



Western Surgical[®]

ULTRASONIC CLEANER

USER MANUAL Foging Machine



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SPECIFICATIONS

1. Model No. : _____
2. Sr. No. : 2k1302032
3. No. Of Chambers : ONE
4. Tank Dimension : 300mm (L) x 238mm x 100mm (H)
5. Tank Capacity : 6.5Ltrs (Moulded)
6. Tank Material : S.S.304
7. Power Output : 150 watts
8. Power Input : 230 VAC
9. Operating Frequency : 33± 3 KHz
10. Transducers : Piezo - Ceramic Type
11. Generator : Mosfet based SMPS

ADDITIONAL ACCESSORIES

12. Tray : Provided
13. Power Cord : Provided
14. Lid : Provided

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INFORMATION ON ULTRASONIC

1. Input Supply : - Input Supply should be consistent & fluctuations should not be more than $\pm 10\%$ more please use CVT of require rating at input. Do not use Multi-pin Plug or Loose Plug or Joint Cable . Avoid water spillage at input or socket at machine.
2. Water / Liquid Level : - Many times it has been observed that liquid level is very very low than minimum required. Due to this energy generated at Transducers can not get transfer to liquid & rise of temperature takes they require replacement. it also damages the ultrasonic Generator. Minimum 50% level is to be maintained for longer life of machine.
3. Liquid Spillage : - User has to careful while filling the tank or removing basket such that liquid do not get spilled & falls on Ultrasonic Generator PCB in enclosure. Such will damage the generator & machine will stop functioning.
4. Dry Running : - Under no circumstances machine should run dry without any liquid in the tank. This will damage the machine permanently.
5. Control Panel : - Liquid should not spilled on Control Panel at all & avoid usage of sharp objects to operate the button of Control Panel.
6. Load / Unload : - Baskets or holder can be loaded or unloaded during OFF Conditions only. Do not do such things when machine is in ON Conditions. Adding or removal of liquid or solvent during ON Condition is not good practice. Machine can perform better when the load (Weight of holder + Components) should be less than 50% of weight of liquid.
7. Duty Cycle:- All these machines are industrial grade & good for continuous duty cycle but to have better life to machine it is better to give a break of 10 - 15 mins after every use of 30 mins.
8. D M Water : - It is recommended to use DM water in Ultrasonic Chamber for more uniform cleaning.

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1. INTRODUCTION

A) Description :

The 'Western Surgical' Ultrasonic Cleaner is a compact, hi-tech & versatile Ultrasonic System designed for rapid cleaning of small and large intricate parts assemblies.

The characteristic feature of Ultrasonic Cleaning is that mechanical energy in the form of high intensity, high-frequency sound waves is transferred to the cleaning liquid. This results in the generation and collapse of large numbers of minute bubbles throughout the liquid. This effect which is known as cavitation, is responsible for the special scrubbing action which ensures quick and thorough cleaning of all immersed surfaces including holes, recesses and crevices and other inaccessible areas that would be impossible to clean by ordinary methods.

The ultrasonic cleaning is adopted even for cleaning of complicated articles like engine block of automobiles and aeroengine assemble etc. The cleaning of such components by any other method is very difficult. This method is also used for digressing of bearing, compressors, cylinder heads, pistons and piston rings etc. in automobile industry, railways and defense establishments. Armature assemblies, stumping etc. are cleaned with Ultrasonic in electrical industries. Diesel engine filters, aircraft filters etc. which are not at all possible to clean by any other method are cleaned thoroughly using Ultrasonic. Now Ultrasonic cleaning is must for medium and large scale units to achieve international standards.

Despite the vigorous action of the cleaner it is particularly suited for the cleaning of delicate components such as watch and instrument movements, electronic parts such as quartz crystals, valve components, relays, switches, printed circuits etc. Jewellery and optical ware and numerous fragile assemblies can be treated without any damage by the cleaner. In most cases, intricate parts can be cleaned with little or no dismantling because cavitation can penetrate into all parts where the cleaning liquid is in contact with the surface.

Basically, the reason for introducing ultrasonic energy into a cleaning liquid is to provide the intense scrubbing action on the part to be cleaned. It also accelerates the chemical action of cleaning liquid making it more effective on soluble soils and will also help to break loose tenacious insoluble soils or matter which is ordinarily can not be removed by chemicals alone.

b. Design :

"Western Surgical" Ultrasonic Cleaner is manufactured with hi-tech, hi-frequency Mosfet based electronic ultrasonic generator. Imported PZT type ceramic transducers are bonded at the bottom of high quality stainless steel tank and connecting it to the generator. The unit has electronic display timer system to control the cycle timing as per the requirement. The generator is perfectly matched with each transducer to have optimum power. Being hi-frequency, the efficiency of the generator increases to the level of never before @ 90%. Completely protected generator ensures long, reliable and consistent operation.

