



MANUAL

MINI50



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1. INTRODUCTION

Thank you for choosing Pure Ocean Marine's water maker. POM's RO system is designed for yachts, ocean cruise boats, sailboats and fishing boats. We understand the value of space on board, and this split desalination system can flexibly allocate components to install on your boat, which is a good space saving. POM water maker chooses the industry's highest quality parts, each POM water maker before the factory has been strictly tested, can provide a strong guarantee for your boat life.

The water produced by this system is odor-free and very clean for daily use. However, if you need to drink the produced water directly, it is recommended to do further treatment to meet the drinking demand.

Please read this manual carefully before installation and use, and strictly follow the instructions in this manual to use the equipment. Improper operation may cause damage to the components of the equipment and affect the warranty.

If you have any questions about the installation, operation or maintenance of the water maker, please feel easy to contact us.

2. Parameters

Model	POM-MINI50
Membrane type	SW-2514×2
Product water quality	<500ppm
Minimum Salt Rejection	99.5%
Effective area of the membrane	16ft ² (1.46m ²)
Working pressure	800psi (55bar)
Seawater temperature range	+4°C~38°C
Maximum inlet flow	6.0gpm (1.4m ³ /h)
Free Chlorine Tolerance	<0.1ppm
Influent pH range during continuous operation	3~10
Water inlet pH range for chemical cleaning	2~12
Maximum SDI15	5
Water production (3.5% salinity, 25°C, 800psi working pressure)	40-50L/h
Material of membrane vessel	FRP
High-pressure pump power supply	730W
Low-pressure pump power supply	70W
Operating time	continuous duty up to 35°C ambient temperature

3. Safety guidelines

This user manual includes important safety information and instructions for commissioning, operating, and maintaining Pure Ocean Marine water maker components. Therefore, before starting any work on the equipment, the responsible staff must read and refer to the manual.

To ensure the installation of the device, please read this user manual carefully. If the installation does not meet this requirement, the warranty will be void. Ignoring warnings/instructions in the user manual and incorrect installation may result in injury or possible property damage. In this manual, the following symbols and their meanings must be observed.

Please follow the instructions and take appropriate measures.

 WARNING	Failure to follow warnings could result in serious personal injury and death or property damage.
 WARNING	Risk of electric shock, resulting in serious personal injury or death, if warnings are not followed. -
 ATTENTION	Remind to follow the instructions, otherwise it may cause personal injury or equipment damage.

4. OPERATIONS



ATTENTION

The system contains a pickling preservative when it is used for the first time. Please allow the system to run for **at least 30 minutes** before using the produced fresh water.

4.1 Start system

4.1.1 Lay the water maker down horizontally as shown in the picture and open the cover.



4.1.2. Check if the pressure regulating valve is fully open.

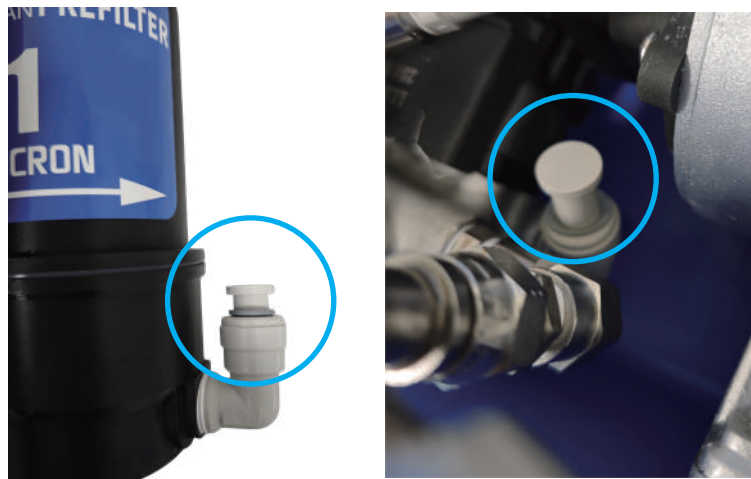
Turn the pressure regulating valve counterclockwise until it stops. This indicates the valve is fully open.



