WACO Corp.

Reverse Osmosis Water Purifying System

DIRO

WACO Corp.

DIRO-2S

<Caution>

Please read this owner's manual completely and carefully before installing and using this product.

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Article 1

Introduction of the product

1. Summary of the product

1. Summary of the product

1) Introduction

Diro, a drinking water system using Reverse Osmosis technology, is designed to supply clean and safe water to a school, a factory, a hospital and etc. with elegant design and ease of installment.

2) Characteristics

- Low pressure, high flow R/O membrane

Reduced the pressure and noise from pump and remained the high salt rejection rate by using the recently developed R/O membrane for potable water.

- Compact design (ease of installment and relocation)

Well planned design by putting in the case and simple steps of installation as connecting to Inlet, Outlet, and Drain line on the backside of the system.

- Economical efficiency

The cost is occurred just by minor power usage, water usage, and replacement of filters like membrane, micro filter and activated carbon filter

- Instant-cooler

Using our improved instant-cooler, sequently supplying large quantity of cold water.

- Sterilizer

U.V sterilizer prevents pollution of produced water through R/O System

Article 2

Specifications

1. General specifications
2. External drawing & arrangement plan
3. Constituent elements of the product
4. Automatic control device

1. General specifications

1) Specifications of the product

Model	Capacity	Membrane (R/O)	Dimension (L×W×H)	Electricity (kWh)	Salt Rejection
SPV-04	3㎥/day	6	1,700*700*1,750	2.5kw	95%

2) Standard condition of feed water

Pressure	Inlet Pressure	1.0 ~ 3.0 kg/㎠
Quality of Feed Water	Temperature	5 ~ 30 ℃
	P.H	5.8 ~ 8.5
	Conductivity	< 300 ㎲/㎝ at 25 ℃
	T.D.S	< 150 ㎎/ℓ
	Turbidity	< 1.0
	Total Hardness	< 80 ㎎/ℓ as $CaCO_3$
	Total Fe	< 0.1 ㎎/ℓ
	Total Mn	< 0.05 ㎎/ℓ
	Remained Chlorine	< 1.0 ㎎/ℓ

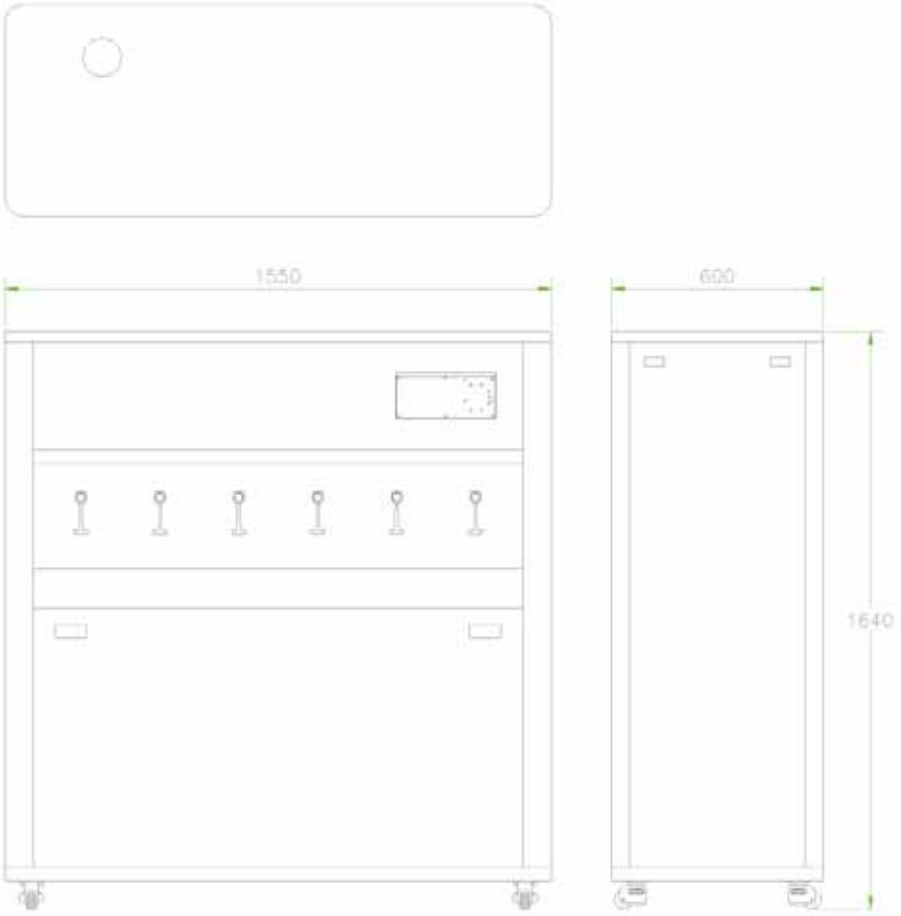
※ Performance varies with condition of feed water

