

SANITOWER



ECOPERLA



IRON AND MANGANESE  
REMOVAL

**ECOPERLA**  
**SANITOWER**  
original product of EcoPerla

USER MANUAL

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

## TABLE OF CONTENTS

|   |    |
|---|----|
| <b>1. Introduction</b>                                  | 4  |
| <b>1.1. Safety measures</b>                             | 4  |
| <b>1.2. Presence of iron and manganese in water</b>     | 4  |
| <b>1.3. Principles of operation</b>                     | 4  |
| <b>1.4. Device operation</b>                            | 5  |
| <b>2. Technical specification</b>                       | 5  |
| <b>3. System components</b>                             | 6  |
| <b>4. Installation and start-up</b>                     | 6  |
| <b>4.1. Requirements</b>                                | 6  |
| <b>4.2. Installation diagram</b>                        | 7  |
| <b>4.3. Control valve</b>                               | 8  |
| <b>4.4. Start-up</b>                                    | 9  |
| <b>4.5. Time setting</b>                                | 9  |
| <b>4.6. Notifications displayed during operation</b>    | 10 |
| <b>4.7. Notifications displayed during regeneration</b> | 10 |
| <b>4.8. Changing regeneration time</b>                  | 10 |
| <b>4.9. Changing regeneration intervals</b>             | 11 |
| <b>4.10. Instant regeneration</b>                       | 11 |
| <b>5. Troubleshooting</b>                               | 12 |
| <b>6. Service card</b>                                  | 13 |
| <b>7. Warranty</b>                                      | 14 |

# 1. INTRODUCTION

## 1.1. SAFETY MEASURES

- Read this User Manual before installing the device and follow the instructions carefully during installation and maintenance. It contains all the necessary information on precautions during device installation, operation, maintenance and service.
- Correct installation and maintenance of the device in accordance with the User Manual will ensure trouble-free, effective and long-lasting operating life.
- The device is intended for removing iron and manganese from water and may only be used for this purpose.
- The device should be installed by a qualified technician.
- The device should be transported vertically. Do not place the device in the horizontal position due to the risk of damage.
- Keep this User Manual in a safe place as long as the filtering system is in operation.
- The device was manufactured in accordance with the latest applicable safety requirements.

## 1.2. IRON AND MANGANESE IN WATER

Iron and manganese are most common quality problems in groundwater. If the concentration of iron in the water is exceeded, the amount of manganese is most probably too high as well.

According to the Regulation of the Minister of Health on the quality of water intended for human consumption, the level of iron in drinking water should not exceed 0.2 mg/L. The manganese levels in water cannot be greater than 0.05 mg/L.

Iron is present in raw water in a soluble, ferrous form. It is invisible to the eye and the water often appears clear. The problem is difficult to solve, as ferrous iron cannot be filtered out. It requires water pre-treatment with chemicals or oxygen. The iron removal process is based on the conversion of soluble Fe (II) form into the insoluble Fe (III) form. Insoluble iron is retained in the filtering medium, making the water clean.

Manganese is also present in water in a soluble form. This substance is considered to be more difficult to remove compared to iron. It is hardly precipitated out of water and requires special catalytic beds or strong oxidisers.

Iron and manganese in drinking water can pose quite a serious problem. They can give water an unpleasant taste, odour and colour. Drinks and dishes prepared with contaminated water can be less tasty. The major problem is hard or gunky deposits that build up in pipes. They significantly reduce pipe diameter and may cause numerous expensive failures. Additionally, iron and manganese cause high energy losses in water pumps. The deposits might also allow bacteria to grow, which is considered health hazard. Both precipitates settle on fittings and laundry, forming rust stains, which are difficult to remove. Yet another problem is malfunctions of household appliances that come into contact with water.

## 1.3. PRINCIPLES OF OPERATION

The Ecoperla Sanitower station requires water pre-aeration. **The process requires the use of a membraneless hydrophore tank and an aeration venturi or compressor.** It oxidises iron and manganese and converts them from a soluble into insoluble form.

After initial aeration, water enters the cylinder, which is filled with a specially selected iron and manganese removing medium. This natural medium is a combination of gravel and dolomitic limestone in the correct proportions. The gravel ensures a filtration process of the highest level. Thanks to the high specific surface area, iron oxides form a large surface area, which catalyses iron precipitation and, consequently, filters out of the substance.