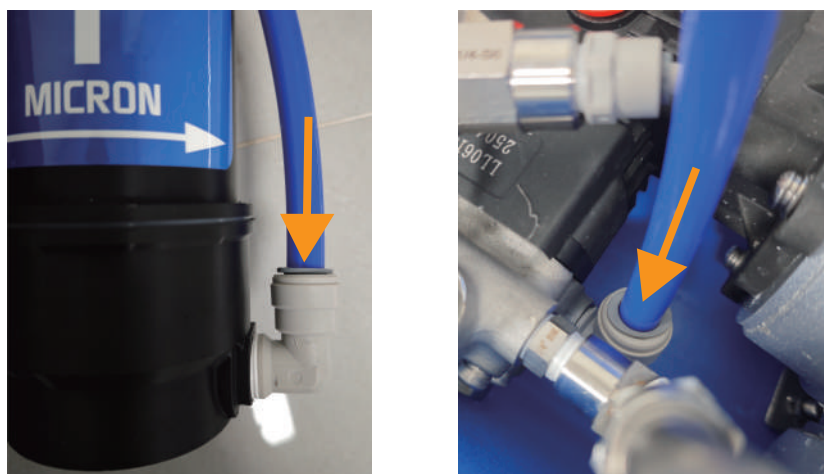
4.1.3. Take out the water boost pump & pre-filter assembly from the box.



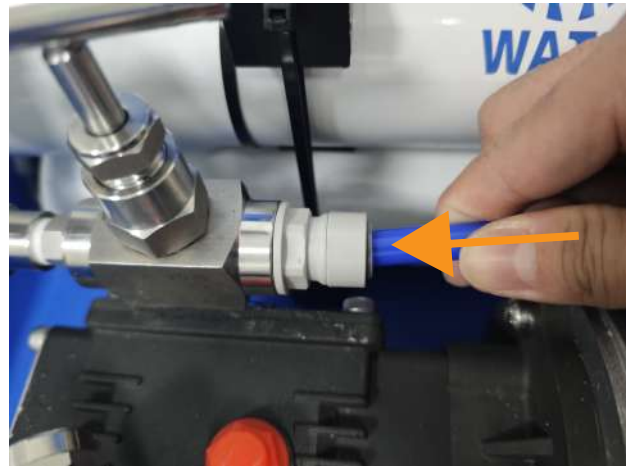
4.1.4. Pull out the sealing plugs at the water outlet of the pre-filter and the water inlet of the main pump.



4.1.5. Insert the seawater hose (1/2" blue PE hose) into the water outlet of the pre-filter and the water inlet of the main pump respectively.



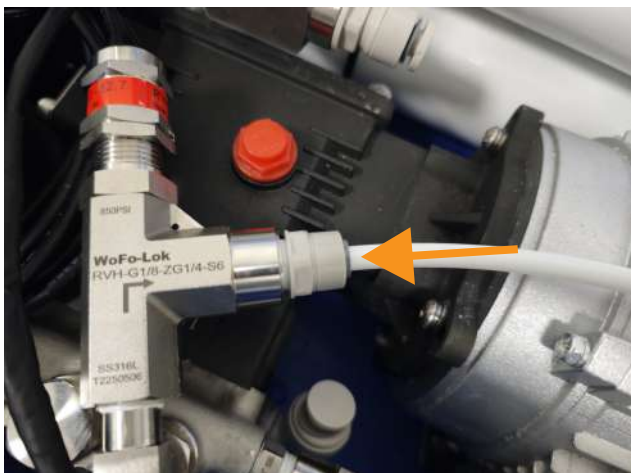
4.1.6. Remove the sealing plug on the Reject water outlet connector, then insert the reject water hose (3/8" blue PE hose).



