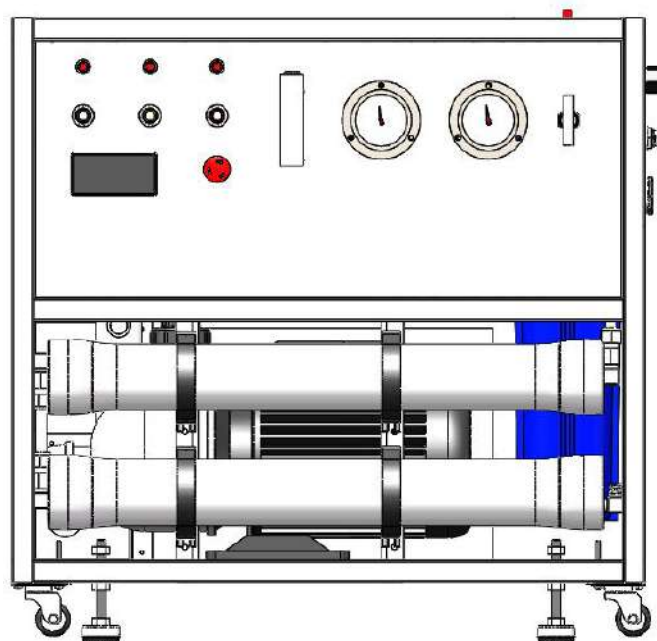


Portable Seawater Desalination Machine

YB-SWRO700-2000LPD-2

Operation instruction manual





Warning

- ◆ When using chemical agents, wear protective goggles, rubber gloves and other protective equipment. If touch with eyes, skin, please use a large amount of clean water to wash, and then go to the hospital for medical treatment.
- ◆ Equipment vibration, timing bolts, check for leaks, damage, etc between the pipe fittings, timely replacement and repair.
- ◆ Before the RO membrane module is ventilated, be sure to rinse the piping and other parts with clean water and confirm that there is no dirt. Careful operation to prevent the sudden increase or decrease of the inlet pressure, resulting in damage to the membrane module or connecting line.
- ◆ The system must record the operation data during daily use, in order to track the system operation and find the cause when the system fails. (Please refer to Appendix 1 for the form of table record)
- ◆ Before the equipment is overhauled, please stop the pressure and shut off the main power and water source!
- ◆ Keep the equipment clean and wipe off the oil or splashed sea water to prevent rust and corrosion. It is recommended to carry out regular paint maintenance.

- Do not apply or store RO membrane components in a high temperature environment.
- Prevent the drying of the RO membrane module and prevent the RO membrane module from freezing. The storage environment should be cold, dry and free from direct sunlight.
- Do not use a power source other than the one specified on the device nameplate, as this will burn the machine.
- Do not overload the machine, such as the following critical conditions: operating pressure, water flow, temperature, cleaning chemical concentration, etc.
- The following seawater cannot be treated: turbid seawater, oily seawater, polluted seawater, etc.

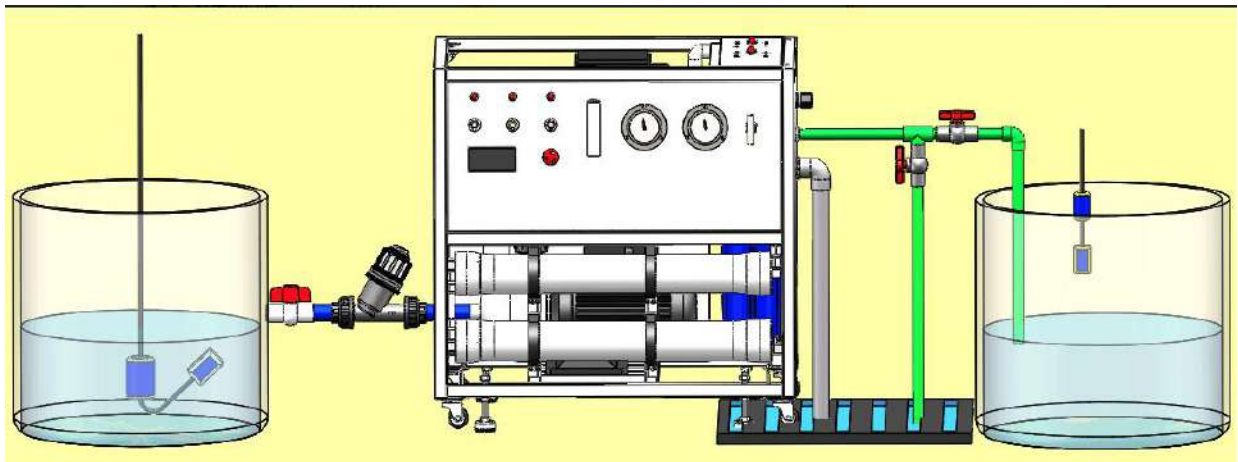
3. Equipment installation, instructions for use

