SFC Umwelttechnik

Clean Water. Engineered for the World.

C-MEM™ ZERO

OPERATION MANUAL

WATER ULTRA FILTER

Version

April 2026

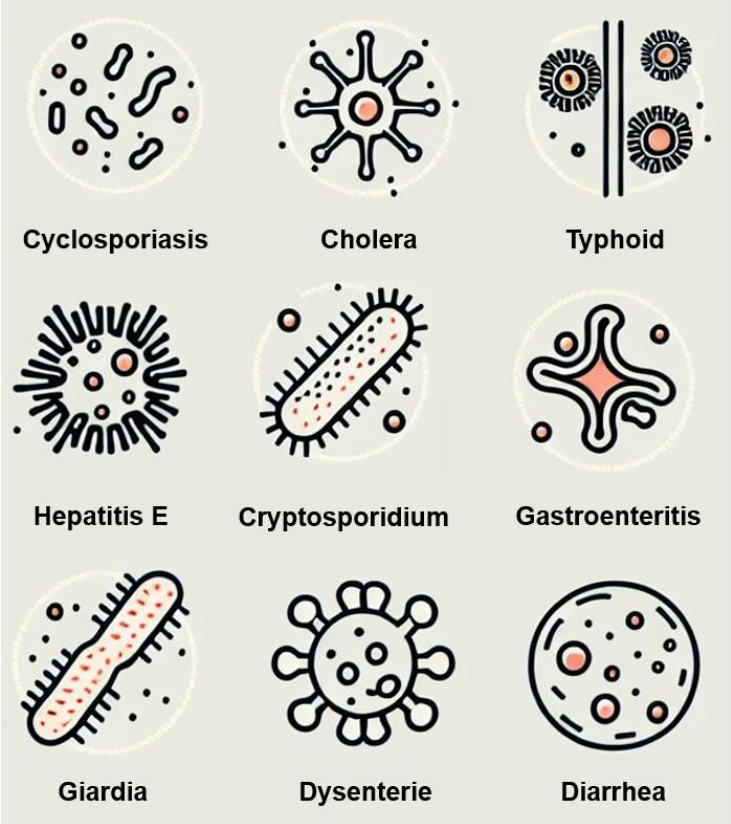
Content

1 General Description

The **C-MEM™ Zero** unit was developed to provide customers with a lightweight, mobile, and ready-to-use water treatment system. The unit operates solely on the pressure difference created by the level difference between the raw water- and the filtration tank. It is also possible to apply a pressure using a pump. A maximum level difference of 60 m / 6 bar must be maintained.

The system has a filtration capacity of up to 450 l/h.bar - liters of water per hour and bar pressure (assuming proper manual and chemical cleaning).

The pore size of the **C-MEM™** ultrafiltration membrane, averaging 20 nm (0.02 µm), safely removes microbiological contaminants (e.g., cyclosporiasis, cholera, giardia, typhoid, hepatitis E, etc.) as well as suspended substances (sediments, colloids, clay, dust, particulate metals, etc.) from the raw water, thus meeting the WHO goals of "high protection" and "highly protective", respectively. The membrane acts as a physical barrier. Dissolved substances (e.g., Na+, K+, Ca2+, Cl-) are not removed.



2 Safety Information

- Read the operating manual carefully and make sure you understand it correctly!
- Use the unit exclusively for the described purpose!
- Do not leave children unattended with **the C-MEM™ Zero** unit!
- The **C-MEM™ Zero** unit is a "point-of-use" (POI) treatment system – treated water must be stored in clean (preferably disinfected) containers and consumed within half a day (recontamination is possible)! Always fully vent the container through the vent valve before use.
- Open and close the clamp carefully when securing the filtration tank to avoid finger injuries!
- Only open the tank when it is depressurized!
- Do not connect pumps or inlet lines with a pressure higher than 6 bar to the unit! Check the pressure with a manometer before and after the unit.
- Do not use raw water with a temperature above 40°C!
- Use only raw water free of algae, plant residues, or other coarse particles! In such cases, pre-filtration is necessary.
- Ensure the unit is on a stable surface!
- The **C-MEM™ Zero** unit should be emptied and stored in a dry place if it is not used for a longer period.
- Wear protective clothing, gloves, and safety goggles during chemical cleaning!
- **NEVER** mix NaOCl and citric acid during the cleaning process!

