

**TORO**



**ECOPERLA**



**WATER  
SOFTENER**  
**ECOPERLA**  
**TORO**  
original product of Ecoperla

**USER  
MANUAL**

KEEP THIS USER MANUAL, SINCE IT CONTAINS THE WARRANTY AND THE SERVICE CARD

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## 1. INTRODUCTION

This user manual describes the installation, commissioning and maintenance steps of the Eco-perla Toro water softening systems.

Please read the manual carefully before installing and commissioning the device. The warranty will be voided if the installation is not carried out correctly.

## 2. SOFTENING PROCESS: OPERATION AND REGENERATION

Water softening is based on the ion exchange process. The process utilises ion exchange resins, which have the chemical ability to absorb calcium ( $\text{Ca}^{2+}$ ) and magnesium ions ( $\text{Mg}^{2+}$ ), thereby removing them from softened water. When calcium and magnesium ions are absorbed by the resin, sodium ion ( $\text{Na}^+$ ) is released. Due to its chemical properties, it forms salts with a much higher solubility, thus combating hardness problems.

It must be taken into account that water after the softening process has a higher sodium concentration than before filtration. Depending on sodium concentration and hardness of water that is fed into the system, concentration of sodium in the softened water may be higher than the concentration recommended in Journal of Laws of 2015 item 1989.

If water is intended for consumption by those who must follow a low sodium diet, it is a better idea to install a reverse osmosis system.

### 2.1. OPERATING MODE

During softening, water enters the control valve through the inlet, flows to the top of the cylinder and through the resin, where the ion exchange process takes place.

Softened water flows through the outlet in the control valve and is directed to the water system.

### 2.2. REGENERATION MODE

Once the resin has absorbed the maximum amount of calcium and magnesium ions, it must be regenerated, before being used in a new cycle. The device carries out the regeneration process, using what is known as backwash regeneration. Brine is sucked in from the brine tank and then guided through the medium from the bottom to the top.

The regeneration process consists of 4 stages aimed at regeneration of the resin and preparing it for a new cycle. The stages are as follows: 1. BACKWASH, 2. BRINE DRAW, 3. RAPID RINSE, 4. REFILL.

The Eco-perla Toro water softeners automatically switch between the operation and regeneration phases. There is no need for the user to intervene in the system. The user should only maintain the correct level of regeneration salt in the tank.

### 3. TECHNICAL SPECIFICATIONS

			Ecoperla Toro 20	Ecoperla Toro 35
Medium volume	V <sub>z</sub>	[dm <sup>3</sup> ]	20	35
Nominal flow rate	Q	[m <sup>3</sup> /h]	1,5	1,8
Maximum flow rate	Q <sub>max</sub>	[m <sup>3</sup> /h]	2,0	2,4
Connection	d	[cal]	1	1
Operating pressure	p	[bar]	2,5-6,0	
Temperature	T	[°C]	2-40	
Average ion exchange capacity	C	[m <sup>3</sup> ·mgCaCO <sub>3</sub> /dm <sup>3</sup> ]	1000	1750
Dimensions	a	[mm]	350	
	b	[mm]	570	
	h	[mm]	710	1050
	H	[mm]	850	1180
Component materials	Valve		Reinforced Noryl	
	Cylinder		Reinforced polyester with glass fibre	
	Connection		PE	
Column fill	Medium		Softening cation exchange resin regenerated with NaCl	



## 4. ASSEMBLY

### 4.1. PRELIMINARY WARNINGS

Ecoperla Toro is a series of cabinet water softeners in two sizes.

Device operates properly if you know hardness value of raw water in your household.

If water comes from a public water intake, information on hardness can be obtained from water supplier. If water comes from a private well, you should perform or commission physiochemical analysis of water to verify water hardness and other physiochemical parameters, such as: chlorides, iron, manganese, pH, ammonium ion, electrical conductivity, nitrates.

It is a good idea to install a sediment pre-filter, as water flowing into the softening device must not contain large mechanical contaminants. Mechanical particles contained in unfiltered water may damage internal parts of the control valve, leading to failure.

### 4.2. INSTALLATION

#### Installation requirements and recommendations:

#### 4.2.1. Choosing installation place

The water softener must be placed in a place which has access to the water system and allows for easy and unobstructed process of filling the salt tank.

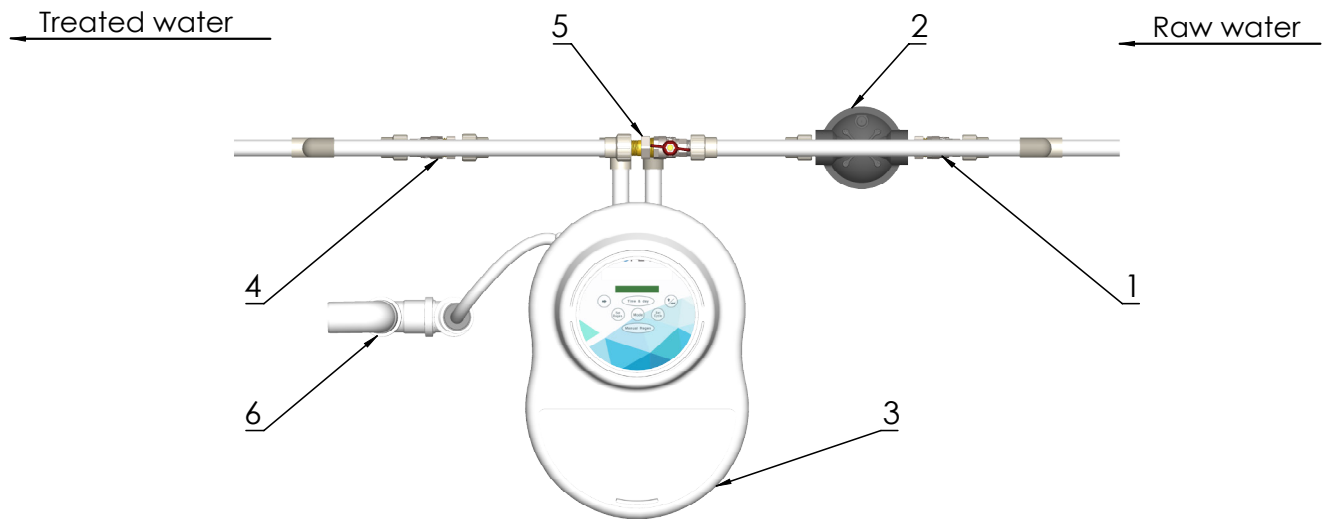
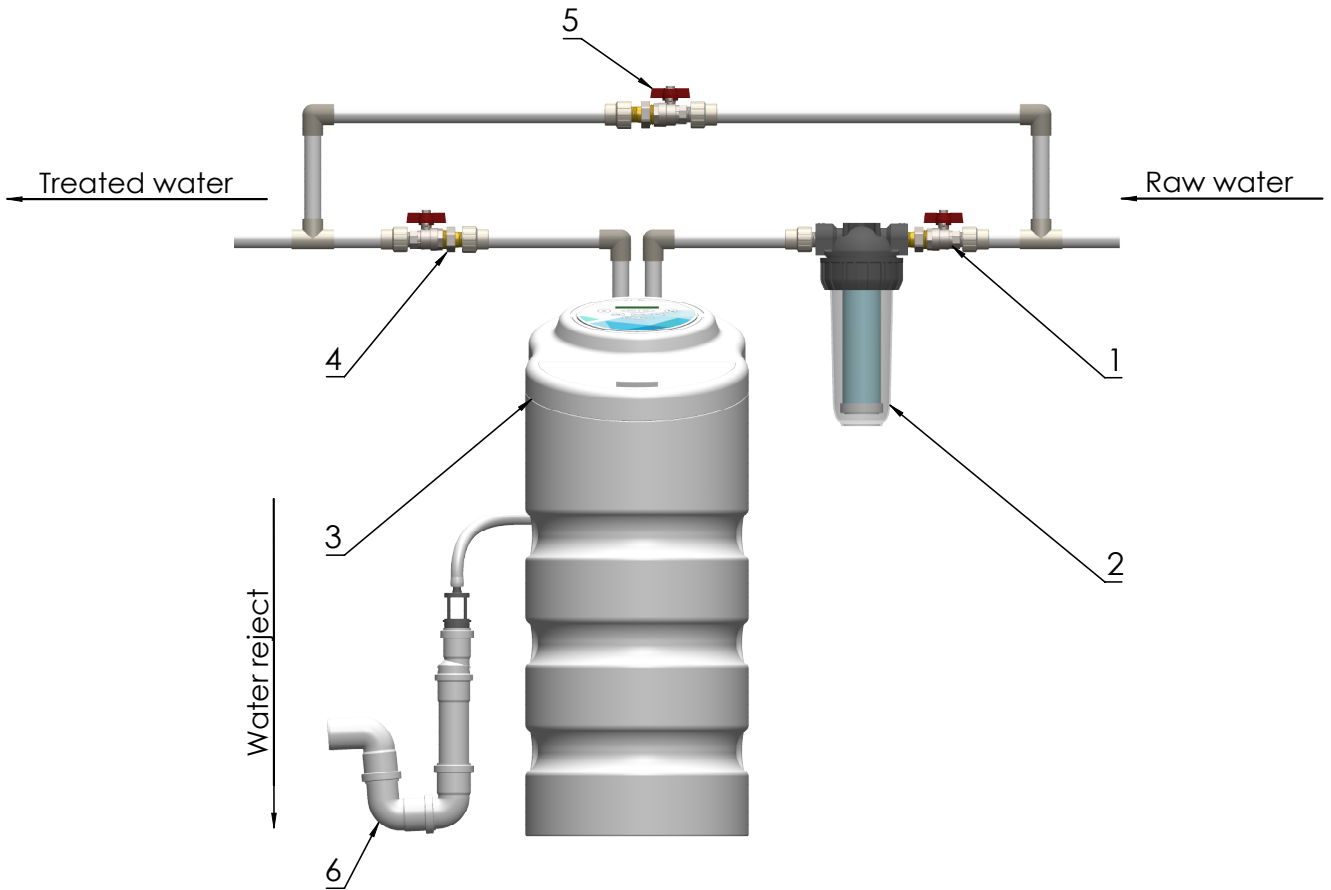
The system must be placed on a flat surface and must not be exposed to direct sunlight, rain or moisture.

