

ULTRASONIC CLEANER

WTC-600-40 WTC-1200-40

—Instruction Manual—

(Includes Requirements for Safe Handling)

Warning: For your safety, read this instruction manual thoroughly and have a good understanding of its contents.

Warning: Keep this instruction manual in a handy place close from the cleaner so that you can read the manual as necessary.

Honda Electronics Co., Ltd.

If you have any question as to the handling of the device and the contents of this instruction manual, inquire at the Industrial Division of Honda Electronics at: +81-532-41-2515.

20, Oyamazuka, Oiwa-cho, Toyohashi, Aichi-ken, 441-3193 Japan

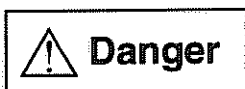
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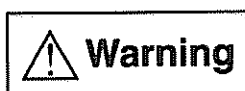
Introduction

Thank you for purchasing our ultrasonic cleaner, WTC-600-40/WTC-1200-40. This instruction manual describes cautionary items for your safety and proper methods of using the cleaner. In order to perform proper and more effective cleaning, please read this instruction manual carefully and understand the manual contents fully before using the cleaner. Keep this instruction manual in a handy place close from the cleaner so that you can read the manual as necessary.

- In this instruction manual, the following warning messages are used in order to maintain the safety of the user or those who happened to be near the cleaner or in order not to damage other properties.



When the warning messages are not observed, there could be serious injury or even death.



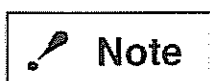
When the warning messages are not observed, there is a possibility of serious injury or even death.



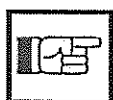
When the warning messages are not observed, there could be slight injuries or damage to other material properties.

Labels used in this manual

In addition to above warning displays, the following labels are used for the operational notes.



If the proper instruction in this manual is not adhered to, the cleaner itself may break or the cleaner may not properly function.



Indication of reference page

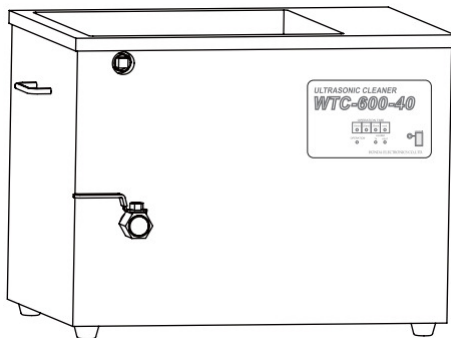
For your safety

1. For your safety

We have designed and manufactured the cleaner with the utmost care for your safety. However, if the proper instruction for the operation of the cleaner is ignored and if the safety cautions are not observed and adhered to, there is a danger for physical injuries to the user and material damages to other objects.

Before operation the cleaner, please read this instruction manual carefully. Please have a full understanding on the safety warnings and cautions and proper method for operation the cleaner.

Do NOT disassemble!



Danger

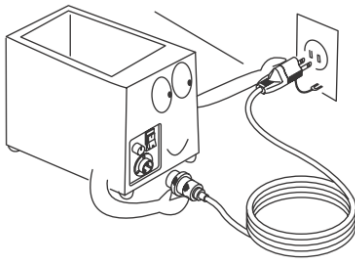
There is a high voltage unit inside this device. Do not open this device. If you ignore this caution, there could be serious injury or even death.

■ Items to be observed for your safety operation

Please understand and observe the following 5 cautions.

If you ignore this caution, there could be serious injury or even death.

Danger

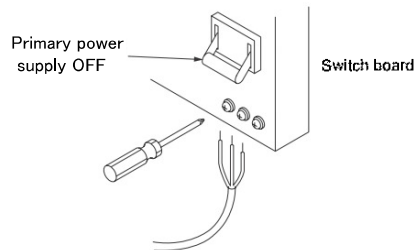


Make sure to connect the grounding. If electric leaks without connection the grounding, it may cause fire or electric shock. However, never connect the grounding line to the following.

- ※City water plumbing: There may be a plastic pipe portion in the plumbing which may not provide good grounding.
- ※Gas pipe: There is a danger for the gas to be catching fire or exploding.
- ※Grounding for the telephone and for lightning rod:
A large current might flow at the lightning, which is dangerous

Danger

When you connect the power supply cable to the bare power supply terminal, please connect them after turning off the primary power supply.



Danger

The cleaner is never to be used where there is gas that catch fire or explode

Warning

A person who has a pacemaker should not operate this device.
The pacemaker may act wrongly

Danger

Do not put water on the device except the cleaning bath.



For your safety



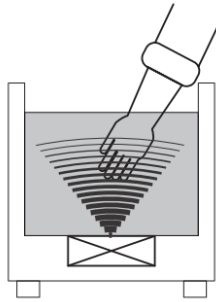
Warning

Please understand and observe the following 3 warnings for the cleaning operation.
If you ignore this caution, there could be serious injury or even death.



Warning

During cleaning, there is a possibility of hurting joints. Never put a hand or fingers directly into the cleaning liquid. If there is a need to put a hand or fingers in to the cleaning liquid in order to perform work, make sure to wear thick rubber gloves.



Bare Hands OFF



Warning

Please have a good understanding on the cleaning liquid and waste liquid in terms of their characteristics and safety cautionary items.
Be informed about emergency measures when touching the liquid or when accidentally swallowing the liquid



Warning

When the work piece to be cleaned exceeds 10kg in weight, two or more people should lift the work piece or use a hoist that has cleared the safety standard. Pay attention not to drop the work piece. Pay attention not to get hurt.



Safety Caution Items

Safety Caution When Installing the Cleaner

Danger

- When connection the power line, output line and option lines, make sure to cut off the electric power on the primary side before beginning work.
- On the primary side of the electric power, install a breaker switch of more than 15A per cleaner. (Leak current breaker sensitivity must be 30mA per cleaner.
- When connecting power and output lines, proper grounding must be installed. (The grounding work must be Type 3 grounding work and the grounding resistance must be 100Ω or less.
- The connection must be performed by qualified electrician or those who possess ample experience and knowledge in electrical work. At least one such person must be present when the work is performed.
- To prevent electric shock, ensure the connection between the output line and the transducer line using a relay box or the similar. Do not connect the lines directly using tape

Caution

- The following power voltages are allowed for the equipment. Do not use any other power voltages

WTC-600-40	AC100V (Single phase)
WTC-1200-40	AC200V (Single phase)

For your safety

Safety Caution during Operation

Danger

- Do not touch the power switch and electric line with wet hands.