3) Water quality of product water

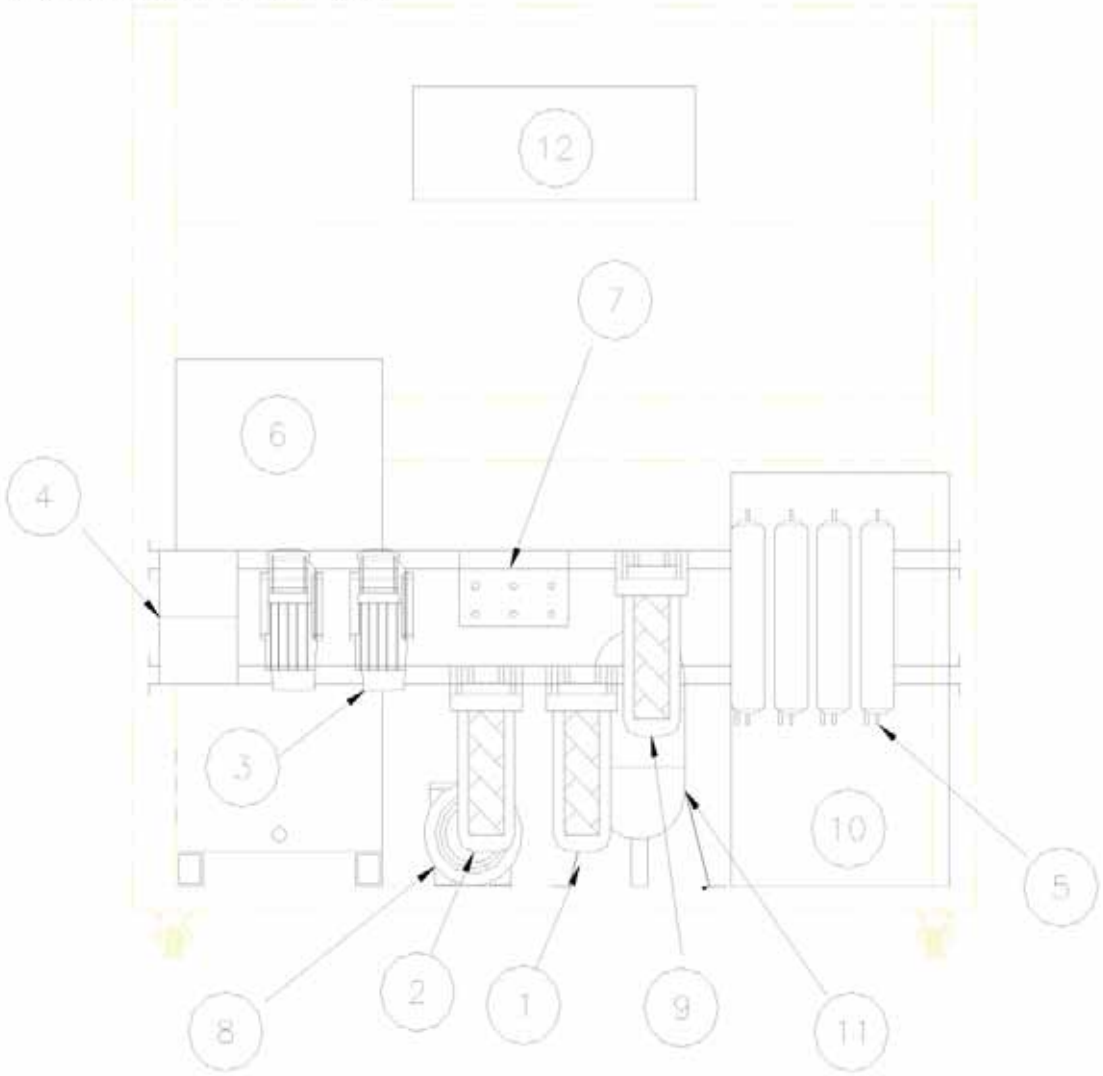
Provision	Range
Conductivity	< 25 ㎲/㎝ at 25 ℃
T.D.S	< 13 ㎎/ℓ
Total Hardness	< 1.0 ㎎/ℓ as $CaCO_3$
Total Fe	< 0.01 ㎎/ℓ
Remained Chlorine	< 0.1 ㎎/ℓ
Living Bacteria	< 100 CFU/㎎

