HUMAN Lab ®

Operating Maunal

Model : Power -I / II / III

Edition : January 2006

Reverse Osmisis Water Purification System

Before operating this unit, please read and underst and this manual completely and keep it for future reference.

HumanLab Instrument Co.

▶ Contents ◀

Chapter 1 Equipment Outline

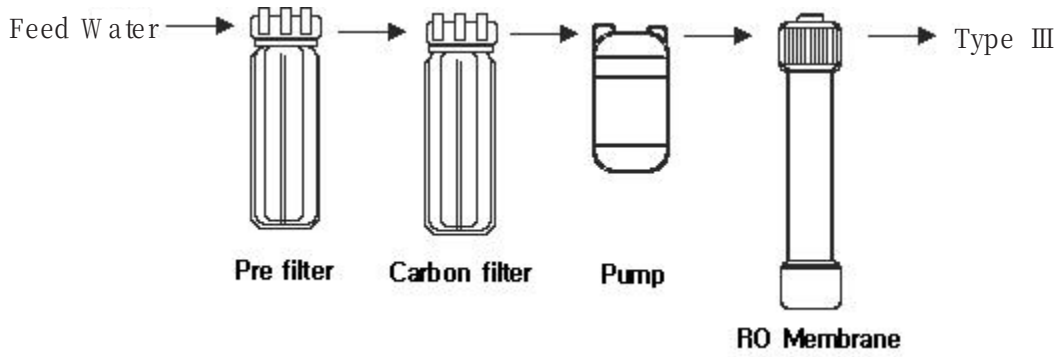
1-1. Introduction

Power which is Pure and Ultra Pure Water system uses supply or underground water, it can produce not only Pure water(Type III) but also Ultra Pure water(Type I), and it which can get the necessary quality of water by operating is very efficient equipment.

Power Series consist of Pure Water System using RO membrane and Ultra Pure Water System passing a Ion filter.

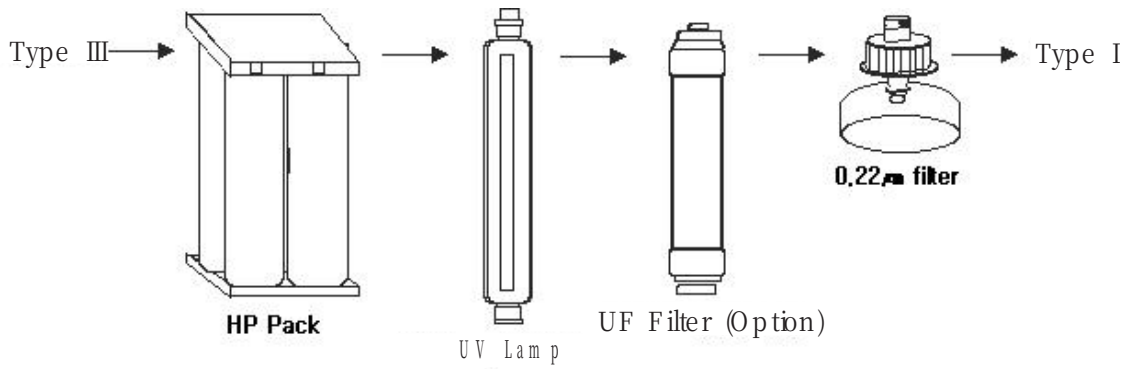
1) Pure Water System Process

After Feed water is passed Pre filter and Carbon filter, it filters off a Particle and Chlorine. And then this system can get Pure water through RO membrane.



2) Ultra Pure Water Process

Pure Water passing RO membrane filters off Ion elements by passing Q-pack, and Ultra Pure water can be produced by passing final filter (0.22㎛ filter).



Power, Pure and Ultra Pure Water System, is suited to ASTM, CAP, ACS provision. And it can be used on HPLC, IC, GC, AAS, ICP and regent manufacture.

