



Water Purifier, Auto Still[®]

Model

WG511/711

Instruction Manual

Third Edition

- Thank you for purchasing "Auto Still, WGH200" of Yamato Scientific Co., Ltd.
- To use this unit properly, read this "Instruction Manual" thoroughly before using this unit. Keep this instruction manual around this unit for referring at anytime.



WARNING!:

Carefully read and thoroughly understand the important warning items described in this manual before using this unit.

Yamato Scientific Co., LTD.


This paper has been printed on recycled paper.


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MEANING OF ILLUSTRATED SYMBOLS

Illustrated Symbols

Various symbols are used in this safety manual in order to use the unit without danger of injury and damage of the unit. A list of problems caused by ignoring the warnings and improper handling is divided as shown below. Be sure that you understand the warnings and cautions in this manual before operating the unit.

 **WARNING!** If the warning is ignored, there is the danger of a problem that may cause a serious accident or even fatality.

 **CAUTION!** If the caution is ignored, there is the danger of a problem that may cause injury/damage to property or the unit itself.

Meaning of Symbols



This symbol indicates items that urge the warning (including the caution). A detailed warning message is shown adjacent to the symbol.



This symbol indicates items that are strictly prohibited. A detailed message is shown adjacent to the symbol with specific actions not to perform.



This symbol indicates items that should be always performed. A detailed message with instructions is shown adjacent to the symbol.

1. Safety precautions

Table of Illustrated Symbols

Warning



Warning,
generally



Warning,
high voltage



Warning,
high temperature



Warning,
drive train



Warning,
explosive

Caution



Caution,
generally



Caution,
electrical shock



Caution,
scald



Caution,
no road heating



Caution,
not to drench



Caution,
water only



Caution,
deadly poison

Prohibit



Prohibit,
generally



Prohibit,
inflammable



Prohibit,
to disassemble



Prohibit,
to touch

Compulsion



Compulsion,
generally



Compulsion,
connect to the
grounding
terminal



Compulsion,
install on a flat
surface



Compulsion,
disconnect the
power plug



Compulsion,
periodical
inspection

1. Safety precautions

Fundamental Matters of "WARNING!" and "CAUTION!"



Do not use this unit in an area where there is flammable or explosive gas

Never use this unit in an area where there is flammable or explosive gas. This unit is not explosion-proof. An arc may be generated when the power switch is turned on or off, and fire/explosion may result. (Refer to Page 71 "13. List of Dangerous Substances".)



Be sure to connect grounding wire.

Connect to grounded plug socket. If no grounded plug socket is available, be sure to connect grounding lead by use of ground adapter attached in nonstandard. Failure to do so could cause electric shock or fire.



Do not touch hot portion

Boiler may be hot in some portion in operation or immediately after operation. Be aware of burns. When performing maintenance of heater etc., ensure that the boiler is cooled down beforehand.



Do not operate the unit during an abnormality.



If you should notice a smoke or a strange odor, immediately turn the ELB on the right side of the unit "OFF(O)", remove the power plug from the power supply and contact your dealer, one of our sales representatives or the general customer center for inspection. Leaving it as it is may result in a fire or an electric shock.



Do not use the power cord if it is bundled or tangled

Do not use the power cord if it is bundled or tangled. If it is used in this manner, it can overheat and fire may be caused.



Do not process, bend, wring, or stretch the power cord forcibly

Do not process, bend, wring, or stretch the power cord forcibly. Fire or electrical shock may result.



Do not disassemble or modify this unit

Do not disassemble or modify this unit. Fire or electrical shock or failure may be caused.



Do not place any objects on top of the unit.

Objects placed on top of the unit might fall. In addition, a solvent, if it is placed and falls, a malfunction may result.



Do not climb onto the unit.

The unit may fall or break and personal injury or a malfunction may result.

1. Safety precautions

Fundamental Matters of "WARNING!" and "CAUTION!"



Close the tap when unit is out of service

When unit is out of service (at night or on holiday), be sure to close the tap so as to avoid water leakage accident.



When a thunder is heard.



When a thunder is heard, immediately turn the ELB on the right side of the unit "OFF(O)" and remove the power cord.

Leaving the unit as it is may lead the control circuit of the unit to malfunction or a fire as well as an electric shock by lightening.

When a power failure occurs.

Although the unit will stop operation when a power fails, turn the ELB on the right side of the unit "OFF (O)" to assure safety.

2. Before operating the unit

Installation and preparation before operating the unit

Warning

1. Choose a proper place for installation

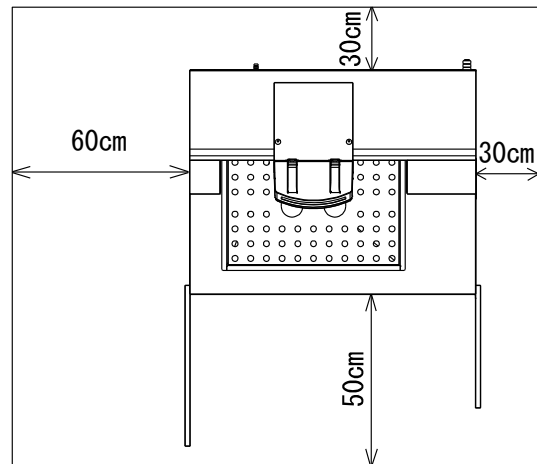


Do not install this unit in a place where:

- Rough or dirty surface.
- Flammable gas or corrosive gas is generated.
- Ambient temperature below 5°C or above 35°C
- Ambient temperature fluctuates violently.
- There is excessive humidity.
- There is direct sunlight.
- There is a constant vibration.
- The power source is instable.
- Not horizontal surface.
- Raw water pressure shall be 0.10MPa or higher or 0.50MPa or lower (WG511)
- Raw water pressure shall be 0.15MPa or higher or 0.50MPa or lower (WG711)
※When the discharge water temperature cooling mechanism is OFF, the pressure shall be 0.10MPa or higher or 0.50MPa or lower.
- Outdoors
- Where raw water temperature is between 5°C and 30°C.



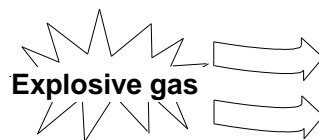
Keep space around each product above the range shown below.



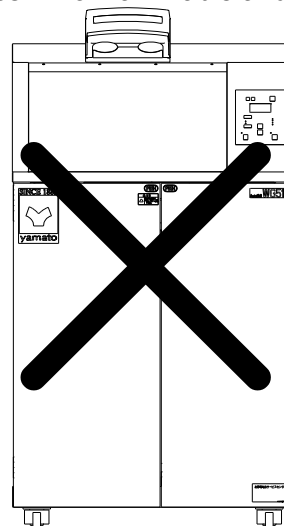
2. Do not use this unit in an area where there is flammable or explosive gas



- Never use the unit in an atmosphere that contains flammable or explosive gases. This unit is not of an anti-explosion structure and an arc may occur when turning the ELB on the right side of the unit "ON(|)" and "OFF(O)" as well as during operation causing a fire or an explosion.
- See Page 71 "13. List of Dangerous Substances ." for flammable and explosive gasses.



Flammable e gas



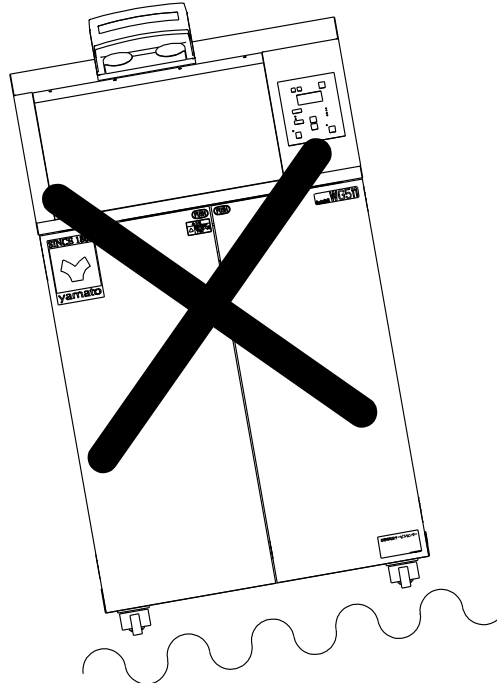
2. Before operating the unit

Precautions when installing the unit

3. Installation on horizontal surface



- Set this unit to the flattest place. Setting this unit on rough or slope place could cause the unrespectable trouble or malfunction.
- Unit weight: WG511:Approx.130kg/WG711: Approx.140kg. Specially be careful for carrying and installing the unit.



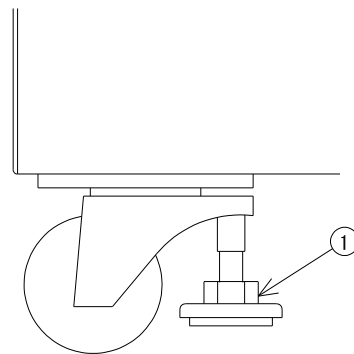
4. Secure the unit with the adjusters.



The adjusters are located at four points on the front of the unit.

When you have selected an installation site, follow the procedures below to lock the adjusters.

- ① Turn the adjuster nuts using a wrench until they are securely pressed against the floor.
- ② Make sure the two adjusters and the two rear wheels are not off the floor and the main unit is held securely.



5. Connect power supply to the dedicated outlet.



- Use a plug socket conforming to electric capacity.
- When power capacity is insufficient, sampling of water goes short, and normal control is disabled by fall of power voltage. Connect to power equipment having sufficient power capacity.

Electric capacity :	WG511	Single phase	AC200V	ELB capacity 30A
Electric capacity :	WG711	Single phase	AC200V	ELB capacity 50A
- Note that extended wire using a cord reel will cause a voltage drop.
- Do not connect too many wires to a branching outlet. A fire or an electric shock may result.

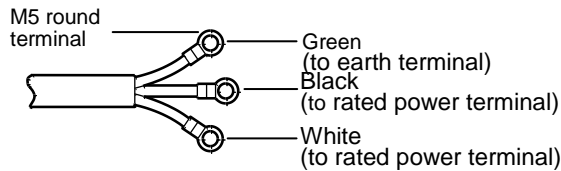
2. Before operating the unit

Precautions when installing the unit

6. Be sure to connect the ground wire.



- When the unit has no ground terminal, class D grounding work is necessary and please consult your dealer or our nearest sales office.
- Securely connect to a distribution board or an outlet.



The unit does not have a power plug. Connect the earth correctly to suit the power facility to be connected.



Do not connect the grounding wire to any parts or lines other than a correct grounding terminal such as a gas pipe, a water pipe or a telephone line. Otherwise, an accident or a malfunction may result.

7. Be careful for the colors of core wires when connecting the power cords.



Be sure to first make sure that the breaker on the power facility side is "Off" before connecting the power cords. The unit does not have a power plug. Select and connect a plug and a terminal with correct ratings suited to the power source capacity of the power facility to be connected. (See the table in the right)

Core wire color	Indoor wiring
Black	Voltage side
White	Earth side
Green	Earth

8. Handling of power cord



- Do not entangle the power cord. This will cause overheating and possibly a fire.
- Do not bend or twist the power cord, or apply excessive tension to it. This may cause a fire and electrical shock.
- Do not lay the power cord under a desk or chair, and do not allow it to be pinched in order to prevent it from being damaged and to avoid a fire or electrical shock.
- Keep the power cord away from any heating equipment such as a room heater. The cord's insulation may melt and cause a fire or electrical shock.
- If the power cord is damaged (exposed core or disconnection, etc), immediately turn the ELB on the right side of the main unit "OFF(O)", remove the power plug from the outlet and ask your dealer for the replacement of the power cord. Leaving as it is may cause a fire or an electric shock.
- Connect the power plug to the receptacle which is supplied appropriate power and voltage.

9. Keep the raw water pressure for tap water within the specified range.



- Keep the tap water pressure within the range of 0.10~0.50MPa(WG511), 0.15~0.50MPa(WG711) including the nighttime.
- The pressure range for raw water pressure shall be the same when the optional "Water supply port unit" (See P.40) is used.

10. About raw water



- Do not use tap water as raw water.
- Do not use a chemical or a lubricant. Otherwise, a malfunction may result.
- Check raw water for contamination with red rust. Contaminated raw water will prevent the specified water quality as well as it may lead to a malfunction.

2. Before operating the unit

Installation procedures

1. Connect the water supply hose securely

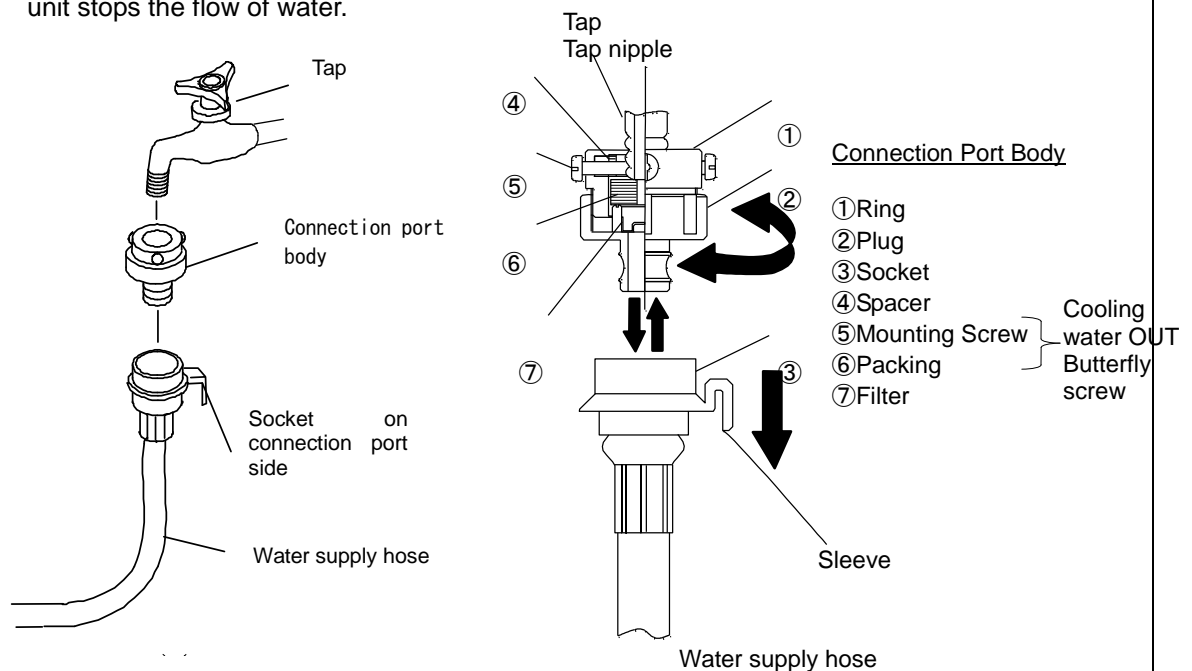


- Take out the supply water hose set (connecting port and water supply hose) from accessories of the main unit. Install the main unit at a level and stable place close to a tap water faucet and a sink.
- Be sure to make connection securely to prevent the water supply hose and the connection ports from disconnecting causing water to gush out or other leaks.
- Do not overly tighten the water supply hose connection port to prevent it from cracking.

2. Connect the tap side



1. Slide the sleeve of socket ③ on connection port side in the arrow direction, then connection port body and water supply hose can be separated. There separate the two parts.
 2. Once loosen the plug ② from the ring ①.
 3. Tighten the 4 mounting screws ⑤ uniformly while pressing the ring ① slightly and uniformly to make the packing ⑥ in flat contact with water tap. If the tap is a chemical tap, adjust the position so that the mounting screw is located at the bottom valley of tap nipple as shown.
 4. Turn the plug ② clockwise to tighten securely. This will allow the tap and connection port to be sealed by packing ⑥.
 5. Insert the socket ③ securely to the plug ② with the sleeve slid in the arrow direction. The sleeve returns to the original position when released, and then connection is completed.
- ❖ In case that the socket ③ is removed, the valve attached on the connection side of the main unit stops the flow of water.



2. Before operating the unit

Installation procedures

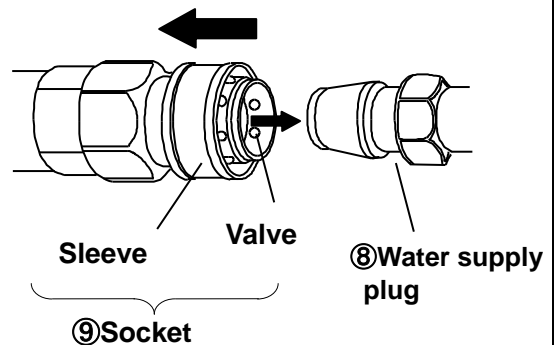
3. Connection on body side



- (1) Remove the rubber cap from the water supply port plug ⑧.
- (2) Insert the socket ⑨ securely to the plug ⑧ on body side with the sleeve slid in the arrow direction. The sleeve returns to the original position when released, and then connection is completed. The socket contains a valve inside, which opens only when the socket is connected by plug; otherwise, water is not fed because this valve does not open.

Water supply hose

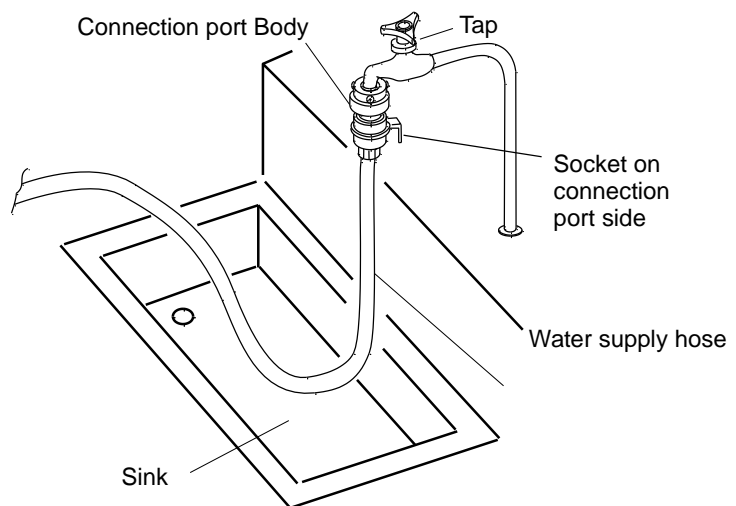
Main unit side



4. Connect the water supply hose to the tap provided with sink equipment



If the water supply hose is connected to a tap without sink equipment, flood damage may be caused when water supply hose is disconnected or damaged; therefore be sure to connect to a tap having sink equipment.



5. When the sink equipment is remote from water tap, use "Water Supply Port Unit" (optional accessory)(on P.41)



"Water Supply Port Unit" is designed to loosen the connection to the tap harder than the set of water supply hoses (standard accessory) when water pressure fluctuates.

※ In case that there is no tap, use appropriate joint shown in the optional "Coupler joints for feed water" on P.40.

2. Before operating the unit

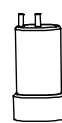
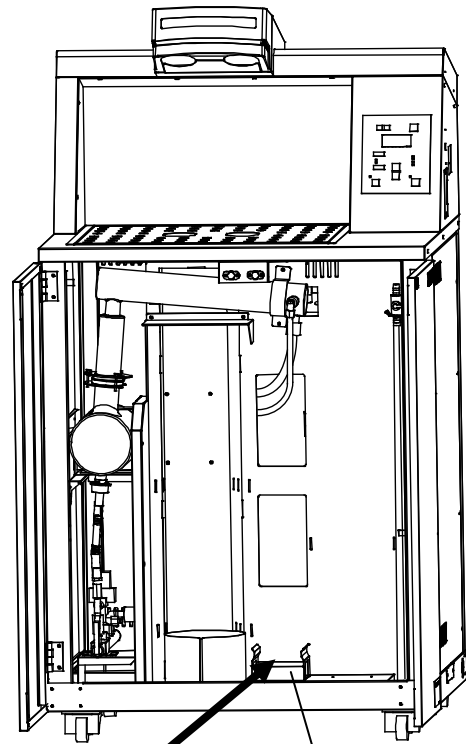
Installation procedures

6. Securely connect the pretreatment cartridge.

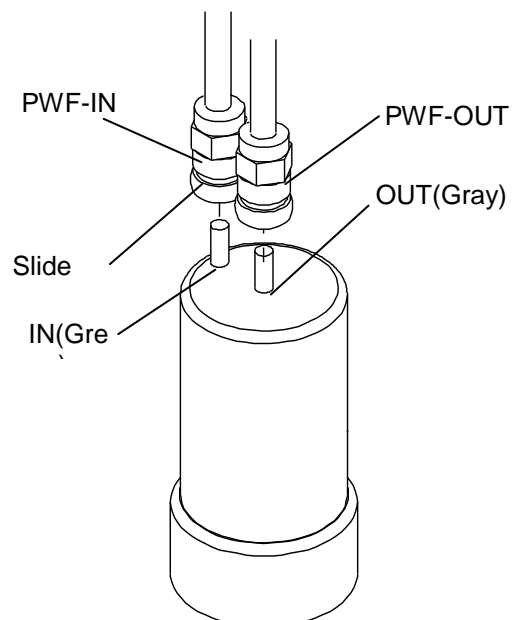


● Follow the procedures below to connect the pretreatment cartridge.

- (1) Remove caps from IN and OUT on the pretreatment cartridge.
- (2) Make sure that the ELB on the right side of the main unit is "OFF(O)" and the tap water faucet is closed.
- (3) Open the door and set the pretreatment cartridge to the pretreatment cartridge installation point
- (4) Connect the pretreatment coupler with an [PWF OUT] mark to the OUT of the pretreatment cartridge.
- (5) Connect the pretreatment coupler with an [PWF IN] mark to the IN of the pretreatment cartridge.
- (6) To connect, align the pretreatment coupler and the port on the cartridge while pushing the slide of the pretreatment coupler to the hose and then release the slide.



Pretreatment cartridge installation point



- ※ When you have inserted the pretreatment coupler, pull it once to make sure it is securely connected and will not come off.
- ※ You can easily remove the pretreatment coupler simply by pulling it up straight while sliding the sliding assembly towards the hose. Also note that some water may drip from the pretreatment cartridge when you remove the pretreatment coupler.

2. Before operating the unit

Installation procedures

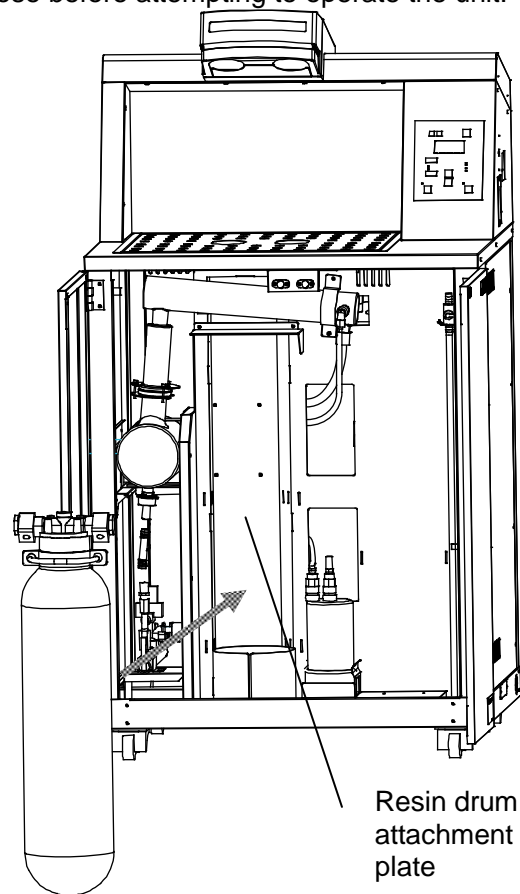
7. Securely connect the ion exchange resin cartridge (SPC-10).



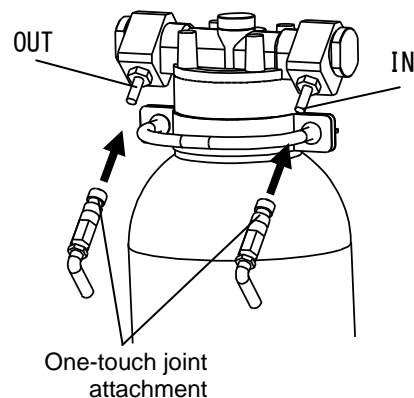
● Follow the procedures below to connect the ion exchange resin cartridge (SPC-10).

※ The ion exchange resin cartridge (SPC-10) is installed at the time of shipping and make sure that the connection is not loose before attempting to operate the unit.

- (1) Make sure that the ELB on the right side of the main unit is "OFF(O)" and the tap water faucet is closed.
- (2) Securely install the ion exchange resin cartridge (SPC-10) in the resin drum installation plate inside the unit.
- (3) Secure with the band of the resin drum attachment plate.
- (4) Push the one-touch joint with a [SPC-10 OUT] mark into OUT (left side) of the ion exchange resin cartridge (SPC-10) and the joint with a [SPC-10 IN] mark into IN (right side) until a click is heard.