2. External drawing & arrangement plan

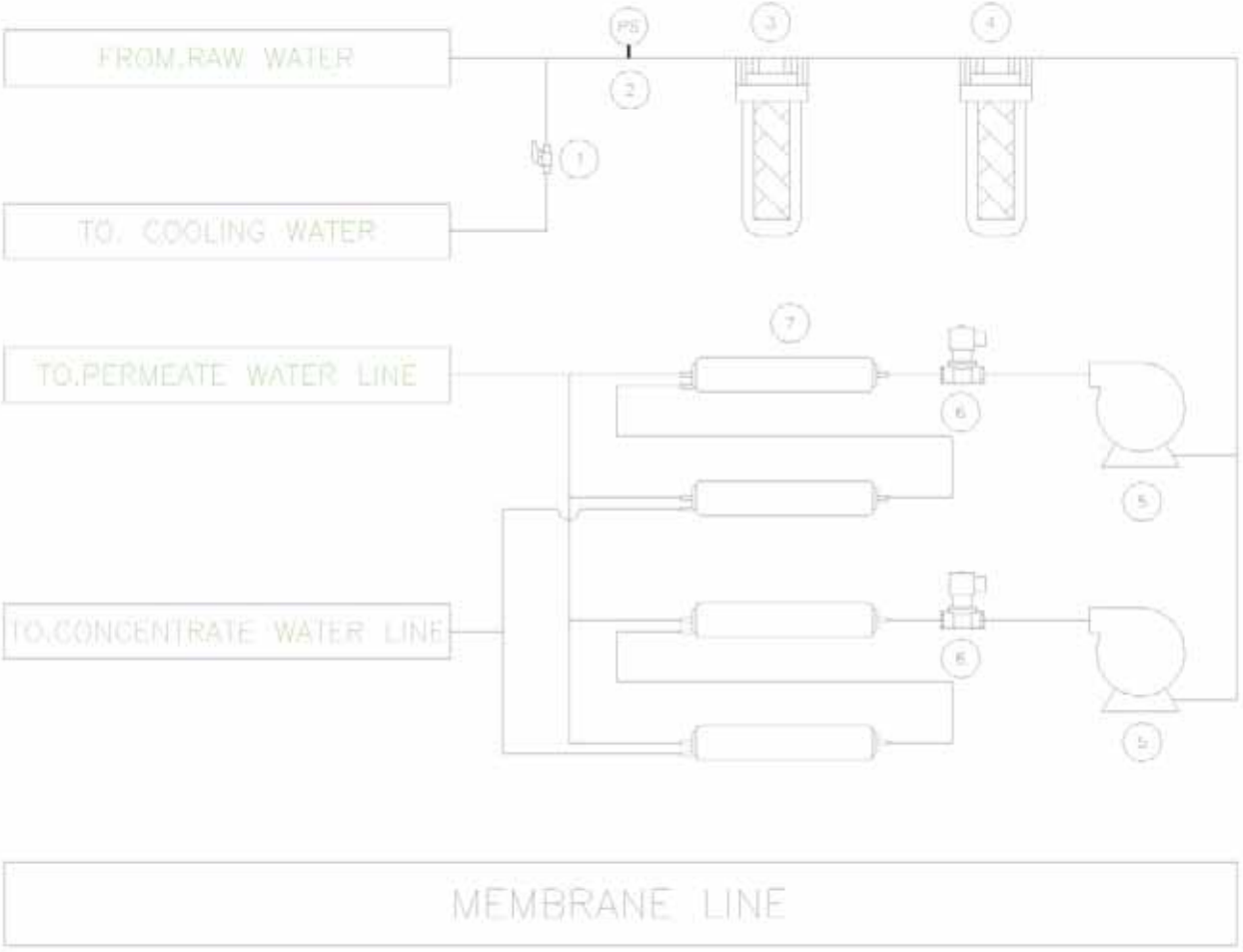
1) External drawing



2) Arrangement Plan



1. MICRO FILTER
2. PRE-CARBON FILTER
3. BOOSTER PUMP9DC24V)
4. ADAPTER
5. MEMBRANE(150GPD)
6. STORAGE TANK(100L)
7. PRESSURE SET
8. PERMEATE WATER FEED PUMP(MCX80/36)
9. POST CARBON FILTER
10. COOLING MACHINE
11. HEATER
12. CONTROL PANEL


FROM.RAW WATER
TO. COOLING WATER
TO.PERMEATE WATER LINE
TO.CONCENTRATE WATER LINE
PS
1
2
3
4
5
6
7
MEMBRANE LINE

3. Constituent Elements of the product

1) PFD (Process Flow Diagram)

Raw Water	·Referring to the chart on article 2.1
↓	
Booster Pump (P-001)	·Supplying raw water to R/O System depending on the setting of pressure switch
↓	
Micro Filter(F-001)	·Removing turbidity, suspended particle and etc.
↓	
Pre-Carbon Filter(F-002)	·Removing organic substance, smell, taste, remained chlorine and etc.
↓	
R/O Module(F-003)	·Removing ionic particle, turbidity, bacteria and etc.
↓	
Post-carbon Filter	Removing organic substance, smell, taste, remained chlorine and etc.
↓	
Storage Tank	·Storing product water from R/O system
↓	
Cooling & Heating M/C	·Cooling & Heating product water upon controled by thermostart
↓	
Drinking Water	·Supplying clean water through faucet

※ Other components

(1) Solenoid Valve : Controling supply of raw water

(2) Auto Flushing Valve : Controling auto. flushing

(3) Temp. Controller : Controling temperature on cooler & heater