4.1.7. Remove the sealing plug on the Fresh water outlet connector, then insert the fresh water hose (1/4" blue PE hose).



4.1.8. Remove the sealing plug on the safety valve outlet connector, then insert the hose (1/4" white PE hose).



4.1.9. Assembling the pre-filter

- ① Open the pre-filter cap.
- ② Install the prepared 1-micron filter element into the filter.
- ③ Screw on the cap.



ATTENTION

Make sure the sealing ring is installed on the pre-filter intact to avoid the filter losing its sealing effect.



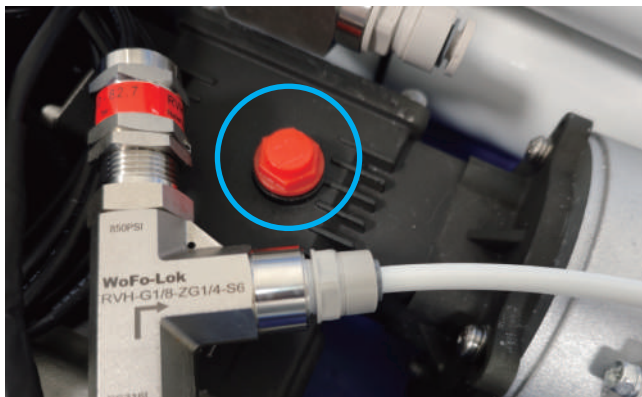
4.1.10. Install the strainer on the boost pump.



4.1.11. Attached the flow meter to the fresh water hose blue hose (1/4" blue PE hose).



4.1.12. Replace the cap on the main pump with the dipstick



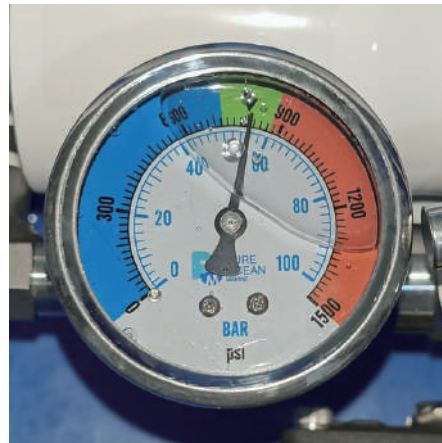
4.1.13. Plug in the power plug and the boost will start working. Water will flow out of the reject hose.



4.1.14. Press the button on the main pump.



4.1.15. Adjust the pressure regulator **SLOWLY** to 800 PSI.



4.1.16. When the system has reached operating pressure, fresh water will begin to generate.



4.2 Shut down and flushing



ATTENTION Please make sure to properly shut down the portable waterMaker system



ATTENTION The system pressure should not be fully released directly from 800psi, otherwise it will cause damage to the RO membrane.

4.2.1 Shut down the system

- ① Prepare a bucket of freshwater. We will flush the system using 5L~6L.
- ② Depressurize the system to 0 PSI.
- ③ Power off the main pump by the button.
- ④ Unplug the boost pump.

4.2.1 Flushing

- ① Put the boost pump into the bucket.
- ② Power on the boost pump.
- ③ Flush the system with fresh water until the water is gone.
- ④ Remove the used pre-filter element.
- ⑤ Plug the sealing plugs back into all connectors.
- ⑥ Store all wires and hoses within the box.

5. MAINTENANCE



5.1 Pickling

If you plan to not use your water maker for a long time, before shutting down the water maker, you need to use a chemical ③ (sodium metabisulfite) for an acid wash to inhibit the growth of bacteria and microorganisms. After pickling, your water maker can be stored for 6 months.



WARNING During the cleaning with chemical, please wear rubber gloves, glasses and masks to ensure personal safety.