1-2. Power Series Specification

1. Inorganic : <99.9% removal

2. Organic : <99.9%

3. Total Organic Carbon (T.O.C) : >20ppb

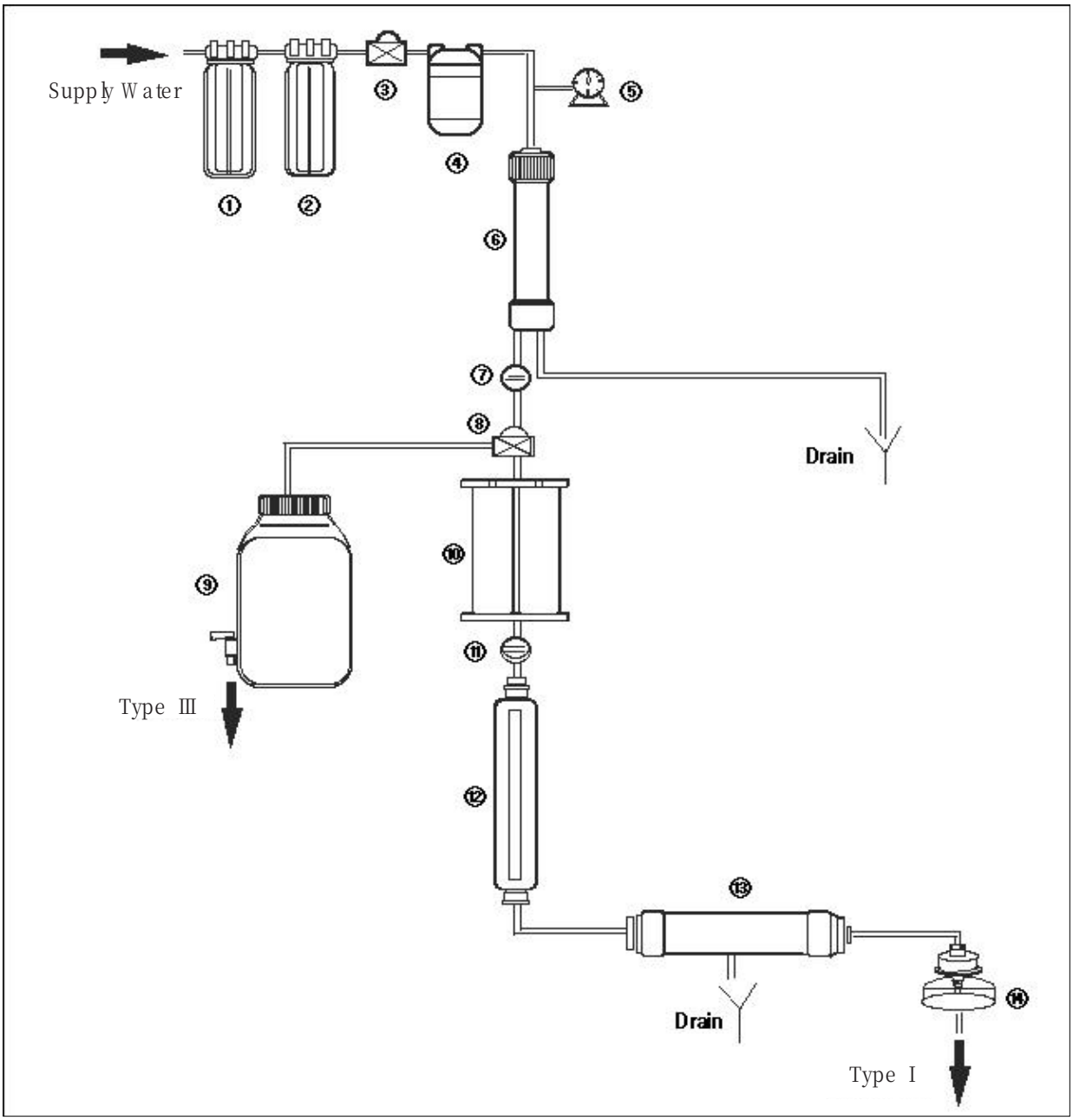
4. Bacteria : <99.9%

5. Product rate (25℃) : 10ℓ ~ 15ℓ

6. Dimension(WxDxH)mm : 450 x 400 x 580 mm

7. Power : 220V/60Hz

1-3. Power System Structure



<Figure 1-1. Power System Structure>

① Pre filter
② Carbon filter
③ Solenoid valve
④ Booster pump
⑤ Pressure gauge
⑥ RO Membrane filter
⑦ Conductivity Cell
⑧ 3Way Solenoid valve
⑨ Water tank (Option)
⑩ High Purity Pack
⑪ Resistivity meter
⑫ UV Lamp
⑬ UF Filter (Option)
⑭ 0.22㎛ filter

