

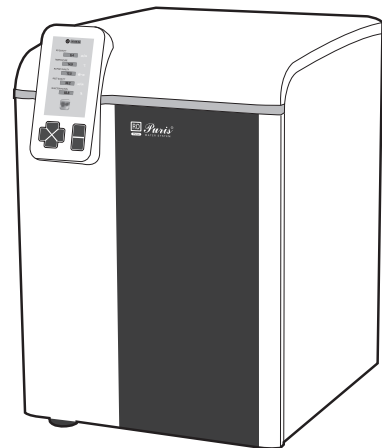
*Puris*<sup>®</sup>



# Puris, Evo-RO Water System

Model : Evo-RO Series

User Manual



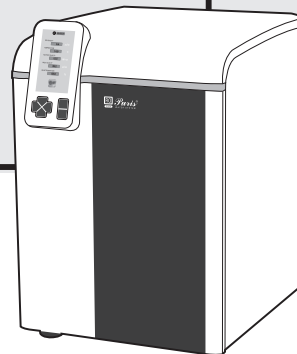
## Foreword

This manual is provided to serve as the installation, operation and maintenance guide for the Evo-Series

LAB Water system models.

The manual should be read before attempting any cycle of installation, operation and maintenance. If the instructions in this manual are not followed, the performance of this product or the safety of the user may be compromised.

If the problem cannot be solved with using this manual, please call your distributor or the manufacture.








## Safety Operation

Evo-RO Water System functions as described in this manual.

Follow the instructions in this manual for correct usage and filter replacement. Failure to do so may result to the malfunction and breakdown of Evo-RO Water System. If any encountered problem persists, contact the Mirae ST customer center for professional assistance.

## Safety Symbols

The following symbols are designed to guide you through Evo-RO Water System operation.

	AC(Analternating Current)
	An Earth
	On
	Off
	FUSE

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## Section 1. User Manual Outline

### 1-1. General Outline

This manual guides you through the installation, operation, and maintenance of Mirae ST Evo-RO System. You will find that using Evo-RO system is very simple, if you take the time to read this manual beforehand. Contact the Mirae ST customer center if you have any inquiries.

### 1-2. Customer Center

#### **Mirae ST Head Office**

- Phone : 031-420-5753
- Fax : 031-420-5978
- Web site : [www.miraest.co.kr](http://www.miraest.co.kr)
- E-mail : [mrst@mrst.kr](mailto:mrst@mrst.kr)

## Section 2. Product Details

### 2-1. Merits of Evo-RO System

- One-touch tubing lets even the first-time users of the Evo-RO Series to install Evo-RO System easily.
- Evo-RO System's quiet pump is perfect for all environments.
- The 4.3" wide graphic display allows the checking of pure water quality, filter condition, storage tank level, and many others.

### 2-2. Water Quality

	<b>Evo-RO Dico 10</b>	<b>Evo-RO Dico 20</b>	<b>Evo-RO Dico 50</b>	<b>Evo-ROP Dico 10</b>	<b>Evo-ROP Dico 20</b>
Flow Rate (L/min) (UP to)	10	20	50	10	20
Product Quality - Conductivity(RO), μs/cm - Resistivity(ROP), MΩ-cm	1-25	1-25	1-25	5-15	5-15
Inorganic	95-99% Removal	95-99% Removal	95-99% Removal	95-99% Removal	95-99% Removal
Organic	99% Removal	99% Removal	99% Removal	99% Removal	99% Removal
Particle	99% Removal	99% Removal	99% Removal	99% Removal	99% Removal
Bacteria	99% Removal	99% Removal	99% Removal	99% Removal	99% Removal

## 2-3. Dimensions and Weight

- Dimensions
  - Main System : W350 × D430 × H520 (mm)
- Weight
  - Main System : 18~19kg

## 2-4. Installation Environment

### 2-4.1 Water Supply

- Reverse osmosis water : <math><250\mu\text{s}/\text{cm}</math>
- Temperature : 5-40°C
- Pressure : 0.07-6bar
- Chlorine :  $\leq 3\text{ppm}$
- Fouling Index(SDI) :  $\leq 12$
- Influx : 20L/hr or 40L/hr