The system (including the inlet and softened water outlet, as well as the drain to the sewage system) must be located in a place where temperature is not lower than 4°C and higher than 45°C.

In order to prevent the risk of fire or explosion, the system should not be located near acid or vapours or be exposed to products derived from crude oil.

Water softeners must be installed and connected in accordance with the manufacturer's recommendations and in compliance with the applicable regulations for low-voltage and hydraulic installations.

## ECOPERLA TORO CONNECTION DIAGRAM



1.	Inlet valve to Ecoperla Toro
2.	Mechanical water filter
3.	Ecoperla Toro
4.	Outlet valve from Ecoperla Toro
5.	Bypass valve
6.	Drain to the sewage system

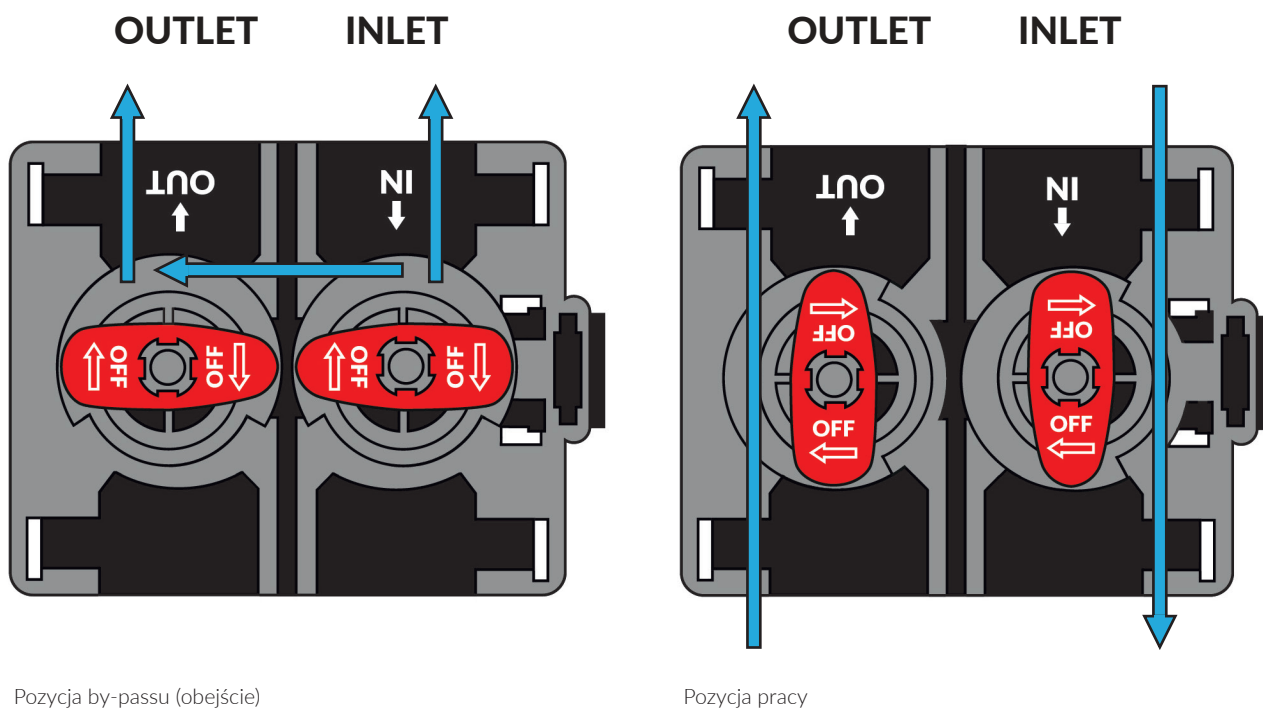


## 4.2.2. Device connection to water system

System must be connected to the feed water with a bypass. You can use either the original bypass or 3 ball valves installed in the pipeline (Fig. 1).

Below is a diagram of the position of the original bypass ball valve, which is attached to the system.

Fig. 2



When the valves are in the **bypass** position, water **does not enter** the softener.

Unsoftened water is supplied to the water system.

When the valves are in the **working** position, water **enters** the softener.

Softened water is supplied to the water system.