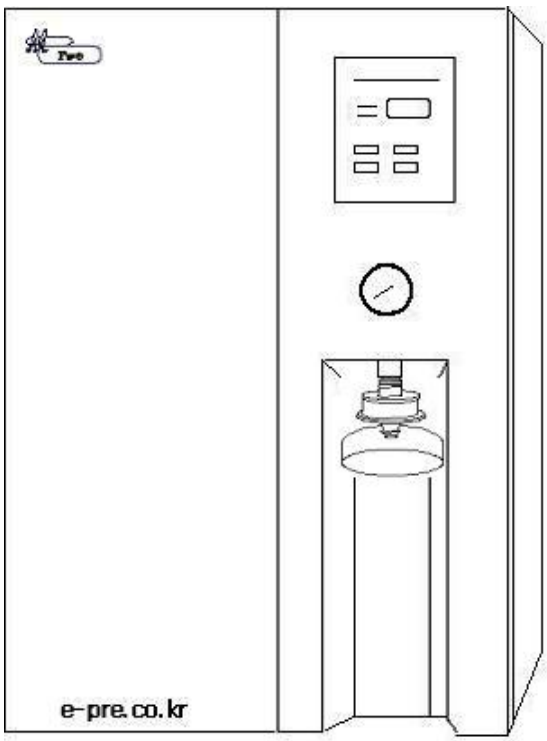
1-4. Equipment Organization

No.	Organization	Product Number
1	Pre filter	HP1001
2	Carbon filter	HC1002
3	RO Membrane	HR1003
4	HP Pack	HP1004
5	0.22㎛ filter	HF1005
6	UV Lamp	HV1006
7	UF Filter (option)	HU1007
8	Drain Valve	HD1008
9	Booster Pump	HB1009
10	Solenoid Valve	HS1010
11	3Way Solenoid Valve	HW1011
12	Control Board & Monitoring	HM1012
13	Pressure Gauge	HG1013
14	Level Sensor	HL1014
15	Power Code	HG1015

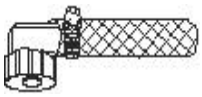
<Table 1-1. Power Equipment Organization>

Chapter 2 Equipment Installation

2-1. Equipment Packing



① Feed water hose

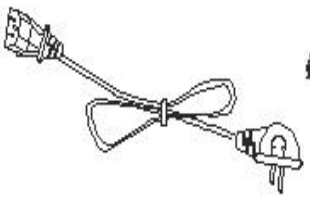


② Water connect hose(10Ø)

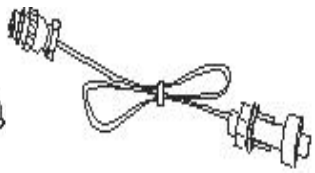
③ Drain hose(6Ø)

④ Product water hose(6Ø)

