



## Water Purifier Auto Still

# WG205 Instruction Manual

First Edition

Thank you for choosing a product of Yamato Scientific Co., Ltd.

For proper equipment operation, please read and become thoroughly familiar with this instruction manual before use. Always keep equipment documentation safe and close at hand for convenient future reference.



**Warning:** The warning items described in the instruction manual make the product safe. Please read it carefully and understand it well before use.

**Yamato Scientific Co. Ltd.**

Printed on recycled paper



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# 1. SAFETY PRECAUTIONS


## Explanation of Symbols

### A Word Regarding Symbols

Various symbols are provided throughout this text and on equipment to ensure safe operation. Failure to comprehend the operational hazards and risks associated with these symbols may lead to adverse results as explained below. Become thoroughly familiar with all symbols and their meanings by carefully reading the following text regarding symbols before proceeding

---

 **Warning** Signifies a situation which may result in serious injury or death (Note 1.)

 **Caution** Signifies a situation which may result in minor injury (Note 2) and/or property damage (Note 3.)

---

(Note 1) Serious injury is defined as bodily wounds, electrocution, bone breaks/fractures or poisoning, which may cause debilitation requiring extended hospitalization and/or outpatient treatment.

(Note 2) Minor injury is defined as bodily wounds or electrocution, which will not require extended hospitalization or outpatient treatment.

(Note 3) Property damage is defined as damage to facilities, equipment, buildings or other property.

### Symbol Meanings



Signifies warning or caution.  
Specific explanation will follow symbol.



Signifies restriction.  
Specific restrictions will follow symbol.



Signifies an action or actions which operator must undertake.  
Specific instructions will follow symbol.

# 1. SAFETY PRECAUTIONS

## Symbol Glossary

### WARNING / CAUTION



General



Danger!: High Voltage



Danger!: High Temperature



Danger!: Blast Hazard



Caution: Burn Hazard!



Caution: May Leak Water!



Caution: Shock Hazard!

### RESTRICTION



General Restriction



Do Not Disassemble

### ACTION



General Action Required



Connect Ground Wire



Level Installation



Disconnect Power



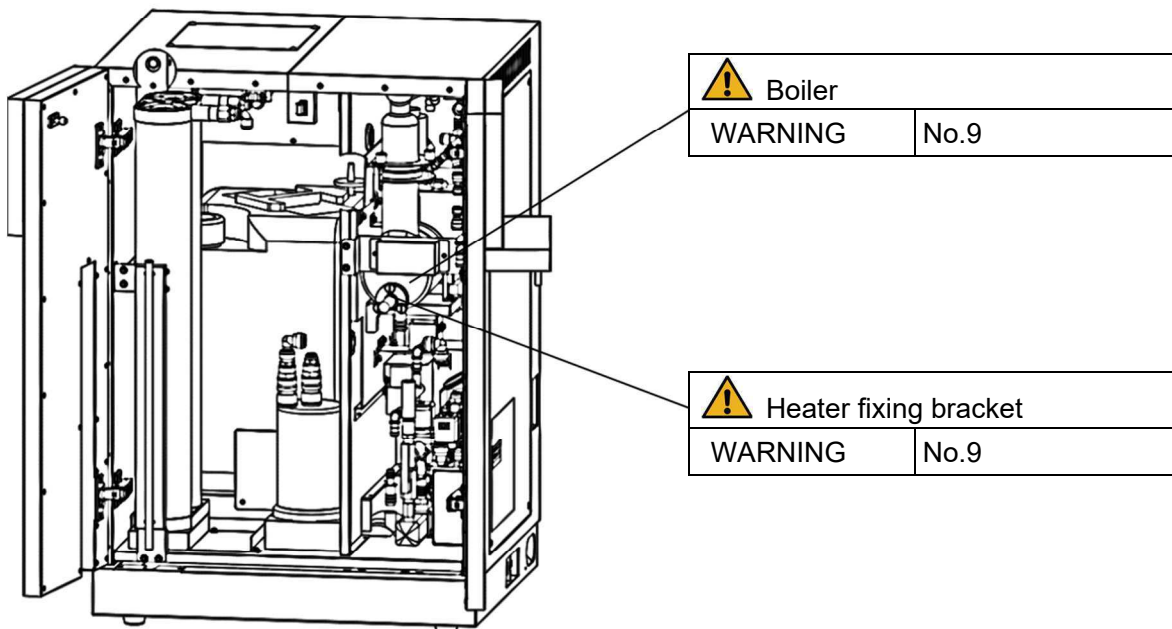
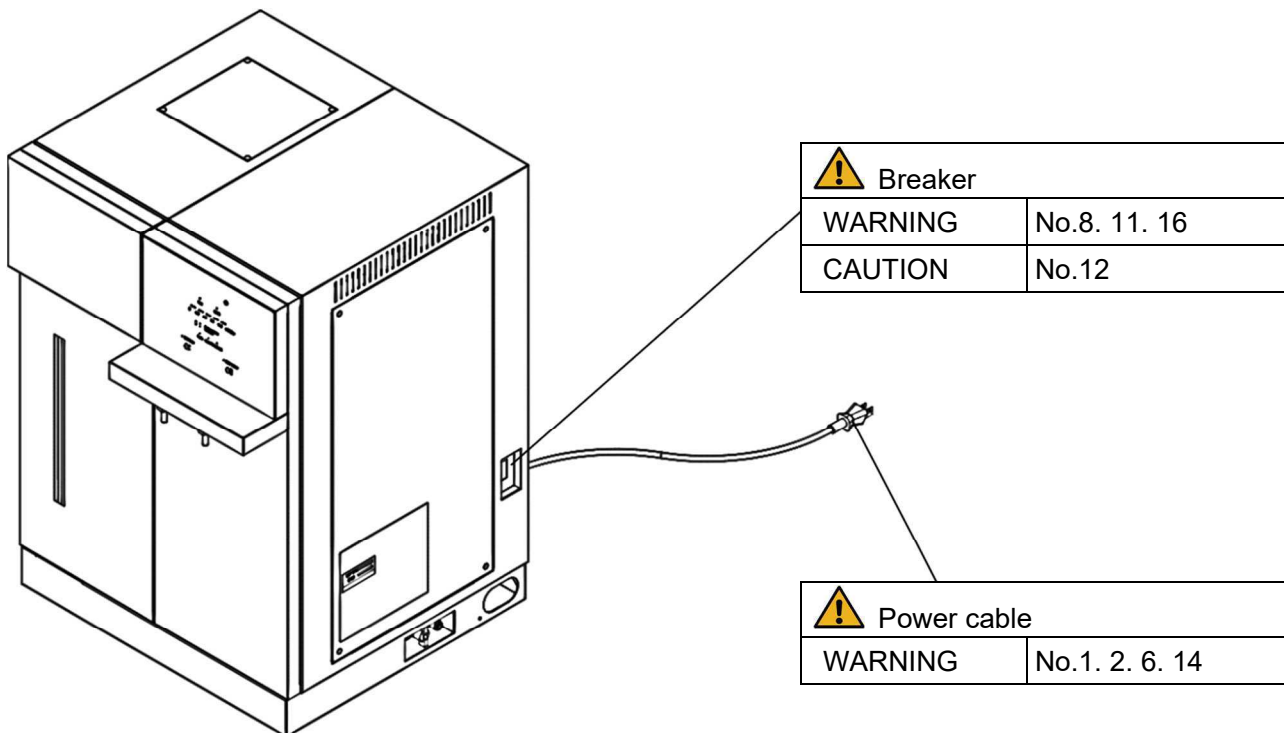
Inspect Regularly

# 1. SAFETY PRECAUTIONS

## Residual risk map

The numbers shown in the figure indicate the numbers listed in the "List of Residual Risks" in this manual.

For details of individual residual risks, see the List of Residual Risks.



Residual risk of unspecified location	
<b>WARNING</b>	No.3,7,10,13,15,17
<b>CAUTION</b>	No.4,5

# 1. SAFETY PRECAUTIONS

## List of Residual Risks

### List of residual risks (instructions for risk avoidance)

This list summarizes residual risks to avoid personal injuries or damages to properties during or related to the use of equipment.

**Be sure to fully understand or receive instructions on how to use, maintain and inspect equipment before starting operation.**

Loading/Installation			
No.	Degree of risks	Risk description	Protective measures taken by the user
1	WARNING	Fire/Electric shock	Ground wire <b>MUST</b> be connected properly. (P.7)
2	WARNING	Fire/Electric shock	Handle power cable with care.(P.7)
3	WARNING	Explosion/fire	Choose an appropriate installation site.(P.19)
4	CAUTION	Injury	Always use cargo-handling equipment to move or install unit.(P.19)
5	CAUTION	Fire/Electric shock	Install unit on a level surface.(P.19)
6	WARNING	Fire/Electric shock	Always connect power cable to appropriate facility outlet or terminal.(P.20)

Use			
No.	Degree of risks	Risk description	Protective measures taken by the user
7	WARNING	Explosion/fire	Install in a location free of flammables and explosives.(P.7)
8	WARNING	Fire/Electric shock	Turn OFF (○) ELB immediately when an abnormality occurs.(P.7)
9	CAUTION	Burn	DO NOT touch hot surfaces. (P.8)
10	WARNING	Injury	DO NOT climb or place any objects on top of equipment.(P.8)
11	WARNING	Fire	DO NOT operate equipment during thunderstorms. (P.8)
12	CAUTION	Fire	Turn OFF (○) ELB in case of power failure.(P.8)

Daily inspection/maintenance			
No.	Degree of risks	Risk description	Protective measures taken by the user
13	WARNING	Fire/Electric shock	DO NOT disassemble or modify equipment. (P.8)
14	WARNING	Fire/Electric shock	Be sure to disconnect power cable before daily inspection and maintenance.(P.30)
15	WARNING	Burn	Perform inspections and maintenance when unit is at room temperature.(P.30)

Extended storage/disposal			
No.	Degree of risks	Risk description	Protective measures taken by the user
16	WARNING	Fire/Electric shock	Turn OFF (○) ELB.(P.38)
17	CAUTION	Injury	Do not leave unit in a location where children may have access. (P.39)

# 1. SAFETY PRECAUTIONS

## Warnings and Cautions



### WARNING



#### Install in a location free of flammables and explosives.



Never install or operate unit in a flammable or explosive gas atmosphere. Unit is NOT fire or blast resistant. Simply switching earth leakage breaker (ELB) "ON" or "OFF" can produce a spark, which can then be relayed during operation, causing fire or explosion when near flammable or explosive fluids, chemicals or gases/fumes.

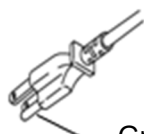
See "[13. LIST OF HAZARDOUS SUBSTANCES \(P.51\)](#)" for information on flammable and explosive gases.



#### Ground wire **MUST** be connected properly

- Connect power cable to a grounded outlet in order to avoid electric shock.
- Never insert multiple plugs into a single outlet. Doing so may result in power cable overheating, fire or drop in voltage.

Grounded outlet



Grounding prong

Grounded plug

#### When no ground terminal is found

Contact original dealer of purchase for location-specific electrical requirements.



#### Turn OFF (○) ELB immediately when an abnormality occurs.

If unit begins emitting smoke, fire or abnormal odors for reasons unknown, turn OFF (○) ELB immediately, disconnect power cable from power supply, and contact original dealer of purchase for assistance. Failure to do so may result in damage to components, fire or electric shock. Never attempt to disassemble or repair unit. Repairs should always be performed by a certified technician.



#### Handle power cable with care.

Observe the following precautions in order to prevent fire, electric shock, or other accidents.

- Do not operate unit with power cable bundled or tangled.
- Do not modify, bend, forcibly twist or pull on power cable.
- Do not risk damage to power cable by positioning it under desks or chairs, or by allowing it to be pinched in between objects.
- Do not place power cable near kerosene/electric heaters or other heat-generating devices.
- Regularly check and clean the connection part, and avoid using an old outlet.

Turn off (○) ELB immediately and disconnect from facility terminal or outlet, if power cable becomes partially severed or damaged in any way. Contact original dealer of purchase for information about replacing power cable.

# 1. SAFETY PRECAUTIONS



## **DO NOT touch hot surfaces**

Some parts of boiler become hot during operation or for a while after operation. Use caution not to get burned. Make sure that boiler is cooled before inspecting/maintaining heater and other components or draining boiler.



## **DO NOT disassemble or modify equipment**

Never attempt to disassemble or modify unit. Doing so may cause malfunction, fire, electric shock, or personal injury. Note that any malfunction resulting from unauthorized modifications or customizations to unit will void the warranty.



## **DO NOT climb or place any objects on top of equipment.**

Personal injury or equipment malfunction may result due to falling.



## **CAUTION**



## **DO NOT operate equipment during thunderstorms**

In the event of a thunderstorm, turn OFF (○) ELB and disconnect power cable immediately. A direct lightning strike may cause equipment damage, fire or electric shock, resulting in serious injury or death.



## **Turn OFF (○) ELB in case of power failure.**

Operation stops when power failures occur. For added safety however, turn OFF (○) ELB in the event of a power failure.



## **In the event of a power failure and restart operation**

In the event of a power failure during operation, unit will be put in standby when power is restored.



## **Handle scale cleaner (Orgazole 10) with care.**

The main component of Orgazole 10 scale cleaner is sulfamic acid, which will be strongly acidic at pH 1 when made into an aqueous solution at a dilution ratio of 10: 1. Always wear protective equipment (gloves, mask, and glasses) when handling the cleaner. If the cleaner comes in contact with any part of human body, wash thoroughly with clean water.

# 1. SAFETY PRECAUTIONS



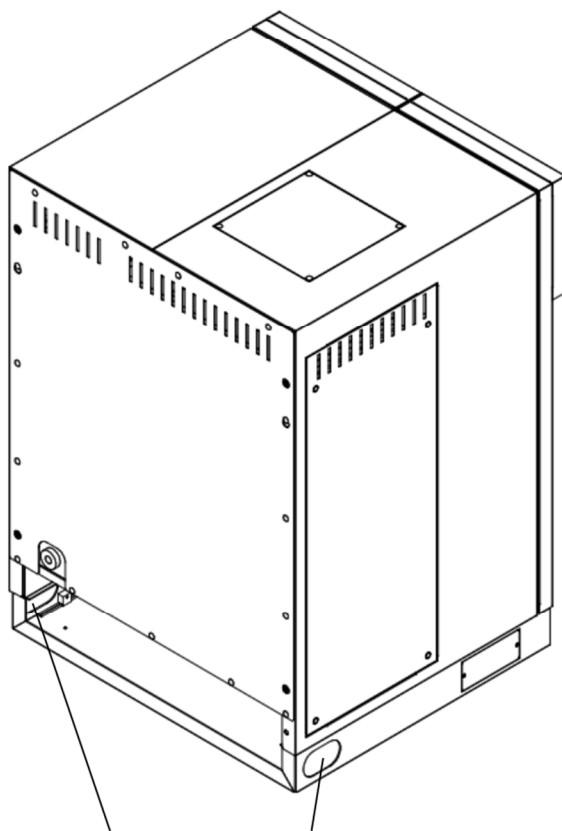
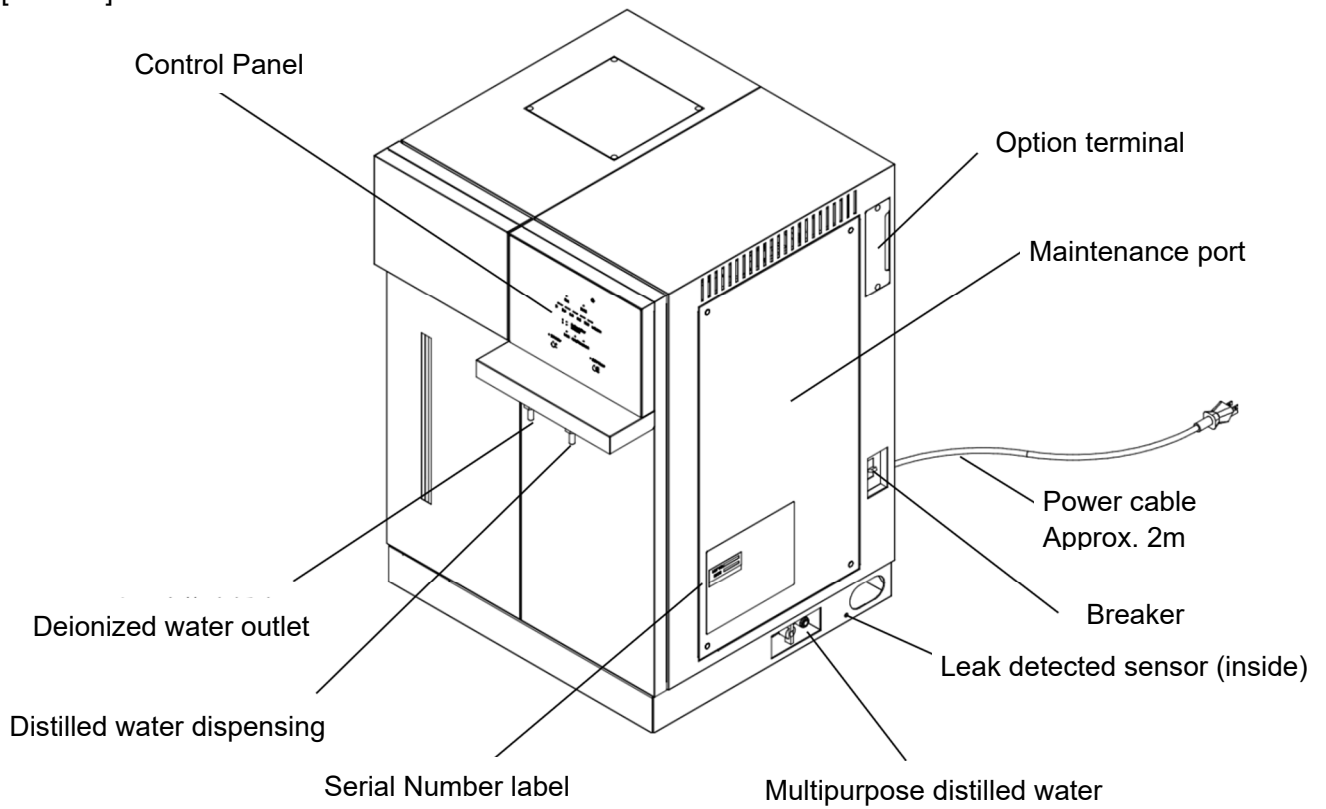
## Handle scale cleaner carefully.

