

Medical ultrasonic cleaning machine

Instruction book

ULTRASONIC CLEANER

【Product name】

Medical ultrasonic cleaner

【Product description】

Thank you for using our products. This product is a Medical ultrasonic cleaner designed according to the characteristics of hospital cleaning. It is mainly applicable to the cleaning procedures of a small amount of polluting, radioactive and high cleanliness in hospitals. Suitable cleaning objects are mainly various types of scalpels, hemostatic forceps, endoscopic biopsy forceps, inlays, injection needles, syringes, test tubes, glass slides, dressing bowls, various utensils and other metal surgical instruments. This instrument is one of the essential devices for hospital departments, supply rooms and disinfection centers. Before using this product, please read this manual to fully understand the operation procedures of this product and to ensure the safe and reliable when use this device, and please save the manual for future reference. Before connecting the power supply, please determine whether it is within the rated range, and it is strictly forbidden to modify this product. Please take notice that the control panel of this product will be eroded by organic solutions, strong acids and strong alkali.

Do not use in the following environments:

- Places with extreme temperature changes.
- Places where the temperature is too high and dew is generated.

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- Places subject to strong vibration or shock.
- Where corrosive gas or dust exists.
- Places where water, oil, and chemical products are flying.
- Places full of explosive and flammable gases.
- Indoor humidity: below 35% or above 85%

[Principle of Ultrasonic Cleaning]

The ultrasonic transducer (vibrating head) emits high-frequency ultrasonic waves, which generates 40,000 vibrations (40KHz Vibrating head) per second, and uses liquid as the transmission medium. Because ultrasonic waves are a compressible longitudinal wave, its role in pushing the medium changes the pressure in the liquid. Countless tiny vacuum bubbles are generated, causing the cavitation effect(CAVITATION). When the bubbles are compressed and burst, a strong impact force will be generated, which will cause numerous bursts and regeneration in an instant. Blood, dirt on the meshing part, the saw-tooth part or the concealment are quickly loosened and the cleaning objects can be thoroughly cleaned without damaging the surface of the cleaning object.

【Product description】

Equipment with only cleaning functions and no disinfection or sterilization functions.

[Product performance]

1. Input voltage: AC220V, 50Hz
2. Input power: The input power is 120w, and the input power error cannot

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exceed 10%.

3. Output frequency: Ultrasonic output frequency 40KHZ, output frequency error cannot exceed $\pm 5\text{KHz}$.

4. Ultrasonic intensity: Ultrasonic intensity must be guaranteed to penetrate 0.12mm thick foil within 30s.

5. Cleaning tank, liquid storage tank and pipeline leak inspection: The cleaning tank, liquid storage tank and pipeline are made of stainless steel acid and alkali resistant materials, and must not be leaked.

6. Automatic temperature control heating system: The automatic temperature control heating system is adjustable from system normal temperature to 60°C , and the error cannot exceed $\pm 5^{\circ}\text{C}$.

7. Working noise: Noise is not greater than 80dB (A) when the equipment is working normally

8. Working time setting: The working time of the washing machine is adjustable: 5 ~ 30 minutes (± 15 seconds), and the working time can be adjusted according to the items to be cleaned.

9. Cleaning quality: the surface of the instrument after cleaning should be free of stains, flow marks and non-glossy thin layers

[Main structure and function]

1 Main structure

The machine is composed of an ultrasonic cleaning tank, an ultrasonic generator, an ultrasonic transducer, a digital control circuit, a press, a front and rear case, a bottom case, an upper cover, etc. The optional parts can be checked for the

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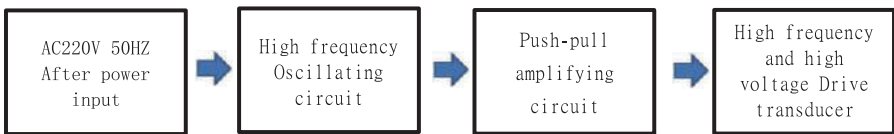
cleaning basket, indirect cleaning tank, beaker + Beaker holder, etc.

2 Main component functions:

2.1 Ultrasonic generator

The ultrasonic generator is composed of a drive circuit PCB board and a power supply PCB board. Its role is to convert the ordinary frequency (50HZ) power into a stable and controllable ultrasonic frequency high frequency alternating power supply to the transducer. The ultrasonic generator is the self-excited working principle is less affected by changes in the external water level and load.