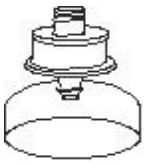
⑤ Power code



⑥ Level sensor



⑦ 0.22㎛ filter



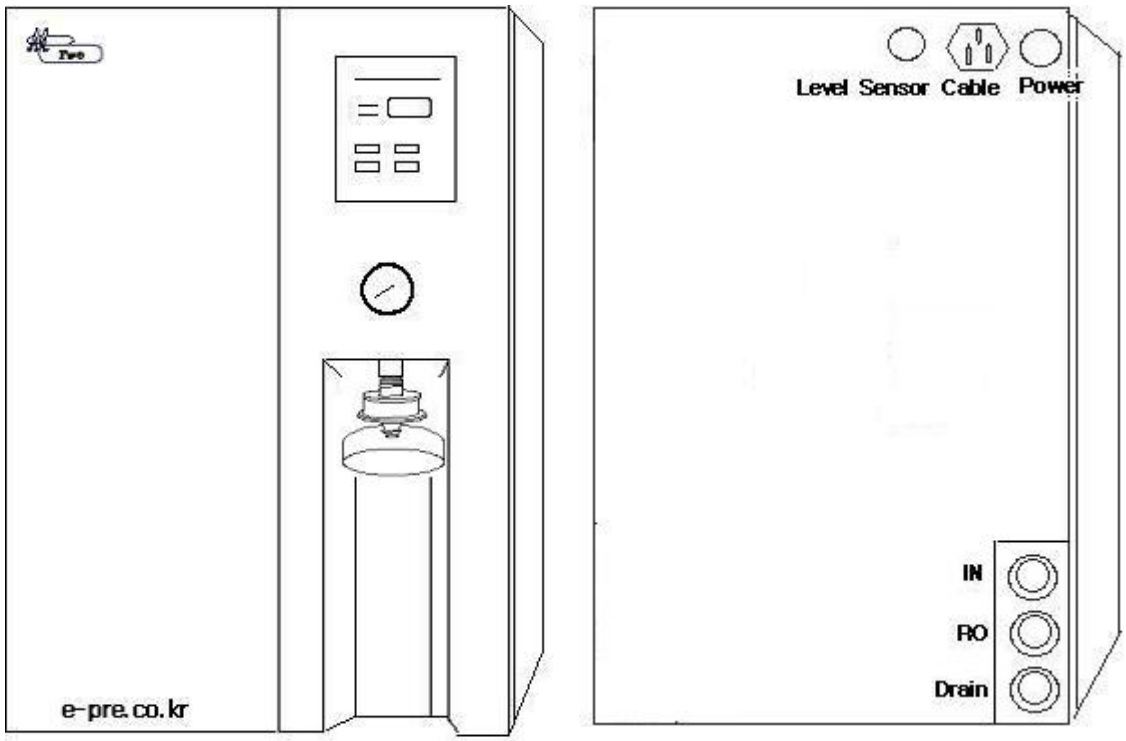
⑧ Operating manual

<Figure 2-1. Packing Contents>

2-2. Installation Condition

1. Water press(kg/㎠) : 1 ~ 2
2. PH range : 3.0 ~ 10.0
3. TDS : below 500ppm
4. Conductivity : below 350㎲
5. Drain water : Waterway

2-3. Equipment Installation



<Front-side> <Back-side>

<Figure 2-2. Equipment front and back-side>

1) Feed Water hose
: ①Connect the hose to a tap.
②Connect a water connect hose(10Ø blue hose) to a feed water hose.
2) Water connect hose (10Ø blue hose)
: If you look at backside of the equipment, you can see "IN(on tough hole)"
Insert this connect hose into the hole("IN")
3) Drain hose (6Ø blue hose)
: If you look at backside of the equipment, you can see "Drain".
① Insert this drain hose into "Drain"
②Connect backside of the Drain hose into waterway
4) Product water hose(6Ø transparency hose)
: If you look at backside of the equipment, you can see "RO"
Insert this hose into "RO"hole
5) Power code
: Connect Power code to "Cable"
6) Level Sensor
: Connect it to "Level Sensor"
7) 0.22㎛ filter
: After 0.22㎛ filter is coiled by Seal Tape, Connect it to "Product"

Chapter 3 Equipment Operating

3-1. Equipment Capacity

1. *RO Pack* (Indicator ability of RO Membrane exchange period)
   : Generally, feed water is 150 ~ 200μs/cm. But product water passing RO Membrane is 0 ~ 35μs/cm. If this RO water is over 35μs/cm and RO pack lamp is lighting, RO Membrane is exchanged.

2. *Tank full*
   : When water fill a tank, Lamp(tank full lamp)is lighting and the equipment is stopped automatically. The light is switched off after using the water. Then user push the "Reset Switch" for operating.

3. *Low pressure* (Option)
   : When supply water is not supplied, This function is that the equipment is stopped. It is option.

4. *Setting Function for exchange period of RO Membrane*
   : This function is that user regulates RO membrane exchange period according to user's choice.