High heaters (optional) are provided with electronic sensors to control temperature as per the requirement.

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2. OPERATION *

- a) **Warning**
This Equipment is likely to get damage, if it is put "on" without Minimum 2" (50 mm) (for STD M/c) Height of liquid in the cleaning tank.
- b) **General :**
The tank should be filled with proper cleaning liquid upto minimum about two thirds the total depth of the tank.
In order to obtain maximum efficiency, we have provided a special degassing cycle for @ 5 minutes to degas the dissolve gases in the liquid for maximum cavitation whenever fresh solution in put in the tank. Care should be taken the tank is not overloaded with a large component or too many small components in lump.
- c) **How to set the Degassing Cycle Timer & PSP. : (For STD. MODELS)**
Plug in the Main cord & start the equipment with the green switch in ON condition.
Degassing (optional) :
Press degas button to start a special degassing cycle for present 5 or 10 (Model dependedt minutes and the equipment will run in ON / OFF condition for maximum degassing of dissolved gasses in the solvent.

Timer :

- ❖ After the degassing cycle is over Press up or Down arrow to set required time in minutes.
- ❖ Press ultrasonic ON / OFF button once to start the equipment.
- ❖ The display will indicate the remaining the time of the cycle.
- ❖ When display will reach zero the equipment shut OFF automatically.
- ❖ Press ON / OFF Button once again to stop the equipment before the cycle is over if required.
- ❖ Repeat the procedure to changes the time of the cycle.

P.S.P. : - Pulse Sweep Power

Press PSP button to run u/s with sweeping frequency for uniform u/s power distribution. This will leave no dead spots in liquid

HOW TO SET CONTROL PANEL (FOR MICRO PLUS MODELS)

Plug in the main cord start the equipment with green switch in ON condition, will appear on display.

I. Time/Temp. Setting :

- Time :
- (a) Press set/actual switch once and indication for set will appear
 - (b) Press time/temp. switch once and indication for set will appear
 - (c) Press up ↑ and down ↓ keys to sent the required time.
 - (d) Now your time is set.

* Operating System is Model dependant & Subject to change without prior notice

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Temperature :
(Model Dependent)

- (a) Start Heater by pressing the green switch with indication in ON condition. indication will remain in ON condition till the desired temperature is achieved.
- (b) Press set /actual switch again the indication for set will appear.
- (c) Press time/temp. switch again and the indication for temperature will appear.
- (d) Press up ↑ and down ↓ keys to set your required temp. in °C.
- (e) Now the bath temp. is set as per your requirement.

II. Auto Degassing (if required)

- ❖ Select & Press degassing switch in ON condition to start auto degassing for Pre-set 5 mints.
- ❖ Press the switch again to stop degassing function before 5 min. if required.

III Pulse Sweep Power (if required) (Model Dependant)

- ❖ Select PSP and press the switch in ON condition to start the unique state of the art PSP mode then press ultrasonic in ON condition.

IV Ultrasonic :

After selecting all above parameters. Press Ultrasonic ON for required time/temp. cycle. The display will show the time completed (count up) by the ultrasonic cycle and by pressing set/actual button you can see the set time/temp. the machine will shutt off automatically after completion of the cycle.

New Micro Controller with Pulsation & Power Controller

This Micro Controller has all above feature and in addition, it has following state - of - the art modes of operation for demanding industrial & other application.

1. **Pulsation Mode :** In this mode machine will operate in pulsation (cyclic) mode where it will be into ON/OFF mode in percentage for every 1sec. of operation. Such as when display shows 10%, the machine operates in ON condition for 90% of 1 sec. ON & 10% OFF & so on. When display shows 50% then machine operates in ON condition for 1/2 sec. & OFF for 1/2 sec.
By pressing ↑ & ↓ arrows user select percentage of operation. This feature is available also when machine is in ON condition.
 2. **Power Controller :** This feature allows user to select various power levels for best & optimum cleaning of their precious components.
By pressing ↑ & ↓ arrows user can select power level to their choice. User also can change power level while machine is in ON condition.
- d) **Choice of Cleaning Liquids**

The Cleaning Liquid used can broadly be classified into two viz.

- (i) Aqueous Solution
- (ii) Solvents

(i) Aqueous Solution

Aqueous Solution is commonly used for general cleaning purpose, as these are economical & non-hazardous. In certain cases, detergent is used to accelerate the action.

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ii) **Solvents :**

Solvents liquids like kerosene, trichloroethylene, petrol, acetone, neptha, elma etc. are used in specific applications where the cleaning by aqueous solvents is difficult or when it is not advisable. Avoid using Carbon Tetra Chloride as it gets decomposed and becomes hazardous to the health of the operators.