Resin drum attachment plate



One-touch joint attachment

- ※ The one-touch joint may be hard and difficult to insert at first and its insertion port might break if you forcibly try to insert. If it is hard to insert the joint, connect it carefully with removed from the resin attachment plate and not to bend it.
- ※ When you have inserted the one-touch joint, pull it once to make sure that it is securely connected and will not come off.
- ※ You can easily remove the ion exchange resin cartridge simply by pulling the one-touch joint toward you while pushing the black part of the joint to back. Also note that some water may drip from the cartridge when you remove the one-touch joint.
- ※ **Take sufficient care when connecting resin cartridges because if you mix IN and OUT of them will lead to a malfunction.**

2. Before operating the unit

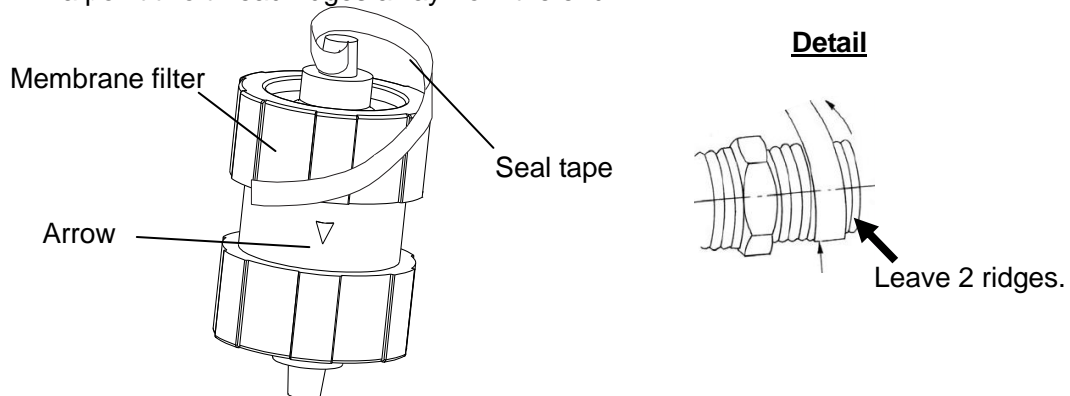
Installation procedures

9. Install the membrane filter firmly.

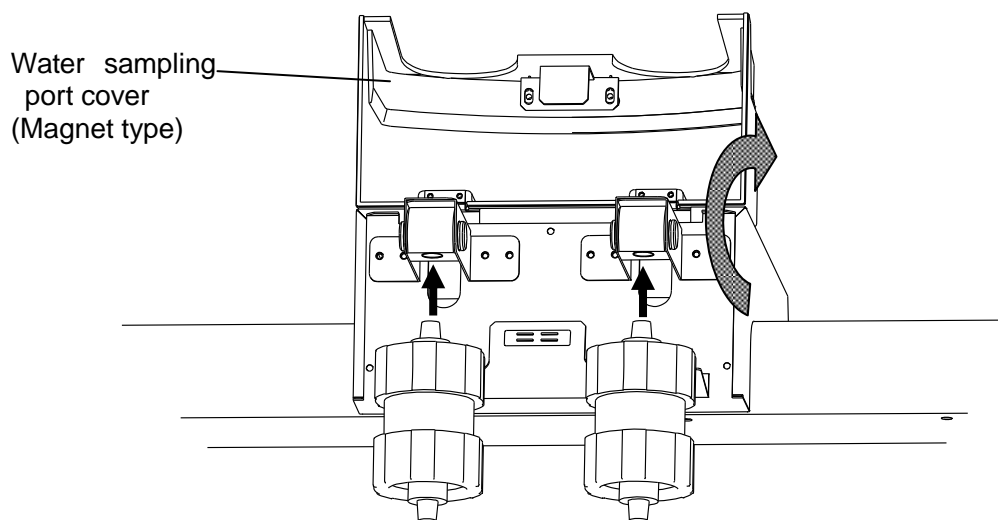


- Install the membrane filter as follows:
- Unless firm connection is made, water may leak from the threaded portion and may be mixed into and contaminate the sampled pure water. Always ensure firm connection.

- (1) Take out two membrane filters and seal tape from among accessories of the main body.
- (2) Pay attention to the direction of arrow mark on the membrane filter. Wind the seal tape clockwise as viewed from the tape winding side two to three turns while pulling the tape slightly. Remaining tape should be cut away. Start wrapping the seal tape at a point two thread ridges away from the end.



- (3) Open the water sampling port cover and screw the membrane filter, with the seal tape applied side on the top side, while taking care not to crush threads. Check for water leak during sampling of pure water. If any, screw the membrane filter further. Rough guidance of the number of tightening is two and a half to three turns.



※ Securely store the seal tape, which will be used when replacing the membrane filter.

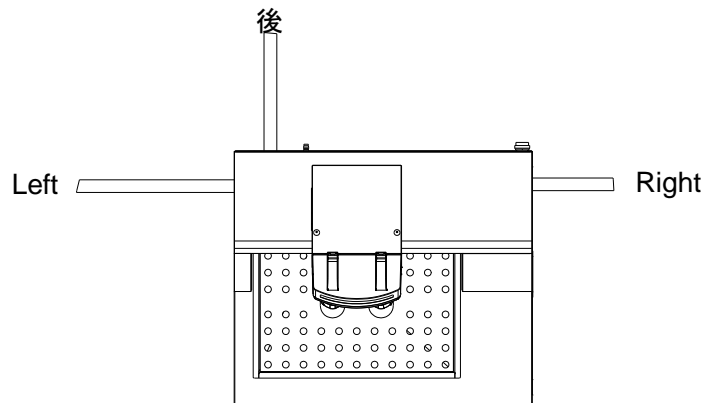
2. Before operating the unit

Installation procedures

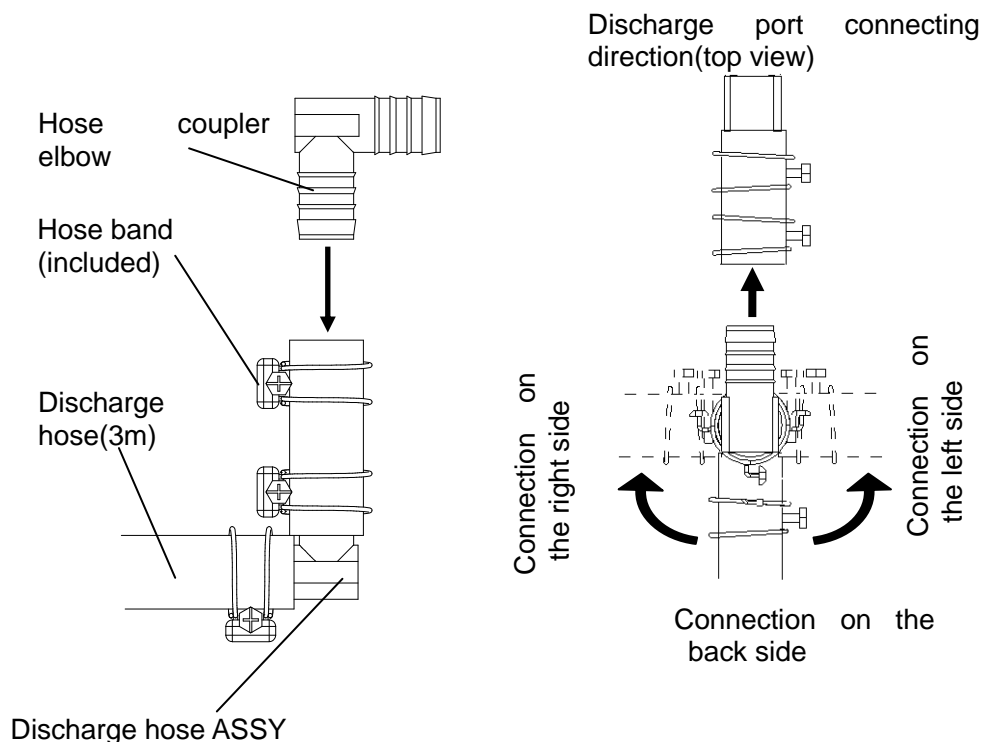
10. Connect the drain hose securely



- Follow the procedures below to install the drain hose.
- Be sure to securely connect the hose. Otherwise, water leak might occur at the pipe connection.
- You can select one of three connecting directions (right, left, and rear) for the discharge hose. Select a correct direction depending on the installation environment.



- (1) Take out the discharge hose ASSY, the hose coupler elbow and two hose bands from the accessory set for the main unit.
- (2) Run the hose bands through the short hose for the discharge hose ASSY according to the discharge direction and then connect the hose coupler elbow. After connecting them, securely tighten the hose bands using a Philips driver.



- (3) Always make sure that the earth leakage breaker of the unit is "OFF".
- (4) Remove the rubber stopper from the outlet of the drain port hose on the main unit.
- (5) Run the hose bands, insert the hose coupler bands for the discharge hose into the discharge port hose on the unit and then securely tighten the hose bands.
- (6) Pull out the hose from the right, left or rear hose connection port on the main unit.

※ Be sure to implement the drain hose to a sink.

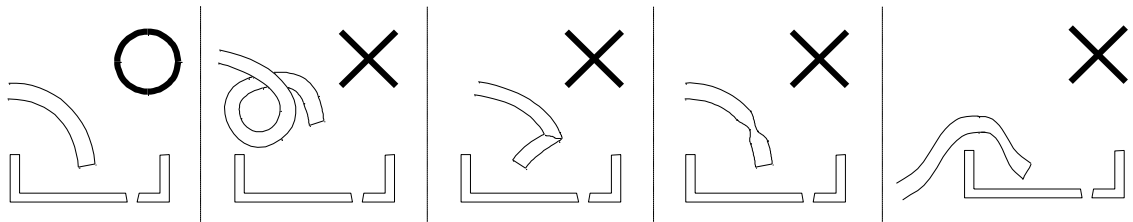
2. Before operating the unit

Installation procedures

11. Use care in routing of drain hose



- Do avoid making bend or projection of drain hose.
- In case that the drain hose is bent and the drain cannot be performed, back-flow or breakage of the hose inside the unit.
- Connect the discharge hose to a discharge facility which is lower than the discharge port of this unit. Further, avoid piping which allows puddle in the hose or at the hose outlet, because it is a resistance against drain.
- Place the end of drain hose where drain is allowed. When distilled water is being prepared, cooling water is drained approx. 2 liters/min. Also drain further increases when boiler water is drained, and sufficient drain equipment is required.



12. After installation



This unit may topple over due to unexpected earthquake or shock causing injury. Take an appropriate measure against toppling for safety.

13. Check the drain temperature of cooling water



- Drain temperature may exceed 60°C in drainage from boiler. Drain to a place remote from working environment not to be touched easily because there is a danger of burns.
- High-temperature cooling water could flow out. If vinyl chloride tube is used for the water drain unit of the sink, such a tube could deteriorate. Water should be drained to a place away from the drain tube of the sink. VP tube (JIS K6741) is used for the vinyl chloride tube, DV-RR joint is used for the joint, and insert socket (JIS K6739) is used. The water drain trap in the nonstandard options should be used when the control temp. cannot be lowered (60°C or lower). Even if the drain temperature is 60°C or lower, and if the above-mentioned tubes and joint are not used, the drain trap (WG511:OWI21, WG711:OWI41) in the nonstandard options should be used.

※ Rough guide to judge if discharge water temperature exceeds 60°C or not.

- WG511 : When supply water temperature exceeds about 30°C.
- WG711 : When supply water temperature exceeds about 28°C.

14. When drain temperature of sink equipment does not fall under 60°C

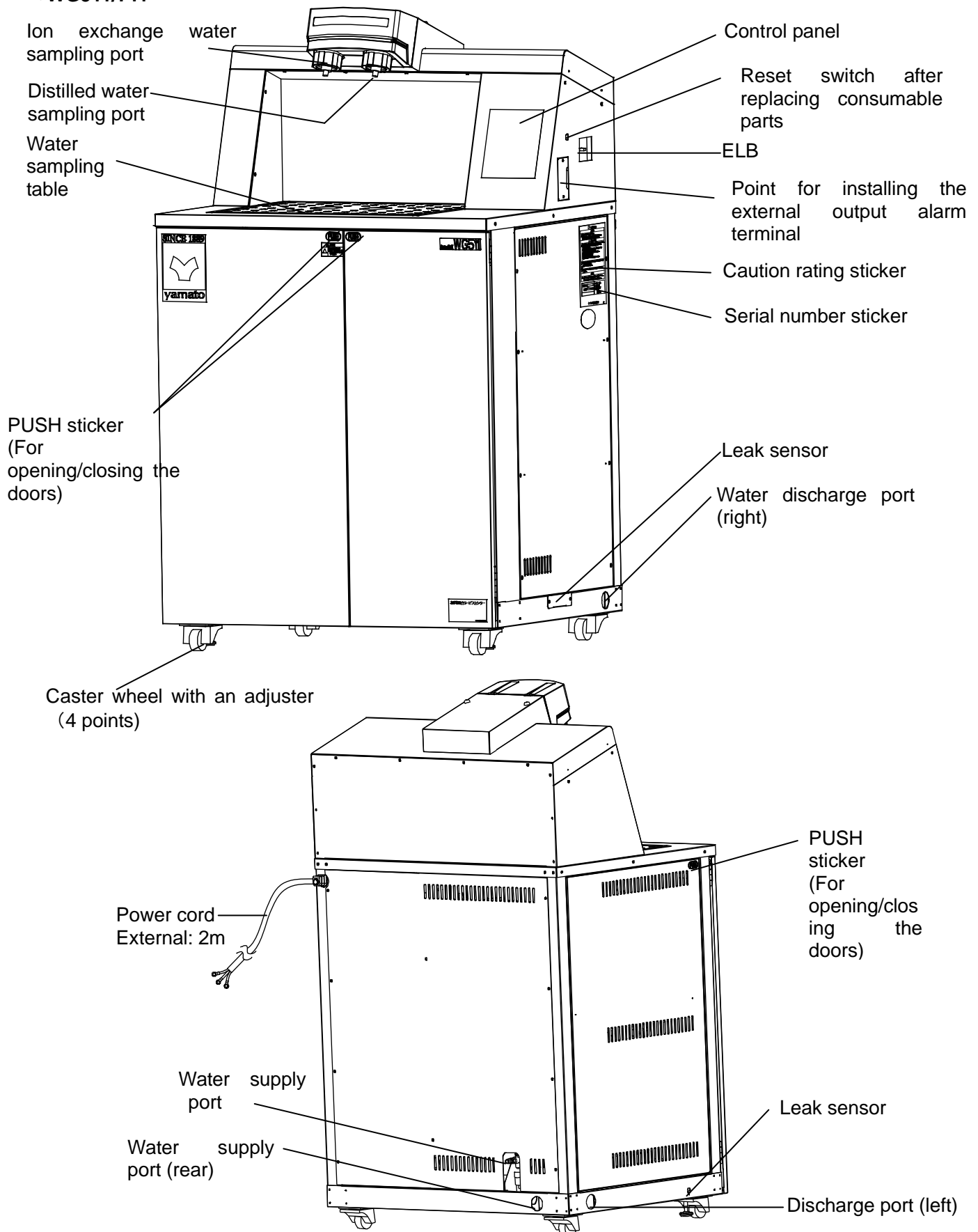


- Use a drain trap (optional accessory) (WG511:OWI21, WG711:OWI41).
- Drain trap makes temperature fall by accumulating cooled drain water temporarily. Further, it mixes city water and cooled-down drain water, makes mixed water temperature fall, then lets drain to sink equipment.
- Contact your dealer or Yamato Scientific sales office for detail of drain trap.

3. Names and functions of parts

Main Unit

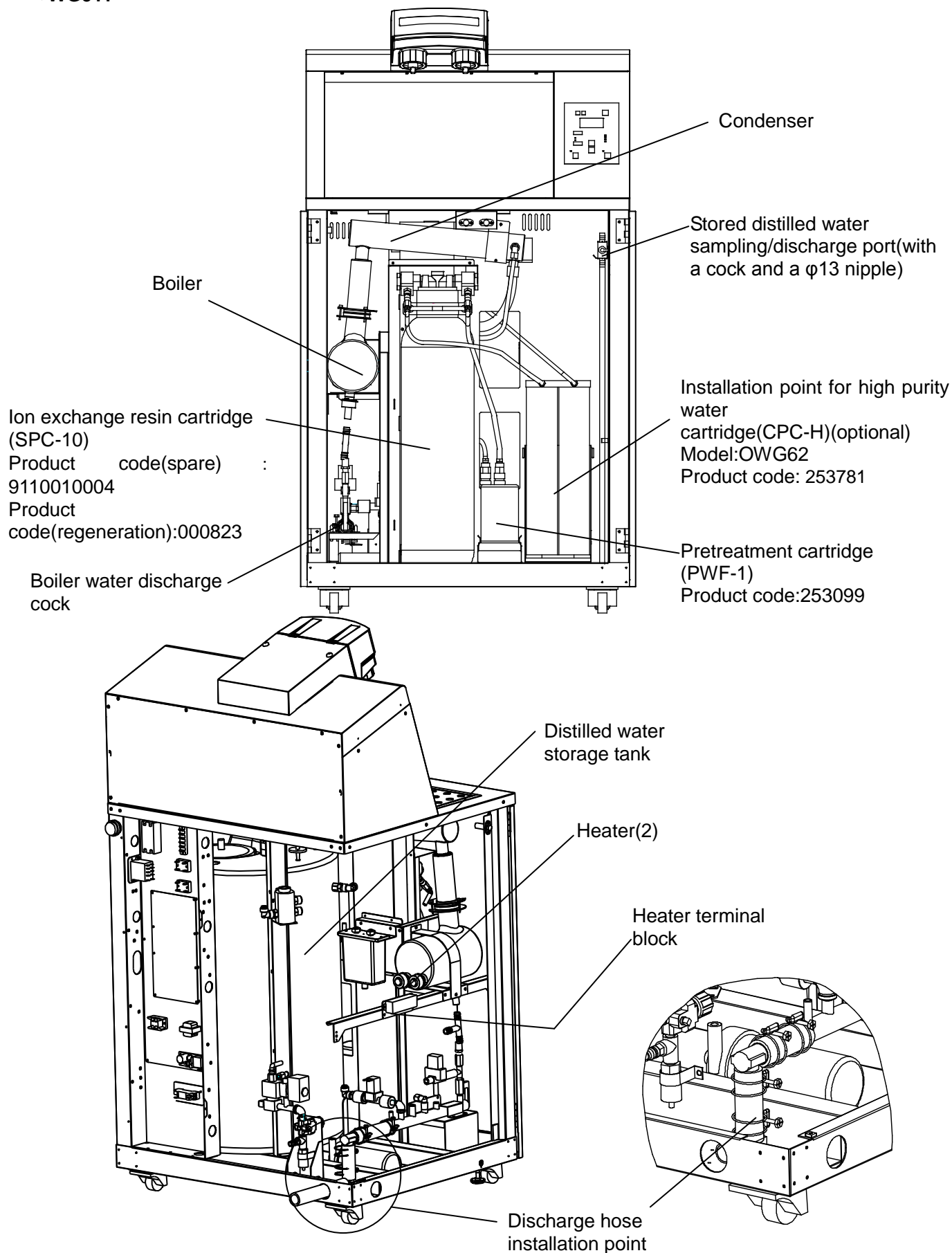
●WG511/711



3. Names and functions of parts

Main Unit

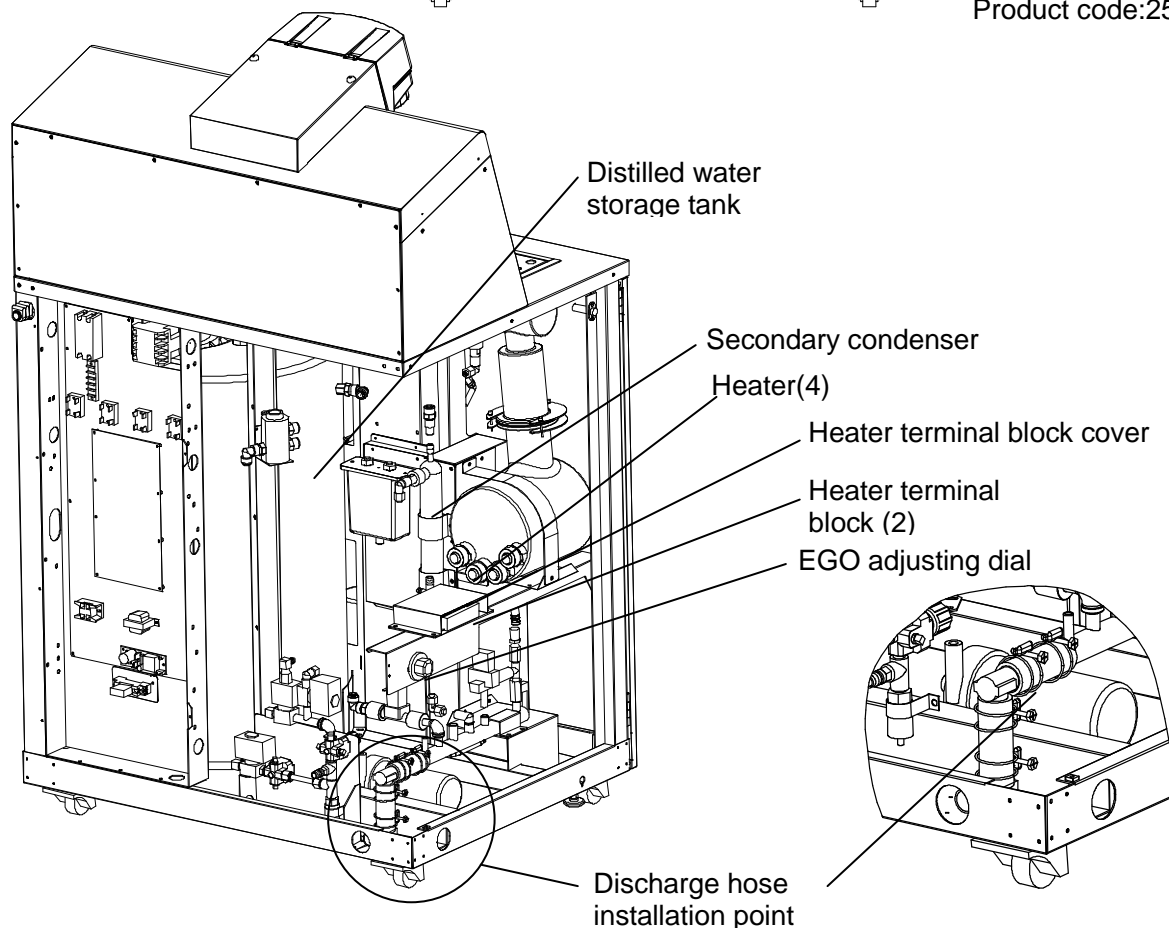
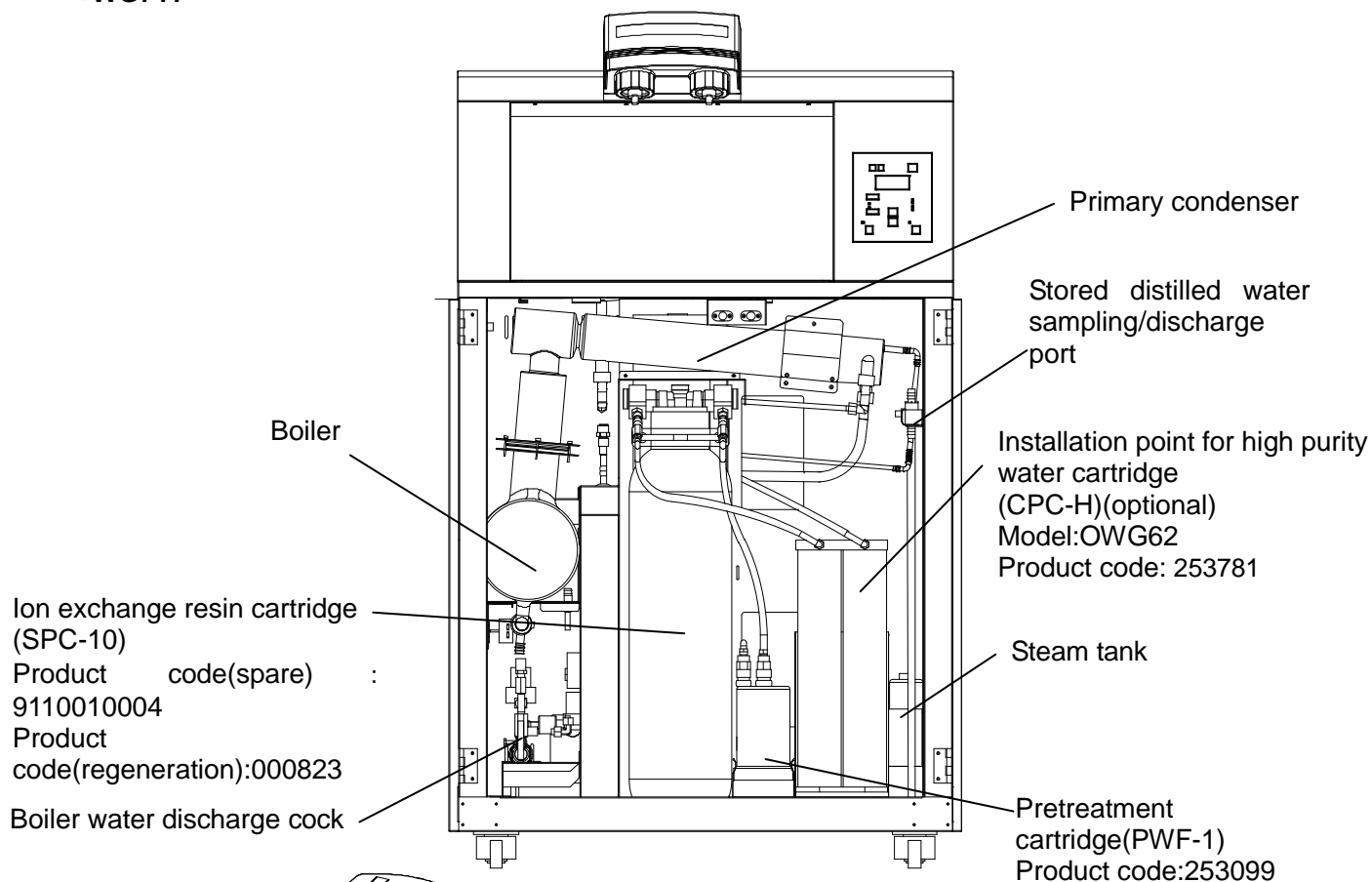
●WG511