Danger

The following liquids should never be used as cleaning liquid.

- Liquid that could catch fire or explode such as thinner and benzene.

Warning

- Please have a good understanding on the cleaning liquid and waste liquid in terms of their characteristics and safety cautionary items. Be informed about emergency measures when making contact with their liquid or when accidentally swallowing the liquid.
- Observe the procedure for turning power on and off.
- When the work piece to be cleaned exceeds 10 kg in weight, two or more people should lift the work piece or use a hoist that has cleared the safety standard. Pay attention not to drop the work piece. Pay attention not to get hurt

Caution

Direct use of the following liquids in the cleaning tank is strictly prohibited:

- Alkaline cleaning liquid (pH 10 or more)
- Acid cleaning liquid (pH6 or less)
- Perform start-up check prior to operation.
- When the following phenomena occurs when turning power on, immediately cut off power source and contact us or our agent.
 - When there is abnormal noise, heat, and smoke.
 - When the red AL. (Alarm) lamp lights up.
 - When the yellow P.L. (Power) lamp does not light up.
 - When no ultrasonic oscillation sound can be heard during cleaning.
 - When the power switch turns off by itself.

Safety Caution during Maintenance Work

Danger

- Except for those who are qualified or licensed to do electrical work or those with ample experience and safety knowledge to perform maintenance work, the covers around the oscillator should never be opened.
- When water or liquid is on the oscillator, immediately cut off the primary side power source and the power switch. Then contact us or our agent for instruction.
- When electricity can be felt when touch the oscillator, immediately cut off the primary side power source and the power switch. Then contact us or our agent for instruction.

Caution

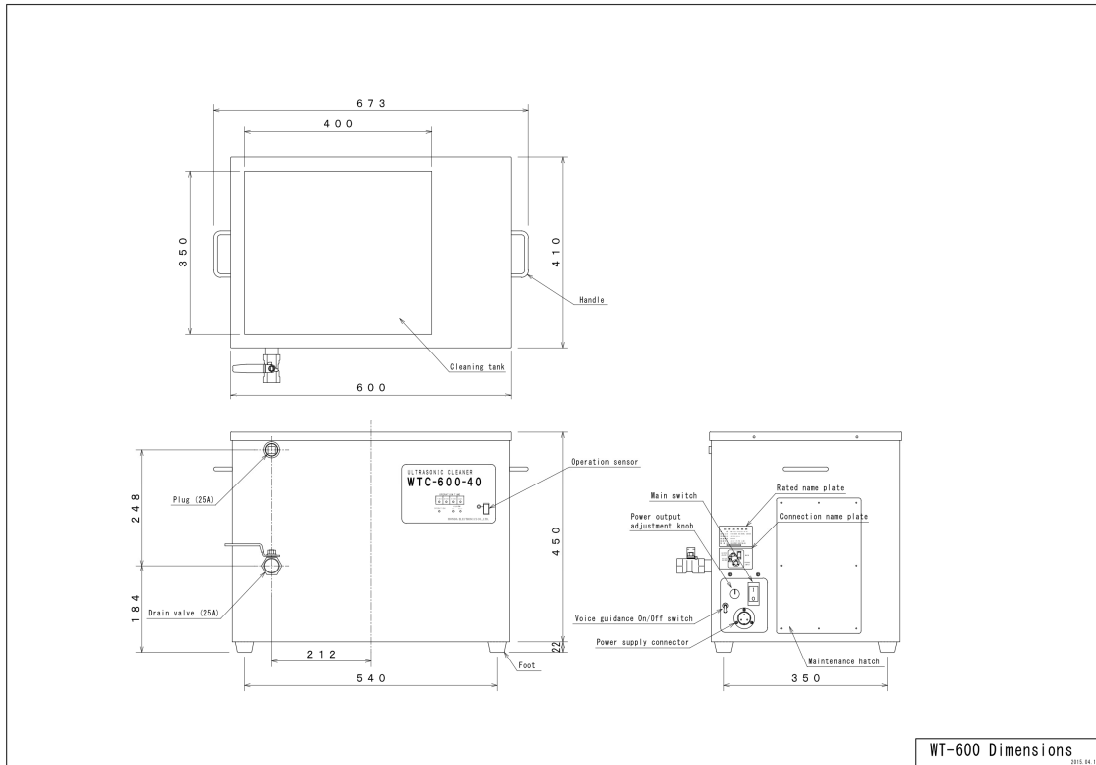
When the following phenomena occurs when turning power on or during operation, immediately cut off power source and contact us or our agent.

- When there is abnormal noise, heat, and smoke.
- When the red AL. (Alarm) lamp lights up.
- When the yellow P.L. (Power) lamp does not light up.
- When no ultrasonic oscillation sound can be heard during cleaning.
- When the power switch turns off by itself.