The solution selected should be such that they do not have any effect on the stainless steel tanks. Whenever it is necessary to use such solutions a glass beaker should be used as a container and beaker immersed in the cleaning tank with water in it. This method is to be adopted specially when using HCL or H2SO4 for cleaning.

e. **Component Handling :**

In case of smaller components to be cleaned are supported on wires or placed in a wire mesh basket. Please note that baskets of smaller mesh will interfere with ultrasonic action. We can provide specially designed wire mesh baskets at extra cost.

The Big and heavy components to be cleaned are generally suspended by means of hoists. The hoists used are of simple chain pully block manually operated or semiautomatic electric hoists. Even completely automatic or servotransport mechanisms or other conveyor systems are adopted when the Ultrasonic Cleaner is used in production line.

Alternatively, the parts can be placed in glass beaker with cleaning medium and the beaker in turn is placed in the tank. The tank is to be filled with water. The beaker is to be supported properly with collar and stand. This technique makes it possible to use corrosive liquid as the cleaning medium.

The time of exposure required is determined on the basis of the nature of contamination and cleaning liquid used, by experiment & the cycle should be set accordingly. Complex mechanism with internal chambers etc., should be dismantled and cleaned in order to avoid attenuation and deposition of soil in the mechanism after it is dislodged by ultrasonic cleaning.

f. **How to get the most from your Ultrasonic Cleaning System :**

INTRODUCTION : Purchasing the highest quality ultrasonic cleaning equipment is certainly important, but effectively utilizing it is even more important. The following guidelines are intended to assist users by providing general information relating to the operation of ultrasonic cleaners.

1. Most ultrasonic systems show high bursts of surface energy on initial activation, especially in room temperature solvents.
2. Cold water will not normally cavitate well although there may be an initial burst of surface activity.
3. Do not introduce excessively hot water into a cold ultrasonic tank as it will cause undesirable start-up conditions and thermal shock.
4. Do not use water solutions above 55°C at any time. (for std Model) other than sp. Specified in specification Sheet
5. Do add chemicals to water prior to initial start-up and mix well, especially if powdered material, which should be premixed before adding to ultrasonic tank.
6. Allow a sufficient degassing period after initial startup, and prior to introducing work into cleaning tank. Degassing time will vary depending on several factors such as type of chemical liquid (i.e. solvent or aqueous,) temperature, viscosity, etc. Note - Normally solvents degasses much slower than aqueous solutions. Degassing time can vary from a few minutes up to hours in large solvent cleaning tanks. For faster start-up, solvents should be heated to accelerate degassing.

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7. Be aware that surface activity may disappear completely after work is introduced since the ultrasonic energy is now being utilized by an on the work.
8. Be aware that certain frequencies provide different surface activity. Generally, higher frequencies will show less violent activity than lower frequencies. Surface activity is not necessarily related to cleaning power. For instance, a high frequency system may show little surface activity and yet may clean a part just as quickly and as thoroughly as a lower frequency unit which produces violent surface activity, or vice versa.
9. Do not introduce turbulent air or fast flowing liquid (i.e. recirculation filter system) into ultrasonic cleaning tank.

Note :-

- a) Use recirculation-filter systems preferably when ultrasonics are not being used, and make certain return line is beneath liquid surface.
 - b) vertical oscillation or rotational basket tumbling of parts (often necessary to ensure through cleaning) can be performed at slow stroke and r. p.m. speeds.
10. Position parts so that air is not trapped in blind holes cavities, as no cleaning will occur in these areas. Liquid is required to carry the ultrasonic cavitation.
 11. Do not use racks, trays, baskets, etc., fabricated from heavy and dense material, since much of the ultrasonic energy will be absorbed by these devices and detract from cleaning.
 12. Do not use racks, trays, baskets, etc., fabricated from or coated with soft material, namely, rubber, wood, soft thermoplastics, fabric, etc.
 13. Be aware that certain chemicals or excess amounts of certain chemical additives will not support ultrasonic cavitation. Check with your chemical or ultrasonic equipment supplier if in doubt.
 14. Do not overload an ultrasonic cleaning tank with work. It is difficult to establish guidelines due to the wide variety of sizes, weights, etc., of parts encountered. It is wiser to clean fewer parts quickly and thoroughly. Start with a few parts, add additional items and check to insure same cleaning results.
 15. Do not place anything on or against the radiating surfaces of ultrasonic tanks or immersibles as this may dampen ultrasonic activity, and can cause equipment damage.
 16. Do not allow cleaning solution to become excessively contaminated or sludge to build up on radiating surfaces, causing a loss of ultrasonic cleaning power and possible damage to ultrasonic equipment.