- Store scale cleaner in a sealable container and avoid high temperature and humidity.
- The main component of Orgazole 10 scale cleaner is sulfamic acid (the pH of the water solution is about 1).
- Always wear protective equipment (gloves, mask, and glasses) when handling the cleaner.
- If the cleaner comes in contact with any part of human body, wash thoroughly with clean water.
- Neutralize the liquid used for cleaning with neutralizer (sodium hydrate, etc.).
- Use pH test paper to check whether the liquid has been neutralized.
- Empty container must not be used to contain drinks.
- Do not release the cleaner into agricultural canals and fields. Doing so may cause withering of crops.

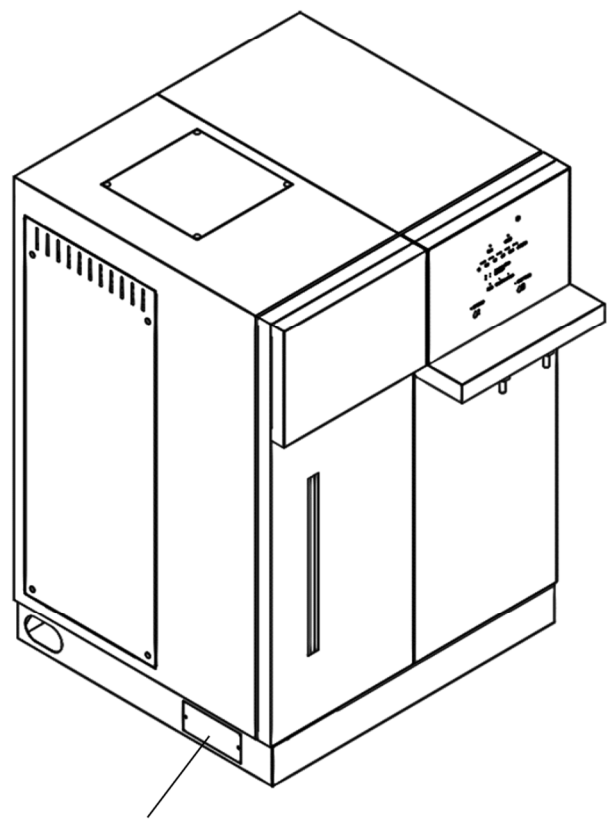
## 2. COMPONENT NAMES AND FUNCTIONS

### Main Unit

[Exterior]



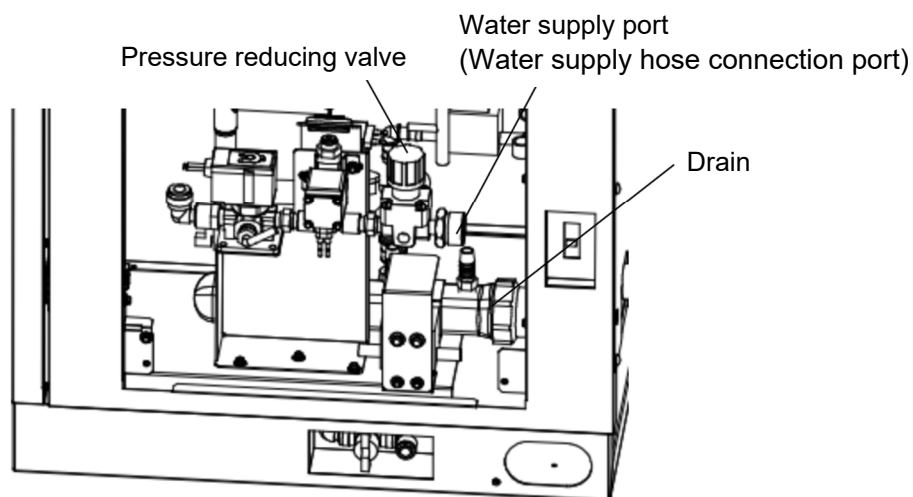
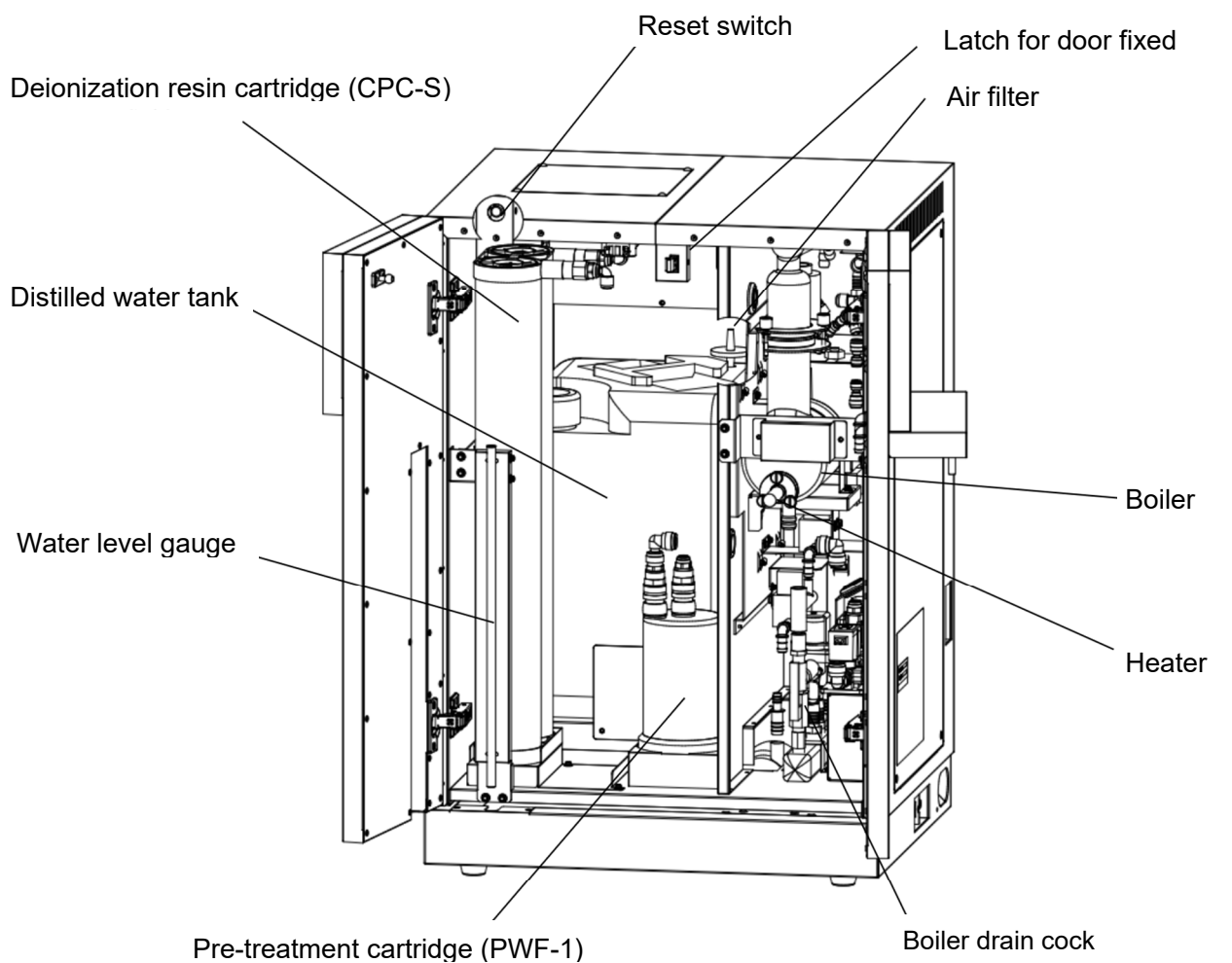
Water supply / drainage hose outlet  
One on each side



Leakage detection sensor (inside)

## 2. COMPONENT NAMES AND FUNCTIONS

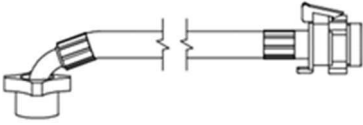
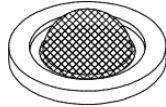

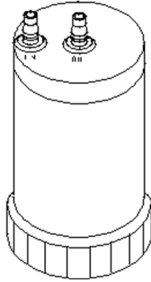
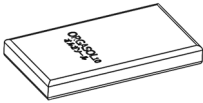



[Interior]



## 2. COMPONENT NAMES AND FUNCTIONS

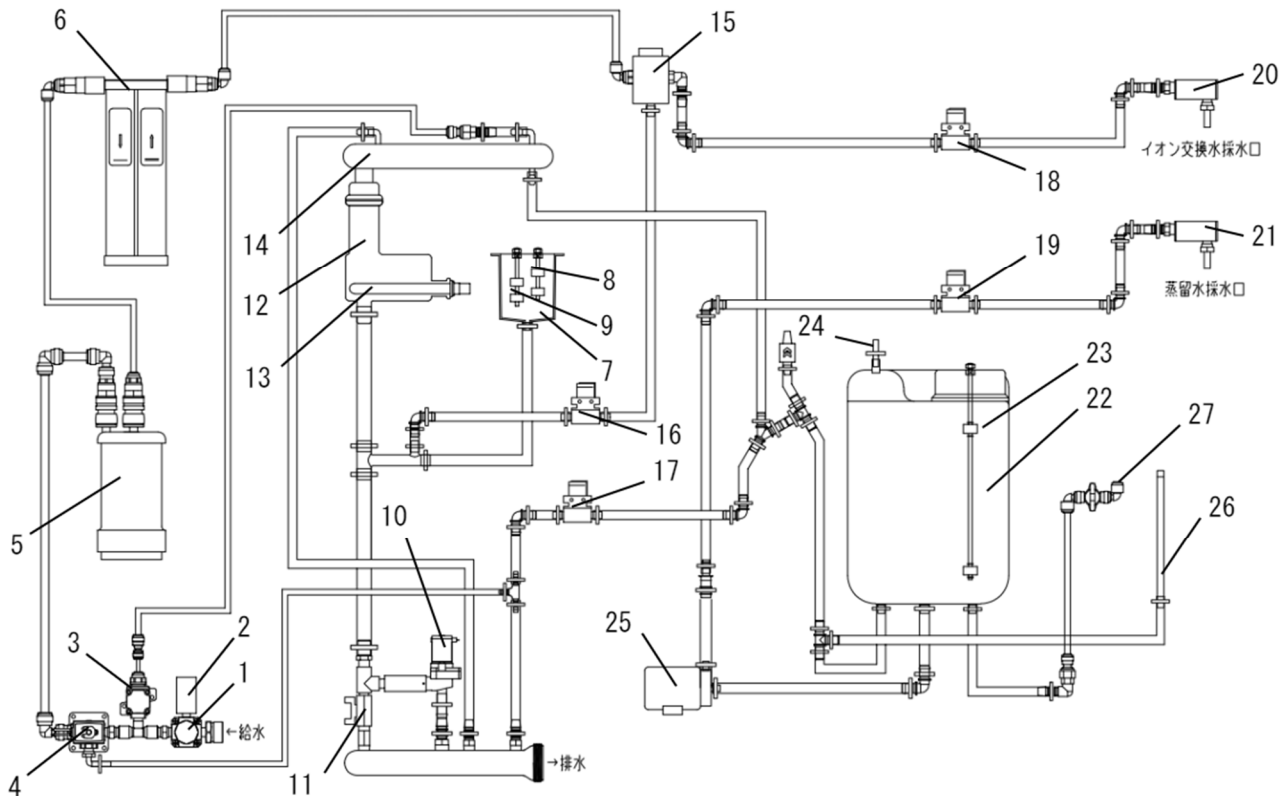
### Accessories

Check before operation that all the accessories are complete. Contact original dealer of purchase if anything is missing.

<p>Water supply hose (2 m) · · · 1 pcs</p> 	<p>Water supply hose filter · · · 1 pcs</p> 
<p>Deionization resin cartridge (CPC-S) · · · 1 pcs</p> 	<p>Pre-treatment cartridge (PWF-1) · · · 1 pcs</p> 
<p>Scale cleaner · · · 1 pcs</p> 	<p>Connection hose assembly · · · 1 pcs</p> 
<p>Seal tape · · · 1 pcs</p> 	<p>Instruction manual, Warranty card · · · 1 pcs each</p> 

## 2. COMPONENT NAMES AND FUNCTIONS

### Piping System Diagram



- 1 Pressure reducing valve
- 2 Pressure switch
- 3 Solenoid valve for coolant
- 4 Solenoid valve for raw water supply
- 5 Pre-treatment cartridge
- 6 Deionization resin cartridge (CPC-S)
- 7 Float cylinder
- 8 Float switch (1)
- 9 Float switch (2)
- 10 Solenoid valve for boiler drainage
- 11 Boiler drain cock
- 12 Boiler
- 13 Heater
- 14 Condenser

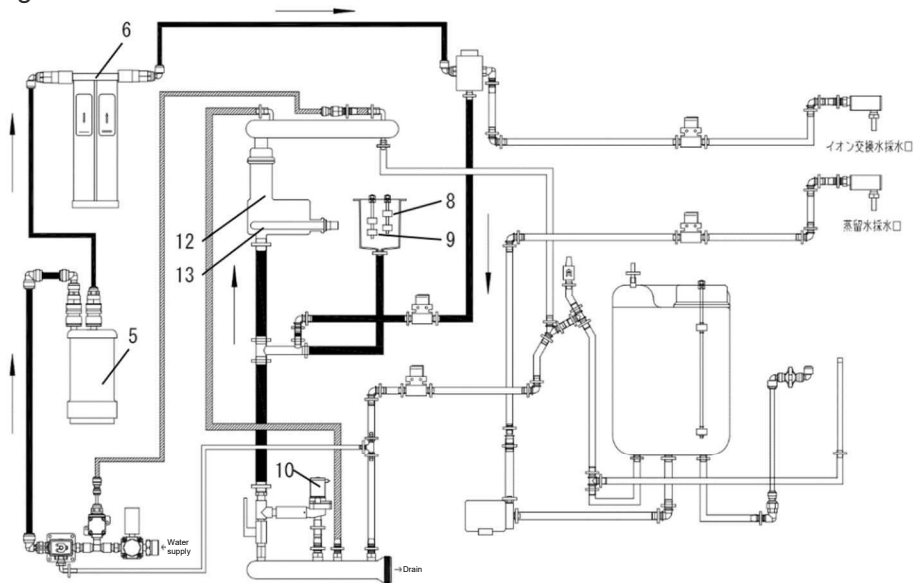
- 15 Deionized water quality gauge electrode
- 16 Solenoid valve for boiler water supply
- 17 Solenoid valve for initial distilled water drain
- 18 Solenoid valve for deionized water dispensing
- 19 Solenoid valve for distilled water dispensing
- 20 Deionized water outlet
- 21 Distilled water outlet
- 22 Distilled water tank
- 23 Float switch (3)
- 24 Air vent filter
- 25 Distilled water dispensing pump
- 26 Water level gauge
- 27 Multipurpose distilled water outlet


## 2. COMPONENT NAMES AND FUNCTIONS

### Operation Principles

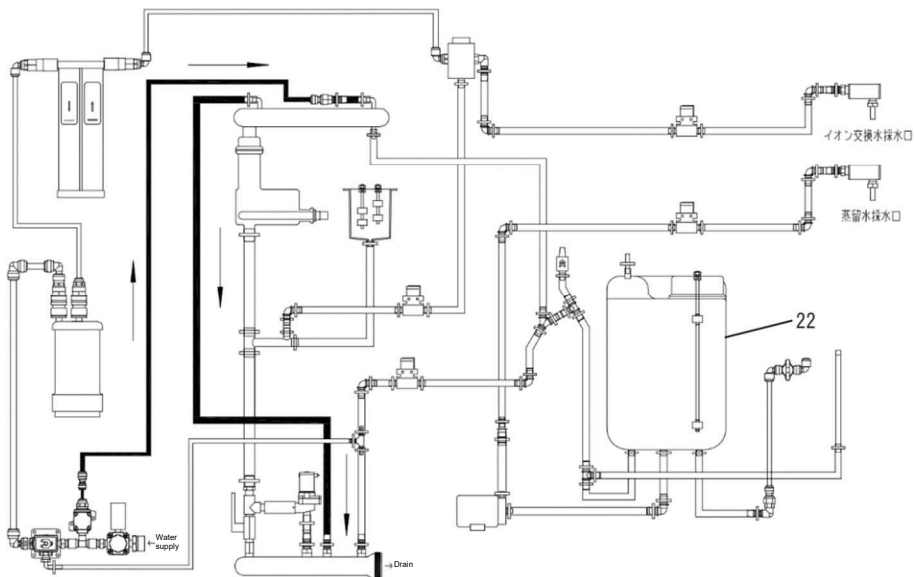
The operation principles of WG205 for each process is defined as follows.