3. Names and functions of parts

Main Unit

●WG711

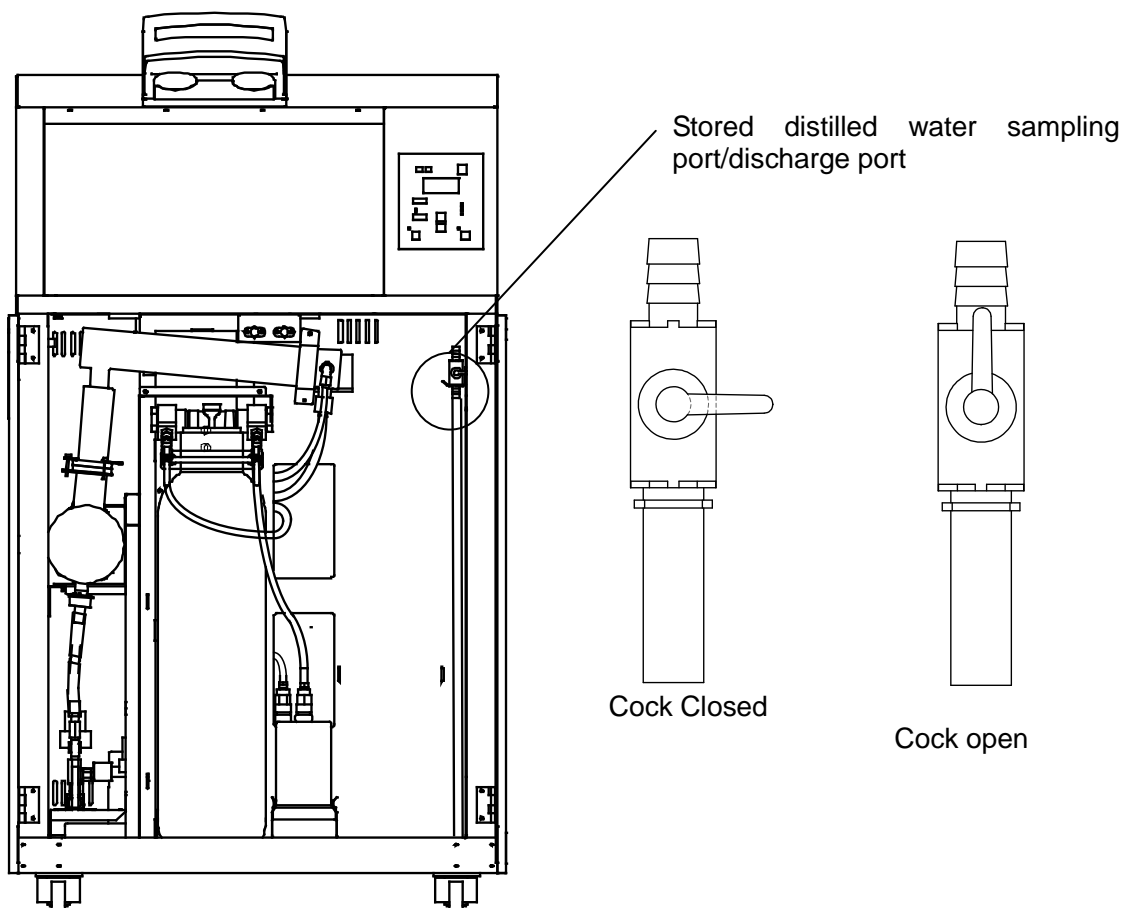


3. Names and functions of parts

Multi-purpose distilled water sampling port

Stored distilled water sampling port/discharge port

You can find the multi-purpose distilled water port by opening the right side door of the unit and you can collect/discharge water by opening the cock.



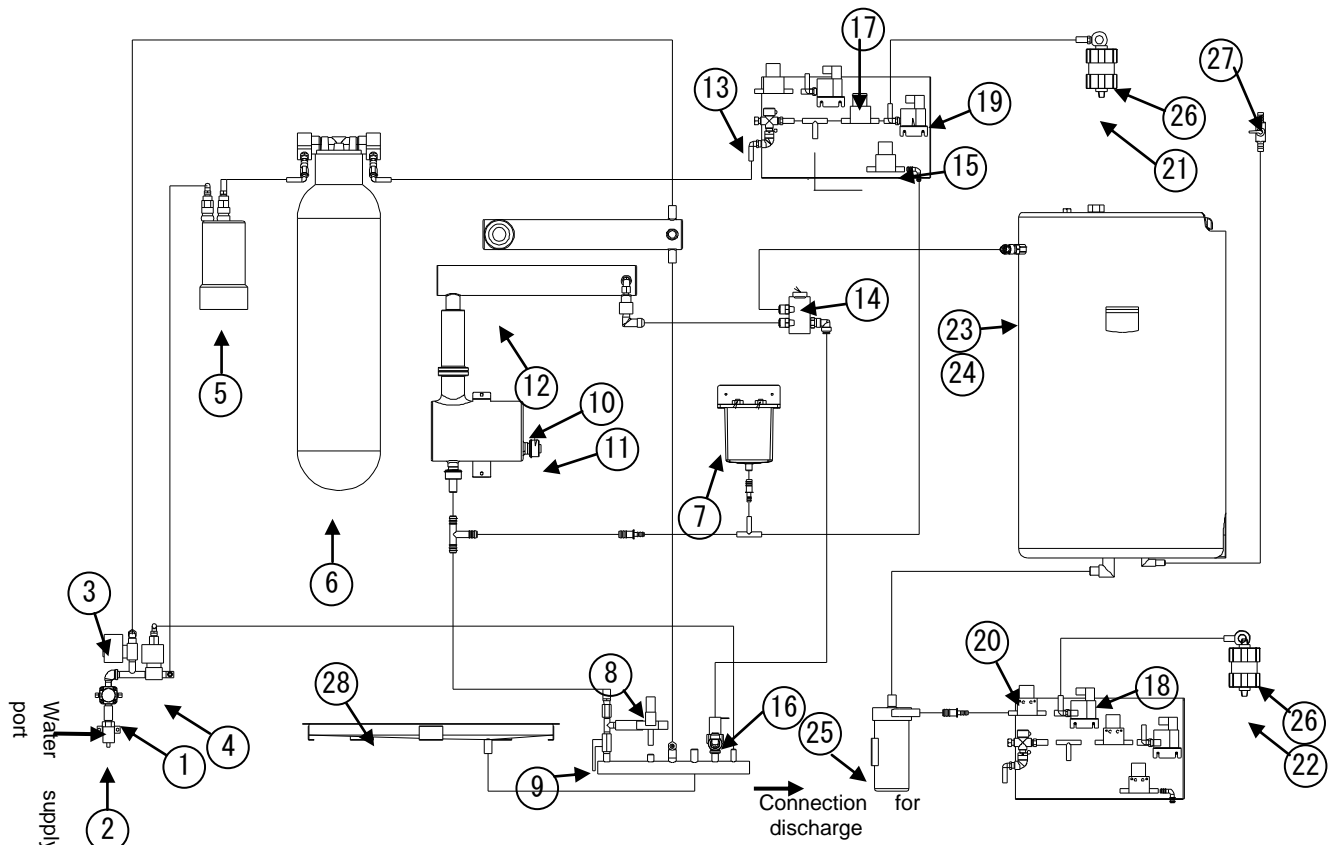
Take extreme care not to forget closing the cock after sampling/discharge water.

※There is a hose clamp at the root of the cock for preventing water leak. Take care for handling of the clamp, which has pointed parts.

3. Names and functions of part

Piping diagram

●WG511

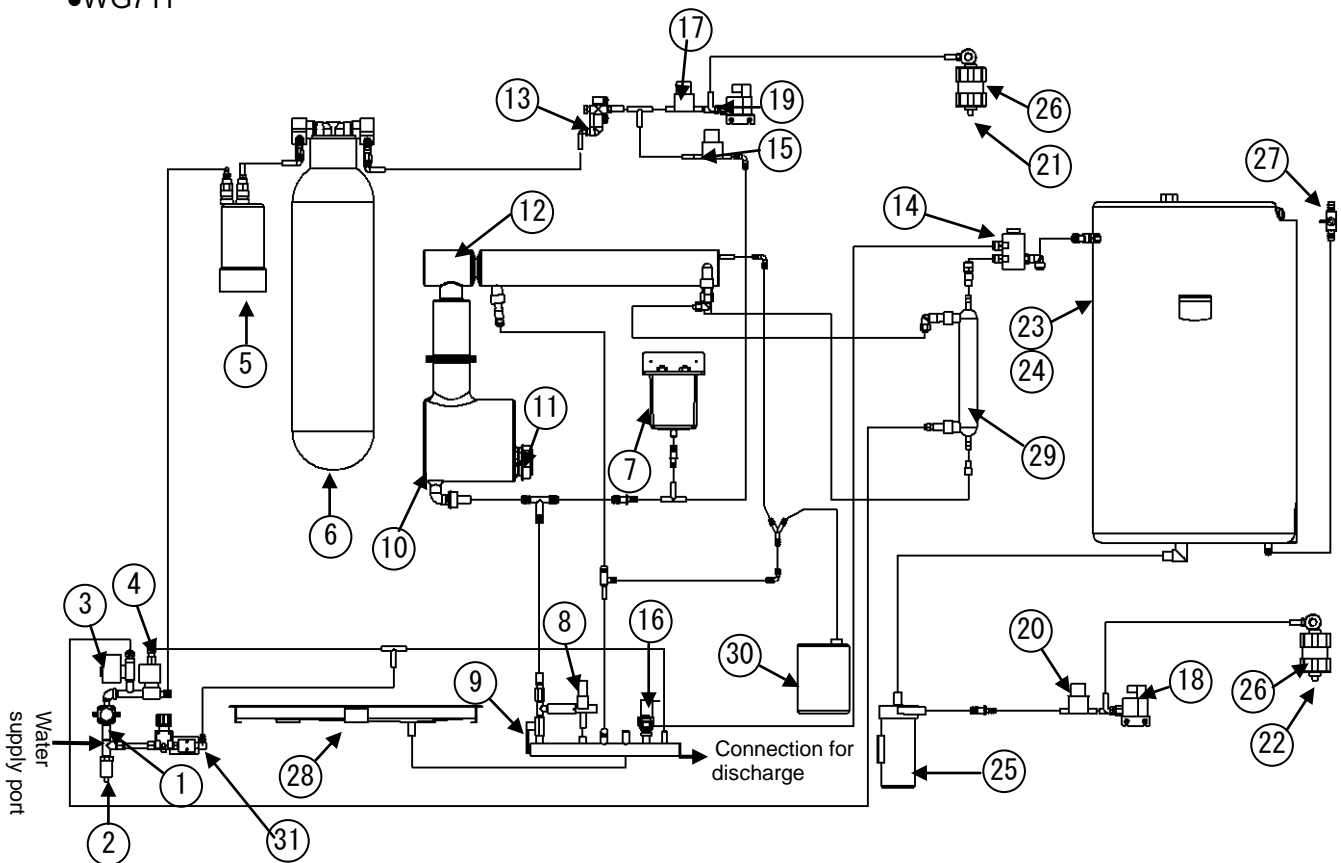


- | | |
|--|---|
| 1. Pressure reduction valve | 16. Initial stored water drain solenoid valve |
| 2. Pressure switch | 17. Ion exchange water sampling solenoid valve |
| 3. Cooling water solenoid valve | 18. Distilled Water flow sensor |
| 4. Raw water supply solenoid valve | 19. Ion exchange water flow sensor |
| 5. Pretreatment cartridge | 20. Distilled water sampling solenoid valve |
| 6. Ion exchange resin cartridge (SPC-10) | 21. Ion exchange water sampling port |
| 7. Float drum | 22. Distilled water sampling port |
| 8. Boiler drain solenoid valve | 23. Distilled water tank |
| 9. Boiler drain cock | 24. Distilled water tank float switch |
| 10. Boiler | 25. Distilled Water sampling pump |
| 11. Heater | 26. Membrane filter |
| 12. Condenser | 27. Stored distilled water sampling port/discharge port |
| 13. Ion exchange water quality gauge electrode | 28. Sink |
| 14. Distilled water quality gauge electrode | |
| 15. Boiler water supply solenoid valve | |

3. Names and functions of part

Piping diagram

●WG711

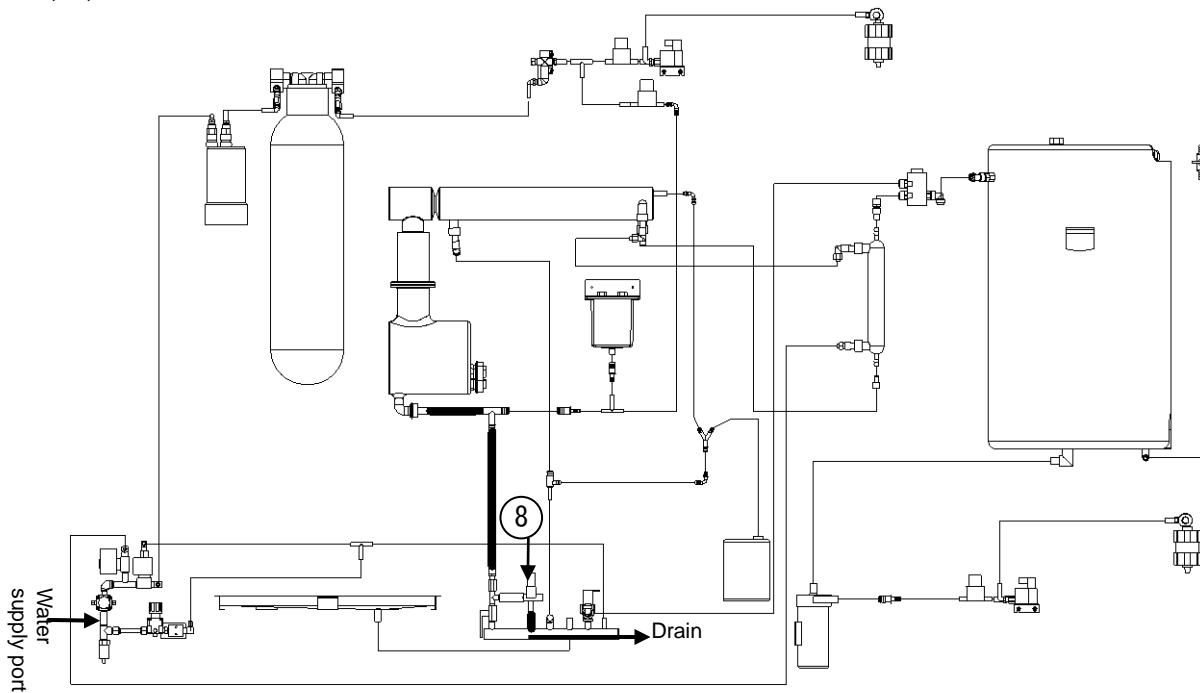


- | | |
|--|---|
| 1. Pressure reduction valve | 17. Ion exchange water sampling solenoid valve |
| 2. Pressure switch | 18. Distilled Water flow sensor |
| 3. Cooling water solenoid valve | 19. Ion exchange water flow sensor |
| 4. Raw water supply solenoid valve | 20. Distilled water sampling solenoid valve |
| 5. Pretreatment cartridge | 21. Ion exchange water sampling port |
| 6. Ion exchange resin cartridge (SPC-10) | 22. Distilled water sampling port |
| 7. Float drum | 23. Distilled water tank |
| 8. Boiler drain solenoid valve | 24. Distilled water tank float switch |
| 9. Boiler drain cock | 25. Distilled Water sampling pump |
| 10. Boiler | 26. Membrane filter |
| 11. Heater | 27. Stored distilled water sampling port/discharge port |
| 12. Condenser | 28. Sink |
| 13. Ion exchange water quality gauge electrode | 29. Secondary condenser |
| 14. Distilled water quality gauge electrode | 30. Steam tank |
| 15. Boiler water supply solenoid valve | 31. Bypass solenoid valve |
| 16. Initial stored water drain solenoid valve | |

3. Names and functions of part

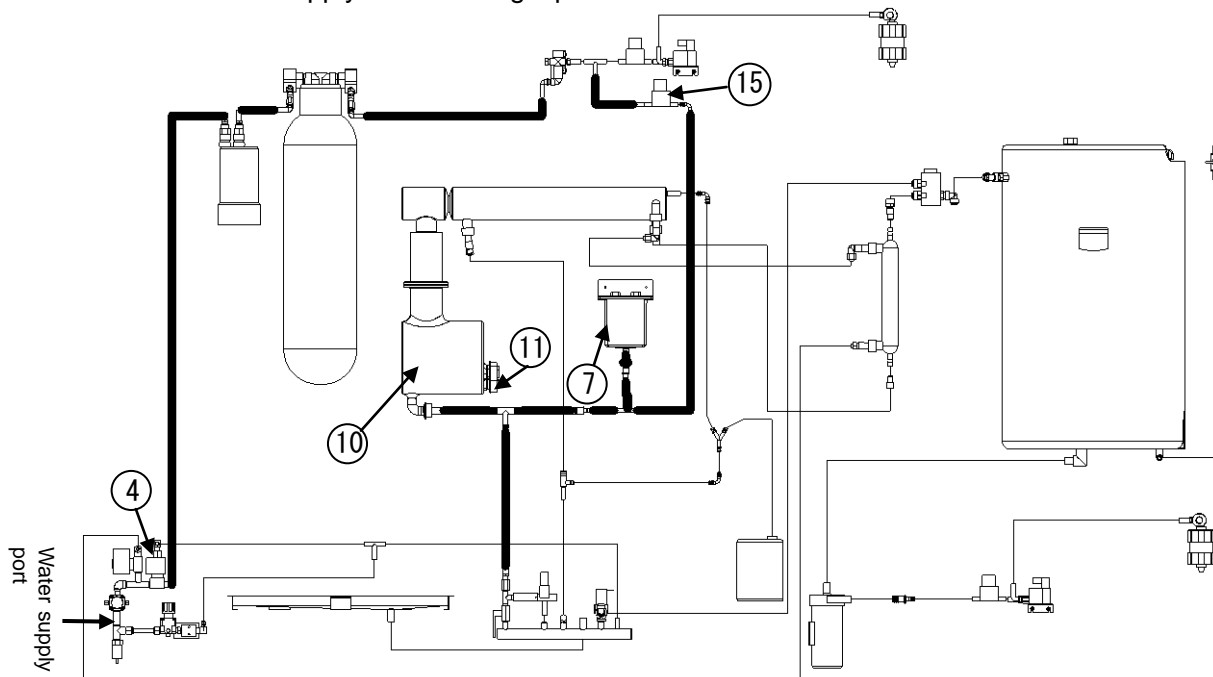
Principle of Operation

(1) Drain of the boiler



- Turn on(|) the earth leakage breaker and press POWER key. And the boiler drain solenoid valve ⑧ opens for approx. 30 seconds, and initial drain of the boiler is performed. Drain of the boiler is performed every 5 hours during distillation. Discharging of the boiler is to maintain the distilled water quality.

(2) Boiler Water Supply and Distilling Operation

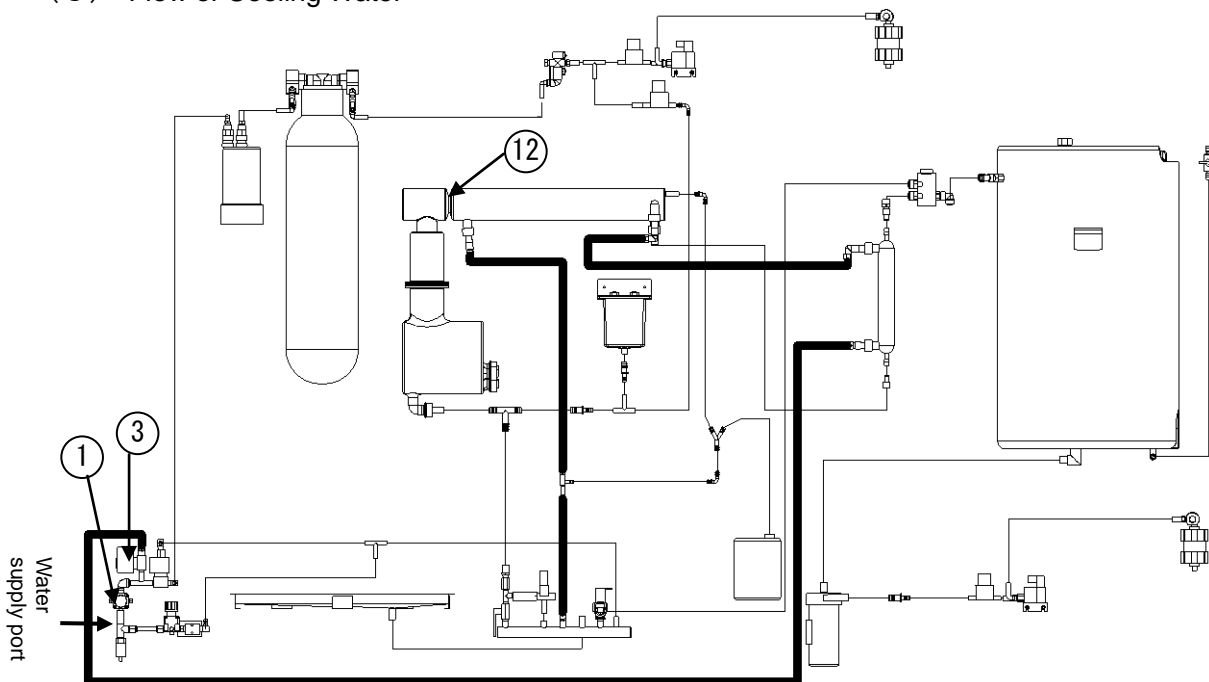


- When drain of the boiler is finished, both of raw water supply solenoid valve ④ and boiler water supply solenoid valve ⑮ open at the same time in order to supply water to boiler ⑩. When float switch in float cylinder ⑦ detects water level, heater ⑪ is turned on and distillation starts. Cooling water solenoid valve opens at the same time. Water supply to the boiler is controlled by opening/closing raw water supply solenoid valve ④ and boiler water supply solenoid valve ⑮.

3. Names and functions of part

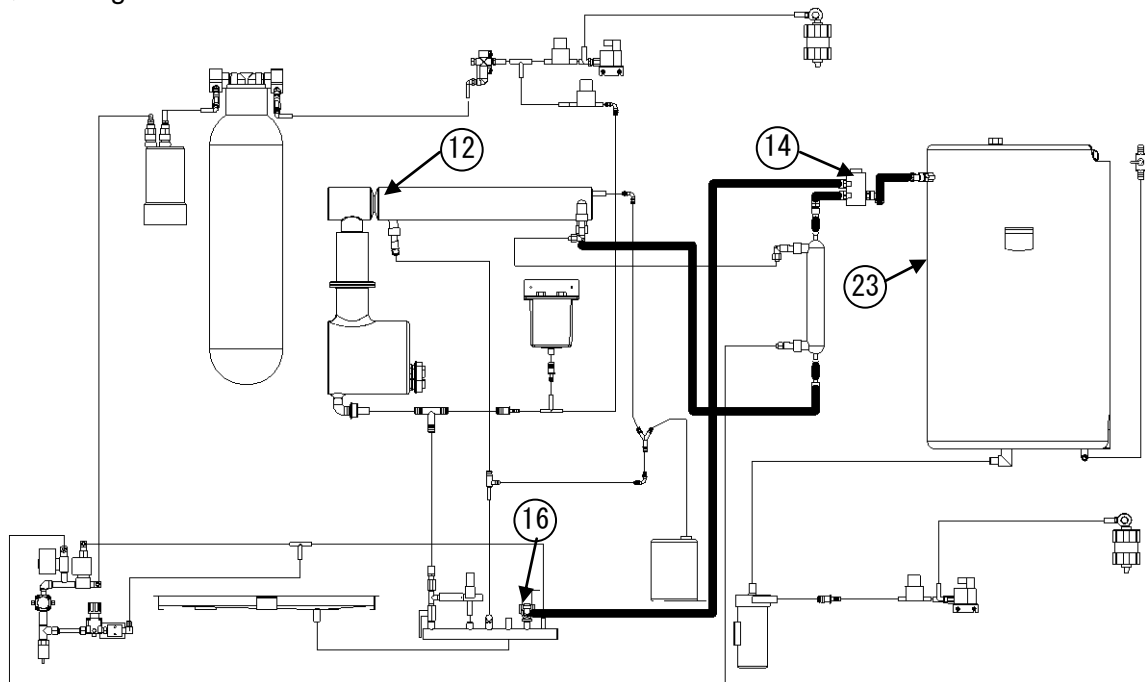
Principle of Operation

(3) Flow of Cooling Water



- During distillation, water is supplied and discharged in the order: ① pressure-reducing valve, ③ cooling water solenoid valve and condenser ⑫. When the distilled water tank is full, or when ion exchanged water is sampled, distillation is stopped, and the cooling water is also stopped automatically.