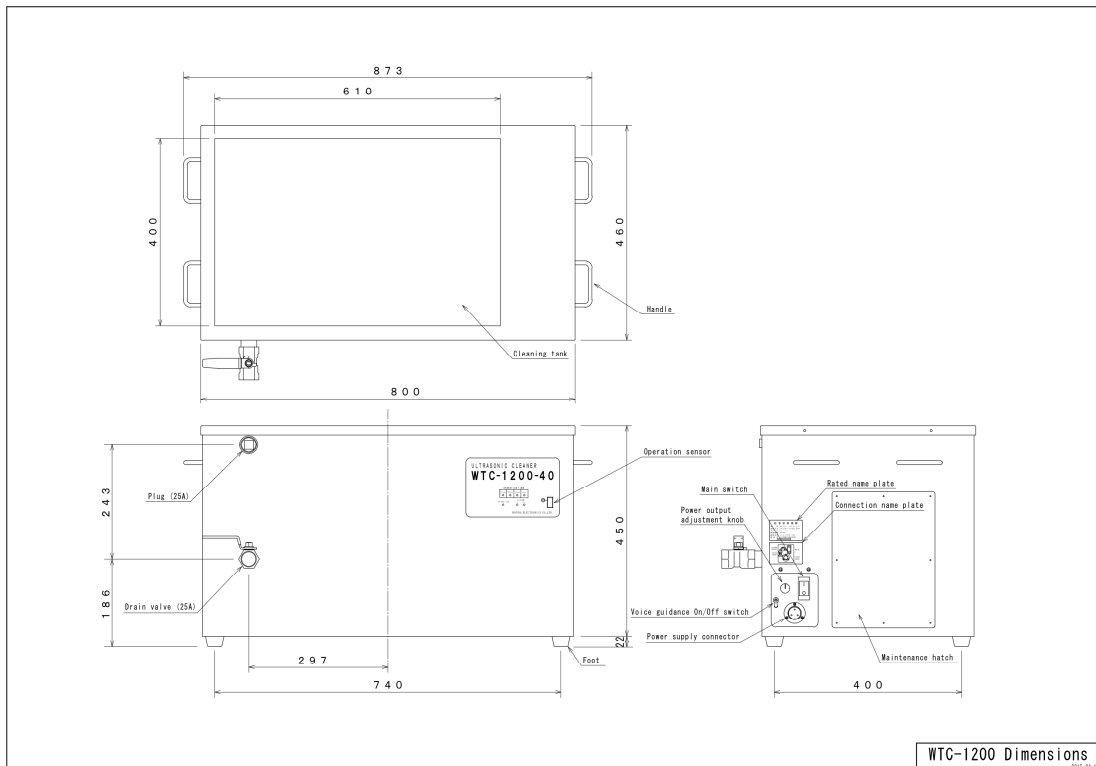
2. Name of the parts / Components / Optional parts

2-1 Name of the parts of cleaner / Dimensions

• WTC-600-40

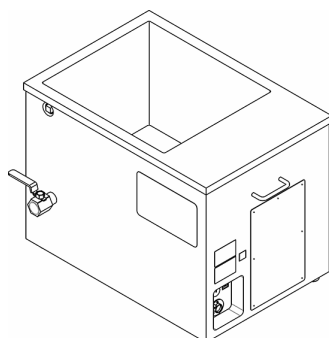


• WTC-1200-40

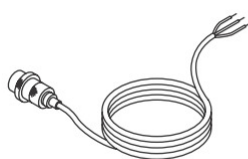


2-2 Components

- Instruction Manual 1



- Ultrasonic Cleaner 1

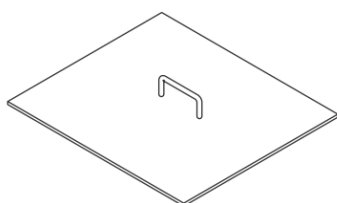


- Power supply cable 1
(200V type for WTC-1200-40)

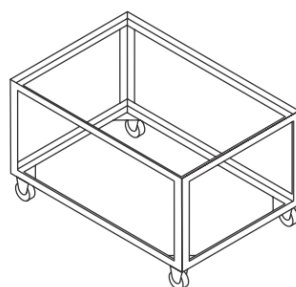


- Power supply cable 1
(100V type for WTC-600-40)

2-3 Optional parts



- Lid



- Rack for cleaner



Discontinued
option

- Immersible type heater
(for water)

Installation of the Device

3. Installation of the Device

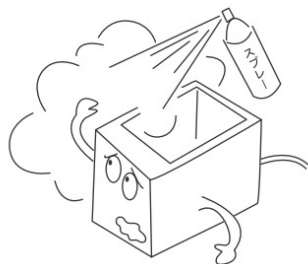
3-1. Oscillator Installation Location



Danger

The cleaner is never to be used in the following locations

The location where there is gas that catch fire or explode.



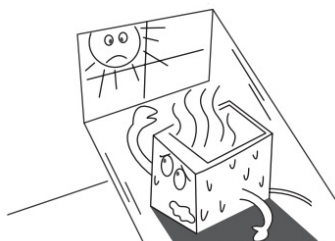
Location where the cleaner may be splashed or where there is much humidity



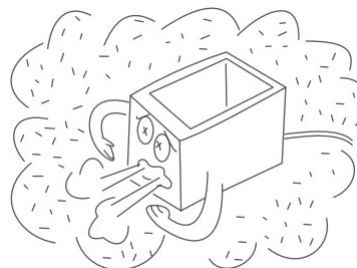
Note

The following locations or use should also be avoided

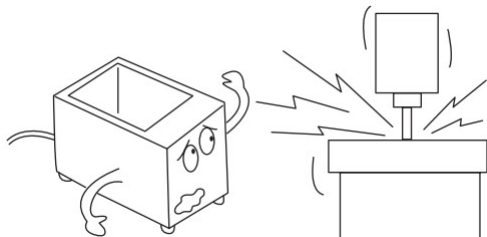
Where there is a direct sunlight on the cleaner or where there is a heater nearby and the ambient temperature exceeds 40°C



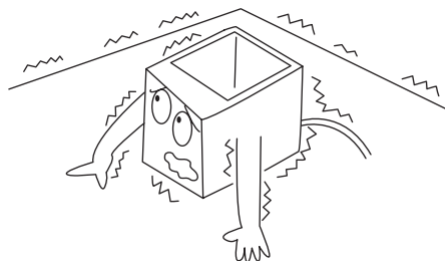
Where there is much dusts and corrosive gas



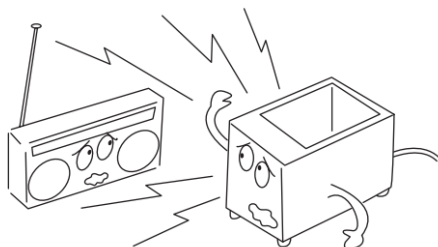
Near equipment that generates large electric noise



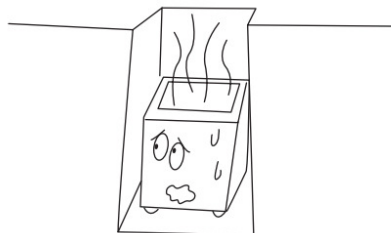
Where there is much vibration and shock.



