MembraSAL — Desalination

User guide · installation, setup and maintenance

Version 1.0 — 17 October 2026

1. Welcome

Thank you for choosing MembraSAL Desalination. In this guide you will read how the system is installed, how to operate it and what maintenance it needs. The guide is made to be read on screen; there is no need to print it.

MembraSAL Desalination is installed by a qualified installer, who knows your situation and the water and electrical regulations. Installation is not included in the price.

2. Your MembraSAL

MembraSAL Desalination works with reverse osmosis. A pump pushes the water under pressure through membranes: very fine filter sheets that hold back a large part of dissolved salts and minerals. Two streams come out:

- **Pure water** (permeate): the desalinated water. This goes to a storage tank.
- **Concentrate**: water containing the salts held back. This goes to the drain. About 25% of the water leaves this way. Not a defect, simply how full desalination works.

Everything is on a plastic wall frame: pre-filter, pump, membranes and control panel. The system works fully automatically.

Model	Pure water at 20 °C	At 10 °C	Membranes
MembraSAL Desalination 150 l/h	150 litres per hour	105 litres per hour	1
MembraSAL Desalination 300 l/h	300 litres per hour	210 litres per hour	2
MembraSAL Desalination 500 l/h	500 litres per hour	350 litres per hour	2

Colder water gives less pure water per hour. That is normal.

Dimensions: approx. 56.5 × 43 × 118.5 cm (w × d × h), including pre-filter and connections. Allow for that space, plus space around it for maintenance.

Power: at most 1.4 kW; the controller itself uses 10 W. The exact power of your model is on the rating plate.

3. Before you start

In the box

- System on a plastic wall frame, with pump, membrane housings and control panel
- Pre-filter housing with the first pre-filter cartridge
- The first set of membranes (1 or 2, depending on the model)
- Settings sheet: a separate sheet with the factory settings of your system. Keep it in a safe place.
- Service manual for your installer

Not in the box: hoses and couplings, and a storage tank for the pure water. This tank is always needed (see below). Remineralisation is optional and supplied separately: a separate housing with cartridge.

The right location

- Indoors, frost-free, out of the sun, wind and rain.
- Room temperature between 5 and 40 °C.
- Well ventilated and with enough light (at least 150 lux) to work.
- Leave space around the system for maintenance.
- An open drain nearby for the concentrate and a 230 V power socket.

Requirements for your water

The water entering the system must meet these requirements. Not sure? Then have a water analysis done first. Sometimes extra pre-treatment is needed.

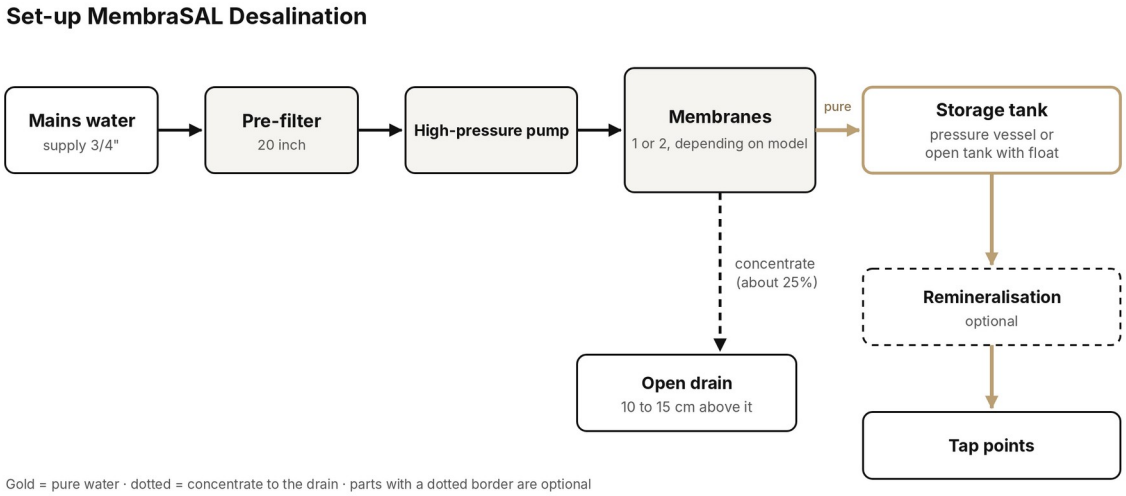
Component	Requirement
Water temperature	5 to 30 °C
Water pressure	2.5 to 6 bar, with fluctuations of at most 1 bar
Dissolved substances (salt content)	less than 2,000 ppm
Hardness	0 to 15 °dH
Acidity (pH)	6.5 to 9
Turbidity	less than 1 NTU
Fouling index (SDI)	less than 3
Iron and manganese	each less than 0.1 mg/l
Free chlorine	0 mg/l, measured before the pre-filter. Dutch mains water normally meets this. If there is free chlorine in your water, an extra activated carbon cartridge must be fitted before it.
Oil	0 mg/l
Odour	odourless