3.1. Installation Precautions

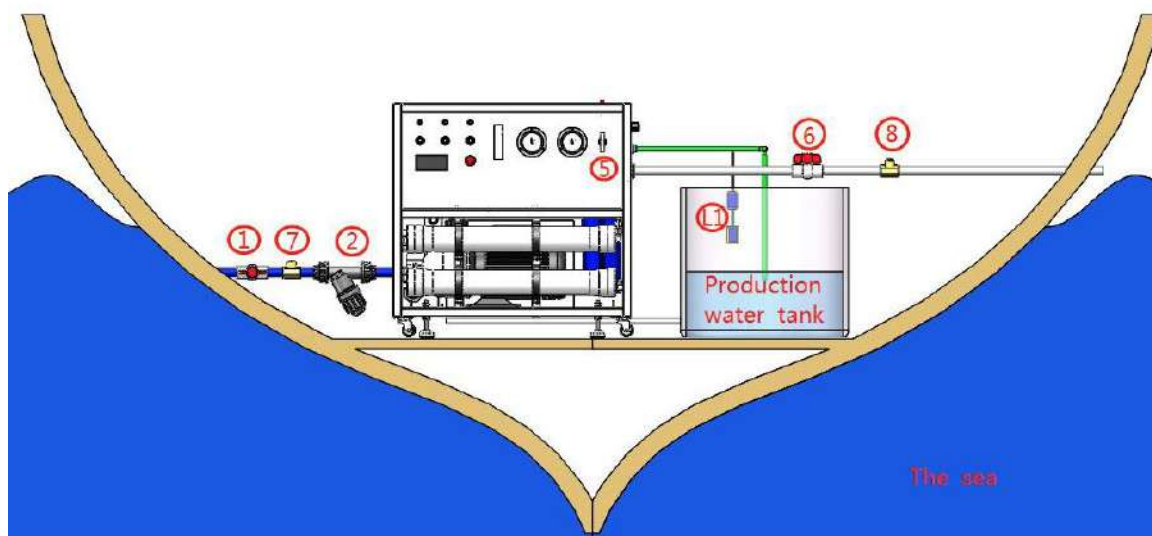
- The equipment should be placed on site for smooth, rainproof, sun protection, and should not be placed in a place where it is wet, hot, or splashy.
- The connection of the pipe must be completely sealed, and the corresponding valve should be installed to facilitate the cut-off inspection. In any case, the pipe should be supported and fixed, and cannot be supported by the pump or equipment alone.
- A screen filter of the corresponding specification shall be installed on the main inlet pipe of the equipment to prevent large debris from entering the equipment water pump and damaging the water pump.

