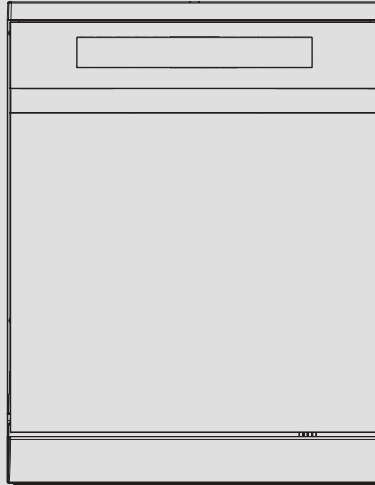


Model:
RDW-U1816-GBW



Dishwasher

Instruction/Installation Manual

Rinnai

Content

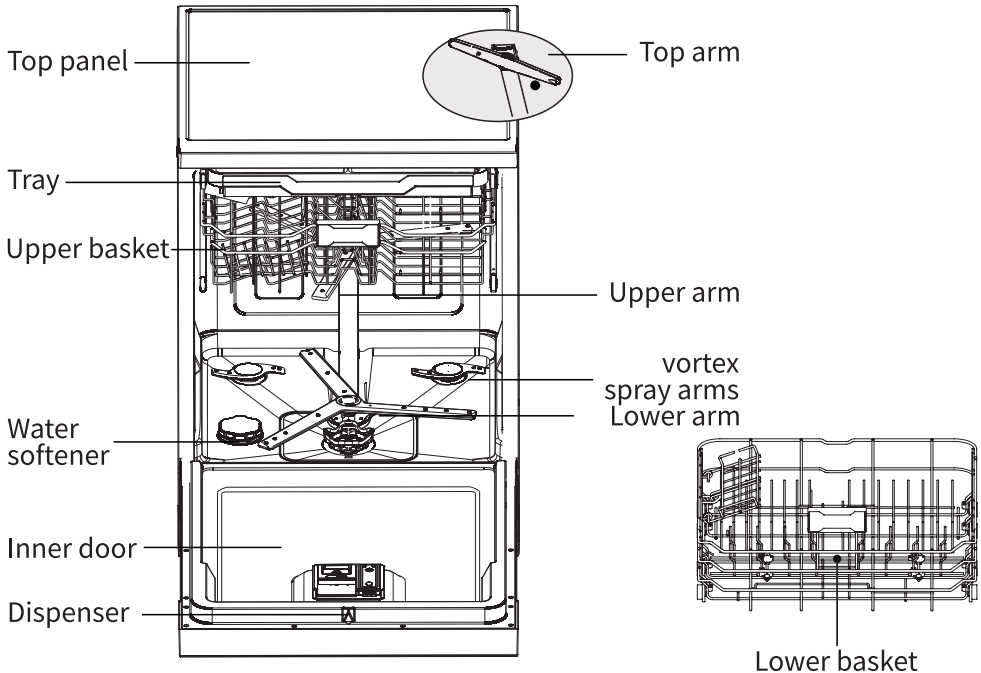
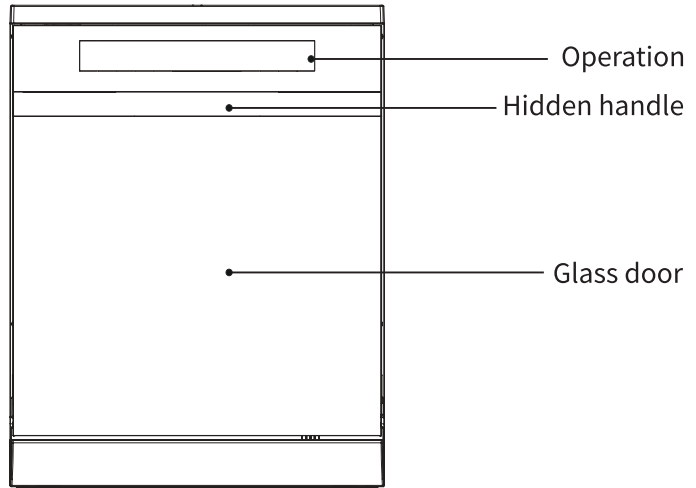
Page

Component name	1
Operation instruction	3
Installation instruction	11
Maintenance and care	16
Troubleshooting and solution	18
Electrical schematic diagram	19
Product specification	20

Thank you for choosing Rinnai dishwasher. Please read the instruction manual carefully before using and keeping it properly for reference.

- Please fill in the model, purchase date, purchase store, invoice number and other information carefully on the warranty card, and send the warranty registration card back to our company.
- This appliance must be installed by professionals.
- For special users (such as children, the elderly, the disabled, etc.), it should be used under the supervision of normal adults.

Component name



Component name

Operation



①	Control panel	Used when selecting the washing program;	
②	Indicators	Digital screen icon instructions	
		Water indicator	Washing indicator
		Drying indicator	Dry & Fresh indicator
		Salt indicator	Rinse Aid indicator
		Upper spray arm indicator	Temperature indicator
		Drying indicator	Child lock indicator
		The water icon on the digital screen lights up when water enters, the washing icon lights up during the washing stage, the drying icon lights up during the drying stage, and the storage icon lights up during storage; the corresponding icon lights up when iron salt and iron are strong. . Display the machine running time and reservation time, temperature, and display when salt and rinse aid level is low;	
③	Function	Choose the function you want	
④	Start/pause	After the machine is set up, use it when starting the operation, use it when the machine is running, and use it when it is suspended;	
⑤	Power on/off	Use when turning on and off	

Warning

- In order to prevent personal injury and property loss, the following categories and warning signs are as below.