5.1.1 Before you shut down the system

- ① Prepare a 15L bucket of freshwater. We will flush the system using 5L of the 15L.
- ② Depressurize the system to 0 PSI.
- ③ Power off the main pump by the button.
- ④ Unplug the boost pump.
- ⑤ Add 10 spoons of Sodium metabisulfite (50g totally) to the remaining 10L of freshwater.
- ⑥ Put the boost pump and reject water hose into the bucket.
- ⑦ Power on the boost pump.
- ⑦ Unplug the boost pump after running for 10 minutes.
- ⑨ Remove the used pre-filter element.
- ⑩ Plug the sealing plugs back into all connectors.
- ⑪ Store all wires and hoses within the box.



WARNING Before starting the system for normal use next time, turn on the fresh water and rinse for 6-10 minutes. Let the system run for 15 minutes without pressurization to remove residual chemicals from the system. After draining, pressurize the water according to the step [Start the system], and discharge the fresh water produced in the first 30-40 minutes overboard.

5.2 Winterization

The RO membrane is likely to be irreversibly damaged in a cold environment. If your PO reverse osmosis system will be in an environment below 0°C, it is recommended to take antifreeze measures in advance to prevent the RO membrane from being damaged by freezing.



WARNING

Do not use ethylene glycol as antifreeze, ethylene glycol is a toxic substance and should not be used in RO reverse osmosis systems.



WARNING

Do not use propylene glycol with additives, always use pure food grade propylene glycol as antifreeze

Method 1: Use Antifreeze

During the pickling process, add antifreeze (food-grade propylene glycol) to the pickling solution to achieve a concentration of 50%. For detailed steps, please refer to the [Pickling] section.

Method 2: Store membranes above freezing without using antifreeze

- ① Please [Pickling] your water maker first (no need to add antifreeze).
- ② Remove your RO membranes and membrane vessels from the system, and use the plugs to seal the joints at both ends of the membrane vessels. Make sure that the RO membrane is soaked in the pickling solution.
- ③ Store the RO membrane and membrane vessels in an environment above freezing point

5.3 Replacing the RO membranes:



WARNING

RO membranes are stored with chemicals. When disassembling, please wear protective gloves to ensure personal safety. In case of accidental contact with chemical liquid, the touched skin area must be thoroughly rinsed with water.



Attention

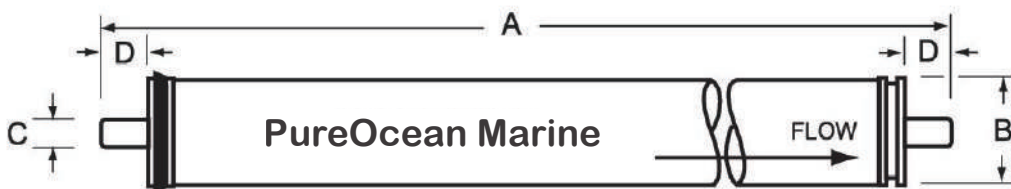
The RO membrane needs to be kept moist at all times to prevent the new membrane from drying out and being damaged. After unpacking the new RO membrane, it should be installed immediately and passed through water.

Remove the old membranes

1. Disassemble the hoses at the seawater inlet end of the membrane vessels.
2. Remove the fastening screw, take out the snap ring with pliers, and take out the metal head.
3. Repeat the above steps to take out the head at the other end of the membrane vessels.
4. Slowly push the membrane out of the membrane vessels according to the direction of the arrow on the membrane vessels (That is the flow direction of seawater).
5. Repeat the above steps to remove the second membrane.

Install new membranes

1. Before installing the new membrane, the accompanying rubber V-shaped sealing ring must be installed on the seawater inlet side. When installing, the open side of the V-shaped ring must face outward, pointing toward the seawater inlet side.



