. Connect the water meter to the METER connector on the PC board
	c. Blocked water meter turbine	c. Disconnect the water meter and make sure that the turbine is not blocked.
	d. Water meter not connected to PC board	d. Connect the water meter to the METER connector on the PC board
	e. Defective water meter	e. Replace the water meter
	f. Defective PC board	f. Replace the PC board
Regeneration at the wrong time of a day.	a. Power failure	a. Set the correct time
	b. Current time set incorrectly	b. Set the current time
	c. Regeneration time set incorrectly	c. Set the time of regeneration
	d. Controller set in immediate regeneration mode	d. Check the regeneration type programming procedure and set delayed regeneration
	e. Controller set in regeneration mode (delayed + immediate)	e. Check the regeneration type programming procedure and set delayed regeneration
A current time is flashing.	a. Power failure	a. Set the correct time
Regeneration does not start after pressing the right buttons.	a. Defective drive gears	a. Replace the gears
	b. Defective main or regeneration piston	b. Replace the main or regeneration piston
	c. Defective PC board	c. Replace the PC board
Regeneration does not start automatically, but starts after pressing the right buttons.	a. Shut-off/bypass valve closed	a. Open the shut-off/bypass valve
	b. The water meter is connected to an incorrect connector on the PC board	b. Connect the water meter to the METER connector on the PC board
	c. Blocked water meter turbine	c. Disconnect the water meter and make sure that the turbine is not blocked
	d. Incorrect programming	d. Check the programming instructions
	e. Water meter not connected to PC board	e. Connect the water meter to the METER connector on the PC board
	f. Defective water meter	f. Replace the water meter
	g. Defective PC board	g. Replace the PC board

PROBLEM	POSSIBLE CAUSE	SOLUTION
Hard or untreated water at the outlet of the valve.	a. Bypass valve closed	a. Open the bypass valve
	b. Medium has run out due to high water intake	b. Check programming or diagnostics
	c. Water meter does not count flow	c. Disconnect the water meter and make sure that the turbine is not blocked
	d. Fluctuations in water parameters	d. Test water and adjust the settings
	e. No or little regenerant in the tank	e. Add regenerant to the tank
	f. Valve does not suck in regenerant	f. See point 12
	g. Too little regeneration solution in the tank	g. Check the regeneration tank filling settings in programming, check the BLFC to find and remove the blockage
	h. Defective gaskets	h. Check and replace the gaskets
	i. Valve and piston are not compatible	i. Select the right valve and piston
	j. Contaminated medium	j. Replace the medium
The valve uses too much regenerant.	a. Incorrect filling settings	a. Check the filling settings
	b. Incorrect programming	b. Check programming and make sure it is suitable for water parameters and process
	c. Too frequent regenerations	c. Check for leaks and make sure that the system is not too small
Regenerant gets into treated water.	a. Zbyt niskie ciśnienie wody zasilającej	a. Check feed water pressure (minimum 1.7)
	b. Incorrect injector size	b. Replace the injector
	c. Blocked DLFC line	c. Check and clean the DLFC line
Too much water in the regenerant tank.	a. Incorrect programming	a. Check "refill" settings
	b. Blocked injector	b. Clean or replace the injector
	c. Gears not pressed	c. Push the gears
	d. Defective seals	d. Replace the gaskets
	e. Bent or blocked drain pipe	e. Unblock or bend back the waste water drain pipe
	f. Clogged DLFC restrictor	f. Clean or replace the DLFC restrictor
	g. Missing BLFC restrictor	g. Replace the BLFC restrictor
The valve does not take regenerant.	a. Blocked injector	a. Clean or replace the injector
	b. Defective regeneration piston	b. Replace the regeneration piston
	c. Leaking regenerant hose	c. Check the regenerant hose
	d. Blocked washings hose	d. Check the washings hose
	e. Washings hose too long or outlet placed too high	e. Shorten the washings hose or lower the drain
	f. Too low feed water pressure	f. Check feed water pressure (minimum 1.7 bar)
Water directed to the drain.	a. Power loss during regeneration	a. Regeneration will be completed when power comes back, set the correct time, check the battery status
	b. Defective gaskets	b. Replace the gaskets
	c. Defective piston	c. Replace the piston
	d. Gears not pressed	d. Push the gears
Error E1/1001 (the display shows a code or code alternating with the text: Error or Err) The valve did not detect the motor movement.	a. Incorrectly or incompletely installed motor, damaged or disconnected power supply cables	a. Disconnect the motor, check the power cables and connection to the PC board, correct installation of the motor, reconnect the motor and reset* the PC board.
	b. Incorrectly installed PC board	b. Improve PC board installation and reset* the PC board