Differentiation of content according to the degree of hazard and damage.



Warning: Indicates potential hazard that may result in death or serious injury if not avoided.



Caution: Indicates potential hazard that may result in minor or moderate injury if not avoided.

Operation instruction

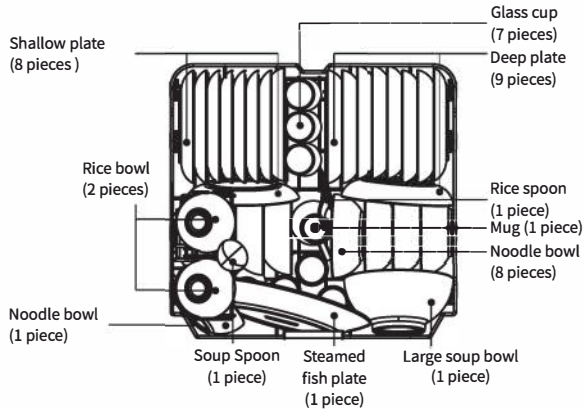
Placement of tableware



Caution

- Do not put the below types of tableware in the dishwasher: Tableware made of bamboo, plastic, styrofoam and other heat-intolerant materials that are prone to rust, pots and knives that are easy to discolor or have coatings that are easy to peel off, such as tableware with small openings, Tableware sponges, rags, etc. that are difficult to clean inside.
- Please soak and clean any burnt and stubborn stains before using the dishwasher.
- Before using the dishwasher, please remove any residue from the tableware.

Placement of tableware for the lower basket



- Each tableware should be placed in its designated position as shown in the diagram.
- The front of bowls and plates should be tilted slightly downward to facilitate cleaning and drying.
- Place the cup face down.
- Chopsticks should be no longer than 24 cm and should be placed with the large end facing downwards.
- Chopsticks and small soup spoons should be placed separately in the grid of the wine glass rack, and should not be overlapped, so as to facilitate drying.

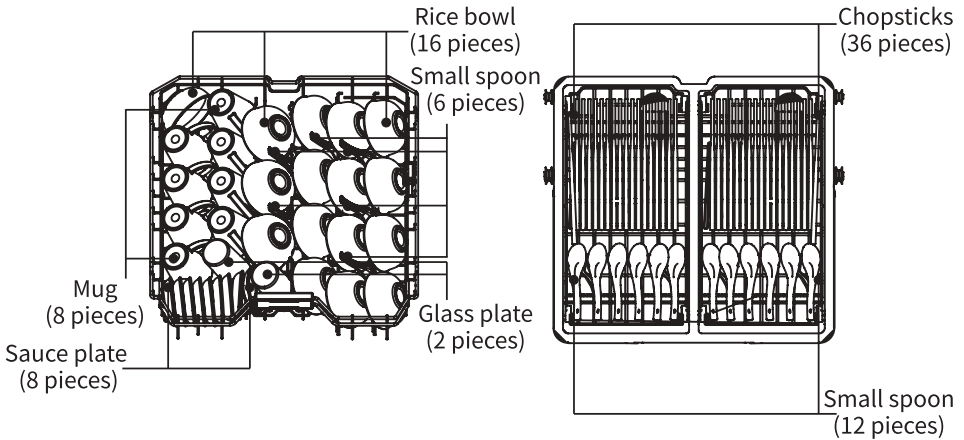


Caution

- The door should not be left in the open position as this may create a risk of the appliance tipping over.
- Knives and other sharp objects must be placed in a basket with the tip pointed down or horizontally

Operation instruction

Placement of upper basket and trays with cutlery



- Each tableware should be placed in its prescribed position as shown in the diagram.
- Place bowls and dishes with the front slightly tilted downward. Place the cup rim down.
- Place the spoon face down.
- The mouth of the rice bowl on the right side of the picture should be placed slightly tilted toward the middle.



Notice

- Please put small tableware in the chopsticks and spoons basket to prevent them from falling during washing.
- Please place the tableware as required and do not place them on top of each other, otherwise they will not be cleaned properly.
- Tableware with a concave bottom can easily retain moisture, so place it at an angle.
- The tableware placed should not protrude from the bottom of the basket, nor should it be too high, so as not to hinder the rotation of the upper and lower spray arms.
- After washing, there is still a lot of high-temperature water vapor in the cabinet. Please be careful when opening the cabinet door to avoid burns.
- When taking out the tableware, first take off the bottom bowl and basket and then the upper bowl and basket.

Operation instruction

- The following table shows the specifications and capacity of standard tableware. Maximum of 130 pieces can be placed. Actual tableware size and shape may vary and quantities may vary.