(4) Pressure Gauge : Checking inlet pressure of pressure tank

4. Automatic control device

1) Item & description of auto. control panel

(1) Power/alarm Lamp : Power of System Control Panel
System Malfunctioning indicator

(2) EXCELLENT Lamp : Product water quality indicator

(3) GOOD Lamp : Product water quality indicator

(4) WARNING Lamp : Product water quality indicator

(5) COOL / HOT Lamp : Cooler & Heater Operating indicator

Article 3

Installation

1. Required Conditions & Precautions

1) Proper place of installation

?The place of temperature between 1℃ to 60℃.

?The clean inside place

- no vibration, no dust, no corrosion gas, no dirty oil and water

?The place able to connect raw water pipe and drain water pipe

?The non-freezing place.

?The non-solar ray place.

?The easy place to vent and ventilate the air

2) Power Supply

?AC 220V Single Phase 60Hz Max 2.5kW

3) Dimension of installation

?Size (L×W×H) : 900 × 700 × 1,600

Article 4

Operating The System

1. Precautions for operating the system
2. Activating the system
3. Operation in automatic mode

1. Precautions for operating the system

1) The use of feed water

This system is designed basically for the use of city water.
This system necessarily need pre-treatment if not to use city water as feed water.

Note: Raw water pressure must be within 1kg ~ 3kg

2) Feed water and a power supply

This system is always provided with water and a power supply because of operating in automatic.