#### (1) Boiler drainage and distillation



Turn ELB "ON (I)", and touch , then "10. Solenoid valve for boiler drainage" opens to drain boiler. After that, boiler is drained repeatedly every 5 hours. Boiler drainage is completed, water is supplied to "12. Boiler" via "5. Pre-treatment cartridge" and "6. Deionization resin cartridge (CPC-S)". When water accumulates in "12. Boiler", "13. Heater" is energized to start distillation and at the same time, coolant flows. The water level of "12. Boiler" is monitored by "8, 9. Float switch (1) (2)".

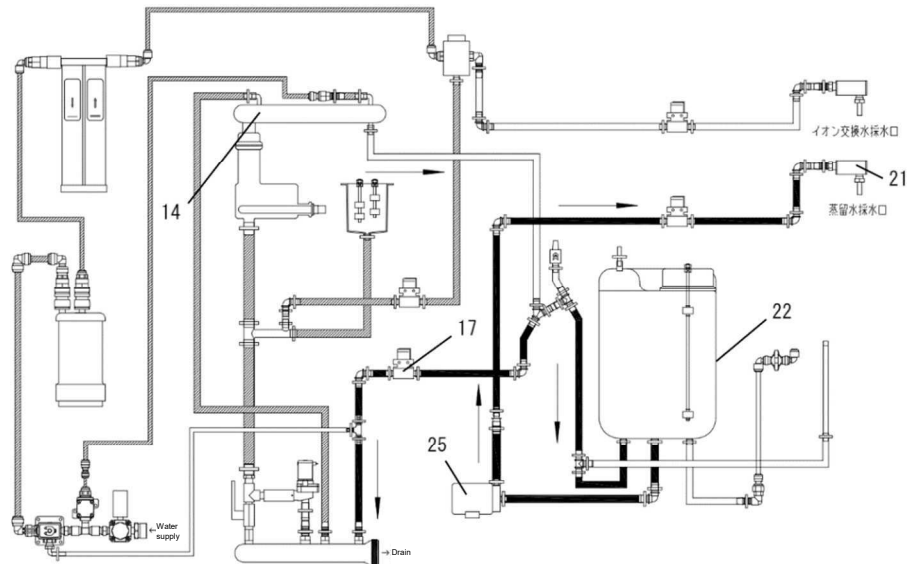
#### (2) Flow of coolant



During distillation, coolant flows. Distillation stops when "22 Distilled water tank" is full, or while collecting deionized water. Coolant also stops automatically.

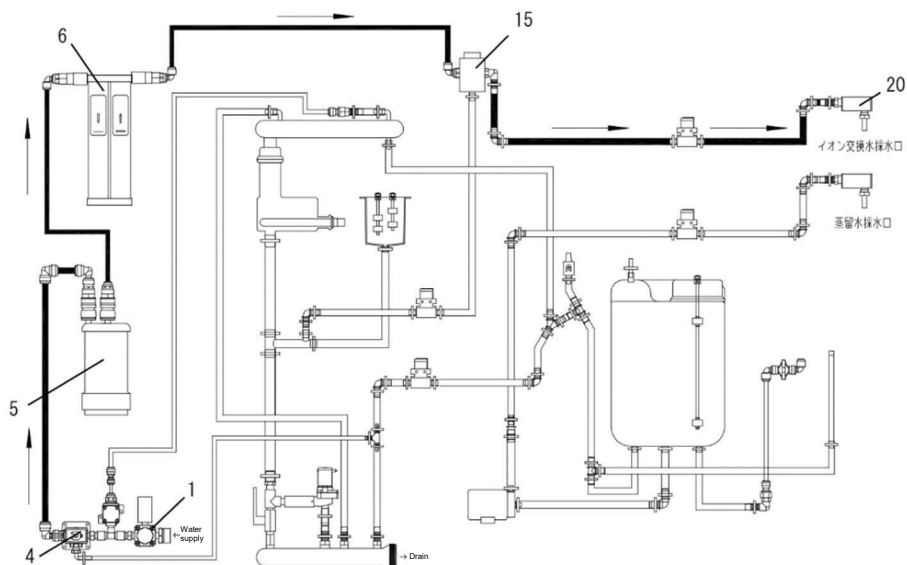
## 2. COMPONENT NAMES AND FUNCTIONS

### (3) Dispense distilled water



"17. Solenoid valve for initial distilled water drain" opens for about 10 minutes from the start of distillation, and the distilled water condensed in "14. Condenser" flows out as initial distilled water. Then, distilled water will be stored in "22. Distilled water tank". When distilled water tank becomes full, distillation stops. When distilled water is consumed at a certain level, unit automatically begins to produce distilled water. The distilled water stored in the tank is sucked up by "25. Distilled water dispensing pump" and is dispensed from "21. Distilled water outlet".

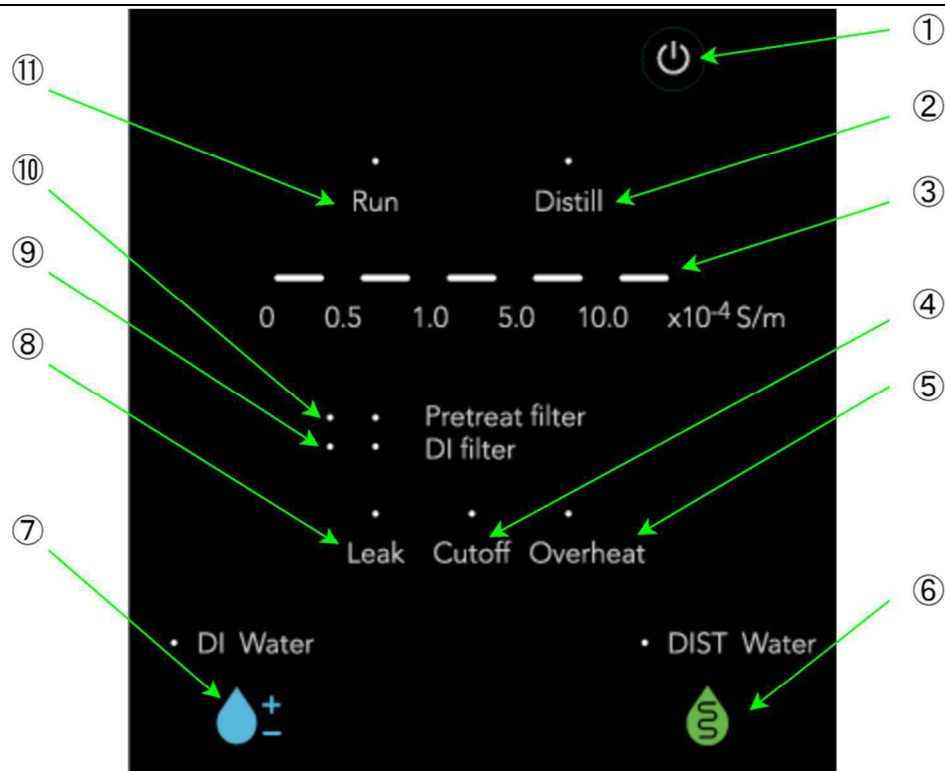
### (4) Dispense deionized water







Deionized water is dispensed by way of "5. Pre-treatment cartridge", "6. Deionization resin cartridge (CPC-S)" and "20. Deionized water outlet".

## 2. COMPONENT NAMES AND FUNCTIONS

### Control Panel



No.	display	Panel item	Description
①		POWER key	Turns on/off controller
②	Distill	DISTILL lamp	Illuminates during distillation
③		CONDUCTIVITY indicator	A lamp on the CONDUCTIVITY indicator illuminates, indicating quality of deionized water between 0.0 and $\infty \times 10^{-4} \text{ S / m}$
④	Cutoff	LOW PRESSURE lamp	Flashes when water cut off or low pressure of water supply is detected.
⑤	Overheat	OVERHEAT lamp	Flashes when heater overheat is detected.
⑥		DISTILLED WATER key	Starts/stops dispensing distilled water
⑦		DEIONIZED WATER key	Starts/stops dispensing deionized water
⑧	Leak	LEAK lamp	Flashes when water leakage is detected.
⑨	DI filter	Deionization resin replacement time indicator	Illuminates when the water quality of deionized resin cartridge falls to a degree of "Caution (orange)", and flashes when it falls to a degree of "Warning (red)".
⑩	Pretreat filter	Pre-treatment cartridge replacement time indicator	Illuminates when usage time of pre-treatment cartridge is in a degree of "Caution (orange)", and flashes when it is into a degree of "Warning (red)".
⑪	Run	RUN Lamp	Illuminates when the controller is powered on.

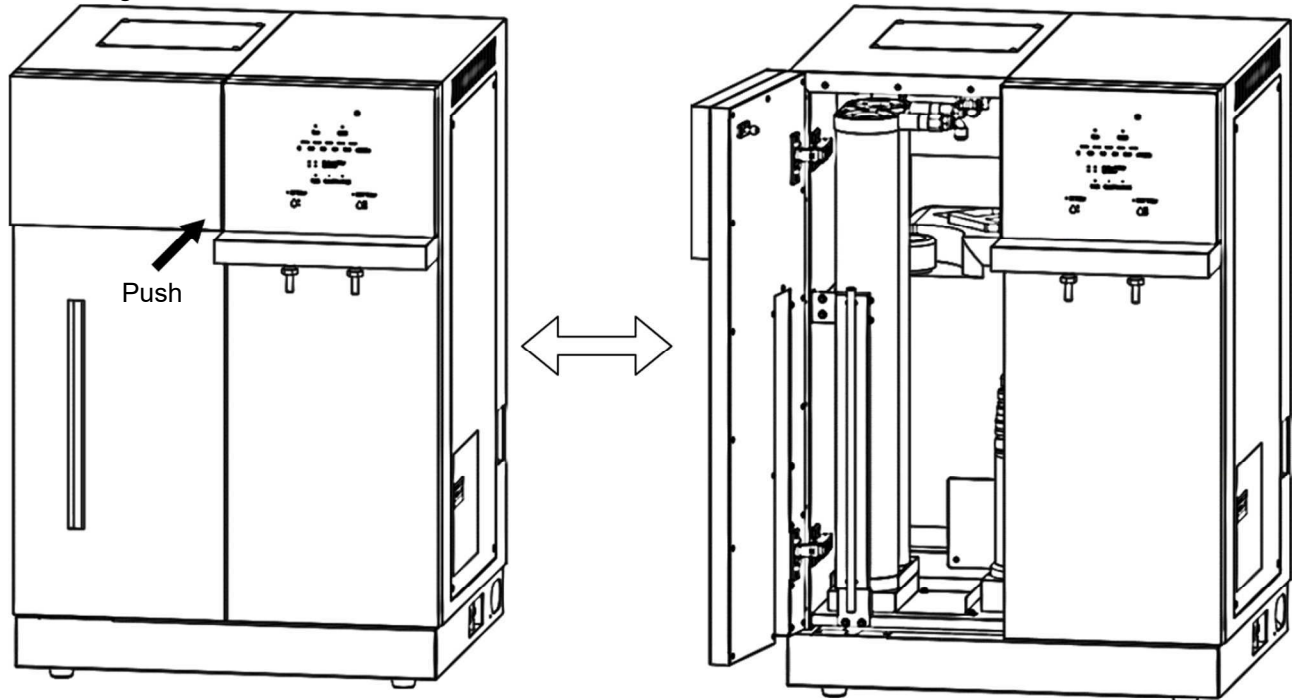
## 2. COMPONENT NAMES AND FUNCTIONS

### Door

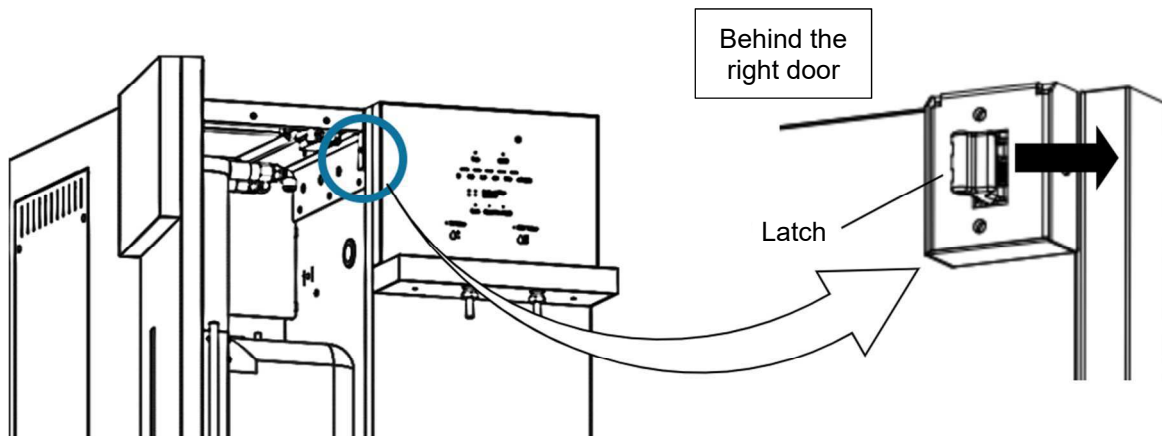
#### How to open and close the door

This unit opens on both sides.

The left door is a push-open type. Push in and release the door by hand to open it. To close it, push the door in again.



The right door is a latch type. To open the right door for maintenance etc., pull the latch on the back of the right door. To close it, push the door in.

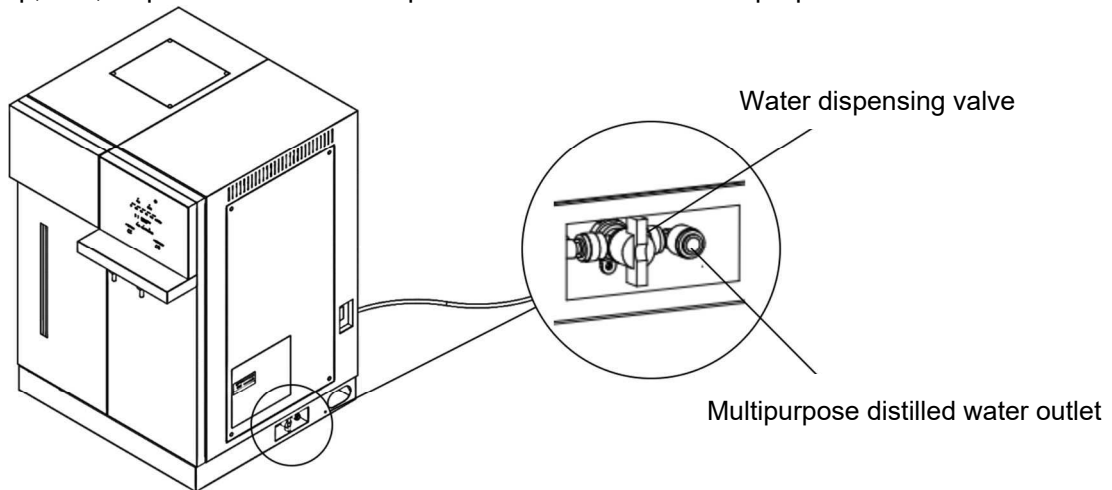


## 2. COMPONENT NAMES AND FUNCTIONS

### Multipurpose distilled water outlet

The multipurpose distilled water outlet is located on the right side of unit and equipped with one-touch joint. Connect the rigid tube with an O.D. of  $\phi 8$  mm. This allows to dispense distilled water directly from the tank. It can also be used as a connection port for distilled water replacement/drainage of tanks and options.

Since the structure uses the weight of the distilled water in the tank, when dispensing water without using a pump, etc., dispense the water at a position lower than the multipurpose distilled water outlet.