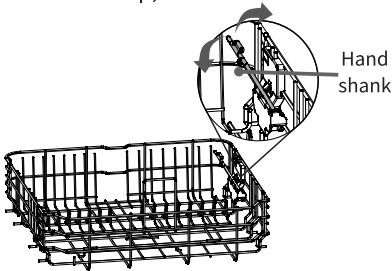
Standard tableware specification table for upper and lower bowl baskets

Tableware	Glass	Noodle bowl	Deep dish	Shallow dish	Large soup bowl	Chopsticks	Small spoon	Rice spoon
Quantity	9	9	9	9	1	36	18	1
Size (mm)	Φ 60*120	Φ 156*58	Φ 208*38	Φ 208*28	Φ 202*98	230	135	200*75

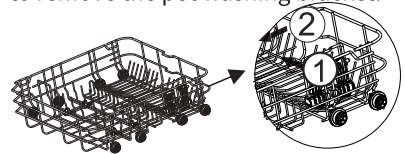
Tableware	Mug	Rice bowl	Condiment plate	Spoon	Steamed fish dish
Quantity	9	18	9	1	1
Size (mm)	Φ 85*94	Φ 117*53	Φ96*23	Φ217*63	320*214*34

● Pot washing bracket adjustment:

1. Pull out the lower basket, and twist the handle on the right side of the bowl monitor to move the handle up and down;
2. Pull it down, and the handle will be in a horizontal position, and you can place pots and pans;
3. Pull it up, and the handle will be in a vertical position. , can fix the handle.

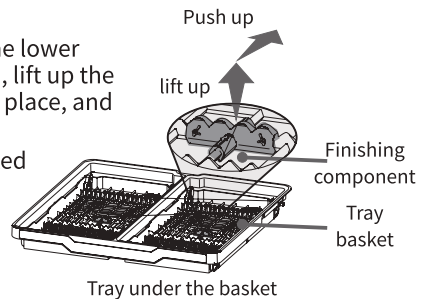


When washing and testing a full load of tableware, please remove the handle pot washing bracket as shown in the figure, press the buckle in the direction of the ① arrow, and push in the direction of the ② arrow to remove the pot washing bracket.



● Adjustment and use of tray

1. Pull out the pallet, with the pallet basket in the lower position, hold the decorative piece in your hand, lift up the pallet basket, push it forward, let go after it is in place, and adjust the pallet basket to the upper position;
2. The left and right pallet baskets can be adjusted independently.



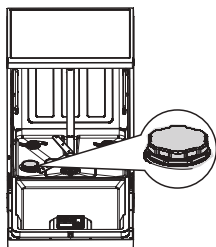
Operation instruction

Water softening system setup

In order to achieve good cleaning results, the dishwasher needs to use soft water, and this dishwasher comes with a soft water device.

● Insert special salt:

1. Open the dishwasher cabinet door, take out the lower basket, and unscrew the salt compartment cover.
2. After adding salt, pour clean water into the water softener until it is full but not overflowing.
3. Tighten the salt bin cover and wipe the surrounding area clean with a rag to prevent salt water from corroding and rusting the inner tank.



Add about 1000g of dishwasher salt.
(One addition can be used multiple times)



Water softener salt bin



Noted

- When the salt in the water softener is insufficient, the display will show "⋯" to remind you to add special salt.
- You must use dishwasher salt, otherwise it will damage the dishwasher liner.
- After each addition of salt, it is recommended that the dishwasher run a pre-wash program without load and rinse the inner tank.

● Set the water hardness level according to local water quality:

Set the salt-adding gear: In standby mode, touch the "⏻" button three times in succession to light up the display, and simultaneously press and hold the "Daily Wash" and "Storage" buttons for 5 seconds to enter the hardness level parameter setting state. The default digital tube displays H4. , press "Daily Wash" "Switch the hardness level, which is displayed in a cycle from H4-H5-H6-H7-H1-H2. Press the "⏻" key to confirm. After confirmation, you will return to the program selection state. The last time you enter the configuration mode will be displayed next time. Hardness level status.



Operation instruction

Comparison table of water hardness and water hardness levels

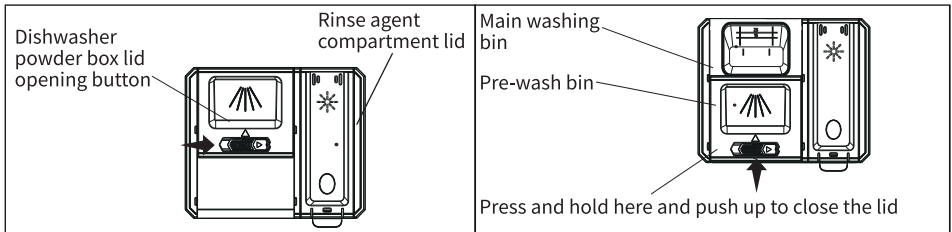
Water hardness mg/L(CaCO ₃)	Water hardness (mol/L)	dH	Water hardness level
/	/	/	H1
0~100	0~1	0~5.6	H2
101~200	1.01~2	5.7~11.2	H3
201~300	2.01~3	11.3~16.8	H4
301~450	3.01~4.5	16.9~25.2	H5
451~650	4.51~6.5	25.3~36.4	H6
>651	>6.51	>36.5	H7

Detergent and rinse aid use

● Addition of special detergent (dishwasher powder) for dishwashers:

1. Open the cabinet door of the dishwasher. You can see the detergent box on the inside of the door. Press the button on the pre-wash compartment cover, and the lid will automatically pop open to reveal the main wash compartment.
2. Add a washing block to the main washing chamber.
3. Close the lid as shown below until you hear a "click" sound.
3. Use running water and a soft brush to clean the filter and flat filter;
4. If using dishwasher powder, follow the prompts to add dishwasher powder to the pre-wash compartment.