**Inlet and outlet of the bypass are marked with arrows.**

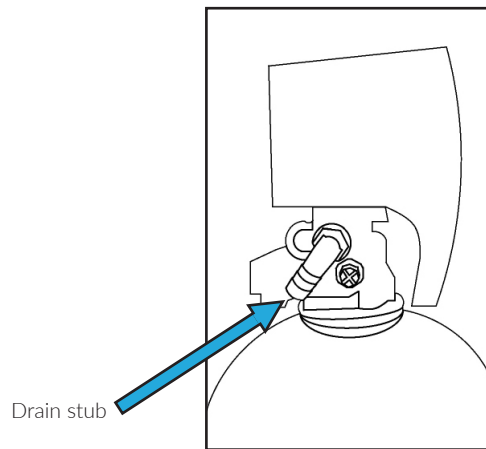
**The outlet in the control valve and the salt tank overflow lead to the drain. These connections are independent and have a separate outlet to avoid water return.**

The device must be connected to the water system with flexible pipes, which must comply with the regulations in force.

### 4.2.3. Drain hose connection

The system should be placed as close to the drain as possible. The drain level should be below the softener valve and no further than 3 m. Otherwise please contact your dealer's technical department. The pipe connecting the device to the sewage system should be connected to the drain stub (fig. 3).

Fig. 3

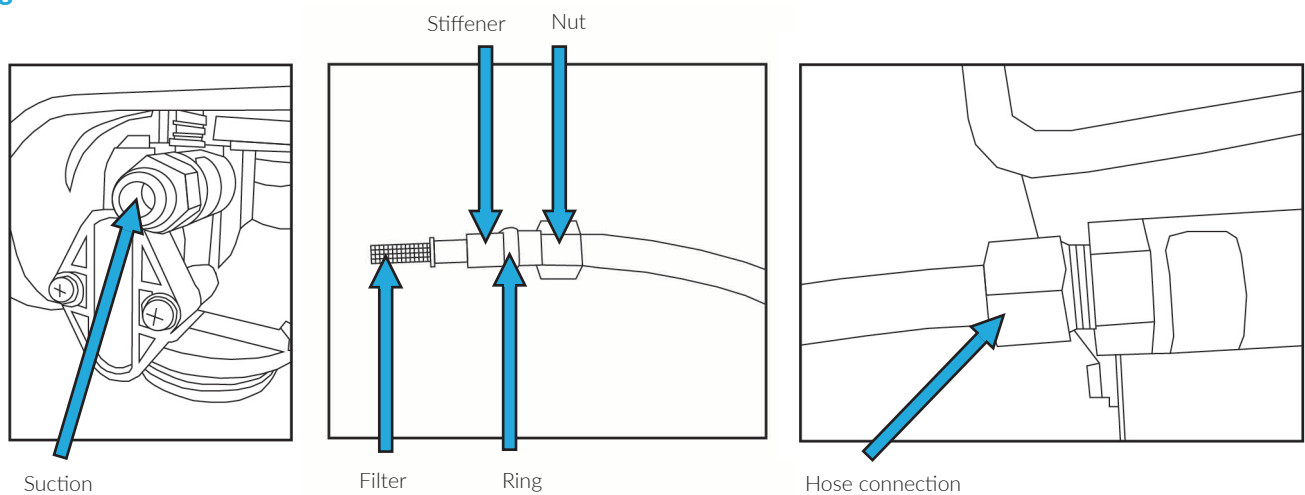


The drain pipe must be connected with a flexible hose with an internal diameter of not less than ( $\varnothing$ ) 15 mm.

### 4.2.4. Brine hose connection

It is necessary to install the brine hose and screw it to the suction inlet. Make sure that the filter, stiffener and ring, which are included in the box, are correctly connected.

Fig. 4



Make sure that all parts of the system are connected tightly, so that no air can get inside.

### 4.2.5. Overflow hose connection

The brine overflow hose removes excess water into the drain to avoid spillage on the floor.

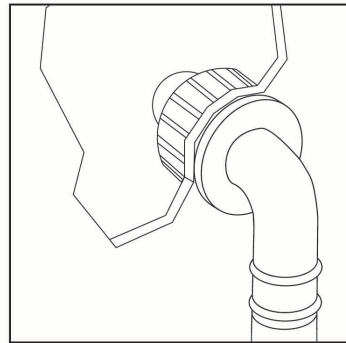
IT IS NECESSARY to install the overflow cap that is included in the box.

To install the overflow hose, the overflow cap must be placed in the hole that is located on the side of the brine tank. It should be fixed with a nut and gasket as shown in fig. 5.

The overflow cap for cabinet systems can be found in the box and can be fitted to the appropriate side of the housing, depending on the location of the system.

Attach a piece of pipe with an internal diameter of  $\varnothing$  15 mm to the cap and suspend it so that it reaches the drain.

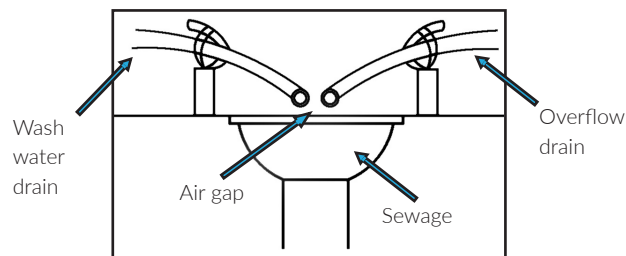
Fig. 5



Tank overflow cap

Connect a drain line or flexible hose with an internal diameter of  $\varnothing$  15 mm.

Always leave an air gap between the drain pipe and the general drain to prevent possible water return through the drain. This may affect correct operation of the device.



#### 4.2.6. Electrical connections

Once the previous connections have been made, the valve with the programmer must be connected to the mains of 220 V - 50 Hz via the included power supply unit.

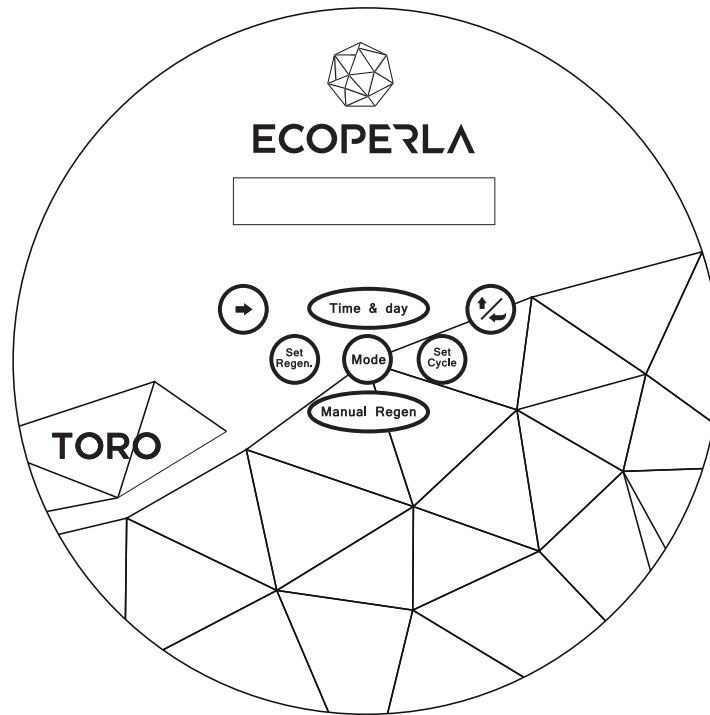
Electrical installation of the device must be carried out in compliance with the relevant regulations. The power supply line must be protected by suitable protective devices (circuit breaker and fuse).