3) Operating condition control

This system is operated in the result of feed water condition that is changed by feed water quality, pressure, temperature.
This system is operated in best condition by operation setting in automatic before hand-operated.

4) Exchange and maintenance of supplies

check the system periodically and exchange supplies
(see appendix)
check the operating condition periodically and then handle it

2. Activating the system

1) Manual v/v Setting-up

?Pressure Tank In/Outlet v/v .....Full Open

2) Power Switch Setting-up

?Power Switch(Case back) ....." ON "

3) Pre-starting-up check

1) feed water condition (open/ closed)
2) feed water quality
3) a power supply condition
4) pipeline leak condition
5) pre-treatment cartridge filter setting
6) each manual v/v condition - open/close
7) R/O membrane setting
8) check water in cooler
9) arrangement around the system

※ operate after full-knowledge of operation and emergency

3. Operation in automatic mode

1) Normal operation of R/O system

(1) when to operate

?process of outputting R/O water

?operating pressure range: 3.5~4.5kg/cm^2(indicator: lower press-ure gauge)process of outputting R/O water

(2) how to operate

?operated by differential pressure of setting value in a tank

?The R/O water is produced to pressure tank if pressure is lower than setting value(3Kg/cm^2), feed pump will run to produce water R/O unit.(indicator: upper pressure gauge)

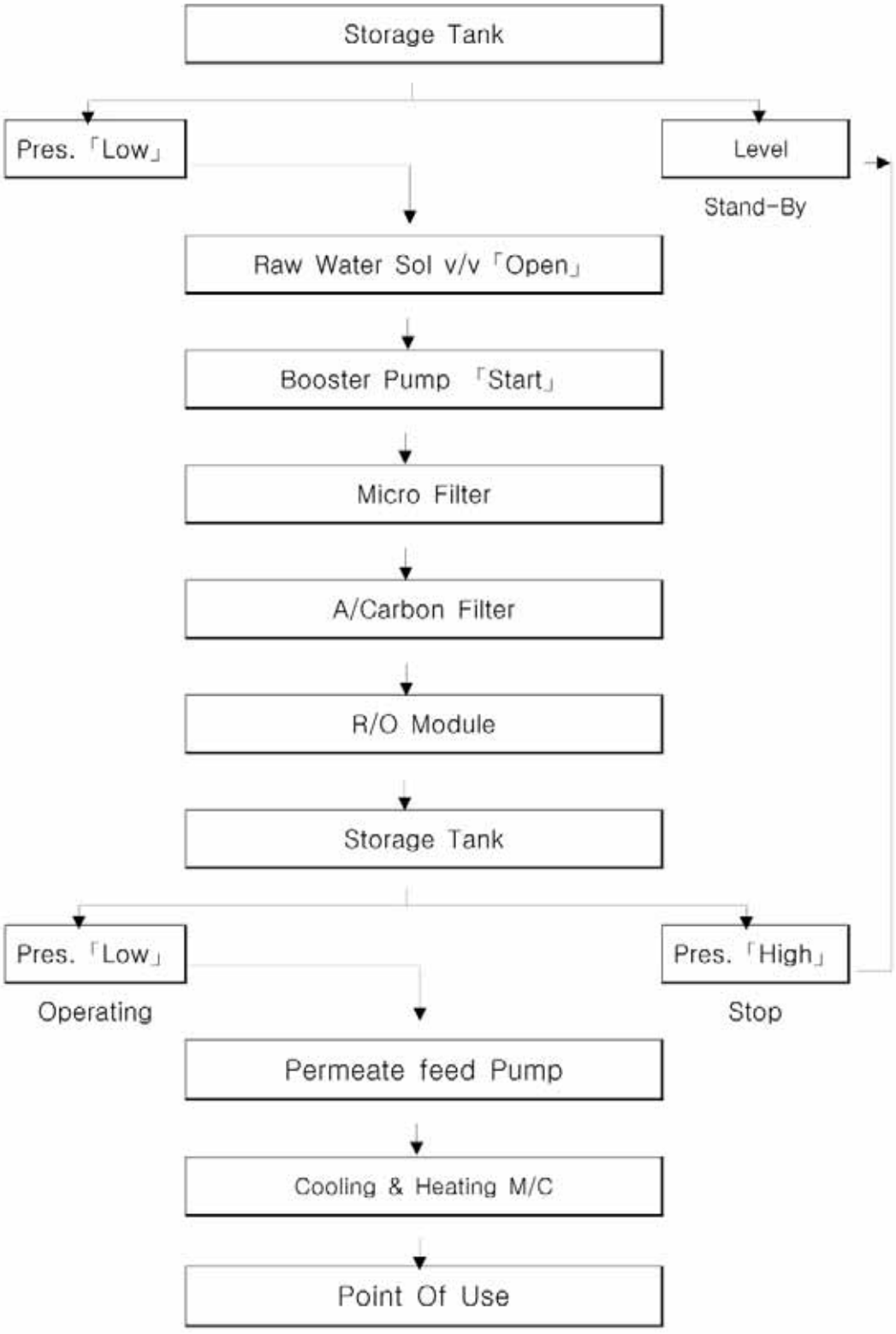
?If the pressure is 4Kg/cm^2 , the feeding pump is halted and stand by. (indicator: upper pressure gauge)