3.2. Equipment installation diagram

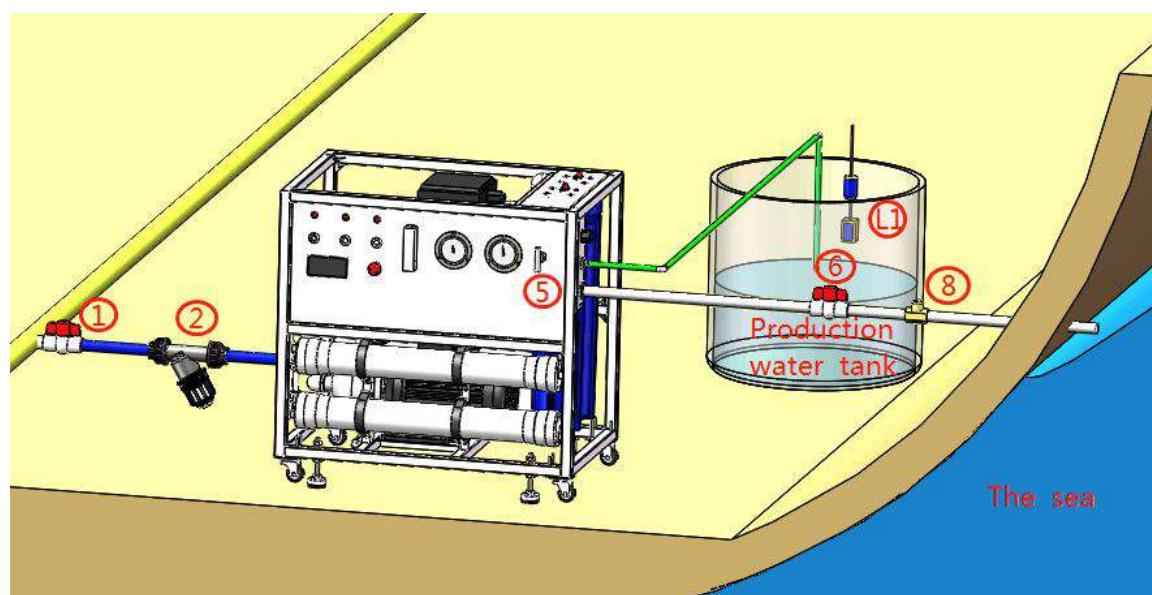
Standard installation reference



Boats installation reference 1



Boats installation reference 2



No	Name	Specification	Remark
1	Equipment inlet valve	≥3/4" (DN20)	Cut off water supply or overhaul
2	Screen filter	≥3/4" (DN20)	Prevent debris from entering the pump
3	Cleaning valve	3/8"	Used during cleaning
4	Product water valve	3/8"	Cut off water or overhaul
5	A pressure regulating valve	3/8"	This valve cannot be completely closed at any time
6	Concentrated water valve	≥3/4" (DN20)	Overhaul use
7	Check valve	3/4"	Prevent water pump from flowing back
8	Check valve	1/2"	Prevent seawater infusion
L1	Float level	High water level	Optional, equipment high level protection
L2	Float level	Raw water low level	Optional, equipment low level protection
	Inlet pipe	pipeline≥3/4" (DN20)	
	Concentrated water pipe	pipeline≥1/2" (DN20)	
	Sea water pipe	pipeline≥3/4" (DN20)	The inlet pressure should be at least 0.1Mpa
	Water production pipe	pipeline≥3/8"	
	Sea water tank	capacity≥1000L	
	Production water tank	capacity≥500L	

Note: When installing the reference standard, the distance between the sea water tank and the equipment is preferably within 5 meters. If the distance is too far apart, it will seriously affect the pumping performance of the sea light machine!

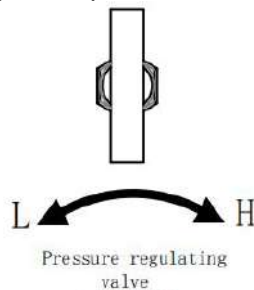
3.3. Starting up preparation

- The sea water tank is full of water and the water is clear, ensuring that the inlet valve of the sea lighter is open. (maximum inlet turbidity ≤ 50 NTU)
- Check whether the inlet and outlet pipes of the equipment are well installed, the pipe diameter is appropriate, and whether the pressure regulating valve (V1) is fully open.
- Exhaust the original water pump: Loosen the hexagonal bolts on the side of the pump head, and wait for the water to flow without air bubbles.
- Refer to the relevant parameters on the equipment nameplate to ensure that the equipment power supply is connected correctly and reliably.
- Before using the device, please ensure that the filter is installed and vented in the security filter; ensure that the pump is turning correctly.
- Dramatic changes in pressure or cross-flow flow should be avoided during start-up, shutdown, cleaning or other processes to prevent water hammer from damaging the membrane. During startup, we recommend a gradual transition from a standstill to an operational state as follows:
 - ▲ The inlet pressure should rise gradually within 30-60 seconds.
 - ▲ The design cross flow rate value should be gradually reached within 15-20 seconds.

3.4. Starting up procedure

Note: During any operation, the pressure regulating valve (V1) must not be completely closed to prevent the pressure of the membrane, pump, pipeline, etc. from exceeding the limit and being damaged.

1. Press the “Water” button on the panel and the device will start working slowly. [Note: 1]
2. Adjust the opening degree of the pressure regulating valve (V1) to make the equipment reach the corresponding water production and recovery rate. [Note: 2]



Note: 1. When the equipment is turned on for the first time, the membrane module is injected with protective liquid and chemical cleaning, etc.; the water produced in the first 10-30 min should be discharged and not drinkable.

2. Under the condition of meeting the standard water production, the lower the inlet

pressure, the better; refer to the following table, but not as the final value.

Raw water pump outlet pressure gauge	0.2-0.4MPA	Water flow meter	(Specific reference to the equipment nameplate)
High pressure pump outlet pressure gauge	4-5.5MPA		

3.5. Shutdown procedure

1. Open the pressure regulator valve (V1) completely.
2. Click the panel Stop button . [Note: 1]
3. Wait for the device to stop working.
4. Click the "Flush" button.
5. Wait for the original pump to flush the equipment.
6. The equipment is flushed for 1-2 min; press "Stop".
7. Turn off the power after shutdown.

Note: 1. The shutdown program can be executed only after the equipment is running smoothly.
 2. "E-STOP" is the emergency stop button.

4. Panel button and process description

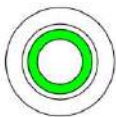
4.1. Indicator light



- ◆ The left side is the thermal overload indicator. When this light is on, it means that the original water pump or high pressure pump is overloaded and the equipment is stopped. Professional electrical maintenance personnel are required to check the overload of the pump to eliminate the overload fault, and then restart the equipment after resetting.

- ◆ In the middle is the high-pressure alarm indicator. When this light is on, it means that the high-pressure pump outlet pressure exceeds the high-pressure protection safety value and the equipment stops. It is necessary to check the overpressure of the high pressure outlet to eliminate the fault, and then restart the equipment after resetting.
- ◆ The right side is the low pressure alarm indicator. When this light is on, it means that the high pressure pump inlet pressure is lower than the low pressure protection safety value and the equipment is stopped. It is necessary to check the cause of the overpressure of the high pressure water inlet to eliminate the fault, and then restart the equipment before resetting.