**BEWARE: The system must be connected to a separate electrical line 24 hours a day, NEVER to a line connected to generators.**

## 5. PROGRAMMING

After connecting the power line, you need to program the programmer.



**Fig. 6**

Programmer front panel

Button	Description
	<b>ADVANCE</b> Moves the pointer to set appropriate parameters.
	<b>TIME&amp;DAY</b> Allows for programming the time and date.
	<b>INCREASE VALUES AND CONFIRMATION</b> Increases the value of the configured parameters. Confirms the programmed values.
	<b>MODE</b> Allows for configuration of the regeneration mode.
	<b>SET REGEN</b> Allows for configuration of the selected regeneration mode parameters.
	<b>SET CYCLE</b> Allows for configuration of the regeneration cycle times.
	<b>MANUAL REGEN</b> Enforces immediate regeneration.

Before using the water softener, you need to program the control valve.  
 Default program is mode 4 - **METERDELEY** - volumetric with delayed regeneration.  
 For programming you need to:

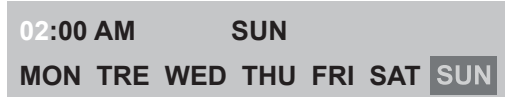
- set the time (point 5.1, page 11)
- set the regeneration time and volume of softened water (point 5.2.4.1, page 16)
- set the regeneration cycles (5.2.5, page 18)

## 5.1. Time and date configuration

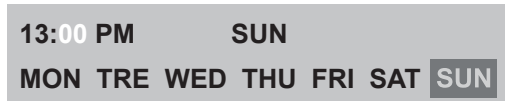
Press **TIME&DAY** to move on to the time and date configuration menu.



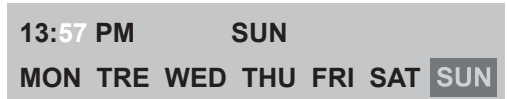
Press **INCREASE VALUES AND CONFIRMATION** to set an hour.



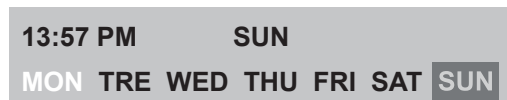
Press **ADVANCE** to move on to setting minutes.



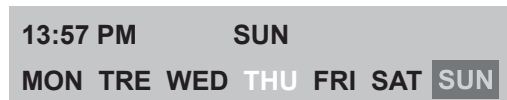
Press **INCREASE VALUES AND CONFIRMATION** to set minutes.



Press **ADVANCE** to move on to setting a day of the week.



Press **INCREASE VALUES AND CONFIRMATION** to set a day of the week.



Press **TIME&DAY** to save the programmed values.

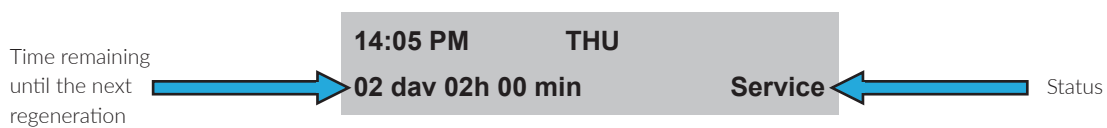


## 5.2. Operating mode configuration

The valve allows for configuration of 4 different operating modes:

### MODE 1: TIME - Time Operating Mode

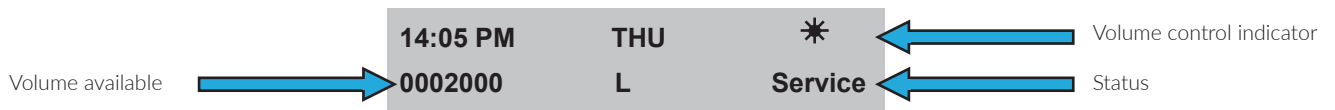
The system will perform regeneration with the frequency of selected days and at a fixed time (01-99 days). After programming, the following message will appear on the screen:



**MODE 2: METERIMM** – Volumetric mode with immediate regeneration.

The system will perform regeneration immediately after softening the specified volume of water.

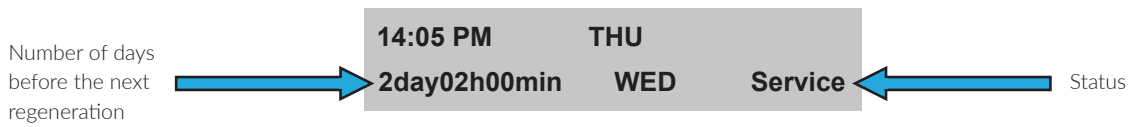
After programming, the following message will appear on the screen:



**MODE 3: WEEK** – Operating mode with weekly regeneration.

The system will perform regeneration on selected days of the week, at a set time.

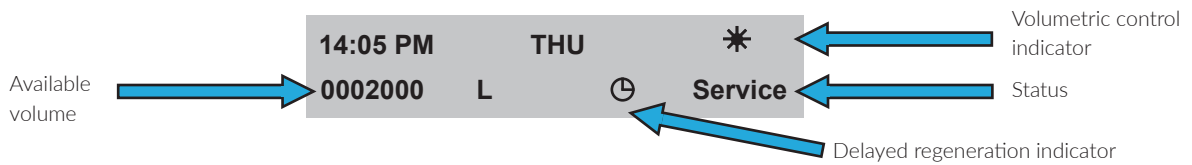
After programming, the following message will appear on the screen:



**MODE 4: METERDELAY** – Volumetric mode with delayed regeneration

The system will perform regeneration at the programmed time after softening the specified amount of water.

After programming, the following message will appear on the screen:



### 5.2.1. 1st operating mode configuration: TIME - Time Operating Mode

Press **MODE** to move on to operating mode configuration.



Press **ADVANCE** to select the operating mode (TIME).










Press **INCREASE VALUES AND CONFIRMATION** to set minutes.









Press **MODE** to save the programmed values.



### 5.2.1.1. Configuration of time regeneration intervals: MODE 1 - TIME - Time Operating Mode

Press <b>SET REGEN</b> to move on to the operating mode.		
Press <b>INCREASE VALUES AND CONFIRMATION</b> to set a regeneration hour.		02:00 AM Day override 03
Press <b>ADVANCE</b> to move on to setting minutes.		04:00 AM Day override 03
Press <b>INCREASE VALUES AND CONFIRMATION</b> to set minutes.		04:35 AM Day override 03
Press <b>ADVANCE</b> to move on to setting days between regenerations.		04:35 AM Day override 03
Press <b>INCREASE VALUES AND CONFIRMATION</b> to determine a number of days between regenerations.		04:35 AM Day override 05
Press <b>SET REGEN</b> to save the programmed values.		

### 5.2.2. Operating mode configuration: MODE 2 - METERIMM

Press <b>MODE</b> to move on to the operating mode.		
Press <b>ADVANCE</b> to move on to the selected operating configuration (METERIMM).		Time Meter Imm. Week Meter Delay
Press <b>INCREASE VALUES AND CONFIRMATION</b> to confirm your choice.		Time Meter Imm. Week Meter Delay
Press <b>ADVANCE</b> to select a desired unit of measure (L).		M <sup>3</sup> GAL L
Press <b>INCREASE VALUES AND CONFIRMATION</b> to confirm a desired unit of measure (L).		M <sup>3</sup> GAL L
Press <b>MODE</b> to save the programmed values.		