### 2-4.2 Power Supply

- 220-240v, 50-60Hz or 110-120v, 50-60Hz

### 2-4.3 Installation Environment

- Installation temperature : 4 ~ 40°C
- Environment type : Indoors
- Altitude : 2,000 m or less
- Pollution Degree : 2

## Section 3. System Installation

### 3-1. Before Installation

#### 3-1.1 Power Supply

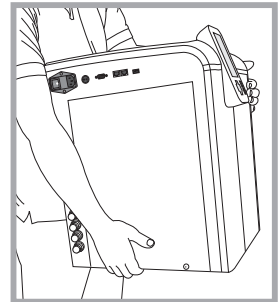
- Plug in the power cord correctly.
- Make sure that the correct level of power is supplied.
- Do not open or disassemble the main PCB (Printed Circuit Board).
- Never tamper with the lines in the main PCB and sensor.  
Program or sensor malfunction may result.

#### 3-1.2 Location

- Install Evo-RO System on a laboratory table or a flat horizontal surface.
- Install Evo-RO System on a table - not floors or surfaces on which Evo-RO System might become contaminated.

#### 3-1.3 Relocation

- Before relocating Evo-RO System, turn off the tap and remove all tubing from the tap and the back of Evo-RO System.
- Remove all packs from the inside of Evo-RO System before relocation.  
Failure to do so can result for the Quick Connector to become damaged.



#### 3-1.4 General Safety Precautions

- Keep Evo-RO System away from alcohol and inflammables.  
Electric shock or fire can be created if an inflammable material comes in contact with the electrical components inside Evo-RO System.
- Keep the top of Evo-RO System free from any objects because it negatively affects the function of electrical components.
- Keep Evo-RO System and the pure water tank out of direct sunlight.  
Direct sunlight can spread microbes.
- Keep Evo-RO System at room temperature.  
Excessively high or low temperatures can deteriorate the filter and PCB.



## 3-2. Unpacking

- Remove Evo-RO System from its packing and check if all components are there.
- Place Evo-RO System on a flat horizontal surface in a safe environment.

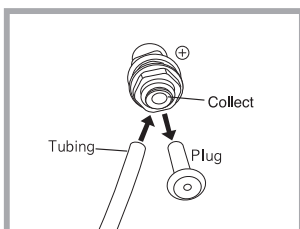
### 3-2.1 Components

Puris, Evo-RO Water System Unit : 1SET

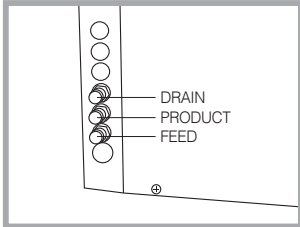
- Built-in filter
  - RO Membrane : 1EA (For RO Dico10, ROP Dico10)  
2EA (For RO Dico20, ROP Dico20)  
3EA (For RO Dico50)
- Removable filter
  - Dico-PC Pack : 1PK
  - Dico-PO Pack : 1PK (For ROP Model)
- Power cord : 1EA
- Tubing Kit
  - 1/4" tubing (Feed) : 1EA
  - 1/4" tubing (Drain) : 1EA
  - 1/4" tubing (Product) : 1EA
  - 3/8" tubing (Tank Overflow) : 1EA
  - Cable Tie : 1SET
- User manual : 1EA

## 3-3. Main Unit Installation

- Place the main unit in the location where it is to be installed and install as follows.
- Influx and drainage must be possible in the installation location.
- Locate the main unit beside or under the pure water tank for optimum influx.
  - Remove the plug-in place to prevent leakage before connecting the tubing to the side of the main unit.
  - Press down on the area marked "Collect" and pull to remove the plug.



- Connect the 5/16" and 1/4" tubing to the area from which the plug was removed.