4.2 Production Water button



This button is used to activate the water production status of the device. This button lights when in the water production state.

4.3 Flush button



This button is used to initiate the flush status of the device. This button lights when in the flush state.

4.4 Stop button/power indicator



This button is used to turn off the water or flush state. This button has a power indicator that

illuminates when the unit is powered.

4.5 Emergency button



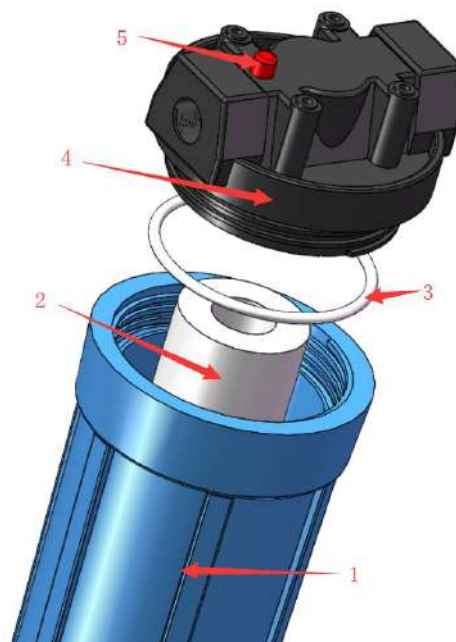
In the event of serious equipment failure or a personal safety emergency, press this button to stop immediately (all AC output power and distribution box AC electrical components are immediately powered off to ensure personal safety and equipment safety). The emergency stop button adopts the self-locking mode. It keeps self-locking when pressed, and needs to rotate clockwise to release the self-locking, and the device returns to the initial state. Note 1: This button can only be operated in an emergency and cannot be used as a normal shutdown.

5. Daily Maintenance

5.1 Use and maintenance of main parts

5.1.1 Cartridge Filter

No.	Name
1	Cartridge Filter Bottle
2	PP Filter
3	Seal ring
4	Cap
5	Air Evacuation Valve



5.1.1.1 Install

• When the equipment leaves the factory, there is no PP filter in the cartridge filter, please install PP filter in the correct way before use.

- Turn the filter bottle to remove it, then take out PP filter.
- Do not let any sundries into the cartridge filter during installation to prevent contamination and blockage.
- It is recommended to replace all PP filter together.
- After replacing the filter element or when using it for the first time, press and hold the exhaust valve 5 to exhaust the air before normal use.

5.1.1.2 maintain

- Recommended replacement cycle: cumulative use of about 50 days.
- Check the fouling and blocking of PP filter element in filter bottle before starting up. If the color is black, replace the filter element.

Warning: no violent demolition !

5.1.2 High pressure plunger pump

Note: please refer to the attachment: operation manual for practical operation.

5.1.2.1 Matters need attention

• When the high pressure plunger pump head goes out of the factory, the oil inlet is blocked by the plug (to prevent oil leakage from transportation). When using it, please replace it with the attached oil ruler!



- Make sure the water supply line is connected and filled with water when starting.
- The maximum inlet water temperature is allowed to be 35°C. If the temperature exceeds 35°C, please contact our after-sales engineer.
- Users are not allowed to change the position of the high pressure plunger pump head and motor. If you need to change, please contact our after-sales engineer.
- High pressure plunger pump is strictly prohibited to run without water.
- When the high-pressure pipeline leaks, immediately stop the operation of the pump and



eliminate the cause of leakage. (It is strictly forbidden to conduct any troubleshooting under high pressure operation)

- Please refer to fault analysis 6 when the high pressure plunger pump head appears abnormal.

5.1.2.2 Replacement of lubricating oil

Always check the oil level in the crankcase and pay attention to the oil color. If the oil turns milky white or black, change the oil immediately. Regular oil change can ensure the long-term safety of the pump and extend the life of the pump.

General new pump in the work of 20-50 hours, that is, you should change the oil, after every 100-300 hours to change the oil! Oil brand is (CD 15w-40) oil.

Oil change method:

Open the oil cover (FIG. A), place the oil receptacle, open the oil screw (FIG. B), and release the old oil. After the old oil is exhausted, screw the oil drain screw and inject the new oil of the specified grade from the oil cap (FIG. C). The oil level should reach half of the oil mark (FIG. D) and screw the oil cap

5.1.2.3 Periodic maintenance

If there are drops of oil or water during operation, but the water leakage does not exceed 1ml/min (or 10 drops /min), it is normal; otherwise, the oil seal or water seal should be replaced.

General pump in the work of 300 hours or so, should be a more comprehensive inspection, inspection in and out of water one-way valve valve wear, seal ring seal, decide whether to replace, but do not open the crankcase!