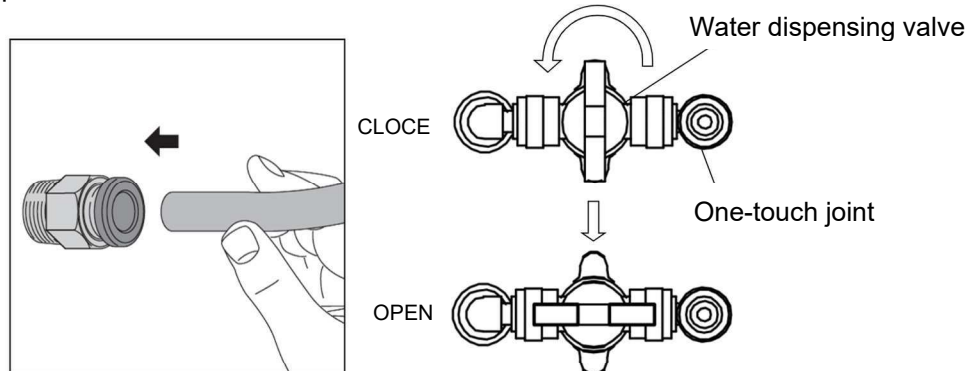


### Handling of one-touch joint

When using the multipurpose distilled water outlet, attach and detach the tube by following procedure.

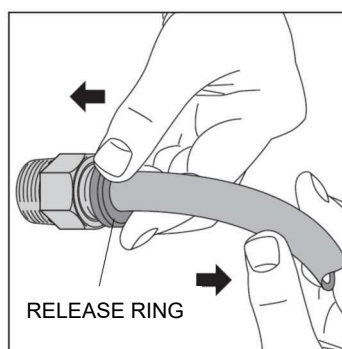
#### (1) Insertion of the tube

1. Check that the tube is cut at right angle, not deformed, and has no scratch or damage in the outer surface.
2. Insert the tube firmly deep into the one-touch joint. Unless the tube is inserted properly, water leakage may result.
3. After inserted, pull the tube to ensure that it does not come out.



#### (2) Removal of the tube

Close the water dispensing valve, push the release ring evenly in and pull out the tube. If the release ring is not pushed in sufficiently, it will not come off. If you pull it out forcibly, the tube may be scratched and shavings may remain inside the joint.








### 3. PRE-OPERATION PROCEDURES

#### Installation Precautions

	<b>Choose an appropriate installation site.</b>
	<p>DO NOT install unit:</p> <ul style="list-style-type: none"> <li>• Where installation surface is not completely level, not even or not clean.</li> <li>• Where flammable or corrosive gases/fumes may be present</li> <li>• Where external temperature will exceed 35 °C will fall below 5 °C</li> <li>• Where external temperature will fluctuate largely.</li> <li>• In excessively humid or dusty locations.</li> <li>• In direct sunlight or outdoors.</li> <li>• Where there is constant vibration.</li> <li>• In direct contact with the outside air</li> <li>• Where power supply is erratic.</li> <li>• Where there is a risk of freezing or condensation.</li> <li>• Where the raw water pressure is higher than 0.5 MPa</li> <li>• Where the raw water pressure is lower than 0.05 MPa</li> </ul>
	<p>Install unit in a location with sufficient space, as specified below.</p> <div data-bbox="542 784 1085 1299"> </div> <ul style="list-style-type: none"> <li>• Leave 30 cm or more space above unit.</li> <li>• On the right side of the unit, secure a workable space for installation, maintenance, and breaker operation.</li> </ul>
	<p><b>Always use cargo-handling equipment to move or install unit.</b></p> <p>Always use cargo-handling equipment to move or install unit. Transport unit with sufficient number of people and an appropriate work method when carrying out manually.</p>
	<p><b>Install unit on a level surface.</b></p> <p>Install unit on level and even surface. Failure to do so may cause abnormal vibrations or noise, possibly resulting in complications and/or malfunction.</p>

### 3. PRE-OPERATION PROCEDURES

	<b>Always connect power cable to appropriate facility outlet or terminal.</b>	
	Connect power cable to a suitable facility outlet or terminal, according to the electrical requirements.	
	Power requirements	[WG205] 100 V AC single-phase 50/60 Hz 12.5 A (ELB capacity: 15 A)
	Operational voltage range is $\pm 10\%$ of power rating, performance guarantee voltage range is $\pm 5\%$ , and frequency is $\pm 1\%$ . Check the line voltage on distribution board and properly evaluate whether to utilize a line being shared by other equipment. If unit is not activated by turning on ELB, take an appropriate course of action, such as connecting unit to a dedicated power source. Inserting multiple cords into a single outlet, using branch outlets, extension cords or old outlets, may cause a drop in voltage, which may affect performance, resulting in malfunction, accident, or fire.	
	<b>Ensure adequate supply water pressure.</b>	
	Operate with tap water pressure in the range of 0.05 to 0.5MPa.	
	<b>Raw water</b>	
	Use tap water as raw water. Do not use chemicals or lubricants. Equipment malfunction may result. Check that the raw water is not contaminated with red rust. If raw water is not clean, water quality may fall below specified quality level. Moreover, it may cause equipment malfunction. In case of poor raw water quality, use the wind cartridge (9020036001) in the optional filter housing (OA111).	
	<b>Please install in a clean atmosphere.</b>	
	If there is smoke or volatile gas in the atmosphere, the quality of distilled water may deteriorate. So install it in a clean atmosphere.	
	<b>Do not turn the pressure reducing valve.</b>	
	The pressure inside is adjusted by a pressure reducing valve. Do not turn the pressure reducing valve as it may cause performance degradation and water leakage.	

### 3. PRE-OPERATION PROCEDURES

#### Installation Procedure

1. Connect the water supply hose securely.

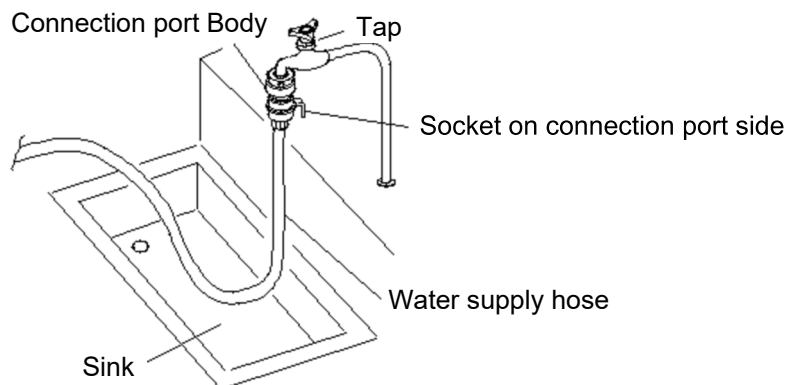


- Take out water supply hose set (tap connector, water supply hose) from among the accessories.
- Install unit on a level and stable location close to a water tap and sink. Improper connection may cause water supply hose or tap connector to come off, resulting in water splash or leakage.
- Note that tap connector can possibly break when fastened more than necessary.

2. Be sure to attach the water supply hose to a tap with the drainage facility.



If water supply hose is connected to a water tap without drainage facility, and the hose comes off or becomes damaged, severe water damage may result. Be sure to connect water supply hose to a water tap with drainage. Close the tap when not in operation. Use optional "water supply extension hose" when the drainage facility is away from the tap. (12. [OPTIONAL ACCESSORIES](#) (See P.48))

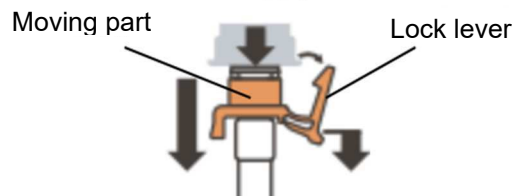


\* If you do not have a water tap facility, use the optional "water supply tap".

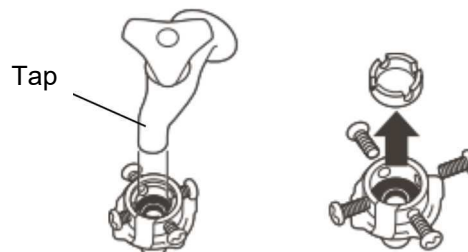
3. Make connection on the water tap side.



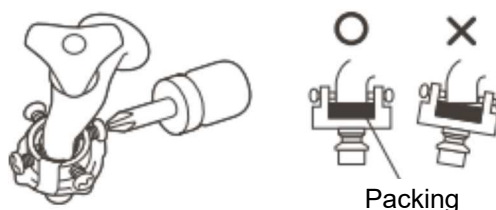
1. Hold the lock lever and knob (moving part) on the water supply hose and pull it down. Both parts of Tap connector and water supply hose can be separated.



2. Loosen screws according to the size of the water tap. If the water tap is too thick to fit in, remove the white ring inside.

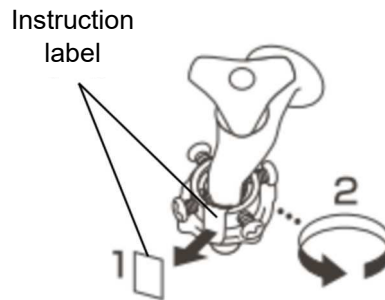


3. Fasten four screws uniformly and firmly while pressing Gasket evenly to the water tap spout.

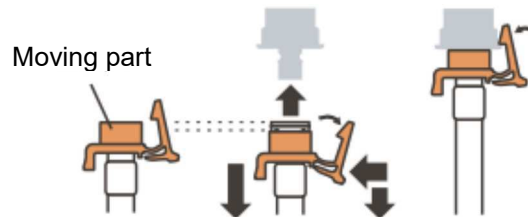


### 3. PRE-OPERATION PROCEDURES

4. Peel off the installation instructions label and turn the bottom to fasten securely.



5. Connect top connector and the water supply hose. Connect by inserting while pulling down the lock lever and knob (moving part). After connecting, pull the water supply hose and check that it does not come off.

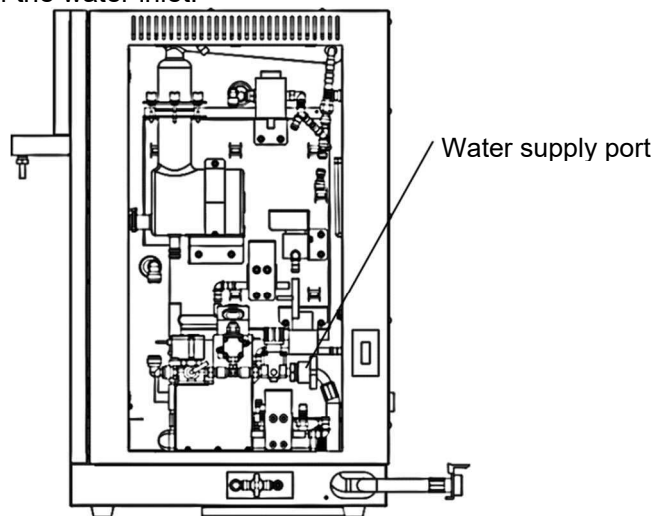


#### 4. Connection on main unit side.



Connect water supply hose according to the following procedure.  
Unless firm connection is ensured, water may leak.

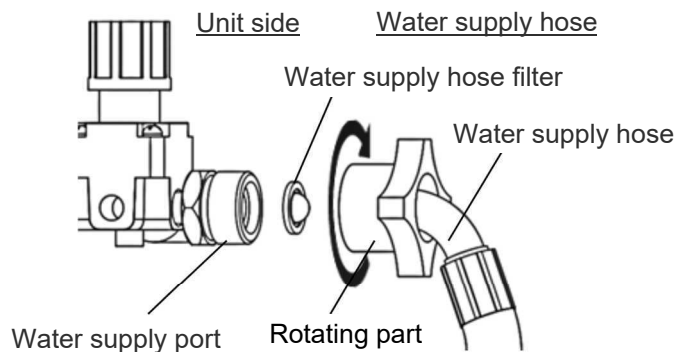
1. Open the maintenance port on the right side with a Phillips screwdriver. See the figure below for the location of the water inlet.



2. Insert the water supply hose filter into the water supply port in the direction shown in the figure.
3. Put the water supply hose into the unit through the left or right drains or the opening on the back. Insert the water supply hose parallel to the water inlet on the main unit, and

### 3. PRE-OPERATION PROCEDURES

turn the rotating part to fix it. The Gasket built-in the water supply hose prevents water leakage.



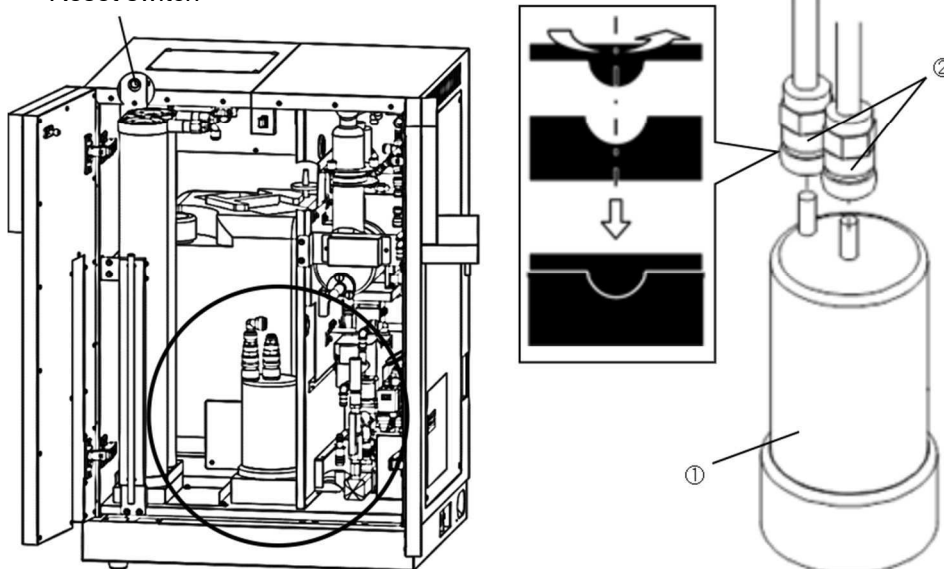
4. Close the maintenance port.

5. Connect pre-treatment cartridge securely.



- Connect pre-treatment cartridge according to the following procedure Remove caps on IN and OUT ports on pre-treatment cartridge.
  - 1. Make sure that ELB on unit is "OFF (○)" and that water tap is closed.
  - 2. Take out ①Pre-treatment cartridge from among the accessories.
  - 3. Remove caps on IN and OUT ports on ①Pre-treatment cartridge.
  - 4. Open the front door of this product and install the pre-treatment cartridge at the position shown on the left.
  - 5. Open front door. There are connection hoses labeled IN and OUT on ②Couplers. Connect the hoses to ①Pre-treatment cartridge so that the IN and OUT coincide with the IN and OUT of the cartridge.
  - 6. For connection, align the unevenness of the ring attached to the coupler, align the ③ coupler with the connection of the cartridge, and push it in until it clicks.
  - 7. When the connection is properly made, turn ON (I) ELB and wait for about 10 seconds. Press the reset switch inside the unit for two seconds.
- \* When removing, go back to steps 1 to 6 above.

Reset switch



### 3. PRE-OPERATION PROCEDURES

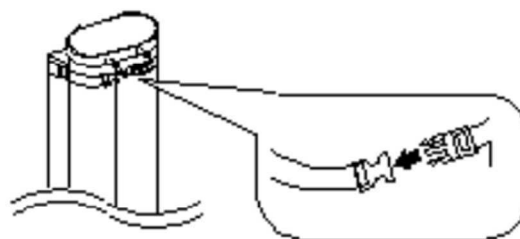
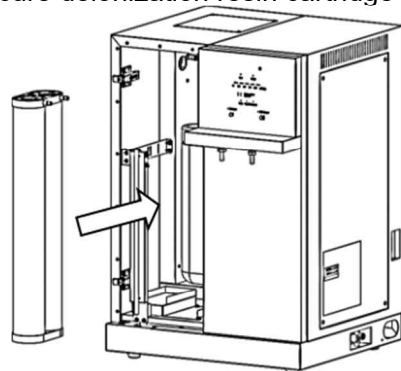
#### ⚠ CAUTION

- After inserting pre-treatment cartridge coupler, pull it once to confirm that the coupler is securely connected, and will not come off.
- Pre-treatment cartridge coupler can be easily removed by vertically pulling it out while pulling up the bottom of coupler to the hose side. Be careful that water may drip from pre-treatment cartridge when the coupler is removed.

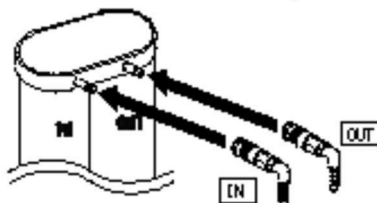
6. Connect deionization resin cartridge (CPC-S) securely.



- Connect deionization resin cartridge (CPC-S) according to the following procedure. Remove the rubber caps from the IN and OUT of the cartridge.
1. Make sure that ELB on unit is "OFF (○)" and that water tap is closed.
  2. Take out deionization resin cartridge (CPC-S) from among the accessories.
  3. Install deionization resin cartridge on the mount in unit.
  4. Secure deionization resin cartridge with fixing band of the mount.



5. Push the one-touch joint marked with (OUT CPC-S) into the outlet (on right) of deionization resin cartridge until it clicks. Push the one-touch joint marked with (IN CPC-S) into the inlet (on left) of deionization resin cartridge until it clicks.