### 5.2.2.1. Softened water volume configuration: MODE 2 - METERIMM - Volumetric mode with immediate regeneration

Next press **SET REGEN**



Press **INCREASE VALUES AND CONFIRMATION** to determine the amount of water that can be softened by the resin bed.



Capacity	0001600	L
----------	---------	---

Press **ADVANCE** to navigate to the next digit.



Capacity	0002600	L
----------	---------	---

Press **SET REGEN** to save the programmed values.



### 5.2.3. Operating mode configuration: MODE 3 - WEEK - Operating mode with weekly time regeneration

Press **MODE** to move on to the operating mode.



Press **ADVANCE** to move on to the selected operation configuration (WEEK).



Time	Meter Imm.
Week	Meter Delay

Press **INCREASE VALUES AND CONFIRMATION** to confirm your choice.



Time	Meter Imm.
Week	Meter Delay

Press **MODE** to save the programmed values.





### 5.2.3.1. Configuration of time and day of week: MODE 3 – WEEK – Operating mode with weekly regeneration

Press **SET REGEN** to move on to the operating mode.



Set the desired regeneration time.  
Press **INCREASE VALUES AND CONFIRMATION** to set an hour of regeneration.



01:00 AM	SUN							
MON	TRE	WED	THU	FRI	SAT	SUN		

Press **ADVANCE** to move on to setting minutes.



16:00 PM	SUN							
MON	TRE	WED	THU	FRI	SAT	SUN		

Press **INCREASE VALUES AND CONFIRMATION** to set minutes.



16:20 PM	SUN							
MON	TRE	WED	THU	FRI	SAT	SUN		

Press **ADVANCE** to move on to setting days of the week on which regeneration will be performed.



16:20 PM	SUN							
MON	TRE	WED	THU	FRI	SAT	SUN		

Press **INCREASE VALUES AND CONFIRMATION** to confirm your choice.



16:20 PM	SUN							
MON	TRE	WED	THU	FRI	SAT	SUN		

Press **SET REGEN** to save the programmed values.



### 5.2.4. Operating mode configuration: MODE 4 - METERDELAY - Volumetric mode with immediate regeneration

Press **MODE** to move on to the operating mode.



Press **ADVANCE** to move on to the selected operating configuration (METERDELAY).



Time	Meter Imm.
Week	Meter Delay

Press **INCREASE VALUES AND CONFIRMATION** to confirm your choice.



Time	Meter Imm.
Week	Meter Delay

Press **ADVANCE** to select a desired unit of measure (L).



M <sup>3</sup>	GAL	L
----------------	-----	---

Press **INCREASE VALUES AND CONFIRMATION** to confirm a desired unit of measure (L).



M <sup>3</sup>	GAL	L
----------------	-----	---

Press **MODE** to save the programmed values.



## 5.2.4.1. Configuration of regeneration time and softened water volume: MODE 4 - METERDELAY - Volumetric mode with delayed regeneration

Press **SET REGEN** to move on to regeneration time configuration.



Set the desired regeneration time.  
Press **INCREASE VALUES AND CONFIRMATION** to set an hour of regeneration.



01:00 AM	DAY: OFF	
Capacity:	00001600	L

Press **ADVANCE** to move on to setting minutes.



16:00 PM	DAY: OFF	
Capacity:	00001600	L

Press **INCREASE VALUES AND CONFIRMATION** to set minutes.



16:20 PM	DAY: OFF	
Capacity:	00001600	L

Press **ADVANCE** to move on to setting the maximum number of days between regenerations.



16:20 PM	DAY: OFF	
Capacity:	00001600	L

Press **INCREASE VALUES AND CONFIRMATION** to set the maximum number of days between regenerations.



16:20 PM	DAY: 06	
Capacity:	00001600	L

Press **ADVANCE** to move on to determining the amount of water that the resin can soften.



16:20 PM	DAY: 06	
Capacity:	00001600	L

Press **INCREASE VALUES AND CONFIRMATION** to determine the amount of water that the resin can soften.



16:20 PM	DAY: 06	
Capacity:	00001600	L

Press **ADVANCE** to navigate to the next digit.



16:20 PM	DAY: 06	
Capacity:	00001600	L

Press **SET REGEN** to save the programmed values.



[See the attached table to determine the volume of softened water depending on the softener resin.](#)

## CALCULATION TABLE FOR PROGRAMMING THE VOLUME OF WATER SOFTENED BY THE ECOPERLA TORO SYSTEM, DEPENDING ON WATER HARDNESS

General hardness			Capacity (number of litres of water between regenerations)	
German degrees [°d]	French degrees [°f]	[mgCaCO <sub>3</sub> /dm <sup>3</sup> ] ([ppm])	[dm <sup>3</sup> ]	[dm <sup>3</sup> ]
			TORO 20	TORO 35
5,6	10	100	10000	15800
6,2	11	110	9091	14364
6,7	12	120	8333	13166
7,3	13	130	7692	12153
7,9	14	140	7143	11286
8,4	15	150	6667	10534
9	16	160	6250	9875
9,6	17	170	5882	9294
10,1	18	180	5556	8778
10,7	19	190	5263	8316
11,2	20	200	5000	7900
11,8	21	210	4762	7524
12,4	22	220	4545	7181
12,9	23	230	4348	6870
13,5	24	240	4167	6584
14	25	250	4000	6320
14,6	26	260	3846	6077
15,2	27	270	3704	5852
15,7	28	280	3571	5642
16,3	29	290	3448	5448
16,9	30	300	3333	5266
17,4	31	310	3226	5097
18	32	320	3125	4938
18,5	33	330	3030	4787
19,1	34	340	2941	4647
19,7	35	350	2857	4514
20,2	36	360	2778	4389
20,8	37	370	2703	4271
21,3	38	380	2632	4159
21,9	39	390	2564	4051
22,5	40	400	2500	3950
23	41	410	2439	3854
23,6	42	420	2381	3762
24,2	43	430	2326	3675
24,7	44	440	2273	3591
25,3	45	450	2222	3511

25,8	46	460	2174	3435
26,4	47	470	2128	3362
27	48	480	2083	3291
27,5	49	490	2041	3225
28,1	50	500	2000	3160
28,7	51	510	1961	3098
29,2	52	520	1923	3038
29,8	53	530	1887	2981
30,3	54	540	1852	2926
30,9	55	550	1818	2872
31,5	56	560	1786	2822
32	57	570	1754	2771
32,6	58	580	1724	2724
33,1	59	590	1695	2678
33,7	60	600	1667	2634
34,3	61	610	1639	2590
34,8	62	620	1613	2549
35,4	63	630	1587	2507
36	64	640	1563	2470
36,5	65	650	1538	2430
37,1	66	660	1515	2394
37,6	67	670	1493	2359
38,2	68	680	1471	2324
38,8	69	690	1449	2289
39,3	70	700	1429	2258
39,9	71	710	1408	2225
40,4	72	720	1389	2195
41	73	730	1370	2165
41,6	74	740	1351	2135
42,1	75	750	1333	2106

Depending on regeneration cycle configuration, the values in the table may vary.