Ways to replace the water seal:

Remove the Allen screw in eight (figure a), from the pump head (figure b), remove the guide ring after component, guide ring after the inspection, vice water seal and cylinder block in the main abrasion of water seal (figure c), if you have wear or lip there are wounds need to change, in replacement of main water seal, and must apply grease on the plunger rod (d), to replace after installed the pump head.



a



b

After 500 hours, in addition to the above checks, can open the crankcase cover, with his hand upon the big, check the clearance, general in guarantee the oil under the condition of normal, 500 hours after the crankshaft and connecting rod mechanism is not have what problem, if found the problem, need to remove the crank connecting rod, please note: the need to remove the crankshaft, not hitting the crankshaft, because this will make the connecting rod bending



deformation, even broken. The correct method is: gently hit the crankshaft pair moving end, while rotating the crankshaft, while beating the crankshaft, until the crankshaft pair moving end from the deep groove ball bearing position, at this point, the crankshaft carefully slowly rotating out, never use the method of hitting the connecting rod, because this will lead to the deformation of the connecting rod and scrap.

When reassembling, must clean the parts, and make connecting rod, crankshaft and connecting rod pin to maintain the original assembly position, not dislocation, otherwise may cause overheating, stuck and other problems.

In addition, attention should be paid to the assembly, all rubber seals, such as v-ring, o-ring, etc., should be coated with grease.

Please use the original parts when repairing!

Failure and maintenance:

Fault	Reason	Exclusion way
Can't suck water	1. New pump, dry inside the pump 2. Inlet pipe assembly connector loose or no seal 3. Water filter screen blocked	1. Using in the first time,can fill water from inlet pipe into pump. 2. Install the seal and tighten 3. Clear the blockage
Unstable pressure	1. Pump intake 2. There is debris in the nozzle hole 3. Pump valve has debris or damaged	1. Check the inlet pipe and its seal, adjust and tighten 2. Clear 3. Remove debris or replace pump valves
pressure can't be adjusted	1. Sprinkler nozzle is too large 2. Pressure regulating valve ball and its seat have foreign objects 3. Water seal damage	1. Change 2. Remove debris 3. Change
The leak hole leaks too much	1. Water seal damage	1. Replace water seal
Leaking hole drip oil	1. Oil seal damage causes oil leakage from the crankshaft or plunger extension	1. Replace rotary oil seal or reciprocating oil seal



Abnormal vibration	1. Pump valve has debris or damaged 2. Pump intake 3. Water filter screen blocked	1. Remove debris or replace pump valves 2. Check the water inlet pipe and tighten the Connector 3. Clean water filter screen
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5.1.3 Description of membrane module

5.1.3.1 Matters need attention

- Once the component is wet, it must always be wet.
- During the long period of equipment shutdown, it is recommended to fill the membrane assembly with protective fluid to prevent the growth of membrane assembly microorganisms.
- The user shall be fully responsible for the impact of the use of incompatible chemicals and lubricants on the components.
- The maximum allowable pressure drop of a single pressure vessel (shell) is 50 psi.
- The back-pressure on the water producing side should be avoided at all times, that is, producing water is under pressure.
- Reverse osmosis membrane shell is a high pressure component. Please do not damage the membrane shell by pounding or bumping, in case of safety risks.
- During normal operation, if the purification water flow or desalination rate decreases and cannot be restored by chemical cleaning, the membrane should be replaced. When the membrane ruptures due to excessive pressure, the desalination rate decreases rapidly and the membrane should be replaced immediately.

5.1.3.2 RO Membrane operating limit:

• Membrane type	Poly amide composite membrane
• Maximum operating temperature	45°C
• Maximum operating pressure	69.0bar
• Maximum pressure drop	1.0bar
• PH range, continuous operation	2—11
• PH range, short-term cleaning (30 minutes)	1--13
• Maximum feed water SDI15	5
• Allow free chlorine content	<0.1ppm

5.1.3.3 Operation instructions for membrane replacement

When inserting the membrane into the membrane shell, the end without "V" sealing should be inserted first, and then according to the direction of the arrow of the membrane shell, slowly

push into the membrane shell, and then install the end cover and accessories. The operator should also follow the arrow on the membrane shell when connecting the inlet and outlet of other membranes.

Notice:

★ It is best to disassemble and assemble under the guidance of a professional. Personnel without any experience are strictly prohibited from operating without permission.

★ Before removing the membrane element, it is better to take pictures and make notes, recording the installation order for reference during installation!

5.2 Flushing maintenance

5.2.1、 RO flushing

5.2.1.1 The role of RO flushing

- Protect membrane elements, wash contaminants and extend the service life of membrane elements.
- Although the high-pressure pipe fittings of the equipment are made of SS316L material, they should also be prevented from being corroded by seawater. After stopping, clean seawater should be used to wash away the high-salt seawater inside the high-pressure pump, pipe fittings and other materials to prevent the corrosion of pumps, valves and pipes. Extend service life.