The circuit drive block diagram is shown below:



2.2 Ultrasonic transducer

This machine adopts a "fixed ultrasonic transducer". The transducer is directly fixed at the bottom of the cleaning tank to provide ultrasonic vibration for the cleaning tank. This mode has a low failure rate, direct ultrasonic action and high efficiency.

2.3 Working capacity of the cleaning tank is 6.0L. The cleaning tank is made of SUS304 stainless steel, which is not easy to rust and oxidize.

2.4 Digital control circuit

All products adopt digital control, with small error, high control accuracy and good durability. At the same time, the touch-sensitive operation part adopts touch-sensitive circuit, which has better durability and water resistance compared with traditional micro switches or membrane switches. The lens of the control board is made of as engineering plastics, which is resistant to organic solvents

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such as acids, alkali and chemical enzymes.

2.5 Pressure ring

After the product's cleaning tank is sealed with a silicone seal, the sealing combination formed by the pressure ring and the inner cylinder, in addition to having good water resistance, silicone rubber can block the low-frequency agricultural movement of the cleaning tank and the shell from clumping. With this structure, the working noise of the ultrasonic cleaner can be significantly reduced, which is more suitable for use in hospitals, clinics and laboratories.

2.6 Front and rear shells

The front and rear shells serve as the middle part of the pressure ring and the bottom shell. The cooling fans installed on it are mainly used to forcibly dissipate heat from the transducer, which is conducive to the machine's long-term work.

2.7 Bottom shell

The generator's power supply PCB is fixed on the bottom case. This power supply PCB is used to convert AC220 / 50Hz to DC5V. The relay that controls the heating part and the relay that controls the ultrasonic wave are controlled separately. At the same time, to meet the various indicators of radiation and conduction Designed a filter circuit.

2.8 Top cover

The window part of the upper cover is made of PC engineering plastic, and the upper cover, inner cover and window are composed of the upper cover assembly. Because the shape of the assembly and the pressure ring is better sealed, the upper cover can make the machine work. The noise of the PC is further reduced, the transparency of the PC window is good, and the cleaning process of the cleaning

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items can be clearly observed. After the inner cover is added, the strength of the entire upper cover assembly is improved, and the anti-fall performance is also significantly improved.

2.9 Collapsible stainless steel cleaning basket (optional)

The cleaning basket has a folding sound handle design, and the folding sound lifting handle can lift the basket to float the water on the water surface and drain. When using a collapsible stainless steel cleaning basket, it will absorb about 15% of the ultrasonic energy. On the upper edge of the pressure ring of the washing machine. Put the cleaning items into the cleaning basket. After cleaning, lift the cleaning basket and do not touch the items to be cleaned by hand.

2.10 Indirect cleaning tank (optional):

It is mainly used for cleaning when there are few maggots or small item size. Place it on the upper edge of the pressure ring of the washing machine, add tap water to the slot of the ultrasonic machine, so that the water level is between min and max, and the water surface contacts the stainless steel for indirect cleaning. The bottom of the tank can be filled with water / enzymatic washing solution / medical alcohol or other chemicals in the stainless steel indirect cleaning tank. When the chemicals in the stainless steel indirect cleaning tank are dirty, it can be easily removed and replaced, which can avoid the entire cleaning tank Use of chemicals inside to reduce chemicals. When using an indirect cleaning tank, it will absorb about 8% of ultrasonic energy.

2.11 Beaker + Beaker holder (optional):

It is mainly used to clean small and bloody items, such as car needles and enlarged needles. Place it on the upper edge of the pressure ring of the washing

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machine and add tap water to the slot of the ultrasonic machine to make the water level between the MIN and MAX. And the water surface touches the bottom of the beaker. Water / enzyme lotion / medical alcohol or other chemicals can be placed in the beaker. When using the Beaker + Beaker holder, it will absorb about 15% of ultrasonic energy.

[Scope of application]

Used for cleaning, decontamination and washing of medical equipment.