(4) Storing of Distilled Water

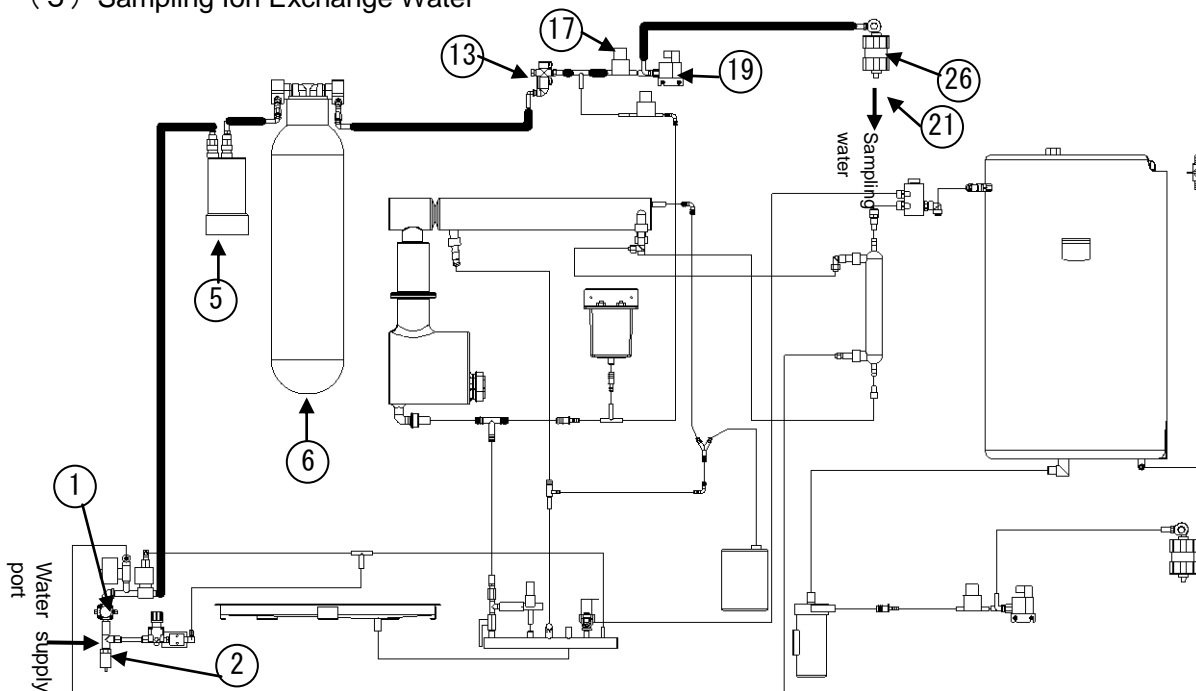


- For 10 minutes after starting distillation, initial distilled water condensed in condenser ⑫ is drained by opening initial accumulated water drain solenoid valve ⑯. Then distilled water is stored in distilled water tank ⑳ by distilled water quality gauge electrode ⑭. Distillation stops as the tank is full when float switch on the top in the tank operates. When certain amount of distilled water in the distilled water tank is consumed, distilled water will automatically be produced accordingly.

3. Names and functions of part

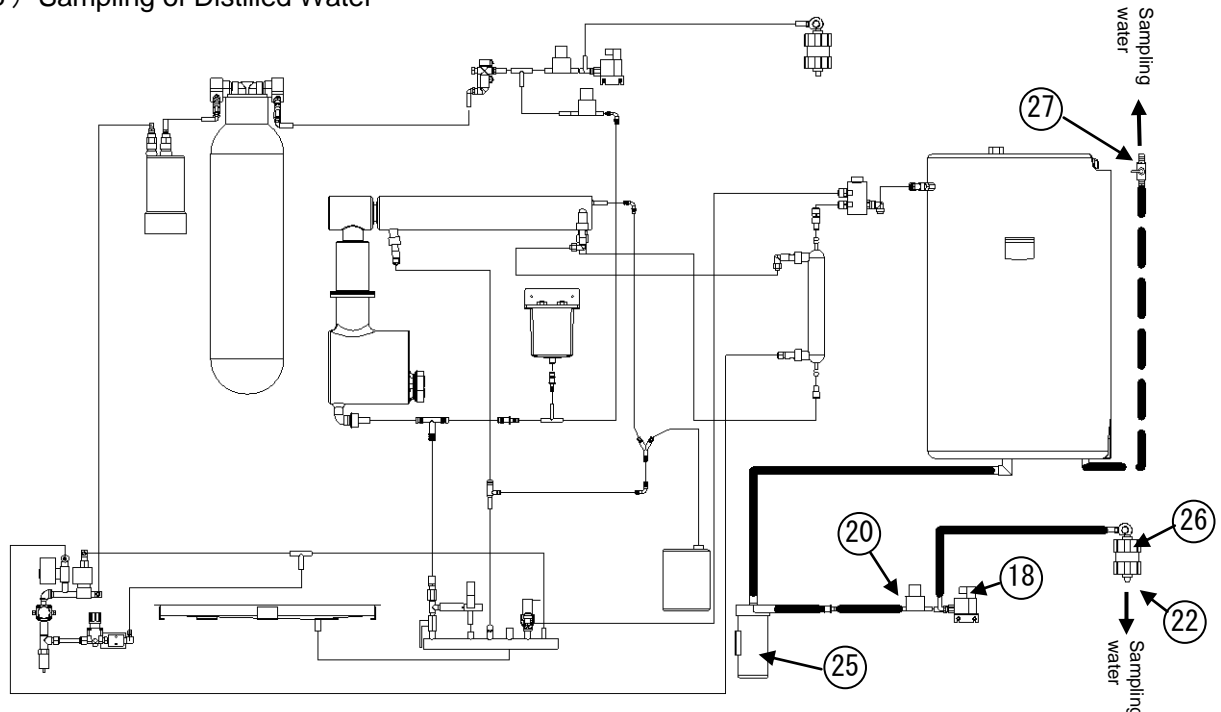
Principle of Operation

(5) Sampling Ion Exchange Water



- Ion exchange water is sampled by way of the pressure-reducing valve ①, raw water supply solenoid valve ②, pre-treatment cartridge ⑤, ion exchange resin cartridge (SPC-10) ⑥, ion exchange water quality electrode ⑬, ion exchange water sampling solenoid valve ⑰, ion exchange water flow sensor ⑱, membrane filter ⑳, and ion exchange water sampling port ㉑

(6) Sampling of Distilled Water

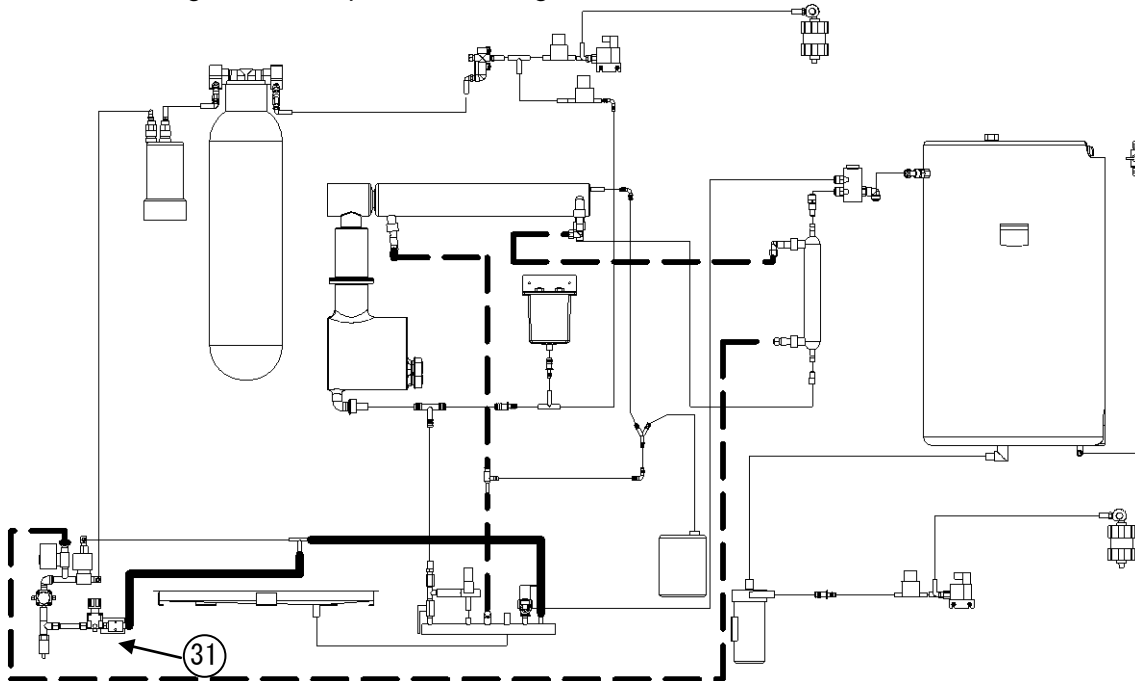


- Distilled water is drawn with the distilled water sampling pump ㉕ by way of the distilled water sampling solenoid valve ㉔, the distilled water flow sensor ⑱, the membrane filter ㉖ and then the distilled water sampling port ㉒ before being collected. Distilled water can also be collected at the stored distilled water sampling port/discharge port ㉗. Use this method during power outage or water outage.

3. Names and functions of part

Principle of Operation (WG711)

(7) Discharge water temperature cooling mechanism



- When the discharge temperature exceeds 60°C while the discharge water temperature cooling mechanism is ON, cooling water(solid line) will flow from the bypass solenoid valve (31) to the discharge port, will join high temperature cooling water(dotted line) which has passed the condenser to lower the discharge temperature at the discharge exit port.

3. Names and functions of part

Discharge water temperature cooling mechanism (WG711)

Discharge water temperature will fluctuate depending on the supply water temperature. The discharge water temperature of WG711 may rise to 60°C or higher when the supply water temperature is 10°C or higher melting the PVC tube (withstand temperature of the PVC tube is 60°C) and therefore is equipped with a discharge water temperature cooling mechanism. When your discharging facility is heat-resistant, you can switch this operation OFF. To do this, follow the EGO setting procedures below to change the setting.

Also note that the supply water pressure range for WG711 differs depending on whether the discharge water temperature cooling mechanism is ON or OFF.

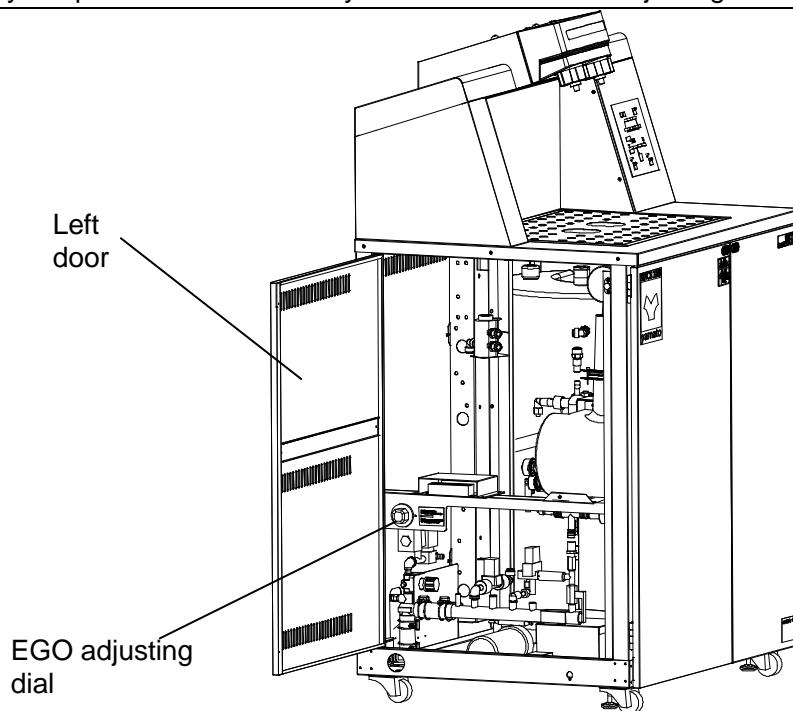
Discharge water temperature cooling mechanism is ON : 0.15 ~ 0.50 MPa

Discharge water temperature cooling mechanism is OFF : 0.10 ~ 0.50 MPa

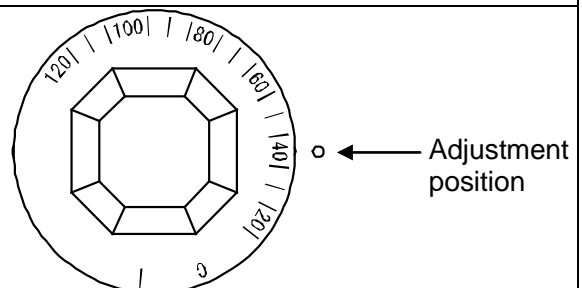
※Discharge water temperature cooling mechanism is set at ON at the time of factory shipping.

●Setting of a Robertshaw thermostat

When you open the left side door you will see the EGO adjusting dial.

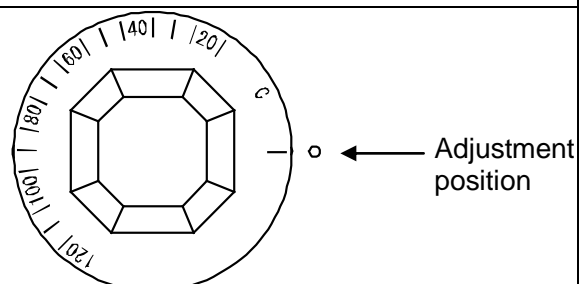


• Set the EGO adjusting dial to 40 when the discharge facility's heat resistance is 60°C or lower (for example, PVC tube)
Set the EGO adjusting dial to 40. The discharge water temperature cooling mechanism will be activated when the discharge water temperature exceeds 60°C.



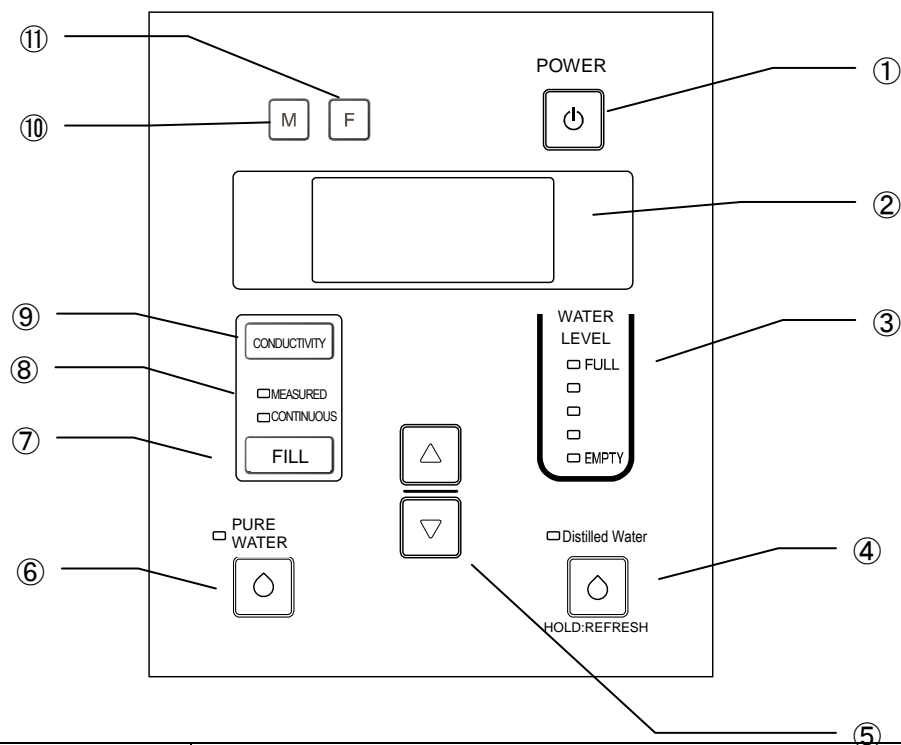
• When discharge facility's heat resistance is 60°C or higher (for example, metal or HT-PVC tube)

Fully turn the EGO adjusting dial clockwise. The discharge water temperature cooling mechanism is disabled.



3. Names and functions of part

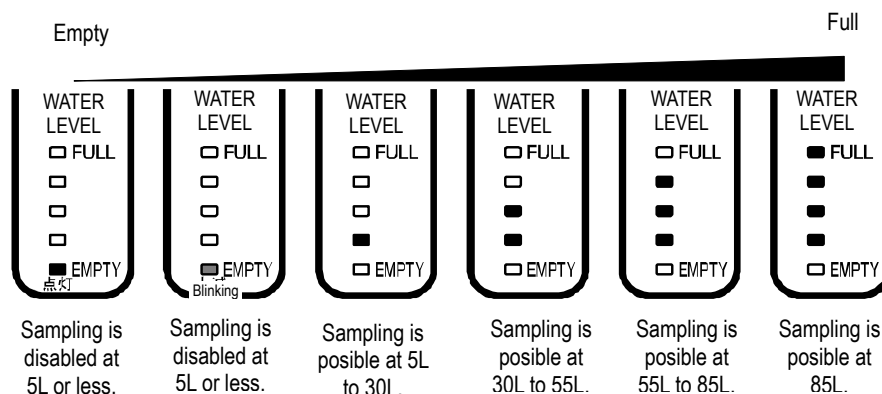
Control Panel



①	POWER key	Turns on/off the power of the controller.
②	Message indication area	Indicates the measured value and setting value.
③	WATER LEVEL lamp	Indicates water level in the distilled water tank in five levels.
④	HIGH-PURITY DISTILLED WATER key	Starts/stops drawing high-purity distilled water.
⑤	▲ ▼ key	Selects the value setting item.
⑥	PURE WATER key	Starts/stops drawing pure water.
⑦	FILL key	Switches water sampling method. (Measured filling/Continuous filling)
⑧	FILL lamp	Lights up when either of MEASURED or CONTINUOUS is selected.
⑨	CONDUCTIVITY key	Switches conductivity indication unit. ($S/m \leftrightarrow \Omega \cdot m$)
⑩	M key	Used when entering submenu or maintenance mode.
⑪	F key	Also (confirms the setting) then shifts to the next setting item.
⑪	F key	(Cancels the setting) then returns to the previous setting item.

Description of ③ WATER LEVEL lamp

This lamp indicates the storage amount of distilled water in the distilled water tank in five levels. When the amount of water remaining in the tank is small, the red lamp at the lowest level flashes to indicate that the level is low. When the tank is empty and the red lamp is on, you cannot sample distilled water to prevent the sampling pump from operating without load. When the storage amount of the tank is set at 30L, the third green lamp will be on when the tank is full and distillation will stop. When it is set at 55L, the forth green lamp will be on when the tank is full and distillation will stop.



4. Operation Method

Setup and Check before Use

(1) Check of water supply

- Check that the water supply hose is securely connected.
- Open the tap.
- Check that water does not leak from connection of water supply hose.

(2) Check of drain

- Check that the drain hose is securely connected.
- Check that the discharge hose is not kinked and connected at a position lower than the discharge facility of the unit.
- Check that the drain hose is connected to the sink free of kinks.
- When the drain hose is bent or the like, system does not operate normally, and in addition, it may lead to water leakage accident. Inspect from time to time, and ensure that water is drained properly.

(3) Check of power supply

- Check that the power cord is connected to appropriate plug socket.

(4) Before operation

- Bleed the ion exchange resin drum. Air remains in the pretreatment cartridge and the ion exchange resin (SPC-10) at initial operation. Never fail to carry out this since imperfect bleeding will prevent this unit from exerting its full performance. (See Bleeding procedures for the ion exchange resin (SPC-10) on P.28.)
- To start initial operation, turn the ELB "ON(|)", while holding down the Consumables replacement reset switch, check a beep after about 4 seconds and release the Consumables replacement reset switch.
- Turn on the earth leakage breaker, then, perform calibration before pressing POWER key. Perform calibration operation at first-time using this unit (refer to page 29, Calibration) and when changing the heater of the boiler (refer to page 53). Press **POWER** key while holding down **PURE WATER** key and **DISTILLED WATER** key. Perform calibration operation (at the measured values of heater temperature and power-supply voltage) for about five minutes, after then, distillation starts automatically. Then the screen will automatically change to one during distillation. Key operation becomes disable while calibration operation. In case that power failure occurs while calibration operation, please perform calibration again.

(5) Caution during the initial operation

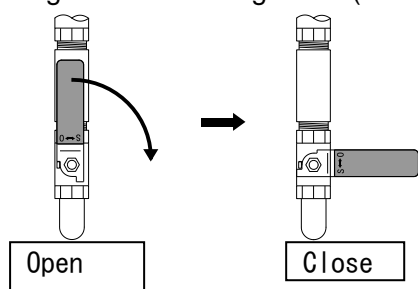
- When you sample distilled water during initial powering and after discharging the distilled water storage tank, air remains in the pump and the pipes and some time is necessary until sampling starts. The pump may generate a strange sound during sampling of distilled water, which does not indicate a malfunction of the device. (When a strange sound continues, remove the membrane filter on the distilled water side to bleed and then sample distilled water.)
- Time is also required when sampling ion exchange water immediately after replacing the pretreatment cartridge or the ion exchange resin cartridge. Also remember to discharge about 5ℓ to remove initial impurities when you have replaced any of these cartridges.

4. Operation Method

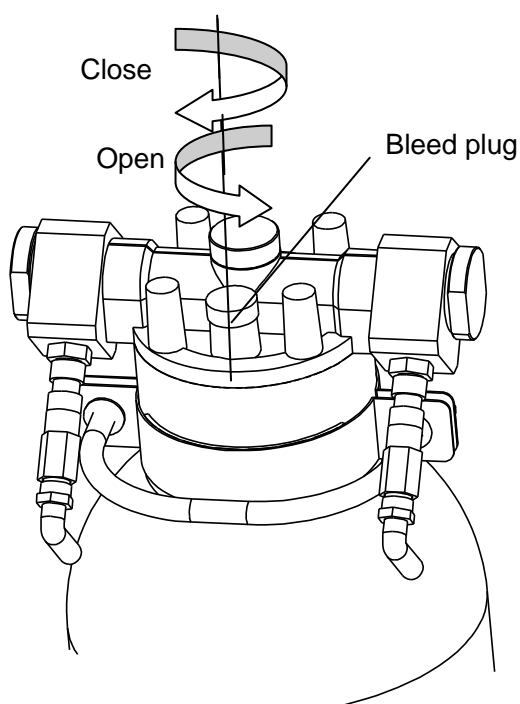
Preparation

When operation is ready, follow the procedures below to start operation.

1. Bleeding the ion exchange resin (SPC-10)



① Make sure that the boiler discharge cock is closed.



② Open the bleed valve of the ion exchange resin cartridge (SPC-10) by 1/3 turn. (Turn anticlockwise to open; clockwise to close.)

③ Carry out calibration on the next page. Water flows into the ion exchange resin during calibration and bleeding starts.

After 1~2 minutes, water will flow out of the bleed plug, when you need to securely close the bleed plug immediately.

Wipe any water off with a dry cloth.

※Never leave the unit alone until bleeding finishes.

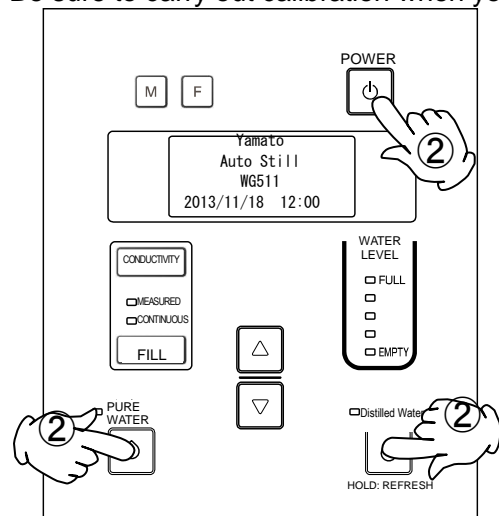
4. Operation Method

Preparation

Follow the procedures below when operation is ready.