5.2.1.2 RO flushing process

1. There is a certain level of raw water in the raw water tank. [note: 1]
2. Make sure to open the outlet valve of the raw water tank.
3. Fully open pressure regulating valve (V1).
4. Press the panel "flush" and the raw water pump will start automatically.
5. Wash continuously for 1-2 min.
6. Press the panel "Stop"

Note: If there is a low level switch at the bottom of the original water tank, when the water level is too low, the equipment will alarm and cannot be used, please keep enough water.

5.2.2 Chemical cleaning

5.2.2.1 Cleaning Conditions

With the increase of running time, RO reverse osmosis membrane surface dirt will lead to the degradation of membrane module performance. If the cleaning work is delayed or not



cleaned, it will cause irreversible damage to the membrane, so the membrane components should be cleaned regularly.

▲ The standardized water yield shall be reduced by more than 10%.

▲ The standardized pressure difference between inlet water and concentrated water increased by 15%.

▲ Standardized salt penetration rate increased by more than 5%.

Note: the above standard comparison criteria are taken from the operating performance of the system after the first 48 hours of operation.

5.2.2.2 Identification of dirt type

The best method is chemical analysis of residues on RO membrane components. If chemical analysis is not allowed, the residue can be distinguished by color, viscosity, etc. As brown residue is generally iron dirt; White or off-white residue may be silicon, sandy clay, calcium scale, etc. The appearance residue of crystal body is a characteristic of inorganic colloid and calcium scale. Biological or organic dirt is usually sticky in addition to smelling. Can also consult the company's after-sales engineers or check online.

Pollution reason	Common reason		
	Salt permeability rate	Membrane pressure	Purified water flow
Metal oxides (iron, manganese, nickel, copper)	It doubled quickly	It doubled quickly	Reduce 20-25%
Sediment (calcium carbonate, magnesium carbonate)	Add 20-25%	Add 10-25%	Add <10%
Colloid (colloidal silicon)	Increased doubled gradually	Increased doubled gradually	Reduce ≥50%
Microorganisms (bacteria, algae)	Double up	Double up	Reduce ≥50%

5.2.2.3 Chemical cleaning agent selection list

Pollutant	Preferred chemical cleaner	Cleaning Conditions	Alternative chemical cleaner
Inorganic salt deposit (e.g. calcium deposit)	0.2% HCL solution	PH value: 2-4 Temperature <35°C	2.0% citric acid 1.0% Na ₂ S ₂ O ₄ solution 0.5% phosphoric acid
metallic oxide	1.0% Na ₂ S ₂ O ₄ solution	Temperature <35°C	0.5% phosphoric acid 2.0% 1.citric acid
Insoluble in acid stains	0.1% NaOH solution +1.0%Na ₄ EDTA solution	PH value: 11-12 Temperature <30°C	SHMP concentration 1%
inorganic colloid	0.1%NaOH solution +0.025%Na-SDS	PH value: 11-12 Temperature<30°C	
silica scale	0.1%NaOH solution +0.025%Na-SDS	PH value: 11-12 Temperature<30°C	0.1%NaOH solution +1.0%Na ₄ EDTA solution
microorganism	0.1%NaOH solution +0.025%Na-SDS	PH value: 11-12 Temperature<30°C	0.1%NaOH solution +1.0%Na ₄ EDTA solution
organic matter	0.1%NaOH solution +0.025%Na-SDS Usually as a first step	PH value: 11-12 Temperature<30°C	0.2%HCL solution It is usually used as the second step after alkaline washing

Note: after chemical cleaning, make sure to flush the system under no pressure for 5 minutes before resuming normal operation, and then discharge the purified water for the first 30 minutes before the machine officially starts operation (no drinking).

5.2.2.4 Reference steps for chemical cleaning

▲ Method 1: Remove the membrane and soak it

1. Make sure the equipment has stopped running and turn off the power;
2. Use a tool to remove the high pressure hose connector at both ends; [note: 1]
3. Remove the end plates at both ends of the membrane shell with an inner hexagon wrench to remove the membrane element; [note: 2]
4. Find a clean cleaning tank that is large enough to fit into the membrane element;
5. According to the pollution of RO membrane, add appropriate cleaning fluid in the cleaning tank, the highest temperature should not exceed 30°C for soaking; [note: 3]
6. The soaking time is 1-15 hours, depending on the degree of membrane contamination;
7. Remove the membrane element and rinse with clean water until PH is neutral;
8. Re-install the membrane element to the device in sequence;
9. The equipment is washed with sea water for 10min, and the equipment is standby. [note: 4]

Note: 1. There is a white sealing ring inside the high pressure hose connection. Please be careful not to lose it when disassembling.

2. Do not use brute force to pull-out the membrane element.

3. The cleaning solution should be completely soaked through the membrane element, and part of the membrane should not be exposed to the protective fluid.

4. It is best to discharge the water produced in the first 30min after the equipment starts to use.

▲ Method 2: online cleaning

According to the RO membrane pollution, in the cleaning tank with appropriate cleaning fluid!