[Contraindications, precautions, and other content that requires warning or prompt]

1. When there is no water or cleaning liquid in the ultrasonic cleaning tank, you cannot start the ultrasonic wave, otherwise it will cause serious consequences of damage to the transducer; although there are multiple protection circuits in the machine, the water will not be "dry-burned" for more than 50 seconds, and may be damaged. Transducers or severely reduced machine life.
2. Do not turn on the heater if there is no water or cleaning liquid in the tank; Turning the heater on without water for more than 30 seconds will directly damage the heater!
3. The cleaning agent or chemical blue should be dissolved in water in another container in the proportion required by its instructions before pouring into the cleaning tank.
4. Before the machine works, set the working time and heating temperature.
5. Put the items to be washed in the cleaning basket. It is best not to add sound to the cleaning items to prevent mutual friction.
6. After cleaning, open the lid and lift the stainless steel basket together, do not

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touch the items to be cleaned by hand.

7. Do not store water in the cleaning tank for a long time, after use, connect the drain pipe as shown in the figure, open the drain valve, drain the dirty water, and clean the cleaning tank.

Please refer to the time specified in the manual (about 6-8 hours) to replace the liquid.

8. Do not work continuously for a long time. The overheating protection circuit is installed in the washing machine. When (△) is on, it means that the machine is in overheating protection state. It needs to stop for more than 12 minutes.

After (△) goes out, it can continue to work. It is recommended to proactively stop for about 20 minutes after continuous cleaning for 60-90 minutes to extend the life of the machine.

9. Do not wash the casing directly with water. Use a dry towel to dry the cleaning tank and the machine casing.

10. Do not expose to sunlight. Please place the machine in a cool, dry and ventilated place.

11. When replacing the old liquid, open the drain valve first to let the old liquid drain through the drain pipe. At this time, the ultrasonic wave and the heater are dry and off. When adding the new liquid, refer to the requirements of Article 3.

12. Don't let chemicals stay on the touch control screen for a long time, if there is liquid conduction between the two keys at the same time, the touch keys will receive a wrong signal, and the integrated circuit will generate self-protection, which will cause the keys to malfunction. Touch the water mark on the control pad to turn off the power on / off key next to the socket. After stopping for more

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than 60 seconds, the program will automatically return to the factory state.

Normally, the button function can be restored to normal.

13. When the cleaning tank is filled with cleaning liquid, try to avoid pushing or moving the body.

14. Avoid strong impact on the bottom of the cleaning tank.

15. In the case of excessively high ambient temperature and long-term continuous work, you should check the cooling fan of the PCB board located on the back of the fuselage and the heat dissipation of the whole machine. Whether the air outlet is good, the machine is equipped with an overheating protection circuit to avoid continuous cleaning for a long time. When () is on, the machine is in an overheating protection state. When the machine is turned on, the ultrasound will not work. It needs to be stopped for 20 minutes. After the () is turned off, it can continue to clean.

16. When there is too much sediment in the cleaning tank, the liquid should be flushed in time.

17. Do not hit the washing machine with force, especially the bottom of the washing tank.

18. Children are strictly prohibited from using the device.

19. When the power is not in use, please turn off the power switch near the socket or unplug the power plug.

20. Do not use attachments not manufactured or recommended by our company.

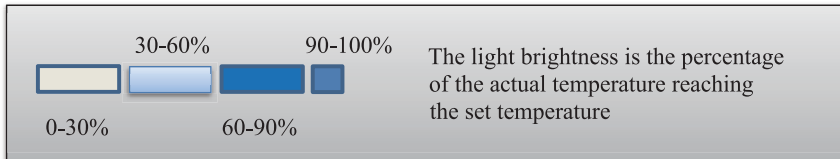
21. Do not use the device if it is working abnormally or damaged.

General Tips: Misuse of electrical equipment can cause electric shock to death, burns, fire, or other hazards!

[Installation instructions or illustrations]

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- A. Add tap water or cleaning liquid to the cleaning tank. The water level is controlled between min and max, but the part to be cleaned must be submerged.
- B. Plug the power cord of this machine into the AC220V10A power supply. A ground wire is required.
- C. After turning on the power, set the cleaning time and heating temperature on the control panel.
- D. Open the lid and put the cleaning items in the stainless steel cleaning plate. Do not check the cleaning items to prevent mutual friction.
- E. Hang the Collapsible stainless steel net basket with cleaning items on the inner edge of the pressure ring of the washing machine. (Note: Do not place the cleaning items directly in the cleaning tank)
- F. When the temperature reaches the required temperature, the heating system is automatically turned off.
- G. When the liquid temperature of the washing machine is close to the set temperature, the ultrasonic switch can be activated.