2. Calibration (Compensation of the heater operation amount according to the voltage conditions you have set.)

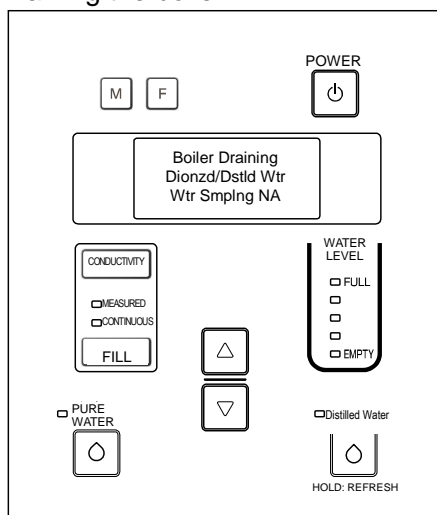
Be sure to carry out calibration when you use the unit for the first time.



- ① Turn the ELB [ON(|)].
- ② After 4 seconds, press **POWER** key while keeping the **Ion Exchange Water** key + **Distilled Water** key.
- ③ In 5 minutes, [3.Distillation Operation] starts automatically.

Bleeding will be completed in 1 ~ 2 minutes after calibration started and water will flow out of the bleed plug, when you need to securely close the bleed plug immediately. Never leave the unit alone until bleeding finishes.

3. Draining the boiler

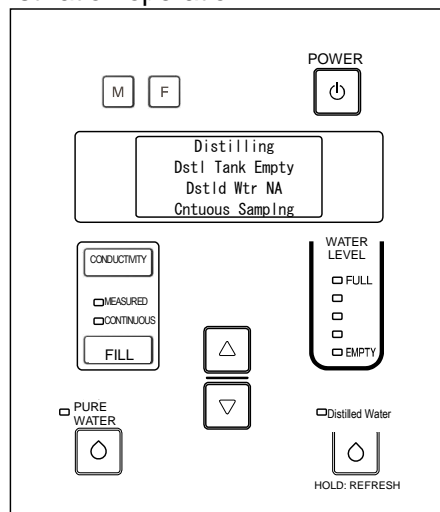


Draining of the boiler will start when power is turned ON.

(The boiler will not be drained unless the **POWER** key is pressed.)

The boiler will be drained every five hours of operation after the ELB is turned ON/OFF or distillation.

4. Distillation operation



When there is no water in the tank, the left screen display and the below screen display are alternately indicated at 5 seconds interval. The value $\cdot \cdot \cdot \times 10^4 \Omega \cdot m$ is indicated while initial distilled water is drained (approx. 10 minutes), after that, the below screen is displayed. The distilled water quality will always be displayed during distillation.

Distilling
Dstld Wtr Rstvtly
 $0.86 \times 10^4 \Omega \cdot m$
Cntuous Sampling

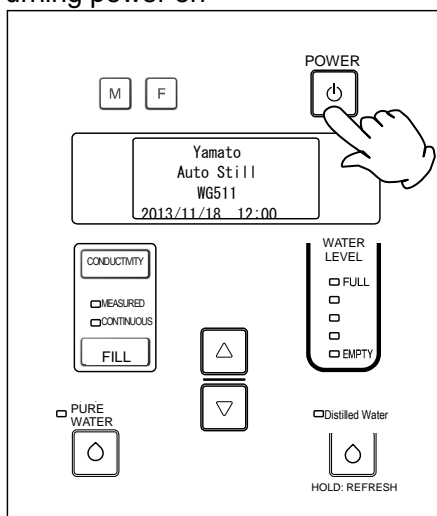
The display will change to the one below when the tank is full.

Distill Stop
Tank Full
Cntuous Sampling

4. Operation Method

Continuous sampling of distilled water and ion exchange water

1. Turning power on

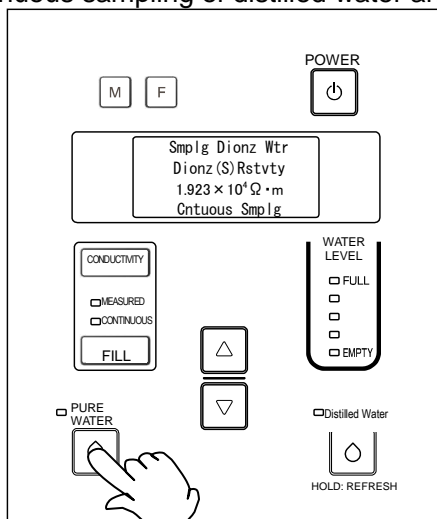


Turn the ELB [ON(|)].

Press the **POWER** key after about 4 seconds.

Sampling will be possible when discharging of the boiler has been completed.

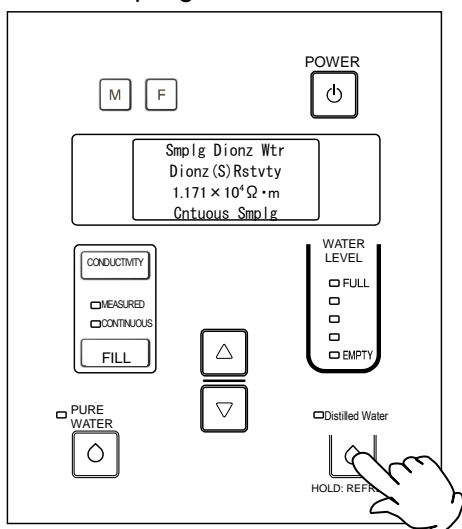
Continuous sampling of distilled water and ion exchange water



FILL lamp lights up by pressing **PURE WATER** key while “CONTINUOUS” lamp is ON. Then, pure water can be sampled continuously.

Sampling water stops by pressing **PURE WATER** key again. Then, PURE WATER lamp is turned off. After water sampling is finished, it returns to distillation operation.

Continuous sampling of distilled water



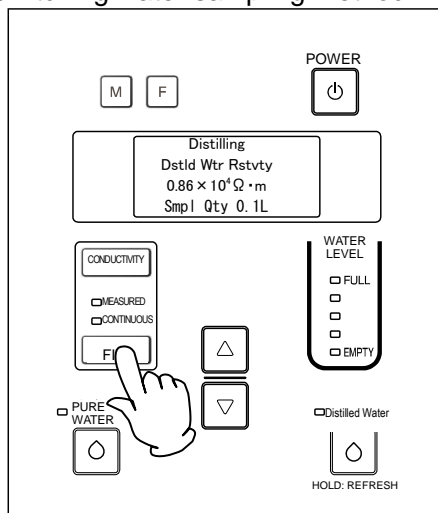
Pressing the **Distilled Water** key while “CONTINUOUS” is on will light the Distilled Water lamp and you can sample distilled water. To finish sampling, press the **Distilled Water** key again. The distilled water lamp will go off. Operation will return to distillation after sampling is completed.

- ※ You cannot sample distilled water unless the distilled water level is lit in green.
- ※ The pump may generate a strange sound during sampling of distilled water, which does not indicate a malfunction of the device. (When a strange sound continues, remove the membrane filter on the distilled water side to bleed and then sample distilled water.)

4. Operation Method

Sampling measured amount of distilled water and ion exchange water

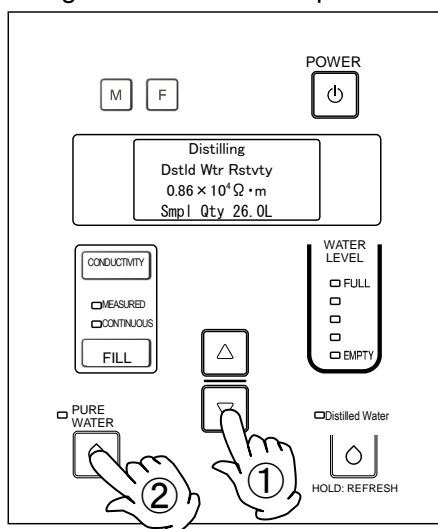
1. Switching water sampling method



Switch to “MEASURED” amount water sampling method.

Switch from “CONTINUOUS” to “MEASURED” by pressing **FILL** key.

2. Setting the amount to sample



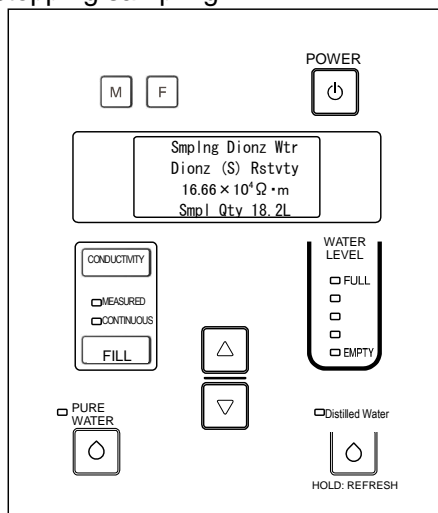
Set the amount for sampling.

The setting screen is common for ion exchange water and distilled water.

- ① Use the ▲▼ keys to set the amount to sample.
Setting range : 0.1L~85.0L
※For sampling of the fixed amount of distilled water, observe the tank level.
- ② Pressing the **Ion Exchange Water** key or the **Distilled Water** key after setting will start fixed amount sampling.

You cannot sample distilled water unless the distilled water level is lit in green.

3. Stopping sampling



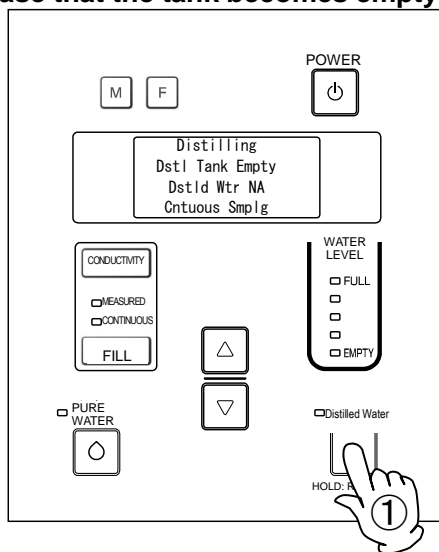
- ① The fixed amount of sampling is decremented.
- ② When sampling is completed, “Smpl Qty : 0.0L” will be displayed.
- ③ The screen will return to that of section 2.

※If you press the **Ion Exchange Water** key or the **Distilled Water** key during sampling, sampling will stop and the amount will reset.

4. Operation Method

Sampling of Measured Amount of Distilled Water

●In case that the tank becomes empty while sampling water

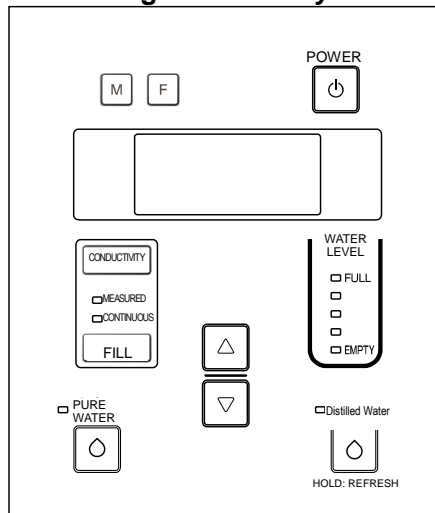


- ① The left screen is displayed when the tank becomes empty during sampling water, and DISTILLED WATER lamp blinks and operation of water sampling is suspended.
- ② Distillation starts.
- ③ Press the **Distilled Water** key again to resume sampling when the “EMPTY” lamp to indicate the distilled water level is in any state other than on.
Note that the mode holding status will be released if you press the **Ion Exchange Water** key in this state.
- ④ When sampling is completed, “Smpl Qty : 0.0L” will be displayed and the screen will return to that of section 2.

4. Operation Method

Conductivity Unit Switching

●Switching conductivity unit



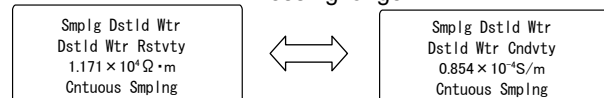
Switch the conductivity unit.

Pressing **CONDUCTIVITY** key for 2 seconds switches the conductivity unit.

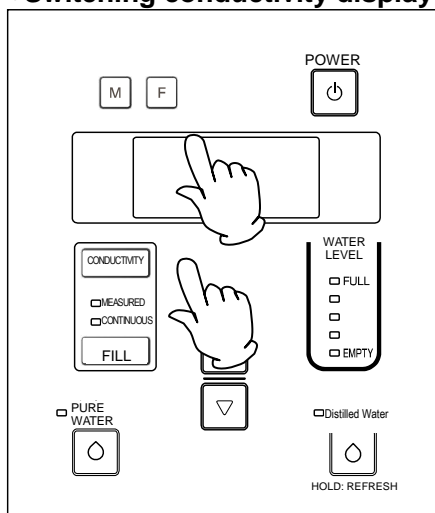
Ex)

In case of switching the conductivity unit during sampling distilled water

CONDUCTIVITY key
Pressing longer



●Switching conductivity display



During ordinary operation mode

Distilled water quality display : During distillation or sampling of distilled water

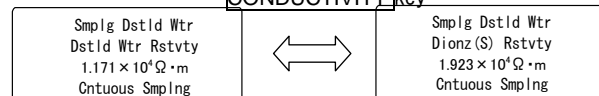
Ion Exchange Water quality display : During sampling of ion exchange water

Pressing **CONDUCTIVITY** key switches the conductivity display for either of pure water or distilled water.

Ex)

In case that you want to see the conductivity of pure water during sampling distilled water: In case that the conductivity of pure water

CONDUCTIVITY key



Water quality indication will return to the previous state if you do not operate any key for about 10 seconds.

Measurement of Electric Conductivity

The water quality in the control panel indicates the conductivity immediately after distillation for distilled water or conductivity at the exit of the ion exchange resin cartridge for ion exchange water. Use the quality indication of ion exchange water as a guide to replace the ion exchange resin cartridge. Be sure to read the indication when the electrode is completely soaked in water, that is, while ion exchange water is being supplied.

Correct value is not displayed in the following cases because the electrode is not damped or air bubbles are produced.

1. At beginning of operation and during halts
2. Just after changing pretreatment cartridge or ion-exchange resin cartridge

Electric conductivity

- Electric conductivity is a value indicating easiness of flowing of electricity. In the case of water, electricity flows the more easily when the more electrolyte i.e. impurity is solved, so the value of conductivity is the greater; when the less electrolyte is solved, the smaller is the value.
- When the value of electric conductivity is the smaller, the better is purity of pure water. Here, electric conductivity indicates only electrolyte, and does not indicate content of non-electrolyte (such as organic substance, colloid substance, dissolved gas, and microorganism), and it is just an index indicating purity of pure water, and it does not represent all of purity.
- Specific resistivity (R) indicates the same contents as electric conductivity (ρ). Specific resistivity is a reciprocal of electric conductivity, which means the larger its value the higher the purity.

$$R[\Omega \cdot m] = \frac{1}{\rho [S/m]} \quad \text{or} \quad R[\times 10^4 \Omega \cdot m] = \frac{1}{\rho [\times 10^{-4} S/m]}$$

So the theoretical value of pure water is as follows:

$$R = 18.2 \times 10^4 \Omega \cdot m (18.2 M\Omega \cdot cm) 25^\circ C$$

$$\rho = 0.055 \times 10^{-4} S/m (0.055 \mu S/cm) 25^\circ C$$

4. Operation Method

Water quality and quality indication

Ion exchange water and distilled water of the unit is compliant with the JIS K0557 A4 standard.

About the JIS K0557 standard

The JIS K0557 standard is applicable for pure water used for testing of industrial water and plant effluent. Types and quality of pure water are defined as in the table below.

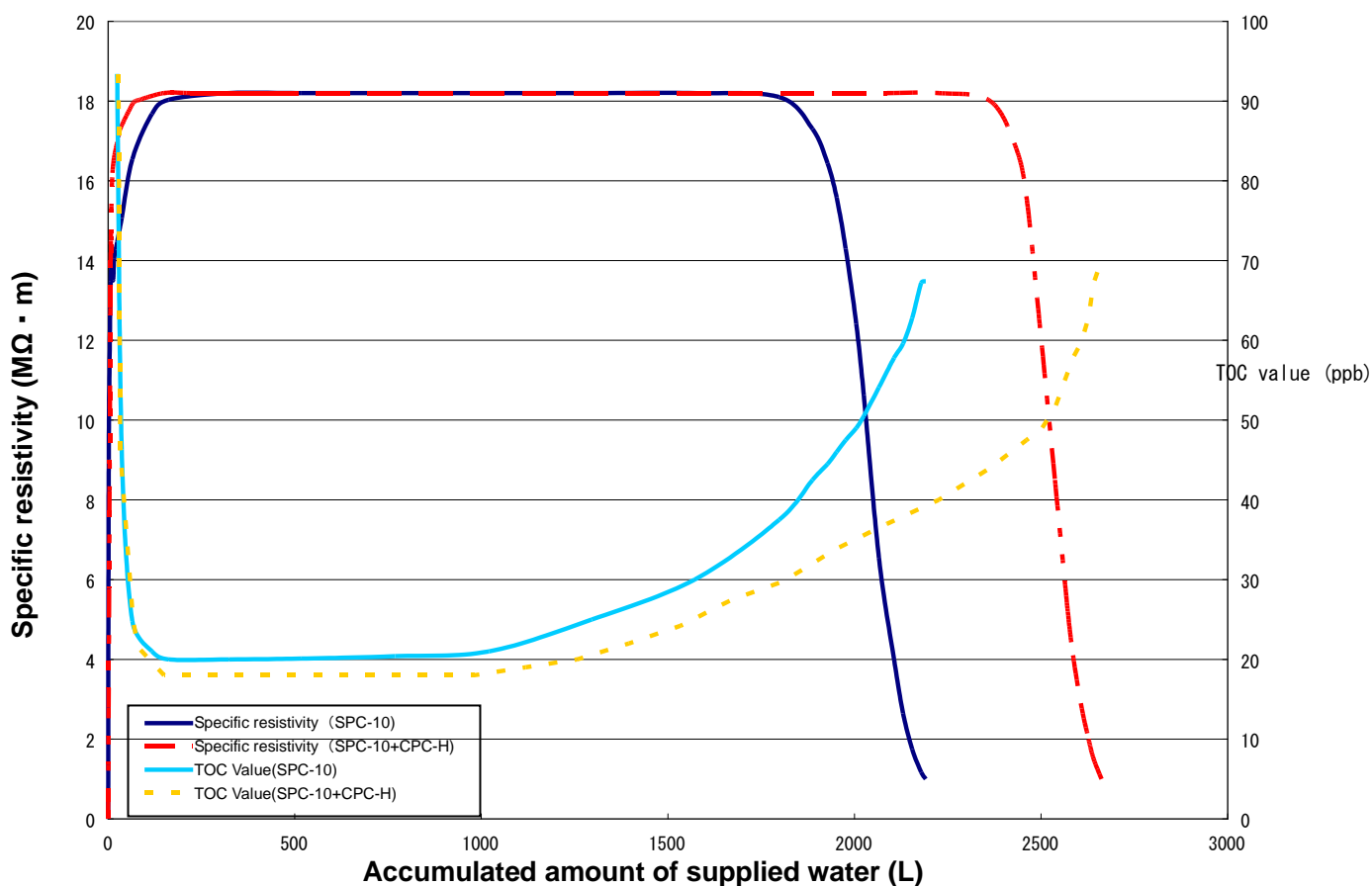
Item		Types and quality			
		A1	A2	A3	A4
Electric conductivity	mS/m(at25°C)	0.5 or less	0.1 or less	0.1 or less	0.1 or less
Specific resistivity	MΩcm(at25°C)	0.2 or more	1 or more	1 or more	1 or more
Organic oxygen	mg/L	1 or less	0.5 or less	0.2 or less	0.05 or less
Zinc	μg/L	0.5 or less	0.5 or less	0.1 or less	0.1 or less
Silica	μg/L	-	50 or less	5.0 or less	2.5 or less
Chloride ion	μg/L	10 or less	2 or less	1 or less	1 or less
Sulfate ion	μg/L	10 or less	2 or less	1 or less	1 or less

- A1 Used for washing utensils and raw materials of A2~A3 raw water.
 - A2 Used for general tests and raw materials of A3~A4 pure water.
(In principle, A1 water shall be used for purification by combining the ion exchange resin and a precision filter in the final process.)
 - A3 Used for preparation of reagents and testing of minor components.
(In principle, A1 or A2 water shall be used for purification by employing the distillation method or equivalent in the final process.)
 - A4 Used for testing of minor components. (The refining technique shall be the distillation with a silica glass distiller or other techniques that can lead to the equivalent results.)
- ※ Specific resistivity is shown for reference only. The original standard does not specify any specific resistivity.

4. Operation Method

Water quality characteristics data (Reference)

●Use life of ion exchange resin cartridge (SPC-10)



Reference water quality data					
JIS K0557 standard items		SPC-10 only	SPC-10+CPC-H (optional)	Distilled water	
				WG511	WG711
Zinc	$\mu g/L$	Less than 0.1	Less than 0.1	Less than 0.1	Less than 0.1
Silica	$\mu g/L$	1	Less than 0.1	1.2	2.0
Chloride ion	$\mu g/L$	Less than 0.1	Less than 0.1	0.2	Less than 0.5
Sulfide ion	$\mu g/L$	Less than 0.1	Less than 0.1	0.2	Less than 0.5

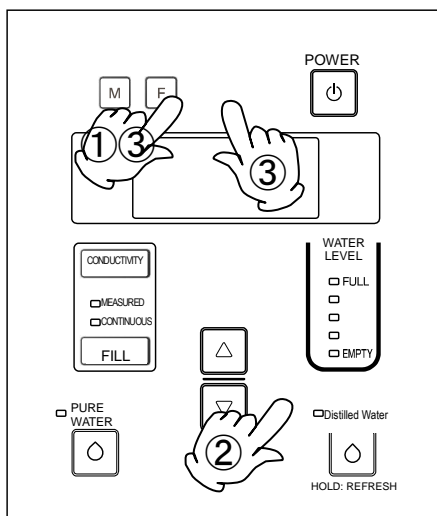
※ CPC-H is optional. Purchase a separately sold high purity cartridge installation unit (OWG62) and CPC-H for its installation.

※ Tap water in Kanagawa Pref. . . . Specific resistance: Approx. $0.007 \times 10^4 \Omega \cdot m$ / TOC : Approx.800ppb

※ Supply water temperature . . . Approx.20°C

※ Data is for reference only. These pieces of data may change depending on the quality of raw water.

1. Setting/display of submenu



Perform setting/display of submenu.

1. Pressing M key for 2 seconds displays the submenu.
2. Select the item to be set or displayed by pressing ▲▼ key.
3. Pressing M key confirms the setting and shifts to the selection screen.

Press F key to (cancel the setting and) return the previous setting screen.

- ❖ If not pressing any keys for 2 minutes, the screen returns to the previous display before setting/display of submenu.

Items of submenu are:

- 1) ON/OFF of buzzer sound
- 2) Calendar setting
- 3) Consumables change history
- 4) Maintenance history
- 5) Error occurrence history
- 6) Power failure occurrence history
- 7) Water cutoff occurrence history
- 8) Language selection
- 9) Power failure recovery function
- 10) Stored water amount setting

2. Setting/display of each item

2.1. Setting of ON/OFF of buzzer sound

Buzzer
1. Key Click
2. Error Buzz

To set a key clicking sound/alarm buzzer sound:

1. Select an item of submenu by pressing ▲▼ key.
 2. Confirm the item by pressing M key. The selection screen appears.
 3. Specify "ON" or "OFF" of each item by pressing ▲▼ key, and confirm the setting by pressing M key.
 4. Pressing F key returns to the submenu screen.
- ❖ "ON" is set to buzzer sound at default setting.

2.2. Calendar setting

Calendar
2014 year
01/01 month/day
12:00 h:min

To set the calendar:

1. Set the items (year/month/day/hour/minute) by pressing ▲▼ key.
2. Confirm the setting by pressing M key.
3. The set items are displayed. Check the set items and confirm your entry by pressing M key to go to the selection screen.
4. Pressing F key returns to the previous submenu screen.