1. Rinse the equipment for 1-2 min before chemical cleaning. (please refer to RO rinse 5.2.1 for specific operation)
2. Prepare the cleaning water tank and prepare the cleaning liquid with sufficient capacity (≥200L). [note: 1]
3. Confirm that the water outlet valve of the cleaning tank has been opened.
4. Fully open pressure regulating valve (V1).
5. Press the panel button to "flush" and start the raw water pump.
6. Let the equipment flush and drain for 0.5 min. [Note: 2]
7. Close the drain valve (V3) to return the cleaning fluid to the cleaning tank. [Note: 3]
8. Make the equipment cycle flushing for 30-60 min (longer cycle and soaking time is required)

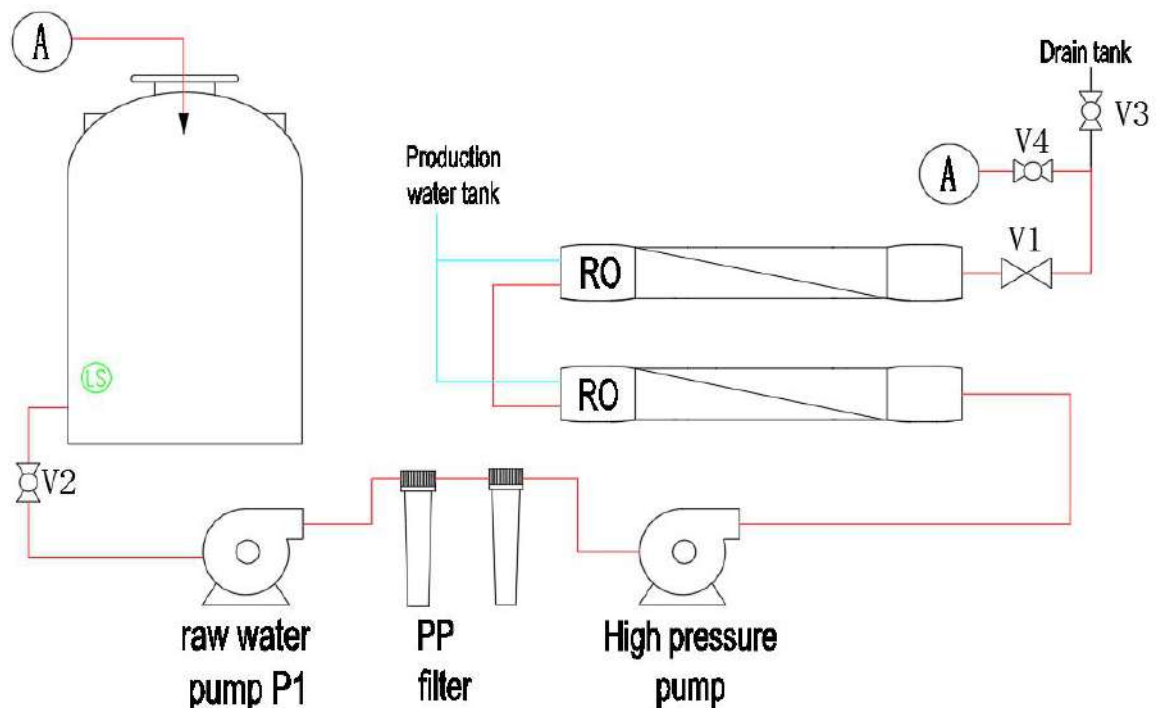
when membrane elements are heavily contaminated)

9. Open drain valve (V3) to drain the cleaning fluid.
10. RO rinse the equipment until the film is clean. (please refer to RO rinse 5.2.1 for specific operation)
11. Stop the machine and restore the water pump and valve for use.
12. Before use again, please refer to the boot preparation, check the equipment pump, valve is ready before use !

Note :

1. Users are advised to prepare a cleaning water tank, connect the water outlet valve of the cleaning water tank with the water inlet of the raw water pump, and install a ball valve switch at the water outlet of the water tank.
2. Discharge the residual seawater from pipe fitting.
3. Make the cleaning fluid form a circuit, reduce unnecessary waste.

★ Chemical cleaning operation reference flow chart (red line is access)



Warning:

▲ For the specific use of chemical agents, please consult the manufacturer who sells the !



▲ Chemical agents are dangerous, please use and deal with them properly. It is recommended that relevant professional personnel operate and use effective personal protective tools, such as rubber gloves, goggles, etc.

▲ The membrane cannot be washed with water with free chlorine. The water temperature is not less than 20°C.

▲ Before chemical cleaning, prepare enough fresh water for chemical cleaning. After chemical cleaning, the first 30min of initial use production water should be drained !

5.3 System down for maintenance

5.3.1 Short-term downtime

Definition: RO unit downtime is greater than 1 day, but less than 30 days, and RO membrane elements are installed in the system.