\* When removing, go back to steps 1 to 6 above.

#### ⚠ CAUTION

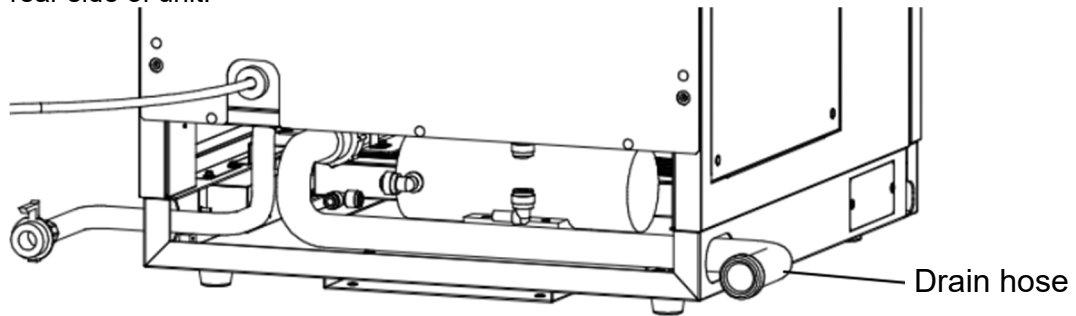
- When replacing deionization resin cartridges (CPC-S), drain about 5 L of water to remove the initial impurities and to bleed air. In doing so, release all the air in the resin until the water comes to flow without intermission.
- One-touch joints may be stiff at the outset. Note that forcing one-touch joint diagonally into plug-in port may result in damage to one-touch joint or plug-in port. If it is difficult to connect one-touch joint to a cartridge, take the cartridge off the resin cylinder mounting plate, and carefully push the joint into plug-in port.
- After inserting one-touch joint, pull it once to confirm that one-touch joint is securely connected, and will not come off.
- To remove the deionization resin cartridge, pull the one-touch joint frontward with the black portion pressed in. Be careful that water may drip from the cartridge when the one-touch joint is removed.
- **Connecting the IN and OUT of each resin cartridge in reverse may cause malfunction. Use caution when making connection of the cartridges.**

### 3. PRE-OPERATION PROCEDURES

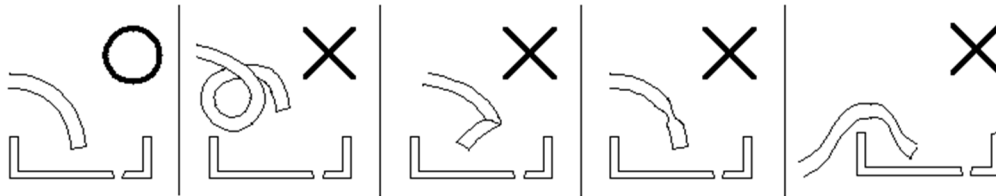
#### 7. Pay due attention when routing drain hose.



- See the figure below, pull out the hose from the drain hose connection in the left, right or rear side of unit.



- Make sure that drain hose does not bend, or form protrusions.
- If drain hose is bent and water is not drained properly, it may cause degradation of water quality or damage to the hoses inside unit.
- Lead drain hose to a drainage facility lower than drain port of unit. Avoid piping that allow puddles in the middle or end of the hose, which can interrupt water to be drained.
- The drain hose end should be positioned in drainable area. While producing distilled water, about 2 L/min of coolant is discharged. In addition, the amount of drainage water will increase when draining boiler, there is a need for a drainage facility with sufficient capacity.



- Be sure to draw drain hose into a drainage facility

#### 8. After installation



Unit may tip over or fall, causing injury or death during an earthquake or other unforeseen incident. Be sure to stabilize unit properly to assure safe operation and a safe work area.

#### 9. Check drainage temperature of coolant.



- When draining boiler, drainage temperature may exceed 60 °C. As there is a risk of burns, drain the water away from the work environment so that it will not be easily touched.
- Depending on the raw water pressure and raw water temperature, high temperature coolant may flow out. If vinyl chloride pipes are used in the drainage system of the sink, it may cause deterioration or breakage of the pipes. Use the optional drain trap (OA104) when the drain temperature is high (60 °C or higher). Likewise, use the optional Drain trap (OA104) if not using the heat-resistant piping and joints, even if drainage temperature is 60 °C or less. ([12. OPTIONAL ACCESSORIES](#) (See P.48))
- Drain trap (OA104) reduces temperature by temporarily storing the drainage water. And then adds tap water to cool it furthermore. The drainage water will be discharged after adequately cooled. For details on the drain trap, contact to our distributors from whom you purchased, our sales office, or the customer service center.

## 4. Preparation for operation

### Check again before use.

#### (1) Water supply

- Be sure that water supply hose is securely connected.
- Open the tap.
- Check that there is no water leak from the connection of water supply hose.

#### (2) Drainage water





- Be sure that drain hose is securely connected.
- Make sure that the drain hose is connected to a sink without being bent or twisted.
- If drain hose is bent or twisted, it may lead to a water leak as well as to hinder proper unit operation.
- Lead drain hose to a drainage facility lower than drain port of unit. If the drain hose is routed higher than the unit, drainage will flow back and it may lead to a water leak as well as to hinder proper unit operation.

Inspect drain hose periodically to confirm that water drains properly.

#### (3) Power supply

- Check that power cable is connected to a proper power source.

#### (4) Before operation

- Turn ON (I) ELB, and calibrate unit before pressing .  
Carry out calibration when unit is used for the first time ([Initial operation \(See P.27\)](#)) or when heater of boiler is replaced (Tank air vent filter replacement (See P.31)). Hold down  +  press the . Unit performs calibration (heater temperature and power supply voltage measurements) for about five minutes, and then automatically shifts to the distilling operation. All the keys become unresponsive while calibration is in progress. If power failure occurs during calibration, it must be carried out once again.

#### (5) Precautions for initial operation

- At the time of initial energization, or after draining distilled water storage tank, it takes time to begin dispensing distilled water because air is contained in the pump and piping. The pump may generate a loud noise when dispensing distilled water, but this is not a failure of unit. If the noise persists, remove membrane filter and dispense distilled water to bleed air.
- Likewise, when dispensing deionized water immediately after replacement of pre-treatment cartridge and deionization resin cartridge, it takes time to become ready due to air accumulation. When replacing each cartridge, drain about 5 L of water to remove the initial impurities and to bleed air.

#### (6) Use of water level gauge

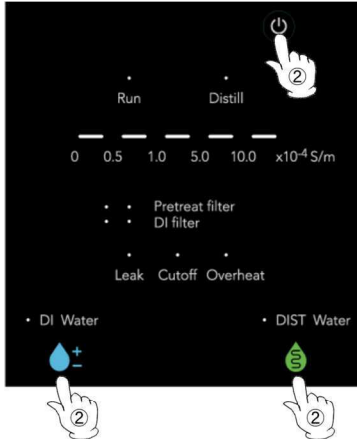
- This unit has water level gauge in the right part of the front panel, which shows an approximate tank water level. (only as a guide)  
However, in rare cases, air may enter the water level gauge and it may deviate from the actual tank level. Where this is the case, discharge distilled water until all the air comes out, then unit will operate normally.

## 5. OPERATION PROCEDURES

### Initial operation

Perform initial operation according to the following procedure.

#### 1. Turn on power



Carry out calibration when unit is used for the first time.

① Turn ON( ) ELB.

② Hold down  +  and press .

After five minutes, distillation starts automatically.

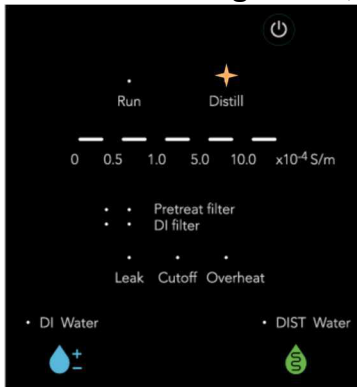
- RUN lamp illuminates.
- A lamp on the CONDUCTIVITY indicator illuminates, indicating quality of deionized water.

For the second and subsequent times:

① Turn ON( ) ELB.

② Press .

#### 2. After draining boiler, distillation begins.



DISTILL lamp illuminates.

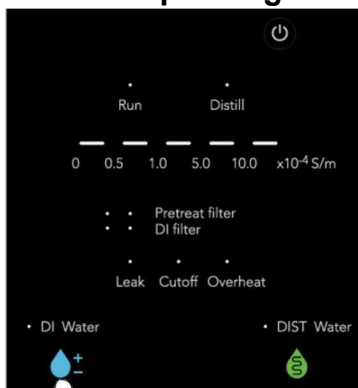
When distilled water tank becomes full, distillation stops.

DISTILL lamp goes out.

## 5. OPERATION PROCEDURES

### Pure Water dispensing


#### Manual Dispensing of deionized water



Press .

Water can be dispensed from deionized water outlet.

- DISTILL lamp goes out.
- DEIONIZED WATER lamp illuminates.

Press again .

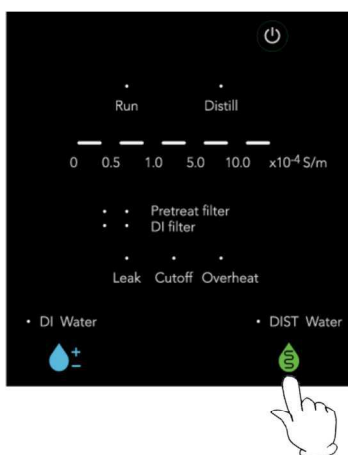
It stops dispensing of deionized water.

- DEIONIZED Water lamp goes out.

#### Manual dispensing of distilled water

##### Check


Check water level gauge and confirm that distilled water is stored in the tank more than 5 L.  
Water cannot be dispensed if the amount of water stored is small.



Press .

Water can be dispensed from distilled water outlet.

- DISTILLED WATER lamp illuminates.

Press again .

It stops dispensing of distilled water.

- DISTILLED WATER lamp goes out.

##### Note

When an optional membrane filter is installed, pump may generate a loud noise when dispensing water, but this is not a failure of unit.

If the noise persists, remove membrane filter and dispense distilled water to bleed air.

## 5. OPERATION PROCEDURES

### Water Quality Indication

#### Measuring electrical conductivity

CONDUCTIVITY indicator on the control panel indicates conductivity at the outlet of deionization resin cartridge.

Use water quality readout of deionized water as a guide to determine a time for deionization resin cartridge replacement.

Be sure to read display with the electrode completely immersed in water, i.e., while dispensing deionized water.

In the following cases, the electrode is not immersed in water and is affected by air bubbles. Therefore, displayed values are not accurate.

1. When unit has just started operation, or during stop
2. Immediately after replacement of deionization resin cartridge and pre-treatment cartridge

#### Electrical conductivity

- Electrical conductivity ( $\rho$ ) is a numerical value representing the ease of passing electricity. When greater quantity of electrolytes or impurities are dissolved, water is more likely to pass electricity and in that state the value of electrical conductivity is high.
- The smaller value represents the better purity of pure water. However, the value of electrical conductivity does not show the content of non-electrolytic substances (organic substances, colloidal substances, dissolved gases, microorganisms, etc.) but only indicates electrolytic substances. Consider it as one index of the purity of water.

#### Water quality of deionized water and distilled water

Deionized water and distilled water have the following characteristics. Use them suitably for the purpose.

It is the best to use pure water immediately after dispensing. If it is not going to be used for a long period of time, drain all the water from distilled water tank.

If the water has been stored in distilled water tank for a long period of time, drain the tank and produce distilled water once again.

##### 1. Deionized water

Most of the electrolytes in the water are removed, and water with the lowest electrical conductivity can be produced. Occasionally, the purity of water more or less drops while the resin is new, or when produced after extended storage of unit.

##### 2. Distilled water

Distillation can remove both electrolytic and non-electrolytic substances averagely, except for substances of low boiling point such as ammonia.

However, in the production process (condensation and storage), water absorbs carbon dioxide gas in the air, and produces carbonic acid gas. This makes electrical conductivity  $1-2.5 \times 10^{-4}$  S/m ( $1-2.5 \mu\text{S/cm}$ )  $25^\circ\text{C}$ , which is worse than that of deionized water, and pH will be 5-6, indicating weak acidity.

See JIS K 0102 (Testing methods for industrial wastewater) for how to remove dissolved gas (oxygen/carbon dioxide) in pure water.

## 6. Inspection and Maintenance

### Precautions before Inspection



#### WARNING

- Be sure to disconnect power cable before daily inspection and maintenance.
- Perform inspections and maintenance when unit is at room temperature.
- Never attempt to disassemble unit.

### Precautions in Daily Maintenance



#### CAUTION

- Clean unit using soft damp cloth. Never use benzene, paint thinner, alcohol, scouring powder, scrubbing brush or other abrasives and solvents to clean unit. Superficial damage and/or discoloration, as well as deformity to some components may result. Always turn off main power switch (ELB) prior to cleaning or maintenance.

### Maintenance and Inspection

#### Maintenance and inspection period

Daily inspection is highly recommended ended to ensure proper operation for longer period of time.

- **Maintenance and inspection to be carried out by yourself**

item	Estimated timing	Description
Deionization resin cartridge (CPC-S) replacement	When a red lamp illuminates in the replacement time indicator	Treatment capacity: approx. 700 L with $200 \times 10^{-4}$ S/m of raw water
Pre-treatment cartridge replacement	When a red lamp illuminates in the replacement time indicator, Approx. 6 months	Treatment capacity: Approx. 5000 L of city water in Tokyo. When raw water quality is poor, the cartridge may need to be replaced sooner.
Tank air vent filter replacement	1 year	Check the hose is not discolored.
ELB inspection	1 month	Inspect each month
Power Plug inspection	1 month	Inspect each month
Cleaning water supply hose filter	6 months	When raw water quality is poor, more frequent treatment may be required.
Draining distilled water tank	3 months	Discharge water when unit is not in use for a long period of time.
Boiler drainage	Once a day	Discharge water when unit is not in use for a long period of time.
Membrane filter (optional) replacement	3 months	Treatment capacity: approx. 500 L with pure water When raw water quality is poor, more frequent replacement may be required.

- **Maintenance and inspection to be carried out by Yamato Scientific**

item	Estimated timing	Description
Washing of Distiller	3 months (recommended)	Should be periodically carried out to maintain water quality.
Hose replacement	2 years	Check the hose and its connection each month for water leakage or discoloration.
Pump replacement	2 years	Replace once every two years.
Solenoid valve and pressure reducing valve replacement	5 years	Replace once every five years.

- Be sure to replace pre-treatment cartridge once a year regardless of whether or not replacement notification is provided.
- Replace membrane filter once every 6 months irrespective of the frequency of use.
- Notification of the consumables replacement time is made based on the water quality and the total water flow time. The actual replacement time varies depending on the quality of raw water.

## 6. Inspection and Maintenance

### Replacement of deionization resin cartridges

If the quality of the deionized water deteriorates, it is necessary to replace the deionization resin cartridge.

See "[6. Connect deionization resin cartridge \(CPC-S\) securely.](#)" (P. 24) for replacement procedure.

Alarm will be automatically released when replacement completes.

- Long term storage of the cartridge will compromise the performance of the cartridge, leading to degraded water quality and treatment capacity. Preparing (requesting for) the cartridge right before replacement is, therefore, recommended. The standard storage period is about four months.
- Dispose of the replaced cartridges according to the local laws and regulations. When returning cartridges to us only in Japan, fill in the invoice attached to a replacement cartridge and send it with the used cartridges.
- Yamato Scientific Co., Ltd. promotes proper collection and recycle for environmental preservation.
- When replacing deionization resin cartridges (CPC-S), drain about 5 L of water to remove the initial impurities and to bleed air. In doing so, release all the air in the resin until the water comes to flow without intermission.

### Pre-treatment cartridge replacement

The pre-treatment cartridge needs to be replaced every 5000 L of water flow volume or every 180 days.

See "[7. Connect pre-treatment cartridge securely.](#)" (P. 23) for replacement procedure. After replacement, reset the total water flow time for consumables by press the reset switch.

- Note that continuing to use the cartridge without replacement may shorten the life span of deionization resin cartridge.
- Dispose of the replaced cartridges according to the local laws and regulations. When returning cartridges to us only in Japan, fill in the invoice attached to a replacement cartridge and send it with the used cartridges.
- Yamato Scientific Co., Ltd. promotes proper collection and recycle for environmental preservation.

### Tank air vent filter replacement

The tank air vent filter needs to be replaced every year.

See "[Main Unit](#) (P.10)" for the installation location. Remove the hose attached to the used air vent filter, fit it to a new air vent filter, and mount it to the tank.

- If the air vent filter is used without replacement, the water quality in the distilled water tank will deteriorate more quickly.