- H. Press the (⏻) "ON / OFF" key twice in succession to start cleaning.

During cleaning, a "sizzling" sound is emitted in the tank, indicating that it is being cleaned. When the cover is closed, the sound will be significantly reduced.

- H. LED display screen : The countdown shows the remaining working time. When 00:00 is displayed, the cleaning is completed. If you need to pause the cleaning during the cleaning process, press the (⏻) "ON / OFF" key twice in a row.

【Instructions for use】

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1. Preparation and inspection before starting:

Check whether the power supply AC220V10A meets the requirements and whether the three-phase power outlet is properly grounded.

- Insert the power plug, turn on the power switch of the body, and the digital display screen lights up.
- Open the lid and put the cleaning items in a stainless steel cleaning basket. Do not add cleaning items to prevent mutual friction.
- Hang the stainless steel basket that has been filled with cleaning items on the inner edge of the pressure ring of the washing machine.
- After the cleaning agent or chemical enzyme is fully dissolved in the water in other containers, it is poured into the cleaning tank to maintain the water level between min and max, but the part to be cleaned must be immersed (the ratio of chemical enzyme to water) According to its instructions).

Press the () temperature setting key, the setting temperature is 50, 55, 60°C, 3 levels can be adjusted.

Press the () key twice, the LED display screen () lights up, and the heater starts.

- To pause heating, press () twice, the LED display screen () goes out, and the heating is paused.

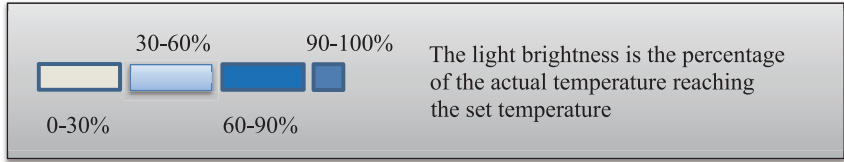
2. Instructions:

- To adjust the timing, you can press the () key to set the cleaning time of 5, 10, 15, 20, 25, 30 minutes.

Common cleaning time: 5 minutes, 10 minutes, 15 minutes.

Check the actual temperature

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- When the actual temperature reaches 90% of the set temperature, press the (Ⓢ) key, the LED display (△) lights up and the ultrasound starts.

During cleaning, a "sizzling" sound is emitted in the tank, indicating that it is being cleaned. When the cover is closed, the sound will be significantly reduced.

The countdown on the LED display shows the remaining working time. When 00:00 is displayed, the cleaning is completed.

To pause cleaning during the cleaning process, press the (Ⓢ) key twice.

- This machine is equipped with an overheating protection circuit to avoid continuous cleaning for a long time. When (△) is on, the machine is in an overheating protection state, at this time it is forced to start

The ultrasonic will not work, it needs to be stopped for 20 minutes, and the green indicator light is on before continuing the cleaning.

After the operation:

- After cleaning. Open the lid.
- Lift the stainless steel net basket, do not touch the items to be cleaned by hand.
- The cleaning items of the stainless steel basket can be directly entered into the subsequent drying and disinfection procedures.

Connect the drain pipe and open the drain valve to drain the dirty cleaning liquid in the cleaning tank.

- Please use the cocoon lotion according to the time specified in its manual (about 6-8 hours).
- Scrub the inner wall of the cleaning tank, turn off the power,

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[Use environment]

The indoor ambient temperature is -20~40, and the relative humidity is 35% ~ 85%.

[Troubleshooting Guide]

※ Ultrasonic does not work

- A. Check if the power supply is normal.
- B. Check that the fuse under the power outlet is intact.
- C. Check the work indicator, when () is off, it indicates normal operation. If () is on, the machine is in overheating protection state. At this time, the power is turned on forcibly, and the ultrasonic wave will not work. It needs to be stopped for 20 minutes. Don't continue cleaning until the () is off.

※ Ultrasonic cannot be heated

- A. Check if the power supply is normal.
- B. Check the ceramic heater for any breakage. If a heater is damaged, replace it. If there is no repair ability, send it back to the dealer or factory for repair.