2. All joints of sealing rings and membranes should be coated with a layer of food-grade silicone grease or glycerin.
3. Slowly push the membrane into the membrane vessel from the seawater inlet side according to the direction of the arrow on the membrane vessel (that is the seawater flow direction).
4. Install the head, if the head cannot be installed, you need to continue to push the membrane inward. After pushing the membrane into a suitable position, install the head and the snap ring, and lock the fastening screw.
5. Connect the seawater inlet hose to the seawater inlet end of the membrane vessel.
6. Repeat step 4 to install the head on the other side, install the snap ring and lock the fastening screws.

5.3 High-pressure pump maintenance:

Maintenance:

1. Pump crankcase oil type: SAE15W-40
2. The oil level should not be lower than 1/2 of the marked line of the dipstick.
3. During the operation of the high-pressure pump, please pay attention to the temperature of the crankcase, and the oil temperature should not be higher than 75°C.
4. After 50 hours of normal operation of a new machine, the first oil change is required. The oil needs to be changed every 500 hours of operation in the future.



Attention:

1. The (red) oil plug must be replaced with the (yellow) oil dipstick after a new pump is installed.
2. Check whether the lubricating oil in the pump has been filled to the position in marked line.
3. It is strictly forbidden to replace or increase or decrease lubricating oil for the pump when the pump is turned on.
4. Avoid dry running, and must maintain continuous liquid supply during operation, so as not to cause damage to the seals inside the machine.



Warning:

Once the oil in the crankcase is found to emulsify (turn into milky white), it must be replaced with new oil immediately.

Oil Change Procedure:

1. Unscrew the oil drain cock at the bottom of the pump, prepare an oil barrel, drain the old oil into the oil barrel. After drain the old oil, then screw on the cock.
2. Unscrew the cock on the top of the pump, fill the new engine oil to above the red line of the dipstick on the visible window, and finally screw on the cock.

6. TROUBLE SHOOTING

SYMPTOM	CAUSE	SOLUTION
High-pressure cannot build. 1. There are bubbles in the brine level gauge. 2. The high-pressure pump runs noisily. 3. The value of the high-pressure gauge is unstable, and the high-pressure tube vibrates. 4. The low-pressure gauge shows insufficient pressure.	1. There is air in the system that has not been emptied. 2. Air leakage in the system hoses and connectors. 3. The seawater valve is closed or blocked. 4. The one-way valve of the high-pressure pump is damaged or blocked. 5. The low-pressure pump is blocked or damaged. 6. The seawater filter or coarse and fine filter is clogged.	1. Press the red button on the top of the coarse and fine filter to empty air. 2. Tighten leaking hoses and connectors. 3. Open or clean the seawater valve. 4. Clean, overhaul or replace the one-way valve of the high-pressure pump. 5. Clean or overhaul the low-pressure pump. 6. Clean the seawater filter or coarse and fine filters.
Oil leakage at the plunger seal of the high-pressure pump.	1. The plunger rod is worn. 2. The oil seal is damaged.	1. Replace the plunger rod (requires a professional). 2. Replace the oil seal (need to use special tools to disassemble).
Water leakage at the plunger seal of the high-pressure pump.	1. The ceramic tube is damaged. 2. Damaged water seal.	1. Replace the ceramic tube. 2. Replace the water seal.
High-pressure pump crankcase oil temperature is too high (more than 75 °C).	1. Too much, too little lubricating oil or oil emulsification. 2. The grade of lubricating oil is wrong. 3. There are sundries in the crankcase, the bearing bush is damaged, and the crankshaft is rough.	1. Increase, decrease or replace lubricating oil. 2. Replace lubricating oil (SAE15W-40). 3. Remove debris and replace the crankcase assembly.
Low-pressure gauge pressure shows pressure drop.	1. There is air entering the system from the hose or connectors. 2. There is air entering the system from the sea water inlet valve.	1. Find the leak point and tighten the connectors or hose clamps 2. Connect the seawater inlet pipe to the lower sea water inlet valve.
Product water TDS$\geq$500ppm.	1. RO membrane damage 2. RO membrane installation error. 3. The O-ring of the RO membrane is damaged.	1. Replace the RO membrane with a new one. 2. Follow the instructions to reinstall. 3. Replace the O-ring.
The produced water has a bad smell.	1. Seawater filters or coarse and fine filters breed algae or bacteria. 2. RO membrane adheres to dirt.	1. Clean or replace the seawater filter and the filter elements of the coarse and fine filters. 2. Cleaning the system with Chemicals.
Water production is too low. 1. The reading of the fresh water flow meter is lower than the normal value. 2. The reading of the seawater flow meter is lower than the normal value.	1. The RO membrane is blocked or damaged. a. Inadequately flushing the system after each use. 2. The carbon filter was not replaced in time, resulting in excessive chloride ion content in the system. 2. Coarse and fine filters are clogged. 3. High-pressure pump performance decline. a. One-way valve blocked. b. The power supply voltage is too low. 4. The seawater temperature is lower than 25°C or the seawater salinity exceeds 35000ppm.	1-a. Cleaning the system with Chemicals. 1-b. Replace the new carbon filter element. 2. Replace the new filter element (stainless steel filter element needs to be taken out and cleaned). 3-a. Clean or replace the check valve of the high-pressure pump. 3-b. Check the supply voltage, check the circuit breaker, fuse and connector of the high-pressure pump motor. 4. Start the water maker test again after moving to a new environment.