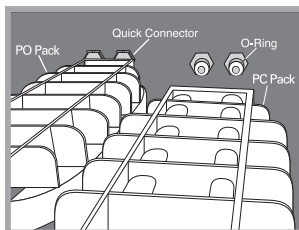
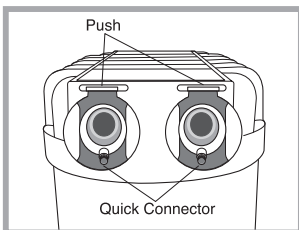


- Feed - Connect the 1/4" tube to the influx.
- Product - Connect the 1/4" tube to the tank.
- Drain - Locate the 1/4" tube to the drainage.



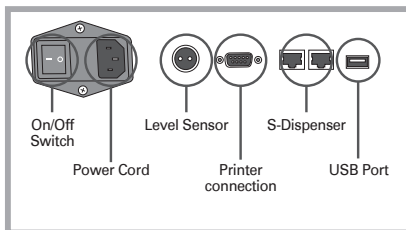
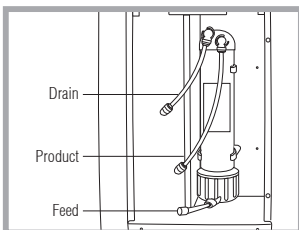
**Caution :** When the Product line is NOT connected to the Pure water tank directly, the pump can be damaged. In this case, the quality of pump functionally cannot be guaranteed.

- Open the front door of Dico-PC Pack, Dico-PO Pack and connect to the Quick Connector.  
Press down on the top part of the Quick Connector before installing the packs on the main unit.

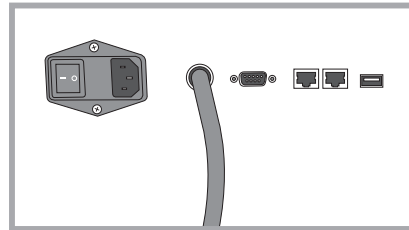
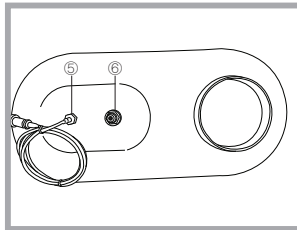
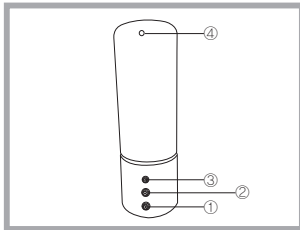


**Caution :** If left protruding, the top part of the Quick Connector can damage the O-ring in the main unit. Press down on the top part of the Quick Connector before installing the packs on the main unit.

- RO Membrane is a device mounted on the left.  
- Connect the power cord at the left side



### 3-4. Pure Water Storage Tank

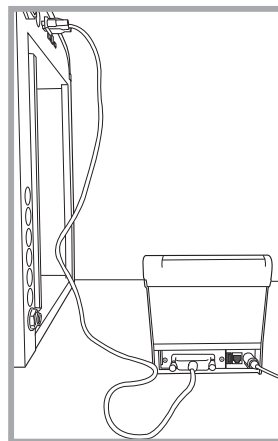
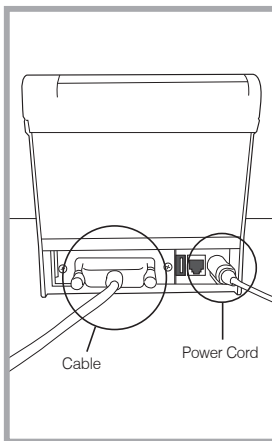


Level sensor connection of the system

- ① Drain – Locate the 3/8" tube to the drainage.
- ② UP Inlet – Connect the 5/16" tube to the main unit (when UP System or CB System is in use).
- ③ Product – Connect the 1/4" tube to the main unit in order to store produced water. (when RO System is in use).
- ④ Overflow – It is placed at the drain hole as linked with the 3/8" line.
- ⑤ Level Sensor – It adjusts the water level of the tank as linked with the system.
- ⑥ Vent filter – It is installed in 35-L or 100-L tank

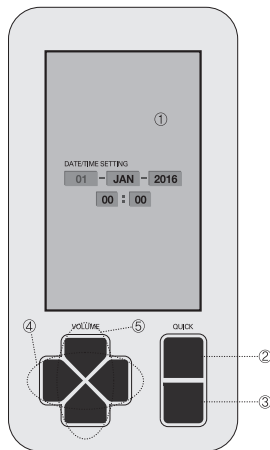
### 3-5. Connecting the System with the Printer

- Connect the power cord to the printer and connect the printer to the main unit.