Connections and storage

Component	Requirement
Supply	3/4"; pressure-resistant hose, copper or plastic pipe (no iron or steel)
Concentrate (drain)	1/2" push-fit coupling; to an open drain, 10 to 15 cm above the drain, without narrowing
Pure water	1/2" push-fit coupling; with a non-return valve in the system
Storage tank (pressure vessel)	more than 100 litres; pre-charge pressure 1 to 1.5 bar, measured with an empty tank. The system stops at 3 bar and restarts after a 1 bar pressure difference.
Storage tank (open tank)	at most 1,000 litres, with a float switch (not supplied as standard)
Power	230 V, 50 Hz, earthed socket (European plug)
Pipework	all in stainless material

4. Installation

These steps are for your installer. Wear safety glasses and gloves when unpacking.



1. **Position.** Place or hang the system in its permanent location. Always transport it upright. Check that no connections have come loose during transport.
2. **Check the filters.** Check that the pre-filter cartridge and the membranes are in place. Note the arrow on the pre-filter: it shows the flow direction.
3. **Connect the supply.** Fit a pressure-resistant hose between the water pipe (or the outlet of any softener) and the supply of the system.
4. **Connect the concentrate.** Run the concentrate hose to an open drain and fix it 10 to 15 cm above the drain. Never put it into the drain: dirt could then flow back into the system.
5. **Pure water temporarily to the drain.** First run the pure water hose to the drain, with a generous air gap (at least twice the diameter of the drain pipe).
6. **Connect the storage tank.** Use a pressure vessel with the correct pre-charge pressure, or an open tank with a float switch. Connect the float in the electrical box on the back of the system.
7. **Connect the power.** Plug into a 230 V socket. Electrical work only by a qualified professional.
8. **First flush.** Set the selector switch to AUTO. Let new membranes flush to the drain for 30 to 60 minutes.
9. **Finishing.** Connect the pure water hose to the storage tank or the pipe. Check all connections for leaks and check that the display shows no fault.

5. Commissioning and setup

The control panel

Component	What it does
Selector switch OFF	Standby: the system is idle.
Selector switch AUTO	Normal use: the system automatically produces pure water and stops when the tank is full.
Selector switch CIP	Service position for cleaning and testing. For your installer only.
Reset button	Clears a fault and returns the system to the start screen.

Component	What it does
	Holding it for 5 seconds also resets the pre-filter counter.
Buttons ■ (OK), ▲ and ▼	Scroll through the screens and settings.
RUN and ALARM lights	RUN light: the system is working. ALARM light: there is a fault.
Emergency stop	If your system has an emergency stop, use it to stop it immediately in case of danger.

The screens

Use the ▼ button to switch between screens:

- **General:** the conductivity of the pure water (in µS), the amount of pure water per minute and any faults.
- **Flow:** how much water comes in, how much pure water and concentrate comes out, and what share becomes pure water (in %).
- **Conductivity:** the conductivity and temperature of the pure water.

Conductivity indicates how many dissolved substances are still in the water: the lower, the fewer. For comparison: 100 µS is about 56 ppm. Hold OK for about 2 seconds to see the statistics for 4 seconds.

Settings

The system comes set up from the factory. The values are on the settings sheet supplied. Do not change them yourself: your installer does that, only when necessary. Your installer sets the date and time at commissioning. Your system also comes with a phone app; you will receive it on delivery.

Note: do not press ▲ and ▼ at the same time. This resets all factory settings.

6. Daily use

- **Leave the switch on AUTO.** The system fills the storage tank and stops automatically when it is full. When water is used, it starts again.
- **Concentrate goes to the drain.** About 25% of the water leaves as concentrate. Not a defect, simply how full desalination works.
- **Colder water, lower output.** In winter the system produces less pure water per hour. That is normal.
- **Check the display now and then.** After installation, note the conductivity and the output. If these values clearly rise or fall, it is time for maintenance.
- **Remineralisation (optional).** Desalinated water contains few minerals. The separate remineralisation unit adds some back.
- **Water off?** First set the switch to OFF. The pump must never run dry.

7. Maintenance and replacement

Only use original cartridges and membranes from H2Ot, such as the Pre-filter cartridge 20 inch, the Remineralisation cartridge 20 inch and the matching Replacement membrane.