### 5.2.5. Configuration of regeneration cycles

Press **SET CYCLE** to move on to regeneration time configuration.



Determine the number of minutes of each cycle.  
Press **ADVANCE** to move on to the particular cycle.



BackWas.004	BrineDr.060
RapidRs.004	ReFill 005

Press **INCREASE VALUES AND CONFIRMATION** to determine the number of minutes of each cycle.



BackWas.004	BrineDr.060
RapidRs.004	ReFill 005

Press **SET CYCLE** to save the programmed values.



See the attached table to determine the volume of softened water depending on the resin.

MODEL	REGENERATION CYCLE			
	BACKWASH	BRINE DRAW	RAPID RINSE	REFILL
Toro 20	4min	60min	4min	5min
Toro 35	4min	70min	6min	10min

## 6. WATER SOFTENER COMMISSIONING

Once the hydraulic system and power source have been connected and the controller has been programmed, the system can be put into operation. Follow the instructions below:

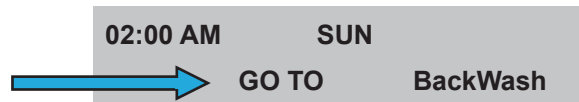
### 6.1. How to commission water softener

Make sure that the softener inlet and outlet valves are closed.

- Press and hold **MANUAL REGENERATION** for 5 seconds. This will start the manual regeneration process. The controller will cause the piston to move on to the **CYCLE 1 BACKWASH** position.



Note that it takes the engine some time to move on to the next cycle, which is indicated by the flashing message "GO TO + name of next cycle".  
Until this message disappears from the screen, you cannot move on to the next cycle.



- With the plunger in the backwash position, very slowly open the inlet valve to ¼ full open, allowing water to enter the system.
- Allow the resin cylinder to vent. Once fully vented (water starts to flow through the drain into the sewer), slowly open the inlet valve fully.
- Allow water to flow into the drain until it becomes completely clear.



**BEWARE:** If the valve is opened too much or too quickly, damage may occur inside the softener due to hydraulic shock. Listen as air slowly escapes down the drain to the sewage system.

- Press and release **MANUAL REGENERATION** to move on to the next regeneration cycles. Repeat this operation until you reach **CYCLE 4, REFILL** to vent the brine hose. Allow water to flow and remove air bubbles from the suction hose.  
After venting:
- Allow the system to fill the brine tank. Then move on to the **SERVICE** cycle.
- You need to make sure that there is suction in the system. In the **SERVICE** mode, press and hold **MANUAL REGENERATION** for 5 seconds to start the next regeneration and proceed to **CYCLE 2, BRINE** as previously described. Make sure that the system is sucking water from the salt tank and is able to remove water completely. There must be a continuous suction process and the water level in the tank must drop. It is crucial for maintaining performance at a high level. If the brine hose is taking on air, cancel regeneration by changing the cycle to **SERVICE**. Inspect and secure the hose components more firmly, then recheck all connections.
- When you are sure that the sucking process works correctly, exchange the amount of water that has been sucked in by switching the system to **REFILL** and wait for the system to enter the **SERVICE** mode.
- The display will show the following information according to the mode:

#### MODE 1: TIME

12:00 PM	SUN	
02day02h00min		Service

#### MODE 2: WEEK

12:00 PM	SUN	
02day02h00min	WED	Service

#### MODE 3: METERIMM

12:00 PM	SUN	*
0002000	L	Service

#### MODE 4: METERDELAY

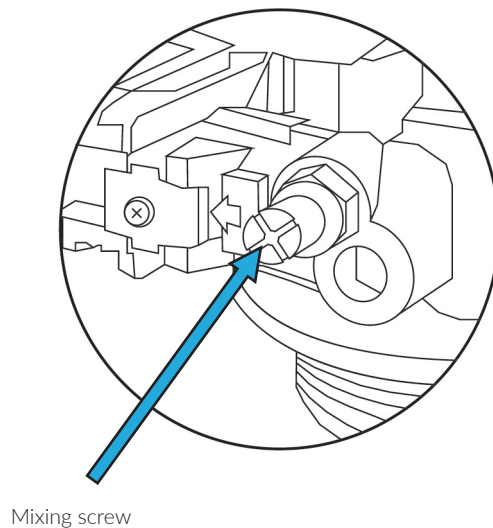
12:00 PM	SUN	*
0002000	L	⌚ Service

- After filling the brine tank with salt specially designed for softeners: either in tablets or in type-3 grains, the system is ready for use.
- Now you can obtain softened water. Set the bypass to work position.
- Make sure that the flow meter is working properly: turn on the tap and make sure that the softened water indicator is decreasing on the display.

## Softened water adjustment

- For domestic use, we recommend a residual hardness of 6 to 7 °F. To adjust hardness, half open the built-in mixing controller, which is located on the valve.
- Check the water hardness by performing a water analysis of the water softener outlet.

Fig. 7



If the system is not used for a month or more, it should be disinfected.

You should also disinfect the system every 6 months.

For more detailed information, consult the technical department.

**BEWARE: We recommend using the Ecoperla Antidotum medium cleaning granulate every 6 months, alternating with Ecoperla Antibacter disinfectant. It is the best combination for maintenance of the filtering medium.**



## 7. MESSAGES ON SCREEN

### 7.1. Automatic lock

If the programmer keypad has not been used for a while, the automatic lock is activated. This option disables the screen backlighting in order to save energy.

When any key is pressed, the following message will appear on the display:



To unlock the controller, press  and then  as shown above.

### 7.2. Returning to previous settings due to power failure

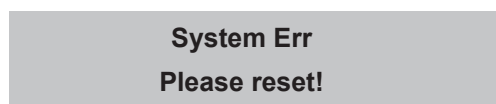
If a power failure occurred during the regeneration process, after power returns the programmer performs an internal reset to regain the set values and return to the mode it stopped at.

During this time the programmer should not be used and the display will show:



### 7.3. System error

If the programmer detects an internal error, the following message will be displayed:

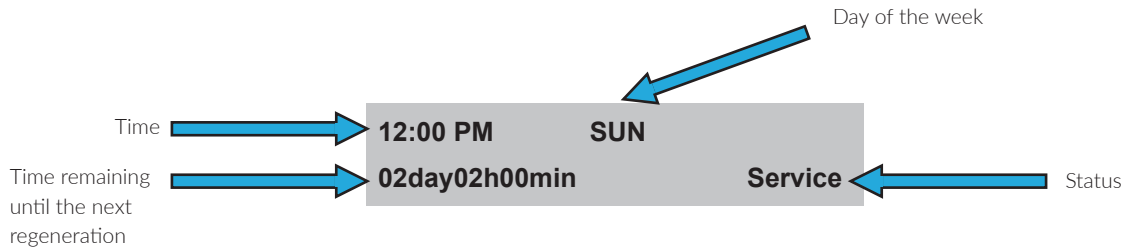


If this message is displayed, disconnect and reconnect the programmer and if the message does not disappear, contact your dealer.