Dolomitic limestone improves the efficiency of iron removal from water. It also slightly improves water pH.

For long-term operation of the unit, remember to carry out the regeneration process. It is based on the countercurrent water flow. Medium regeneration is fully automatic.

## 1.4. DEVICE OPERATION

The medium regeneration is carried out by countercurrent water flow.

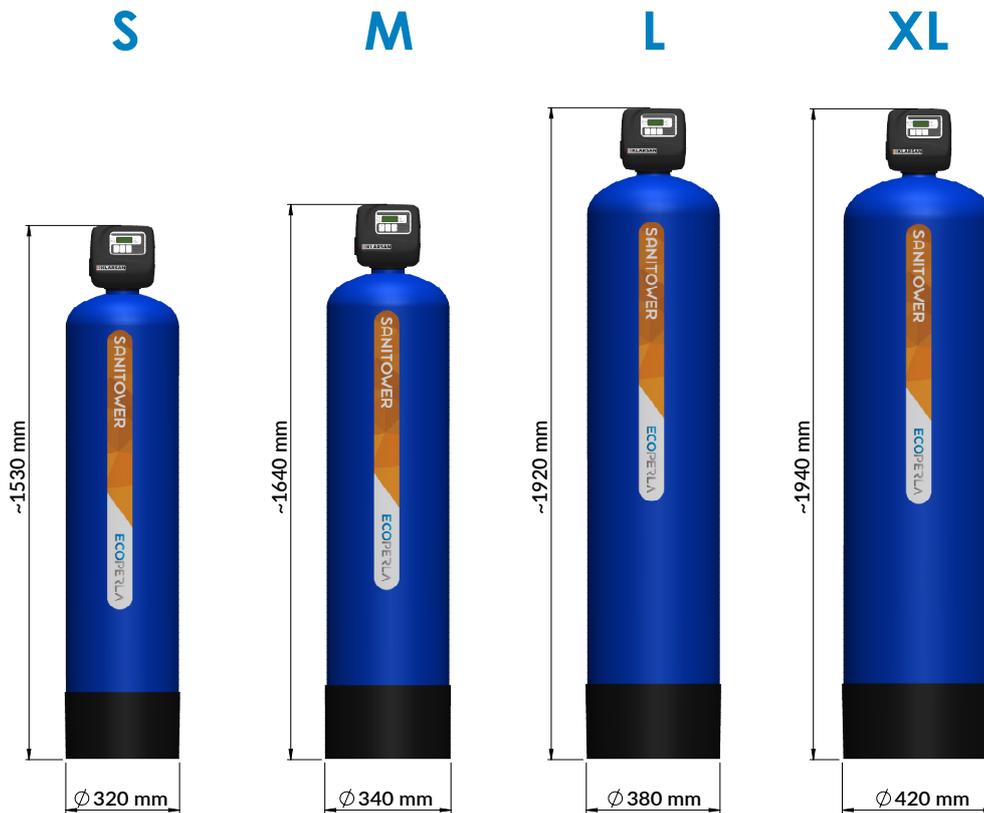
In order to maintain proper operation of the device, remember to regularly replace the cartridges in the mechanical filter, located behind Eco-perla Sanitower.

The cartridge lifespan is between 4 and 8 years. It depends on the water parameters and regeneration effectiveness. When the medium wears out, it should be replaced.

If your water is characterised with high exceedances, you may need to clean the valve periodically.