4. Operation Method

Setting/Display of Submenu

<p>2.3. Consumables change history</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> Replcmnt Hstry 1.Pre-Crtrdge 2.Dion Crtrdge S 3. Dstl M-Fltr </div> <div style="border: 1px dashed black; padding: 5px;"> 4. Dionz M-Fltr </div>	<p>To display the history of pretreatment cartridge and ion exchange resin (S), distilled water M filter, the ion exchange water M filter and the UV sterilization light,</p> <p>To display the history of changing pretreatment filter, ion-exchange resin (S), M filter for distilled water, and M filter for pure water:</p> <ol style="list-style-type: none"> 1. Display an item of submenu by pressing ▲▼ key. 2. Confirm the setting by pressing M key. The history display appears. 3. Confirm the history by pressing ▲▼ key. 4. Pressing F key returns to the previous screen. <p>* Up to 20 records are displayed for each change history. If it exceeds 20 records, the oldest record is deleted.</p> <p style="text-align: right;">Ion exchange resin(S) : SPC-10 M filter : Membrane filter</p>
<p>2.4. Maintenance history</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> Maintenance Inspctn Hstry 1 01/01/2014 12:00 </div>	<p>To display the maintenance history:</p> <ol style="list-style-type: none"> 1. Confirm the maintenance history by pressing ▲▼ key. 2. Pressing F key returns to the previous screen. <p>❖ Up to 20 records are displayed for each change history. If it exceeds 20 records, the oldest record is deleted.</p>
<p>2.5. Error occurrence history</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> Error Alert Event Hstry 1 Leak Error 01/01/2014 12:00 </div>	<p>To display the error occurrence history:</p> <ol style="list-style-type: none"> 1. Confirm the maintenance history by pressing ▲▼ key. 2. Pressing F key returns to the previous screen. <p>❖ Up to 20 records are displayed for each change history. If it exceeds 20 records, the oldest record is deleted.</p> <p>❖ For details of error alarms, refer to page 58.</p>
<p>2.6. Power failure occurrence history</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> Pwr Restore Event Hstry 1 ↑01/01/2014 15:00 ↓01/01/2014 15:10 </div>	<p>To display the power failure occurrence history:</p> <ol style="list-style-type: none"> 1. Confirm the maintenance history by pressing ▲▼ key. 2. Pressing F key returns to the previous screen. <p>❖ Up to 20 records are displayed for each change history. If it exceeds 20 records, the oldest record is deleted.</p>
<p>2.7. Water cutoff occurrence history</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> Alert: Wtr Loss Event Hstry 1 ↑01/01/2014 15:00 ↓01/01/2014 15:10 </div>	<p>To display the water cutoff occurrence history:</p> <ol style="list-style-type: none"> 1. Confirm the maintenance history by pressing ▲▼ key. 2. Pressing F key returns to the previous screen. <p>❖ Up to 20 records are displayed for each change history. If it exceeds 20 records, the oldest record is deleted.</p>
<p>2.8. Power failure recovery function</p> <div style="border: 1px solid black; padding: 5px; margin-bottom: 10px;"> Rstr Op Fn 1.OFF 2.ON </div>	<p>To set the power failure recovery:</p> <ol style="list-style-type: none"> 1. Select an item of submenu by pressing ▲▼ key. 2. Confirm the item by pressing M key. The submenu screen appears. <p>❖ This function is set to "No" at default setting.</p>

4. Operation Method

Setting/Display of Submenu

2.9. Language selection

Language
1. Japanese
2. English

To select display language:

1. Select an item of submenu by pressing ▲▼ key.
2. Confirm the item by pressing M key. The submenu screen appears.

2.10. Stored water amount setting

Tnk Lvl Set
85L
2.55L
3.30L

To set a storage water amount,

- 1 Select the sub menu item to set with ▲▼ keys.
 - 2 Determine with the M key and return to the sub menu screen.
- ※It is set to "26L" at the time of shipping.

3. Finishing of setting/display

Press M key for 2 seconds.

The screen returns to the previous display before setting/display submenu.

5. Useful functions

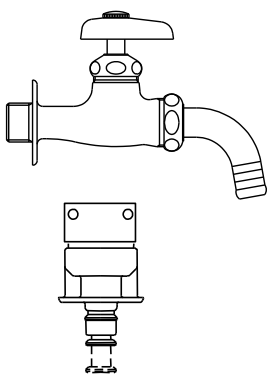
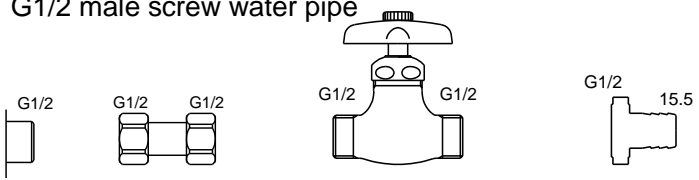
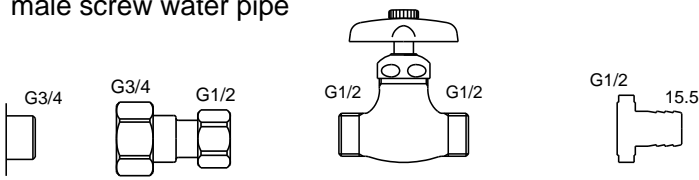
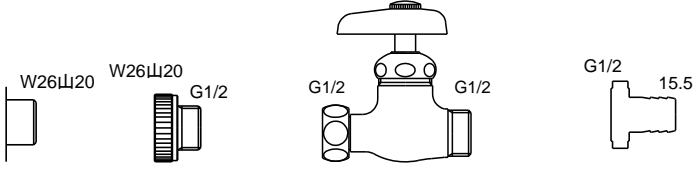
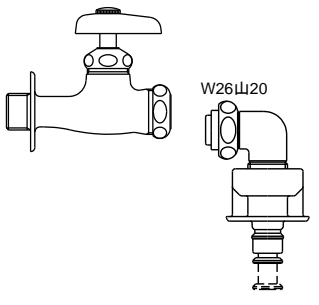
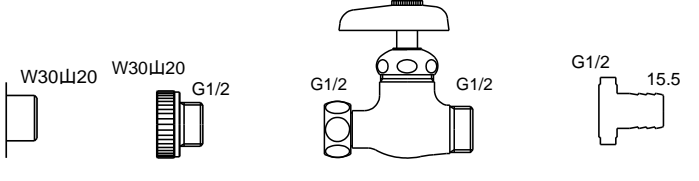
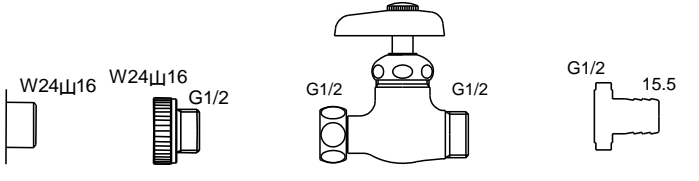
List of optional parts

Product name (type)	Product code	Supported model	Remarks
External alarm output (OWG64) ※1	253225	WG511/711	This function outputs an alarm signal when a leak or other errors occur and to inform the user of the replacement timing of consumables. This is used by linking to the pilot light, the buzzer or the destination unit.
UV sterilization lamp (OWG66)	253226	WG511/711	Light the UV lamp for 10 minutes every 24 hours to sterilize bacteria which will propagate in distilled water in the distilled water storage tank.
High purity cartridge(CPC-H) connecting unit (OWG62)	253781	WG511/711	Connection hose set for adding a high purity cartridge(CPC-H) on the rear stage of the ion exchange resin cartridge(SPC-10).
Water supply port unit (OWH10)	253686	WG511/711	Used when a sink is not available for raw water supply port. A water faucet shall be installed on the tap water line.
Water supply port coupler (OWG32)	253764	Screw type	See P.41 "List of connections to the water supply port" for how to use these.
Water supply port coupler joint A (OWG34)	253765	For G1/2 water pipe	
Water supply port coupler joint B (OWG36)	253766	For G3/4 water pipe	
Water supply port coupler joint C (OWG38)	253767	For W26 chemical water faucet	
Water supply port coupler joint D (OWG40)	253768	For W30 water faucet	
Water supply port coupler joint E (OWG46)	253771	For W24 water faucet	
Raw water pressure reduction valve (OWG42)	253769	WG511/711	Used to keep the raw water pressure steady. Use this when the raw water pressure is unstable or is 5×100kPa(5kgf/cm ²) or higher.
Connecting unit G (WL100+WG series)	253668	WG511/711	
Drain trap (OWI21)	253222	WG511	Stores drain water (Cooling water) tentatively, and drain when it has cooled down. It is ideal when drain water temperature exceeds the withstand temperature of the hard vinyl chloride drain tube because of the installation condition of the auto still.
Drain trap (OWI41)	253223	WG711	

※1 Specify as an optional part when placing an order for the main unit.

5. Useful functions

List of optional parts

List of connections to the water supply port			
<p>Connection to a ferrule for standard water supply hose (with a stopper) Connection to a chemical water faucet (hose connection water faucet)</p> 	<p>Water supply coupler joint A (OWG34) Connection of G1/2 male screw water pipe</p>  <p>Double side nut union External screw decorative valve Hose faucet coupling</p>		
	<p>Water supply coupler joint B (OWG36) Connection of G3/4 male screw water pipe</p>  <p>Double side nut union External screw decorative valve Hose faucet coupling</p>		
	<p>Water supply coupler joint C (OWG38) When the main chemical faucet is W26</p>  <p>1/2 screw takeout nipple (small) Single sided nut valve Hose faucet coupling</p>		
<p>Water supply port coupler (OWG32) (screw type, with a stopper) When the pipe for a universal water faucet or a flexible faucet is removed for connection</p> 	<p>Water supply coupler joint D (OWG40) When the main chemical faucet is W30</p>  <p>1/2 screw takeout nipple (large) Single sided nut valve Hose faucet coupling</p>		
	<p>Water supply coupler joint E (OWG46) When the main chemical faucet is TOTO W24</p>  <p>Conversion nipple Single sided nut valve Hose faucet coupling</p>		

6. Maintenance Method

Maintenance and Inspection

Timings of maintenance and inspection

(Regular inspection is highly recommended to assure stable operation of the product.)

Maintenance and inspection items	Timing	Remarks
Replacement of the ion exchange resin cartridge (SPC-10) (See P.11)	When a notice appears on the message window	Notice for replacement appears when the water quality is: $1 \times 10^{-4} \text{ S/m}$ or higher $1 \times 10^4 \Omega \cdot \text{m}$ or less ※Treatment capacity: Approx. 2000L for raw water of $200 \times 10^{-4} \text{ S/m}$
Replacement of the pretreatment cartridge (See P.10)	When a notice appears on the message window ※1	Notice for replacement appears when accumulated live time reaches 6 months. ※Treatment capacity : Approx. 5000L
Replacement of the membrane filter (See P.1212)	When a notice appears on the message window ※2	Notice for replacement appears when accumulated live time reaches 3 months.
	When sampling flow is 0.5L/min or less even if nothing is displayed on the message window ※2	
Washing of the water supply hose filter (See P.54)	6 months	Perform earlier if raw water quality is low.※3
Replacement of the pipe hose	2 years	Check for water leak or discoloration every month for the hose and its connections.※3
Replacement of the pump	2 years	Replace every 2 years.※3
Replacement of the distilled water tank	3 years	Replace every 3 years.※3
Replacement of the solenoid valve and the pressure reduction valve	5 years	Replace every 5 years.※3
Replacement of the UV sterilization lamp (optional)	2 years	Prompts replacement when accumulated live time reaches 170 hours.
Inspection of the ELB (See P.54)	1 month	Check every month.
Draining of the distilled water tank	3 months	Drain the tank also when you are not going to use the unit for a long time.

※1 Be sure to replace the pretreatment cartridge at least once every year even if a notice for replacement does not appear.

※2 Replace the membrane filter every 6 months irrespective of the frequency of use.

※3 Ask your dealer or one of our sales offices or the service department for replacement of parts.

※ The unit notifies timings for replacement of consumables based on the water quality and accumulated water supply time.

※ Actual replacement timing will differ depending on the raw water quality.

6. Maintenance Method

Replacement of the ion exchange resin cartridge(SPC-10)

Ion exchange cartridges (SPC-10) that have reached their use life can be refreshed and reused. Follow the procedures below to replace them.

- (1) When the message display prompts replacement of the ion exchange resin cartridge(SPC-10), contact your dealer or one of our sales offices or the service department for refreshment of the ion exchange resin.

All of acceptance, refreshment and carrying-in of resin will be made by the unit of cartridge (resin is filled in the resin drum).

※Certain days will be necessary for refreshment and carrying-in.

Use the Stored distilled water sampling port/drain port when you want to collect distilled water in the tank during refreshment.

We recommend purchasing an ion exchanger (Product code : 9110010004) as a spare cartridge considering the time for refreshment when you ask for initial refreshment.

- (2)How to remove the ion exchange resin

1. Remove the one-touch joint from the cartridge. Remove the socket of the one-touch joint out of the plug with the sleeve slid in the direction of arrow. (Remove the one-touch joint from the IN end first.)

2. Remove fixing bands for the main unit.

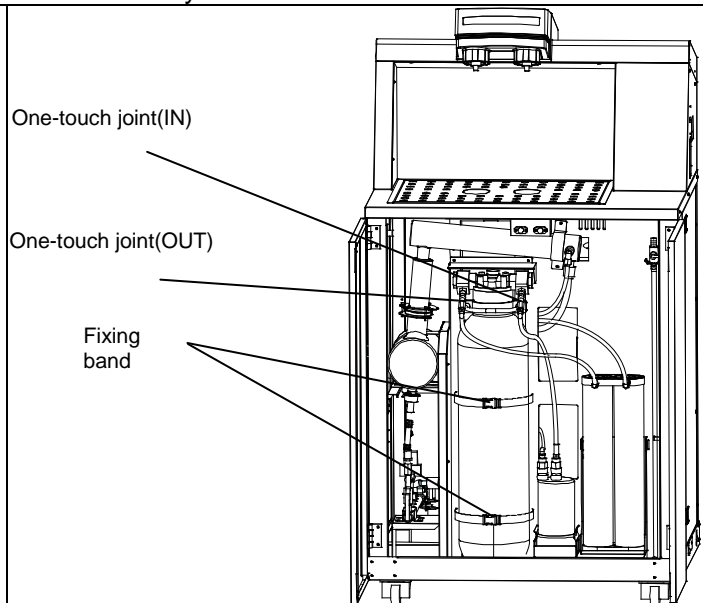
3.Pull out the resin out of the main unit.
Take extreme care not to drop it on your feet since it weighs approximately 18kg.

- (3) Draining of the ion exchange resin drum for refreshment

1. Insert the drain hose included with the product into the OUT side plug, lay the other end in an appropriate place for draining and tilt the cartridge until water comes out of the drain hose.

2. When once water comes out of the drain hose, water will continue to be drained because of an internal siphonic phenomenon and you can put the cartridge up and leave it stand against something. Complete draining will take about 10 minutes.

3. Remove the hose when finished.



6. Maintenance Method

Replacement of the ion exchange resin cartridge (SPC-10)

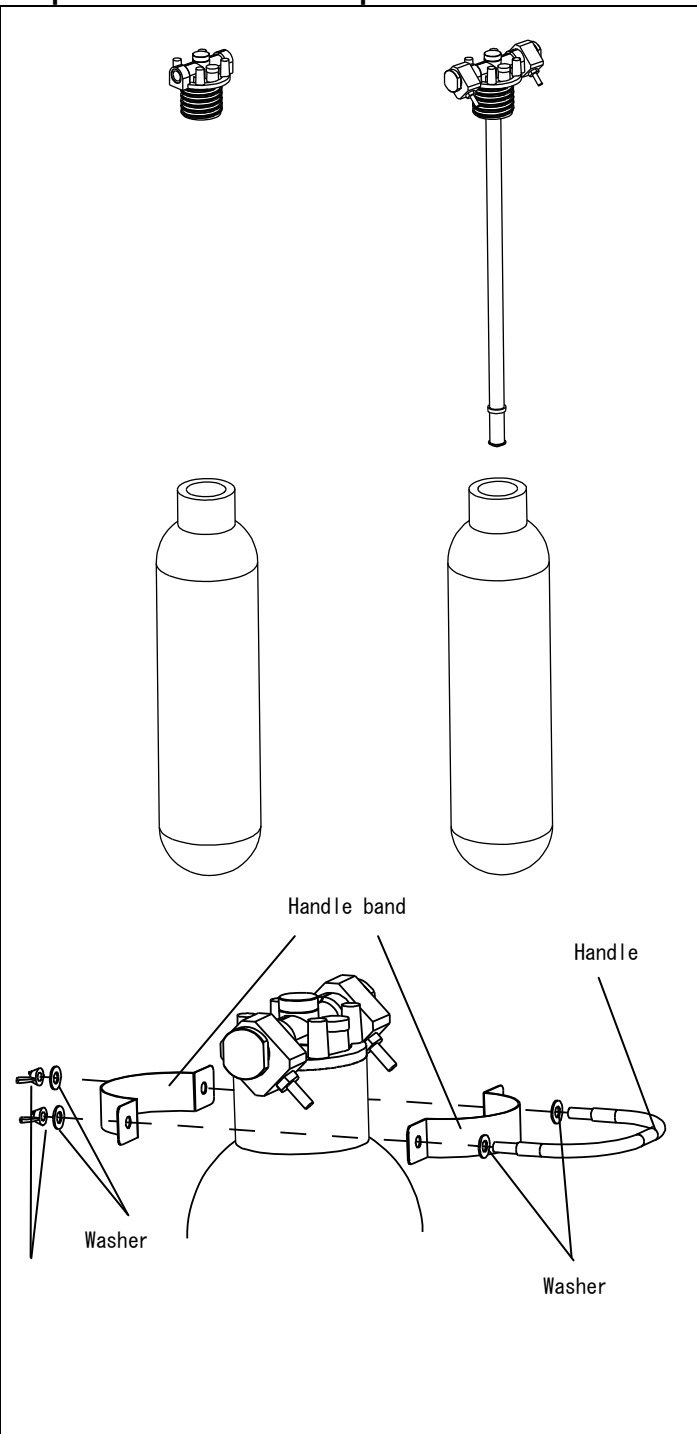
When you have a spare cartridge, follow the procedures below to replace it.

(4) Using a spare cartridge

1. Remove the cap and the water sampling pipe from the ion exchange resin cartridge to refresh. Remove the seal cap from the spare cartridge and install it to the ion exchange resin cartridge.
2. Securely insert the water sampling pipe into the center hole of the cap so that the pipe will be positioned in the center of the resin in the spare cartridge.
3. Securely screw the cap into the spare cartridge. Ion exchange resin remaining in the gap between the cap and the spare cartridge may lead to a leak. Be sure to check before installing the cap.
4. Remove the handle and the stand from the ion exchange resin cartridge to refresh and install them to the spare cartridge.

- (5) Install the spare cartridge to the unit referring to "7. Securely connect the ion exchange resin cartridge (SPC-10).

- (6) Carrying-out of the cartridge to refresh
Put the ion exchange resin cartridge to refresh in the original corrugated paper box, in which the spare cartridge has been packaged.



6. Maintenance Method

Refreshment of the ion exchange resin

Contact your dealer or one of our sales offices or the service department for refreshment of the ion exchange resin.

All of acceptance, refreshment and carrying-in of resin will be made by the unit of cartridge (resin is filled in the resin drum).

We recommend purchasing a spare cartridge in advance since certain time will be necessary for refreshment and carrying-in.

After replacement the alarm will be automatically reset when its activation conditions are released. After replacement reset the accumulated flow time for the consumable parts referring to "Resetting after replacing consumables" on P.47.

- Cartridges will cause degradation of water quality and treatment performance during a long term storage and prepare a spare cartridge prior to the expected replacement timing. The rough guide for the storage period is about 4 months.
- Discard used cartridges as non-flammable garbage or you can return them to us if they have been used in Japan. In that case, return the cartridge using the specified letter of return included with the new cartridge.
- We actively promote proper sampling and recycling for environmental preservation.
- When you have replaced the ion exchange resin cartridge (SPC-10), discard about 5L from the initial sampling to remove initial impurities. In this case, purge any air in the resin until water flow is no more intermittent.

※Operating the unit without the ion exchange resin cartridge (SPC-10) will result in a malfunction.

Replacement of the pretreatment cartridge

See P.10 "6." for how to replace. See P.47 "Resetting after replacing consumables" for how to reset the alarm display after replacement.

- Using without replacing the cartridge will shorten the use life of the ion exchange resin cartridge.
- Discard used cartridges as non-flammable garbage or you can return them to us if they have been used in Japan. In that case, return the cartridge using the specified letter of return included with the new cartridge.
- We actively promote proper sampling and recycling for environmental preservation.

6. Maintenance Method

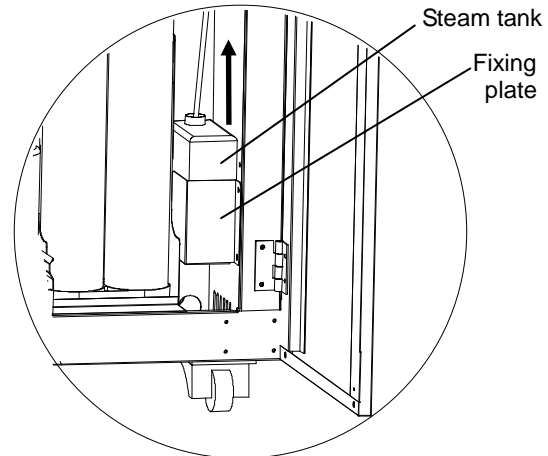
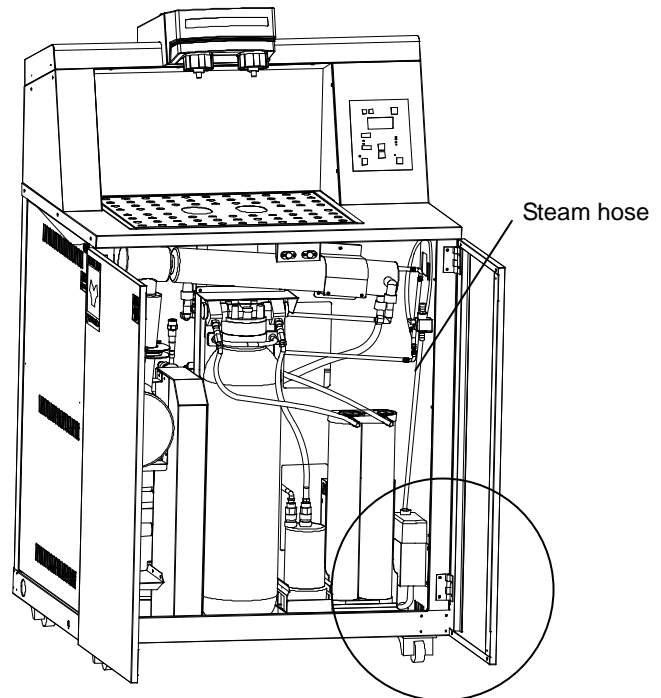
Washing the steam tank (WG711)

The steam tank installed in the WG711 receives liquid drops overflow from the condenser. Carry out draining and washing the steam tank every two weeks.

Washing the steam tank

※ The steam hose is hot. Turn the ELB of the main unit OFF and wait 30 minutes before starting work.

1. Remove the steam hose from the steam tank.
2. Steam tank can be removed off the fixing plate simply by lifting it upward.
3. Drain the steam tank and wash the tank with tap water.
4. Return the steam tank to the fixing plate and insert the steam hose.

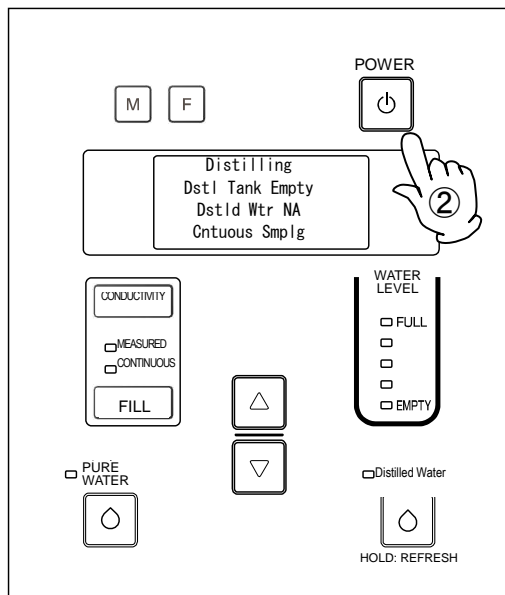


6. Maintenance Method

Resetting after replacing consumables

Total water supply amount has been defined for each consumable and the unit counts accumulated energizing time for each consumable as a rough guidance for replacement. When the accumulated energizing time reaches the limit, the consumable replacement error is triggered, in which case replace the consumable with the error and reset the consumable accumulated energizing time count following the procedures below.

Consumable replacement error and resetting the accumulated energizing time counter (when an alarm occurred)



① Turn the ELB on the right side of the main unit "ON(|)".

② Press the **POWER** key.

▪ **In the case of single consumable replacement error**

③ Pressing the reset switch on right side of the main unit will sound a beep and the alarm indication will be reset, and this event will be registered in the consumables replacement history and you can resume regular operation.

▪ **In the case of multiple consumable replacement error**

④ The same operations as the single consumable replacement error will be carried out and events will be registered in the order of occurrence. Note that the registration of the ion exchange resin cartridge will be the last.

(The ion exchange resin cartridge alarm will automatically be reset when the alarm conditions are eliminated.)

- ※ Be sure to replace the consumable before resetting. In the case of multiple consumables replacement error, replace all consumables before resetting.
- ※ When multiple alarms have occurred, repeat the operation for the same number as the alarms.
- ※ Alarm may recur if water quality does not improve.

Stone will accumulate in the distiller (boiler, condenser, and heater) in the course of distillation. Stone will accumulate thicker as operation period lengthens causing degradation of water quality or disconnection of the heater. Regularly wash the condenser with the stone cleaning agent included with the product.

You need a set of Philips drivers and pliers for washing the condenser. These shall be supplied by the user.

Precautions for washing the condenser

Be sure to read before washing the condenser.



Turn the ELB "OFF(O)".

Be sure to turn the ELB "OFF(O)" before washing the condenser. Otherwise, an electric shock may result.



First cool the condenser down before starting work.