[Product maintenance and maintenance methods]

1. Do not start without water. The machine is equipped with multiple protection circuits, but if it is started without water, for more than 50 seconds, it may damage the machine or seriously reduce the life of the machine.

If it is heated for more than 30 seconds, it will directly damage the heater.

2. Do not continuously clean for a long time. There is an overheat protection circuit in the machine. After continuous cleaning for 60 minutes, it is recommended to stop for about 20 minutes to extend the life of the machine.

3. Do not store water in the cleaning tank for a long time, then connect the drain pipe as shown in the figure, open the drain valve, drain the dirty water, and clean the cleaning tank. For the enzyme washing solution, please refer to

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the time specified in its manual (about 6- 8 hours).

4. Do not rinse the casing directly with water. After cleaning, please dry the cleaning tank and the machine casing with a dry towel.

5. The washing machine should be stored in a room with a relative humidity not exceeding 80%, non-corrosive gas and well-ventilated.

[Transportation and Installation]

1. Carrying method: When transporting, it should be flat and flat, and the tilt should not exceed 30 degrees, and it should not impact the machine;

2. Installation: The machine should be installed in a dry and ventilated place, and its ambient temperature and humidity should not be too high. There should be space around the machine so that the machine can get enough good ventilation and heat dissipation, and the rear side of the machine must be at least 500mm away from the wall;

3. Power supply: The power supply voltage and maximum allowable current should meet the requirements of this manual;

4. Ensure grounding: The machine is reliably connected to the ground wire.

5. The end of the equipment's service life should be scrapped in time. The scrapped equipment cannot be disposed of as ordinary garbage and should be disposed of by a professional waste electrical appliance collector.

[Environmental conditions for transportation and storage]

Ambient temperature -20-40°C, relative humidity 35% ~ 85%

[Simple faults and troubleshooting]

1. The power switch cannot be started, please check the main power PCB board for a fuse or other damage.

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2. Heating failure, please check the corresponding ceramic bottom heater for damage.
3. The ultrasonic does not work, check whether the machine is in an overheating protection state, and () is on.
4. The ultrasonic wave is weakened, please check if there are signs of cavitation and aging at the bottom of the water tank.
5. Drainage is not smooth. Please check whether the drain valve is blocked by foreign objects.
6. If the transducer is found to be damaged, stop using it immediately and return it to the dealer or factory for repair.

【Production Date】

See product label

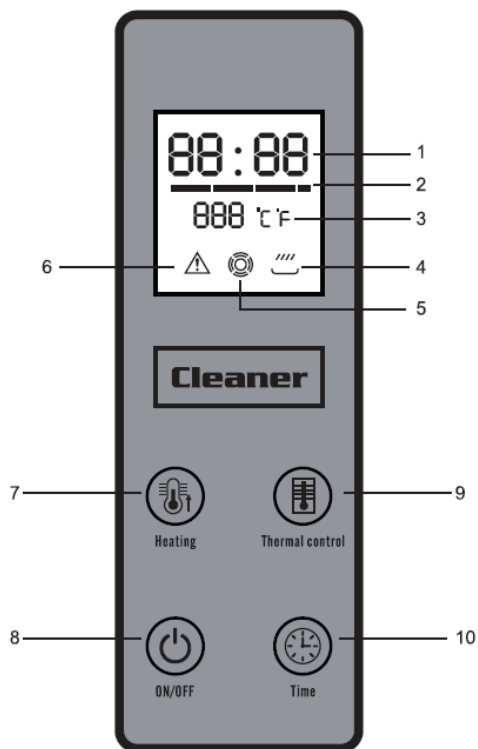
【Period of use】

When stored in the specified environment, this product is valid for 5 years.