Tip: When using special dishwasher powder, please refer to the program table on page 10 of the instruction manual; **Note:** Energy-saving washing 10+27.5 g means that 10g of dishwasher powder is placed in the pre-wash compartment of the dispenser, and 27.5g of dishwasher powder is placed in the dispenser. Main wash warehouse;



Operation Instructions

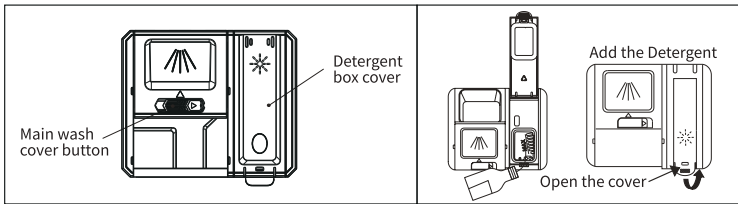


Noted



- Please use dishwasher-safe dishwasher powder and follow its instructions.
- It is recommended to use special dishwasher powder for dishwashers, and a trial bag is included in the attachment.
- If you use ordinary detergent, a large amount of foam will be produced in the dishwasher, which may cause the dishwasher to issue a water leakage alarm.
- Please keep dishwasher detergent powder out of the reach of children.
- When you are not using the dishwasher, do not put dishwasher powder into the dishwasher to prevent the dishwasher powder from getting wet and affecting the washing effect.

● Addition of rinse aid (rinse agent):

1. Open the dishwasher cabinet door. You can see the rinse agent box on the inside of the cabinet door. Open the rinse agent box cover.



2. The dispenser gear determines the amount of rinse agent used during each rinse. The larger the gear number, the greater the dosage. For example, the dose in gear d2 is larger than the dose in gear d1. If there are blue deposits after washing the dishes, you can reduce the amount of rinse agent.

3. In standby mode, tap the "  " button three times in succession to light up the display, and simultaneously press and hold the "Daily Wash" and "Drying" buttons for 5 seconds to enter the dispenser gear parameter setting state. The default digital tube displays d7. Press "Daily Wash" to cut Change to the dispenser gear, the default is d7 gear, which is displayed in a cycle from d7-d1-d2-d3-d4-d5..., press the "  " key to confirm and save; d1 gear means no rinse aid; once Add to use multiple times.




4. After the addition is completed, close the lid tightly. If any rinse agent comes out of the box, please wipe it clean to avoid a large amount of foam during washing and triggering a water leakage alarm.

Tip: If you don't want to use rinse aid, the above steps can be omitted.

Operation Instructions

Function settings

1. Press "  " and power on.



2. Click separately on different washing icon to choose a washing program.




3. Press "ALT Wash" to use it to match with other washing programs.



4. Press the "Reservation" button to set the reservation function. Short press the "Reservation" button to select the duration. The duration scrolls from "1 H, 2 H...23 H, 24 H". At this time, long press the "Reservation" button for 1.5S to exit the reservation mode, and the reservation light will turn off and return to the standby state."



5. At any stage of setting, press the "  " key to start the job immediately, and press the key again to pause the current job.



- Press and hold the 3S "child lock" button to lock or unlock;
- When the drying and storage functions are used with the washing program, a short press can freely add or cancel the drying/storage function;
- Long press of the "drying" button can turn it on Independent drying function 120min; long press the "storage" button to enable independent storage function 10080min (7 days).

● Changing settings

Once the work is started, the settings cannot be changed. You can only reset the machine after shutting down and then turning it on again.

Operation Instructions

● Interrupt work

After starting work and running for 3 minutes, the child lock function will be automatically turned on. Press and hold the "child lock" button for 3 seconds.

After canceling the child lock, press and hold the "⏏" button for 3 seconds. The operation will be interrupted for drainage and then shut down. Short press will prompt an invalid sound (to prevent accidental activation.)

The program settings are as follows:

Program	Dishwasher powder	Washing time (min)	Highest temp (°C)	Dry time (min)	Applicable scenarios
Normal	35g (1 or 2pcs)	99	65	90	Wash in time after daily meal
Baby-care	35g (1 or 2pcs)	119	75	90	Continuous high-temp wash & Sterilization
AI wash	35g (1 or 2pcs)	119/109/99	65	90	Sensors intelligently determine the degree of dirt
Hi-temp	35g (1 or 2pcs)	89	75	90	High temperature rinse and disinfection
Rapid	20g(1pcs)	29	55	90	Quick cleaning of lightly oiled tableware
Pre-wash	/	15	/	/	Wash before meals
Glass	35g (1 or 2pcs)	99	65	90	Clean temperature vessels
Intensive	35g (1 or 2pcs)	109	70	90	Cleaning heavily oily tableware
ECO	10+27.5g pre-wash + main wash	149	51	99	Fuller soaking saves water and electricity
Self-clean	35g (1 or 2pcs)	79	65	90	Clean the machine inner tank

Performance testing

The test program is "ECO", the amount of dishwasher powder is 10+27.5g, and the rinse aid level is set to "d7".



- The temperatures in the above table vary by 3-5°C depending on the actual washing environment.
- Please do not allow children to operate this appliance to avoid accidental injuries such as electric shock, penetrating wounds, etc.
- During washing, do not open the cabinet door to avoid burns and water splashing.
- When not in use for a long time, the angle water inlet valve should be closed.
- The display only shows the washing time during washing, and switches to the drying time after washing is completed.
- Except for "Pre-wash", all other programs will automatically open and close the door during the drying stage. When opening the door, there will be a "drip, beep, beep" sound. Please stay away from the door to avoid burns from the steam that rushes out.
- When opening the door during the drying stage, do not close the door manually. If you need to interrupt the work, please refer to the interruption work process above.

