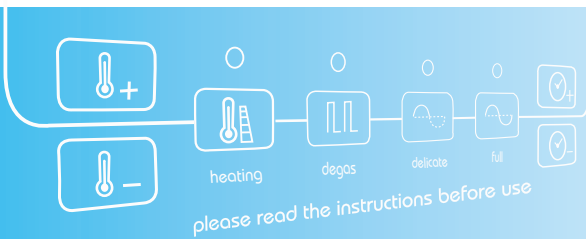




allendale-ultrasonics.co.uk
Suppliers of Ultrasonic Cleaners and Solutions

Ultrasonic Cleaner User Manual



V1.0

General Information

Introduction

This user manual is for use with Allendale-Ultrasonic and Cavitek™ ultrasonic cleaning tanks. All cleaning tanks should be handled with care to ensure maximum performance.

Please read and understand this user manual before using your ultrasonic cleaner.

Care and Safety

- Do not operate if the tank is less than 2/3 full.
- Ensure power is disconnected before attempting to add or remove fluid.
- If pouring fluid away, pour away from the electrical socket on the rear and front control panel.
- Do not let items rest on the base of the bath, always use a glass beaker or basket.
- Do not place hands or fingers in the bath. Contact exposure to ultrasonic cavitation is suspected to cause living tissue and bone damage.
- Do not use any fluids which could potentially damage the stainless steel bath e.g acids.
- Do not use fluids exceeding 80 °C.
- When submerging parts ensure fluid is not displaced out of the bath.
- Maximum running time for a single cycle is 45 minutes.
- Always allow a rest time of 20 minutes between cleaning cycles.
- Never drop an item onto the base of the bath.
- Always clean bath after use.
- Never change the fuse for a higher rated one.
- Aqueous solvent/detergent solutions should be made up with deionised, demineralised or distilled water as calcium carbonate and other impurities in tap water can effect/ reduce the cleaning properties of the solutions and produce undesirable side effects such as deposits and staining.
- Volatile solvents with low boiling temperatures should not be used. The ultrasonic action can cause them to heat rapid and the vapour is a fire risk.

Failure to carefully follow the points above could void the warranty and cause injury.

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About Ultrasonics

How Ultrasonics Work

Ground-In dirt and grime can be extremely tedious to remove by hand, however it becomes easy with the use of ultrasonic cleaners. A wide range of parts can be cleaned by the ultrasonic process to a 'Like New' condition with the right detergent/solvent without damaging the part.

A physical effect called "acoustic cavitation" generated in the liquid is responsible for the cleaning process. Cavitations form when ultrasonic waves travel through liquid. When a sound wave travels through fluid it stretches and compresses the liquid to transmit the sound, as the amplitude of such sound waves increase to a critical level the negative pressures create cavities in the water.

As these cavities collapse high temperatures and large forces are generated in a very localized area, the accumulative effect of millions of these collapsing cavities is responsible for the cleaning action and are particularly effective when used with the correct detergent/solvent. Cavitation takes place where ever the liquid comes into contact with the object being cleaned, for example; fine recesses/cracks and obscured chambers to clean where many other cleaning methods cannot reach.

Objects Ultrasonics Can and Can't Clean

Ultrasonic cleaners can be used to clean just about anything. The list below names the most common items cleaned by ultrasonics:

- Taps, Dies, Milling cutters,
- Engine Blocks,
- Carburetors,
- Jewellery (Gold, Silver and Platinum)
- Waterproof watches
- CD's and DVD's,
- Medical equipment / instruments (ultrasonic cleaning does not sterilize, it must be followed by sterilisation in an autoclave)
- Dentures,
- PCBs / assemblies (clean with caution, see operational advice below)
- Golf clubs,
- Ceramics,
- Paint spray guns,
- Tattooing equipment (ultrasonic cleaning does not sterilize, it must be followed by sterilisation in an autoclave)
- Printer heads,
- Diving respirators,
- Bike parts and much more.

Most objects can be processed in an ultrasonic tank but there are some exceptions including some plastics, precious stones and electronic components. We advise checking with the manufacturer of the objects to be cleaned whether they are suitable for ultrasonic cleaning.