## Section 4. System Operation

### 4-1. Keypad



- ① LCD monitor
- ② Quick - Use this button to check the remaining pack level when the filter icon is displayed on the screen.
- ③ Menu - Use this button to automatically save changes and return to Menu.
- ④ ◀ ▶ - Use to navigate items.
- ⑤ △ ▽ - Use to make changes.

#### 4-1.1 Icons



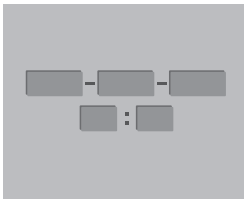
- Evo-RO System is in operation.



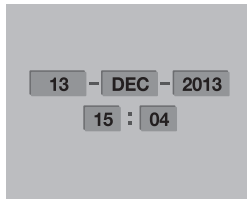
- Pure water is produced. The quantity stored in the tank is displayed.

## 4-2. Date and Time

- The time setting screen is displayed when Evo-RO System is first started. Press  $\Delta$ ,  $\nabla$  to set the time.
- Press Menu to save the changes made and move to Menu.

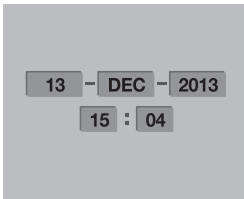


(Before Setting)



(After Setting)

## 4-3. Initial Screen



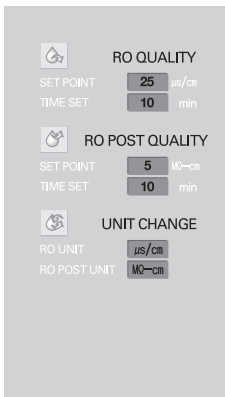
- It is the system standby window.

## 4-4. Menu Setting

※ This item is the factory default setting, so you do not need to reset.

### 4-4.1 Quality

- The unit of Pure water can be set in quality.



(The above example is based on the ROP model. For the case of the RO model, the RO POST QUALITY item does not appear.)

The unit of conductivity is  $\mu\text{S}/\text{cm}$ .

The unit of specific resistance is  $\text{M}\Omega\text{-cm}$ . (applicable only to the ROP model)

When the specified quality is not reached during the saved time, production will be stopped automatically.

It is possible but not recommendable to modify configuration values depending on the quality of water input.

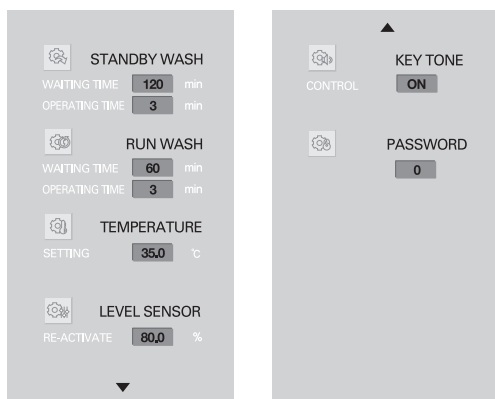
(Configured value - conductivity: 25  $\mu\text{S}/\text{cm}$ ; specific resistance: 5  $\text{M}\Omega\text{-cm}$ )

As the default values have been configured, you don't have to adjust them.

Press Menu to save and return to the Menu.

## 4-4.2 Setting

- In the Setting item, it is possible to configure Standby Wash, Run Wash, Water Input Temperature, Level Sensor, Key Tone, and Password.



### - Standby Wash

Automatic washing is performed for three minutes once every 120 minutes.

### - Run Wash

RO membrane is automatically washed for three minutes once every 60 minutes.

### - Temperature

Evo-RO System stops operating if influx temperature exceeds a set level (default: 35°C).

### - Level Sensor

The system is restarted when the water level of the tank reaches at about 80% under the system standby mode.