### Heater replacement procedure

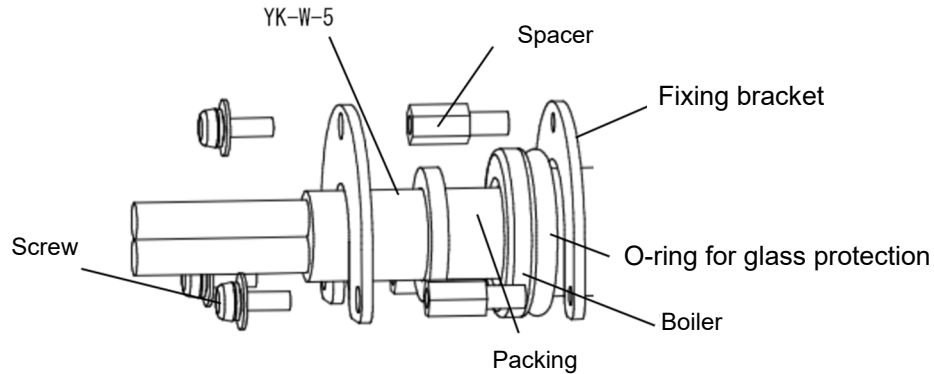
If heater is disconnected or damaged due to scale build-up, replace heater according to the following procedure.

We recommend that you ask the sales agent from whom you purchased the product, our sales office, or the customer service center to replace the heater.

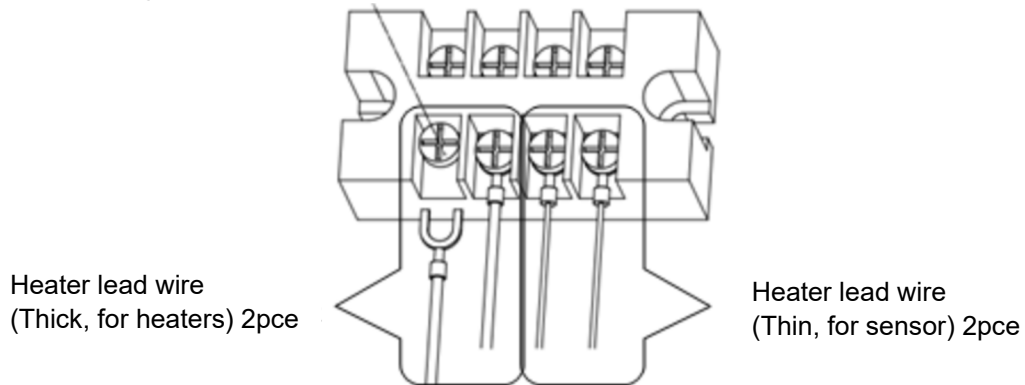
1. Turn OFF (○) ELB.
2. Close the water tap.
3. Leave unit at least 30 minutes to cool boiler down, and open front door and turn on boiler drain cock.
4. Loosen the four screws on the underside of the terminal block and disconnect the heater lead wire.
5. Loosen the screw, remove the fixing bracket, and pull out the heater.
6. Remove the gasket and cap nut from damaged heater. Be careful not to lose the gasket as it may stick to the boiler.
7. Put the gasket and the fixing bracket on new heater.  
Use caution not to touch heater with bare hands, in order to prevent heater from being soiled by handling.




## 6. Inspection and Maintenance

- Attach it to the boiler so that the "YK-W-5" mark on the heater is always on top, and tighten it by hand so that the distance between the fixing brackets is even.



- Check the mounting position of the heater lead wire and fix it to the terminal block.



- Close boiler drain cock.
- Close front door and then open the water tap.
- Turn ON (I) ELB on the right side of unit.
- The display on the control panel will show the standby screen.
- Be sure to press  +  while pressing  to perform calibration operation. Calibration is to store temperature of the sensors under normal operating conditions in the internal controller as a reference temperature. When heater temperature exceeds this reference temperature by 20 °C or more, unit will detect the abnormality.
- After calibrating for about five minutes, unit automatically begins normal operation.

### Hose replacement

Use only Yamato-prescribed components for the replacement hose.

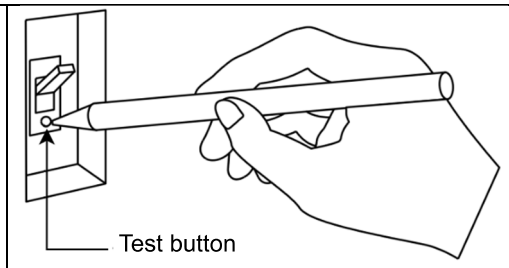
We recommend that you ask the sales agent from whom you purchased the product, our sales office, or the customer service center to replace the heater.

◆Contact original dealer of purchase, if further questions arise concerning maintenance procedures.

## 6. Inspection and Maintenance

### ELB inspection

- ◆ Inspect ELB ON and OFF function.
  - Prepare unit for inspection by connecting power cable to a facility outlet or terminal.
  - Turn ON(ⓘ) ELB.
  - Press the test button on ELB using a ball-point pen or other fine-tipped object. If ELB shuts OFF (⓪), it is functioning normally.



\*ELB must be inspected, as prescribed above, prior to every instance of extended or overnight operation.





### Power Plug inspection

- ◆ Check power plug for damage
  - Check power plug for dust or dirt on its prongs, and clear off if any accretions found. If there is dust or dirt on it, remove it.
  - Confirm that the prongs of power plug are not bent or damaged. Replace if bent or damaged.
  - Check the power plug for discoloration or abnormal heat generation. If there is discoloration or abnormal heating, the internal contact of the outlet may be faulty.

### Washing of Distiller

Scale builds up on distiller (boiler, condenser, heater) by distillation. Scale will accumulate as the duration of use becomes longer, which may cause drop in water quality or interruption of heater. Clean distiller regularly with the included scale cleaner. We recommend that you ask the sales agent from whom you purchased the product, our sales office, or the customer service center to clean the distiller.

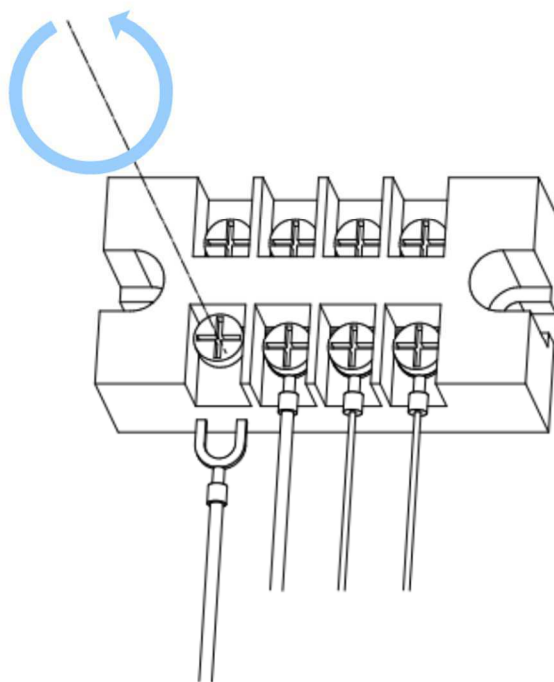
Cleaning distiller requires tools such as a Philips screwdriver and plier and these tools should be prepared separately. Prepare in advance.

 <b>Read carefully before cleaning condenser.</b>	
	Turn OFF (⓪) ELB. Be sure to turn OFF (⓪) ELB before cleaning distiller. Failure to do so may result in electric shock.
	Always carry out cleaning after distiller is sufficiently cooled. Distiller becomes very hot after distillation. Leave unit at least 30 minutes after turning OFF (⓪) ELB. Unless, it may cause burn injury or damage to condenser.
	Use protective equipment. Always wear protective equipment (gloves, mask, and glasses) when cleaning distiller. Direct contact with bare hands may cause damage to distiller. If the cleaner comes in contact with any part of human body, wash thoroughly with clean water.
	<b>Handling of distiller</b> <ul style="list-style-type: none"> <li>● Be careful not to drop the boiler or condenser when you remove the boiler. Since distiller is made of a fragile material (boiler/condenser: hard glass, heater: ceramic), it may break on impact of contact or falling.</li> <li>● Be sure to install the gasket and hose clamp at boiler and the condenser joint. Water leakage may result.</li> </ul>
	<b>Handling of heater</b> <ul style="list-style-type: none"> <li>● Do not touch heater with bare hands. Doing so may cause damage to heater.</li> <li>● Do not forcibly bend the heater lead wire in an improper direction. The lead wire may break.</li> <li>● Ensure that the screw is not loose after fastening the lead wire to the terminal block. Electric shock may result.</li> </ul>

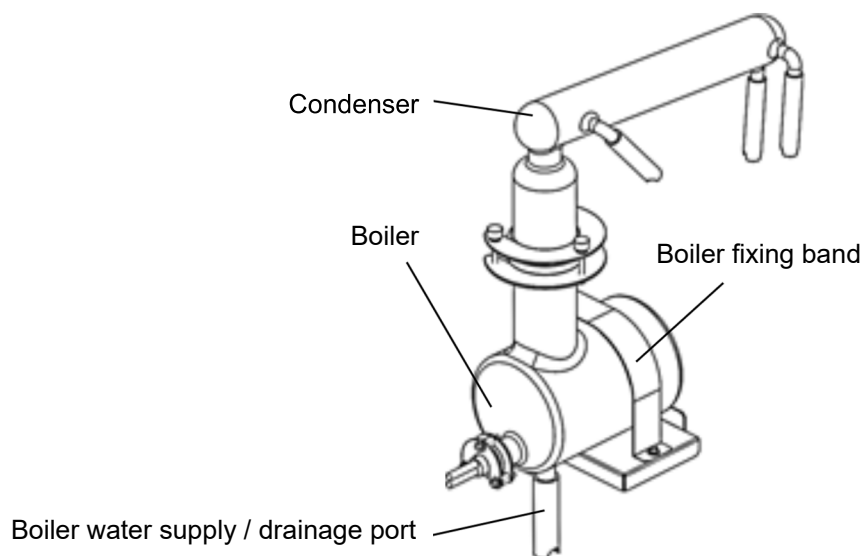
## 6. Inspection and Maintenance

### Removing distiller

1. Turn OFF (○) ELB.
2. Close the water tap.
3. Turn OFF (○) ELB and wait for at least 30 minutes to dissipate heat, and then open front door and turn on boiler drain cock.
4. Open the right door of the main unit, loosen the four screws on the lower side of the terminal block with a Phillips screwdriver, and pull out the heater lead wire.



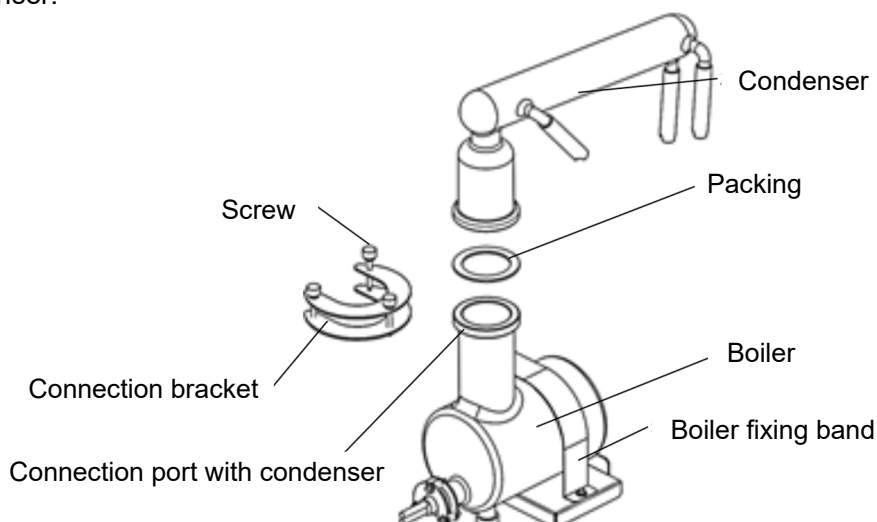
5. Remove the maintenance port on the right side and disconnect the hose connected to the boiler. Remove the distilled water outlet by twisting the hose clamp with a tool to disengage the meshing portion (serrated portion). Remove the glass carefully, it may break if excessive force is applied.



6. Remove two screws of the boiler fixing band with a Phillips screwdriver, and take boiler and condenser out of main unit.

## 6. Inspection and Maintenance

- Loosen the three knurled screws on the connector and remove the boiler. Be careful not to drop the condenser.



### Cleaning boiler

- Density adjustment of scale cleaner
  - Prepare about 2 L of hot water at 50 to 60 °C.
  - Add about 200 g of scale cleaner (Orgazole) to the hot water, and stir it thoroughly.
- Plug water inlet/drain port at the bottom of boiler with a rubber stopper, etc.
- Secure boiler on a level and stable surface to prevent the cleaner from spilling.
- Pour the cleaner into boiler through the connection port to condenser. (At that time, do not need to remove heater.) Most scale will be removed in about four to five hours. Drain scale cleaner out of boiler when the scale cannot be completely removed and much left inside boiler, add the cleaner and wash once again.
  - Once scale removing completes, dismantle heater from boiler, and wash each of them thoroughly with tap water. Always clean heater in a large beaker or other container filled with water in order to avoid wetting lead wire and its outlet. Do not pour water directly through a water tap.
  - Follow the procedure below if solid scale remains after washing with the cleaner.  
Boiler: Scrape off with a brush, etc.  
Heater: Scrape off with a wood piece or other soft object.

Ensure that all the scale over heater is removed evenly and not sparsely left in solid form. In an extreme case, the thermal resistance may increase only at that part, causing serious damage to heater.



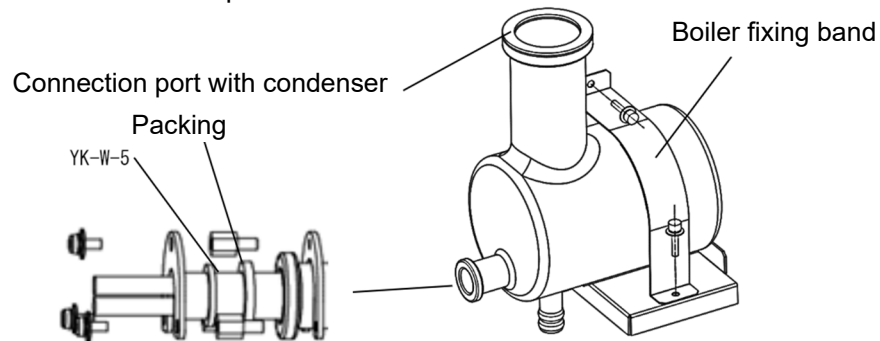
#### Handle scale cleaner with care

- Cleaning boiler and heater in shorter period is recommended. When large amount of scale accumulates, it becomes more difficult to remove, and may lower the volume of dispensing distilled water, or cause damage to heater.
- After cleaning, discharge the cleaner and neutralize it with neutralizer (sodium hydrate, etc.). Use pH test paper to check whether the liquid has been neutralized. The main component of the scale cleaner is sulfamic acid (the pH of the water solution is about 1)
- Store scale cleaner in a sealable container and avoid high temperature and humidity.
- Always wear protective equipment (gloves, mask, and glasses) when handling the cleaner.
- If the cleaner comes in contact with any part of human body, wash thoroughly with clean water.
- Empty container must not be used to contain drinks.
- Do not release the cleaner into agricultural canals and fields. Doing so may cause withering of crops.

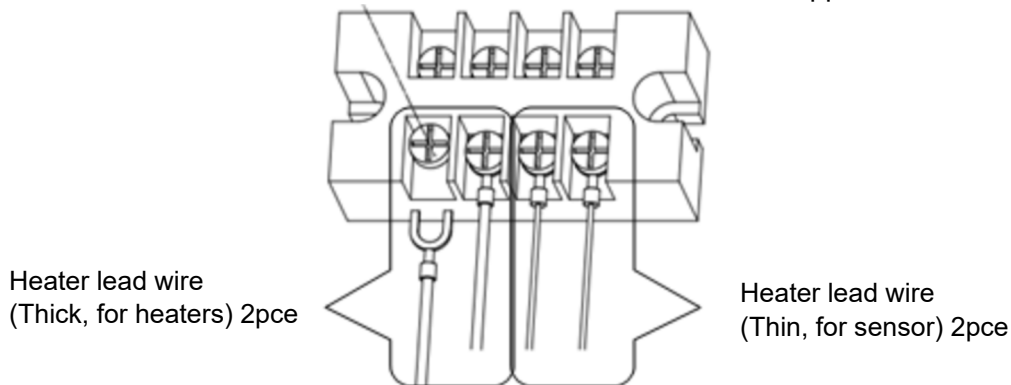
## 6. Inspection and Maintenance

### Installation of boiler

1. Secure boiler with the boiler fixing band so that the connection port of the condenser becomes horizontal. Make sure that the gasket is placed inside the cap nut and install heater into boiler so that the letter "YK-W-5" turns up.