Operational Advice

1. Around 20 minutes should be enough to remove/loosen most foreign bodies from the item you are cleaning. There is no specific recommended duration for a cleaning cycle but generally the shorter the better to minimize the possibility of damage to the item being cleaned especially if it is to be cleaned regularly. It will reduce the ultrasonic cleaning cycle time by soaking the item to be cleaned for as long as possible before ultrasonic cleaning. It is recommended after cleaning is completed to perform a short rinse cycle with clean water to ensure cleaning agent deposits are not left in obscured areas of the object.
2. The action of ultrasonic cleaning will slowly micro pit the surface of metals, aluminium is particularly easily eroded. The softer the metal the more rapidly it will be eroded which may be a concern with polished machined and aesthetic parts which need to be cleaned regularly.
3. Gemstones including those used in jewellery and clocks should be cleaned with great caution. Some stones are surface eroded, can lose colour or become discoloured, crack due to ultrasonic shock and/or heat, see the list below for stones which are unsuitable for ultrasonic cleaning,

Please note; this list is for reference only and is by no means exhaustive;

Pearl, Opal, Amber, Tanzanite, Emerald, Peridot, Agate, Amazonite, Topaz, Aquamarine, Turquoise.

4. **Please note; this information is for reference only and is not exhaustive**
Weaker gemstone settings such as Grain, Pave and invisible can be loosened by ultrasonic cleaning. Mechanically superior settings such as Claw and rubover are not generally affected.

Use Cavitek™ in delicates mode
5. Certain electronic components are considered sensitive to ultrasonic cleaning, unfortunately there is very little empirical published data regarding this subject. In general it is safe to clean the vast majority of electronic components. To minimize the potential for damage use a basket to reduce the ultrasonic intensity, turn the basket occasionally during the cycle to stop ultrasonic hotspots and use an effective aqueous solvent to quickly remove the contamination.

Use Cavitek™ in delicates mode
6. You should consider adhesives used in the object being cleaned, these can be attacked/softened by the detergent/solvent used and the bond undermined by the ultrasonic effect.
7. Fully immerse item into the water. Ensure there are no air pockets in recesses and blind holes/ chambers to ensure the ultrasonic effect can propagate to all surfaces of the item being cleaned.



8. Delicate items should be cleaned in a basket to reduce the ultrasonic intensity and turn the basket periodically during the cleaning cycle to stop standing wave cleaning hotspots. All single frequency ultrasonic cleaners create standing waves, in the case of 40KHz cleaners they create standing waves at approximately 12.5mm intervals ignoring reflections from the walls of the bath and items placed within. These are hotspots where the cleaning effect is most aggressive, between these hotspots the ultrasonic intensity will reduce. A more even clean is achieved by periodically moving the item being cleaned or turning the basket several times during the cleaning cycle.

PLEASE NOTE; the use of a basket will reduce the cleaning effectiveness, for this reason it is preferable to suspend heavily soiled robust items so they are exposed to the full ultrasonic intensity and do not sit on the base of the bath.

9. Always use warm water, never hot/boiling. If using an aqueous solvent you can speed up the heating of the fluid by mixing some preheated water with the room temperature fluid in the bath. Do not thermally shock the bath by putting boiling water directly into an empty bath.

Refer to fluid manual for operating temperatures.

10. Make sure there is good space around your objects, it is not advised to overlap items in the tank. The more items loaded into an ultrasonic cleaner the longer the required cycle time will be to effectively clean them so it is better to wash little and often.
11. If you are cleaning a small part in a large ultrasonic cleaner you can reduce solution wastage by using only a small amount of cleaning solution in a glass containing the item being cleaned and fill the rest of the bath with plain tap water.
12. Print heads should be considered delicate. It is advisable to soak the print head first to loosen dried ink, run Cavitek in delicate mode, run the ultrasonic in cycles of two minutes then flush head with warm water and see if it runs clear. Long cycle times can cause the head to fail or lead to imprecise ink dispensing.

Use Cavitek™ in delicates mode

13. The Cavitek degas feature speeds up the liberation of air from the fluid and is required to be run each time you change or add fluid to the bath. The process will normally take between 10 and 20 minutes to complete. Fluid containing high concentrations of air will considerably reduce the ultrasonic cleaners effectiveness. Running the ultrasonic cleaner in any mode will liberate the air but the degas function is designed to perform degas more rapidly by adding a duty cycle to the ultrasonic effect.



Cavitek™ Professional Series

Product Operation

The following instructions will ensure safe and correct use of your Cavitek™ cleaner:

Step One: Place ultrasonic cleaner on a flat stable surface.