### - Key tone

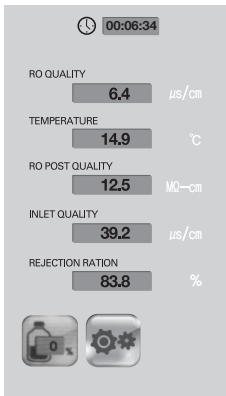
This function sets whether to activate the key tone. On/Off switching is set with  $\Delta \nabla$ .

### - Password

Initial password is 0000.

- Press Menu to save changes made and return to Menu.

## 4-5. Pure water (RO) production window

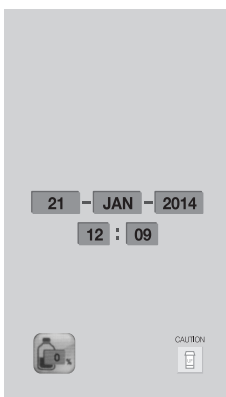


- Activate Pure water by pressing the RUN button.
- Quality and temperature of Pure water are displayed.
- The normal range of pure water is 1-25  $\mu\text{S}/\text{cm}$ .
- The specific resistance of the post is displayed, and its normal range is 5-15  $\text{M}\Omega\text{-cm}$  (applicable only to the ROP model)

## 4-6. Water Quality Printout

- Press the Print button while the Pure water is running to get a printout of water quality.

## 4-7. Filter Replace Alarm



- A filter change icon is displayed seven days ahead of the required filter change. Press Quick to view the remaining life span of all filters.

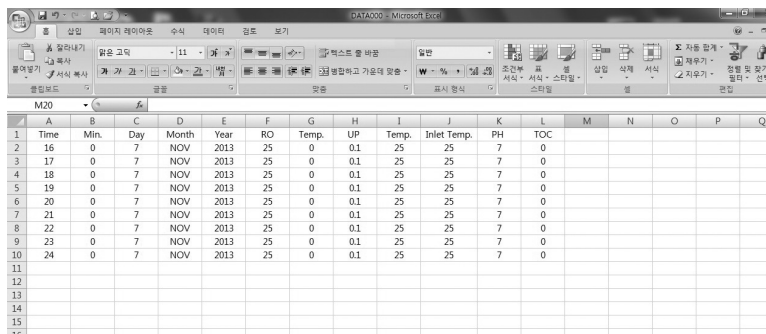


## 4-8. USB Auto Save

- You can save water quality records automatically to a USB memory device.
  - Insert a USB memory device and press the Menu key in USB Print. Remove the USB memory device and insert it again at a desired time and press the Menu key in USB Print to save.
  - Water quality records are saved in Excel format on the hour from the start and the end of this function. Auto save does not take place if Evo-RO System is not working.

\* Example : Auto save is not performed if USB Print starts at 17:03 and ends at 17:58. Two files are saved if USB Print starts at 16:57 and ends at 18:02 and it can be viewed on your PC.

### Sample Screenshot



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	Time	Min.	Day	Month	Year	RO	Temp.	UP	Temp.	Inlet Temp.	PH	TOC					
2	16	0	7	NOV	2013	25	0	0.1	25	25	7	0					
3	17	0	7	NOV	2013	25	0	0.1	25	25	7	0					
4	18	0	7	NOV	2013	25	0	0.1	25	25	7	0					
5	19	0	7	NOV	2013	25	0	0.1	25	25	7	0					
6	20	0	7	NOV	2013	25	0	0.1	25	25	7	0					
7	21	0	7	NOV	2013	25	0	0.1	25	25	7	0					
8	22	0	7	NOV	2013	25	0	0.1	25	25	7	0					
9	23	0	7	NOV	2013	25	0	0.1	25	25	7	0					
10	24	0	7	NOV	2013	25	0	0.1	25	25	7	0					
11																	
12																	
13																	
14																	
15																	

Auto saved files do not have the item names shown in the sample screenshot. Refer to the sample screenshot and name the items yourself.