3 Components C-MEM™ ZERO

The **C-MEM™ Zero** unit consists of the following components:

1	**C-MEM™** cartridge with integrated **C-MEM™** ultrafiltration membranes
1	Filtration vessel, stainless steel 304/304 L, Ø 204 mm, incl. lid, capacity 12.5 l
1	Clamp Ø 204 mm, including gasket
2	Clamp ¾", including gaskets
2	Ball valve ¾"
1	Ball valve ¼"
4	Pipe sections with V-flange, DN23, male thread ¾"
1	Sealing tape (Teflon)
1	Protective cap Ø 42 mm (plastic)

Not included but available as accessories:

C-MEM™ Zero connection hose set: Item No.: 240015

- Raw water hose - DN 19mm, 4 m length, with GEKA XK drinking water coupling on both ends
- Treated water hose - DN 19mm, 2 m length, with GEKA XK drinking water coupling on one end
- Raw water tank container fitting, plastic ¾" AG
- 2 brass GEKA "K" drinking water couplings with ¾" IG
- 1 brass GEKA coupling with ¾" IG, rotatable

C-MEM™ Zero Cartridge Cleaning Set: Item. No.: 211090

- Drip tray, protective gloves, full-view goggles
- Replacement gaskets (1 pack of 5 pieces), sealing cap (1 pack of 5 pieces)
- Cleaning agents (1 pack = 5 packages of 350 g each)

C-MEM™ Zero Cleaning Set: Item No.: 211091

- Cleaning agents (1 pack = 5 packages of 350 g each)

4 Assembly

If the **C-MEM™ Zero** unit is delivered in parts, it must be assembled according to the following instructions:

4.1 Installation of the C-MEM™ Cartridge

Step 1:

Insert the sealing ring (O-ring) into the designated opening at the top of the **C-MEM™** cartridge. The top is defined by the radial openings in the lid.

Attention:

Opening the locknut will inevitably void all warranty claims. Reason: Every C-MEM™ cartridge is tested for tightness and functionality. This can no longer be guaranteed once the locknut has been unscrewed.

Step 2:

Screw the **C-MEM™** cartridge together with the lid (pre-assembled upon purchase). Ensure that the top of the cartridge is screwed to the lid. It is indicated by the sticker on the side of the cartridge.

Step 3:

Check if the **C-MEM™** cartridge is securely fixed.

4.2 Installation of Filtration Container Connection Parts (optional)

Depending on the installation situation, the connection of the **C-MEM™ Zero** unit may vary. The following describes the assembly of the standard version. Before assembly, check the inventory list from Chapter 2.

Step 1:

Seal the threads with sufficient sealing tape according to the requirements.

Step 2:

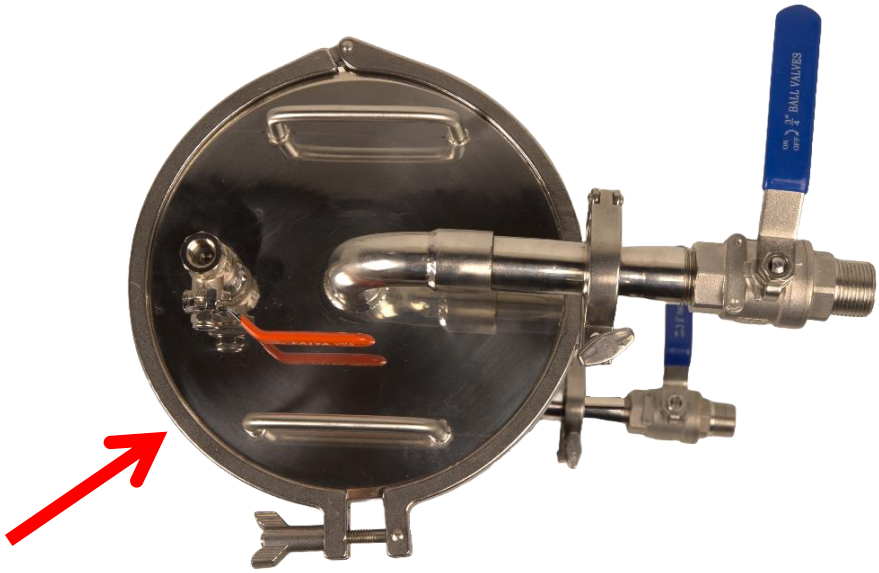
Assembling the V-flanges, gaskets and clamps.