Users should follow the following steps for maintenance every 24 hours:

1. Check equipment before starting. (please refer to preparation 3.3 before starting up for the operation method)
2. Start the equipment to run normally for 30-60 min.
3. RO flush the equipment for 15 min. (please refer to RO rinse 5.2.1 for specific reference methods)
4. After shutdown, please make sure to close all power and water inlet valves to eliminate safety risks.

5.3.2 Long-term downtime

Definition: RO unit downtime is greater than 30 days and RO membrane elements are installed in the system.

Users follow these steps for maintenance:

1. Flush the machine for 15 min. (please refer to 5.2.1 for the operation method).
2. Chemical cleaning of equipment. (please refer to 5.2.2 for the operation method).
3. Prepare a 1-2% protective solution (sodium bisulfite SMBS) and add it to the cleaning tank.

[Note: 1]

4. Refer to the chemical cleaning process (5.2.2), circulate the protective liquid in the membrane for 10-30 min or soak in the water tank for 60-900 min.

5. Ensure the system is filled with protective fluid, then shut down and close the inlet and outlet of the membrane element. [note: 2]

6. After shutdown, please make sure to turn off all power supply and water inlet valve of the equipment (to prevent siphoning) to eliminate safety risks.
7. Regularly test the PH value of the protective solution in the RO system to ensure that the PH value does not fall below 3. [note: 2]
8. If the PH value of the protective solution cannot be detected under field conditions, please re-inject the protective solution according to the following conditions.
 - If the temperature is below 27°C , replace it every 6 months.
 - Other conditions, replace it every 3 months.

Note:

1. Please use food grade protective liquid, the specific use of the agent please consult the manufacturer of the purchased agent.
2. Any contact between SMBS solution and external air (oxygen) oxidizes SMBS to sulfate and continues to decrease PH. When all SMBS is used up, the remaining oxygen allows it to grow microbes.
3. During the shutdown, the membrane components must be prevented from freezing, and the maximum temperature should not exceed 45°C (the lower the insulation temperature, the better).

6. Fault Analysis

Phenomenon	Possible cause	Corrective action
The membrane pressure difference is too high	Membrane components are contaminated	Find out the cause of pollution and take corresponding cleaning methods
	Production water flow rate is too high	Adjust flow rate according to operation instruction
	Inlet water temperature is too low	Adjust and increase inlet temperature
Low production water flow rate	Membrane components are contaminated	Find out the cause of pollution, take the corresponding cleaning method, adjust the washing parameters
	Incorrect valve opening setting	Check and make sure all valves that should be opened are in the open position and adjust valve opening
	Flow meter out of order	Check the flow meter to ensure correct operation
	Low water supply pressure	Identify and resolve this issue

	Inlet water temperature is too low	Adjust and increase inlet water temperature and inlet water pressure
Production water quality is poor	Excess inlet water quality	Check inlet water quality, mainly turbidity, COD, total iron, etc
	Membrane element damage	Find the cause of damage and replace the membrane element
The motor is not running after energizing	Power off	Power supply
	The Fuses is burned	Replacing the Fuses
	Starter overload device has been disconnected	Reset
	The starter contact point cannot be closed or the coil is damaged	Repair
	Control circuit fault	Examine
	Motor fault	Repair
Water pump overload	Whether the input power supply matches	Replace the power supply that matches the nameplate of the equipment
	Poor contact with overload device	Replace
	Loose connection or poor contact	Tighten or replace
	Motor winding is bad	Repair
	Water pump overload	Check whether the water pump is blocked and replace it
	Overload current setting is too low	Reset
The pump is running without water, or the pressure is unstable or the flow rate is low	There is foreign matter blocking the inlet water pipe or pump inlet	Check and clean up
	Leakage in intake pipe or insufficient water supply	Make repairs and ensure adequate water supply
	Air in line or pump	Check water inlet
	Inlet and outlet valves are worn or clogged with debris	Check, replace or clean
The joint is	The joint thread is not	Tighten the screw thread

leaking	tightened	
	The joint thread is not sealed	Replace O - ring or wrap raw tape
oil leak	Oil seal damage	Replace
	Damaged plunger rod	Replace plunger rod
	The oil temperature is too high	Maintain ventilation and avoid sun exposure
The pump head is leaking	Water seal damaged and deformed	Replace
	The plunger surface is brushed	Replace
Wide Noise	There is air intake in the pump head	Check inlet and seal
	Broken or foreign body in inlet and outlet valves	Replacement or cleaning
	Bearing wear	Replace
Electric high pressure ball valve	Valve does not open or close properly	Replace
high pressure protection	Membrane fouling is serious	Replacement and cleaning
	Improper adjustment of pressure regulating valve	Lower working pressure
Low pressure protection	Low water supply pressure	Confirm and solve this problem
	PP filter element is seriously polluted and blocked	Replace
	Original pump reversal	Check power wiring

Attached table 1: 700-2000 operation record of seawater desalination system

[illegible]