3. MAINTENANCE

- a) **WARNING :**
THE ULTRASONIC CLEANER MUST BE DISCONNECTED FROM SUPPLY DURING ANY REPAIR WORK BEING CARRIED OUT.
- b) **General :**
The cleaning tank should always be kept clean to avoid any deposition or solvent or soil. This may affect the ultrasonic energy radiation. The scouring powder should be used to clean, care being taken to avoid scratching of the surface. Apart from this, the unit does not need any special maintenance. Care should also be taken to avoid trickling of water or solvent in ultrasonic generator.
- c) **Please switch off before increasing / decreasing Liquid level.**

4. SERVICING PROCEDURE

In case of any difficulty please write to us or telephone us, giving the Sr. No. of the unit being used by you. Also send us the full report of the nature of the fault and steps taken to eliminate it, if any. In case of major faults the equipment should be sent to our factory securely packed on freight paid basis.

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LIST OF SOLVENTS

S. No.	Contamination to be Cleaned	Typical Products	Chemical Adopted
1.	Light grease, buffing Compound shop dirt, oil and water soluble contaminations etc.	Bearing, Automobile components, gears machined parts etc.	Alkaline solutions ASFOCLEAN-B or Trichloroethylene
2.	Heavy grease, hardened grease with buffing compound and hard deposits, hydraulic oil etc.	Same as above and Engine Components nozzles, Filters Jewel bearing etc.	Alkaline solutions ASFOCLEAN-HD or Trichloroethylene
3.	Light rust, oxidations	Ferrous and non-ferrous components	Rust Solvent or Orthophosphoric acid (diluted) ASFOCOAT-31
4.	Heavy rust, heat treatment scale etc.	Ferrous parts gears heat treated parts-bearing, tools, tool bits etc.	Scalgun or strong Acidic solvents.
5.	Light carbon deposits burnt oil etc.	Diesel engine parts automobile parts fuel injection components	ASFOCOAT-31
6.	Heavy Carbon deposits	Same as above	Carboclin-5
7.	Paint, varnish Lacquerers dried oil etc.	Ferrous and non-ferrous metallic components Glass.	Stripzol or equivalent
8.	Grease, fungus, finger prints etc.	Lenses, Slides etc.	Benzene or Acetone
9.	Blood stains clotting precipitates (water soluble) saline etc.	surgical instruments Hypodermic needles blood bottles, Saline bottles	(Alkaline solvents) Soap Solution or teapol solution (any detergent)

Other type of contamination may be cleaned using proper chemical in the Ultrasonic Cleaner.

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WARRANTY

This Ultrasonic Cleaning Machine is under warranty against any defect due to defective materials or workmanship for a period of 12 months from the date of purchase.

The Warranty is made in lieu of all other guarantees expressed or implied including but not limited to guarantees of merchantability or fitness of particular purpose and there are no other guarantees that extend beyond this.

1. The above referred products are warranted against defects in workmanship and material under normal use, service and duty conditions specified.
2. Normal use is to be understood when the Ultrasonic cleaner shall be working under the service conditions as specified in Order Acceptance.
3. This warranty is further subject to the installation and operation of the Ultrasonic Cleaner set being carried out as per instructions contained in our "Users Manual" booklet.
4. This warranty is limited to a period of 12 months from the date of Sale.
5. Warranty is subject to the provision that the user does not open the unit and make any change and/or repair without our prior written approval during the warranty period.
6. Warranty claim shall be limited to rectifying, repairing or replacing defective items Ex-works/ Service stations/Authorised service Centre provided the purchaser has given immediate written notice within 7 days of the occurrence of the problem. Equipment for repairs should be returned to us. Free of cost The replaced/repaired parts will be supplied on Ex-works basis.
7. Products or parts thereof not manufactured by the seller are guaranteed only in accordance with the respective manufacturer's guarantee and then only to the extent that the seller is liable to enforce it.

In no event the seller will be liable for any direct or consequential damages or costs whatsoever.

TERMS & CONDITIONS :

1. The Ultrasonic Cleaning Machines upto and inclusive of the tank capacity of 20 ltrs does not have on site warranty. The customer will have to bring the unit to the factory and collect it back at their own cost and arrangement.
2. The Ultrasonic Cleaning Machines of tank capacities above 20 ltrs. are warranted for 1 year on site. However the service personnel can make the visit only when it is suitable and viable. If no manufacturing faults is found in the unit then the visit charges and To & Fro. charges for the Technician / Engineer will have to be provided by the customer. Not doing so will render the warranty null and void.

Date of Installation	Installed By
Model No.	Serial No.
Warranty Period	
Name of Doctor & Address :	

Customer Sign. With Stamps

Marketed By: Western Surgical
Sign. With Stamps

No Claim Warranty :

- 1) Any Defect Through Power Supply
- 2) Any Physical Damage

3) Under Warranty Standby Unit Not Provide

4) Under Warranty When Company Send Parts or Machine we Immediate send to Buyer.

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OUR OTHER PRODUCTS RANGE



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