The condenser immediately after distillation is very hot and be sure to turn the ELB "OFF(O)", wait for at least 30 minutes and then start washing. Otherwise, burning or damage of the condenser may result.



About the protective devices

Be sure to wear protective devices (gloves, mask, glasses) when washing the condenser. Touching the condenser with bare hand may cause its damage. If washing agent has come in contact with any part of your body, completely wash off with clean water.



About handling of the condenser

- When removing the condenser, take care not to touch other parts.
- Be sure to place the condenser removed from the main body on a level surface. Never place it at a place where it might fall.
The condenser is made of fragile materials (boiler and condenser: hard glass; heater: ceramics) and may break if it is subjected to a contact, fall or other shocks.
- Be sure to attach the packing and the hose band to the connection of the condenser. Otherwise, water may leak.



About handling of the heater.

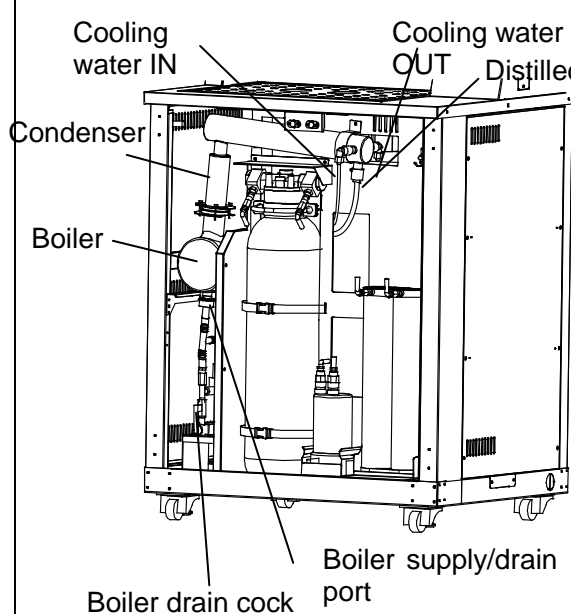
- Do not attempt to touch a new heater with bare hand. The heater might be damaged.
- Do not bend the heater lead wire in an acute curve. Otherwise, the lead wire may break.
- After connecting the lead wire to the terminal block, be sure to make sure that the screw is not loose.
Otherwise, an electrical shock may result from earth leakage.

6. Maintenance Method

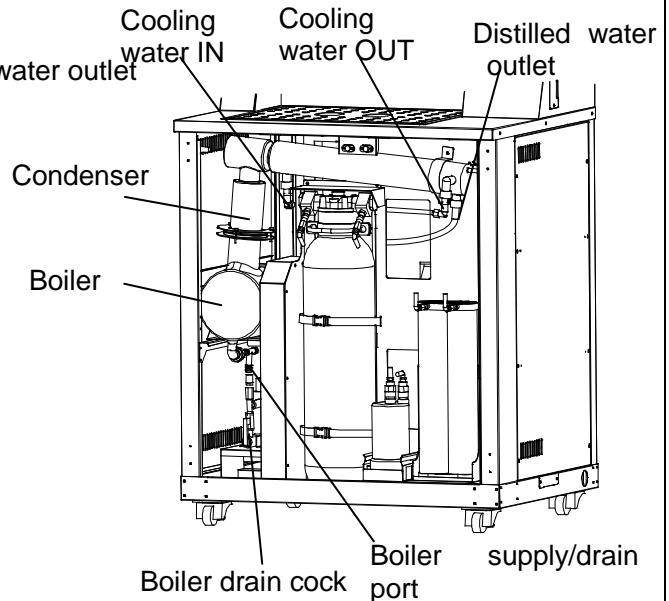
Washing the distiller

●Dismounting of Distiller

1. Turn "OFF(O)" the earth leakage breaker of the unit.
2. Close the tap.
3. Check that the boiler is not hot (longer than 30 minutes after the breaker is turned "OFF(O)"), then open the front door of the unit, and open the boiler water drain cock.
4. Remove the hoses from the boiler and the condenser(cooling water IN, cooling water OUT, distilled water outlet, and boiler supply/drain port). Take care not to apply excessive force against the glass with the resin nut of the hose connection not to break the glass.

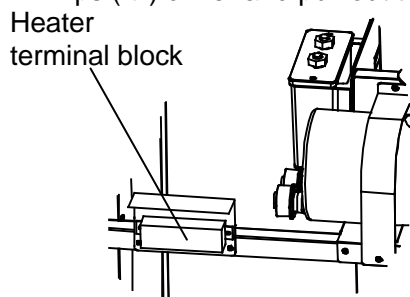


WG511

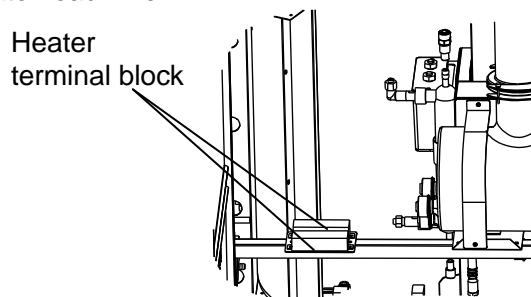


WG711

1. Open the left side door. Remove the heater terminal block cover for WG711. Loosen 8 screws on the heater lead wire terminal on the terminal block (WG511) or 16 screws (WG711) using a Philips (+) driver and pull out the heater lead wire.

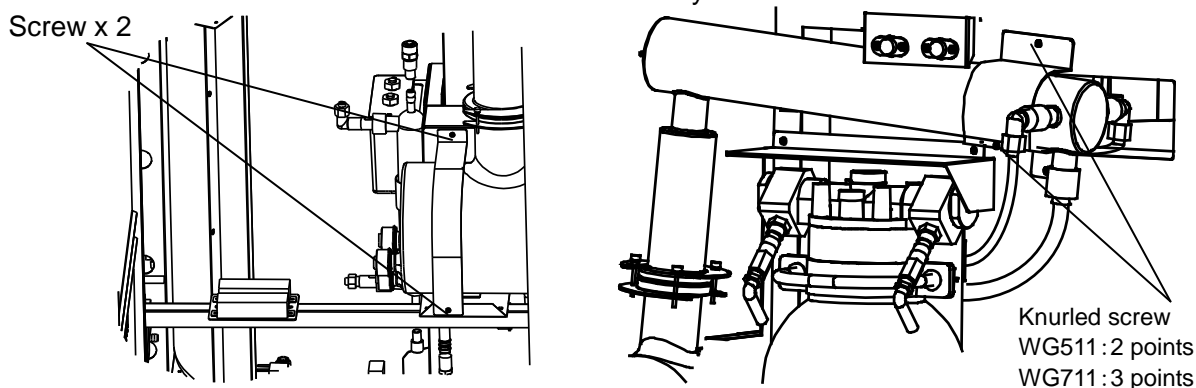


WG511

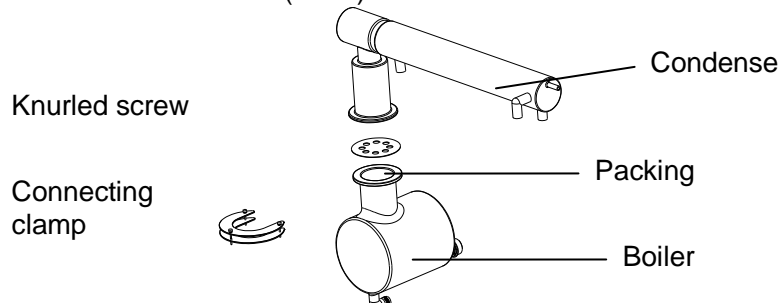


WG711

7. 1) Note that, do not bend or pull the heater lead wire more than necessary.
2) Remove the four screws of boiler/ condenser securing band with a Phillips screwdriver, and take the boiler and condenser out of the body.



- 3) Loosen the knurled screws (three) and remove the boiler and condenser.



●Washing of boiler

1. Prepare cleaning liquid.
1) Prepare hot water of 50~60°C. Add stone cleaner (ORGASOL) of the amount specified in the table to hot water prepared and stir well.

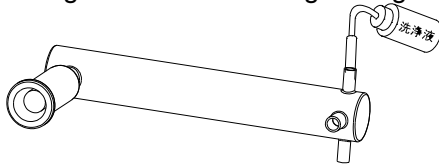
Model	Water temp.(°C)	Amount of ORGASOL(g)
WG511	4	330
WG711	6	500

2. Seal the hose connection port at the bottom of boiler (boiler supply and drain port) by use of rubber stopper, etc.
3. Secure the boiler at a stable position to prevent washing liquid from spilling.
4. Pour in washing liquid through connection port with condenser with heater turned on. Most scale is removed in 4 to 5 hours approximately. Drain washing liquid in the boiler. If much scale is distiller deposited, pour in washing liquid newly, and repeat washing
1) When scale-removing work is finished, take the heater out of boiler and wash each of them enough with city water. Here, in washing the heater with water, be sure to fill a larger beaker with water and wash the heater inside so that lead wire and its routing port are not wet by water.
Avoid washing the heater directly with water from tap.
2) If solid scale distiller remains after washing by washing liquid, follow the remedy below:
Boiler: Scrub with brush etc. for removing.
Heater: Scrub with something soft such as wood piece or plastic.

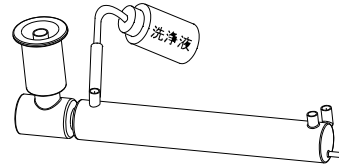
In this connection, remove scale on the heater uniformly in general, never leaving solid scale in part. In an extreme case, only such part has a great heat resistance, causing damage to the heater.

- Washing of Condenser

1. Pour detergent liquid into the cooling pipe of condenser.
(See Page 50 for formulating detergent liquid.)



WG511



WG711

2. If detergent liquid should flow out of hose connection port, seal with rubber stopper. Most fur can be removed in 4 - 5 hours approximately.
3. Drain detergent liquid, and then wash enough with city water.

- Handling of Detergent Liquid

1. Wash the boiler and heater sooner. If the more scale is deposited, the more difficult is its removal, which may cause decrease of distilled water sampling and damage to heater.
2. When washing is finished, drain detergent liquid out of the unit, and apply neutralization by neutralizer (such as sodium hydroxide). In neutralization, check that it is neutral by use of pH test paper, etc. (Principal component of scale detergent: Sulfuric acid and pH of water solution: Acidic approximately 1)
3. In storing this detergent, seal the agent and store in cold and dark place avoiding high temperature and humidity.
4. In handling this detergent, be sure to use protective tools (gloves, mask, and glasses).
5. When it is in contact with human body, wash it away with clean water.
6. Do not use empty container for beverage.
7. Do not allow detergent to directly flow into agricultural irrigation canal or fields because it causes withering of rice crop.

6. Maintenance Method

Washing the distiller

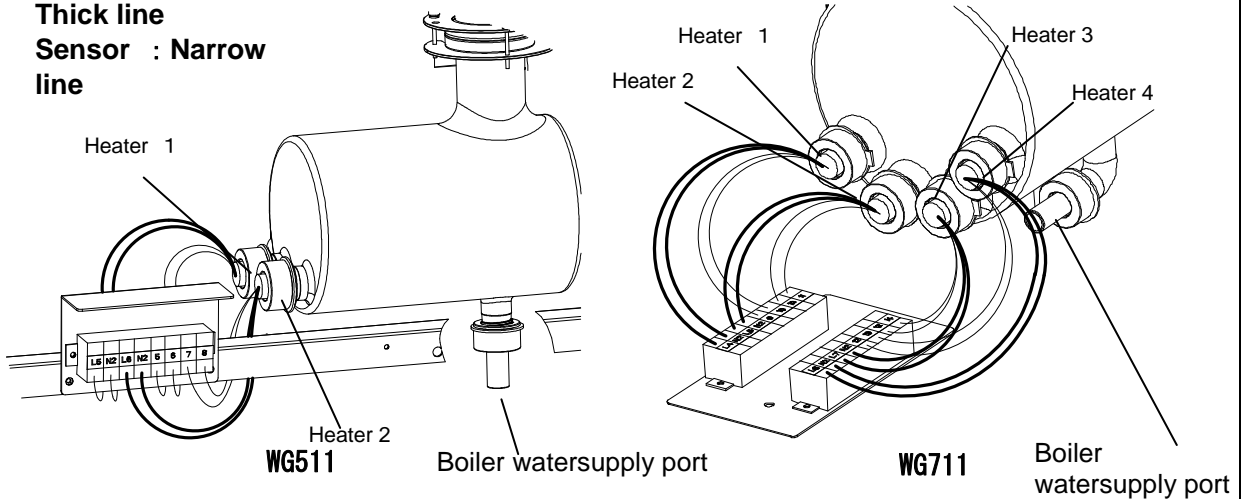
- Installation of boiler

1. Attach heater lead terminals to the terminal block.

Power supply :

Thick line

Sensor : Narrow line

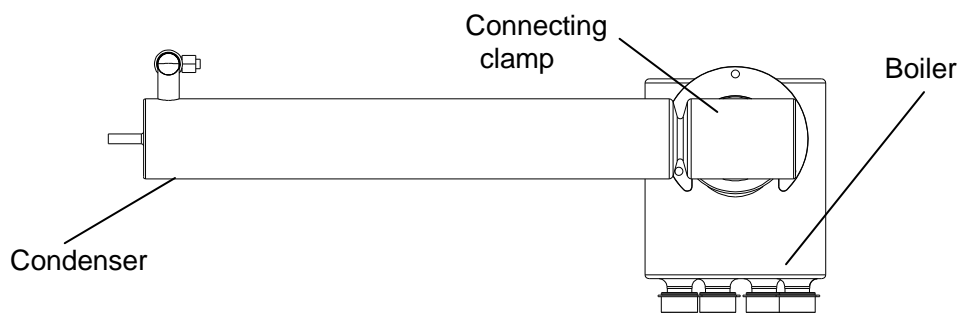


WG511				WG711											
Heater1		Heater 2		Heater 1		Heater 2		Heater 3		Heater 4					
Power supply	Sensor	Power supply	Sensor	Power supply	Sensor	Power supply	Sensor	Power supply	Sensor	Power supply	Sensor	Power supply	Sensor	Power supply	Sensor
L5	N2	5	6	L6	N2	7	8	L4	N2	9	10	L5	N2	10	11
								L7	N2	13	14	L6	N2	12	13

2. Insert the hose to the boiler water supply and drain port, and secure with the hose band.
3. Attach heater terminal block cover. (WG711)

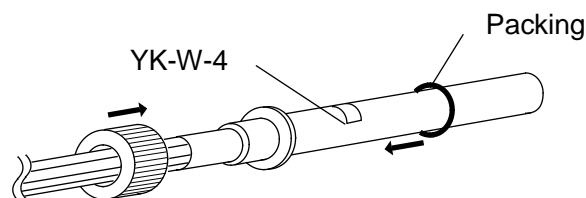
- Installation of condenser

1. Place packing in the connection port of boiler with condenser, and secure with connecting hardware so that the boiler and condenser are placed in the same direction.



2. Connect hoses to each of the cooling water IN, the cooling water OUT, the distilled water outlet, and the boiler supply/drain port of the condenser.
3. Close the boiler water drain cock. (See P.57)

- If the heater should be disconnected or damaged due to deposit of scale, replace it by the procedure below.
1. Turn "OFF(O)" the earth leakage breaker of this unit.
 2. Close the tap.
 3. Turn "OFF(O)" earth leakage breaker, and when more than 30 minutes has passed, open the front door of this unit, and open the boiler water drain cock.
 4. Open the left side plate of the body, loosen the four screws on the right of the terminal block, and disconnect the heater lead terminal.
 5. Pull the heater lead out of the grommet.
 6. Remove the cap nut of heater, and pull out the heater.
 7. Remove the packing and cap nut from the damaged heater.
 8. Install the packing and cap nut on the new heater. At that time, do not touch with bare hand in order to prevent soiling by hand.



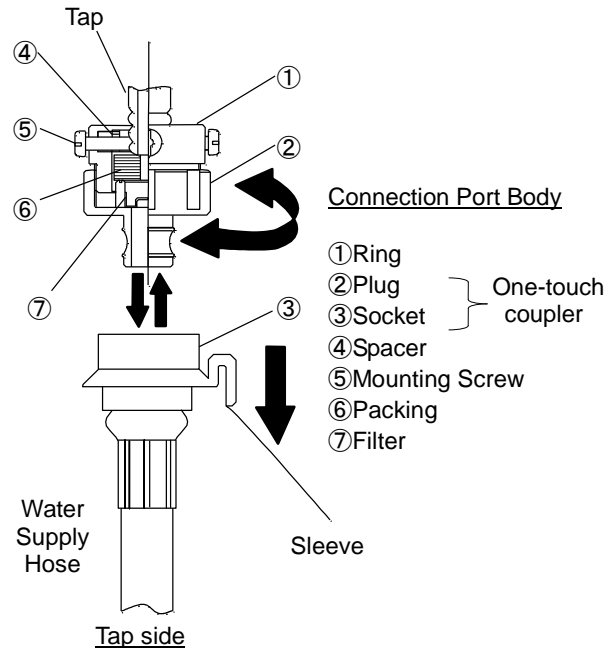
9. Install on the boiler so that "YK-W-3" mark of the heater is faced up.
10. Feed the heater lead wire through the grommet, check the heater lead wire attaching position, and secure to the terminal block.
11. Mount the left side plate.
12. Close the boiler water drain cock.
13. Close the front door, and then open the tap.
14. Turn on the earth leakage breaker.
15. The standby screen appears at the display window of the control panel.
16. Perform calibrations by pressing **POWER** key while holding down **PURE WATER** key and **DISTILLED WATER** key. (Refer to page 29.)
(Calibration is performed for storing the standard temperature of the sensors in each heater under normal operation in the inner controller. Performing calibration detects errors when the temperature rises higher than the standard temperature + 20°C.)
17. During calibration, a message is displayed at the message window of the control panel.
18. After approx. 5 minutes passed after starting calibration, normal operation starts automatically.

6. Maintenance Method

Washing of Water Supply Hose Filter

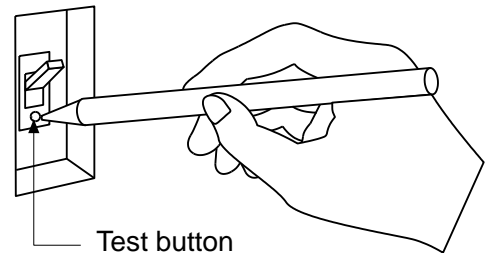
1. After turning "OFF(O)" the earth leakage breaker on this unit, turn the tap off, slide the sleeve to the direction of the arrow, then, remove the water supply hose from the connection port.
2. Remove the plug ② from ring ① as turning.
3. Cleanse filter ⑦ attached to the packing with water.
4. Wash the filter with spray, etc.
5. Assemble by reversing the procedure.

※ Wash the water supply hose filter in approximately every 6 months.



Inspection of the ELB

- Connect the power cord and conduct the test with the live status.
- First, turn the ELB "ON(|)".
- Then press the test button on the ELB with the tip of a ball-point pen to make sure that the ELB properly opens.



7. Long storage and disposal



WARNING

When disposing...



- Keep out of reach of children.
- Treat as large trash.

When the unit is out of service at night and on holidays



- Turn the ELB on the right side of the unit to “OFF(○)”.
- Be sure to close the tap.
- In use in winter at a severely cold place, beware of freezing in the tank, boiler, condenser, etc. while system is stopped.

When disposing

Environmental protection should be considered

- We request you to disassemble this unit as possible and recycle the reusable parts considering to the environmental protection. The feature components of this unit and materials used are listed below.

Component Name	Material
Main components of exterior	
Exterior	Chrome free electro galvanized zinc plated steel plate (SECC), chemical proof bake finish
Door	Chrome free electro galvanized zinc plated steel plate (SECC), chemical proof bake finish
Mounting plate (painted)	Chrome free electro galvanized zinc plated steel plate (SECC), chemical proof bake finish
Mounting plate (unpainted)	Stainless steel plate SUS 304
Hinge	Stainless steel plate SUS
Caster wheel	Cold rolled steel plate (SPCC), polyamide resin (nylon 6)
Production plates	Polyethylene terephthalate
Main components of water circuit system	
Boiler	Hard glass
Condenser	Hard glass
Float cylinder	Polypropylene
Pure water tank	Polyethylene
Drain port	Brass
Float cylinder branch pipe	Polypropylene
Electrode holder	Polypropylene
Water sampling port	Polypropylene
Control panel	ABS resin
Water sampling table	Stainless steel plate SUS 304

7. Long storage and disposal

Environmental protection should be considered

Component Name	Material
Main components of water circuit system	
Resin cylinder case	Polypropylene
Ion exchange resin	Polystyrene Resin
Water quality gauge electrode	Titanium
Heater	Ceramic
Heater mounting nut	Teflon
Main components of piping system	
Water supply hose	Vinyl chloride
Drain hose	Ethylene propyne
Hose (transparent)	Vinyl
Hose (milky transparent)	Silicon
Hose clamp	Polyacetal
Hose nipple (resin black)	Polyamide
Hose nipple (resin white)	Polypropylene
Hose nipple (metal)	Brass
Main components of electric system	
Pump	Casing: Polypropylene Impeller: Polypropylene Magnet: Ferrite magnet Motor case: Iron Rotor: Iron
Solenoid Valve	Made of metal: Body, brass Made of resin: Body, polyacetal
Float Switch	Polypropylene
Power Cord, Wiring Material, etc.	Wiring material and board coated by synthetic rubber and resin

7. Long storage and disposal

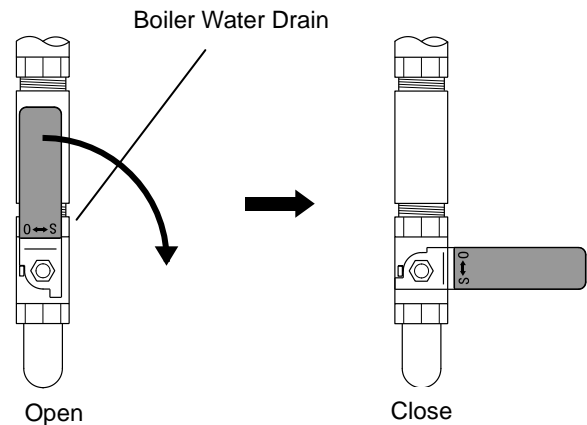
When you are not going to use the unit for a long time



- If this unit is to be put out of service for a long time, be sure to turn off the earth leakage breaker of this unit for safety, and close the tap. Water in the boiler and distilled water tank, if stored as it is, will deteriorate in quality due to generated bacteria or algae. Drain water by the procedure below:

Boiler Water Drain

1. In draining boiler water, turn off the earth leakage breaker, ensure that the tap is closed, then wait for 30 minutes or more for boiler cooling, and open the front door.
2. Open the boiler water drain cock.
3. Make sure that all water in the boiler and float cylinder is drained.
4. Be sure to close the boiler water drain cock. If boiler water drain cock is opened in next use, water is not fed into the boiler, and distillation is not started.



8. In the Event of Failure...

Failure indication and Its Contents

Corrective Measures

When any of errors listed below appears in the information display, note the error description and immediately turn the ELB on the right side of the main unit "OFF(O)" and close the tap water faucet. If any malfunction has occurred, you need to replace a part or inspect the unit. Contact your dealer, one of our sales offices or the general customer service center.

Notify the description of the error indication and the serial number of your product.

The contact information of the general customer service center can be found at the end of this document.