Near equipment that can receive electric noise.



Please leave space between the cleaner and wall and maintain good ventilation around it.



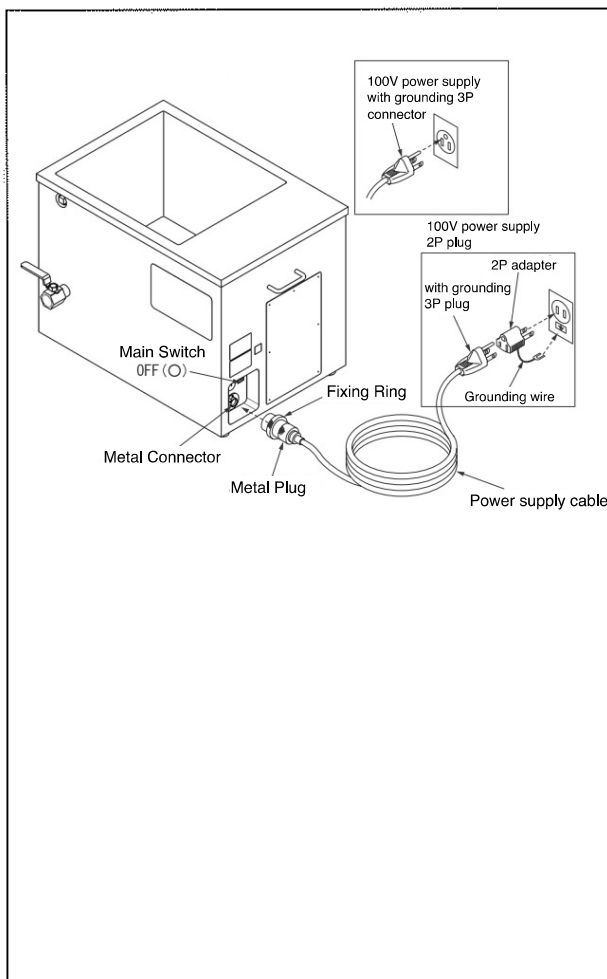
3-2 Connection of Power supply cable



When connection the power supply cable , please make sure to cut off the electric power on the primary side before beginning work
On the primary side of the electric power, install a breaker switch of more than 15A per cleaner. (Leak current breaker sensitivity must be 30mA per cleaner)

- If a sensitive breaker switch is used, it may be activated by the leak current from the noise filter.
- When connection power supply cable, proper grounding must be installed. (The grounding work must be Type III grounding work and the grounding resistance must be 100 Ω or less.)
- The connection must be performed by qualified electrician or those who possess ample experience and knowledge in electrical work. At least one such person must be present when the work is performed.

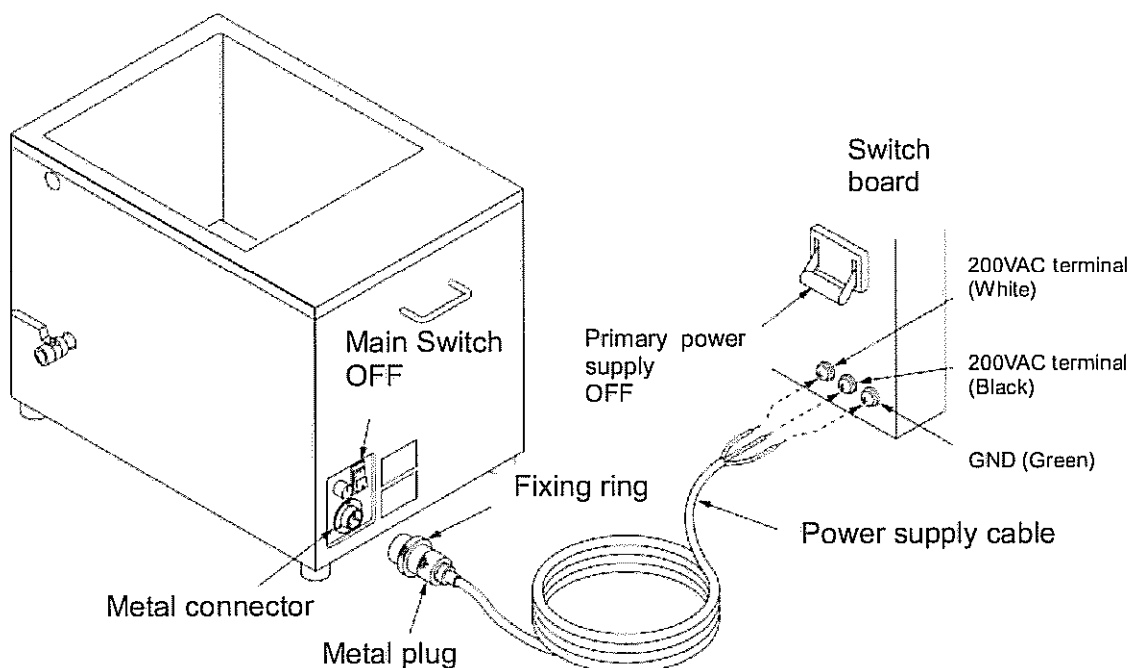
Connection of Power supply cable



Connection of Power supply cable (WTC-600-40)
(Power supply voltage: 100VAC single phase)

1. Please confirm that the primary power source to be connected to the power supply cable is OFF.
2. Please connect the plug of the power supply cable.
 - If the socket is 3P (one of them is the grounding), please disconnect the adapter of 2P and then please connect the plug to the socket.
 - If the socket is 2P, please connect the grounding line to the ground and then please connect the plug to the socket.
3. Please connect the metal plug of the power supply cable into the metal connector of the cleaner and then please fix by the fixing ring of the connector.

Installation of the Device



Connection of Power supply cable (WTC-1200-40) (Power supply: 200VAC)

- When connection the power supply cable, please make sure to cut off the electric power on the primary side before beginning work
- On the primary side of the electric power, install a breaker switch of more than 15A per cleaner. (Leak current breaker sensitivity must be 30mA per cleaner)
- If a sensitive breaker switch is used, it may be activated by the leak current from the noise filter.
- When connection power supply cable, proper grounding must be installed. (The grounding work must be Type III grounding work and the grounding resistance must be 100 Ω or less.)
- The connection must be performed by qualified electrician or those who possess ample experience and knowledge in electrical work. At least one such person must be present when the work is performed.