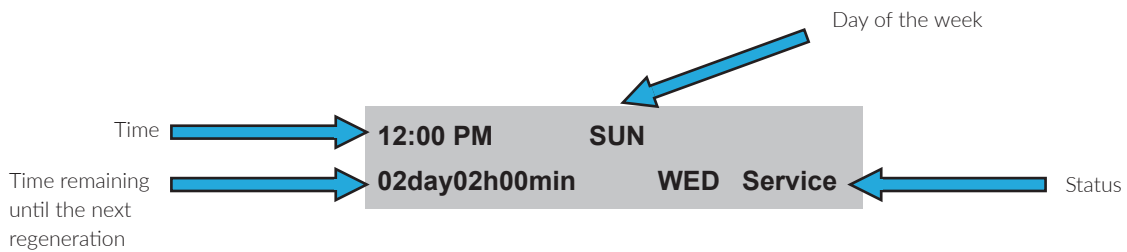


## 8. INFORMATION DISPLAYED ON THE SCREEN IN OPERATING MODE DEPENDING ON SELECTED CONFIGURATION

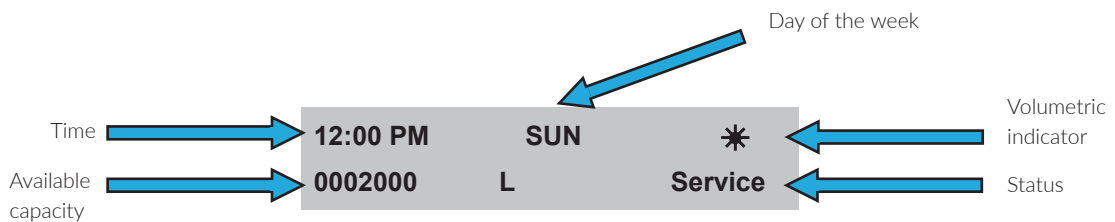
### 8.1. Delayed time program: TIME: Delayed clockwork



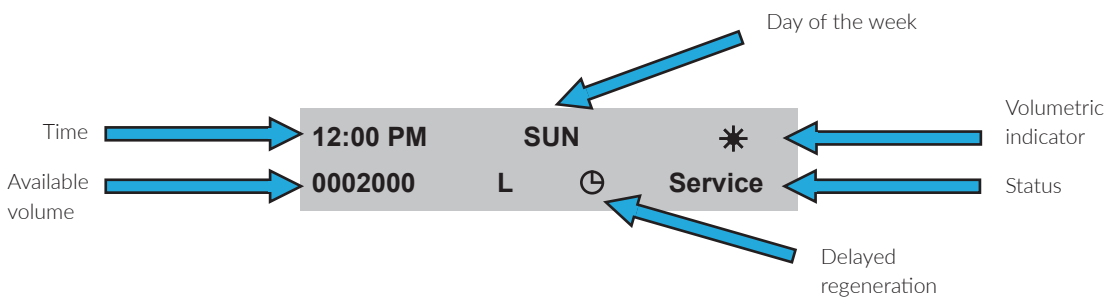
### 8.2. Weekly program: WEEK: weekly clockwork



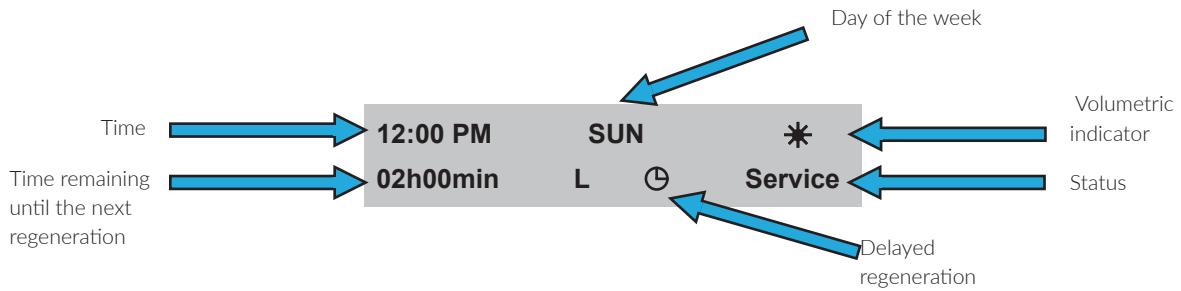
### 8.3. Immediate Volumetric Program: METERIMM:



### 8.4. Delayed volumetric Program



## When the counter reaches zero, the following message will appear:



## 9. OPERATION

### 9.1. Water softener operation

You need to add salt tablets to the brine tank of the water softening system. Salt demand depends on total hardness of raw water and average water consumption.

The system requires regular, periodic regeneration. This process requires appropriate volume of water for rinsing and brining the medium. These values vary, depending on the size of the device.

**BEWARE:** Any modifications made by the User or Installer not authorised by the manufacturer will void the warranty and often cause malfunctions of the device.

### 9.2. General information

To ensure long-term and trouble-free operation of the water softener, maintenance services must be performed at regular intervals and a record of the activities performed must be kept.

If you sign a service agreement with the supplier, the supplier will assume responsibility for performing regular maintenance on the system.

### 9.3. List of requirements for proper operation

Proper operation of the device requires:

- Correct connection of the device according to the user manual,
- Using a pre-filter,
- The appropriate quality of the feed water, particularly with regard to iron and manganese content, turbidity, pH, chlorides and microorganisms,
- Suitable working conditions: operating pressure within the required limits, temperature within the required limits, low humidity in the room, protection against atmospheric factors (sunshine, precipitation, etc.),
- Pressure in the device should not rise above the maximum operating pressure and below atmospheric pressure of 0 bar (vacuum),
- Electrical supply with the correct voltage and frequency in accordance with national standards,
- Ensuring adequate patency and throughput of wash water reject into the sewage system,
- Commissioning of the device in accordance with the user manual,
- Entering the value of the raw water hardness into the device controller,
- Correct operation in accordance with the user manual,
- Closing the emergency bypass of the device,
- Regular replenishment of salt and replacement of cartridges in the mechanical filter.

## 9.4. User maintenance

The user is required to carry out the following maintenance procedures:

- Regular replacement of the pre-filter cartridge (depending on the contamination degree, but at least every 6 months),
- Replenishment of salt tablets in the salt container,
- Monitoring of irregularities in device operation (e.g. alarm displayed on the controller, large amount of water in the salt container, no salt consumption, leaks, poor quality of treated water).

## 9.5. Medium disinfection and cleaning

Disinfection and maintenance should be done with Ecoperla Antibacter and Ecoperla Antidotum. Using both products alternately every six months will help maintain mechanical and bacteriological purity of the medium. The products should be used in accordance with their instructions for use.

## 9.6. System downtime

If your water softener has not been used for a month or more, you should disinfect it with Ecoperla Antibacter and Ecoperla Antidotum. Please contact the Klarsan Service Department.

## 9.7. Consumables

List of consumables:

- Salt tablets (usually packed in 25 kg bags) – depending on water hardness and water consumption,
- Pre-filter cartridges in the required mechanical filter – usually replaced every 2-6 months,
- Injector – replacement every 2-5 years,
- Piston guide and piston – may require replacement in the case of very high hardness or other contamination (every 2-5 years),
- Ecoperla Antibacter, recommended for medium disinfection – once a year according to the user manual,
- Ecoperla Antidotum, recommended for removing deposits from the medium – once a year according to the user manual,
- Medium – replacement every 5-10 years.

## 9.8. Loss of warranty

The device must be installed and operated in accordance with its intended use and user manual and in appropriate conditions. Some negligence or irregularities in this respect may result in loss of warranty.