## 2. TECHNICAL SPECIFICATION

|   | <b>S</b> | <b>M</b> | <b>L</b> | <b>XL</b> |
|---|----------|----------|----------|-----------|
| <b>Control valve</b>  | Clack TC | Clack TC | Clack TC | Clack TC  |
| <b>Connection</b>   | 1"       | 1"       | 1"       | 1"        |
| <b>Medium amount [L]</b>                                    | 55       | 75       | 90       | 120       |
| <b>Nominal flow rate [m3/h]</b>                             | 0,9      | 1,0      | 1,2      | 1,6       |
| <b>Maximum flow rate [m3/h]</b>                             | 1,3      | 1,5      | 1,8      | 2,3       |
| <b>Required water flow during flushing at 3 bars [m3/h]</b> | 2,2      | 2,6      | 3,0      | 3,9       |
| <b>Operating pressure</b>                                   | 3,0-6,0  | 3,0-6,0  | 3,0-6,0  | 3,0-6,0   |
| <b>Water consumption [L]</b>                                | 310      | 360      | 420      | 550       |
| <b>Cylinder dimensions [inch]</b>                           | 12 x 48  | 13 x 54  | 14 x 65  | 16 x 65   |
| <b>Column width [mm]</b>                                    | 320      | 340      | 380      | 420       |
| <b>Column height [mm]</b>                                   | 1530     | 1640     | 1920     | 1940      |
| <b>Column depth [mm]</b>                                    | 320      | 340      | 380      | 420       |