Line colors

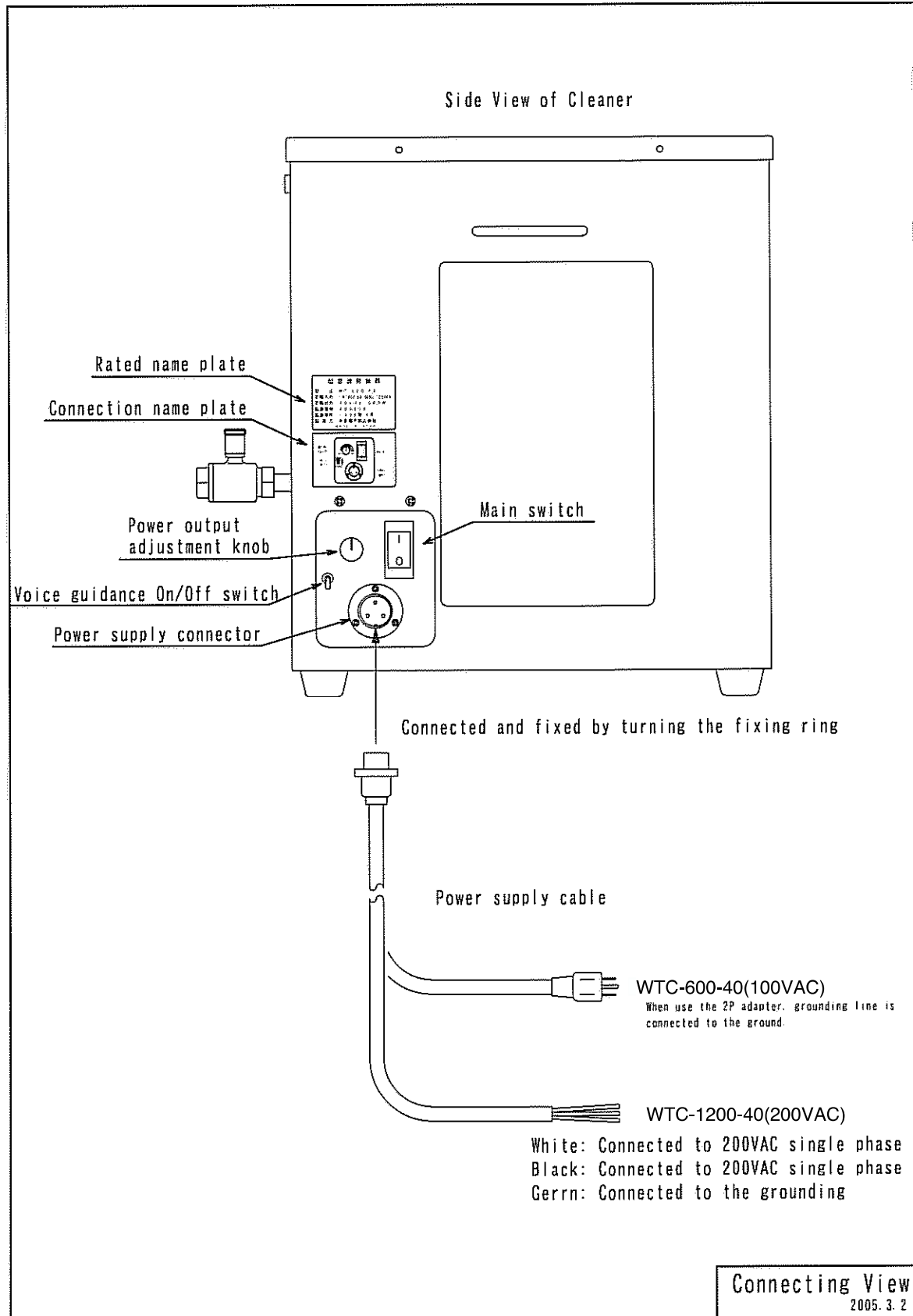
Green : Connected to the grounding
 White : Connected to the 200V single phase
 Black : Connected to the 200V single phase

Danger

Make sure to connect the grounding. If electric leaks without connection the grounding, it may cause fire or electric shock. However, never connect the grounding line to the following.

- ※City water plumbing: There may be a plastic pipe portion in the pumping which may not provide good grounding.
- ※Gas pipe: There is a danger for the gas to be catching fire or exploding.
- ※Grounding for the telephone and for lightning rod:
A large current might flow at the lightning, which is dangerous

Connecting view

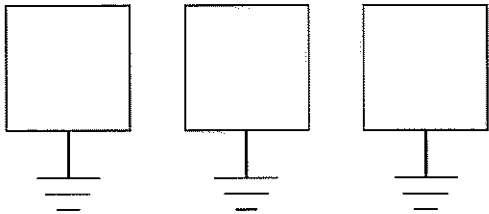

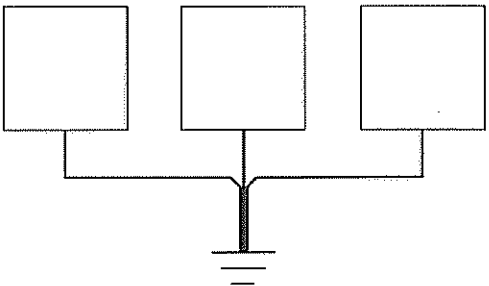
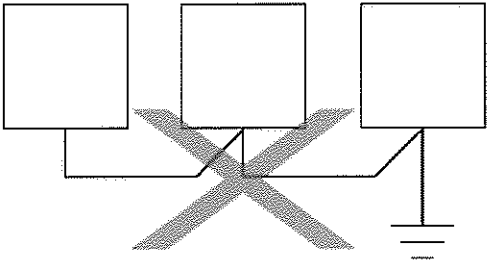


Installation of the Device

Grounding Work

The grounding work should be performed as Type III grounding work and the grounding resistance should be less than 100Ω . Independent grounding work using grounding bar is desirable. If independent grounding work is not possible, perform grounding work based on the following.