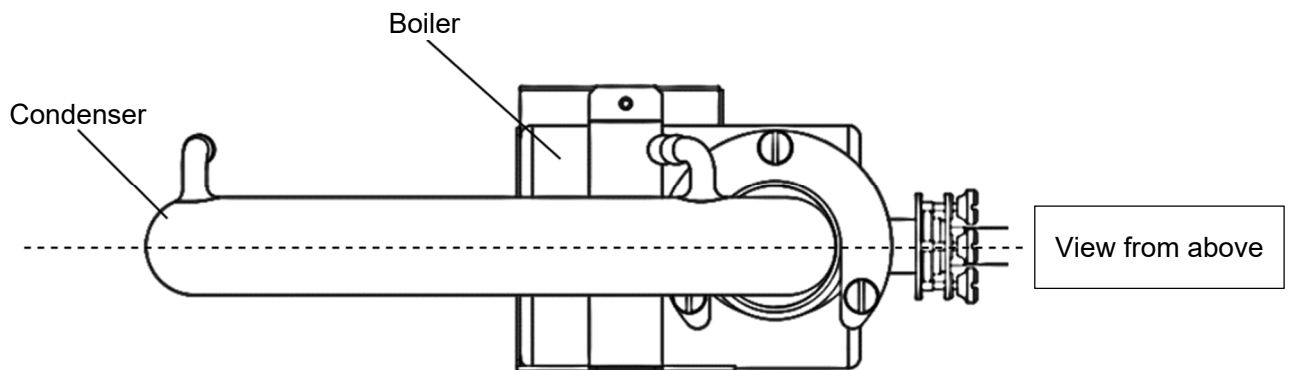
2. Connect the four heater lead wires to the terminal block. There is no problem even if the thick heater lead wires and the thin heater lead wires are connected in opposite directions.



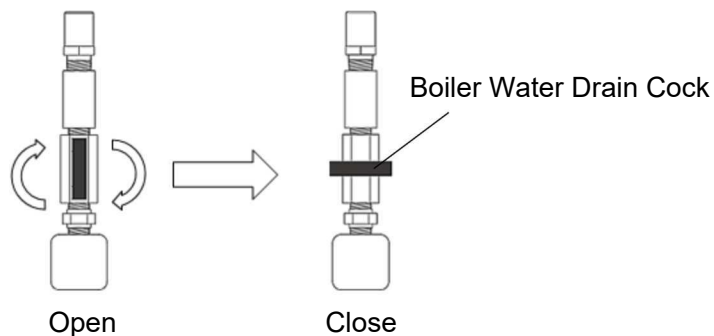
3. Insert a hose into boiler water inlet/drain port and fix it with a hose clamp.

### Installation of condenser

1. Insert a gasket between the connection ports of boiler and condenser. Secure boiler and condenser in the same orientation using the attachment bracket.



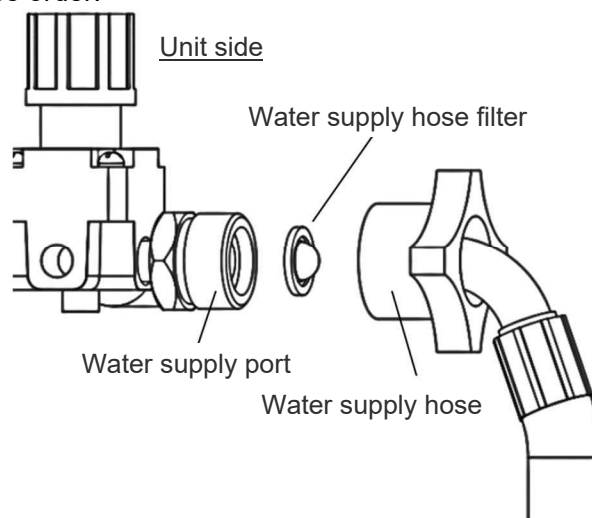
2. Close boiler drain cock.



## 6. Inspection and Maintenance

### Cleaning water supply hose filter

1. Turn "OFF (O)" ELB on the right side of unit, close the water tap, and remove the water supply hose from the tap connector.
2. Remove a water supply hose filter inside the water inlet or water supply hose.
3. Clean the water supply hose filter with tap water. Use a brush to clean the metal parts.
4. Assemble it in the reverse order.



\*Clean the filter of water supply hose once in about 6 months.

## 7. EXTENDED STORAGE AND DISPOSAL

### Extended storage



WARNING

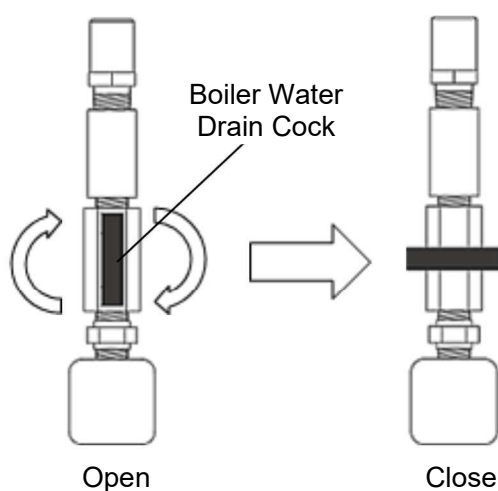


#### When unit will be out of service for an extended period

Be sure to turn OFF (○) ELB and close water tap for safety. Leaving the water stored in boiler and distilled water tank will allow the growth of bacteria or algae, impairing the water quality. Discharge water by following the steps below.

##### Drain boiler

1. When draining boiler, turn OFF (○) ELB, close water tap and wait for at least 30 minutes to dissipate heat, and then open front door and turn on boiler drain cock.
2. Open boiler drain cock.
3. Check that all the water in boiler and float cylinder has been discharged.
4. Be sure to close boiler drain cock. If boiler drain cock is open at the next use, all the water will be discharged from drain cock and will not flow into boiler, hindering distillation.



##### Drain distilled water from tank

1. Attach the tube to the multipurpose distilled water outlet on the right side of the unit. See "[Multipurpose distilled water outlet \(P.18\)](#)" for connecting procedure.
2. Turn the cock of the ball valve counterclockwise to open it. Water is drained from the distilled water tank.
3. After draining is completed, turn the cock to the right to close the ball valve.



#### When not in use during the night or holidays.

- Turn OFF (○) ELB on the right side of unit.
- Be sure to close the tap.
- If unit is used in a place where it becomes extremely cold in winter, beware of freezing of tank, boiler, and condenser while unit is in storage.

## 7. EXTENDED STORAGE AND DISPOSAL

### Disposal Considerations



#### CAUTION

	<b>Unit disposal</b>
	<ul style="list-style-type: none"> <li>• Dispose of this unit in accordance with local laws and regulations.</li> <li>• Do not leave unit where it may be unattended, or in a location where children may have access.</li> </ul>

Dispose of or recycle this unit in a responsible and environmentally friendly manner.

Yamato Scientific Co., Ltd. strongly recommends disassembling unit, as far as is possible, in order to separate parts and recycle them in contribution to preserving the global environment. Major components and materials, comprising WG205 unit are listed in the table below

Component Name	Material
<b>Exterior Parts</b>	
Exterior	Chromium-free electrogalvanized steel sheet, baked-on finish
Exterior rear panel	Chromium-free electrogalvanized steel sheet, baked-on finish
Door	Chromium-free electrogalvanized steel sheet, baked-on finish
Door back plate	Stainless steel sheet metal
Mounting plates (coated)	Chromium-free electrogalvanized steel sheet, baked-on finish
Mounting plates (uncoated)	Stainless steel sheet metal
Hinges	Stainless steel sheet metal
Rubber feet	Synthesized rubber
Name plates, Labels	Polyethylene terephthalate
<b>Water Circuit</b>	
Boiler	Hard glass
Condenser	Hard glass
Float cylinder	Polypropylene
Pure water tank	Polyethylene
Drain port	Polyethylene
Float cylinder branch tube	Polyethylene
Electrode holder	Polypropylene
Pure water outlet	Polypropylene
Control panel	ABS resin
Resin cylinder case	Polypropylene rubber
Deionization resin	Polystyrene resin
Water quality gauge electrode	Titanium
Heater	Ceramic
<b>Internal Piping</b>	
Water supply hose	Vinyl chloride
Drain hose	Vinyl chloride
Hose (transparent)	Silicon rubber
Hose (white)	Polypropylene
Hose clamp	Polyacetal
Hose nipple (resin black)	Polyamide
Hose nipple (resin white)	Polypropylene
Hose nipple (metal)	Brass
One-touch joint (white/gray)	Polyacetal

## 7. EXTENDED STORAGE AND DISPOSAL

<b>Electrical Parts</b>	
Pump	Casing: polypropylene Impeller: Polypropylene Magnet: Ferrite magnet Motor case: Iron Rotor: Iron
Solenoid valve (metal)	Body: brass Resin: Body polyacetal
Float switch	Polypropylene
Power cable, wiring and other components	Synthetic rubber or resin coated wiring materials, boards

## 8. TROUBLESHOOTING

### Error Indications and Descriptions

#### Troubleshooting guide

When any of these error indications below are seen on the control panel, confirm the lighting pattern and its detail. Then turn OFF (○) power immediately and close the tap. When an error message is displayed, replacing consumable(s) or unit inspection is required.

Contact original dealer of purchase for assistance. Please inform of the error indication shown on the control panel.

Symptom	display			Possible causes	Possible measures
	Leak	Cutoff	Overheat		
Heater interruption or disconnection	On	On	Flashing	If heater temperature does not rise after a certain time has passed in distilling operation.	Replace heater.
Boiler water level error	Off	On	Off	If the heater operation water level is entered OFF after the abnormality determination time has passed from the start of water supply to boiler.	Check that manual drain cock is open, and there is no problem with solenoid valve and water supply path.
Boiler drain error	On	Off	Off	If the heater operation water level is entered ON after the abnormality determination time has passed from the start of boiler drain.	Turn OFF (○) ELB.
Coolant error	Off	Off	On	When the boiler overflow input of float cylinder keeps ON for longer than the abnormality determination time.	Check the coolant solenoid valve and cooling water path.
Boiler water level gauge error	On	Flashing	On	When the float switch in the float cylinder is suspected to be out of order.	Replace float switch.
Water level gauge error	Flashing	On	On	When the float switch of the tank water level gauge is suspected to be defective.	Replace float switch.
Deionized water quality gauge error	On	On	On	Thermistor sensor of deionized water quality gauge continues being interrupted/short-circuited for longer than the abnormality determination time.	Replace deionized water quality sensor.
Heater overheat	Off	Off	Flashing	When temperature of heater unit exceeds the abnormality determination value, or when the temperature sensor is interrupted or short-circuited.	Replace heater.

## 8. TROUBLESHOOTING


Symptom	display			Possible causes	Possible measures
	Leak	Cutoff	Overheat		
Water leakage	Flashing	Off	Off	When the resistance of leak sensor input falls below the water leak determining value	Turn OFF (○) ELB and check the piping components.
Water cut-off	Off	Flashing	Off	When the raw water is cut off or the raw water pressure becomes 0.05 MPa or less.	Check raw water pressure and that water tap is open. When the raw water pressure returns to normal, unit will automatically resume operation.
Controller error	Flashing	Flashing	Flashing	When the set value stored in the storage cell cannot be read normally or is an abnormal value, or when an error in the A/D circuit is detected.	Turn OFF (○) ELB.

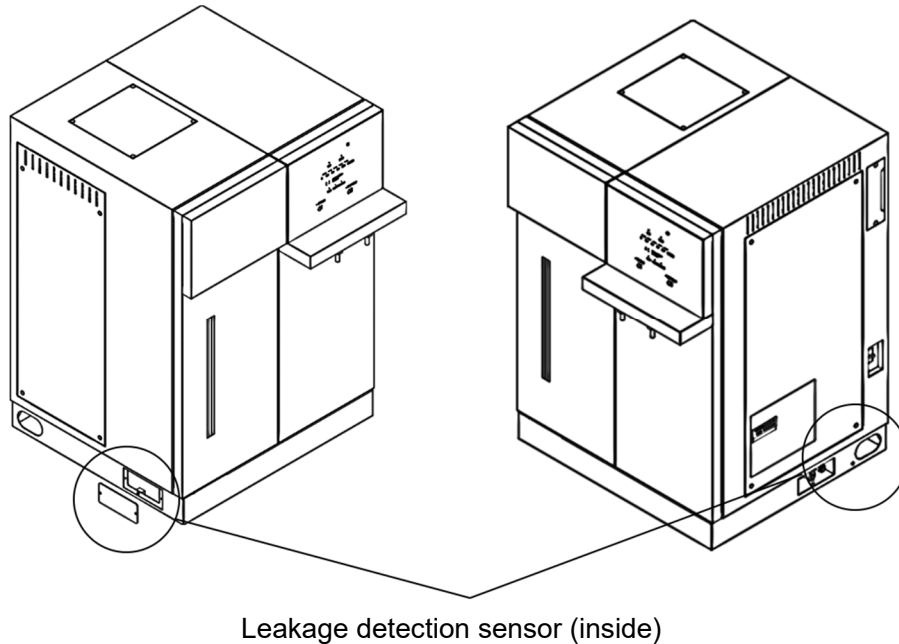
## 8. TROUBLESHOOTING

### Troubleshooting Guide

#### When Water leak error is displayed

##### Corrective actions

1. Turn OFF (O) ELB on the right side of unit.
2. Identify the water leakage point.
3. Wipe off and dry the water at the bottom of unit. Remove leak sensor and dry the electrode thoroughly. (A Philips screw driver is required to remove leak sensor. )
4. Reinstall leak sensor.
5. Replace the door and cover on the unit.
6. Turn "ON (I)" ELB on the right side of unit, and press  on the control panel to resume operation.



\*Close the tap before disassembling the piping, such as repairing water leakages from the piping.

#### When CUT OFF lamp begins flashing

1. Check raw water pressure and that water tap is open (water reaches to unit).
2. When the raw water pressure returns to normal, unit will automatically resume operation.

#### When OVERHEAT lamp begins flashing

1. Check that coolant is flowing.
2. If coolant is flowing, heater may be overheating or disconnected.
3. In this case, contact original dealer of purchase.

## 8. TROUBLESHOOTING

### Troubleshooting Guide

Symptom	Possible causes	Measures
The controller does not turn on	ELB is OFF (○)	Turn ON (I) ELB on the right side of unit.
	Power supply failure	Check the power supply capacity. 1 φ AC100 V
	ELB failure	Replace relevant parts
No water is supplied	Water tap is not sufficiently open.	Open the water tap.
	Water is cut off or pressure is low.	Check whether the tap is turned on.
	Water supply hose is not properly connected	Reconnect the water supply hose.
	Raw water supply solenoid valve failure	Replace relevant parts
	Boiler water supply solenoid valve failure	Replace relevant parts
	Float switch failure	Replace relevant parts
	Pre-treatment cartridge is clogged	Check whether the consumables have been replaced at regular intervals.
Water supply will not stop	Boiler drain cock is open	Close the drain cock.
	Failure in solenoid valve for raw water supply.	Replace relevant parts
Dispensing of deionized water will not stop	Float switch failure	Replace relevant parts
	Failure in solenoid valve for deionized water dispensing	Replace relevant parts
Dispensing of distilled water will not stop	Failure in solenoid valve for distilled water dispensing	Replace relevant parts
Heater does not turn on	Float switch failure	Replace relevant parts
	Heater interruption or disconnection	Replace relevant parts
Coolant does not flow	Failure in solenoid valve for coolant	Replace relevant parts
Water in the boiler does not drain	Failure in solenoid valve for boiler drainage	Replace relevant parts
Initial distilled water is not discharged.	Failure in solenoid valve for initial distilled water drainage	Replace relevant parts
Distilled water is not accumulated.	Failure in solenoid valve for initial distilled water drainage	Replace relevant parts
Distillation will not stop	Float switch failure	Replace relevant parts
Cannot dispense water	Failure in solenoid valve for deionized water/distilled water, distilled water dispensing pump	Replace relevant parts
	Pre-treatment cartridge, Deionization resin cartridge or membrane filter is clogged	Check whether the consumables have been replaced at regular intervals.
	Piping connection failure	Check the hose connection.
Poor water quality	Deionization resin cartridge is degraded	Dispense about 5 L of water. If not improved, replace deionization resin cartridge.
	Remaining air in deionization resin cartridge	
	Deionization resin cartridge has not been used for a long period of time	
	Distilled water is stored in the distilled water tank for an extended period.	Drain distilled water tank and produce distilled water again.

## 9. SERVICE & REPAIR

### Warranty card (attached separately)

Warranty card will be handed by dealer or Yamato personnel upon delivery and installation, or will be attached to equipment if no one from dealer or Yamato is to be present at delivery and installation.

Register warranty card at <https://www.yamato-net.co.jp/support/warranty.htm>

- Keep warranty card safe.

### Requests for Repair

If abnormalities remain after confirming "Troubleshooting Guide", terminate operation, turn OFF (○) ELB, and disconnect power cable. Contact original dealer of purchase or Yamato sales office for assistance.

The following information is required for all repairs.

- Product Name
  - Model
  - Serial Number
  - Date (year/month/day) of Delivery
  - Description of problem in as much detail as possible
- } Refer to warranty card.
- Repair this equipment for free of charge according to the contents on warranty card.  
Warranty period is 1 (one) year from date of purchase.
  - Consult with original dealer of purchase or Yamato sales office for any repair after warranty ended.  
Charged repair service of this equipment will be available on customer's request when it can be maintained functional by its repair.

\* Be sure to present warranty card to the service representative.

### Guaranteed Supply Period for Repair Parts

Guaranteed maximum supply period for repair parts is 7 (seven) years from date of discontinuation for this equipment.