| <b>Electrical connection [V/Hz]</b>                         | 230/50   | 230/50   | 230/50   | 230/50    |



### 3. SYSTEM COMPONENTS

In the box, you will find:

- Cylinder for the medium together with a distributor,
- Control valve,
- Medium (if it is supplied in a bag, a funnel for filling and filling instructions are included),
- Connections,
- Power supply,
- User Manual.

### 4. INSTALLATION AND START-UP

#### 4.1. REQUIREMENTS

For proper operation of the device, make sure that the right amount of water flows through the Ecoperla Sanitower iron and manganese removing unit. The minimum required water flow rates for the device are given in the table (see in the table in item 3 on page 3 'Flushing flow').

Water aeration is necessary upstream of the Ecoperla Sanitower station, before the membraneless hydrophore tank. Ecoperla Sanitower is installed downstream of the hydrophore tank.

You may also want to install a mechanical filter behind Ecoperla Sanitower.

The device should be positioned vertically on a hard and flat surface. The control valve must be connected to the electricity supply (230 V/50 Hz).

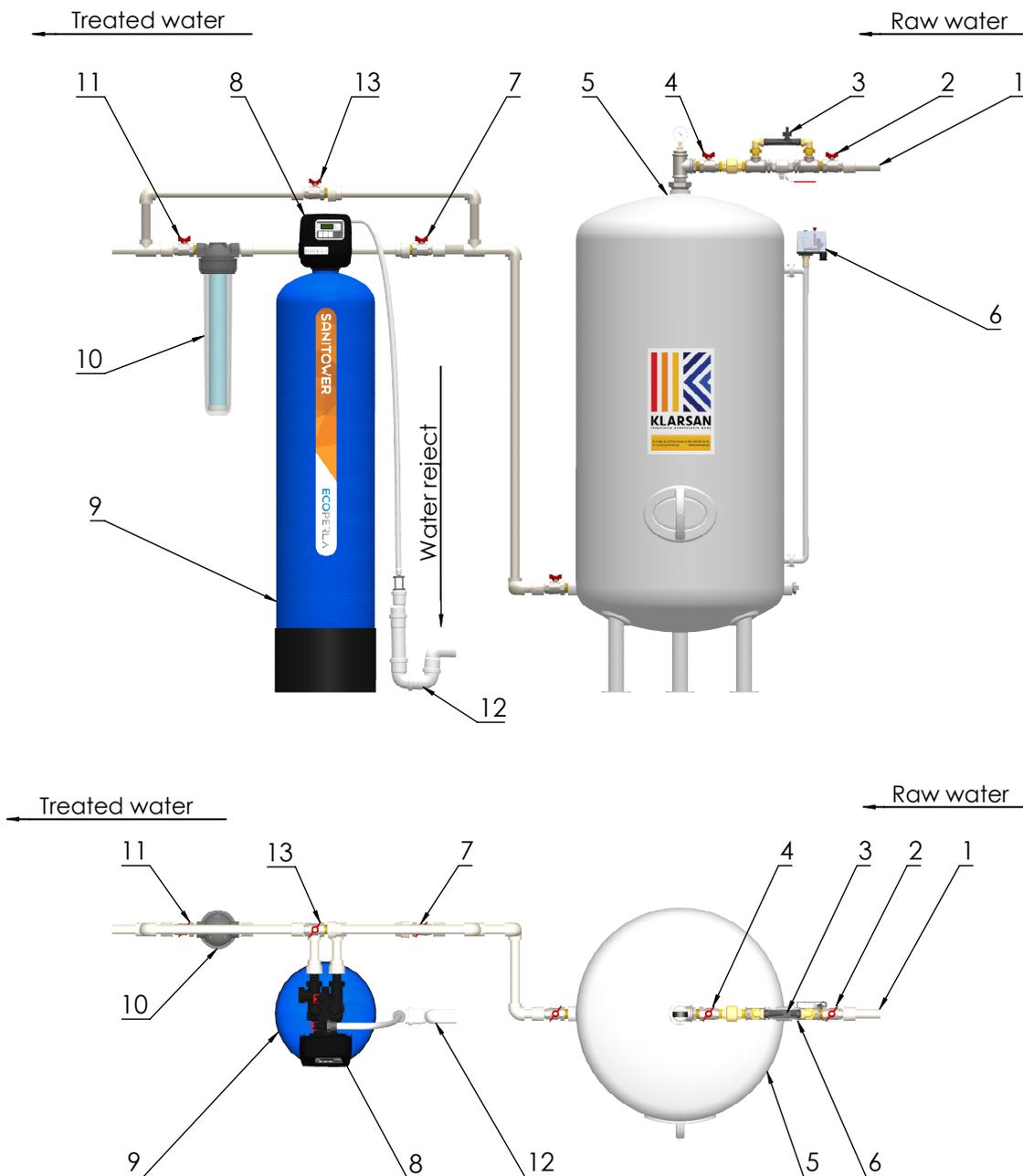
A minimum air temperature in the room where the Ecoperla Sanitower is installed should be +4°C. There should be a drain to the sewerage system in close proximity to the device to ensure water removal after flushing.