PROBLEM	POSSIBLE CAUSE	SOLUTION
	c. Defective or incorrectly installed drive gears	c. Improve installation, replace damaged drive gears
Fault E2/1002 (the display shows a code or a code alternating with the text: Error or Err) The valve motor ran too short and did not stop in a position for the next regeneration cycle.	a. Mechanical blockage inside the valve	a. Open the valve and check the piston and gaskets
	b. Mechanical blockage on the outside of the valve	b. Check gears, mounting and gearboxes
	c. Drive gears are over-tightened to the housing	c. Loosen the gears and reset* the PC board
	d. Incorrect supply voltage	d. Connect to the power supply with the correct voltage and reset* the PC board
Error E3/1003 (the display shows a code or a code alternating with the text: Error or Err) The valve motor ran too long and did not stop in a position for the next regeneration cycle.	a. Damage to the motor during regeneration	a. Check the connection or replace the motor and reset* the PC board
	b. Dirt on the piston and/or valve gaskets causing high resistance to the motor	b. Replace or clean the piston and valve gaskets and reset* the PC board
	c. Motor and PC board holder not pressed against the rest of the housing; the motor does not interlock with the drive gearbox	c. Improve motor holder installation and reset* the PC board
Error E4/1004 (the display shows a code or a code alternating with the text: Error or Err) The valve motor ran too long and did not stop in the WORK position.	a. Motor and PC board holder not pressed against the rest of the housing; the motor does not interlock with the drive gearbox	a. Improve motor holder installation and reset* the PC board
Error 1006 (the display shows the code alternating with Error) The MAV/SEPS/NHBP** valve motor ran too long and did not stop in the correct position.	a. The valve programmed as ALT A, ALT B, NHBP or SEPS did not detect the connected MAV or NHBP valve	a. Reset* the PC board and check programming
	b. Supply line MAV/NHBP valve not connected to the PC board	b. Connect the MAV/NHBP valve supply line to the PC board and reset* the PC board
	c. MAV/NHBP valve motor does not overlap with the gearbox	c. Improve installation of the MAV/NHBP valve motor and reset* the PC board
	d. Contamination on the piston and/or gaskets of the MAV/NHBP valve causing high resistance to the motor	d. Replace or clean the piston and gaskets of the MAV/NHBP valve and reset* the PC board
Error 1007 (the display shows the code alternately with the text: Error) The MAV/SEPS/NHBP** valve motor operated too short and did not stop in the correct position.	a. Mechanical interlock inside the MAV/NHBP valve	a. Open the valve and check condition of the piston and gaskets
	b. Mechanical lock outside the MAV/NHBP valve	b. Check gears, mounting and gearboxes
Error 4002.	a. Memory error	a. Replace the PC board

\*

The PC board can be reset by:

- pressing of the NEXT and REGEN buttons at the same time and holding them for 3 seconds
- disconnecting the power supply from the PC board and reconnecting it after 5 seconds

\*\*

MAV - Motorized Alternating Valve

SEPS - Separate Source

NHBP - No Hard Water Bypass

## 9. SERVICE CARD

<b>Service to be performed after 2 years of device operation</b>	Date of service:	<b>Service to be performed after 3 years of device operation</b>	Date of service:
Service technician's signature:		Service technician's signature:	
Service technician's stamp:		Service technician's stamp:	
<b>Service to be performed after 4 years of device operation</b>	Date of service:	<b>Service to be performed after 5 years of device operation</b>	Date of service:
Service technician's signature:		Service technician's signature:	
Service technician's stamp:		Service technician's stamp:	
<b>Service to be performed after 6 years of device operation</b>	Date of service:	<b>Service to be performed after 7 years of device operation</b>	Date of service:
Service technician's signature:		Service technician's signature:	
Service technician's stamp:		Service technician's stamp:	
<b>Service to be performed after 8 years of device operation</b>	Date of service:	<b>Service to be performed after 9 years of device operation</b>	Date of service:
Service technician's signature:		Service technician's signature:	
Service technician's stamp:		Service technician's stamp:	

## 10. WARRANTY

The distributor warrants efficiency of Ecoperla Softower in accordance with the warranty conditions attached to the manual.

To use the warranty, the user must provide proof of purchase of the system. In the case of any problem with Ecoperla Softower, please contact your dealer.

SERIAL NUMBER

AUTHORISED DEALER/SERVICE



ECOPERLA