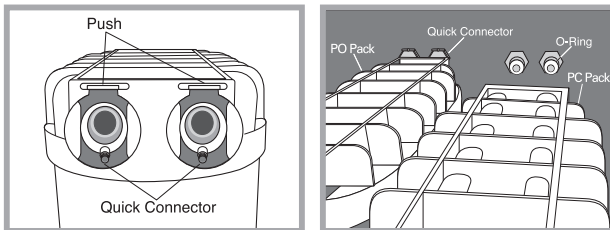
## Section 5. System Maintenance

### 5-1. Replacing of the Dico-PC Pack, PO Pack

Open the front door and connect the Quick Connector. Before connecting the pack to the main unit, press down on the top part of the Quick Connector.

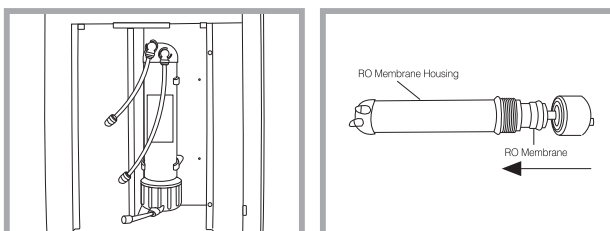


**Caution :** If left protruding, the top part of the Quick Connector can damage the O-ring in the main unit.



### 5-2. Replacing of the RO Membrane

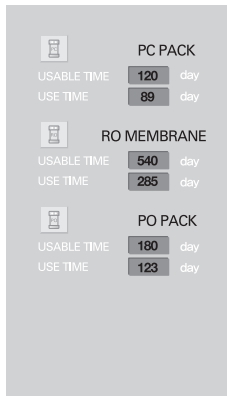
- Remove the cover from the left side of the system with a screwdriver.
- Remove the tubing from the top and bottom.
- Pull out the RO Membrane Housing, turn its cover part counterclockwise, remove the RO Membrane that is installed inside, and push in a new RO Membrane.



**Caution :** Make sure to check the direction of the RO Membrane so that it will not be inserted in a wrong direction.

### 5-3. System Resetting after filter replacing

- Select Filter on Menu.
- Press ◀▶ to select the replaced filter.
- Press △▽ to change USE Time to “1 day” and press Menu to return to Menu.



\* Filter type can vary by model. Sample model in the photo : Evo-ROP Dico10



**Caution :** Changing USE TIME greatly affects water quality and optimum water quality guaranteed if extended excessively. Regular filter change is recommended.

### 5-4. Component Replacement Cycle

Consumable	P/N	Replacement cycle	Remark
Dico-PC Pack	ADP28M	4 months	
Dico-RO Membrane	ADRM75M	18 months	
Dico-PO Pack	ADPO28M	6 months	For ROP Dico10, 20
Pre-treatment system	PCPRTS15M		

\* Average life span of consumables can vary according to water quality and frequency of use.

## 5-5. Maintenance

- Fuse replacing
  - Switch off the power and remove the power cord.
  - Assess the power cord unit at the side of the main unit.
  - Pull forward the part in the middle marked "Fuse" using a screwdriver.
  - Remove the fuse box with the hand. Two fuses, one being a spare, should be found.
  - 200–240 v or 110–120 v: T1.6A (T: Time lag fuse)

- Cleaning






Clean the exterior and interior (inside the door) of Evo-RO System as follows.

- Switch off the power and remove the power cord.
- Wet a clean soft cloth and wring it thoroughly. Wipe the surfaces clean.  
Carefully wipe clean the microprocessor control panel (top panel of the main unit) with a dry soft cloth.  
Never use cleaning liquids directly on any part of Evo-RO System.  
Do not use alcohol, benzene, or thinner to clean as discoloration or disfiguration may occur.
- Remove any vapor formed on surfaces with a dry cloth.