## 4.2. INSTALLATION DIAGRAM

Look at the following diagram to see how individual elements should be positioned in the device.

Diagram 1.

### ECOPERLA SANITOWER CONNECTION DIAGRAM



|    |                                   |     |                                      |
|----|-----------------------------------|-----|--------------------------------------|
| 1. | Water inlet from the pump         | 8.  | Control valve                        |
| 2. | Shut-off valve                    | 9.  | Ecoperla Sanitower                   |
| 3. | Aerator                           | 10. | Mechanical water filter              |
| 4. | Shut-off valve                    | 11. | Outlet valve from Ecoperla Sanitower |
| 5. | Non-membrane hydrophore tank      | 12. | Drain to the sewage system           |
| 6. | Pressure switch                   | 13. | Bypass valve                         |
| 7. | Inlet valve to Ecoperla Sanitower |     |                                      |

**BEWARE:** You can also connect the hydrophore from the side. Such a solution is used in the case of minor iron and manganese exceedances in the water, which do not require very intensive aeration.

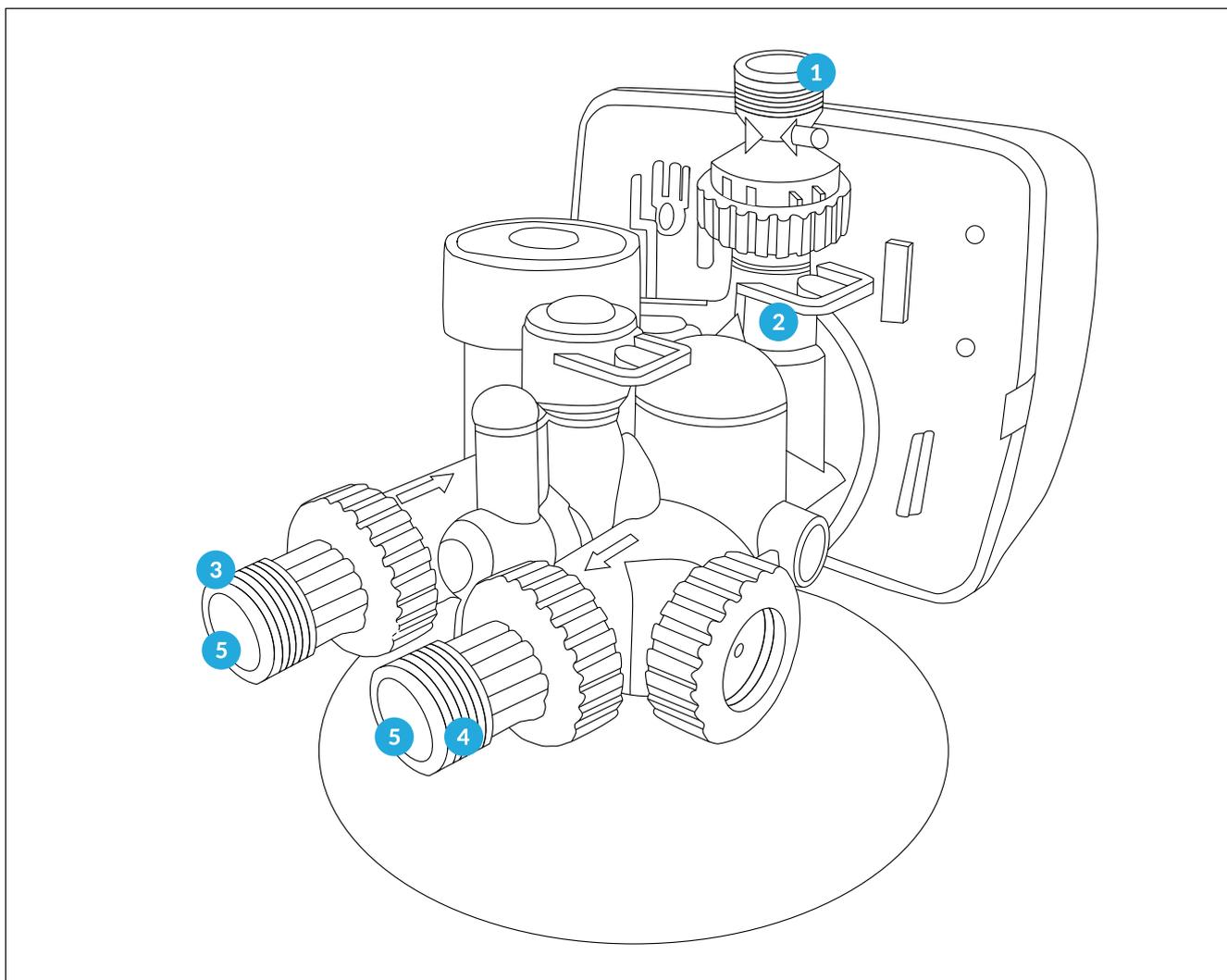
### 4.3. CONTROL VALVE

The control valve is mounted on the pressure cylinder. It is responsible for the proper functioning of the device, monitors its operation and controls the regeneration process.

**Inlet and outlet from the control valve:** control valve connection ends are made of plastic, 1" external thread. The connections are easily detachable from the valve, so you do not need additional connecting screws. Do not connect the device to rigid steel, copper or bonded plastic pipes. Instead of that, use welded or twist-on connections, flexible hoses or braided pipes with an inch measurement. You can fit additional rigid fittings for connections from the valve, e.g. steel elbows between the valve connection and the flexible hose.

**Drain to the sewage system:** drain to the sewage system on the control valve is made of plastic, external thread (see table, item 2. page 5). The drain to the sewage system should be made of plastic (32 mm pipes) or, alternatively, connected to a garden hose adapter and routed to the sewage system via the garden hose (the drain to the sewage system should not be more than a few metres long or placed more than 1 metre above the head).

Diagram 2.



- 1. Drain to the sewage system 1" connection
- 2. DLFC
- 3. Water inlet
- 4. Water outlet
- 5. 1" connections