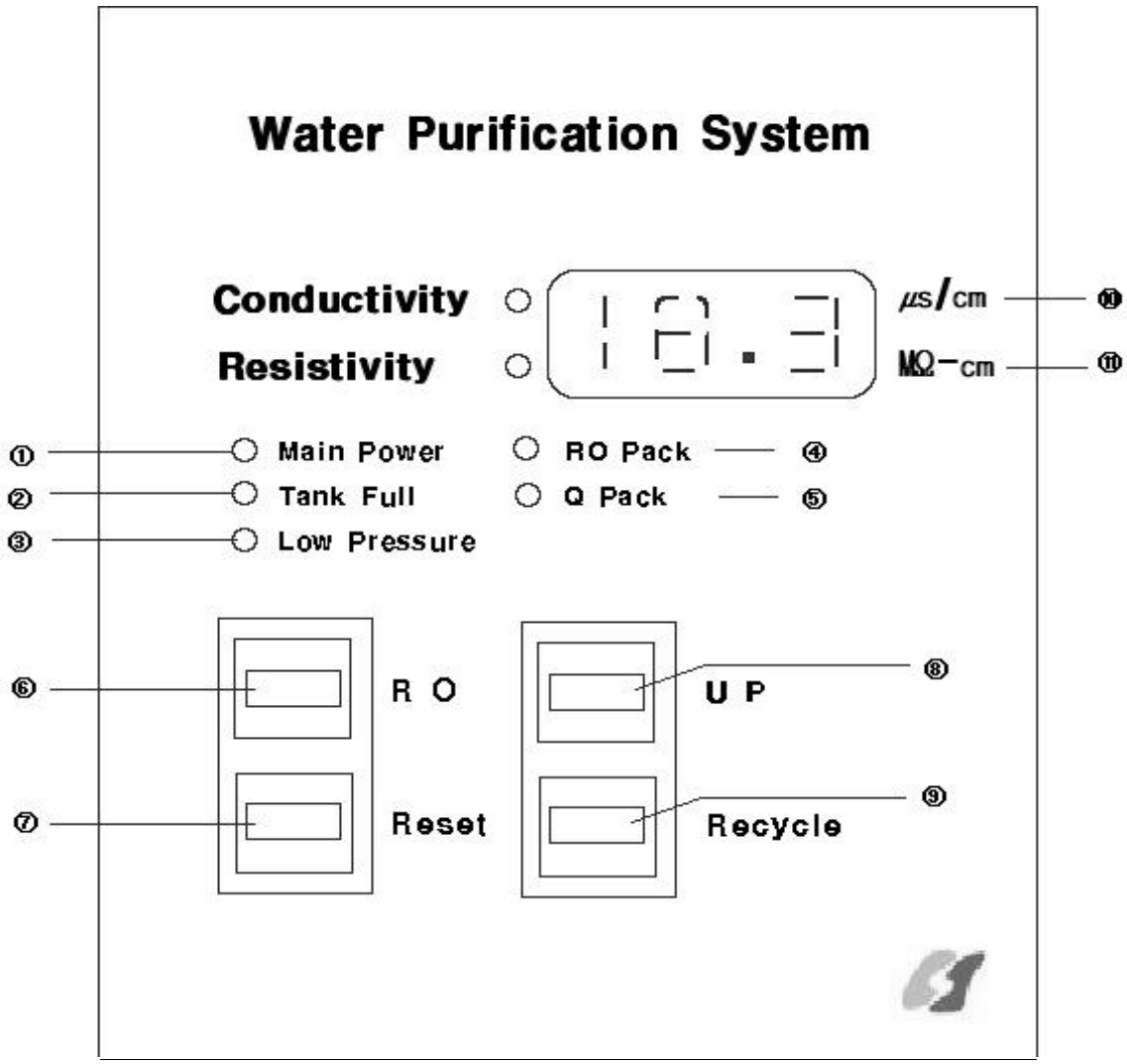
5. *Q-Pack (Function for exchange period of Q-Pack)*
   : Range of Ultra Pure water is 10MΩ-cm ~ 18.3MΩ-cm. If this range indicates below 10MΩ-cm, Q-pack will be lighting. Then user have to exchange Q-Pack.

6. *Setting Function for exchange period of Q-Pack*
   : Q-pack exchange period is regulated according to user's choice.