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Appendix I,

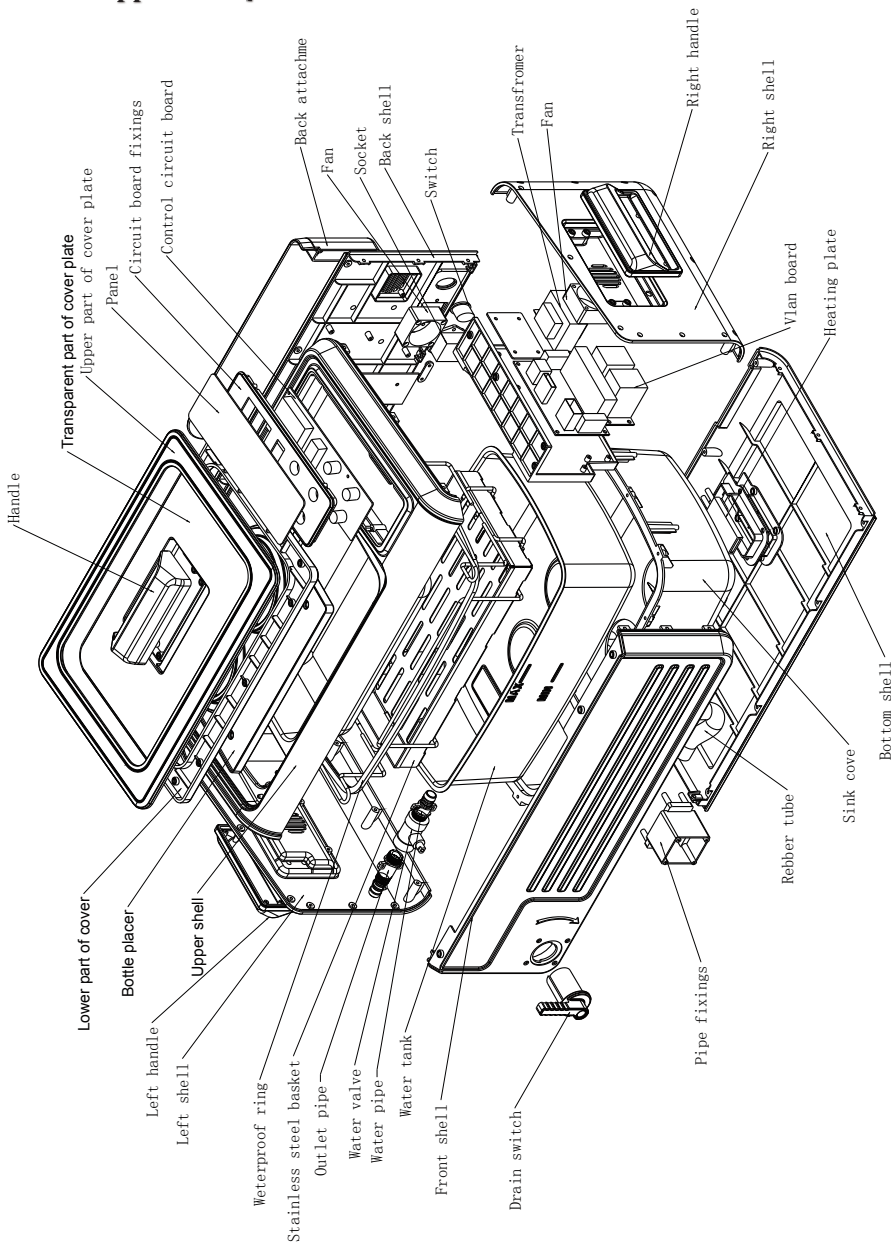
[Control Panel Icon]



1	Ultrasound time
2	Temperature percentage
3	Set temperature
4	Heating indicator
5	Ultrasound indicator
6	Overheat protection indicator
7	Start / stop heating
8	Start / stop ultrasound
9	Heating setting
10	Time setting

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Appendix ii [Product appearance]



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Appendix III, 【Packing List】

Host	1
Net basket	1
Cover	1
Beaker stand	1
500ml beaker (beaker lid, retaining ring)	2
Drain pipe	1
Power cable	1
Manual	1
Certificate of conformity	1

Appendix IV, [Detailed technical parameters of the product]

Dimensions	560x310x230mm
Inner slot size	330x200x100mm
Capacity	6L
Ultrasound frequency	40kHz
Ultrasonic power	200W
Heating power	220W
Total power	420W
Time setting range	5 、 10 、 15 、
Temperature setting range	50 、 55 、 60℃
Carton size (single)	580x370x290mm
Carton size (two)	600x390x620mm
Gross weight (single unit)	8. 6KG
Gross weight (two)	17. 7KG

Note: Please read this manual carefully before use !