Factors that may void the warranty include:

- Poor quality raw water (in particular exceeding the standards for iron and manganese content, turbidity, pH, chlorides and microorganisms),
- No pre-filter, no cartridge in pre-filter,
- Wrong hydraulic connection (e.g. interchange of inlet and outlet),
- No or insufficient drainage of wash water into the sewage system,
- No venting at commissioning or significant amount of air in the device,
- Poor quality salt tablets (contaminated or in loose form or without the certificate of the National Institute of Hygiene),
- Exceeding the maximum permissible pressure for the device,
- Pressure in the installation below 0 bar (vacuum),
- Water hammer in the system,
- Too low or too high temperature,
- Change of controller settings or disassembling the device, or its modification without consulting the technical department,
- Use of chemical agents which have a negative impact on the medium or the device,
- Vandalism or other mechanical damages.

In the case of any of the above-mentioned irregularities, the warranty will be voided; the decision of warranty loss is taken by the warranter. As the above mentioned inappropriate connection or operation does not always cause damage, the warranter may decide to maintain the warranty of the device.

## 10. SERVICE

### 10.1. Activities performed by service technician

To ensure many years of trouble-free operation and a 10-year warranty period, the device should be serviced annually after the second year of operation.

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

- Checking water hardness,
- Checking brine intake,
- Checking/cleaning/replacing the injector,
- Checking operation of flow meter,
- Checking the salt level in the brine tank,
- Checking the pre-filter cartridge,
- Checking operation of the device,
- Checking for leaks,
- Issuing of a protocol.

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

- Replacement of the pre-filter cartridge,
- Salt refilling,
- Providing consumables,
- Checking/change of controller settings,
- Mixer adjustment,
- Control valve (piston, guide, etc.) cleaning.

### 10.2. Nieuzasadnione wezwanie serwisu gwarancyjnego

If the device does not work properly, you should check if it is not caused by incorrect operation before calling a service technician. In case of groundless request for warranty service, you will be charged with costs of travel and service.

Groundless request refers to the following cases:

- All cases listed under "Loss of warranty",
- No salt in the salt container,
- Unscrewed bypass valve (raw water bypasses the device),
- Wrongly entered water hardness value,
- Too low feed water pressure,
- A significant change in the quality of the feed water, which has a negative impact on the device operation,
- Failure to replace consumables in accordance with the user manual.

## 11. TROUBLESHOOTING

Problem	Possible cause	Solution
1. The display does not turn on.	a. The power supply cable is disconnected from the transformer.	a. Connect power supply.
	b. No power at the power outlet.	b. Repair the outlet or use another functional outlet.
	c. Defective transformer.	c. Replace the transformer.
	d. Defective circuit.	d. Replace the control board.
2. Flow indicator does not flash when water is flowing.	a. The valve is in the bypass position.	a. Change to normal operating position.
	b. The measuring probe is disconnected or incorrectly connected to the turbine.	b. Fully insert the probe into its sheath.
	c. Flow meter rotation is obstructed by foreign objects.	c. Remove the water meter and rinse it with water. The water meter should rotate freely. If it does not, replace it.
	d. Defective control board.	d. Replace the programmer.
3. The system regenerates at the wrong time.	a. Loss of power supply.	a. Set clock to correct time.
	b. Clock has been set incorrectly.	b. Set clock to correct time.
4. Continuous regeneration.	a. Defective control board	a. Replace the control board.
5. System does not regenerate automatically, but regenerates when button is pressed.  If the water flow indicator does not work, see point no. 2 in this table.	a. Defective board.	a. Replace the programmer. Set the correct values.
	b. Hardness and capacity are incorrectly set.	b. See the programming section.
6. Hard water comes out from the system between regenerations.	a. Incorrect regeneration.	a. Repeat regeneration, making sure that you add the correct dose of salt.
	b. Softener medium is contaminated.	b. Use a resin cleaner.
	c. Wrong salt dosage.	c. Verify the system configuration, depending on the amount of resin
	d. Wrong programmed hardness or wrong capacity.	d. Set the correct values. See the programming section.
	e. Increase in water hardness.	e. Set a new hardness value. See the programming section.
	f. Restricted rotation of the water meter due to the presence of foreign matter in the flow meter.	f. Remove and unlock the turbine. DO NOT REMOVE THE TURBINE FROM FLOWMETER. The turbine should rotate freely. If it does not, replace the flowmeter.
	g. Slow water flow.	g. Repair leaking pipes and/or components.
7. Brine is not sucked in.	a. Low water pressure.	a. Ensure higher pressure, make sure that the pre-filter does not cause pressure drop.
	b. Outlet hose is clogged and suction is hindered.	b. Remove obstructive material from the hose.
	c. Blocked injector.	c. Clean the injector and strainer.
	d. Defective injector.	d. Replace the injector and its cover.
8. Brine leaks from the tank.	a. No control of the brine tank filling rate.	a. Remove and clean the brine line flow control (BLFC).
	b. Air gets into in the brine line.	b. Check the brine line for tightness.
	c. Defective drain line flow control (DLFC).	c. Check the drain line flow control (DLFC).
	d. Drain outlet is clogged with resin or other debris.	d. Clean the drain.

<b>Problem</b>	<b>Possible cause</b>	<b>Solution</b>
9. The system uses more or less salt than set.	a. Incorrectly set value.	a. Set the correct value.
	b. Foreign body in BLFC causing incorrect flow	b. Remove and clean BLFC. Program the system manually to extract brine in order to clean the floats. Then set the controller to "Vacuum" to remove the brine from the tank.
	c. Defective controller.	c. Replace any defective parts.
10. Intermittent and uneven brine removal.	a. Water pressure too low.	a. Ensure higher pressure.
	b. Defective injector.	b. Replace the injector and its cover.
11. Unsoftened water after regeneration.	a. System has not performed regeneration.	a. Check if there is power supply.
	b. No salt in the brine tank.	b. Add salt to the brine tank.
	c. Injector is dirty.	c. Remove and rinse the injector.

## 12. SERVICE CARD

<b>Maintenance service after 2 years of operation</b>	Date of maintenance service:	<b>Maintenance service after 3 years of operation</b>	Date of maintenance service:
Signature of the service technician:		Signature of the service technician:	
Stamp of the service technician:		Stamp of the service technician:	
<b>Maintenance service after 4 years of operation</b>	Date of maintenance service:	<b>Maintenance service after 5 years of operation</b>	Date of maintenance service:
Signature of the service technician:		Signature of the service technician:	
Stamp of the service technician:		Stamp of the service technician:	
<b>Maintenance service after 6 years of operation</b>	Date of maintenance service:	<b>Maintenance service after 7 years of operation</b>	Date of maintenance service:
Signature of the service technician:		Signature of the service technician:	
Stamp of the service technician:		Stamp of the service technician:	
<b>Maintenance service after 8 years of operation</b>	Date of maintenance service:	<b>Maintenance service after 9 years of operation</b>	Date of maintenance service:
Signature of the service technician:		Signature of the service technician:	
Stamp of the service technician:		Stamp of the service technician:	

## 13. WARRANTY

The dealer warrants efficiency of Ecoperla Toro in accordance with the warranty conditions included in the user manual.

In order to execute the warranty, you need to present proof of purchase of the system. In the case of a problem with Ecoperla Toro, please contact your dealer.

SERIAL NUMBER

AUTHORISED DEALER / SERVICE CENTRE











ECOPERLA