?The permeate water is provided with cool and hot through cooler and a water heater.

?Change the temperature value of cooler and a water heater, if required by turn the heater and cooler adjustment knob.

※ cooler temperature setting value: average 10℃

2) Permeate water diagram



Article 5

Trouble shooting

1. Power problems

1) check power supply
2) check ON/OFF on panel (ON is power suppling)
3) check power Cable and fuse

2. Cooling water temperature problems

1) check cooling water level in tank of refrigerator
   - low level of cooling water :
2) check setting value (temperature controller)
   : setting value Reset
3) check hot or cool air from fan of compressor
   - hot air is normal (cool air : check compressor condition)
4) check agitator(Fan) rotation in refrigerator: remove dust

3. Cooling water problems

1) check manual valve Open or Close
2) check cooling water freezing in refrigerator
3) check cooling water level in tank of refrigerator
4) check inside Hose and pipeline leakage
5) check Lamp of refrigerator : 「ON」 is normal

☆ If you can not solve the problems do not hesitate to contact WACO Corp.

Article 6

Maintenance

1. Replacing period of spare-parts

2. Routine maintenance requirements

1. Replacing period of spare-parts

Item	Standard	Replacement time
Micro Filter	?Size : ø60 × 250 L ?Pore Size : 5㎛ ?Mat'l : P.P ?Q'ty : 1 EA/set ?Maker : SAEHAN Co,. Ltd.	?eye checking (strange material) ?long term unused - depend on raw water condition ?Differential pressure over 1.4 bar(MICRO FILTER) ?periodically replacement M/F: 1 month, A/C : 3 month
A/Carbon Filter	?Size : ø60 × 250 L ?Mat'l : A/Carbon ?Q'ty : 1 EA/set ?Maker : SAEHAN Co,. Ltd.	
Membrane	?Size : ø3.5" × 12"L ?Model : RE-3512-TK ?Type : PA ?Q'ty : 1 EA/set ?Maker : SAEHAN Co,. Ltd.	?Not using during long term ?Decreasing product water ?product water quality increased ?Being pressure difference over 15% than initial operation ?Replacement : 1 year
U . V STERILIZER	?Size : ø30 × 350 L ?EL'Y : 220V × 60㎐ × 6W ?Q'ty : 1 EA/set ?Maker : Cheong Kwang Co.,Ltd	?Being U.V Lamp「OFF」 ?Using during long term ?Replacement : 5,000 hours

2. Routine maintenance requirements

checking point	every day	every week	every month	every 6 month
Leakage of pipe/hose	◎			
Manual v/v open/close	◎			
Operation pressure and flowrate	◎			
Filter condition		◎		
Membrane				◎
Pressure swtich and Pressure gauge			◎	
Pump			◎	
Refrigerator (temperature controller)		◎		
Hot water heater		◎		
U.V Sterilizer			◎	
U.V			◎	
Leakage of electricity	◎			