Installation instructions

Installation accessories list

- The accessories that come with the dishwasher are as follows, please confirm before installation.

Accessories name	Quantity	Accessories name	Quantity
Dishwasher	1pcs	Φ 4*14 mounting screws	8pcs
Manual	1pcs	Φ 3.5*25 mounting screws	4pcs
Water inlet pipe (Φ 20mm)	1pcs	Dishwasher Powder	1 bag
Adjustment bracket	2pcs	Anti steam sticker	1 roll

Installation notice



Noted

- A safe distance of more than 15cm should be maintained between the dishwasher and gas appliances and high-temperature open flames.
- The power socket must be an effectively grounded 220V~50Hz three-prong socket.
- It is strictly prohibited to install the dishwasher and power socket in a place where they may be affected by moisture or water.
- Do not use damaged power cords, power plugs, or loose power sockets.
- To prevent leakage accidents, please install a leakage protector. If a leakage protector is installed on the main circuit, it is not necessary. Install it separately. The power cord must not be damaged, bent, pulled, or twisted, and the power cord must not carry heavy objects.
- Appliances should be connected to the water source using new hose assemblies and old hose assemblies should not be reused.
- After the trial run is completed, close the angle water inlet valve and cut off the power supply to the appliance.



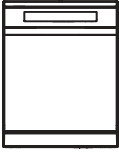

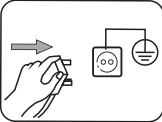


Noted

- Do not install in places where freezing is possible (room temperature below 0°C) otherwise water leakage may occur.
- The dishwasher should be installed steadily in a location that is convenient for operation and maintenance, and the bottom plate of the installation part must be firm and at least able to withstand the weight is 90kg and cannot be placed tilted.
- When transporting and placing, it should be lifted from the side hand holes or the bottom, and handled with care. Do not use the cabinet door handles as transport support.
- Do not wrap the drainage pipe around the connection to avoid affecting the drainage effect.
- After installation, check whether the water inlet pipe is blocked by foreign matter and whether there is water leakage at the pipe connection.
- In areas with hard water, please adjust the water hardness setting after installation to avoid affecting the cleaning effect.

Installation instructions

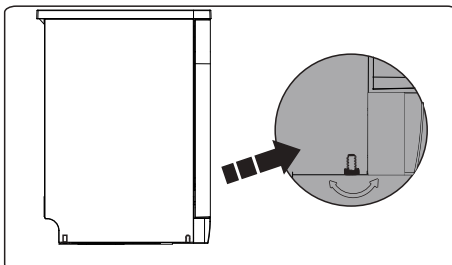
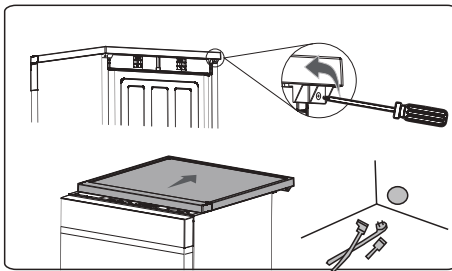
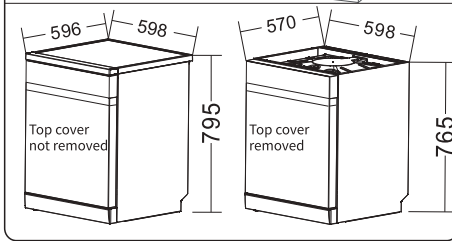
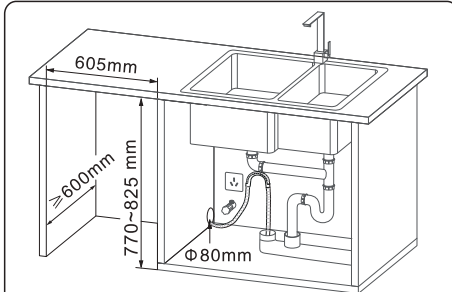
■ ■ Precautions before installation.

The dishwasher had been tested through water during production to ensure that the machine are qualified. When you unpack the dishwasher, there may be water droplets in it. This will not affect the performance of the product.

	<ul style="list-style-type: none">• The dishwasher should be installed smoothly in a place where operation and maintenance are convenient and firm, and be careful to stay away from high temperature open flame
	<ul style="list-style-type: none">• Do not install dishwashers and electrical outlets in places that may be damp or wet.
	<ul style="list-style-type: none">• Ensure that the grounding pole of the power outlet is effectively grounded.
	<ul style="list-style-type: none">• It must be installed or moved by professionals Forbidden to disassemble, refit and repair without authorization.
	<ul style="list-style-type: none">• Check whether the voltage meets the requirements.• Check whether the length of the drainage hose meets the use requirements.• Check whether the materials required for use the platform for placing the machine or other accessories are ready. Special required accessories can be customized if needed.

Installation instructions

Installation diagram



● In the setting position of the cabinet, set appropriate square holes according to the figure, the square hole size is 605x770~825mm; The depth is not less than 600mm.

● At the setting position of the cabinet, set the pipeline inlet and outlet as a round hole according to the figure, and the size of the round hole is about 80mm. The length of the power cord is about 1.6m; Make sure the distance between the electrical outlet and the dishwasher is appropriate.

● Be careful to reserve room for opening the door.