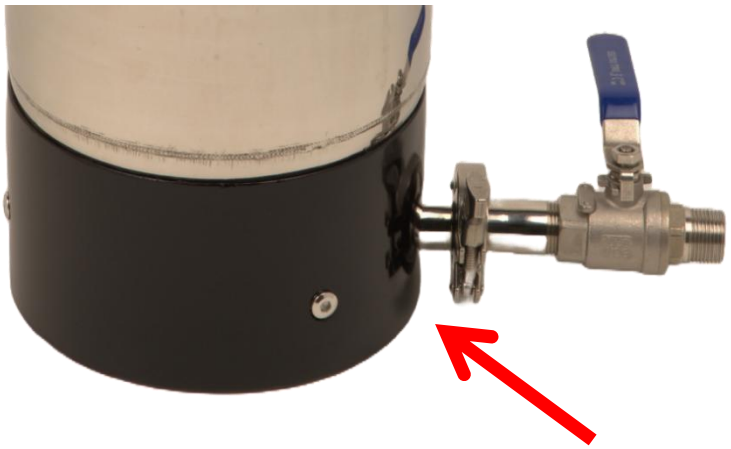
Step 3:

Tightly screw the connection threads onto the ball valves using a pipe wrench (not included).

Step 4:

Attach the connections to the vessel and securely tighten the connecting clamps.





5 Commissioning

Before commissioning, all connections must be checked and tightened if necessary.

Step 1:

Before the first use, please clean all parts with clear drinking water.

Step 2:

Attach the protective cap to the bottom of the cartridge.

Step 3:

Place the gasket on the flange of the tank. Ensure that the gasket is positioned correctly.

Step 4:

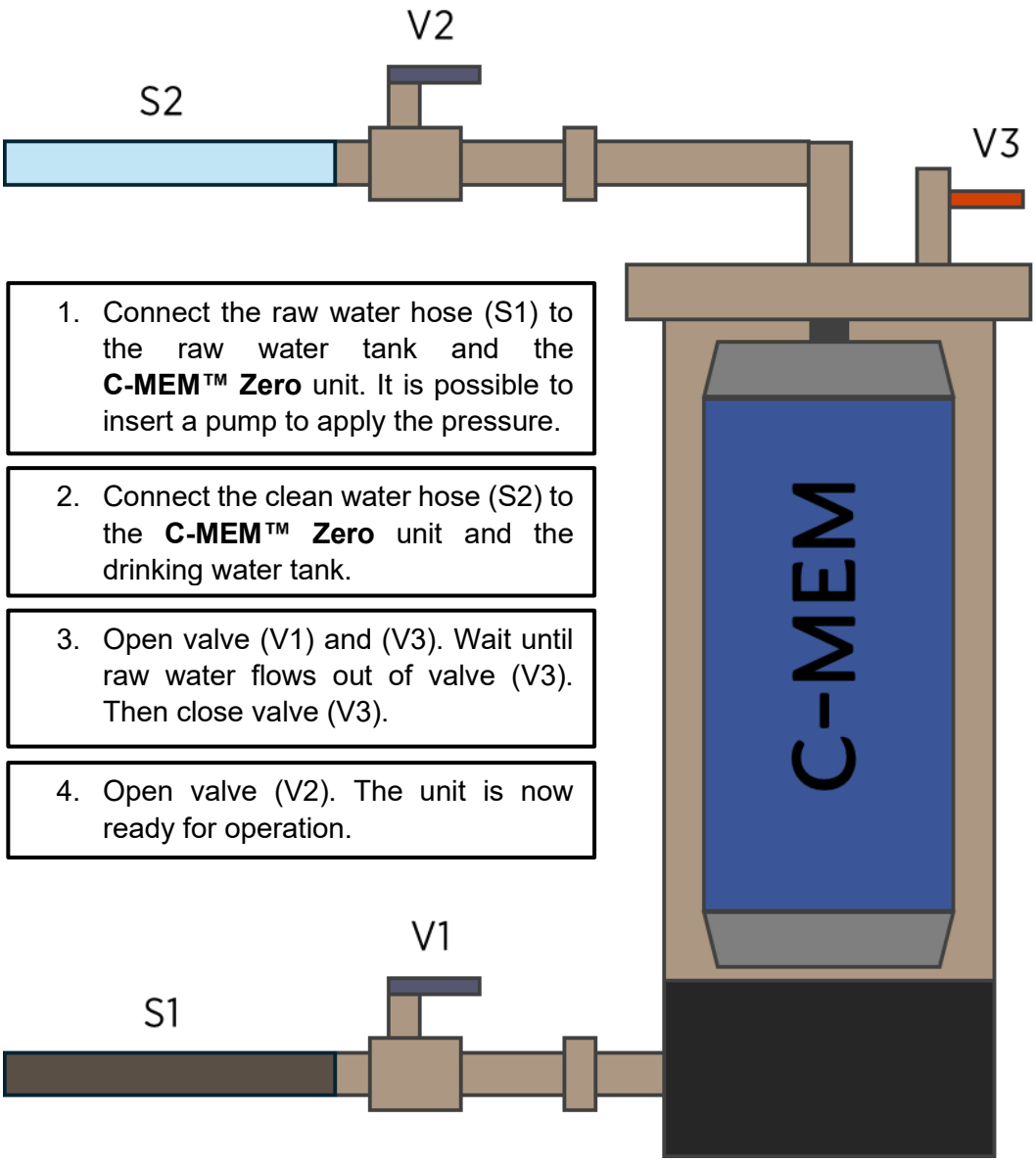
Lift the **C-MEM™** cartridge into the stainless-steel tank.

Step 5:

Close the connection clamp and tighten it by hand. Then, securely tighten the clamp using a pipe wrench (not included).

Step 6:

Vent and Start

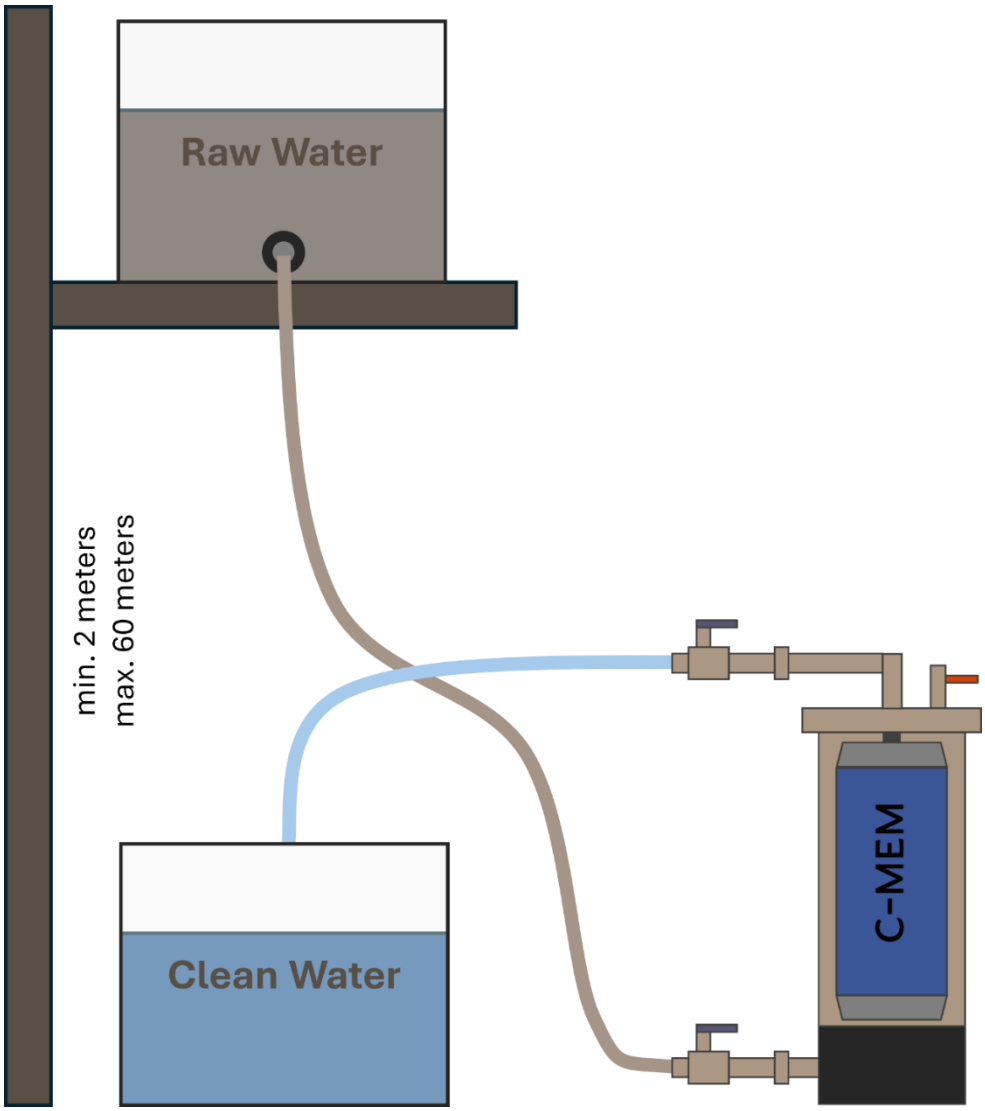


1. Connect the raw water hose (S1) to the raw water tank and the **C-MEM™ Zero** unit. It is possible to insert a pump to apply the pressure.
2. Connect the clean water hose (S2) to the **C-MEM™ Zero** unit and the drinking water tank.
3. Open valve (V1) and (V3). Wait until raw water flows out of valve (V3). Then close valve (V3).
4. Open valve (V2). The unit is now ready for operation.

6 Installation Diagrams

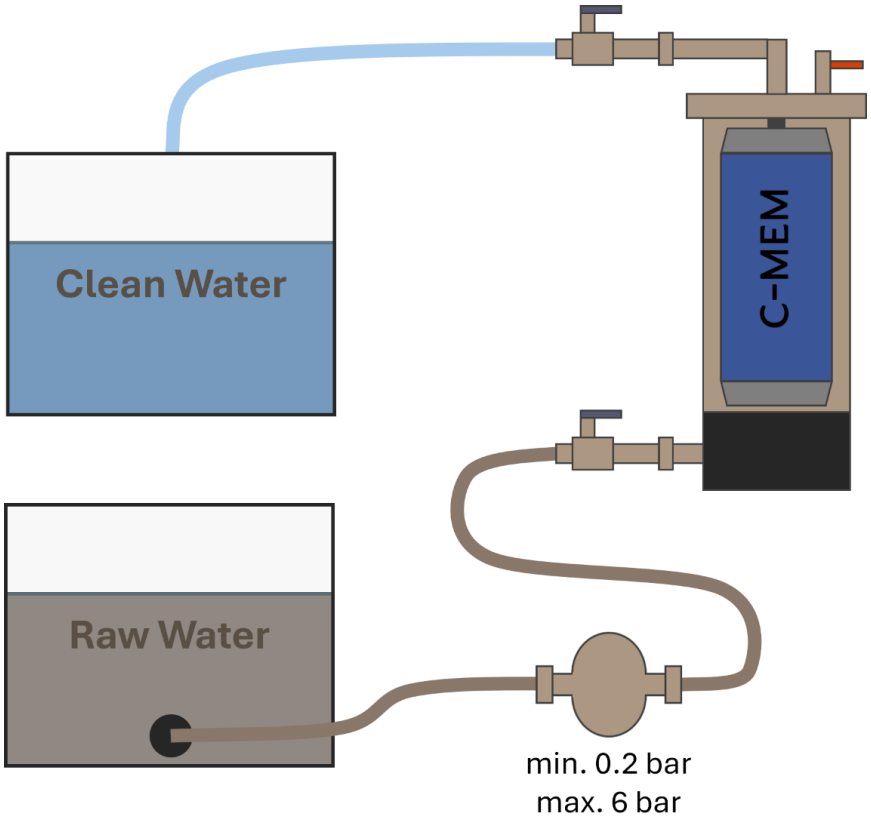
Ensure pre-filtration of raw water (insects, leaves, etc.) to prevent damage to the filter cartridge and the pump. Below are schematic diagrams for both gravity- and pump operation.