"Repair parts" is defined as components which, when installed, allow for continued equipment operation.

## 10. SPECIFICATIONS

Model		WG205	
System / Performance <sup>*1</sup>	Water purifying system	deionization → distillation	
	Water supply system	Resin hose connection to water tap with one-touch coupler/hose connection	
	Drain system	Drain water connector on both sides for the connection of a drain hose	
	Purified water	Deionized water, distilled water	
	Distilled water production	Approx. 1.5 L/h	
	Distilled water delivery rate	Approx. 1.5 L/min	
	Deionized water delivery rate <sup>*2</sup>	Approx. 1.0 L/min	
	Water dispensing capacity setting range	Manual dispensing	
Configuration	Condenser	Hard glass	
	Heater	Ceramic heater 1.2 kW	
	Pre-treatment cartridge	0.1μm hollow fiber membrane + activated carbon (PWF-1)	
	Deionization resin cartridge	CPC-S 4 L: 1 pc (high-purity cartridge with activated carbon)	
	Final filtration	Optional (membrane filter)	
	Water leakage detection	When water leakage is detected, leak sensor shuts off water supply solenoid valve.	
	Distilled water storage tank	20 L PE tank	
	UV sterilization for distilled water	-	
	Dispenser tray	-	
	Multipurpose distilled water outlet	For Φ8 rigid tube connection (on the right side)	
	Water level detection	Float switch 2-stage detection	
	Standard	Raw water pressure range	0.05-0.5 MPa
Raw water requirement		Approx. 2.0 L/min	
Operating ambient temperature range		5-35 °C	
Power supply (50/60 Hz), Rated current		AC100 V 12.5 A (15 A)	
External dimensions <sup>*3</sup>		W540 × D575 × H775 mm	
Weight		Approx. 55 kg	
Indications		Water level	Communicating tube level indication
	Water quality	5-stage LED indication in conductivity	
	Other Indications	Consumables replacement time indication (Deionization resin cartridge)	
	Accessories	Water supply hose (2 m)	1
		Water supply hose filter	1
		Connection hose assembly	1
		Scale cleaner	1
		Pre-treatment cartridge	1
		Deionization resin cartridge	1
		Seal tape	1
		Instruction Manual	This manual
Warranty card		1	

<sup>\*1</sup> Performance data above based on WG205: 100V AC supplied power, 23 °C ±5 °C room temperature, and 65%RH ±20% humidity.

Operating ambient temperature range for this unit is between 5 °C and 35 °C. Keep temperature range of raw water between 5 °C-30 °C. When raw water temperature is high, the drainage temperature may also be high.

<sup>\*2</sup> The guaranteed performance range is raw water pressure 0.2-0.5 MPa. Water dispensing volume varies depending on water temperature.

<sup>\*3</sup> Dimensions do not include protrusions.

## 11. REPLACEMENT PARTS LIST

### Consumables

Name	Model	Code No.
Pre-treatment cartridge	PWF-1	253099
Deionization resin cartridge	CPC-S	253080
Tank air vent filter	AVF-1(4210)	9020020001
Scale cleaner (1 kg)	-	8190010001
Membrane filter (optional)	MFRL727	9020010004

The following consumables are used as **a set with the filter housing (OA111)**.

Name	Purpose	Code No.
Wind cartridge	Filtration of raw water	9020036001
Activated carbon filter	Removal of iron rust, chlorine, etc. in raw water	9020026002

Contact original dealer of purchase for further assistance.

## 12. OPTIONAL ACCESSORIES

### List of Options

Please note that some options cannot be installed after delivery. Contact original dealer of purchase for requests for options.

Name	Code No.	Model	Description
Stand	281333	OA097	External dimensions: W540 x D 660 x H 800 mm Caster with adjuster Accessories: Shelf board, adjuster fixing bracket
Water dispensing hose unit	281336	OA100	Length of hose: 2 m Accessories: Magnet hook
Water supply joint	281337	OA101	This joint is to connect to faucet by removing pipe part.
Water Tap	281338	OA102	Used when there is no water tap.
Water Tap (Pressure reducing valve)	281339	OA103	A water tap and a pressure reducing valve are included in the set. Regulates raw water pressure. Used when the raw water pressure is not constant or when the raw water pressure is 0.5 MPa or more.
Drain trap	281340	OA104	Used when the drainage temperature is high.
Water supply extension hose (1m)	281341	OA105	For extending the water supply hose
Drain hose (3m)	281342	OA106	For a replacement
Water outlet cover	281344	OA108	It is a cover to be attached to the membrane filter water outlet. Use with the membrane filter.
Hose for deionized resin expansion	281346	OA110	Deionization resin cartridge (CPC-S) can be added to two, to reduce the frequency of cartridge replacement.
Pure line	253669	WL100G	Separately placed large deionization resin cartridge (resin amount: 10) It helps to reduce the frequency of replacement of cartridge by connecting. Comes with hoses and fittings for connecting to WG205
Filter housing	281347	OA111	Used with optional consumables. See " <a href="#">11. REPLACEMENT PARTS LIST (P.47)</a> " for compatible consumables. Comes with a hose for connecting to WL100H and WG205.
Filter stand	281348	OA112	Used to secure the filter housing. It can fix up to two with one stand.
Pure water delivery unit	253135	PW200	Used by connecting to a multipurpose distilled water outlet. Use this when you want to dispense water from a remote location, or when you want to connect to a separate tank or other product.
Membrane filter	9020010004	MFRL727	A membrane filter (0.1 µm hollow fiber) that can be retrofitted to the water outlet when dispensing. It needs to be replaced every 1000 L of water flow volume or every 90 days.

## 12. OPTIONAL ACCESSORIES

### Install membrane filter

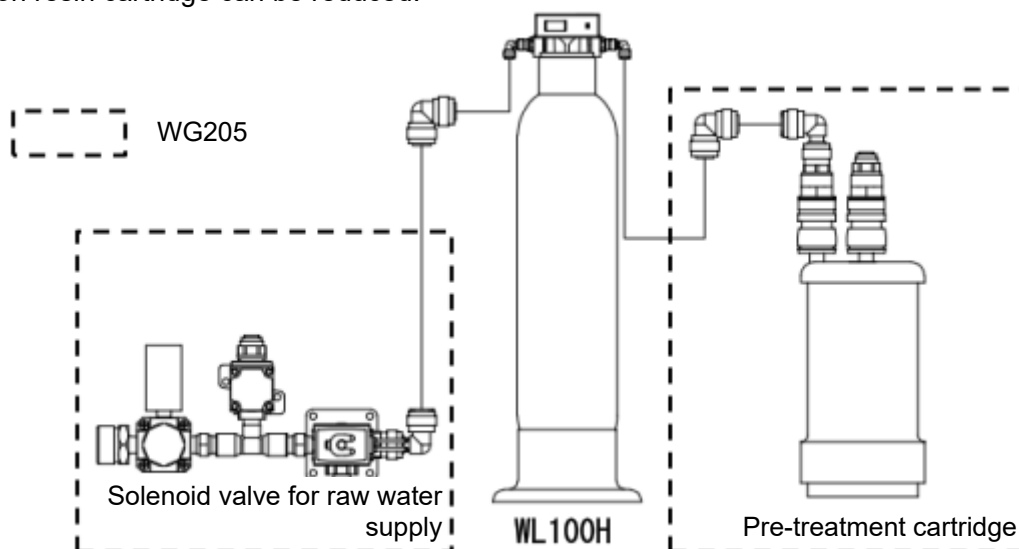


- Install membrane filter according to the following procedure.
  - Unless firm connection is ensured, water may leak from the threaded portion.
1. Take out seal tape from among the accessories.
  2. Observe the direction of an arrow on membrane filter. Wind seal tape firmly clockwise as viewed from the tape winding side two to three turns. Remaining tape should be cut away. Start winding the tape at a point two thread ridges away from the end.
  3. Remove the water outlet cover. With the tape-wound side up, screw membrane filter in the water outlet. Use caution not to crush the threads. Check for water leakage while dispensing pure water. If water is leaking, screw the filter further. Rough guidance of the number of tightening is two and a half to three turns.
- Securely store the seal tape, which is to be required when replacing membrane filter.

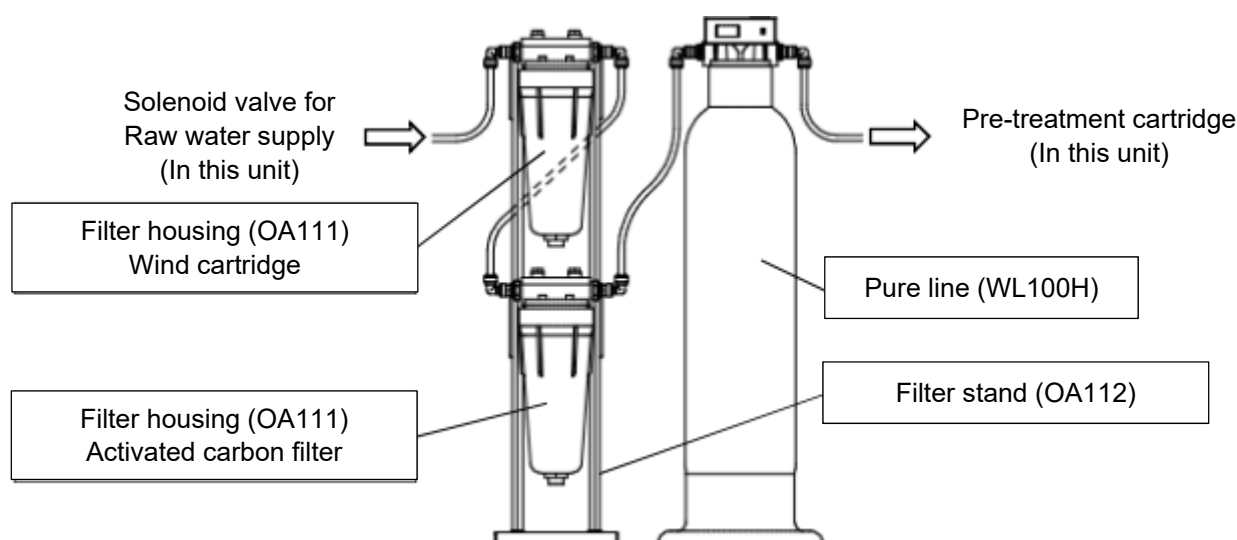
## 12. OPTIONAL ACCESSORIES

### Pure Line (WL100H)

Pure Line (WL100H) is an option to add a large Deionization resin cartridge prior to the Pre-treatment cartridge of this unit. By connecting as shown in the figure below, the frequency of replacement of the deionization resin cartridge can be reduced.



As shown in the figure below, the pure line (WL100H), filter housing (OA111), and filter stand (OA112) can be combined and connected to this unit. In addition, the filter housing (OA111) can be equipped with an "activated carbon filter" or "wind cartridge" depending on the purpose. See "[11. REPLACEMENT PARTS LIST \(P.47\)](#)" for the filter.



Composition Parts	Add Pure line (WL100H)	Add Pure line (WL100H) and Filter housing (OA111)	Add Pure line (WL100H) and two Filter housing (OA111)
WL100H	○	○	○
OA111	×	○	○ (x2)
OA112	×	○	○

## 13. LIST OF HAZARDOUS SUBSTANCES



Never attempt to process explosives, flammables or any items which contain explosives or flammables.



Never attempt to process explosives, flammables or any items which contain explosives or flammables.

### List of hazardous substances

Explosive substances
①Trinitrobenzen, Trinitrotoluene, Picric Acid and other explosive nitro compounds
②Trinitrobenzen, Trinitrotoluene, Picric Acid and other explosive nitro compounds
③Acetyl Hydroperoxide, Methyl Ethyl Ketone Peroxide, Benzoyl Peroxide and other organic peroxides
④Metallic Azide, including Sodium Azide, etc.
Combustible substances
①Metal "Lithium" ②Metal "Potassium" ③Metal "Natrium" ④Yellow Phosphorus ⑤Phosphorus Sulfide ⑥Red Phosphorus ⑦Phosphorus Sulfide ⑧Celluloids, Calcium Carbide (a.k.a, Carbide) ⑨Lime Phosphide ⑩Magnesium Powder ⑪Aluminum Powder ⑫Metal Powder other than Magnesium and Aluminum Powder ⑬Sodium Dithionous Acid (a.k.a., Hydrosulphite)
Oxidizing substances
①Potassium Chlorate, Sodium Chlorate, Ammonium Chlorate, and other chlorates
②Potassium Perchlorate, Sodium Perchlorate, Ammonium Perchlorate, and other perchlorates
③Potassium Peroxide, Sodium Peroxide, Barium Peroxide, and other inorganic peroxides
④Potassium Nitrate, Sodium Nitrate, Ammonium Nitrate, and other nitrates
⑤Sodium Chlorite and other chlorites
⑥Calcium Hypochlorite and other Hypochlorites
Flammable substances
①Ethyl Ether, Gasoline, Acetaldehyde, Propylene Chloride, Carbon Disulfide, and other substances having ignition point of 30 or more degrees below zero.
②N-hexane, Ethylene Oxide, Acetone, Benzene, Methyl Ethyl Ketone and other substances with ignition point between 30 degrees below zero and less than zero.
③Methanol, Ethanol, Xylene, Pentyl n-acetate, (a.k.a. amyl n-acetate) and other substances having ignition point of between zero and less than 30 degrees.
④Kerosene, Light Oil, Terebinth Oil, Isopentyl Alcohol (a.k.a. Isoamyl Alcohol), Acetic Acid and other substances having ignition point of between 30 degrees and less than 65 degrees.
Combustible gas
Hydrogen, acetylene, ethylene, methane, ethane, propane, butane and other flammable objects that are gases at 1 atm and 1 atm

Excerpt from Table 1, Hazardous Substances, of Cabinet Order of the Occupational Safety and Health Law (substances related to Articles 1, 6, and 9)

# 14.STANDARD INSTALLATION MANUAL

Install this equipment according to following format (check options and special specifications separately). (Please check separately for options and special specifications)

Model	Serial Number	Installation Date	Installation proved by (company name)	Installation proved by	Judgment

No.	Item	Implementation method	Chapter No. & Reference page of instruction manual	Judgment
<b>Specifications</b>				
1	Accessories	Quantity check according to the accessories column	Accessories (P.12)	
2	Installation	<ul style="list-style-type: none"> <li>Visual check of surrounding conditions Caution: Take care for environment</li> <li>Securing a space</li> </ul>	<a href="#">Installation Precautions</a> (P.19) <a href="#">Choose an appropriate installation site.</a> (P.19)	
<b>Operation-related matters</b>				
1	Power supply voltage	<ul style="list-style-type: none"> <li>Customer voltage with tester Measure (outlet, etc.)</li> <li>Measure line voltage during operation (must meet required voltage)</li> </ul> Caution:Use a compliant plug to install	<a href="#">Always connect power cable to appropriate facility outlet or terminal.</a> (P.20)	
2	Raw water	Drainage water	<a href="#">Raw water.</a> (P.20)	
3	Dispensing water	Explain about water dispensing operation according to instruction manual.	<a href="#">5. OPERATION PROCEDURES</a> (P.27)	
<b>Description</b>				
1	Operational descriptions	Explain operations of each component and handling precautions according to instruction manual.	<a href="#">2. COMPONENT NAMES AND FUNCTIONS</a> (P.10)- <a href="#">5. OPERATION PROCEDURES</a> (P.27)	
2	Error Codes	Explain about error codes and procedures for reset according to instruction manual.	<a href="#">8. TROUBLESHOOTING</a> (P.41)	
3	Maintenance and Inspection	Explain about maintenance of equipment and each component according to instruction manual.	<a href="#">6. Inspection and Maintenance</a> (P.30)	
4	Completion of installation Matters to be Stated	<ul style="list-style-type: none"> <li>Enter the date of installation and name of the charged personnel in the main unit nameplate.</li> <li>Fill in necessary information to warranty card and hand it over to customer</li> <li>Explain how to contact with service personnel</li> </ul>	<a href="#">9. SERVICE &amp; REPAIR</a> (P.45)	

## Limited Liability

**Always operate equipment in strict compliance to the handling and operation procedures set forth by this instruction manual.**

**In the unlikely event that it is used with contents other than those described in the instruction manual, an accident or failure may occur.**

**In case of occurrence, Yamato Science Co., Ltd. does not take any responsibility.**

**Never attempt to disassemble, repair or perform any procedure which are not expressly mandated by this manual.**

**Doing so may result in equipment malfunction, serious personal injury or death.**

## Notice

- **Instruction manual descriptions and specifications are subject to change without notice.**
- **Yamato Scientific Co., Ltd. will replace flawed instruction manuals (pages missing, pages out of order, etc.) upon request.**

Water purifier  
WG205  
Instruction manual  
First Edition 2021/3/16  
revision 2021/12/21

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For repair service, maintenance service and consumables purchase support, please contact to our distributors from whom you purchased.

Or please visit to our customer support website at  
<https://www.yamato-scientific.com/support/inquiry/> Click here or tap to enter the text.

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