3-2. Equipment Operating Method

1. Push "Power Switch" locating the backside.
2. Open "Supply Water" after "Power On"
3. Push "Reset Switch" after user push "RO Switch"
4. Then the pressure gauge moves. And the equipment produces the pure water(Type Ⅲ).
   - Normal range : 0 ~ 35μs/cm (Type Ⅲ)
5. Ensure that water is flowed out at drain and product hose.
6. Push the "UP Switch" (Product Water: Type Ⅰ)
   - After Pure water pass Q-Pack and 0.22μm filter, Ultra Pure water is produced
   - Normal range : 10 ~ 18.3MΩ-cm

3-3. Control Panel



<Figure 3-1. Equipment Control Panel>

① - Main Power Lamp is turned on when Power is ON
② - Tank Full Lamp is turned on when water tank is filled
③ - Low Pressure Lamp is turned on when supply water is low pressure(option)
④ - RO Pack Lamp is turned on when RO Membrane exchange time become(over 35μs/cm)
⑤ - Q Pack Lamp is turned on when Q-Pack exchange time become(below 10MΩ-cm)
⑥ - RO Mode Switch
⑦ - Button for producing Pure water
⑧ - Button for producing Ultra Pure water
⑨ - The Auto-flushing function for Ultra Pure water(Option)
⑩ - Pure water's grade is shown(Normal range : 0 ~ 35μs/cm)
⑪ - Ultra Pure water's grade is shown(Normal range : 10 ~ 18.3MΩ-cm)