6.1 Gravity Operation



6.2 Pump Operation

Connect the pump between the raw water tank and the **C-MEM™ Zero** unit. The use of similar pumps (e.g., suction pump) is also possible. Ensure that the **maximum pressure** does not exceed **6 bar**.



6.3 Expected Flow Rate

The flow rate depends on the temperature and the quality of the raw water (solid content). The values mentioned below assume regular manual and chemical cleaning (see Chapter 7).

Level Difference [m]	**2**	**20**
Pressure [bar]	**0,2**	**2**
Max. Flow Rate [l/h]	**95**	**950**
Limit Manual Cleaning [l/h]	**40**	**400**
Limit chemical Cleaning [l/h]	**20**	**200**

7 Maintenance and Cleaning

Depending on the degree of contamination of the water, sediment residues inside the tank should be removed at regular intervals (manual cleaning). If the **C-MEM™ Zero** unit is not used for more than 2 months, it is recommended to remove it from the system, empty it, clean it and store it in a dry place. The unit should be chemically cleaned before reuse.

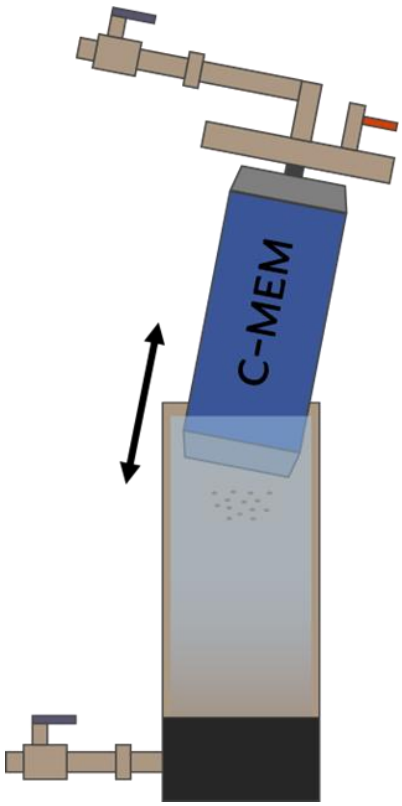
7.1 Manual Cleaning

If the flow rate is less than 200 litres per hour and there is a pressure loss (e.g., 400 l/h at 2 bar pre-pressure), the cartridge and container must be cleaned manually. To do this, close valves V1 and V2 to stop the filtration process. If a pump is installed upstream, it must be switched off beforehand. To release the overpressure in the filtration tank, open valve V3.

Immersion Cleaning:

1. Empty the filtration tank and refill it with clean water.
2. Immerse the C-MEM™ cartridge, including the lid, into the tank several times and pull it out again.
3. Before resealing the tank, it must be emptied.

To avoid potential damage to the cartridge, the immersion process must be carried out with great care.