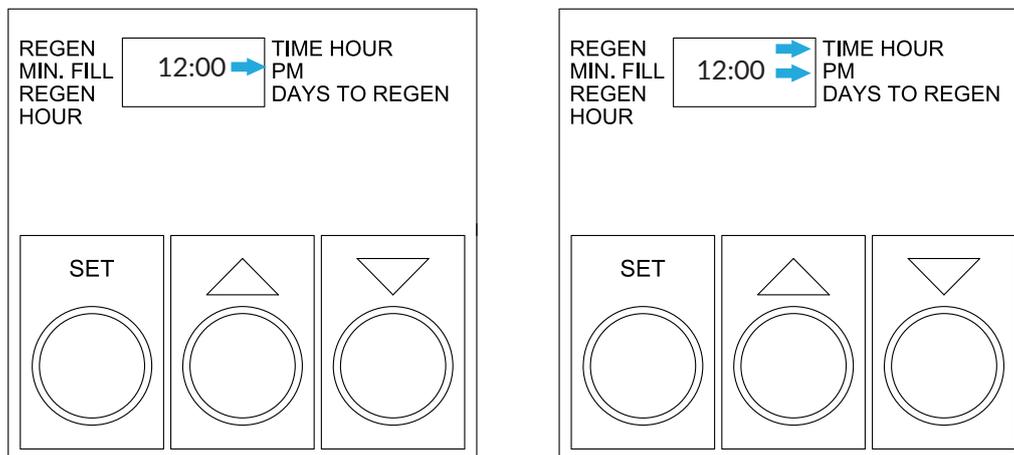
## 4.4. DEVICE START-UP

- Prepare the installation site (according to section 5.1 REQUIREMENTS).
- Cut off the water supply to the installation.
- Make a water by-pass\* (Diagram 1. page 7).
- Install the mechanical filter together with the cartridge.
- Connect the water inlet to the device (Diagram 2. page 8).
- Connect the water outlet of the appliance (Diagram 2. page 8)
- Once connected, flush several times (2-5 times) until you can see clear water flowing out of the outlet. To start flushing, press and hold the UP and DOWN arrows on the control valve for a few seconds. Flushing runs automatically and takes 10-16 minutes.
- To avoid water hammer, gently open the valve while introducing water into the device.
- Check the system for leaks.
- Proceed to program the device (Section 4.5 page 9).

The device is ready for operation.

## 4.5. TIME SETTING

When the device is started for the first time, the display flashing with time displaying 12:00.

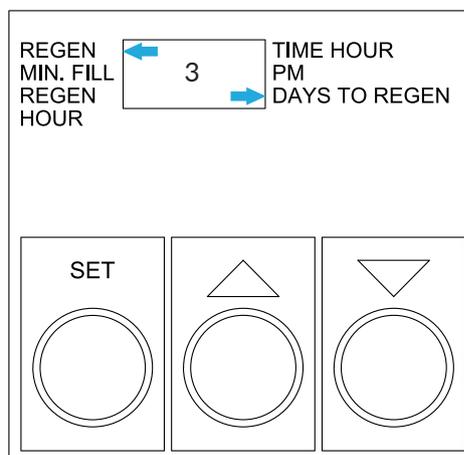
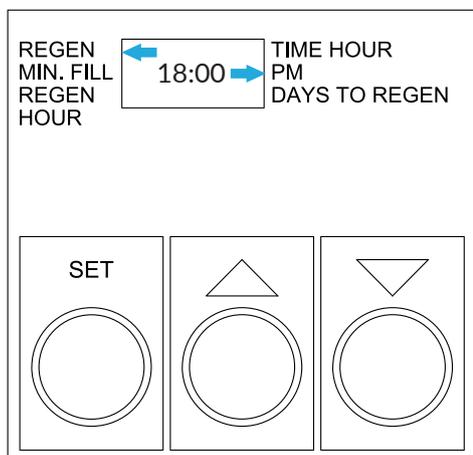


- Press and hold the SET button until the time starts flashing.
- Use  $\nabla/\triangle$  to set the current time. Press the SET button to proceed.
- Use  $\nabla/\triangle$  to set the minutes. Press the SET button to finish setting the time.

## 4.6. NOTIFICATIONS DURING OPERATION

Two notifications may be displayed during operation. Use  $\nabla/\triangle$  to navigate between them. The first notification shows the current time, while the second one shows the number of days left until the next regeneration.