1. Please connect one grounding line per grounding terminal.

<p style="text-align: center;">Desirable grounding work</p> 	<p>Individual grounding resistance of less than 100Ω.</p> 
<p style="text-align: center;">When grounding is shared.</p> 	<p>The common grounding line should have the capacity for the cleaners combined.</p>
<p style="text-align: center;">The grounding method should never be done</p> 	<p>When and if the grounding of the terminal becomes bad and if grounding current from one of the cleaner goes into another, there could be a major accident</p>

2. When using iron reinforcement of a building as a grounding pole.

Do not use the grounding with other machines that are large noise sources, such as a welder, high frequency hardener, and the like.

3. The grounding should be stable and durable for electricity.

4. Grounding line should be made as short as possible.

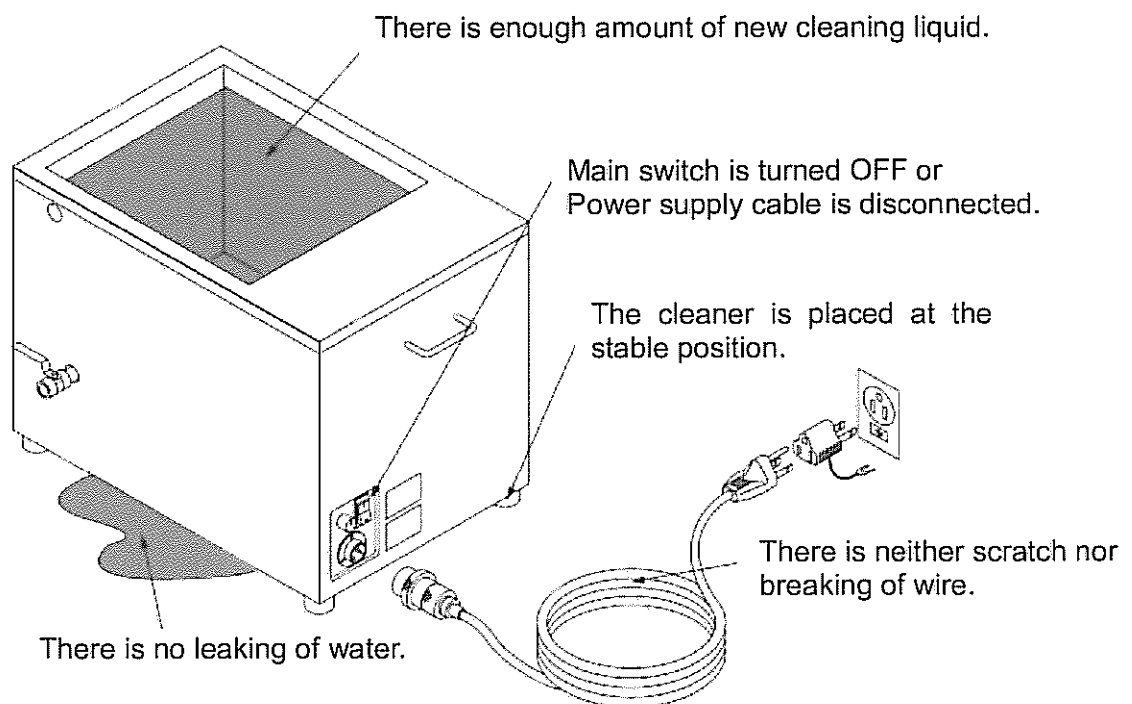
4. Operation method

4-1 Start-up Checks



Caution

The following start-up checks must be performed before operation of the cleaner.



Operation method



Danger

Do not touch the power switch and electric line with wet hands



Warning

Do not put fingers or hands in the cleaning liquid during cleaning operation.



Caution

When the following phenomena occurs when turning power on, immediately cut off power source and contact us or out agent.

- When there is abnormal noise, heat, and smoke.
- When the red AL. (Alarm) lamp lights up.
- When the green P.L (power) lamp does not light up.
- When no ultrasonic oscillation sound can be heard during cleaning.
- When the power switch turns off by itself.

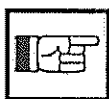
4-2 Connection of Power Supply Cable

Connect the power supply cable bet been the primary power source and the cleaner.

Turn on the primary power source.

4-3 Pouring the cleaning liquid into the cleaning tank.

Pour enough amount of the cleaning liquid into the cleaning tank.

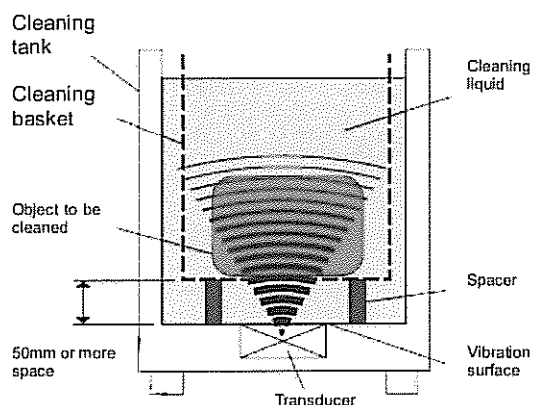
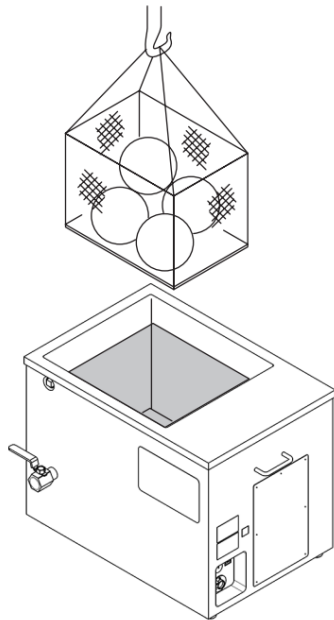


Regarding the cleaning liquid, please refer to the item of " 5. Cleaning liquid". (P.20)

4-4 Turning ON the main switch.

Turn ON the main switch of the cleaner.