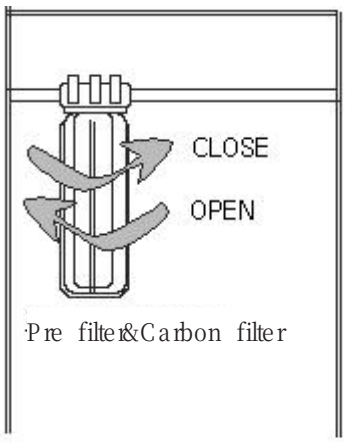
Chapter 4 Equipment Maintenance

4-1. Filter Capacity and Exchange Period

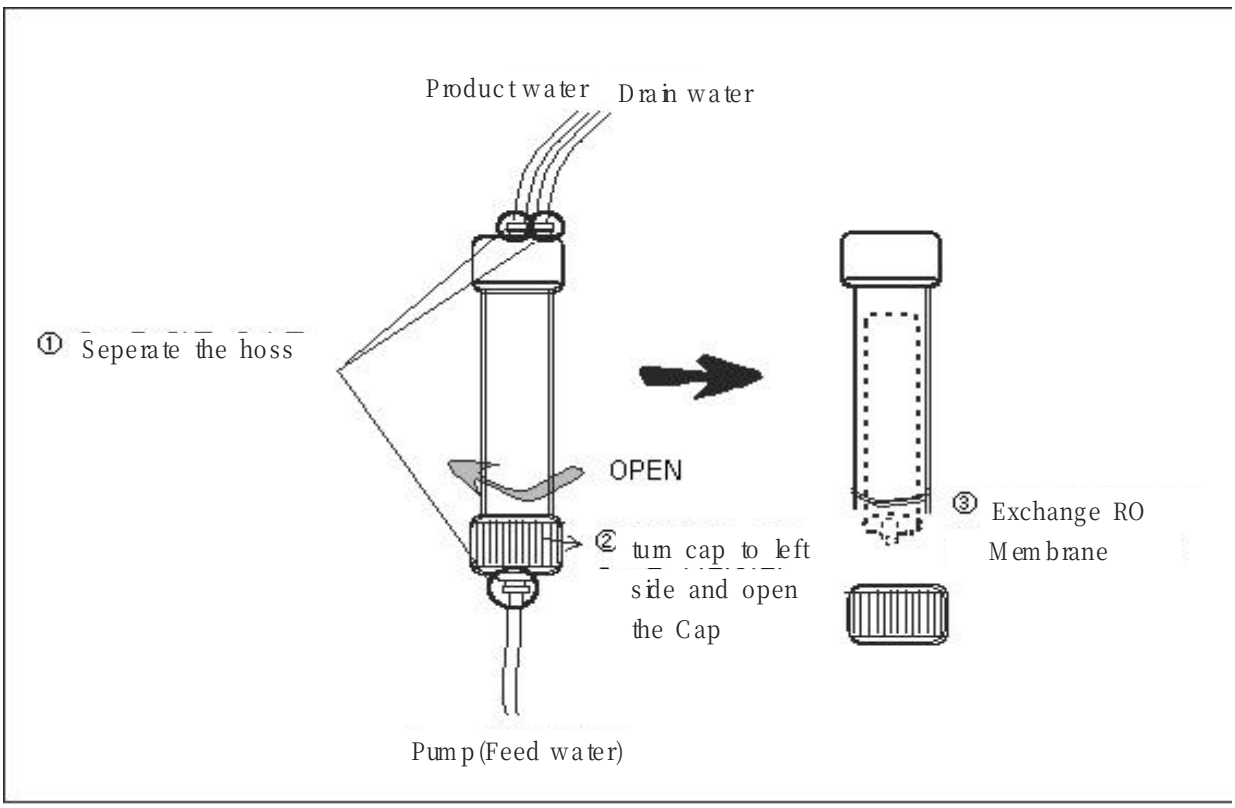
Filter	Capacity	Exchange Period
Pre filter	Removal: the particle, mud, and floating matters	when prefilter color is yellow
Carbon filter	Removal: Cl ion and organism	Carbon filter is exchanged one time when Pre filter is exchanged two times
RO Membrane	Removal: over 90% of organism, inorganic matter and bacteria.... by using Reverse Osmosis	RO membrane can usually be used for one years. When user manages pre filter and carbon filter efficiently, it can be used over one years
HP Pack	Removal: remained Cl, ion and inorganic matter	Q-Pack can usually be used for six or eight month. When it's numerical value is below 10MΩ-cm, user must exchange
UV Lamp	Sterilization Function	Using time is about 1800~2000hours
UF Filter	Romoval: Pyrogen and microorganism (option)	When bacteria is founded
0.22μm filter		When HP-Pack is exchanged

4-2. Exchange Method

; You can exchange the filter easily after pressure removal. When pressure gauge is normal range(=when pure water is producing), user turn off the supply water. The pressure is removed while internal pressure go down. And you can exchange the filter after RO switch is pushed(RO switch OFF).



