Industrial ULTRASONIC CLEANER
Operating Manual

For questions, comments, or concerns

Please call Hardware Factory Store Inc.

Call: 626.332.7744
Mon-Fri: 10:00AM - 6PM
1029 N Todd Ave, Azusa CA 91702

WARNING: To reduce the risk of injury, do not attempt to use or maintain this unit until you read and understand these instructions. Do not permit untrained persons to use or maintain

We appreciate you for choosing HFS' ULTRASONIC CLEANER. Visit us online to see our full line of products available for your Business.

CONTENT

I. Introduction

Digital control series ultrasonic cleaning machines have been widely used in hospitals, medicine, schools, scientific research, petroleum, chemical industry, light industry, metallurgy, machinery, transportation, national defense and other industries.

For instruments, meters, electronic devices, circuit boards, semiconductor silicon chips, magnetic materials, electroplating parts, hardware, optical lenses and spare parts, audio magnetic head, polyester filter element, spinneret, latex mold, medical equipment, glassware, jewelry The deep cleaning of clock parts, precision hardware, bearings, oil nozzles, oil pumps and parts and components with complex geometry in mechanical manufacturing, especially the dirt cleaning of deep holes, blind holes and concave and convex surfaces, is the most ideal high-efficiency and high-precision cleaning equipment at present.

When cleaning, choose to add the corresponding cleaning solution to achieve better cleaning effect.

II. Ultrasonic Principle
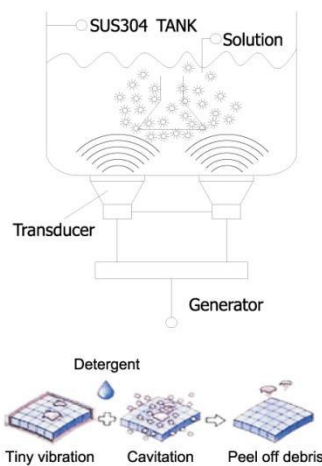
Ultrasonic cleaning is based on the cavitation effect caused by high frequency ultrasonic wave vibration signal in the fluid. Microscopic bubbles are formed, and then implode violently causing the cavitation which create an intense scrubbing action on the surface of the item being cleaned. The bubbles are small enough to penetrate microscopic crevices, cleaning them thoroughly and consistently.

Ultrasonic cleaning is extremely effective at removing dirt and grime which would normally require tedious manual cleaning by hand. It has been used to clean a wide variety of instruments and mechanical parts such as carburetors, returning them to almost "like new" condition without damage to delicate parts.

III. Cleaner Components

① SUS 304 stainless steel tank

② Sound proof lid

③ Mesh basket

④ Operation panel

⑤ Fan

⑥ Drain valve

IV. Technical Parameter

Model	Tank Size (mm)	Overall Size (mm)	Volume (L)	Ultrasonic (W)	FREQ. (KHz)	Heating (W)	Time (mins)	Temp. (°C)	Voltage
DK-1210D	500*300*250	760*480*710	38	600		2000	1-99	0-80	AC 220V
DK-1810D	500*350*300	760*530*730	53	900		3000	1-99	0-80	AC 220V
DK-2410D	550*400*400	820*580*900	88	1200		3000	1-99	0-80	AC 220V
DK-3010D	550*450*400	820*630*850	99	1500	28/40	3000	1-99	0-80	AC 220V
DK-3610D	600*500*450	870*680*900	135	1800		6000	1-99	0-80	AC 380V
DK-4810D	700*500*500	970*680*960	175	2400		6000	1-99	0-80	AC 380V
DK-6010D	800*600*550	1070*780*101	264	3000		6000	1-99	0-80	AC 380V
DK-7210D	1000*600*600	1270*780*106	360	3600		9000	1-99	0-80	AC 380V

V. Features

- SUS 304 stainless steel tank

- Industrial grade integrated circuit

- 0~80°C temperature range

- 1~99 minutes working time

- Power adjustable

- Dewaxing and degreasing function

- 28KHz for gross rinse or 40KHz for intensive rinse

- Auto Stand-by, Sleep, and wake up by one key-press Mode

- Simple Digital Controller of high-precision and a long service-life

- Digital controller of high-precision and a long service-life


VI. Operating Manual

1. Before operating

(a) Carefully unpack the cleaner, remove all packing materials and check whether any parts have become loose or damaged during transit.

Contents: a: Main machine   b: Sound proof lid   c: Power cable
              d: Outlet filter   e: Mesh basket (Optional)   f: Manual

(b) Place the cleaner on a flat, clean surface and ensure that the cooling fan will get adequate ventilation, and that all controls are set to off, and the drain tap is closed.