7. WARRANTY

This warranty agreement is limited to the repair and replacement of the product. Direct or indirect damage to personal and property safety due to failure to use the equipment in accordance with this manual is not covered by the warranty.

This warranty agreement is limited to the repair and replacement of the product and does not include any compensation to consumers

1. The warranty period of this product is 2 years. Calculated from the day the product is shipped, the warranty service is only provided to the original purchaser of the product, and is transferred or resold to a third-party purchaser, and the manufacturer does not provide warranty.

2. In the event of a defect, malfunction or failure during the warranty period, POM will, at its option, repair or replace products or components that have been inspected by POM as defective or not in compliance with factory specifications. To obtain warranty service, the defective product or part must be returned to a repair service center designated by POM. The buyer is responsible for any shipping and labor costs for disassembly and reinstallation that may arise.

Return Merchandise Authorization must be obtained prior to shipment of any parts or assemblies. The warranty does not apply to any system component that has been used as a result of misuse, neglect, accident, improper installation, or violation of instructions provided by the POM. Warranty does not apply to parts whose serial numbers have been removed, defaced or altered.

Any issues with the device will be checked by a POM authorized service to determine if there is a problem and if it is under warranty. Failures not covered by the warranty will be charged additionally.

WARRANTY EXCLUSIONS

1. Parts not guaranteed

Parts	Consumables
Membranes	High-pressure pump crankcase lubricating oil
Paper filter element	Chemical①
316L filter element	Chemical②
High-pressure pump check valve assembly	Chemical③
carbon filter element	Antifreeze
Pump Seals and Packing	
Pump bushings and bearings	

1. The manufacturer does not provide warranty for system or component damage caused by failure to install according to the instructions

2. Failure to follow the instructions of the manual, improper operation caused by system damage, the manufacturer does not provide warranty

For example:

2-a Working pressure exceeds the tolerance range of the system

2-b Sea water supply valve is not opened, resulting in the system running without medium

2-c Running the system with air in the system that has not been purged

2-d Damage to the high-pressure pump caused by the high-pressure pump lubricating oil not being replaced or supplemented in time

2-e Membrane damage caused by failure to maintain the membrane according to the instructions

2-f Improper use of chemicals

2-g Damage caused by operating the system on a dock or other location containing sewage, petroleum waste, etc.

and other situations that are not used in accordance with the instructions

3. The use of third-party parts not provided by the manufacturer, including but not limited to accessories, wearing parts or consumables, will cause damage to the system, and the manufacturer will not provide warranty

4. The manufacturer will not provide warranty for any damage caused to the system by unauthorized service providers for repair, installation or maintenance.



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