4-5 Putting the object being cleaned in the cleaning liquid



Reserve a gap of 50mm or more so that the container or item being cleaned does not touch the vibrating surface.

Warning

When the weight of the object to be cleaned exceeds 10kg, two or more people should lift it or a safe hoisting device should be used. Pay attention not to drop the object and not to hurt waist

1. Gently put an object being cleaned in the cleaning tank.

Note

- When a container is used in the cleaning tank or when cleaning a flat plate, take care so that the container or the plate does not touch the vibrating surface. An air layer may be generated or the transducer may be over-loaded due to touching, resulting in damage of the transducer.
- When using a mesh cleaning basket, use one with meshes of 10mm or more. When cleaning an item that is smaller than the mesh size, use a cleaning basket made of punched stainless steel
- When putting an item being cleaned into the tank, take care not to give impact on the vibration surface. If the vibration surface suffers impact, the transducer may malfunction or deteriorate.
- Do not operate, put cleaning sample on vibration plate directly. It would be cause of problem.

4-6. Start Operation

(a) Normal operation

If a hand is held up to the SENSOR of the front of the cleaner, OPERATION TIME lamp turns off.

If the hand is kept holding up to the SENSER for a while, timer selection lamp lights on and off.

- If the hand is left from the SENSER, it starts operation for selected time on the OPERATION TIME panel.
- If the hand is kept holding up to the SENSER, OPERATION TIME is changed in turn. It starts operating during the time which was blinking when the hand was left from SENSER.

(b) Power output adjustment

Power output is adjustable (Approx. 0% ~ 100%) by turning the output adjustment knob near the main switch.

(c) When ALARM lamp (red) lights up (Operation will be stopped automatically)

Please check the following items when ALARM lamp lights up during the operation.

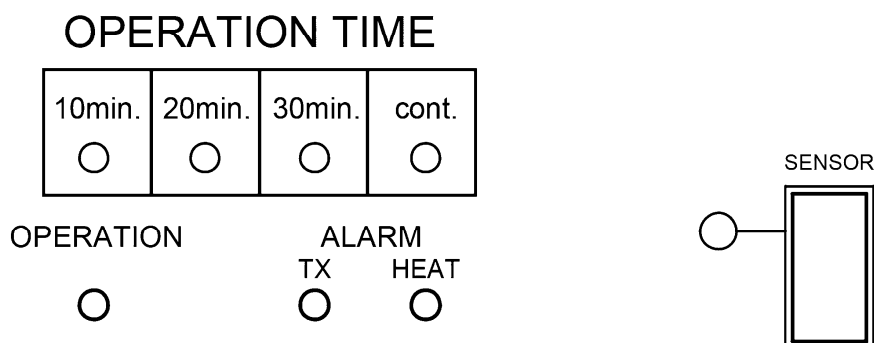
- If the HEAT (unusual heating) lamp (red) is lighting up, internal circuit is being heated up. Please check the following items and please wait until the heat goes down.
 - Make sure something is not preventing the hole of cooling fan for ventilation.
 - Make sure the ambient temperature of the cleaner is not high.
- TX (unusual oscillation)
 - Water level is very low. (less than 50mm)
 - The object being cleaned is directly on the vibration surface.
 - There is air bubble and contacting to the vibration surface.

(Example: Air bubble between the bottom of the double tank and the vibration surface)

(d) Canceling method of ALARM lamp (red)

It is possible to cancel the ALARM by any following measures.

- Re-switch ON the main switch.
- Keep holding up the hand to the SENSER until the ALARM turned off.



4-7 Finishing Operation

- (a) It automatically stop operating after passing the selected operation time
- (b) In the case continuous operation is selected, or want to stop operation during cleaning.
 - It is possible to stop operation, if a hand hold up to the SENSOR for a while.

4-8 Taking out the cleaned object

Take out the cleaned object from the cleaning tank after cleaning.




4-9 Keeping of cleaner

Turn OFF the main switch of the cleaner, and then disconnect the power supply cable.
Drain the cleaning liquid from the cleaning tank. Rinse and dry when necessary.

5. Cleaning Liquid

5-1. Selection of Cleaning Liquid

Ultrasonic cleaning increases its cleaning effect by using a cleaning liquid suited to the kind of dirt. Choose the most suitable cleaning liquid from the table below.

 Warning	<ul style="list-style-type: none"> • Please have a good understanding on the cleaning liquid and waste liquid in terms of their characteristics and safety cautionary items. Be informed about emergency measures when making contact with the liquid or when accidentally swallowing the liquid
 Danger	<p>The following liquids should never be used as cleaning liquid</p> <ul style="list-style-type: none"> • Liquid that could catch fire or explode such as thinner and benzene.
 Caution	<p>Direct use of the following liquids in the cleaning tank is strictly prohibited:</p> <ul style="list-style-type: none"> • Liquid that could catch fire or explode such as thinner and benzene. • Acid cleaning liquid (pH6 or less)

<Kinds of cleaning liquid>

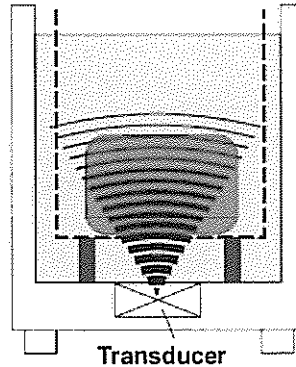
Type	Feature	Cleaning effect
Water, hot water	<ul style="list-style-type: none"> • No degreasing power • Low price • Harmless to human body 	Removal of water-soluble flux, machining oil, etc
Noncombustible organic solvent (Pay attention to the packing material)	<ul style="list-style-type: none"> • Great degreasing power • Non-inflammable • Waste treatment necessary 	Removal of oily flux, machining oil
Alkaline cleaning liquid (Double-tank structure is required for pH10 or more)	<ul style="list-style-type: none"> • Medium degreasing power • Non-inflammable • Waste treatment necessary 	Removal of machining oil, polishing powder
Neutral cleaning liquid	<ul style="list-style-type: none"> • Low degreasing power • Non-inflammable • No adverse effect on the subject • Waste treatment necessary 	Removal of small volume of machining oil
Acid cleaning liquid (Double-tank structure is required for pH6 or less)	<ul style="list-style-type: none"> • Medium degreasing power • Non-inflammable • Waste treatment necessary 	Removal of carbon dirt



Note

- If a cleaning liquid other than water is used, the maximum of oscillation output will vary in some cases.