What	When	Who
Pre-filter cartridge	After 150,000 litres, but after 6 months at the latest. Also when the display asks for replacement. Your installer leaves the counter at the factory start value.	You or your installer

What	When	Who
Membranes	Under good conditions after about 2 years. Sooner if the output drops or the conductivity rises. Then recommission.	Installer
Remineralisation cartridge (optional)	At least once a year, together with the pre-filter.	You or your installer
Calibrating the conductivity meter	Every year, and always after cleaning the meter.	Installer
Chemical cleaning of the membranes	When the output drops due to fouling or scaling.	Installer
Pressure vessel pre-charge	Every year at the service check, with an empty tank: 1 to 1.5 bar.	Installer
Service check	Every year. What your installer checks is described in the service manual supplied on delivery.	Installer
Off for more than 48 hours	The membranes must then be preserved, otherwise bacteria can grow.	Installer

Replacing the pre-filter cartridge

1. Set the switch to OFF and close the water supply to the pre-filter. Release the pressure.
2. Disconnect the quick couplings and take the filter out of the holder. Let the residual water drain out.
3. Release the clamp, take off the head and pull the old cartridge off the central connection.
4. Rinse the inside of the head, the filter housing and the rubber ring clean with water.
5. Fit the new cartridge. Secure the head and housing again with the clamp and fully tighten the wing nut.
6. Put the filter back in the holder. Note the arrow on the head: it must point in the flow direction.
7. Open the water and check that everything is leak-tight. Set the switch back to AUTO.
8. Hold the reset button for 5 seconds to reset the filter counter.

8. Troubleshooting

In the event of a fault, the system goes into alarm mode. The display shows the fault and the time until the next automatic restart. With minor faults the system restarts by itself. After solving the problem you can also press the reset button.

What do you see?	Possible cause	Solution
Message: replace cartridge (End of resource)	The pre-filter has processed its maximum amount of water	Replace the pre-filter cartridge, then Reset for 5 seconds
Message: pressure difference too high (High pressure drop)	Pre-filter is getting blocked	Replace the pre-filter cartridge, then Reset for 5 seconds
Alarm 04 or 05: pressure too low	Main tap closed, water pressure too low or pre-filter full	Open the tap, have the pressure checked, replace the pre-filter. Restarts automatically every hour, or press Reset.

What do you see?	Possible cause	Solution
Alarm 06: pressure too high at the membranes	Membranes fouled	Call the installer: clean or replace the membranes. Restarts automatically every 3 hours.
Alarm 07: pump overloaded	Pump motor protection has tripped	Call the installer
Alarm 08: conductivity too high	Meter needs calibrating, concentrate valve or membranes	Call the installer. Restarts automatically every 3 hours.
Alarm 09: too little pure water	Membranes fouled or flow meter	Call the installer. Restarts automatically every 3 hours.
Alarm 10: too little concentrate	Concentrate valve or meter	Call the installer. Restarts automatically every 3 hours.
Alarm 14 to 17: pressure sensor gives no signal	Sensor or cable	The installer has the sensor and cable checked and replaced if necessary
Alarm 01, 02, 03, 11 or 12	Only with extra components, such as a storage tank, pre-treatment or dosing pump	Call the installer
Display stays blank	No power	Check the plug and socket

Not working? First contact your installer. If something is broken within the warranty, email info@h2ot.nl with your order number and a photo. You will hear from us within 4 working days.

9. Safety

- Electrical work only by a qualified professional. Unplug and make sure there is no more voltage before any work is done on the system.
- Depressurise water and air lines before disconnecting anything. After any work, check that all connections are leak-tight.
- Never let the pump run dry. This can damage it and voids the warranty.
- Do not open the electrical cabinet yourself. Chemical cleaning, calibration and preservation are done by your installer.
- Always transport and store the system upright, in its packaging, dry (humidity at most 80%) and between 3 and 50 °C. Do not tilt or turn it over.
- Follow the water, electrical and building regulations that apply where you are.

10. Warranty and disclaimer

Warranty. Your MembraSAL comes with a **2-year warranty** on the main components. Pre-filters, membranes and remineralisation cartridges are consumables and are not covered. If the product does not work when connected and you report this within 24 hours of installation, we will replace it free of charge, provided it was installed within 3 months of delivery. The installer's costs are your own. Is something broken within the warranty? Email info@h2ot.nl with your order number and a photo; you will hear from us within 4 working days.

Sealed. Membranes and cartridges are supplied factory-sealed. Once the seal is broken, we cannot take them back for hygiene reasons.

No medical advice. This guide is a user manual and not medical advice. Our products are not medicines or medical devices and are not intended to diagnose, treat, cure or prevent any disease. If you have questions about your health, please contact your doctor.

What a filter does. How much a system reduces depends on the composition of your water, the flow rate and timely replacement. The substances mentioned are reduced, not always completely removed.

Liability. To the extent permitted by law, H2Ot is not liable for damage caused by incorrect installation, use that deviates from this guide, or failure to replace consumables in time. Your statutory consumer rights always apply. Please also read our general terms and conditions at h2ot.nl.

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