● Cabinet materials must be heat and moisture resistant.

● Use a cross screwdriver to remove the two screws on the top back of the machine.

● Push backward and remove the top panel.

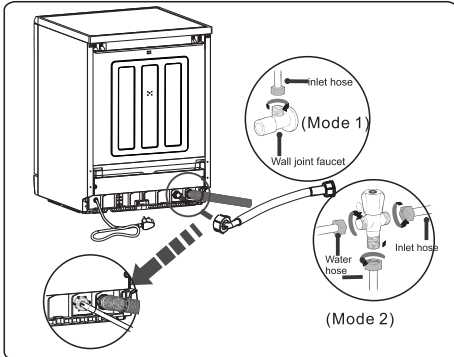
● After removing the top plate, insert the power cable, water inlet pipe, and drainage pipe into the cabinet hole. Do not bend the water inlet pipe and drainage pump.

● The dishwasher must be placed horizontally, otherwise, it will cause the dishwasher to overflow or even electricity leakage.

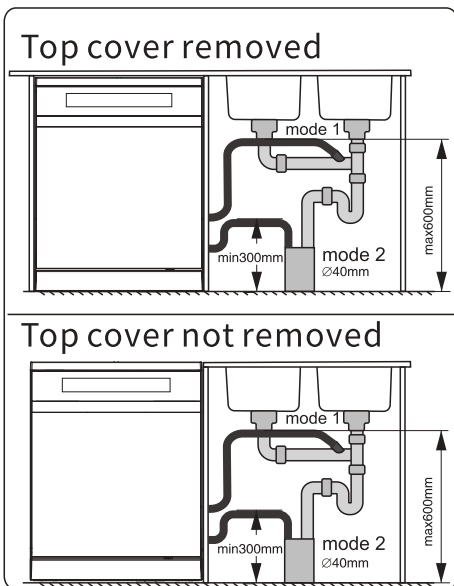
● If the dishwasher is not placed horizontally, you can adjust the balance by adjusting the feet.

Installation instructions

Installation diagram



- Connection (Mode 1) is connected to the faucet (through the angle valve).
- Connect (Mode 2) with three-way valve (through two ends of water hose interface).
- The old water inlet pipe can not be reused to avoid aging or damaged water inlet pipe, resulting in water leakage and leakage.



- After the dishwasher is installed in the cabinet, run the drain pipe and power cable through the reserved inlet.
- Insert the outlet end of the drain pipe into the sewer to a depth of not less than 100mm to prevent the drain pipe from escaping during drainage.
- The drainage pipe shall not be squeezed and deformed, and shall not be discounted to ensure smooth drainage.
- The drain pipe height ranges from 300mm to 600mm. If the drainage pipe needs to be extended, do not extend more than 5m, otherwise it may affect the washing effect.

Installation confirmation

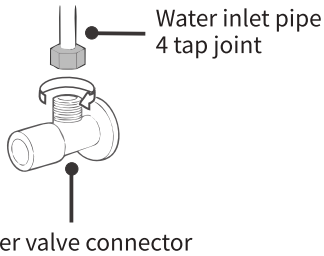
After the installation is complete, check whether the dishwasher is level and firm, and whether the water inlet pipe and drain pipe are properly connected. Take out the packaging materials and accessories, switch on the power supply and perform the function test operation of the dishwasher. Check whether the functions are normal and whether the machine has abnormal phenomena.

Installation instructions

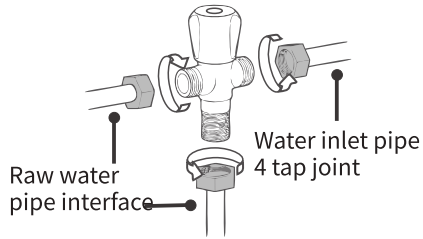
Connect water inlet and drain pipes

- Two connection methods for water inlet pipe:

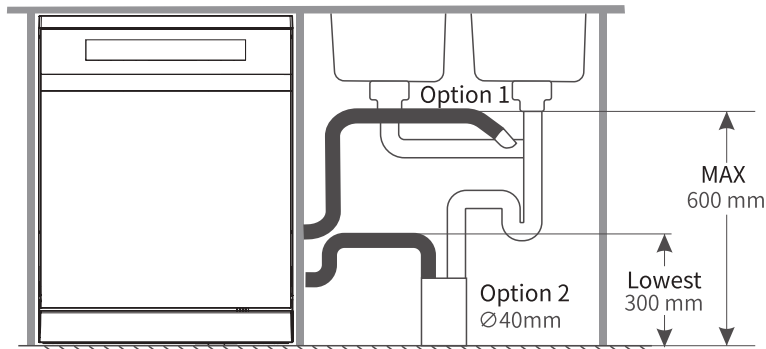
① Connect to the faucet (via angle valve)



② Connect with the tee (through both ends of the water pipe interface)



- The distance between the elevated position of the drain pipe and the bottom of the dishwasher must not be higher than 600mm and not lower than 300mm.



Trial run

1. Close the dishwasher cabinet door, turn on the power, and open the water inlet valve.
2. Press the " ⏻ "key to turn on the machine, then select one of the washing programs among all washing programs, and then press the " ▶|| " key to start the work.
3. Confirm the following content.

① Normal water spraying sound can be heard during operation.

② During operation, there should be no leakage at the connections and other parts of the water inlet pipe, drain pipe.