Alarm	Indication	Condition	Corrective measures
Ion-exchange resin S exchange notification	Dio Wtr Qlty Err Rplc Rsn Ctrdg S	When ion exchange water quality is: 1×10^{-4} S/m or higher $1 \times 10^4 \Omega \cdot m$ or lower	Replace the ion exchange resin (SPC-10). (See P.11.) After replacement, automatically returns to normal when the conditions are released. (See P.47.)
Pretreatment filter exchange notification	Rplce Pre-Ctrdrg	When 6 months passed under continuous energizing condition	Change the pretreatment filter. (See P.16) After exchange, press and hold the reset switch on right side of the main unit till a beep is heard. Then, the alarm indication is reset. (See P.47)
Membrane filter for distilled water exchange notification	Rplc Dstl Mb Fl	When 3 months passed under continuous energizing condition	Change the membrane filter for distilled water. (See P.12) After exchange, press and hold the reset switch on right side of the main unit till a beep is heard. Then, the alarm indication is reset. (See P.47)
Membrane filter for pure water exchange notification	Rplc Ion Mb Fltr	When 3 months passed under continuous energizing condition	Change the membrane filter for pure water. (See P.12) After exchange, press and hold the reset switch on right side of the main unit till a beep is heard. Then, the alarm indication is reset. (See P.47)
Replacement notice of the UV sterilization light (Optional)	Rplc UV S Lite	When accumulated live time has reached 170 hours.	Replace the UV sterilization light. Pressing the reset switch on backside of the door will beep and the alarm indication will be reset. (See P.47)

8. In the Event of Failure...

Failure indication and Its Contents

Alarm	Indication	Condition	Corrective measures
Water cutoff alarm	Alert: Wtr Loss Chk Flw&Prssr	When raw water pressure decreases ($<0.1\text{MkPa}$), or when water cutoff occurs	Make sure that water is supplied and open the tap water faucet wider. If the situation does not improve, call for service.
Maintenance time notification	Mntnce Rqd Call for Service	When 3 years passed under continuous energizing condition	Perform maintenance of the unit. Press and hold the reset switch on right side of the main unit till a beep is heard. Then, the alarm indication is reset.
Multiple replacement notices above have occurred at the same time	Alternate indication of consumable replacement notices	When conditions for notifying different alarms overlap	Replace the relevant consumable part. After replacement, press the reset switch on right side of the main to reset the alarm indication. Repeat reset operation until all alarms will be reset. (See P.47)

8. In the Event of Failure...

Failure indication and Its Contents

Error	Indication	Cause	Countermeasure
Controller error	Controller Error Call for Service	When the setting value which is memorized in the memory chip cannot be read properly, or when an abnormal value is displayed	ELB on the right side of the main unit. Turn the breaker on again. If the trouble persists, please call our customer service center.
Water leakage error	Leak Error Call for Service	When water splashes over the leak sensor.	When water leaks during replacement of consumables, turn the ELB on the right side of the main unit "OFF(O)" and allow the leak sensor to dry. (See P.62) When water leaks at a pipe, call for service.
Overheat of heater	Overheat Error Call for Service	When temperature at the heater exceeds the error judgment value, or when breakage or shortage occurs on the temperature sensor	Change the heater. Call for service.
Burnout of heater	Heater Error Call for Service	When temperature of the heater did not rise after certain time passed during distillation	Change the heater. Call for service.
Tank water level meter error	Tnk Wtr Snsr Err Call for Service	When the condition of the float contacting points in the tank water level meter becomes abnormal	Change the float switch. Call for service.
Pure water conductivity meter (S) error	Dionz S Snsr Err Call for Service	When the state of breakage or shortage of the thermistor sensor for pure water conductivity gauge continues longer than error judgment time	Change the pure water conductivity sensor. Call for service.
Distilled water conductivity meter error	Dst Wtr Snsr Err Call for Service	When the state of breakage or shortage of the thermistor sensor for distilled water conductivity gauge continues longer than error judgment time	Change the distilled water conductivity sensor. Call for service.

8. In the Event of Failure...

Failure indication and Its Contents

Others	Indication	Cause	Countermeasure
Distilled water quality low	Dst Wtr Qlty Err Call for Service	When the distilled water quality exceeding the error limit continued over the time period to trigger the distilled water quality alarm.	Call for service.
Boiler drain error	Boiler Drain Err Call for Service	When the heater operation water level input kept OFF even if the time for required to evaluate the boiler water level error passed after starting water supply to the boiler	Check the solenoid valve for drain and drain path.
Coolant error	Coolant Error Call for Service	When the state that became boiler water overflow input ON in the float pipe continued longer than coolant error judgment time	Check the coolant solenoid valve and the coolant path.
Water level error of boiler	Boiler Lvl Error Call for Service	When the heater operation water level input kept OFF even if the time for required to evaluate the boiler water level error passed after starting water supply to the boiler	Check the feedwater solenoid valve and feedwater path whether manual drain cock is opened or not.
Water level meter of boiler error	Boiler Snsr Err Call for Service	When the condition of the float contacting points in the float pipe becomes abnormal	Change the float switch. Call for service.

- ※ When an error or other indications occurred, control of all devices including the heater, the solenoid valves will be turned OFF.
- ※ When an error occurs, confirm the error message shown at the message window, and call the shop from which you made a purchase or our customer support center.

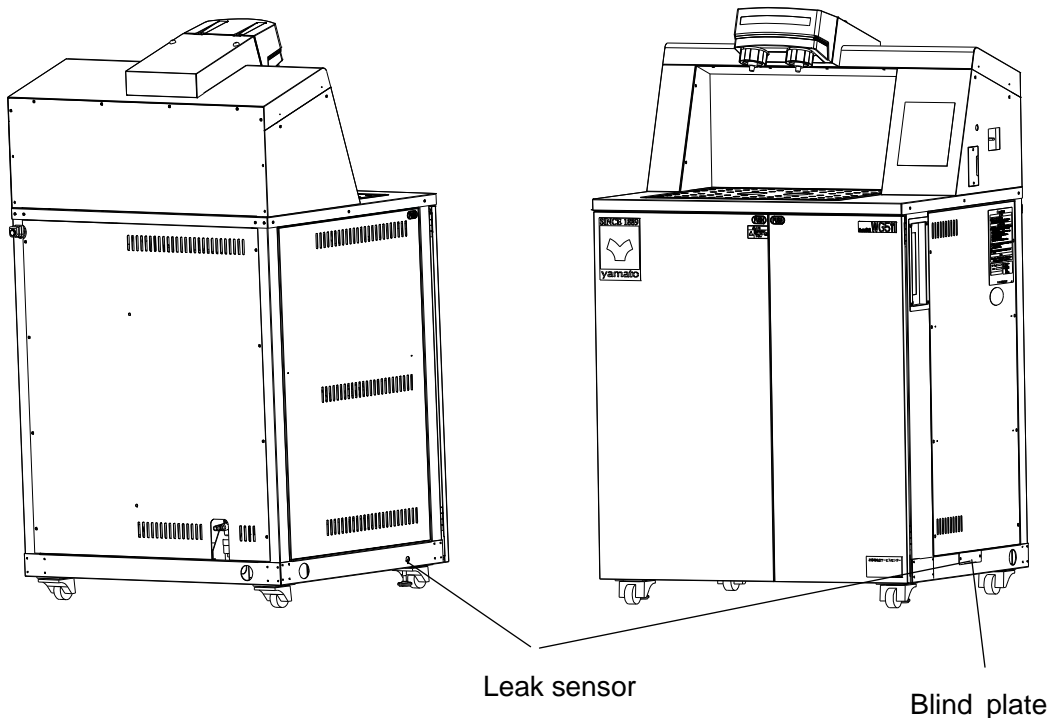
8. In the Event of Failure...

Remedy for Trouble

Counter measures when a water leak error is displayed

Countermeasures

- (1) Turn the ELB on the right side of the main unit "OFF(O)".
 - (2) Isolate the leaking point.
 - (3) Wipe off any water at the bottom of the unit and let it dry, remove the leak sensor from the main unit, wipe the electrode and allow it completely dry. (You need a Philips driver to remove the leak sensor.)
 - (4) When dried, be sure to set the leak sensor to the original position.
 - (5) Return the door to the original position.
 - (6) Turn the ELB on the right side of the main unit "ON(|)", press the **POWER** key on the operation panel to resume normal operation.
- ※ Remember to close the tap water faucet first before disassembling the piping in order to repair water leak from a pipe or other purposes.



※You need a Philips driver to remove the blind plate and the water leak sensor.

8. In the Event of Failure...

When you suspect a malfunction

Symptom	Possible malfunctions	Countermeasures
Power will not turn on.	● ELB is OFF.	Turn the ELB on the right side of the main unit "ON()".
	● User side power supply is defective.	Assure 1φAC200V power supply.
	● ELB is defective.	Replace relevant parts.
Water is not supplied.	● Tap water faucet is not sufficiently open.	Open the tap water faucet.
	● Insufficient tap water pressure or water is failed.	Check that the tap water faucet is open.
	● Water supply hose is not connected properly.	Reconnect the water supply hose securely. (See P.8~9)
	● Raw water supply solenoid valve is defective.	Replace relevant parts.
	● Pretreatment cartridge is clogged.	Check if consumables have not been replaced for a long time.
Supply water or sampling will not stop.	● Raw water supply solenoid valve is defective.	Replace relevant parts.
	● Ion exchange water/High-Purity Distilled Water sampling solenoid valve is defective.	Replace relevant parts.
Water is not supplied to the boiler.	● Boiler water supply solenoid valve is defective.	Replace relevant parts.
	● Float switch is defective.	Replace relevant parts.
	● Pretreatment cartridge is clogged.	Check if consumables have not been replaced for a long time.
	● Boiler drain cock is open.	Close the drain cock.
The heater will not be turned ON.	● Float switch is defective.	Replace relevant parts.
	● Heater is disconnected.	Replace relevant parts.
Cooling water does not flow.	● Cooling water solenoid valve is defective.	Replace relevant parts.
Initial accumulated water is not drained.	● Initial accumulated water drain solenoid valve is defective.	Replace relevant parts.
Distilled water will not accumulate.	● Initial accumulated water drain solenoid valve is defective.	Replace relevant parts.
	● Improper storage amount setting	Check if the storage amount is set at 30L or 55L. (P.39)
Distillation does not stop.	● Float switch is defective.	Replace relevant parts.
Water cannot be sampled.	● Ion exchange water/High-Purity Distilled Water sampling solenoid valve is defective.	Replace relevant parts.
	● The pretreatment cartridge, the ion exchange resin cartridge, the high purity cartridge or the membrane filter is clogged.	Check if consumables have not been replaced for a long time.
	● Improper connection of pipes	Check the connection of the hose. (See P.10)
Water quality is low.	● The ion exchange resin cartridge and the high purity cartridge are deteriorated.	Sample about 5L.
	● Air remains in the ion exchange resin cartridge and the high purity cartridge	If situation does not improve, replace the ion exchange resin cartridge and the high purity cartridge.
	● Ion exchange resin cartridge and high purity cartridge have not been used for a long time.	

9. After sales service and warranty

Request to repair parts

Request to repair parts

Stop operation immediately, turn Earth Leakage Breaker (○) off, disconnect Power Cord or turn facilities breaker off for Power Cable, if any trouble occurs.

Contact with local dealer, Yamato sales office, or Yamato Customer Service Center.

Require the following information for repair.

- Model name of Yamato products
 - Serial Number
 - Date (year/month/date) of purchase
 - Description of trouble in detail as possible
- See Warranty Card or sticker on this Equipment.
(See Chapter 3. Names and functions of each part for details on P.15.)

Be sure to present the warranty card to Yamato service representative.

Keep Warranty Card with care.(attached separately)

- Warranty Card would be given by local dealer or one of Yamato sales offices.
Date of purchase of this Equipment and other information should be filled in Warranty Card.
Please send Warranty Card to Yamato Customer Service Center(Yamato CSC) by facsimile described Fax number in the left top corner of it.
Then, keep its Card with good care.
- 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 local dealer, one of Yamato sales office or Yamato CSC 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.

Guarantee for maximum storage period of repair parts.

Guarantee that maximum storage period of repair parts will be 7(seven) years after end of their production.

Repair parts will be defined the parts to maintain this Equipment performance.

10. Specifications

Model		WG511	WG711
Performance	Water quality level	Ion exchange water : Compliant with the JIS K0557 A4 standard Distilled Water : Compliant with the JIS K0557 A4 standard※1	
	Sampling system	【Ion exchange water】 Pretreatment⇒Ion exchange⇒Filtering 【Distilled water】 Pretreatment⇒Ion exchange⇒Distillation⇒Filtering	
	Water supply system	One-touch coupler resin hose for connecting tap water/free connection of a hose	
	Water to sample	Ion exchange water and distilled water	
	Amount of distilled water generated	Approx. 5.0ℓ/h	Approx. 10.0ℓ/h
	Sampling amount	Ion exchange water※	Approx. 1.4ℓ/min
		Distilled Water	Approx. 2.8ℓ/min
	Draining	Approx.1.0~2.0ℓ/min(50Hz)/ Approx.1.5~2.5 L/min(60Hz)	
Configuration	Sampling capacity setting range	Right/Left selective connection system/hose connection	
	Condenser	0.1~85ℓ/continuous sampling ※2	
	Heater	Hard glass	
	Pretreatment cartridge	Ceramics heater 1.9kw x 2	Ceramics heater 1.9kw x 4
	Cartridge	Containing 0.1μm hollow fiber + activated charcoal (PWF-1)	
	Final filtration	Ion exchange resin(SPC-10) x1	
	Water quality meter	0.1μm membrane filter	
	Leak detection	on water quality meter/distilled water quality meter	
	Distilled water storage tank	Water supply solenoid valve is forcibly shut off when leak is detected 2 points	
	Pump	100ℓPE tank ※2	
	Water sampling table	Magnetic pump 20W	
	Distilled stored water sampling/drain port	Large stainless steel sink (with a splashing preventive mechanism)	
	Level detection	Discharge cock + φ13 nipple	
	Level	5-step lead SW detection(also has a distillation control function)	
Standard	Raw water pressure range	Full level setting:8 Selectable among 5L, 55L, 30L	
	Safety devices	0.10MPa~0.50MPa	0.15MPa~0.50MPa※6
	Power (50/60Hz)	ELB, water leak sensor, pressure reduction valve, water quality error alarm	
	External dimensions※3 (Width×Depth×Height)	Single phase AC200V Max. 21A(30A)	Single phase AC200V Max. 42A(50A)
	Weight (at dry condition)	800mm×685mm×1510 mm	870mm×685mm×1510 mm
	Sampling port	Approx.130 kg	Approx.140 kg
Display	Water quality display	Approx. 1400mm above the floor	
	Other display	Digital display(electric conductivity/specific resistivity)	
		Consumables replacement display (ion exchange resin cartridge, pretreatment cartridge, membrane filter), error display alarm with text, error history display, consumables replacement history display (20 events each), Japanese/English select function, maintenance display	

10. Specification

Accessories	Water supply hose(with a cap with a stopper)	x 1	
	Instruction Manual	This document	
	Warranty card	x 1	
	Stone cleaner(1kg)	x 1	
	Ion exchange resin cartridge (SPC-10)	x 1	
	Pretreatment cartridge	x 1	
	Membrane filter	x 2	
	Seal tape	x 1	
	Elbow coupler	x 1	
	Hose band	x 2	
	Drain hose Assy	3m×1	
	Connecting hose Assy	X 1	
Consumables	Part name	Model	Product code
	Refresher for the ion exchange resin	SPC-10	000823 ※4
	Ion exchange resin cartridge	SPC-10	9110010004 ※5
	Pretreatment cartridge	PWF-1	253099
	Membrane filter	MFRL730	9020010006
	Seal tape		F0260021

※ Performance data has been measured at power supply of AC200V, room temperature of 23°C±5°C, and humidity of 65%RH±20%.

The operating environmental temperature range of the unit is between 5°C~35°C. Rough guide of raw water temperature range shall be between 5°C ~ 30°C. When raw water temperature is high, drain water temperature may be high.

※ The guaranteed performance range is raw water pressure of 2.0~5.0×100kPa(2~5kgf/cm²) and water temperature of 20°C. The amount of sampling water changes depending on the changes of water temperature.

※1 The values are measured immediately after distillation.

※2 The capacity for continuous sampling is up to the limit selected for the full capacity of the tank.

※3 Protrusions are excluded.

※4 When replacement of the ion exchange resin S is prompted, contact your dealer, one of our sales offices, or the service department. We will refresh the ion exchange resin.

※5 It can be used as a spare cartridge during refreshment of the ion exchange resin.

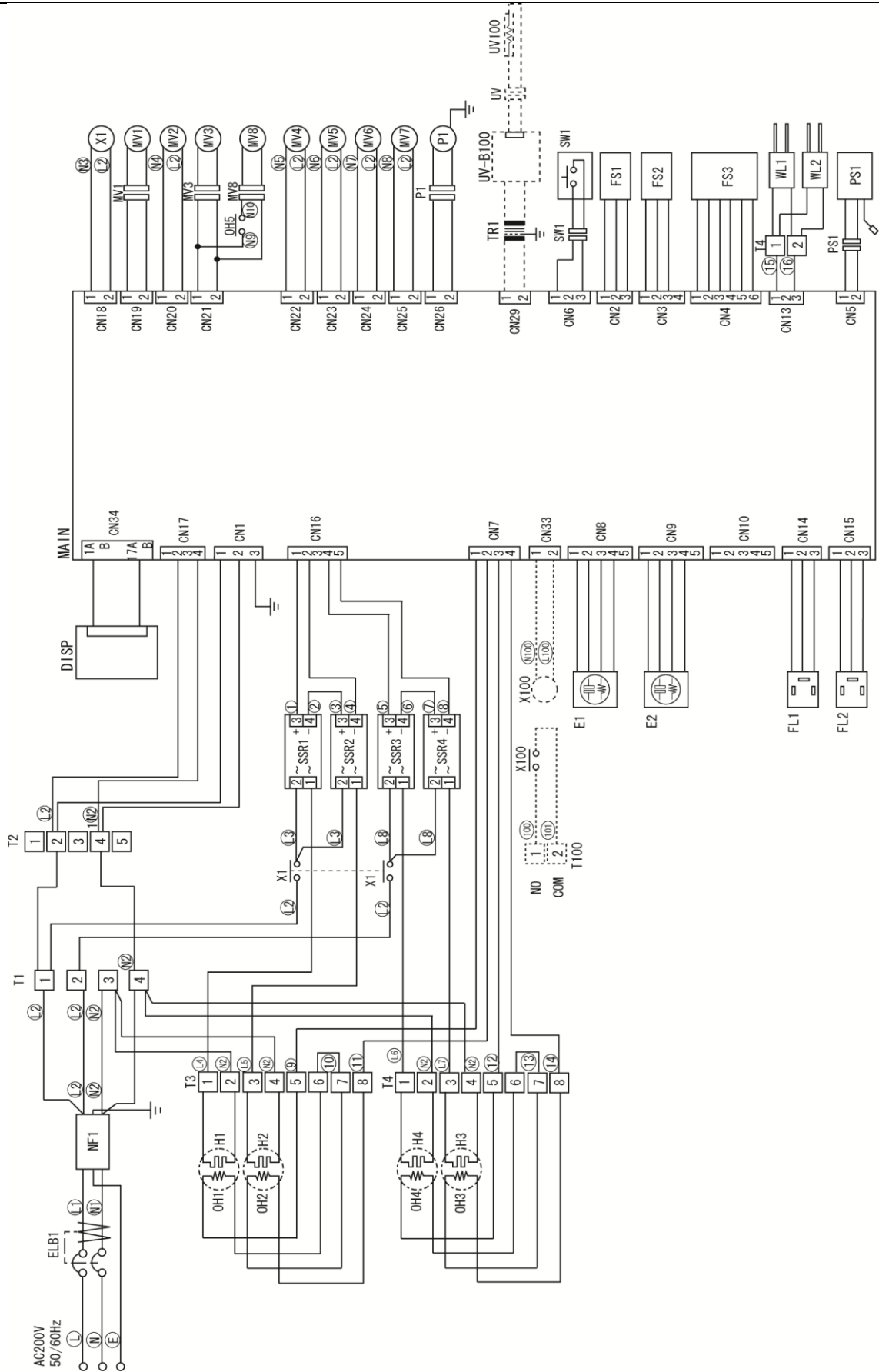
※6 The raw water pressure range will be 0.10~0.50MPa when the drain water temperature cooling mechanism is turned OFF.

Wiring diagram (WG511)



11. Electric Circuit Diagram

Wiring diagram (WG711)



11. Electric Circuit Diagram

Component symbols in the wiring diagram

• Standard components 品

Symbol	Part name	Symbol	Part name
ELB1	Electric Leakage Breaker	NF1	Noise filter
X1	Main relay	T1,2,3,4	Terminal block
H1,2,3,4	Boiler heater	MV1	Raw water supply solenoid valve
OH1,2,3,4	Heater temperature sensor	MV2	Boiler water supply solenoid valve.
OH5	Thermostat	MV3	Cooling water supply solenoid valve
E1	Distilled water quality meter	MV4	Initial accumulated water drain solenoid valve
E2	Ion exchange water quality meter	MV5	Boiler drain solenoid valve.
WL1,2	Leak sensor	MV6	Ion exchange water sampling solenoid valve
FL1	Distilled water flow meter	MV7	Distilled water sampling solenoid valve
FL2	Ion exchange water flow meter	MV8	Bypass solenoid valve
FS1,2	Control float switch	P1	Distilled water sampling pump
FS3	Tank level float switch	SSR1,2,3,4	Solid state relay
SW1	Consumables reset switch	DISP	Display board
PS1	Pressure switch	MAIN	MAIN board

• Optional parts

OWG22

Symbol	Part name	Symbol	Part name
UV100	UV sterilization lamp	UV-B100	UV sterilization lamp ballast
TR1	Step-down transformer		

OWG64

Symbol	Part name	Symbol	Part name
X100	External alarm output relay	T100	Terminal block

12. Table of replacement parts

Part name	Code №	Specification	Maker
Ion exchange resin cartridge	SPC-10	9110010004	Yamato Scientific
Pretreatment cartridge	253099	PWF-1	Yamato Scientific
Membrane filter	MFRL730	9020010006	Yamato Scientific
Hose in the pipe(Silicon)	3040010002	φ9×12	Yamato Scientific
Hose in the pipe(Silicon)	3040016009	φ10×14	Yamato Scientific
Hose in the pipe(Silicon)	3040010021	φ12×16	Yamato Scientific
Hose in the pipe(Silicon)	3040010005	φ15×20	Yamato Scientific
Hose in the pipe(Poiron)	3040060004	φ6×10	Yamato Scientific
Hose in the pipe(Poiron)	3040060005	φ9×13	Yamato Scientific
Hose in the pipe(Poiron)	3040060006	φ12×16	Yamato Scientific
Drain hose	3040090001	φ18×24	Yamato Scientific
Water supply hose Assy	WGH2040020		Yamato Scientific
Bottle filter	WG71030620		Yamato Scientific

13. List of Dangerous Substances



Never use an explosive substance a flammable substance or a substance containing them for this device.

Explosive substance	Explosive substance	①Nitroglycol, glycerine trinitrate, cellulose nitrate and other explosive nitrate esters
		②Trinitrobenzen, trinitrotoluene, picric acid and other explosive nitro compounds
		③Acetyl hydroperoxide, methyl ethyl ketone peroxide, benzoyl peroxide and other organic peroxides
		④Sodium azide and other metal azide
	Explosive substances	Metal "lithium", metal "potassium", metal "natrium", yellow phosphorus, phosphorus sulfide, red phosphorus, celluloids, calcium carbide (a.k.a, carbide), lime phosphide, magnesium powder, aluminum powder, metal powder other than magnesium and aluminum powder, sodium dithionous acid (a.k.a., hydrosulphite)
Flammable substances	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 with ignition point at a degree 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 acetate, (a.k.a.amyl acetate) and other substances with ignition point between zero and less than 30 degrees.
		④Kerosene, light oil, terebinth oil, isopenthyll alcohol(a.k.a. isoamyl alcohol), acetic acid and other substances with ignition point between 30 degrees and less than 65 degrees.
	Combustible gas	Hydrogen, acetylene, ethylene, methane, ethane, propane, butane and other gases combustible at 15°C at one air pressure.

(Quoted from the separate table 1 in Article 6, the enforcement order of the Industrial Safety and Health Law)

14. Installation Standard Manual

* Install the unit according the procedure described below (check options and special specifications separately))

Model	Serial number	Date	Person in charge of installation (company name)	Person in charge of installation	Judgment

No	Item	Method	Reference operation manual	Judgment
Specifications				
1	Accessories	Check the quantities of accessories with the quantities shown in the Accessory column.	10. Specifications P.65	
2	Installation	▪ Visually check the surrounding area. Caution: Pay attention to the ambient environment.	2. Before Using This Unit "▪ Installation space " P.5	
		▪ Keep space.		
Operation				
1	Power voltage	▪ Using a tester, measure the voltage of the voltage used by the customer (distribution board, outlet, etc.). ▪ Measure the voltage during operation (the voltage must be within the standard). Caution: When a unit is to be connected to the plug or breaker, use one that conforms to the standard.	2. Before Using This Unit - Always ground this unit" P.7 -Choose a correct power distribution board or receptacle" P.65 10.Specifications Standard – power supply	
2	Raw water	Checking raw water	2. Before Using This Unit ▪ About raw water··· P.7	
3	Sampling of water	Explain water sampling operation to the customer according to this Operation Manual.	4. Operating procedures P.27~ ▪ Operation procedure 34	
Description				
1	Description of operation	Explain the operation of each unit to the customer according to this Operation Manual.	4. Operating procedures P. 27 ▪ Operation procedure ~34 1. Cautions in Using with P. Safety - 13. List of 71 Dangerous Substances	
2	Error code	Explain error codes and the procedure for resetting them to the customer according to this Operation Manual.	8. In the Event of Failure... - 9. After sales service and warranty P.58~ 64	
3	Maintenance inspection	Explain the operation of each unit to the customer according to this Operation Manual.	6. Maintenance Method P.42~ Daily inspection and 54 maintenance	
4	Completion of installation Information to be entered	▪ Enter the date of installation and the name of the person in charge of installation on the face plate on the unit. ▪ Enter necessary information on the guarantee, and pass it to the customer. ▪ Explain the after-sale service route to the customer.	9. After sales service and warranty P.64	

Responsibility

Please follow the instructions in this document when using this unit. Yamato Scientific has no responsibility for the accidents or breakdown of device if it is used with a failure to comply. Never conduct what this document forbids. Unexpected accidents or breakdown may result in.

Note

- ◆ The contents of this document may be changed in future without notice.
- ◆ Any books with missing pages or disorderly binding may be replaced.

Instruction Manual for
Water Purifier, Auto Stil®
Model WG511/711
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Revises

〒103-0022

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