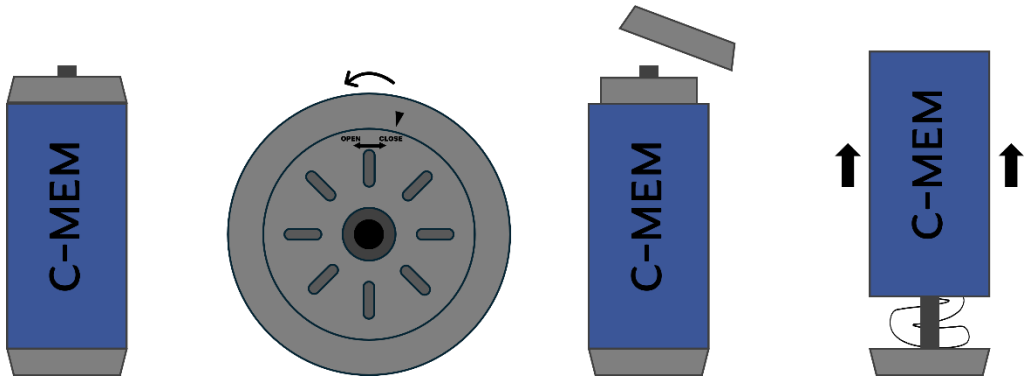


Rinse Cleaning:

If contamination is more severe (immersion cleaning is insufficient), a direct rinsing of the membrane may be necessary.

1. Open the C-MEM™ cartridge by turning the locking ring (marked "Open-Close"). Remove the blue protective cover and carefully rinse the hollow fiber membranes with water until all residues are removed. Then, place the protective cover back onto the cartridge and close the locking ring.
2. Clean the tank with clean water and reassemble the unit properly (see Chapter 5). The cleaned unit is now ready for water filtration again.

Attention: Extreme caution must be exercised when rinsing the membrane to avoid damaging the sensitive hollow fibers.



7.2 Chemical Cleaning

If the flow rate is less than 200 litres per hour and there is a pressure loss, the cartridge must be chemically cleaned in addition to manual cleaning. In general, the cartridge should be chemically cleaned twice a year to ensure optimal cleanliness and an adequate flow rate.

1. After manually cleaning the cartridge (see Chapter 7.1), fill the tank(10 liters) with 0.25% NaOCl (25g) solution with a pH of 9-10. Leave the cartridge in the solution overnight, ensuring it is completely covered by the solution.
2. Empty the tank and rinse both the tank and the cartridge with clean drinking water.
3. In case of inorganic deposits in the tank or on the cartridge, repeat steps 1 and 2 using 2% citric acid solution (200 g, see C-MEM™ Zero cleaning agent) to achieve a pH value of 2–3.

Attention: Never mix NaOCl and citric acid! Use professional protective clothing (gloves, body, eye, and face protection) during chemical cleaning.

7.3 Storage

When storing the **C-MEM™** cartridge, the following must be observed:

General storage conditions:

- Minimum temperature: 5°C
- Maximum duration: 1 year

If the **C-MEM™** cartridge has already been in use, the following steps must be performed before storage:

- Cleaning according to sections 7.1 – 7.2
- Moist storage, preferably in a closed plastic bag

After storage, the cartridge must be cleaned manually in accordance with Section 7.1.

8 Problem Solving

Tank is leaking:

→ The lid may not be securely fastened. Tighten the tank lid to the container using a pipe wrench.

Inlet valve (V1) of the raw water and the vent valve (V3) do not close completely:

→ Tighten the ball valves more firmly to the lid fixation.

The turbidity in the cleaned water is above 3 NTU and particles are still visible:

→ Check the connection between the cartridge and the lid to ensure an O-ring is in place.

Flow rate changes:

→ There may be air pockets in the hose system. Fill the hoses with clean drinking water before starting operation.

No flow after start:

→ There may be air in the membrane. Remove and inspect the hose. Wait until no air bubbles come out of the hose and the pipe connection.

Low flow rate < 200 l/h.bar during operation:

→ Clean the cartridge (see Chapter 7) or check if there is sufficient pre-pressure.

9 Contact

For any questions, we are always available to assist you:

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