(c) Ensure that the power cables are securely and correctly connected with the single phase switch (220V) or three-phases switch(380V), and that no part of these cable is likely to contact with moisture or water.
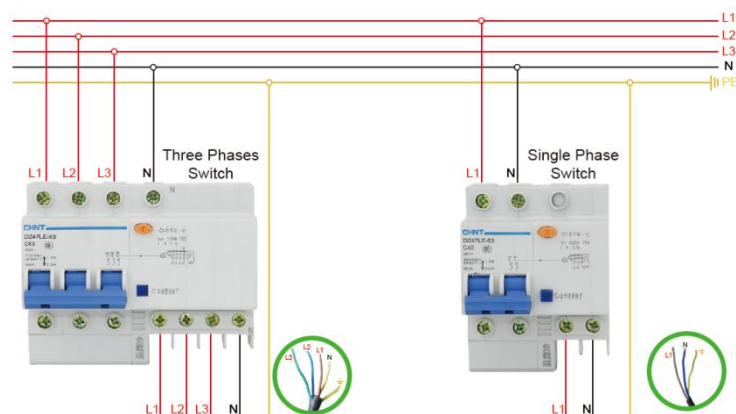
(d) Carefully fill at least 1/2 of the tank with a solvent solution. Based on cleaning requirements, we recommend to use a small amount of cleaning solution because this will help increase the cleaning performance. Now the cleaner is ready for use.

2. Operation instructions

(a) Fill the stainless steel tank with cleaning solution; turn the single phase switch or three phases switch on; After power-on, the LED display of the temperature displays the actual environmental temperature; while the LED display of time displays 3 minutes (default ultrasonic time).

(b) **Time setting:** Press the "**TIME-/TIME+**" shortly at a time means time increase/reduce 1min at a time, press and hold means time will increase/reduce by 10mins continuously. The cleaning stops when the timer counts down to 00:00. If the unit needs to be stopped before the timer runs up, press "Ultrasonic" button.

(c) **Temperature setting:** Press **"temperature-/temperature+"** shortly at a time means time increase/reduce 1℃ at a time, press and hold there means time will increase/decrease by 10℃.

Note: Usually, the best cleaning temperature is within 40℃ to 60℃. The temperature displayed is the real temperature. The default value of the temperature is 0℃. When you set temperature, the heating function cannot be started unless the set temperature is higher than the environmental temperature and the "**Heating**" button is pressed after the temperature setting. When the real temperature is higher than the set temperature, the indicator of heating will turn off. However, the heating function would not be turned off automatically if the ultrasonic cleaning still works, it will start again when the water temperature is lower than the set temperature. In this case, you

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can only press "**Heating**" to turn off heating function. However, if the ultrasonic cleaning time runs out, the heating function will stop automatically.

(d) After time and temperature setting, press "**Ultrasonic**" or "**Heating**" button to start both functions. Press "**Ultrasonic**" or "**Heating**" button again, the Ultrasonic or heating function will stop.

(e) Power Controller: the power can be adjusted among 0% and 100%. Users can adjust the power value randomly based on the characters of the stuffs to be cleaned.

(f) Empty the tank and clean both the outside and inside of the cleaner with a clean and dry cloth for next use.

VII. Effect factors

For Better cleaning effect, make sure that:

(a) Make the machine have a proper power density: The higher the power density is, the better cavitation effect the machine can make, the better cleaning effect we can get, the faster the cleaning can be finished. For big work pieces, better to choose a big power density; while for high precision work pieces, better to choose a small power density. Generally most ultrasonic cleaners have a power density among 12~20W/L.

(b) Choose a suitable frequency: The lower frequency we choose, the better cavitation we can get; the higher frequency we choose, the better refraction and reflection we can get. So for simple surfaces, better to choose a low frequency; while for complicated surfaces with deep and blind holes, better to choose a high frequency. The common frequencies are 20KHz, 28KHz, 40KHz, 80KHz, 0.8MHz.

(c) Immerse the cleaned stuffs well into the water (below the "MAX" mark).

(d) Add a small amount of cleaning solution.

(e) Make sure that there is enough space around each stuff in the tank. The more stuffs you place in the tank, the less efficiency you can get. It is not advised to overlap stuffs because the ultrasonic cleaning system cannot work well with layered stuffs.

(f) Use a basket. Do not put stuffs directly into the bottom of the tank because that is harmful for the inner tank. So it is better to use a suitable basket. Especially a metal basket only absorbs about 8% ultrasonic energy.

(g) Choose a suitable leaning temperature: The cavitation effect can be the best when the water is under 40℃～50℃. Generally, the higher the temperature is, the easier the contaminants get re-solvent. However, when the temperature reaches 70℃～80℃, the cleaning effect also will be affected.

(h) Set a suitable cleaning time: the longer, the better. (except for stuffs made with

special materials).

VIII. Attentions

(a) In the process of cleaning, any loose tessera may fetch way.

(b) Please don't clean any cloth, leather, wooden stuffs which would fade easily via this machine.

(c) Please don't clean cellphones, watches which is not water-proof via this machine.

(d) Please don't clean any shells, glass brackets which is made with hawksbill etc. via this machine.