Step Two: Add your chosen cleaning solution to the bath (cleaning agents are not always necessary) to a level where it will not overflow when the item to be cleaned is added. Add item to be cleaned.

Step Three: Plug in the cleaner and switch on via the switch on the rear of the unit if present, otherwise at the wall socket.

If no buttons are pressed after eight hours your Cavitek™ cleaner will go into power save mode. To restore power press any button on the front panel.

Step Four: Digital displays on the front panel should now show the last set time and the current water temperature.

Step Five: To increase/decrease the target temperature, press the up or down arrow below the temperature display, temperature is adjusted by 1 °C with each press between 0 and 80 °C, holding the up or down button will change the target temperature by 10°C. The heater is used to keep fluid at temperature between cleaning cycles, the ultrasonic process also acts to heat the fluid.

Step Six: To increase the process timer by 1 minute press the up arrow button, hold the up arrow button to increase in 10 minute steps.

To decrease by 1 minute press the down arrow button, hold the down arrow button to decrease in 10 minute steps.

Step Seven: Once the time and temperature have been set press the relevant process enable/disable button(s) (Heating, Degas, Delicate or Full). The relevant indicator lights will turn on and the cleaner and/or heater will enable.

To end the cleaning/heating process press the corresponding key(s) again, if nothing is pressed the ultrasonic will stop when the timer reaches 00:00, the heater will switch on and off to maintain the fluid at the target temperature.



Cavitek™ Cleaning Modes

Degas Mode: Degas mode will start intermittent operation of the ultrasonic power. This ensures rapid removal of air from liquids. This can be started via the degas button. This button will also stop the cleaning prior to timed ending if needed.

Delicate Mode: The ultrasonic cleaner delivers half power to provide a less aggressive clean for delicate items. To start the delicate mode press the delicate button. This button will also stop the cleaning prior to the timed ending if needed.

Full Mode: The ultrasonic cleaner delivers its maximum ultrasonic power to provide an aggressive clean for heavily soiled items. The full button will start Full mode on your Cavitek™ tank. This button will also stop the cleaning prior to the timed ending if needed.

Different Methods of Cleaning

General Cleaning: For lightly soiled objects we suggest only using warm water. This should be paired with a temperature around 40°C .

Enhanced Cleaning: If the objects in question need a deeper clean then we advise the use of an ultrasonic cleaning solution mixed weakly and heated to the mid range of the fluids operating temperature. Again a warm temperature between 40-60°C will help you achieved your desired results.

Extensive Cleaning: For the removal of tarnish, fuel and hard carbon deposits, and rust from non-plated metals, etc, we recommend a pre-soaking in the ultrasonic bath of detergent/solvent mixed to its strongest concentration ratio to soften unwanted deposits whilst heated to the high end of the fluids operating temperature range. These steps coupled with Cavitek's™ Full mode will ensure the best cleaning possible.

For more information on Allendale-Ultrasonics' range of solutions visit page 15.

Series Features





Cavitek™ Series Comparison Sheet

Units	Tank Capacity	Timer	Ultrasonic Power (No. of Transducers)	Heating Power	Frequency	Tank Dimensions (Bath Lip)	Tank Dimensions (Bath Base)
	Litres	Minutes	Watts	Watts	KHz	MM	MM
US-CU-CA-2L	2	1-99	50 (1)	100	40	150x137x100	138x124
US-CU-CA-3L	3	1-99	100 (2)	100	40	240x137x100	221x118
US-CU-CA-6L	6	1-99	150 (3)	300	40	300x153x150	275x130
US-CU-CA-9L	9	1-99	200 (4)	300	40	300x240x150	280x220
US-CU-CA-13L	13	1-99	300 (6)	400	40	330x300x150	310x280
US-CU-CA-20L	20	1-99	400 (8)	500	40	495x295x150	470x270
US-CU-CA-27L	27	1-99	500 (10)	500	40	495x295x195	470x270

DI Series - Digital Control

Product Operation

The following instructions will ensure safe and correct use of your DI Series cleaner:

Step One: Place ultrasonic cleaner on a flat stable surface.

Step Two: Add your chosen cleaning solution to the bath (cleaning agents are not always necessary) to a level where it will not overflow when the item to be cleaned is added. Add item to be cleaned.

Step Three: Plug in the cleaner and switch on via the switch on the rear of the unit if present, otherwise at the wall socket.

Step Four: Digital displays on the front panel should now show the last set time and the current water temperature.