③ After the operation is completed, open the cabinet door and confirm that all water in the machine has been drained.

④ After the operation is completed, close the water inlet valve and turn off the power supply.

Maintenance and care

In order to maintain good washing performance and results of the dishwasher for a long time, please clean the filter system regularly and check whether the filter assembly and spray arm are blocked by debris.

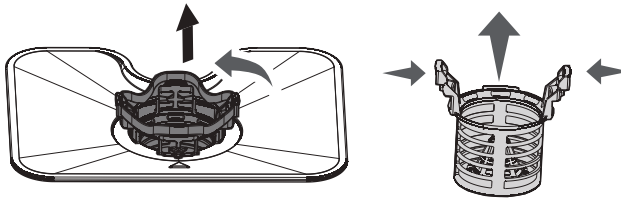


Noted

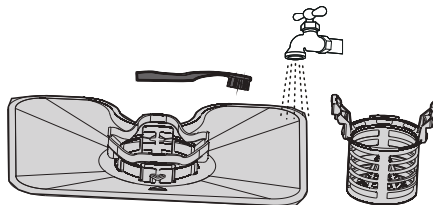
- Do not fill or spray water manually or use sharp metal objects.
- Non-professional technicians are strictly prohibited from dismantling, repairing or modifying the machine.
- If the power cord is damaged, it must be replaced by professionals from the manufacturer, its service department or similar departments in order to avoid danger.

■ ■ Cleaning and maintenance

1. Open the cabinet door and pull out the lower basket.
2. As shown in the picture, rotate the filter counterclockwise and take out the filter assembly upwards; hold the two buckles and pull up the coarse filter;



3. Use running water and a soft brush to clean the filter and flat filter;



4. Reinstall the filter assembly and tighten it clockwise. After confirming that the installation is in place, return the lower basket to its original position.



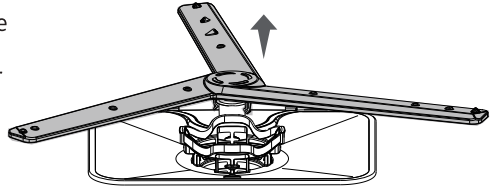
Noted

- If the filter is blocked, it may lead to poor washing performance or mold, odor, water leakage and other adverse consequences.
- It is recommended to clean the filter after each use. Do not damage the filter during cleaning.

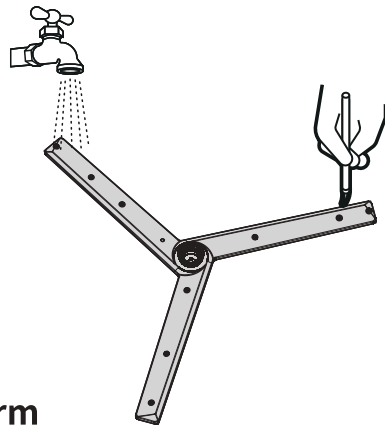
Maintenance and care

Clean lower spray arm

1. Open the cabinet door and pull out the lower basket.
2. As shown in the picture, hold the middle of the spray arm and point it vertically upward. Pull out. Be careful because water may splash out.



3. Use a toothbrush or toothpick to clean the spray holes on the spray arms, pipes, etc., and rinse them with clean water.



4. Insert the pipe part of the lower spray arm into the pipe part of the body until you hear a "click" sound. Confirm that the spray arm can rotate easily, and finally return the lower basket to its original position.

Clean the upper spray arm

1. Pull out the upper basket to remove the upper spray arm (the upper spray arm is fixed at the bottom of the upper basket).
2. Use a toothbrush or toothpick to clean the stains on the spray holes, pipes, etc. on the spray arm, and rinse them with clean water.
3. Return the upper bowl basket to its original position.



- Do not use bleach, detergent, thinner, etc. for cleaning.
- Wipe the main body with a wrung-out soft cloth. When using a chemical fiber cloth, please follow its instructions.
- When you are concerned about stains or odors, add a washing block or a commercially available dishwasher-specific body cleaner and run it without load "Self-cleaning" program. It can keep the inside of the machine clean.
- If the spray arm is not installed correctly, dishes will not be washed.

Troubleshooting and solution

- If you found it abnormal in the machine during normal use, please check and handle it according to the following content. If the fault cannot be eliminated, please contact the Rinnai after-sales service center or a special maintenance outlet.