5-2 Caution for Cleaning Liquid



1. The contact surface to the cleaning liquid is made of stainless steel. If the acid or strong alkaline liquid is used as the cleaning liquid, the stainless steel can corrode. Therefore, please use the glass material container as double tank in this case. Please pour the cleaning liquid in the double tank and then put it in the water pored cleaning tank. (If the container made of plastic is used as the double tank, cleaning effect decreases.)
If the double tank is used, and if the bottom of the double tank contacts to the vibration surface, ultrasonic transitivity decreases. Also, there is a possibility of the overheating because of the air bobble between the bottom of the container and the vibration surface of the ultrasonic. Therefore, please reserve the distance between the bottom of the double tank and the vibration surface by using the spacer.
2. There are restrictions and laws related to the handling of cleaning liquid and its disposing method. Please observe them and take care of the handling.

5-3 Changing of Cleaning Liquid

The cleaning power gradually decreases with the time lapse of use of the cleaning liquid. If the cleaning power has deteriorated, replace the cleaning liquid with new one.



Note

- Use the cleaning liquid within the range of 5 to 80°C. Using at a temperature over 80°C or a sharp temperature change may cause the transducer to malfunction or deteriorate.
- When discharging hot liquid and filling the tank with cool cleaning liquid, leave the tank empty for a while. Make sure its temperature comes to the ambient temperature, then pour cool cleaning liquid.
- For waste liquid treatment, strictly observe laws and regulations concerned such as municipal pollution prevention regulations and pollution prevention enforcement regulations. Ask a professional company for waste treatment

Favor to ask

When using organic solvent as cleaning liquid, never drain it to a drain pipe or on the ground.

6. Specifications

	WTC-600-40	WTC-1200-40
Outer dimensions (mm)	600(W) x 410(D) x 450(H) (mm)	800(W) x 460(D) x 450(H) (mm)
Inner tank dimensions (mm)	400(W) x 350(D) x 300(H) (mm)	610(W) x 400(D) x 300(H) (mm)
Tank capacity	40 liter	69 liter
Drain	20A Connection screw size PT3/4	25A Connection screw size PT1
Power supply	100VAC 50/60Hz	200-230VAC 50/60Hz
Rated current	3A	3A
Max. Power output (PEAK)	Max. 600W (adjustable range Approx.0~100%)	Max. 1200W (adjustable range Approx.0~100%)
Oscillation frequency	40kHz	40kHz
Transducers	Bolt Clamped Langevin Transducer (15pcs)	Bolt Clamped Langevin Transducer (30pcs)
Operation panel	Non-contact type switch (Start, Stop, Timer change)	Non-contact type switch (Start, Stop, Timer change)
Timer	10 / 20 / 30 min / continuous	10 / 20 / 30 min / continuous
Alarm detection	Auto stop when abnormality	Auto stop when abnormality
	Indication when oscillation abnormality (Red: TX)	Indication when oscillation abnormality (Red: TX)
	Lamp Indication when inner circuit overheats (Red: HEAT)	Lamp Indication when inner circuit overheats (Red: HEAT)
Cooling fan position	Bottom side of the equipment	Bottom side of the equipment
Handle position	Sides of the equipment	Sides of the equipment
Voice guidance	Japanese voice guidance	Japanese voice guidance
Temperature for cleaning liquid	5 ~ 80℃	5 ~ 80℃

7. Trouble Shooting

When it seems something is wrong and trouble is suspected with the cleaner, do not keep on using it. It is important to correct what is wrong at an early timing. As a precursor to trouble, the following is likely.

- There is something that is different from usual.
- There is abnormal noise, vibration, or heating.
- Something smells.

When there are above or other symptoms, observe the following safety cautions and contact maintenance person and your supervisor immediately and take appropriate measures.

Danger

- Except for those who are qualified or licensed to do electrical work or those with ample experience and safety knowledge to perform maintenance work, the covers around the oscillator should never be opened.
- When water or liquid is on the oscillator, immediately cut off the primary side power source and the power switch. Then contact us or our agent for instruction.
- When electricity can be felt when touch the oscillator, immediately cut off the primary side power source and the power switch. Then contact us or our agent for instruction.

Caution

When the following phenomena occurs when turning power on, immediately cut off power source and contact us or our agent.

- When there is abnormal noise, heat, and smoke.
- When the red AL. (Alarm) lamp lights up.
- When the yellow P.L. (Power) lamp does not light up.
- When no ultrasonic oscillation sound can be heard during cleaning.
- When the power switch turns off by itself.

Trouble Shooting

The following are the common trouble common trouble conditions and simple measures that may be taken to recover from troubles. If these measures to not correct the trouble or the cause are not known, please contact us or our agents.

Trouble Conditions	Things to Checks	Measures	Reference Page
Operation does not start after turning power on.	Rated power supply is not supplied	Please confirm the rated input voltage and connect to the rated power supply	11, 12
	The oscillator connection line is loose.	Make a good cable connection.	11 ~ 14
	When TX(alarm) lamp (red) is lighting on and off.	When the cleaning liquid amount is limited, please add the enough amount of cleaning liquid to the tank.	11 ~ 14
Electricity can be felt when touching the cleaning tank or the oscillator.	The oscillator is used where it is very humid	Move the oscillator to locations where is less humid	10
	The ground is not firmly connected	Make the grounding connection firm	11 ~ 14
The oscillator is heating up too much	Ventilation of cooling fan is being prevented	Reserve the space so that the ventilation can become smooth.	10
Output is weak.	Power supply voltage is low	Connect to the rated power supply.	11, 12
	Power output adjustment knob is set at minimum	Turn the power output knob so that the power goes up.	18
	The water level prevents proper output	Change the water level and set to the optimum water level.	—

■ Guarantee

Warranty Period: Warranty period is one year from the date of shipping.
However, the heater is outside the warranty.

Favor to ask

Please contact us if you have a question, error, or missing information and the like.



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