(e) While the machine is working normally, the synonym of the ultrasonic wave and tank gives a well-proportioned sound with no shudder on the surface of the water but sprays generated by the tiny bubbles. If there are discontinuous surges, please add or reduce a little of washing solution in the tank to stop the surges, which is good for get a better cleaning effect.

(f) Please don't make the machine work for a continuous long time (not more than 24 hours) as possible as you can because a long-time working will raise the temperature of the case, accelerate the burn-in process of inner electronic components and parts.

(g) Please don't use flammable detergent.

(h) This device cannot be used by individuals with limited physical knowledge, or the mental disabled, or those lacking experiences or knowledge, such as children, unless they are supervised by an individual who can take charge of their safety or have received training in operating the device.

(i) DO NOT operate the unit without fluid in the tank. Always ensure that the fluid is no higher than the max mark and no lower than the minimum depth of 7cm.

(j) Please prevent the cleaning solutions or water from getting into the case or being splashed on the transducers because it may cause electric leakage and short circuit or damage the wafers inside the transducers.

(k) If something gets into the case, please take it out immediately.

(l) When you change or drain the liquid inside the tank, please ensure that the liquid is under common temperature, and that the ultrasonic function is turned off, and that power switch is turned off.

(m) The more items you place in the cleaning bath, the less cleaning efficient you can get. Leaving enough spaces among items rather than overlapping them is recommended.

(n) Do keep the lid on during use. This will prevent splashes and reduce evaporation of the fluid.

(o) DO NOT touch the power switch with wet hands.

(p) DO NOT disassemble the machine if you are not professional.

(q) DO NOT place the device on a soft surface where the vents can be blocked.

(r) Take care when adding or removing items from the cleaning tank as the splashed fluid is likely to be hot and damage the internal components. Any splashed fluid must be dried immediately.

(s) Clean the contaminants in the tank and keep the surface of the machine clean after use.

(t) In case of emergency or failure to follow the aforementioned items, turn the power switch off and contact the maintenance staffs.

IX. Application

1. Application listing

This list is almost endless. Provided the product is non porous and can normally be immersed in water, they can be thoroughly cleaned. Here are some examples:

- Jewelry especially gold, silver & platinum
- Watchstraps
- Coins and other collectibles
- PCB Boards etc.
- Engine/Model parts
- Toothbrushes & Dentures
- Electrical components
- Make-up cases
- Diesel injection pumps
- Printer heads and toner cartridges
- Motorcycle radiators
- Vehicle differentials
- Milking parlor equipment

- Golf clubs & grips & golf balls

- Horse bits & stirrups &horse brasses

- Tattoo needles

- Surgical equipment

- Motorcycle engine crank cases

- Engine cylinder heads

- Turbochargers

- Bicycle derailleurs

- Knives, bayonets and other militaries

- Gun and gun components

Ultrasonic cleaning is not recommended to be used to clean the following gemstones: Opal, Pearl, Emerald, Tanzanite, Malachite, Turquoise, Lapis and Coral.

2. Different ways of cleaning

General Cleaning—use only water to clean under the temperature of about 50℃;

Enhanced Cleaning—add few drops of standard cleaning solutions, liquid soap, or detergent, or any other non-acidic cleaning agents;

Extensive Cleaning--removing tarnish, carbon & rust from non-plated metals, it is recommended to use specific cleaning solution associated with ultrasonic cleaners.

WARNING: Strong acid or alkaline cleaning solution will cause corrosion, rust and even puncture of tank or machine body. To solve this problem, please dilute the solution to mild PH or use a special tank made of a

The cleaning solution will deteriorate in effectiveness over time and use. It is important to regularly change the fluid and carefully wash the inside of the cleaning tank in order to preserve the effectiveness and longevity of the cleaner.

Do not use corrosive or abrasive cleaning tools to clean the tank which must be wiped down and dried before it can be re-connected to the electrical supply.

NOTE: If the machine starts to spark, smoke, smell of burnt electrics or displays any other fault the operator must immediately stop the machine, and isolate it from the electrical supply and contact the supplier. It is dangerous to use it after that.

X. Maintain

This machine is a valuable equipment and should be used, maintained and maintained by a special person. A comprehensive inspection of the equipment should be carried out on a regular basis.

(a) Check whether the contacts of the power supply and output line are loose, overheated, damp and poor contact.

(b) Check the sealing condition of the bottom plate of the cleaning tank for leakage. Check for leaks at the joint between the drain pipe and the cleaning tank.

(c) If you find that the ultrasonic vibrator falls off or the power tube is burnt, please contact the manufacturer.

(d) The ventilation, dryness and cleanliness of the ultrasonic equipment workplace is conducive to the long-term efficient operation of the equipment and the optimization of the working environment conditions.

(e) After the end, please unplug the power supply and pour out the water in the cleaning tank. (Please do not store water in the wash tank for a long time).

(f) Dry the cleaning tank and the surface of the machine with a paper towel or dry towel.

(g) After using the product, store the product in a dry place.