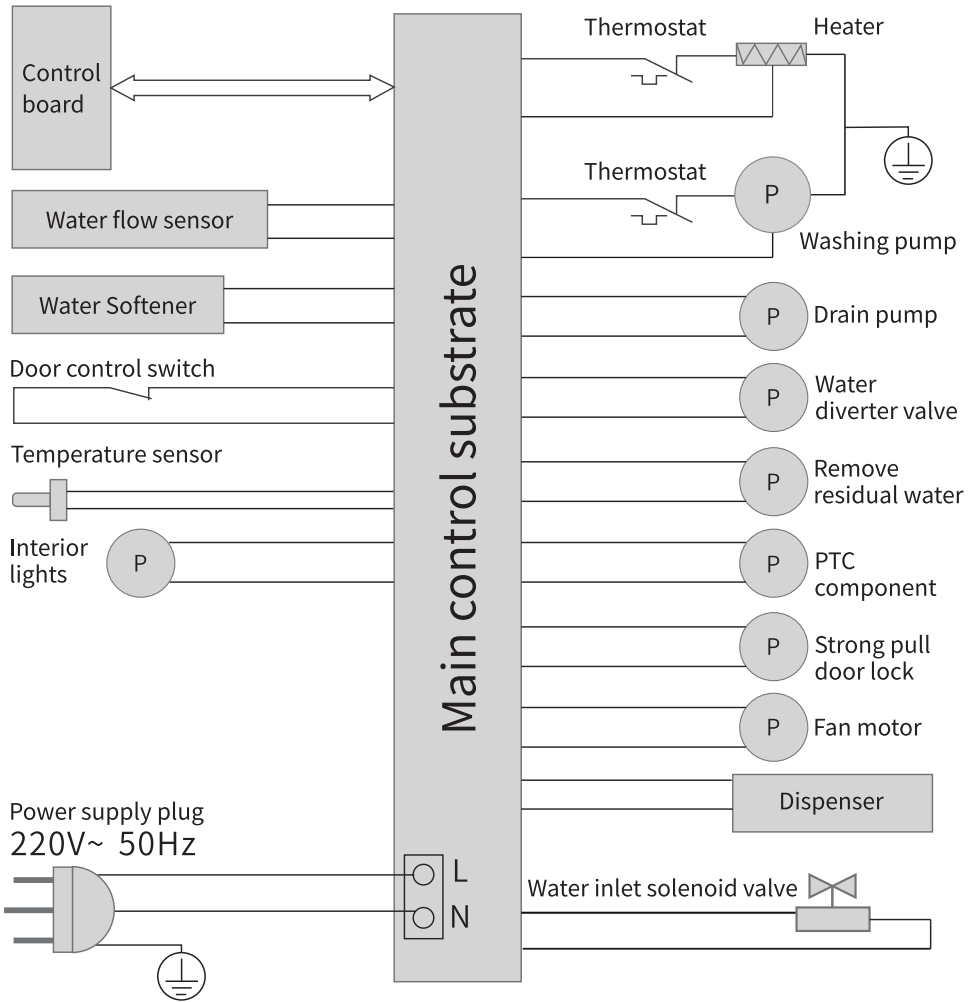
Phenomenon	Possible reasons	Solution
The display shows "E1"	The water inlet valve is not open	Open the water inlet valve.
	The water inlet pipe is broken or leaking	Check the water inlet pipe. If it is damaged, please contact after-sales customer service to replace it.
	Flow meter or solenoid valve failure	Open the water inlet valve, press the "▷ " button to restart. If the problem still occurs, please press and hold the "⏻" button for 3 seconds to shut down, then power on again. If this problem occurs again, please contact after-sales service personnel.
The display shows "E3"	Abnormal water overflow	Please contact after-sales customer service.
The display shows "E4"	Temperature sensor abnormality	Unplug the power and then power it on again. If the same fault code still appears during the process, please contact after-sales service personnel and inform them of the fault code.
The display shows "E5"	Communication abnormality	
The display shows "E6"	Abnormal heating	
The display shows "E8"	Abnormal water distribution valve	Please contact after-sales customer service.
The display shows "E9"	BLDC abnormality	
The display shows "E10"	Door lock abnormality	



Notice

- When water is cut off, shut down the machine and close the water inlet valve. After the water supply is restored, drain the turbid water from other taps first, then open the water inlet valve and restart the machine.
- When power off or circuit breaker occurs, please restart the machine after the power supply returns to normal.

Electrical schematic diagram



Product specification

Product name	Dishwasher
Model number	RDW-U1816-GBW
Capacity	18 sets
Size	W 598 mm × D 596 mm × H 795-805 mm
Rated voltage	220-240V~
Rated frequency	50/60Hz
Rated power	1910W
Washing method	Spray type
Washing power	79W
Heating power	1800W
Drying method	Residual temperature drying + hot wind drying
Applicable water pressure	0.04-1.00MPa
Water consumption	13.7L
Working cycle power consumption (KW.h)	0.866kW·h
Cleaning index	1.22
Drying index	1.25
Water proof	IPX 1
Net weight	47kg

Water efficiency test information:

Water inlet method:	Water inlet valve	Powder dosage:	10+27.5g
Rinse level:	d7	Test procedure:	ECO
Water hardness level:	H4	Filter type:	Manual filter

Note: 10g of dishwasher powder is placed in the pre-wash compartment of the dispenser, and 27.5g of dishwasher powder is placed in the main wash compartment of the dispenser.

RoHS

Hazardous substances content						
Components	substances					
	Pb	Hg	Cd	Cr6+	PBB	PBDE
Plastic parts	0	0	0	0	0	0
Metal parts	0	0	0	0	0	0
Rubber parts	0	0	0	0	0	0
Screws	0	0	0	0	0	0
Stickers	0	0	0	0	0	0
Heat plate	0	0	0	0	0	0
Wire	0	0	0	0	0	0
Water pumps	0	0	0	0	0	0
PCB, Fan	X	0	0	0	0	0
Water valve	0	0	0	0	0	0
Parts of others	0	0	0	0	0	X

The table is made according to SJ/T11364 standards

0: Indicates the hazardous substance contain is below the limitation of GB/T26572 standards

X: Indicates the hazardous substance contain is over the limitation of GB/T26572 standards, but it for the RoHS order.

The information of the table is offered by suppliers, under the present skills, we will keep the lowest level of hazardous substance in all of machine parts. We promise that we wil try our best to low the level of hazardous substance in the machine through improving the technologies constantly.