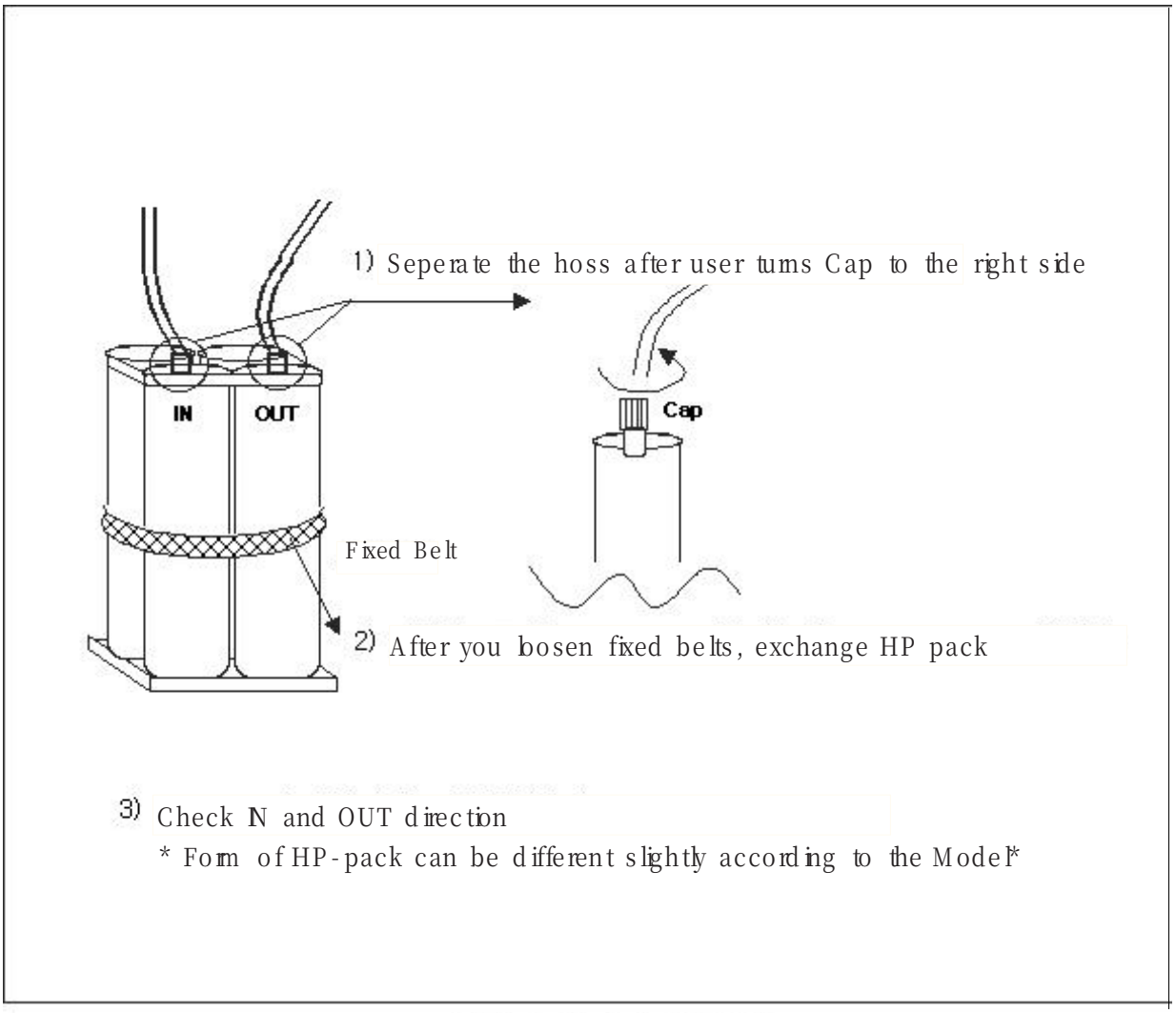
<Figure 4-1. Pre filter and Carbon filter exchange method>



<Figure 4-2. Exchange Method of RO Membrane Filter>

※ Matters that require attention : Be careful that Nipple is broken when hose is divided (If you heat the hose, it can be divided softly)

※ In case there are two RO Membrane, user have to remove T-shaped connect part



<Figure 4-3. HP-Pack Exchange Method>

4-3. Troubleshooting

Symptoms	Check Point	Solution Method
When product water is decreased(Pure water)	- Check RO numerical value (0~35μs/cm) - Check the drain water	- When conductivity is over 35μs/cm, exchange RO Membrane - Exchange Drain valve
	- Check volume of drain water (water way) - Check the pressure of supply water - Check Pump condition	- Return to the normal pressure - Exchange the Pump
When the water tank is overflown	- Check the level sensor - Check a Pump back flow	- Exchange Level sensor - Exchange Pump
When the equipment is'nt "ON"	- Check the fuse - Is there at an electric leakage of Control Board? - Check the trance condition	- Exchange fuse - Come in contact with manufacturer - Exchange trance
When RO Pack Lamp is turned on	- when the equipment is operating, User can check the numerical value	-When conductivity is over 35μs/cm, exchange RO Membrane
When the pressure is got lower	- Check the pressure of supply water - Compare production with drain water's amount (35% product water : 65%Drain water>)	- After the pressure is became normal value, user can operate the equipment - Exchange Drain Valve
the water is not flowing at the drain hose	- Check the pressure	- Exchange Drain Valve
When Q Pack Lamp is turned on	- Check numerical value (Is numerical value below 10MΩ-cm)	- Exchange Q-Pack

HumanLab Instrument Co.

B-401,Jaeun Bldg,#417-33,
Younghwa-dong,Jangan-gu,
Suwon-si 440821, Korea

Tel : +82-31-256 3403
Fax : +82-31-256 3404
Email : sales@humanlab.co.kr
www.humanlab.co.kr

Made in Korea