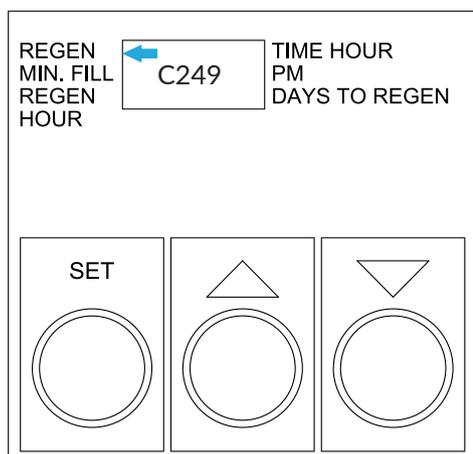
If one day is displayed, regeneration will start today at the specified time. In addition, an arrow will appear on the display next to the REGEN field.



## 4.7. NOTIFICATIONS DURING REGENERATION

The regeneration is usually set during the night hours, when water consumption is at its lowest. During the regeneration process, the display on the control valve shows the number of the ongoing process (e.g. C1, C2), the time remaining until the end of the process and an arrow at the REGEN position.

Once the regeneration process is complete, the device will switch to operating mode.



## 4.8. CHANGING REGENERATION TIME

If you want to change the regeneration process start time, follow the steps below:

- Press and hold SET and  $\triangle$  simultaneously until the message on the display changes.
- Use the buttons  $\nabla/\triangle$ , to select the time at which the regeneration process should start.
- Use the SET button to confirm the selected time.

## 4.9. CHANGING REGENERATION INTERVALS

If you wish to change the number of days remaining until the next the regeneration process, follow the steps below:

- Press and hold SET and  $\triangle$  simultaneously until the notification on the display changes.
- The display shows the time at which regeneration starts (discussed in the paragraph above). To change the number of days left until the next regeneration, press the SET button twice.
- Use  $\nabla/\triangle$  to select the number of days between regenerations.
- Use the SET button to confirm the selected number of days.

## 4.10. INSTANT REGENERATION

You can force the regeneration process to start **at a specific time** and **immediately**, independently of previous settings.

- In order to force the regeneration process to start **at a specific time** press  $\nabla/\triangle$  simultaneously and hold them until an arrow appears at the REGEN position. In the same way, you can abort the process.
- Start the **instant** regeneration process by pressing  $\nabla/\triangle$  simultaneously and holding them for 3 seconds. Instant regeneration cannot be aborted.

## 5. TROUBLESHOOTING

| PROBLEM                            | POSSIBLE CAUSE  | SOLUTION   |
|------------------------------------|---|--|
| <b>Untreated water</b>             | a. Open or damaged bypass.                                | a. Close or replace a bypass.  |
|                                    | b. Regeneration is on.                                    | b. Wait until the regeneration process is complete, or abort the regeneration yourself.                    |
|                                    | c. Change in raw water composition.                       | c. Check the composition of the raw water and then adjust the regeneration frequency.                      |
|                                    | d. Failure to start the regeneration process.             | d. See: 'Regeneration does not start'.   |
|                                    | e. Valve body and timer are not synchronised.             | e. Synchronise the valve and timer with each other.  |
|                                    | f. Loss of medium.  | f. See: 'Loss of medium'.  |
| <b>Water is not fully treated</b>  | a. Bypass is not fully closed.                            | a. Close the bypass.   |
|                                    | b. Excessive water flow rate.                             | b. Reduce the water flow rate. Increase the capacity of the device by increasing the volume of the medium. |
|                                    | c. Leak between the dispenser and the control valve body. | c. Make sure that the dispenser is correctly positioned inside the control valve.                          |
| <b>Regeneration does not start</b> | a. No electrical power.                                   | a. Check power supply in the system.   |
|                                    | b. Defective motor.                                       | b. Replace the motor.  |
|                                    | c. Regeneration is not programmed.                        | c. Set the regeneration frequency.   |
| <b>Loss of medium</b>              | a. Lower or upper dispenser is damaged.                   | a. Replace the dispenser.  |
|                                    | b. Leakage between lower and upper dispenser basket.      | b. Make sure that the dispenser is positioned correctly and is not broken.                                 |

## 6. 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:                      |                              |

## 7. WARRANTY

The dealer warrants efficiency of Ecoperla Sanitower 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. If you have a problem with your Ecoperla Sanitower, please contact your dealer

SERIAL NUMBER

AUTHORISED DEALER / SERVICE CENTRE





ECOPERLA