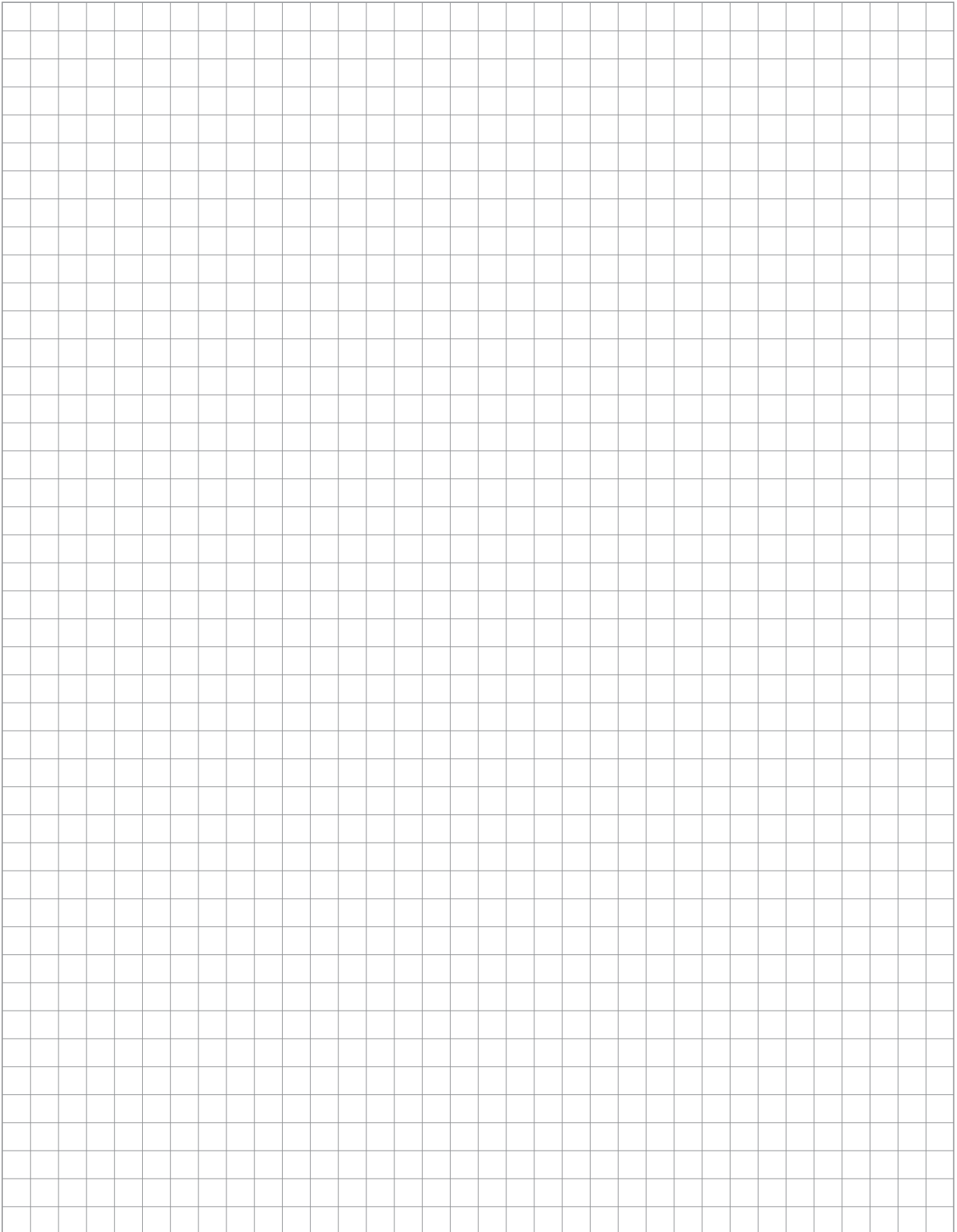


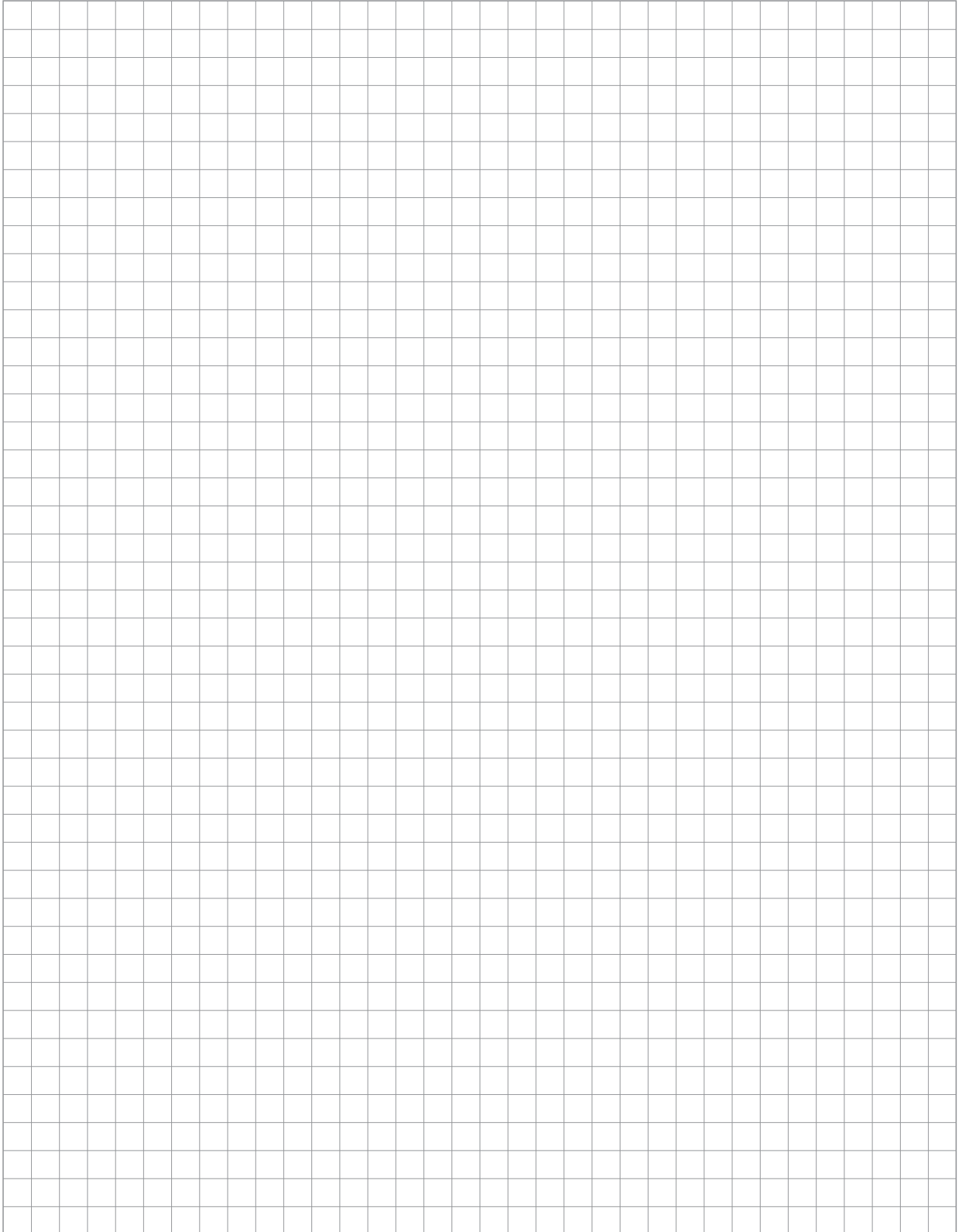
**Caution :** Always remove the power cord before cleaning.

## Section 6. System Alerts

Error	Solution
 <p>REPLACE PC PACK</p>	<p>Replace the PC Pack Refer to 5-1.</p>
 <p>REPLACE RO MEMBRANE</p>	<p>Replace the RO Membrane Refer to 5-2.</p>
 <p>REPLACE PO PACK</p>	<p>Replace the PO Pack (ROP model) Refer to 5-1.</p>
 <p>HIGH PRESSURE</p>	<p>Check the inflowing water pressure.</p>
 <p>RO HIGH TEMPERATURE</p>	<p>Check the inflowing water temperature.</p>

Contact the Mirae ST customer center if problems persist.





We strive to guarantee our customers the complete satisfaction.  
MIRAE ST CO. LTD not only makes high quality products but we do our best  
to provide the best after service to our customers.  
We are always glad to receive feedbacks or any opinions from our  
customers. If you have any inconvenience or something that we can be of  
help, please don't hesitate to contact us.  
Thank you!!



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