If the cleaner is left like this for a period of time it will go into power saving mode. Press the On/Off button to wake up from power save.

Step Five: To increase/decrease the target temperature, press the up or down arrow below the temperature display, temperature is adjusted by 5 °C with each press between 0 and 80 °C. The heater is used to keep fluid at temperature between cleaning cycles, the ultrasonic process also acts to heat the fluid. Press the on/off button to start/stop heating of the fluid.

Step Six: To increase the process timer by 5 minutes press the up arrow button, to decrease by 5 minutes press the down arrow button. Press the on/off button to start/stop the cleaning cycle.

Step Seven: You can change the temperature or timer at any time by pressing the relevant button

Series Features





DI Series Comparison Sheet

Units	Tank Capacity	Timer	Ultrasonic Power (No. of Transducers)	Heating Power	Frequency	Tank Dimensions (Bath Lip)	Tank Dimensions (Bath Base)
	Litres	Minutes	Watts	Watts	KHZ	MM	MM
US-CU-DI-1.3L	1.3	1-99	50 (1)	100	40	150x137x63	140x127
US-CU-DI-2L	2	1-99	50 (1)	100	40	150x137x100	138x124
US-CU-DI-3L	3	1-99	100 (2)	100	40	240x137x100	221x118
US-CU-DI-9L	9	1-99	200 (4)	300	40	300x240x150	280x220
US-CU-DI-27L	27	1-99	500 (10)	500	40	495x295x195	470x270

BU Series - Dial Control

Product Operation

The following instructions will ensure safe and correct use of your BU Series cleaner:

Step One: Place ultrasonic cleaner on a flat stable surface.

Step Two: Add your chosen cleaning solution to the bath (cleaning agents are not always necessary) to a level where it will not overflow when the item to be cleaned is added. Add item to be cleaned.

Step Three: Plug in the cleaner and switch on via the switch on the rear of the unit if present, otherwise at the wall socket.

Step Four: Turn the heating dial to your desired temperature, the heating indication light will illuminate and heating will begin.

Step Five: Turn the time dial to the required time, the ultrasonic process will begin instantly.

Step Six: To stop either function you can turn the dial back to the "OFF" position.

Series Features





BU Series Comparison Sheet

Units	Tank Capacity	Timer	Ultrasonic Power (No. of Transducers)	Heating Power	Frequency	Tank Dimensions (Bath Lip)	Tank Dimensions (Bath Base)
	Litres	Minutes	Watts	Watts	KHz	MM	MM
US-CU-BU-0.7L	0.7	N/A	50 (1)	N/A	40	150x83x63	140x73
US-CU-BU-2L	2	N/A	50 (1)	100	40	150x137x100	138x124
US-CU-BU-3L	3	0-20	100 (2)	100	40	240x137x100	221x118
US-CU-BU-9L	9	0-20	200 (4)	300	40	300x240x150	280x220
US-CU-BU-27L	27	0-20	500 (10)	500	40	495x295x195	470x270



Other Tanks and Accessories

Industrial Sized Tanks

Allendale Ultrasonic can source a range of industrial size ultrasonic tanks from 36 litres through to 235 litres, with heaters and ultrasonic power up to 2520 Watts. Custom sizes can also be quoted and manufactured on request.

For more information on these tanks please contact:

Tel: +44 (0)1992 455925
Email: sales@allendale-ultrasonics.co.uk
Web: www.allendale-ultrasonics.co.uk





Ultrasonic Solutions

Ultrasonic solutions can be essential when using an ultrasonic cleaner to achieve your desired results, whether that's for cleaning motor parts through to rust removal and optical cleaners.

Allendale Ultrasonics stocks a range of solutions which will cater for a wide range cleaning needs. Most of the solutions come in a range of bottle sizes right through to 25 litre bottles.

All products can be viewed and purchase at www.allendale-ultrasonics.co.uk or through an authorised distributor.



Cleaning Baskets

Creating the correct cleaning environment can be difficult. One aspect that will help is having the items in question off the base of the bath to allow correct propagation around the item.

At Allendale-Ultrasonics.co.uk we supply a range of baskets for our cleaners which make for a useful addition in many applications. A must have when purchasing your new BU, DI or Cavitek™ tank.

A range of our baskets can be viewed and purchased at: www.allendale-ultrasonics.co.uk

Or call: +44 (0)1992 455925 for more information and advise.

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